

Replacing steel and concrete with wood?

Exploring Sustainable Development



with Dr Goh Chun Sheng

AS mentioned in the previous article, the building materials used in urban construction emit large amounts of greenhouse gases during the production process and increase the risk of air and water pollution. Currently, cement and steel still account for 80% of the raw materials used in construction.

The United Nations expects the number of people living in cities to rise from more than half of today to nearly 70% by 2050. Under the pressure of coping with global climate change, urban construction and planning will face incredible challenges. Cities need to be greener, more comfortable, and more cost-effective than ever.

Environmental effects of wood use

Partial replacement of cement and steel with wood may be a feasible solution. Wood has a wide range of uses in civil engineering. In addition to house building, it can also be used in building bridges, sidewalks, guardrails, and noise barriers.

Japanese researchers found that by increasing the use of wood in construction, furniture, and energy production in Japan, the greenhouse gas emission reduction potential can reach a maximum of 9.6 million tons per year in 2050, which is close to 1% of Japan's current annual emissions.

The most significant effect is replacing high-emission and high-polluting cement and steel with wood products. The share of emission reductions comes mainly from the carbon storage in wood products (73%) and material substitution (19%). The remainder comes from partially replacing fossil products such as coal as fuel (8%) with recycled waste wood and forestry residues.

Beyond emissions, using wood instead of other building materials is expected to save Japan a staggering 350 billion JPY in the costs of dealing with health and environmental pollution issues.

Health benefits of wooden buildings

Several studies have shown that increasing the use of wood in the home and office can help improve overall health. Some cases show that working in wooden buildings can improve employee job satisfaction and job performance. This effect may be due to the better environmental quality of the interior with the presence of wood.

Wood has biophilic properties, and humans have an innate need to connect with nature. People generally like the feel of wood by seeing, smelling, and touching it. When surrounded by wood structure, neurological, physical and psychological responses may help us reduce stress, lower blood pressure, make mood positive and increase focus.

Cultural significance of wooden architecture

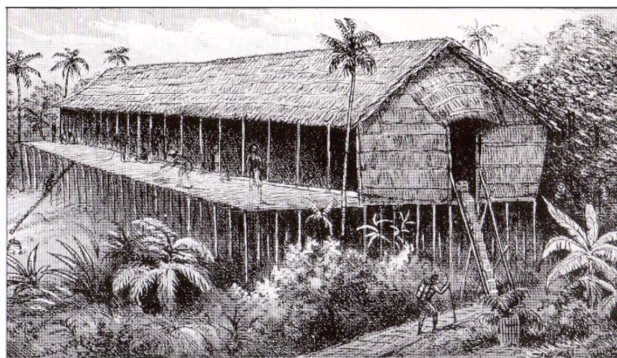
Wooden buildings have special cultural significance around the world. Wood has been used for houses since ancient times. The oldest surviving wooden structure in the world is Horyu-ji Temple in Japan, which was built in the early 7th century. The preservation and

inheritance of Japanese wooden architecture lie in a traditional set of skills, techniques and knowledge. Artisans of different skills must work together to maintain and restore traditional wooden buildings. By promoting cooperation and social cohesion, traditional wooden buildings have their specific social function and reinforce Japanese cultural identity. To date, many Japanese houses still use traditional wooden structures in many aspects.

In densely forested Borneo, wooden longhouses are deemed one of the oldest permanent structures on the island. Longhouses are deeply rooted in local culture, and the architectural form incorporates many of Borneo's traditions and values. The gradual disappearance of longhouses also represents a trend toward the disappearance of traditional Borneo customs. Reusing wood and incorporating various longhouse elements in modern architecture may provide a new way to revitalise traditional values and identity.

Promotion of wooden construction

The promotion of wooden buildings may start with public buildings in cities. In city-building, the public sector is often the largest customer of the construction industry. Governments may consciously increase the proportion of wood in building materials for projects like schools, social housing, libraries, and medical centres, to demonstrate the benefits of various wood structures and promote the transformation of the entire construction industry. There is a law in Japan that requires construction companies to use wood for public buildings below three storeys high. Governments may also promote wood construction through various educational



EXTERIOR OF MURUT LONGHOUSE

Longhouses are deeply rooted in local culture, and the architectural form incorporates many of Borneo's traditions and values. — Image credit to Henry Ling Roth, public domain, Wikimedia Commons)

and advocacy channels to demonstrate the benefits of wood use. In Borneo, an interesting example is the Murut Cultural Centre in Sabah. Its design and construction are based on traditional Murut longhouses, with the central column made from 207 logs of Borneo Ironwood (locally known as Belian), one of the hardest woods in Southeast Asia. Currently, the Murut Cultural Centre is the largest ironwood building in Borneo.

Potential drawbacks of large-scale wood use

In tropical regions like Southeast Asia, nesting insects, termite infestations, mold, and various forms of decay are all frequent problems with wooden buildings due to the hot and humid climate. If wood is used, the building has to be specially treated to ensure that these problems do not arise. Maintenance work must also be

carried out frequently. Also, a rapid transition to heavy use of wood may put enormous pressure on forests if not appropriately handled. While it is true that reducing the use of cement and steel can reduce negative environmental impacts, increasing wood consumption will also increase the risk of overexploiting forests. This risk is particularly sensitive for Borneo, which has long suffered from the negative impacts of land-use change. Therefore, it is necessary for the authorities to strictly implement sustainable forest management with selective harvesting and replanting in order to minimise the pressure on the forest.

Using wood to partly replace cement and steel remains an exciting solution to address the climate impacts of city-building. If appropriate strategies can be developed and carefully executed, it is possible

to achieve substantial emission reduction. City planners, the wood industry and those in the construction sector will play a key role here.

