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The green issue

Carbon challenge

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A new green labelling scheme is nudging Malaysian builders to put up structures that save energy and resources, and emit little toxic substances.

Better buildings

By TAN CHENG LI
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Green ways

Greening the property industry: Architects Selina Hijjas and Dr Tan Loke Mun are part of the effort to encourage Malaysian developers and builders to construct more sustainable buildings that will conform to the Green Building Index rating scheme.

ARCHITECT Dr Tan Loke Mun's dream home is a "green" one – and not just because the garden will flourish with fruit and flowering trees grown to nurture specific species of insects and animals, but because of the small carbon footprint it leaves behind.

The house that will come up in the quiet suburb of Section 11 in Petaling Jaya will adhere to strict rules governing green buildings. To cut down air-conditioning needs and hence, electricity, the house will be heat-insulated by roofing materials and aerated lightweight concrete walls. Well-placed windows will allow a breeze to flow through. Cool air will be drawn from the cellar to further lower interior temperatures while a light tube from the ceiling will allow natural light to spill in.

The bathrooms, meanwhile, will partially use collected rainwater and condensation from air-conditioners. Demolition material from the original house will not go to waste – the timber will be reused for construction formwork and the roof tiles, crushed and mix into concrete. And only sustainably harvested timber will be used for the 720sqm property.

But Tan's home is not just claiming to be green; it will be officially declared as such for Tan is having his house rated under the Green Building Index (GBI), Malaysia's very own certification scheme for sustainable buildings.

To be launched on May 21, the GBI spells out the standards which a new building must meet before it can stake that green claim. It was developed by Pertubuhan Akitek Malaysia (PAM) and Association of Consulting Engineers (ACEM) as part of the effort to green the property industry.

As chairman of the sustainable committee in PAM, Tan had led the team that drew up the GBI. So it makes perfect sense that he is eager to have his home rated.

And he is not alone. There appears to be a growing number of builders embracing the movement – Tan shares that the idea for a green building index was prompted by requests from clients. In fact, the absence of such a scheme here had left the developers of at least three projects in the Klang Valley – GTower skyscraper, Sunway Pallazio condominium and 11 Mont Kiara condominiums – little choice but to seek Singapore's green building certification scheme, the Green Mark.

Apart from Tan's home, another 11 projects ranging from office towers to malls, mixed development and even a car showroom, are seeking GBI rankings. These are expected to receive provisional GBI awards within the year.

The GBI labelling is voluntary but because buildings are major emitters of greenhouse gases, all new structures should strive to be green-certified. Buildings have an enormous impact on the environment, human health and the economy. The processing of all the glass, steel and concrete that are needed for construction, plus the energy needed to power, heat and cool buildings, collectively belch out 33% of global carbon emissions, according to the World Green Building Council.

In Malaysia, commercial and residential buildings use up 48% of the electricity generated. So making buildings greener is key to tackling climate change.

Eco-wise structures

PAM and ACEM started drafting the green building criteria last year, drawing upon industry views and existing schemes such as Singapore's Green Mark, Australia's Green Star and the United States' Leadership in Energy and Environmental Design (LEED). A company, Greenbuildingindex Sdn Bhd (GSB), has been formed to manage the certification scheme.

To qualify for the award, the buildings will be judged in six areas: how efficiently it uses water and electricity, indoor environmental quality, sustainable site planning and management, use of eco-friendly materials and resources, and innovation.

"Achieving points in these targeted areas will mean that the building will likely be more environment-friendly than those that do not address the issues," says Tan.

GBI accreditation panel member Serena Hijjas says the final list of criteria was designed to suit the tropics and local culture. "The GBI is not of a lower standard than other certifications but gives different emphasis," she says. Singapore's Green Mark, for instance, addresses specifically the priorities and needs of Singapore.

Hence, it weighs heavily on energy and water efficiency, areas deemed critical to the republic. As Singapore's public transport network is already in place, this is of lower priority in the rating procedure. In the GBI, however, access to public transport is given much weight.

The GBI also has to suit current social, infrastructure and economic development, says Serena. "LEED is more detailed in its requirements as they are at a more mature stage of development. They have requirements like how much light spill can be allowed from a building to avoid light pollution."

Serena says one reason why energy-efficient buildings have not taken off in Malaysia is because most buildings here are not owner-occupied but are either tenanted or bought from developers. "The developers are not the ones paying the electricity bills and running costs, so they would not care about including energy-saving features into the building. Only corporate clients buy into it (green buildings), not developers."

To comply with the GBI, buildings must have an energy consumption of below the national guideline of 150 kilowatt hour per square metre per year (kWh/m²/year). Most commercial buildings are now at 250 to 350kWh/m²/year.

The GBI certification fees are said to be reasonable, starting at RM5,000 for the review of a residential home of below 2,000sqm. For commercial projects, rates vary from RM8,000 (for projects up to 4,000sqm) to RM45,000 (50,000sqm to 100,000sqm).

"The fee is for assessing and awarding the certificates. GSB won't make huge amounts of profits but it needs the money to sustain its work," explains Tan.

Raising the bar

For Tan, the GBI certification will not just give developers a marketing edge; it will also lift the industry. "Malaysia introduced the MS1525 (an industry code of practice on energy efficiency in buildings) in 2001 but because it is not mandatory, few adhere to it and so our buildings never improved," says Tan.

He adds that reducing energy usage can be as simple as adding a RM2,000 insulation layer under the roof, which prevents heat penetration. But developers often omit this to save cost and because it is not a legal requirement. "And this is why in linkhouses, you need air-conditioning in the afternoons."

Singapore, he adds, has leapt ahead of Malaysia in green construction as it had mandated reduced energy usage. And last year, it made Green Mark certification a requisite for buildings over 2,000sqm in size, a mere three years after it was introduced as a voluntary scheme.

Malaysia is nowhere near making green buildings a law but Tan says the Uniform Building Bylaws 1984 that is now under review will include energy efficiency rules.

He is also optimistic that the GBI will help create informed and discerning consumers who will keep in mind the life-cycle of buildings. He believes that green buildings will stimulate green labelling, especially for the energy consumption of electrical appliances. After all, it is pointless to live or work in an eco-friendly structure, yet use energy-guzzling equipment.

To further promote green construction, the architects suggest that local authorities reward such initiatives by offering reduced car park rates or lower assessments.

As the GBI will be the only such rating tool for the tropical zone apart from the Green Mark, its proponents hope to promote its use within the region. A GBI certification criteria is also planned for existing buildings and new townships. This means old buildings which are retrofitted to be energy efficient and less polluting can apply for the GBI award in future.

Tan says the green certification of townships will be a first as most countries do not have it. Unlike the criteria for buildings, those for townships will emphasise the biological impact of the project since a larger site would be involved.

Such standards augur well for the future of green construction. We will finally see buildings that not only provide energy and water savings plus healthy indoor air, but also cause minimal disturbance to nature. And let's hope it puts an end to developers calling their projects "eco-towns" or "eco-projects" when all they have is just nice landscaping.

How it works

THE Green Building Index certification process starts with an assessment of the building design by a certifier appointed by Greenbuildingindex Sdn Bhd. A provisional award is then issued. The award is issued when the completed building has been verified according to the design. To maintain the award, the building is reassessed every three years.

Points are given for performance above benchmarks and current industry practice. Depending on the scores achieved, the buildings will be awarded one of four types of ratings: certified, silver, gold or platinum.

Different emphasis is given in the assessments. For residences, it is on sustainable site planning and management while in commercial buildings, it is on energy-efficiency and indoor environmental quality.

Buildings are evaluated in six areas:

Energy efficiency: use of renewable energy, lighting zoning and low energy consumption

Indoor environmental quality: mould and air pollutants prevention, thermal comfort, natural lighting, volatile organic compounds-free paints and formaldehyde-free composite wood, particle boards and plywood

Sustainable site planning and management: site selection, access to public transport, community services, open spaces and landscaping, redevelopment of existing sites and Brownfields (abandoned land or former industrial sites), avoidance of environmentally sensitive sites, construction management (proper earthworks and pollution control) and stormwater management

Materials and resources: use of environment-friendly, recycled materials and sustainable timber; storage and collection of recyclables; construction waste management; and reuse of construction formwork

Water efficiency: rainwater harvesting, water recycling and water-saving fittings

Innovation: innovative design and initiatives

Climate-saving tips

By TAN CHENG LI
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HERE are some ideas for reducing your carbon footprint through simple, everyday steps. Most are small changes which you probably won't even notice, but if all of us were to adopt just a few good habits, the carbon savings will surely add up.

Phantom power

Always turn off electrical equipment. Appliances left on standby mode continue consuming energy (by as much as 100kWh a year) and emitting carbon (68kg a year). The US Department of Energy states that 75% of all electricity consumed in homes is standby power. Before going on holiday, unplug appliances or they will continue draining away energy. Turn off your computer when you're away for long meetings, lunch and at the end of the day. Consider using an on-off timer to shut off electrical equipment when they are not in use, such as the water dispenser at night.

