

# **SUSTAINABLE DEVELOPMENT INITIATIVES IN MALAYSIA II:**

## **AN INSIGHT ON ENERGY COMMISSION & GREEN BUILDINGS**



**MALAYSIA PRODUCTIVITY CORPORATION (MPC)**

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# **Sustainable Development Initiatives in Malaysia II: Insights on Energy Commission & Green Buildings**

Dr. Shaik Roslinah Bux ([roslinahbux@mpc.gov.my](mailto:roslinahbux@mpc.gov.my)) and  
Norsuhada Othman ([norsuhada@mpc.gov.my](mailto:norsuhada@mpc.gov.my))  
Transformation Management Office,  
Malaysia Productivity Corporation (MPC)

## **Introduction**

Incidences in the past decades have indicated that economic growth does have environment consequences. Malaysia, being a developing country, is concerned with the ecological changes happening around us. The key to achieving a balance between economic growth and taking care of the environment that we live in is through sustainable development. The World Commission on Environment and Development through its 1987 Brundtland Report defined sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”.<sup>1</sup> In addressing this need and the continuous effort of Malaysia Productivity Corporation (MPC) to propagate sustainable development, there is the urgent need to view productivity, quality and competitiveness with new light. This second sustainable development study provides insights on Energy Commission that is situated at Precinct 2 in Putrajaya and green buildings.

## **Overview of Energy Commission**

In Malaysia, energy has been recognised as a core factor for sustainable development. The Malaysian Government has on 1 May 2001 established the Energy Commission under the Energy Commission Act 2001. The Energy Commission of Malaysia is a statutory body responsible for regulating the energy supply and piped gas supply industries in Peninsular Malaysia and Sabah. The commission has the role to ensure the supply of electricity and piped gas to consumers is secure, reliable, safe and at reasonable prices.

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<sup>1</sup> World Commission on Environment and Development (WCED), Our common future, Oxford: Oxford University Press, 1987, p.43

The main office of this commission is designed in the shape of a diamond; hence for its name “The Diamond Building” or *Bangunan Berlian*. Anyone visiting the Energy Commission will be impressed with the structure and design of the building. In the essence of sustainable development, the Diamond Building is the first office in Malaysia and the first outside of Singapore to obtain the Green Building Index (GBI) platinum. GBI is a wholly-owned subsidiary of Malaysian Institute of Architects (PAM) and the Association of Consulting Engineers Malaysia (ACEM). GBI was incorporated in February 2009 to administrate GBI accreditation and training of GBI facilitators and certifiers.

## **Green Building Index and Green Buildings**

As defined by Green Building Index, a building is considered green when it emphasises on efficient use of resources such as energy, water and materials, while reducing building impact on human, health and the environment. In Malaysia, numerous construction companies such as S.P.Setia Berhad have embraced the potentials of green buildings to obtain the benefits of harnessing with the local climate, culture and the surrounding environment. This development showcases the companies’ sense of social responsibility and commitment towards a better future for our society and business sustainability. The need to be sustainable-wise in the construction sector is indicated by the World Green Building Council<sup>2</sup> (WGBC) that the building sector contributes about 40 percent of the world’s energy, 12 percent of its water and contributes 40 percent of the wastes that are sent to landfill. WGBC advocates that all nations should promote the benefits of sustainable building practices as we all live in one world and should have collective responsibility to work together to achieve global change.

Green Building Index (GBI) is a trend that many construction companies are adopting as the system has proven to generate income and preserve the environment at the same. This eco-friendly system is achieved when energy efficiency, indoor environmental quality, sustainable site planning and management, materials and resources as well as water efficiency and

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<sup>2</sup> Source: [www.greenbuildingindex.org/why-green-buildings.html](http://www.greenbuildingindex.org/why-green-buildings.html)

innovation come together as one unit to achieve common goals. Nowadays, many properties from high rise buildings to houses including schools and mosques are equipped with eco-friendly systems. The systems such as solar panel, rain water harvesting and mirrors reflecting are being deployed to comply with the green method objectives. GBI will soon be widely used across the nation following other developed countries as Malaysians become more educated on the importance of sustainable building practices and how the system can assist us to prevent our planet Earth from further catastrophes.

