

[MUSIC PLAYING]

SHRADDHA PANDEY: Sustainability, energy efficiency, and green development. These are fundamental to the modern cities of today and tomorrow.

Hi. I'm Shraddha Pandey, and in this video I will be discussing about the role of green building rating systems in city sustainability, by analyzing the impact of green building index, as a system, on the future of green buildings in Malaysia.

Let us start by understanding what green buildings are, and why rating systems are important.

Infrastructure is indispensable to the growth and development of a society. And key components of it are buildings.

Buildings use energy for lighting, space, heating, or cooling, ventilation, air conditioning, and other electronic and electrical appliances. Collectively buildings can consume around 40% of the total energy around the world, including energy usage during construction, as well less in their operational phase.

Efficient energy use, and a conducive environment in and around the buildings is critical to city sustainability.

So what is a green building? How is a green building, or an energy efficient building, different from a conventional one?

A green building is a building whose construction and lifetime of operation assure the healthiest possible environment by making the most efficient and least disruptive use of land, water, energy, and resources.

Some of the features that define a green building include climate responsive nature of its architecture, passive techniques for heating, cooling, ventilation and day lighting, use of renewable sources of energy, efficient and environment friendly practices during construction and post occupancy, use of [INAUDIBLE] materials, and occupant health, safety, and comfort.

An efficiently designed green building can save up to 30% to 60% energy as compared to that by a conventional building which is not environment sensitive.

LESLIE NORFORD: are an important part of that, particularly in developing countries where they use maybe a third to 40% of national energy resources, and a significantly higher percentage of electricity, over 70% in the US.

Lighting is a major energy consumer in commercial buildings. Another major energy consumer, particularly in tropical areas, where large numbers of the world's people live, is cooling. Shading for windows, more efficient cooling systems, and use of what's called natural ventilation at times of year when outdoor conditions permit.

SHRADDHA PANDEY: However, if we hope to align the benefits of green buildings with the sustainability of a city and optimize energy use by buildings globally, every designer and developer will need to be aware and work towards creating energy efficient buildings. Only then shall [INAUDIBLE] energy saving. And that is where the green integrating systems play a very important role.

They can be used as a tool to encourage and enforce the building of green structures. These may be either in form of certifications or mandate records.

LESLIE NORFORD: Now, we might ask how the countries and governments, nonprofit agencies, promote the development of green buildings.

And two big elements of that are standards and rating systems. And rating systems have increasingly shown their value in many countries by calling attention to the value of green buildings, and giving building owners, building operators clear, easy to understand targets for construction features and for operation of their buildings.

They're not perfect. They tend not to be overly quantitative. And one can get a good rating, maybe in some cases for aspects of the building that don't necessarily save energy but are important environmentally.

But their popularity is hugely important.

This works well at city level, and larger. People can see that neighboring buildings are part of this.

Work in one country can help, the development work, can help make it easier for neighboring countries with similar climates to do the same.

SHRADDHA PANDEY: There are various rating systems developed and being followed in different countries around the world.

While designing green buildings, the site, surroundings, climate, resources, and building function all play a crucial role. And thus, every rating system needs to be contextual and unique in its response to the location, climate, and resource availability of the area that it has been designed for.

Green Building Index Malaysia, launched in 2009, is a green building rating system developed by Malaysian Institute of Architects and the Association of Consulting Engineers Malaysia.

It is a comprehensive rating system for evaluating the environmental design and performance of buildings on six main criterion under seven different categories.

VON KOK LEONG: GBI is just another tool to actually help to spread awareness throughout the country, which is why we also so formed the Malaysia Green Building Confederation, or MGBC, whose role is to actually spread awareness of sustainability throughout the whole country, not just to designers, but to other stakeholder organizations.

So we worked together with MGBC in promoting other areas apart from accreditation. And we consider that moving towards green is a natural step for designers to know.

THIRUKUMARAN JALLENDRA: The industry is responding in the manner it should. So I'm quite hopeful that again in the last five years we've gone from 0 green buildings to about 627 green buildings. So that's an indication of where the market's right now. So I'm quite encouraged with this development.

And they see that through GBI, through a green building certification, there's value added to their development, to their projects. The projects are performing environmentally better than projects which are not GBI certified.

That is one. Secondly, they also see the benefits through operational savings. So they use less energy. They use less water, less utilities. They produce less waste.