Keeping cool

Air-conditioners are real energy gobblers – an average 100W air-conditioner emits 680g of CO2 hourly. Use them sparingly or keep cool with a fan. Buy the inverter type of air-conditioner and energy-efficient models. Since there is no such labelling in Malaysia, refer to Singapore's energy labelling scheme for appliances (www.nccc.gov.sg). And buy the right size for your room. An over-sized air-conditioner will consume more power.

Adjust the thermostat so that it is not too cold. Studies show 24°C to be the comfort level for Malaysia. Keep the air-filter and coils dust-free to optimise operations.

Lighting

Switch off the lights when you leave a room. Clean lights shine brighter. So dust them occasionally. Refrain from using general room lighting for specific purposes; instead use task lighting such as reading lamps or lights over a kitchen counter. Energy-saving lights such as compact fluorescent light bulbs or fluorescent tubes may cost more but are cheaper over their life-spans. Photo-electric switches, timers and dimmer controls can help save energy. Make the most of natural light: think pale walls, ceilings and floors.

A good wash

Wash only full loads. This saves 45kg of CO2 a year. High temperatures are unnecessary as modern-day detergents clean efficiently at low temperatures. Irons demand lots of energy. So iron large batches of clothes at one time to avoid wasting energy in reheating the iron. Plan your ironing. Start with items which require lower temperatures so as to avoid unnecessary and repeated heating of the iron. Turn off the iron if you are interrupted halfway through.

Save water

Conserve water. Not only is water a scarce resource globally, it takes huge amounts of energy to treat and move it around.

Keeping food fresh

Choose the right capacity refrigerator to suit your family's needs. Check for the energy rating among similar-sized options. Find the most energy-efficient refrigerator at Singapore's energy labelling scheme (www.nccc.gov.sg).

Heat will make the compressor work harder, so place your fridge on a cool spot away from direct sunlight or the stove. Ensure adequate space around it for better air circulation. Too cold a setting will consume more energy. The ideal operating temperature is between 3°C and 5°C.

Test the door seal occasionally by closing the door on a thin piece of paper. If it does not stay in place, the seal should be replaced. A grimy condenser coil can raise energy use by 30%, so keep it dust-free. Decide what you need before opening the refrigerator door. Repeated opening wastes energy.

Stuff we don't need

Some appliances are simply energy-guzzlers and we could well do without them. The airpot is one such item. Keeping water hot or at boiling point 24-7 is simply a waste of electricity. Boil water as and when you need it.

Chop garlic and onions manually instead of using those small electrical choppers. You not only waste energy but lots of water too when washing them.

Use instant water-heaters instead of the storage type which keeps stored water hot all the time. Consider solar water-heaters which do not consume electricity.

Dry clothes in the sun with free and non-polluting energy, instead of in tumble dryers. A study by Cambridge University's Institute of Manufacturing found that 60% of the energy associated with a piece of clothing is spent in washing and drying it. A T-shirt can send up to 4kg of CO2 over its lifetime!

Ditch the McMansion

The bigger your house, the more electricity you will need to light and cool it. The production of building materials such as cement releases carbon, too.

Seek out homes built with energy-efficient features or consider renovations that will keep your home cool, for instance, by installing insulation under the roof, shades, awnings, glass tints and double-glazed glass.

Trees and shrubs around the house will also help keep temperatures down.

Go online

Eliminate your paper trail by paying bills online. You will also avoid unnecessary trips to the bank, post office or council.

Carbon-smart driving

Transport accounts for 14% of global greenhouse gas emissions. Cut down your driving as every litre of burnt fuel emits 2.7kg of carbon.

Bad driving habits (sudden breaking and accelerating) guzzles up petrol. Don't speed – driving faster than 120km increases fuel consumption by 30% compared to driving at 80km.

Plan ahead – choose the least busy routes and combine trips. Turn off the engine if you're parked for more than two minutes. Keeping your car in tip-top shape and tyres properly inflated will give you better mileage. A heavy vehicle uses more petrol; so empty the boot and remove unused roof racks.

Choose a fuel economy car. The Singapore fuel economy labelling scheme (www.nccc.gov.sg) has a list of such vehicles. Perodua cars fare pretty well on the list. The Kelisa emits 126g of CO2 per km and the VIVA 134g/km – comparable to that of Toyota Prius (103g/km on petrol drive) and Honda Civic hybrid (109g/km).

And by the way, the Honda hybrid is now in the local market. Sure, its expensive at around RM130,000 but it's still cheaper than many cars on the road. Plus with a hybrid, you're not only doing the climate a favour, you'll also get green bragging rights.

Responsible travels

Going on a long trip? Choose your mode of transport wisely. An average new car generates 160g/km of CO2 per passenger, a plane 100 to 250g/km, a bus 40 to 80g/km and a train 40 to 160g/km.

Take the train whenever possible. A lone car driver generates three times more CO2 per kilometre than if he was on the train. If going by car, take as many passengers as possible to average out the CO2 emissions.

Aviation accounts for 2% of global greenhouse gases but that number is climbing fast. Fly only for distances greater than 700km. Otherwise take the train.

If you fly, consider "offsetting" your carbon emissions by investing in renewable energy projects.

Carbon-conscious shopper

Anything you buy will inflate your carbon footprint for the simple reason that it took energy to manufacture and distribute them. So buy only stuff which you really need.

And buy locally made things as they involve less transportation.

Avoid disposables and single-use goods. Their high turnover means more energy is needed to make and dispose them. Also avoid products with heavy packaging which will only end up as trash.

Buy organic produce. They are grown without fertiliser and pesticides, which release nitrous oxide, a greenhouse gas. Also, skip the steak. The meat industry generates 18% of global greenhouse gas emissions; much of it comes from manure and methane from the digestive tracts of cows.

Bag the waste

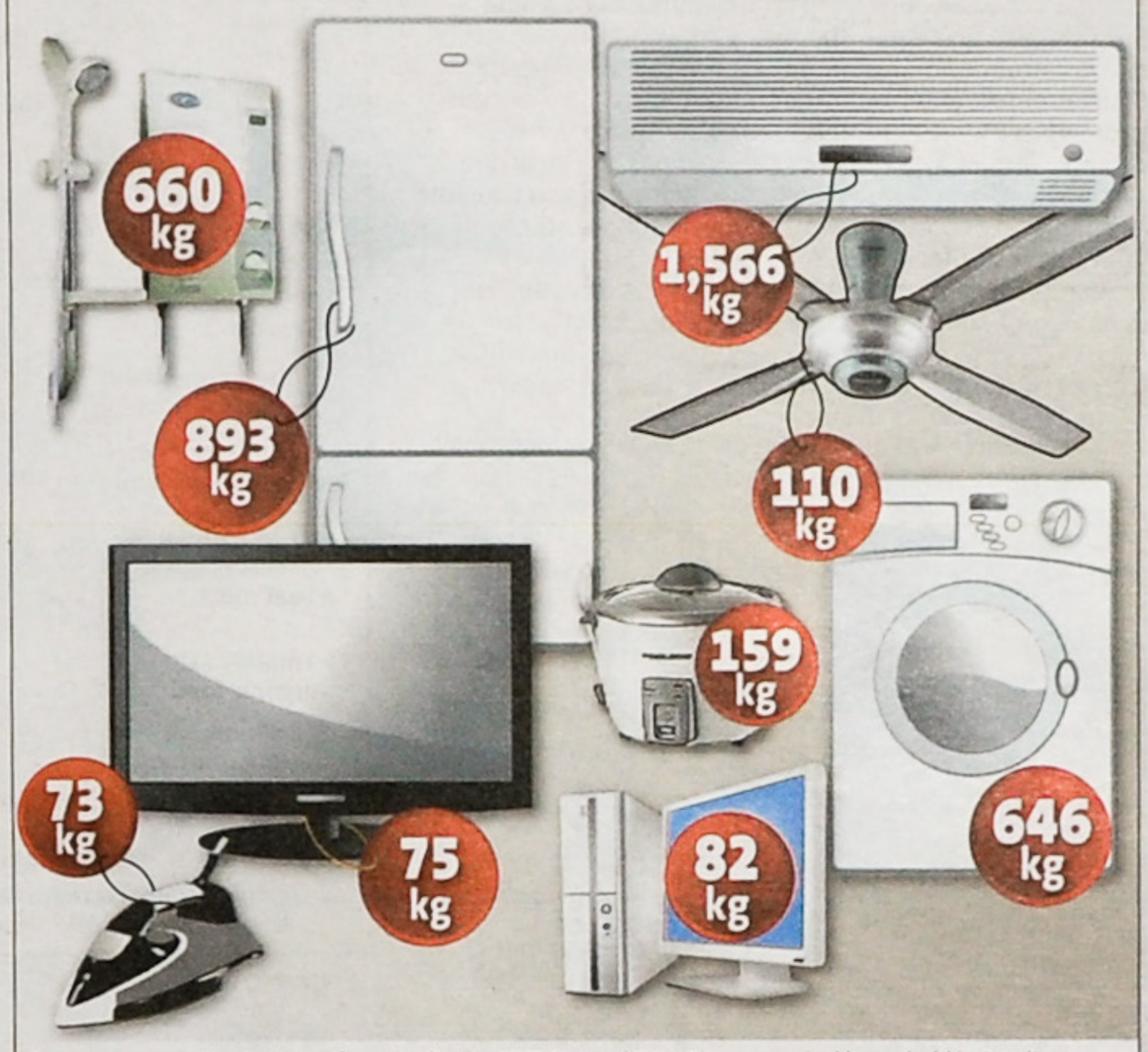
Reduce first. Then reuse, followed by recyle. Reusing things saves the need for new materials and energy. Recycling one aluminium can saves 90% of the energy needed to produce a new one. For 1kg of recycled plastics, the saving is 1.5kg of CO2 and for 1kg of recycled glass, it is 300g of CO2.