## Elements of Sustainable Building Practices at Energy Commission



Figure 1 Energy Commission

Some of the notable environment friendly features at Energy Commission are:

- Tilted roof panels that reflect light to the lounge area (*Figure 2*);
- The photovoltaic (PV) solar panels on the roof supply about 10% of the energy used in the building (*Figure 3*);
- Pipes are embedded in the concrete floor and water runs through them at night to cool down the whole building structure to about 21 degrees (*Figure 4*);
- Reflective panels on the fourth and fifth floors are tilted at 10 degrees to reflect light across to the first and second floors (*Figure 5*);

- Everything is designed for a work friendly environment in this building. The amount of light is always at a comfortable level and computer screens do not fade out in the glare;
- Rainwater is harvested for toilets and gardens while grey water is recycled to irrigate the wetlands outside contributing to a saving of 70% to 80% on water usage;
- Solar power supplies about 10% of the energy used in the building while the thin-filmed photovoltaic panels that serve as efficient solar cells for the climate due to their efficiency at absorbing diffused light are also used (*Figures 6 & 7*);
- The inverted pyramid shape also directs wind into the basement where there is a cross-ventilation system; and
- A sunken garden allows natural air and light into the basement and car park. Hence, the ventilation fans are almost never turned on.



*Figure 2 Tilted roof panels*



*Figure 3 Photovoltaic solar panels*



*Figure 4 Embedded water pipes*



*Figure 5 Reflective panels*



*Figure 6 & Figure 7 Thin-film photovoltaic solar cells*

After almost 13 years in establishment, Energy Commission has recorded numerous sustainability benefits. It is still the first exemplary environment friendly building in Malaysia that obtained the Green Mark. The commission has charted almost RM1million savings annually in operation cost through energy efficiency (RM950,000) and solar power generation (RM45,000). At the same time, the Energy Commission building also reduces carbon dioxide emissions of 1,400 tons per year. The photovoltaic cells of 71.4kWp installed yields about 1,400kWh/m<sup>2</sup> annually. Although the commission has lighting savings of 77% compared to the Green Mark base, it is expected that once task lights are distributed, the amount of lighting savings will increase. It is also estimated that its eco-friendly measures expenditure of RM3.4mil, that is

about 6% of the total construction cost will have a payback time within three-and-a-half years.

Besides Energy Commission, there are also other buildings in Malaysia that have taken the natural direction such as PTM (*Pusat Tenaga Malaysia*) GEO Building and SJK (C) Lai Ming in Bukit Jalil. The school is one of the education establishments in Malaysia that adopts the green method for operational cost savings. Some of the green features at the school are specially built shades that protect the newly relocated school from being directly heated by the sun, reflective mirrors to make a space appear large as well as brighten the area, and rain water harvesting system. Notwithstanding of the green building benefits, the implementation of sustainable building practices in Malaysia is still wanting and stronger enforcement is needed as the one world that we are living in experiences drastic climate change almost daily!

## **Conclusion**

Recent years have seen sustainable building practices or eco-friendly buildings gaining popularity in Malaysia due to the need to be more environmental friendly. Eco-friendly buildings have also been known to be more feasible and cost saving in the long term. According to Green Building Index, when the six key criteria of energy efficiency, indoor environment quality, sustainable site planning and management, material and resources, as well as water efficiency and innovation are met, a building is considered to achieve the GBI recognition. As equipment and materials for an eco-friendly building are now available locally and readily, more residential and commercial property owners should opt for eco-friendly buildings that provide better quality living and work environment. In addition, current global environmental issues and corresponding rising cost of living have also made adopting eco-friendly ways a needed way of life to achieve and ascertain a sustainable future for all.

**Note:** Photographs of Figures 1 to 7 featured in this article were prepared by Cik Raudhoh Baharuddin