



Prospects of Sustainable Wood Building Architecture

JAMES RILATUPA

WOOD BUILDING ARCHITECTURE

- *In terms of scientific taxonomy, the 'design activity' of architecture is basically the estuary of a whole series of architectural planning and design activities which are divided into several domains/fields of work/fields of study (domains) that are inseparable from one another. At least five important domains in the field of architecture are found and known that need to be known and understood by both academics and professionals alike.*

- *The five key areas of the architecture are: (a) the architectural sciences domain, (b) the architectural arts domain, (c) the architectural engineering domain, (d) the architectural philosophy domain and (e) the architectural design domain (Prawiro, 2009).*

RESEARCH METHOD

- *The method used in this research is a literature review that is included in qualitative research (qualitative research), which is based on the issues raised (Keegan, 2009). In this research, the issue analyzed is "wooden building architecture". Data collection was carried out by the method of observation and document analysis. The data obtained is interpreted based on the relationship with the issue of "wooden building architecture" and the environment that affects the issue.*

1.RESULT DAN DISCUSSION

Traditional Architecture

Historically, Indonesia has traditional architectural variances that have anticipated humid tropical climate conditions such as high roof angles to anticipate rainfall and high solar heat radiation on the roof. The use of windows and doors with a cross ventilation design for indoor circulation and elevated floors above ground level is to anticipate high humidity (Antonius Ardiyanto, A. Djunaedi, Ikaputra and J.A. Suryabrata, 2015).

Vernacular / Traditional Architecture



Figure 1. Kampung Naga traditional house.(source:
<https://anisavitri.files.wordpress.com/2009/12/kampnaga.jpg>,
accessed on November 21, 2019)

Vernacular / Traditional Architect



2.RESULT AND DISCUSSION Post Modern Architecture

- *The tradition of post modern architecture can be said to prioritize theory first then practice. Post modern architecture is better known as an architecture that 'marries' two codes or styles or styles.*

Post Modern Architecture

- *In conclusion, referring to the explanation above, the architectural tradition is from the practice of giving birth to theory and from theory to being the foundation for practice. In this paper **three examples** of post modern architecture from wooden buildings will be discussed, namely the Novotel Hotel in Lombok (Indonesia), the Roof of the Pompidou Center Museum Building in Metz (France) and mj0sa tower brumunddal Norway*

.

Post Modern Architecture



Figure 2. Novotel Hotel in Lombok with coconut wood architecture (sumber: <https://mataram.antaraneWS.com/berita/24146/kayu-kelapa-dalam-arsitektur-bangunan-tradisional-lombok>, accessed on November 21, 2019)

RESULT AND DISCUSSION Coconut wood as a building material

- *Coconut wood as a building material has indeed become an alternative choice for the community when the price of forest wood is increasing or jungle wood is increasing lately. In addition, coconut wood is more durable, not easily weathered and resistant to termite attack; and the price is affordable compared to wood from fast-growing trees or wood from natural forests. Building materials from old coconut wood can last for decades. Coconut wood can be used as door frames, windows and rafters (rib roof frames), even many who use coconut wood for door leaf. The color of the fiber from black coconut wood looks attractive, especially if you use wood fiber varnish will be brighter.*

Coconut wood as a building material



RESULT AND DISCUSSION Museum Building Pompidou Center

•Materials made for the structure are laminated bamboo, Teflon and wood made prefabricated with modular geometry (hexagon) components. Also add transparent glass membrane which is attached to the roof structure module. This waterproof material can create a natural climate, helping to meet the demands of building energy needs and ensuring that works of art are well known and preserved in the best conditions (Hayaturrahmah, 2014).

The roof of the Museum Pompidou Center, Metz(France)



Figure 3. Roof of the Museum Building Pompidou Center, Metz
(France) (source: <https://www.archdaily.com/490141/centre-pompidou-metz-shigeru-ban-architects>, accessed on November
21, 2019)

3.RESULT DAN DISCUSSION

Wood is one of the building materials that comes from nature and is very often used. As wood structure materials have various strengths (Anonymous, 2007), especially in:

- *Engineering for the development of various innovative products, for example engineered wood by means of composite wood waste with non wood waste is an effort so that the lifetime or lifetime of wood-based products will be utilized longer. Engineered wood has been very advanced and is widely used in countries such as Canada, Australia, New Zealand, the United States and **many countries in Europe**. Up to 10 storey buildings which are widely used as apartments using engineered wood have become common in some of these countries (16-22)*

Now the tallest building made of wood

- Opened on 15 March, or the Mjøsa Tower in Brumunddal near Oslo, Norway, is with 85.4 metres currently the world's tallest wooden building.
completed in March 2019

WORLD'S TALLEST WOODEN BUILDING. (MJØSA TOWER)



CLT, LVL and LSL panels can utilize low-grade wood which is otherwise considered for structural use



SUSTAINABLE ARCHITECTURE

- *The ecological approach to architectural design is not a specific hi-tech building concept, but a building design concept that emphasizes an awareness and courage to decide on a building design concept that respects the importance of ecosystem sustainability in nature (Frick, H and TH Mulyani, 2006). (20-22)*

CONCLUSION 1

The vernacular architecture of a traditional house is one of the cultural elements that grows and develops together with the growth and development of the culture of a society, tribe or nation whose basic elements persist for a long period of time and remain in accordance with the development and growth of the culture of a community, tribe, or the nation concerned.

The tradition of post modern architecture can be said to prioritize theory first then practice. Post modern architecture is better known as an architecture that 'marries' two codes or styles or styles. For example, between the antique and modern, between masculine (buildings with more dominant structures) and feminine (dominant exterior beauty), between westerns

CONCLUSION 2

- *The prospect of wooden building in Indonesia is very dependent on our knowledge and policies from the government. Reduced natural resources such as sand, gravel and materials for making cement or iron sand and mining prohibitions that damage the environment will encourage the use of wood material as a sustainable material.*
- *Engineered wood needs to be prepared or engineered wood as a substitute for solid wood and other building materials, so as to realize sustainable wood building architecture.*

THANK YOU