By taking your lunch in a reusable lunch box instead of a disposable one, and opting for a reusable bag instead of more plastic bags, you save the energy needed to produce new ones.

Compost your organic waste. In landfills, such waste will decompose and emit methane, a greenhouse gas that is 21 times more potent than CO2.

COUNTING CARBON

The amount of carbon created in a year by some appliances



Energy consumption is drawn from studies by CETDEM and DANIDA on a typical household in Petaling Jaya
Conversion: 1kWh emits 0.68kg CO_2

Star GRAPHICS © 2009

Electrical appliances of all kinds have made our lives easier but this translates to greater use of energy.

By HILARY CHIEW
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Botanist extraordinaire: Dr Francis Ng holding up the plaque which honoured his long dedication to the world of plants.

Flora lover

A lifetime dedicated to studying plants has not gone unnoticed for this botanist, who recently received a prestigious award for his work.

IF you ask Dr Francis S.P. Ng the name of any trees in this country, chances are he will be able to answer you. And he might even tell you where the herbarium specimens are kept.

Such is the depth of his knowledge for he is one of the handful of local botanists who have toiled for a quarter century surveying 2,800 species of trees, all of which are documented in the four-volume *Tree Flora of Malaya*.

Working alongside his mentor, the late Dr Tim C. Whitmore who had edited the first two volumes that were published in 1972, Ng edited the last two volumes which were published in 1978 and 1989.

He belongs to the pioneer corp of local foresters who gradually took over the management and research work at the Forest Research Institute of Malaysia (FRIM) from their English predecessors in the years after independence in 1957.

Under the Colombo Plan for economic and social advancement of the peoples of South and South-East Asia, Ng received a scholarship to pursue his botanical degree at the University of Tasmania. He joined FRIM upon graduation in 1964. Four years later, again sponsored by the Colombo Plan, he left for the University of Oxford where he based his thesis on the biological studies of the Ebenaceae, a family of 500 species of flowering trees and shrubs which include ebony and persimmon.

"Malaysia is the only independent country ever to finish a tree inventory," reveals the botanist.

"The process of Malayanisation, as it was called, spanned 1957 to 1965. Subsequently, Malaysia continued to receive support from rich countries in the Commonwealth group such as Britain, Australia, Canada and New Zealand," he explains.

During that period, foreign experts were also sent to work and train locals in the former colony and FRIM benefited from experienced foresters who willingly imparted their skills and knowledge to develop a forestry management system for the country.

Recalling the extensive and ambitious *Tree Flora of Malaya*, Ng says the project spanned his entire career at FRIM.

"In those days, we were prepared to spend our lifetime exploring and dedicated to one single mission. Nowadays, scientists don't harbour that big an ambition. Nobody will invest their lifetime doing one piece of work.

"With the new funding mechanism, researchers tend to think short-term. They do small projects and wait for funding. (In a way,) the prevailing funding mechanism has changed the scientific mentality (for the worse) and stifled good research," he opines.

Ng's interests in plants began when he was a young boy growing up in Kampung Simee in the outskirts of Ipoh. His family had built their house on the prescribed 360sqm of land given by the government to each resettled Chinese family during the Emergency period.

Like most settlers, his family grew edible plants. In his secondary school days, Ng was an active Scout and often explored the jungle which earned him one of the merit badges, the forester badge. Autobiographies of great people like Thomas Edison and Albert Einstein inspired and nurtured Ng's dream of becoming a scientist.

"By the 20th century, all the physical discoveries have been accomplished. The only discoveries that can be had were in the botanical arena," says Ng who retired from FRIM in 1989 as its deputy director-general.

He later headed the forest research and training branch of the Food and Agriculture Organisation from 1991 to 1994 and was director of the research division at the Centre for International Forestry Research between 1994 and 1997.

His dedication to botany recently earned him the David Fairchild Medal for Plant Exploration, making him the first Malaysian to be listed on the esteemed list that includes other luminaries like Sir Gillian Prance, the former director of the Royal Botanical Gardens at Kew, renowned for his ethno-botanical study of the Brazilian nut in the Amazon forests.

Ng, 68, is instrumental in the *ex-situ* conservation to save the rare Malaysian witch hazel (*Maingaya malayana*), the only species of its genus and until recently known only from two herbarium specimens collected a century ago.

In 1971, upon returning from Oxford, Ng collected three seeds of the Malaysian witch hazel from one tree in Penang and planted them on FRIM grounds. When the tree's rarity was noted, Ng rushed back to the place but the tree had been felled.

Ng is known for his exhaustive study of 1,000 species of tropical fruits and seeds.

The award citation noted Ng's contribution to conservation, research and exploration of Indomalaya's forest, achievements that are in the footsteps of Fairchild, an accomplished American plant collector before World War II.

As director of the Office of Foreign Seed and Plant Introduction of the United States Department of Agriculture, Fairchild introduced some 75,000 selected varieties and species of useful plants such as durum wheat, Japanese rice, Sudan grass, Chinese soybean, Chinese elm, persimmon and pistachio to the world's leading superpower.

A past recipient of the Fairchild award is Dr Ruth Kiew, a Malaysia-based English botanist renowned for her extensive work in Malaysian flora.

As someone who believes that knowledge is borderless and who appreciates the free flow of genetic resources throughout human history, Ng is concerned that recent developments governing genetics ownership under the Convention on Biological Diversity will have an adverse effect on knowledge about plants beneficial to mankind.

"The convention has rightly emphasised the need for conservation but on the flip side, barriers have come up that inhibit the sharing of these resources due to fear of bio-piracy. Now people tend to look at genetic resources as a pot of gold but without intellectual effort that goes into studying their properties and values, a plant may not have its perceived value.

"Very often, the intellectual input does not necessarily happen in the country of origin. So, if you discourage research, you risk putting an end to discovery of new knowledge," he argues.

Ng's vast knowledge in tropical plants now goes into the many consultation jobs that he has taken up. He is consultant editor for the *Journal of Tropical Forest Science*, lead consultant for the planned Natural History Museum and is also supervising the creation of a rooftop garden at 1 Utama shopping centre in Petaling Jaya.

He has published more than 140 scientific papers, books and CDs on tropical botany, including *The Tropical Garden City: Its Creation and Maintenance* and *Tropical Horticulture and Gardening*.

Green goods, false claims

JUST two per cent of the growing number of self-proclaimed green products on store shelves make completely legitimate claims on their labels, said a report by consulting firm TerraChoice Environmental Marketing.

The remainder commit "greenwashing" sins, that is they mislead consumers about the environmental benefits of a product or the practices of a company, said TerraChoice, which runs the Canadian Government's eco-labelling programme.

It increased its list of greenwashing sins this year to seven from six, adding "worship of false labels" for marketers who mimic third-party environmental certifications on their products to entice consumers.

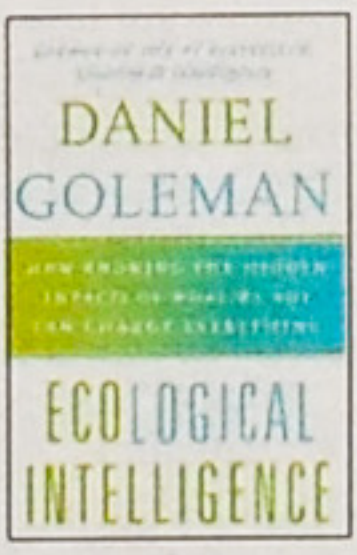
Other sins in the report include lack of proof, vagueness, irrelevance and outright lying. Products that make environmental claims and are sold in big box stores in the United States, Canada, Britain and Australia were surveyed.