GBI boasts to have successfully achieved 100 million square feet of green rated built up area in the past five years in Malaysia.

As imperative it is to have a system in place, it is equally vital to comprehend the approach and response of the building developers and designers towards it to ensure that we achieve our aim of having more sustainable green buildings in the future.

GBI takes a holistic approach and covers many aspects that facilitate the design and construction of an environment friendly building, grading them on a 100 point system.

To assess the impact of GBI as a system, the criterion on which the buildings are rated was sorted into two broad categories, short term impact, and long term impact.

The categorization depends on whether the criterion helps keeps the building green for its expected lifetime.

Long term impact criterion are mostly part of the physical structure and design of the building itself. And their energy benefits can be gained year after year.

For example, if skylights are incorporated in the building envelope as a passive design feature to optimize the use of daylight. Or if advanced energy performance measures, and innovative design initiatives are included at the conception and construction phase, their benefits last for a lifetime.

However, other measures, like worker side amenities, or construction waste management are also important. But these are examples of short term impact criterion, as they do not ensure the effective energy efficiency and environmental gain repeatedly in the coming years.

GBI has rated around 300 buildings since 2009 in Malaysia. The study was conducted for the existing GBI non-residential new construction code.

It was identified that out of a total 100, 57 points account for long term impact criterion, and 43 for short term impact criterion.

In the past years, GBI has certified 112 buildings in the NRNC category under the four classifications. Out of these almost 50% of the buildings have applied for and received green certification under the rated classification, which requires only 50 points, suggesting that the majority of buildings aim for and receive this basic level of certification.

And it may be important to note that these buildings can acquire 84% of their points from the short term impact criterion. It is evident from the data from GBI that these building tend to acquire points from short term impact criterion more, suggesting that most of the buildings rated green would not be very different from the conventional ones during their lifespan. So the buildings may be called green, but in reality might not have the expected impact on energy use optimization in Malaysian cities.

Also identified were the criterion which seemed to be most achievable and non achievable by the buildings. Less than 20% of the rated buildings could achieve few of the major criterion in the long term impact category.

It is interesting to see that these account for almost 25 points in the 100 point system. And the points achieved by more than 80% of the rated buildings have a substantial share of the short term impact criterion.

However, from the examples of platinum, gold, and silver rated buildings, we see that it is possible to achieve better efficiency within the GBI framework.

To encourage and enforce that on a larger scale a few improvisations can be made. Following are suggestions specific to GBI existing NRNC code.

Malaysian standard MS 1525 is the Malaysian code of practice for energy efficiency and use of renewable energy for non-residential buildings. Compliance to it should be introduced as a prerequisite for a GBI rating.

Among the points achieved by buildings, the percentage requirement for long term criterion should be specified, making sure that the buildings achieve a balance of both.

A minimum number of long term criterion points required should be fixed to apply for silver, gold, and platinum certification.

A few of the identified criterion are vital for human health, comfort, and environment protection, therefore should be made mandatory to apply for GBI certification.

The weightage of long-term impact criterion can be increased. This will reinforce their importance, and higher efforts would be put by developers to achieve them.

The number of points allotted for innovation criterion should be increased. This encourage designers to be creative and make proper analysis of the behavior of the designs and specifications.

Innovation should be encouraged in design, rather than just being limited to technology, by equally dividing innovation points among building design features and technology incorporation.

Learning the lessons from the examples of environment sensitive buildings in Malaysia, and looking at their climate responsive architectural design and solutions can be one of the most effective ways of doing this.

These buildings have been built for the Malaysian climate, with features like solar buffer effect, solar shading devices, day lighting, terraced gardens, and orientation driven ventilation. These are a few of the celebrated environment sensitive buildings in Malaysia.

Encouraging architects to apply these features under innovative design criterion, which promote the use of climate responsive architecture, these suggestions may help bring about substantial benefits, and create more green buildings, having higher efficiency through the green building index in Malaysia.

And GBI can become a guiding tool for buildings in Malaysia to sustain their energy efficient character throughout their lifespan.

In the next 50 years our energy demands globally will be doubled. Hence, energy saving has become the need of the [? Earth. ?] Green building rating systems are the way towards a greener, more comfortable, and more efficient future of our build environment. By developing more effective rating systems we can ensure the quality of our build environment, and hence, shape a sustainable future for our cities of tomorrow.

Our future is our responsibility.

[MUSIC PLAYING]

[BIRDS CHIRPING]