Southeast Asia's megacities have been constantly changing and adapting to new technologies and environments for the past few decades. It is not impossible to bring sustainable architecture to new heights by adopting wooden structures, potentially with traditional and cultural elements, in order to combat climate change and also to restore heritage.

Dr Goh Chun Sheng is a researcher at Sunway University and Harvard University. His research interests lie within the intersection of bio-economy development and environmental restoration, with a special focus on both Malaysian and Indonesian Borneo.



Wong (third left) presents a token of appreciation to Lai witnessed by others. Also seen are Khoi Nam (second left) and Chow Jin (third right).

Kuching Memorial Services donates RM20,000 to KLCS

BAU: Kuching Memorial Services Bhd has donated RM20,000 to Kuching Life Care Society (KLCS), a non-government organisation (NGO), for a new ambulance.

"KLCS has five ambulances but one of them was totally lost in an accident recently. Therefore, on behalf of Kuching Memorial Services Bhd, we present this donation to KLCS to purchase a new ambulance which cost RM120,000 in total," said its executive director Siaw Chow Jin Siaw when met at the Enlightenment Ceremony at Nirvana Memorial Park yesterday.

The Enlightenment ceremony received overwhelming response after being conducted online the past two years.

"This year, the ceremony has attracted more than a thousand people between 8am and 5pm during the seventh month in the Lunar calendar, the highest number in 23 years.

"Many came to pray for their departed loved ones especially during weekends when it gets very crowded during the

prayer session. The in-person Enlightenment Ceremony started yesterday (Saturday) until today (Sunday)," he said, thanking all who participated while adhering with Covid-19 standard operating procedures.

Adding on, Siaw said Bau has become a very busy town with the opening of many tourist spots and hoped Ministry of Tourism, Creative Industry and Performing Arts could include Nirvana Memorial Park as a place of interest.

"Nirvana Memorial Park could be a place to understand the different religions and cultures as well as visit burial sites of historical figures like Kapitan Ong Tiang Swee, Tan Sri Datuk Amar Stephen Yong Kuet Tze among others.

"With many people coming to visit Bau, we hope infrastructure like roads could be widened, street lightings improved among others," he said while thanking Seremba assemblyman Miro Simuh for working hard to promote the gold town.

Meanwhile, KLCS chairman Hung Sung Huo thanked

Kuching Memorial Services Bhd for the donation and hoped the corporate sector, government and public could chip in the balance of RM100,000 to procure an ambulance to provide none emergency services.

"We provide transportation for terminally ill and bedridden patients or follow-up treatment at government hospitals or clinics. We also send patients to other areas outside Kuching," said Hung.

Depending on distance to hospitals and clinics, patients who can afford pay according to financial ability to offset maintenance, personnel and administrative cost, he informed.

For KLCS ambulance service, call 013-8038999.

Among those present at the ceremony were SUPP Seremba chairman Dylan Lai who represented Miro, Kuching Memorial Services Bhd Site general manager cum Fengshui consultant Siaw Khoi Nam and Kuching Memorial Services Bhd managing director Anna Wong Nga Yang.

Deputy Resident: Government out to support devt of more youth groups in Bintulu

BINTULU: Having more youth clubs or organisations with solid foundation would facilitate the government in coming up with better and more holistic development programmes for this group.

Deputy Bintulu Resident Hussaini Hakim, in pointing this out, also called upon the local youths to be more proactive, especially in setting up clubs or organisations for their peers in their respective villages and housing areas.

In this respect, he also observed that as at June this year, only 14 youth organisations in Bintulu had been registered, versus 101 sports bodies established under the Sports Development Act 1997.

"I believe that the Bintulu Youth and Sports Office is always open when it comes to assistance in setting up youth clubs in Bintulu," he said in his speech for this year's division-level National Youth Day celebration, themed 'Ini Masa Kita' (This Is Our Time), at Bintulu Civic Centre yesterday.

The event hosted various activities such as sports and

games, sales booths run by local youth entrepreneurs and also an autoshow.

The Social Security Organisation (Socso) also brought in the representatives of nine companies, which were opening job opportunities for the youths.

Tanjong Batu assemblyman Johnny Pang officiated at the opening ceremony.

According to Hussaini, it was the first time that the Youth Day was celebrated here.

"The National Youth Day is usually held at state or national level, and only on May 15.

"Regardless, it reflects government's appreciation to all the efforts undertaken by the youths and also their success. Youths stand as a core of the country's growth and they represent the strength of 'Keluarga Malaysia' (Malaysian Family)," he said.

Hussaini said according to statistics, 21.4 per cent or seven million out of Malaysia's population of 32.7 million comprise youths aged 15 to 30; those aged between 15 and 40 account for almost 15 million

out of the total population.

"Such statistics stand as being quite significant in that they affect the country's development plans. In this aspect, the views and aspirations of youths are important for the government to formulate the direction for the future."

Meanwhile in his speech, Pang said in line with the theme of the division-level celebration, the event yesterday highlighted that 'it was time' for the youths to enjoy all the activities being run.

"I believe that the activities will instil in our youths the spirit of sportsmanship and also awareness of the importance of being involved in healthy activities.

"For over two years of limited outdoor activities due to the MCO (Movement Control Order) to stop the spread of Covid-19, the youths should by now regain their energy and passion in doing healthy sports activities.

"No matter who you are, we are all under stress; thus, these activities can release stress and make us become stronger," said Pang.



(From left) Pang and Hussaini share a light moment with a trader who sells machetes at one of the booths.