Beware of green claims – many might be unsubstantiated.

The survey of 2,219 consumer products in Canada and the US shows that 98% committed at least one sin of greenwashing and that some marketers are exploiting consumers' demand for third-party certification by creating fake labels or false suggestions of third-party endorsement." – Reuters

Green mirage

Ecological Intelligence
Author: Daniel Goleman
Publisher: Broadway, 288 pages



THIS book reveals the hidden environmental consequences of what we make and buy, and how with that knowledge we can drive the essential changes we all must make to save our planet and ourselves. We buy herbal shampoos that contain industrial chemicals that can threaten our health or contaminate the environment. We dive down to see coral reefs, not realising that an ingredient in our sunscreen feeds a virus that kills the reef. We wear organic cotton t-shirts, but don't know that its dyes may put factory workers at risk for leukaemia. Daniel Goleman reveals why so many of the products that are labelled green are a mirage, and illuminates our wild inconsistencies in response to the ecological crisis.

Eating the Sun
Author: Oliver Morton
Publisher: Harper Perennial, 480 pages

This is the story of the source of life itself. It describes the extraordinary process that has allowed plants to power the earth for billions of years. Photosynthesis is the most mundane of miracles. Wherever nature offers us greenery, the molecular machinery of photosynthesis is making oxygen, energy and organic matter from the raw material of sunlight, water and carbon dioxide. We rarely give the green machinery that brings about this transformation much thought, and few of us understand its beautifully honed mechanisms. But we are dimly aware that those photosynthetic mechanisms are the basis of our lives twice over: the ultimate source of all our food and the ultimate source of every breath we take. *Eating the Sun* will foster and enrich that awareness.

You are Here
Author: Thomas M. Kostigen
Publisher: HarperOne, 272 pages

Despite the recent prominence of "green" issues in the news, the direct relationship between our actions and the earth is too often ignored. But the seemingly insignificant things we do every day have the power to literally alter the landscape in our own carbon footprint into perspective. What makes this book stand out, though, is that it doesn't just inform kids, it encourages them to make a difference by providing them, their friends and their families the tools to take action.

Haley's Green Hints
Author: Haley, Graham and Haley, Rosemary
Publisher: NAL C, 256 pages

This is a collection of earth-friendly tips for around the house. The tips, both time-tested and money-saving, range from cooking and home repair to pest control and clever laundry ideas. Organised by category, the book shows how ordinary, non-toxic products can perform extraordinarily, all the while saving time and money. Readers can now say goodbye to expensive products and harsh chemicals. And Mother Earth will thank them for it.

The New 50 Simple Things Kids Can Do To Save The Earth
Author: John and Sophie Javna
Publisher: Simon & Schuster, 160 pages

John Javna and his daughter Sophie have revised the original best-selling book for a concerned and vibrant Web 2.0 youth market. Its easy-to-do and kid-friendly projects show that kids can make a difference, and each chapter is packed with links to groups and resources. The book helps kids go from aware to active with simple (but inspiring) projects, tips and little-known details that put a kid's

Low yields from GE crops

THE use of genetically engineered corn and soybeans in the United States for more than a decade has had little impact on crop yields despite claims that they could ease looming food shortages.

A study by the Union of Concerned Scientists evaluated the effect of these crops over the past 13 years, examining peer-reviewed academic studies that date back to the early 1990s.

"Based on that record, we conclude that GE (genetic engineering) has done little to increase overall crop yields. There is little confidence that this technology will play a major role in helping the world feed itself in the forseeable future," they said.

The report said genetically engineered soybeans account for 90% of soybeans grown in the United States, while genetically engineered corn accounts for 63% of the US corn crop.

"Overall, corn and soybean yields have risen substantially over the last 15 years, but largely not as a result of the GE traits," the report said. "Most of the gains are due to traditional breeding or improvement of other agricultural practices."

Earth pulse

It found that corn and soybeans that were genetically modified to increase their tolerance to herbicides "have not increased operational yields, whether on a per acre or national basis, compared to conventional methods that rely on other available herbicides."

Corn modified with genes from Bt or *Bacillus thuringienisis* bacteria for resistance to several kinds of insects did provide higher yields, but the study estimated the increase at between 0.2 and 0.3% a year on average over the past 13 years. – Reuters

Soybeans which have been genetically engineered to be herbicide-tolerant have not shown better yields.

Calories-climate link

The rise in obesity in rich nations has also caused a spike in their emissions of greenhouse gases.

BEING weight-challenged is not good for the climate. A study found that obesity in richer countries causes up to one billion extra tonne of greenhouse gas emissions each year, compared with countries with leaner populations. Overweight nations also need 19% more food energy.

The finding is particularly worrying, scientists say, because obesity is on the rise in many rich nations. The study, carried out by Edwards and Ian Roberts, was published in the *International Journal of Epidemiology*.

"Population fatness has an environmental impact," said Phil Edwards, from the London School of Hygiene and Tropical Medicine. "We're all being told to stay fit and keep our weight down because it's good for our health. The important thing is that staying slim is good for your health and for the health of the planet."

In their model, the researchers compared a population of a billion lean people, with weight distributions equivalent to a country such as Vietnam, with a billion people from richer countries, such as the United States, where about 40% of the population is classified obese – having an average body mass index (BMI) of more than 30.

They also factored in greater car use by the overweight. "The heavier our bodies become the harder and more unpleasant it is to move about in them and the more dependent we become on our cars," said the report.

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On a roll

Wiping off his carbon footprint: Pierre Andre Senizergues relaxing on the solar-panelled roof of his company.

A former skateboard great turns his sights onto a new wave of greening.

By ADAM TSCHORN

PIERRE Andre Senizergues can make skateboards do anything. When he was in his 20s, he steered them from the Paris suburbs to Los Angeles' Venice Beach and turned them into the key to an apartment he could afford when he started winning skate competitions.

In his 30s, he used them as the foundation of a multi-million dollar Orange County-based footwear, apparel and accessories empire. And in his 40s, he made them the literal building blocks for a line of museum-quality furniture and even a springboard to being an executive producer of Leonardo DiCaprio's *The 11th Hour* documentary about global warming.

Today, 20 years after selling his first pair of skateboarder shoes and a decade after his first foray into the eco-movement, the 45-year-old Frenchman wants to use the business that boarding built to help spark the next wave of global greening.

"If I can have a company that can work on the green model," he says, kicking back on a couch crafted from discarded skate decks in the Los Angeles office of Sole Technology Inc, "it might inspire other companies and we'll have a green revolution ... like the Industrial Revolution, but only with everyone trying to reduce their carbon footprint."

Senizergues (pronounced sen-ee-ZEHR-guh) is an affable sparkplug of a man with a skater's low centre of gravity. He's almost always wearing a black knit cap and a broad smile, and on a recent spring day, he's in a pair of raw denim jeans and a white T-shirt. In the sun-filled "inspiration room" next to his office (which is guarded by a man-sized, free-standing tiki bearing the logo of his Etnies skate brand), he's talking enthusiastically in a thick French accent about making the company carbon-neutral by 2020.

That's no mean feat considering that all those skate kicks, hoodies and T-shirts spewed about 40,000 tonnes of carbon dioxide into the atmosphere in 2007. But he's moving his personal green revolution forward with the same combination of thinking outside the box and seizing every opportunity that helped turn the skater into an action-sports magnate/eco-warrior.

Senizergues – who's won a dozen French skating championships, nine European Cup titles, five European championships and two World Cup events – started his business by relaunching Etnies, a French skate shoe brand, from a 27sqm office in the shadow of Disneyland.

Today, he's Sole Technology's owner, president and chief executive, with a stable of brands that includes eS, Emerica, ThirtyTwo and Altamont Apparel. Though he won't divulge exact sales, he says recent reports of US$200mil (RM720mil) in annual sales are in the ballpark.

He began making the enterprise greener in 1999, when his business was shifting from survival mode to steady growth. He had visited the coal-powered factory in China where his shoes were made and noticed that "the sky was so grey all the time," he says. "In France and in California, it's grey sometimes, but then it will clear and be blue. When I asked why it was so grey, they told me: 'Pollution.'"

The glimmer of a solution began to take shape on a 2002 visit to the Colorado ranch of actress-activist Daryl Hannah, where a caretaker was driving a car that ran on vegetable oil.

"It not only used up the oil," he says, "but it also cut down the consumption of petroleum and reduced the possibility of war (over that petroleum) at the same time."

He realised then how interconnected global problems are, and he's been involved in eco-friendly ventures, projects and investments ever since. In 2002, he broke ground on a 6,700sqm research and design building that took advantage of eco-sensitive materials such as recycled limestone and reclaimed wood shavings. He says the 616 solar panels on the roof generate 275,000 kilowatt-hours of electricity (enough to power 60 homes) and eliminate 97 tonnes of carbon dioxide annually.

In 2007, he hired an environmental affairs manager – and was the first action-sports label to do so, he says. In 2008, he began to shift production to a site in China that uses hydroelectric power – a move that ultimately will reduce the carbon output of the company's factories by 20%.

When he noticed discarded skateboard blanks, he decided to re-purpose them into a line of home furnishing – tables, chairs and bookcases salled Skate Study House.

All his eco moving and shaking caught the attention of well-known actor-activist DiCaprio, and soon Senizergues was an executive producer of *The 11th Hour*. DiCaprio's 2007 alarm-sounding global-warming eco-documentary painted a picture so dire it made former Vice President Al Gore's *An Inconvenient Truth* seem like a feel-good film.

Its premiere at the Cannes Film Festival in May 2007 sparked Senizergues' most recent project – C-PAS (for Collection Pierre Andre Senizergues), a high-end line of men's tuxedos, suits, dress shirts and outerwear made from recycled materials.

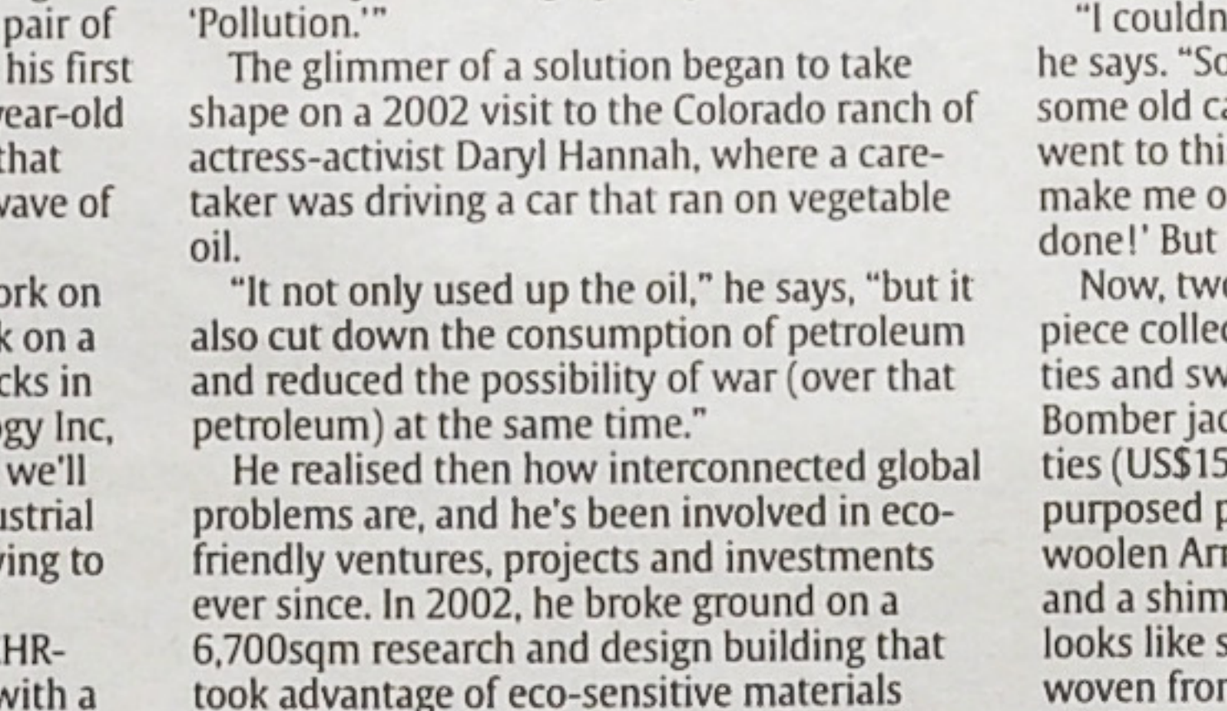
"I couldn't wear just any tuxedo to Cannes," he says. "So I took some cashmere scraps, and some old cassette tapes and an old T-shirt and went to this tailor in Los Angeles and had him make me one. At first he said, 'It can't be done!' But he did it."

Now, two years later, C-PAS is a full 30-piece collection that includes tuxedos, bow ties and sweaters – all handmade in the US Bomber jackets (US$450, RM1,620) and bow ties (US$155, RM558) are made from re-purposed parachutes, blazers are crafted from woolen Army blankets (US$2,400, RM8,640) and a shimmery, coarse-woven fabric that looks like sharkskin burlap but in reality is woven from recycled audiocassette tape (US$3,160, RM11,370). C-PAS will also offer custom-tailored suits that give customers the option of using a favourite T-shirt to line the jackets.

The high-end men's collection, launched online at www.collectionpas.com in April and will roll out at Colette in Paris in June, is hardly aimed at the price point or sales outlet frequented by skate rats.

"What I'm trying to do with this is reach the influencers. I realised that when my furniture was (at Colette), Karl Lagerfeld bought some of it. Whether it's skateboarding, movies, furniture, architecture or fashion, if you can move that 10% that are the influencers, you can move everybody else."

And since fashion is nothing without recycled ideas, if you happen to see something that looks like a shimmering Chanel jacket woven from castoff cassette tapes on the runway next season, remember there's a good chance it got there by skateboard. – LAT-WP



Sole power: Senizergues started his business 20 years ago by relaunching Etnies, a French skate shoe brand.

Sails that power

Wind turbines that move with the slightest of breezes to produce power – now that would be something to look forward to in less-than-windy Malaysia.

By MICHAEL CHEANG
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Green ways

An iWind Vertical Axis Wind Turbine in Taiwan. The turbines are currently used for small-scale power generation.

The iWind vertical axis wind turbine in the Instacom compound at the Subang Hi-Tech Industrial Park.

THE iWind power-generating wind turbine does not look like a wind turbine at all. The blades look more like the boat sails they were designed after.

The invention by Cell Power, a Taiwanese power supply and electrical equipment manufacturer, was launched only last June. What makes it unique is its ability to capture wind from any direction, much like the sails of a boat.

"Sail boats move forward against the wind. The iWind turbine was designed based on this concept. We cannot direct the wind but we can adjust our sails to capture it," says Richard Loh, director of iWind Energy, the local distributor of the wind turbine.

He says conventional horizontal wind turbines need a more finite wind, and can only capture wind blowing from one direction. The propellers also need to be turned towards the direction of oncoming winds to optimise power generation.

"The iWind fan blades are designed to capture wind from every direction ... up, down, left or right. That way, it maximises the available wind energy around it," says Loh.

And while conventional horizontal wind turbines require a wind speed of at least 4m/s (metres per second) to start generating power, iWind turbines can reportedly start turning with as little as 0.8m/s and start generating electricity by 1.8m/s. This is thanks to the use of high-efficiency blades made from an ultra-light composite and fibreglass reinforced material, as well as a permanent magnetic generator.

Currently, the iWind turbines that are available range from 0.3 to 10kWp (kilowatt peak) and are strictly for small-scale power generation – more suitable for small buildings, homes or streetlights rather than entire cities.

Winds of change

Now, the idea of harnessing wind energy from your own personal wind turbine is certainly appealing. After all, wind is practically free, the turbine generates power day and night, is noise-free and installing one on your roof will not take up as much space as a solar photovoltaic system would.

It all sounds good except for one thing: harnessing renewable energy from wind is somewhat untested in Malaysia.

According to Dr K.S. Kannan, director of the Centre for Energy Studies at Universiti Teknologi Malaysia's Sultan Iskandar Institute of Urban Habitat and Highrise, wind patterns in Malaysia are not consistent enough for wind turbines to run efficiently.

"We have never considered the wind here to be enough for power generation. However, there is potential especially with the unpredictable weather patterns these days and this new technology," he says.

Senior lecturer at the department of mechanical engineering in Universiti Malaya, Dr Chong Wen Tong concurs, saying that the evolution of technology can increase the efficiency of wind turbines here, and make them economically feasible.

"The optimum wind condition for normal wind turbines is 4m/s and this has been taken as a reference point for economical wind power generation. Anything less than that is considered less economical," says Chong, who did his post-graduate studies on wind turbine technology.

"But if the iWind technology can cut in at 2.5m/s, this means we can tap the energy even when the wind speed is below 4m/s. This will not only increase its operating time, the amount of energy produced will also increase."

The other consideration is the substantial capital investment. Loh says iWind system investors can expect an eight to 20-year payback period at the moment and returns are still relatively small.

However, he is hopeful for reduced prices if some of the parts could be made locally. "We also hope to get some support from the government in terms of subsidies so that we can make it more affordable," he says.

One way to bring the cost down is to integrate iWind turbines into a hybrid system with solar panels, thus creating a more efficient system.

"Wind speed, like sunlight, is intermittent, so it is best to have a combination of wind and solar. That way, the wind turbines can continue to generate energy even when it is cloudy or during the night when wind speeds are faster," says Kannan.

Will it work here?

Nevertheless, until there is more studies and data, it remains to be seen whether iWind turbines will work just as effectively in Malaysia as they do in windy Taiwan.

This is where the prototype unit at the Instacom building at Subang Hi-Tech Industrial Park, Shah Alam comes in. A monitoring system will be installed for the 2kWp turbine to gauge the system in real-time and collect data on wind velocity and generated power..

This is Loh's biggest system; the previous ones were all small, 300kWp systems.

Instacom Engineering chief technical officer Freddy Tay says the company (which specialises in the construction of telecommunication network infrastructure) decided to install the wind turbine after recognising its potential for the telecommunications industry.

"Most telecommunications companies have stand-alone trunk stations in remote areas which have to rely on diesel power generators. Since these towers are generally quite tall, there is a possibility of using wind turbines to power the towers," he says.

At the moment, iWind is not looking to rush the product into the mass market. Loh plans to introduce the turbines in remote sites omitted by the national electricity grid and which may have stronger winds.

Chong agrees with this approach. "It would be more feasible to do it on islands or coastal areas where 80% of the wind is more than 3.5m/s and where there is difficulty in delivering fuel to. In urban areas, there needs to be a more innovative design before we can consider installing them," he says.

Kannan concurs. "There is a long way to go before we can bring this technology to urban areas. But we have to start somewhere, and the best place to start is in a place with enough wind."

■ *Get more information on iWind at www.iwindenergy.com.my*

Under great stress: Brazil's Pantanal wetlands.

Sanctuary at risk

The world's largest wetlands is found in Brazil – but it's threatened by encroaching agriculture and industries.

By **RAYMOND COLITT**

JAGUARS still roam the world's largest wetland and endangered hyacinth macaws nest in its trees but advancing farms and industries are destroying Brazil's Pantanal region at an alarming rate.

The degradation of the landlocked river delta on the upper Paraguay river which straddles Brazil's borders with Bolivia and Paraguay is a reminder of how economic progress can cause large-scale environmental damage.

"It's a type of Noah's Ark but it risks running aground," biologist and tourist guide Elder Brandao de Oliveira says of the Pantanal.

Brazil's exports of beef, iron and to a lesser extent soy – the main products from the Pantanal – have rocketed in recent years, driven largely by global demand. Less well-known than the Amazon rain forest, the Pantanal is larger than England and harbours a huge fresh water reserve and extraordinary wildlife, ranging from 100kg jaguars to giant otters that mingle in water holes packed with 3m caimans.

The world's largest freshwater wetland, it is almost 10 times the size of Florida's Everglades.

Of the Pantanal's 650 bird species, the largest has a wing span of nearly 3m and the smallest weighs only 2g.

During the rainy season the water level rises by as much as 5m, creating a mosaic of dark-brown swamps with islands of shrubs and tall standing tropical trees. When the water first hits dry soil it loses oxygen and kills schools of fish as part of a nose-wrenching natural life cycle.

A melting pot for various ecosystems, the Pantanal has the greatest concentration of fauna in the Americas, according to The Nature Conservancy, a global environmental advocacy group.

But some species are in danger of disappearing, including the long-snouted giant anteater, which claws into anthills and flicks its two-foot tongue up to 160 times per minute to quickly gobble up stinging ants. The giant armadillo and maned wolf are also on the list of endangered species because of their falling numbers.

Visitors to the Pantanal marvel at the idyllic scenery and the proximity and abundance of wildlife.

"I hadn't heard about it before, it's a bird-lovers' paradise," said Alkis Ieromonachou, a Cypriot tourist, eyeing a group of giant Jabiru storks from the deck of a bungalow.

The impact of modern farming is obvious even in the tourist resort, however, as a large herd of cattle wanders through the swamp, squashing floating lily pads. Cattle ranchers cut trees on higher elevations and sow pasture in the lowlands, which are flooded for months. Many say they have been here for decades and can't be expected to abandon the land and their livelihood.

"True, deforestation is a problem but 50 years ago when it began nobody thought of these things," said Ademar Silva, head of the local association of farmers and cattle ranchers. "The government needs not only to punish bad behaviour but promote new technology with financial incentives."

The green issue

Economic pressures

Brazil's beef exports have more than tripled in five years to US$5bil (RM18bil) in 2008, with pasture often replacing forests. Experts say improving productivity, from currently around one head of cattle per hectare, could prevent much deforestation.

"We're using our natural resources fast and inefficiently," said environmental economist Andre Carvalho at the Getulio Vargas Foundation, or FGV.

The environmental group Conservation International says 63% of the forest in elevated regions of the Pantanal and 17% in lowland regions have been destroyed. Under a federal law dating back to 1965, ranchers can clear up to 80% of the forest on their property. Parks and protected areas make up only a small fraction of the Pantanal, and the rest is largely unprotected. Demand for charcoal from Brazilian pig iron smelters has accelerated deforestation, environmentalists say.

Cut and dry: Piles of native wood cut from virgin forest lie next to charcoal kilns in Brazil's Pantanal wetlands.

"We set up shop precisely to use wood from the advancing agricultural frontier," said Vitor Feitosa, operations director for MMX, a smelter located in the Pantanal town Corumba and owned by Brazilian billionaire Ike Batista.

Brazil's pig iron exports have grown sixfold to US$3.14bil (RM11.3bil) since 2003. Around 1.5 million ha of native forest are lost annually in Mato Grosso do Sul state, home to much of the Pantanal, an FGV study showed.

Marcos Brito, head of a charcoal manufacturers group with 15,000 employees in the state, claims most producers use wood cut and discarded by ranchers. But Alessandro Menezes, an activist with the environmental group ECOA, says they clear forests in exchange for the wood.

After being fined several times, MMX agreed not to buy Pantanal charcoal, but most smelters in the state still do.

Erosion resulting from deforestation has created large sandbanks on tributaries to the Paraguay river, such as the Taquari and Rio Negro, making them partially unnavigable.

"Rivers will change course, lakes appear or disappear ... the size and shape of the Pantanal will change," said Sandro Menezes, manager of Conservation International's Pantanal project. "It's very probable that local flora and fauna will become extinct."

Already, there are signs that runoff water from nearby farms is altering the ecosystem's delicate balance.

"We see trees flower and birds breed earlier. We believe it's because of fertilisers in the water," said de Oliveira.

The global financial crisis has hit demand for steel and beef and temporarily eased pressure on the Pantanal as smelters and farmers put expansion plans on halt. But most environmentalists agree the next commodity boom could cause irreversible damage.

"Now is the time for stricter laws, environmental education and corporate citizenship," said Ricardo Melo, environmental public prosecutor in Corumba. "Economic development here is inevitable; we need to make it sustainable." – Reuters

Facing extinction: The Pantanal's quaint fauna species such as (from left) the Tuiuiu birds, Yacares crocodiles and marsh deer may soon die out.

Sizing up

TO start your low-carbon diet, you must first know your carbon footprint. You can use the national average of 7.5 tonnes but if you're an urbanite, chances are your footprint will be larger. Use the simplified calculator to estimate your personal carbon footprint.

Your carbon footprint consists of two parts. The primary footprint is the carbon emitted from your energy use: electricity, petrol, gas and flights. The secondary footprint is emissions from energy "embedded" in the goods and services which you consume. So just about every aspect of your life affects the size of your carbon footprint.

Sizing up your primary footprint is not too difficult; you just need to crunch the figures from your electricity and petrol bills, plus any air travel. You also have direct control over it – you can reduce it simply by not wasting electricity and commuting by public transport instead of driving.

Pusat Tenaga Malaysia figures show that every kilowatt-hour of electricity used (that's one unit in your TNB bill) discharges 0.68kg of carbon dioxide (CO_2). This figure varies yearly as it is calculated based on our sources of power: oil, gas, coal and hydroelectric. Meanwhile, burning a litre of petrol adds a whopping 2.7kg of CO_2 to the atmosphere.

Measuring your secondary footprint gets a little complicated because there's no way of knowing exactly how much CO_2 is embedded in that burger or that new handbag. So the calculator uses only estimates of emissions from your shopping. Controlling your secondary footprint, however, is a cinch – the less you buy, the less CO_2 you'll emit.

If all the number-crunching is too messy for you, then use an online carbon calculator (many websites have them) to work out your carbon footprint. Some websites even provide an action plan outlining the steps to take to shrink your carbon waistline.

■ *Share your experiences on The Carbon Footprint Challenge and on using the carbon calculator with us at star2green@thestar.com.my.*

Commuting by public transport instead of driving can greatly reduce one's carbon footprint.

Little things that add up

JOANNE LIM has done the planet a favour and at the same time, helped her own pockets – all by cutting down her energy bill.

Over the course of three months, she has slashed her electricity use by 215kWh. Her TNB bill has plunged from RM213 to RM133.

How did she manage it? "Just by being conscious of what I need to do," says the business manager with a marketing and communications firm.

Previously unbothered about environmentalism, Lim got a wake-up call when she joined the group Eco-warriors late last year and went tree-planting at the Raja Musa peat swamp in Selangor.

"The land was barren and it was really hot. Some of us nearly fainted. That day made me envision what the world would be like without trees and with climate change. The awareness sank in and I returned to the city with opened eyes."

Her climate-crusade started soon after and she sought out electricity-saving tips from like-minded greenies.

The first thing she did was to switch to energy-saving lights in her 108sqm city centre condominium which she shares with her mother. She also turned off lights in empty rooms.

"These energy-saving lights are expensive. But you don't have to change all of them, just those which are heavily used," advises Lim who is in her 40s.

In the living room, she now relies on the fan and opened windows and uses the air-conditioner only when absolutely necessary. Though the air-conditioner in her mother's room runs through the night, Lim uses hers for only two to three hours just to cool the room. She uses the fan for the rest of the night.

"Trust me, your body will adjust to it, just like how I'm now very conscious of lights left on in empty rooms."

In the bathroom, she runs the water-heater for only three minutes instead of the whole duration of her shower.

She also unplugs all unused electrical items and uses the washing machine once a week instead of twice.

Her cheaper bills took her by surprise. "I'm basically a city slicker and living in the city, I thought it would be difficult to do this. But I found that it wasn't. I'm just doing small things but they all add up."

Steps to a cleaner world

Our modern, energy-guzzling lifestyle has adversely affected the climate. We need to look into damage control and take up The Carbon Footprint Challenge.

Stories by TAN CHENG LI
star2green@thestar.com.my

Our consumer lifestyle exacts a heavy toll on the planet. To produce, distribute and dispose of all our purchases exhaust loads of energy.

LET'S get real. Turning off your lights for 60 minutes during Earth Hour means nothing. Not when Malaysians collectively spewed 177 million tonnes of greenhouse gases in 2004, a figure which thrusted us to No.26 among the world's top 30 emitters.

That gesture of switching off, as the event organisers had repeatedly stressed, is merely the first step towards clearing our carbon-conscience. But has that event made you think about your energy-intensive way of life, as it was meant to? Have you been diligently turning off lights in empty rooms? Have you stopped leaving your television and computer on standby mode? Have you refrained from buying another handbag this month?

If you haven't been doing any of those – which are among the easiest things one can do to help save the climate – then it is time to do so. We suggest that you join us in The Carbon Footprint Challenge – Reduce It! and take tangible steps to address climate change.

The carbon footprint is the amount of greenhouse gases (measured in tonnes of carbon dioxide equivalent) we each emit annually from just living – sheltering ourselves, equipping our homes, commuting, eating, shopping.

And my, do we have big feet. Statistics from the *Human Development Report 2007/2008* say each Malaysian averages a carbon footprint of 7.5 tonnes in 2004. Sure, it seems puny considering that an American's is 20.6 tonnes, but our feet are still six times larger than an Indian's and twice that of a Chinese's.

Though many Malaysians attest to be worried about a warming world, this concern is hardly reflected in their use of energy. Figures from Pusat Tenaga Malaysia show the nation's electricity usage climbed 34% between 2000 and 2005 to 80,705gWh. For the same period, carbon dioxide (CO2) emissions from our use of energy (for electricity and transportation) grew by 46% to 186.8 million tonnes.

And we all have read about – and also seen – what those heat-trapping gases can do to our planet: scorching days, melting ice, expanding oceans, floods, diseases, failed crops, species extinction.

By now, we hope you're convinced why we *all* need to take up The Carbon Footprint Challenge. In this voluntary and self-monitoring exercise, all you need to do is measure your carbon footprint, then take little steps to shrink it. You'll be tracking your carbon emissions over the months, just like you would count calories when you're on a slimming diet. Yes, you can call it a low-carbon diet.

There are many things you can do to shed those kilowatts. The fastest and least expensive way is simply to not waste energy since everything that is powered by fossil fuels have a carbon cost.

Reducing your energy use is not all that difficult. Take it from Joanne Lim, who started making a few changes in her life, such as unplugging the TV at night and turning on the fan instead of the air-conditioner. Her efforts have saved the planet an estimated 146kg of carbon emissions.

Follow the tips we've provided (in the table on P3 and those on P4) and chances are that by the end of the year, you would have substantially shrank your footprint.

Target areas

Knowing where energy is used up will help you focus your efforts. A study by the Centre for Environment, Technology and Development Malaysia (Cetdem) found that the urban Malaysian household uses 7,000kWh of electricity annually. And that power is mostly exhausted by the refrigerator, air-conditioner and water-heater.

"If you tackle these three main energy users, you would have solved 70% of your electricity consumption," says executive director Gurmit Singh.

Lighting, although taking up only 10% of a household's electricity bill, should not be ignored since turning off unused lights and switching to energy-saving lights are among the easiest things to do.

Research by environmental consultant C.K. Tang showed that Malaysians could shave 60% off their energy usage by switching to energy-efficient electrical equipment and keeping homes cool through insulation and glazed windows.

"The potential to save is quite high. It is a matter of getting yourself educated and demanding for energy-efficient technology," says the director of IEN Consultants.

But if we continue living the way we do, he adds, the annual energy exhausted by households will more than double to over 58,700gWh by 2020 – that's 40 million tonnes of CO2 spewed into the atmosphere. And that's not counting emissions by industrial and commercial sectors.

If you find calculating your carbon footprint too much hassle, Dr Stellios Plainiotis says an easier way would be to just keep track of your monthly electricity and petrol bills – and make sure that the figures decline and not go up.

Scrutinising these bills is just the beginning of a low-carbon lifestyle, says Plainiotis, also a consultant at IEN. "Once you start looking at them, you'll also start thinking about other things that cause carbon emissions. We must have a mind-set of checking for their energy-efficiency. If people ask for such appliances, manufacturers will make better products."

Going low-carb(on)

Malaysians may not have gotten into the habit of tracking their carbon footprints but in the United States and Europe, it is growing in popularity with even the websites of national environment agencies providing online carbon calculators (www.mycarbonfootprint.eu, www.epa.gov/climatechange/emissions).

In Britain, a growing band of people are taking matters into their own hands. The Carbon Rationing Action Group (www.carbonrationing.org.uk) is a network of community groups who set themselves individual and collective annual carbon allowances. Members who exceed their carbon rations are penalised, for instance, by giving funds to a low carbon project or for carbon offsetting.

At www.carbonrally.com, teams throughout the United States pit against each other to make the deepest CO2 cuts by taking up various challenges. A recent one calls for the planting of a vegetable garden; it will cut CO2 emisions by 18kg. And some 9,120 people have taken the challenge of skipping meat twice a week, saving some 26kg of CO2.

Calculating carbon footprints, however, is not an exact science since it relies on many assumptions. So you tend to get different results from different calculators. Housewife Catherine Ooi discovered this when she was tracking her family's carbon footprint online. But the discrepancies did not bother her for she found the whole exercise highly educational.

"I now know what are the things that will enlarge my carbon footprint, and avoid them. The calculators remind me to think about my purchases and to make better choices. I think they are useful in raising awareness on the easy, simple changes that people can make to lower their carbon score and positively impact the planet," says the mother-of-two.

Those who have gone on the low-carbon diet, people like Ooi and Lim, vouch for its lack of hardship and extra expenses – all that it requires is to not waste energy at home and on the roads, and to shop wisely.

Imagine if the whole country – all office buildings, malls, factories, government buildings – went on a similar diet. The shed kilowatts would stack up and eventually halt further expansion of our already huge carbon feet.

Climate-saving tips – P4

The best we can do

The Carbon Challenge has become a lifestyle imperative for the individual and a question of priorities for the corporate citizen.

SOLVING any problem begins with first recognising that a problem exists. Judging by what's on TV, printed in the papers and the 3R projects in school, the age of innocence concerning global warming and climate change is over. Ignorance is no longer an option.

Since there is now acceptance of the existence and prevalence of the issues, the next step is obviously to find a solution. But where do we start? Who makes the rules and who enforces them?

How do you handle a global problem using national and local initiatives? What do I, as an individual, do? Welcome to the Carbon Challenge.

3D movies work best when things fly at you from the screen. In *Carbon Challenge: The Movie*, blame flies freely – who industrialised first, who deforests now, who protects their industry, who feeds the power-hungry (which has a new meaning these days), who wants to mine fuel instead of grow food, etc.

It's an epic. Nobody today can tell you how it will end, so only the next generation of critics will determine whether it is worth the price of the ticket.

Regardless of this uncertainty over the effectiveness of any policy, protocol or practice that our generation may be able to ratify, the fact remains that we know the score and so we should be compelled to take action.

However, before you run around switching off all your lights for more than an hour in a year, understand how you fit into this picture. You are part of the Carbon Challenge. Clichéd as it may sound, if you are not part of the solution, you are part of the problem.

With this in mind, you need to ask yourself three questions before you take up any challenge: Why am I doing this (what does this mean to me)?

What can I do (where will my inputs be most effective)? How can I succeed (what do I expect of my efforts)?

Obviously, the answers to these questions will be very different depending on whether you are a citizen and consumer, a CEO of a company, a government policy-maker, or an NGO activist.

A concerned citizen and consumer might frame the questions in the context of their children by saying that the reason they are doing anything at all is for the sake of the next generation. They don't have the time nor inclination to read all the political pronouncements or take to the streets in protest.

Instead they want to be effective by using energy more wisely at home and by consciously buying products from companies committed to sustainable business practices.

The citizen and consumer wants the peace of mind of simply knowing that they are not part of the problem.

For a multinational diversified conglomerate such as Sime Darby, the questions remain simple, but demand complex and sophisticated answers.

Firstly, the company establishes a context for the questions. Because it operates across more than 20 countries in five major businesses, a group like Sime Darby needs to develop 100 different answers for every question – one for each division in each country, depending on the economic situation, the people, and what role that division plays in that territory.

Being a global growth company from an emerging economy, Sime Darby could not presume to impose a set of values on a developing economy if those values compromise the ability of that economy to develop a sustainable future.

It needs to craft business operating procedures that meet the longer-term needs of the planet without compromising the immediate hopes of communities seeking food, education and opportunities to earn income.

On this premise, the company can plan how, when and where it will make its inputs.

Consider that for the citizen-consumer to be effective in making a proactive choice of salad at the supermarket, Sime Darby must ensure that the entire value chain (including product promotion, labelling, delivery, harvesting, irrigation, and the whole farming or manufacturing community for that product) is energy-use optimised.

The measure of success for a company like Sime Darby is how it allows that consumer to become part of the solution in meeting the Carbon Challenge; and to extend that empowerment to ensure that all its stakeholders – suppliers, shareholders, employees, and management – can share in that success.

For the responsible corporate entity, from an operational perspective, the quest to achieve optimal energy efficiency poses its own challenges.

For instance, clean development mechanisms require investment in not just man-hours but capital as well. The decision by a planter not to slash and burn to facilitate planting means investment in man-hours, equipment and time. Requiring the capture of methane gas or the treatment of mill effluent will add on layers of costs for the planter when the alternative is to simply let things flow wherever they may.

SPEAKING UP

From the perspective of the property player, the challenges are different but still complex. How should land be cleared for development?

What is the accepted hurdle rate of return for an investment and will it be cleared if environmentally-friendly features are added to a project? What if the technology available adds a layer of cost that will make the project untenably costly for the target market?

And once the properties are handed over, to whom is the responsibility of monitoring passed on? The local council? The community? A paid private contractor? The developer who has made a commitment to sustainability?

The Carbon Challenge has morphed from a geeky, statistically-driven argument to a lifestyle imperative for the individual and a question of priorities for the corporate citizen. The corporate citizen, of course, will at the end of the day go where its market takes it – which then brings responsibility right back to the individual.

No additional set of figures will further underline the dire consequences that await our children's children. We already know all that we need to.

The challenge today is coming to terms with what we can reasonably do, doing that thing, and being satisfied that it's the best we could have done.

Puvan J. Selvanathan
Chief Sustainability Officer
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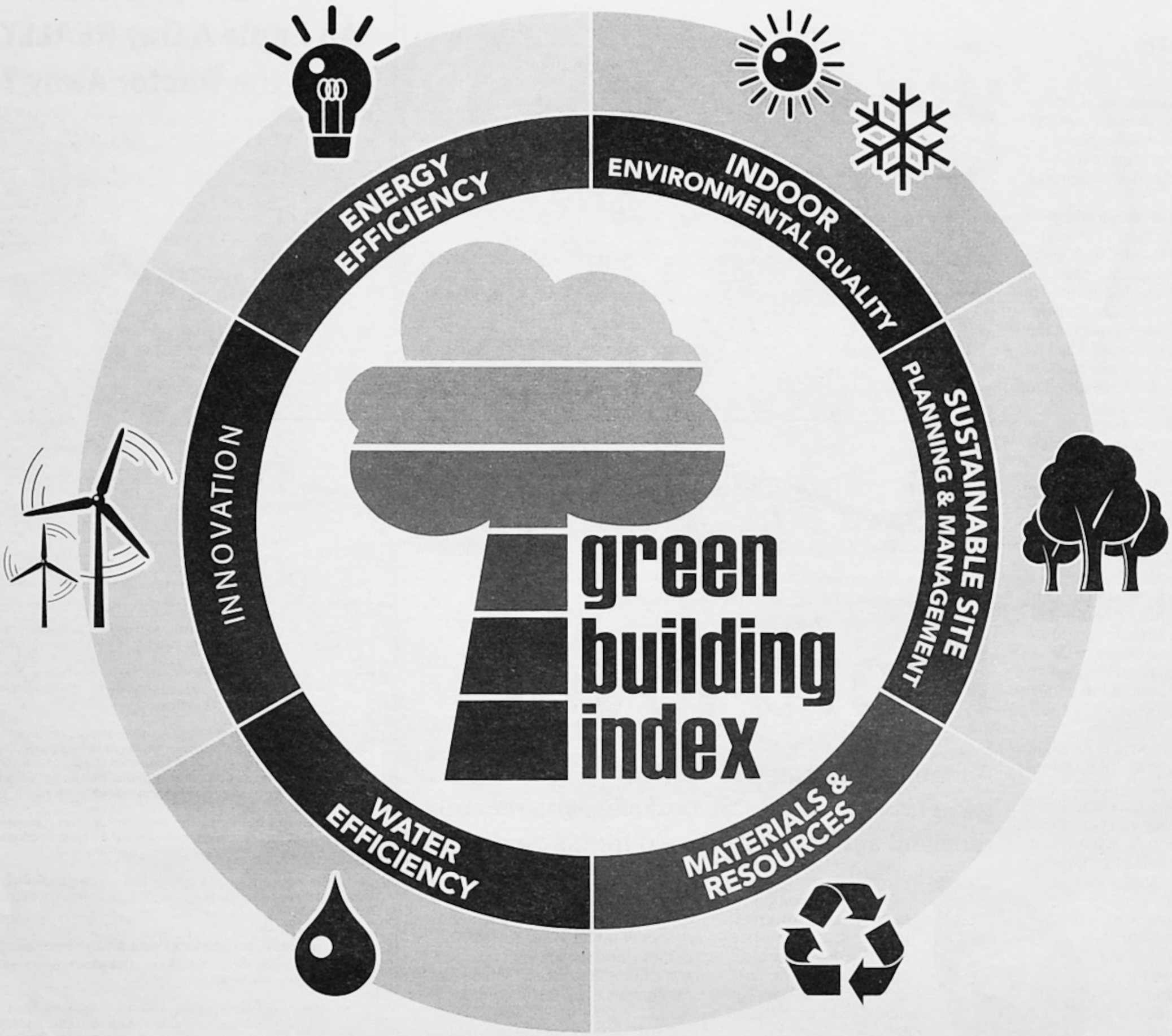

WHAT IS THE GREEN BUILDING INDEX?

BUILDINGS, CITIES AND THE BUILT ENVIRONMENT ARE PRODUCTS OF OUR CIVILISATION. CHANGE IS COMING... **FAILURE TO CHANGE IS NOT AN OPTION**

Green Building Index (GBI) is developed by Pertubuhan Akitek Malaysia (PAM) and the Association of Consulting Engineers Malaysia (ACEM). It is a profession driven initiative to lead the property industry towards becoming more environment-friendly.

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

BUILDINGS ARE AWARDED GBI MALAYSIA PLATINUM, GOLD, SILVER OR CERTIFIED RATINGS DEPENDING ON THE SCORES ACHIEVED.

GBI is designed for the tropical climate of Malaysia, and incorporates internationally recognised best practices in environmental design and performance.

WHY GREEN BUILDINGS?

1. Green buildings are designed to save energy and resources, recycle materials and minimise the emission of toxic substances throughout its life cycle
2. Green buildings harmonise with the local climate, traditions, culture and the surrounding environment
3. Green buildings are able to sustain and improve the quality of human life whilst maintaining the capacity of the ecosystem at local and global levels
4. Green buildings make efficient use of resources, have significant operational savings and increases workplace productivity
5. Building green sends the right message about a company or organisation – that it is well run, responsible, and committed to the future

GBI IS SUPPORTED BY

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