

Towards the Extinction of the Local Wisdom of Traditional Minahasa Wooden House in Kampung Jawa Tondano - Indonesia

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Abstract

The dwelling house of Kampung Jawa Tondano community is originally a wooden house with Minahasa Traditional Architecture which is very distinctive and unique both its form and its construction. Kampung Jawa Tondano is a residential area located in the highlands of Minahasa, Indonesia. This settlement began in 1832 by a group of men who were all male. They are militant groups from Java Island who fought in the Java War or Diponegoro War. The group is led by Kyai Mojo and all are Muslims. All of these groups, except Kyai Mojo, married Minahasan women and their descendants formed a community called Jawa Tondano. The Javanese Culture and Minahasa Culture meet and take place in harmony where the people of Kampung Jawa Tondano lived by adaptation. The problem that can be formulated is the process of cultural acculturation and development in all aspects of life both social, economic, technological, has an impact on the change of way of thinking expressed in ideas of building a house where traditional wooden houses of Minahasa are increasingly abandoned. Currently, only six traditional houses are still standing and all in very poor condition. These traditional houses are slowly changing and evolving to adapt to the development of the culture itself. One by one the traditional house is lost to a wooden house, although some people still consider as minahasa architecture but in fact it is different from the architectural values and local wisdom of Minahasa traditional house. The method of research used is descriptive qualitative method. The conclusion obtained that the people of Kampung Jawa Tondano prefer a change towards modern life and accept the modern mindset into ideas and ideas or norms and values of life including leaving the local wisdom of wooden houses with typical Minahasa architecture.

Keywords: Wooden houses, traditional, architecture, minahasa, jawa-tondano, local wisdom

INTRODUCTION

Kampung Jawa Tondano is located in Minahasa Region, Indonesia (figure 1). In the village of Kampung Jawa Tondano, North Sulawesi, settled a group of people from the island of Java, precisely around the city of Solo-Central Java, which has been mixed with local residents through marriage. The group from Java is a militant group led by Kyai Mojo and his family and his loyal followers who were exiled by the

Dutch Government in 1829 after undergoing the Java War or known as the Diponegoro War (Babcock T. 1989). Kyai Mojo and his followers arrived in Minahasa in 1830. Except for Kyai Mojo himself, all of his followers, 62 followers and all men married to Minahasan women. This is where the cultural acculturation process begins where the Javanese culture meets Minahasa culture For 187 years the people of Kampung Jawa Tondano have developed with a new culture resulting from the acculturation process. The only culture that does not change is the Islamic Religion which is believed by the whole population.

This cultural acculturation not only appears in social and language patterns of behavior, but also appears in other aspects including the architecture of houses and settlements. The architecture of traditional houses has changed continuously to this day. Traditional houses have gradually disappeared and replaced with wooden houses that are the development of the traditional house itself. And at this moment, these development houses are still materials of wood, began to change with concrete houses.

The most interesting thing is that there are still many new types of wooden houses in this settlement compared to other settlements and other villages in Minahasa. According to some villagers of Kampung Jawa Tondano that the old people refused to build a concrete house because this type of house is still associated with colonialism. Resentment against colonialism is quite pervasive in the soul of the community in Kampung Jawa Tondano given the history that led to the outbreak of the Diponegoro War. But today, more and more concrete houses are being built in this residential area. Currently, the traditional house still exists in 6 (six) houses which although have changed but still look traditional Minahasa architectural features. No one else wants to build a house like this. This traditional house is considered a part of the past.

Minahasa traditional wooden houses have a floor height of the house from the ground surface is generally 2.70 meters. The architecture of these traditional houses is a form of house that is believed to be the result of the development of a walewangko house or heir home that once existed in the era of the 1700s although it has not been scientifically proven. The great earthquake of 1845 had destroyed the walewangko houses so that people than built smaller houses since then. All traditional house building material are made from wood. The process of building a traditional house follows the traditional

ceremony of building a minahasa house, the columns are called tombuls, made of aliwowos wood (*Homalium foetidum* Benth Sp.). These columns are resting on large wooden blocks where the blocks are placed freely on rocks called watulaney rocks. Laying of the first watulaney rock is a traditional ceremony where the owner of the house called makawale will put the first watulaney on the right front corner.

The traditional house has a symmetrical look with 2 stairs in front of the so-called naran that descends from the center of the room called the setup towards the left and right side, turning each other back. Interior of the house is divided into 4 parts: open space is called lesar. This lesar space only separated by a wall as high as 1 meter on the front and side. This space is public and is used for the meeting room or if there is a family event then the community leaders are placed here while the community is given a place outside the home. In the lesar room there is a door in the middle that leads backward. Behind the middle door there is a space called sekey. Sekey room surrounded by wall with 2 windows on both side and 2 windows in front which connected to lesar room. Sekey room is semi-public where this room is a family entertaining guests. This room is also where the ceremony held a traditional family ceremony such as engagement events, family gatherings, etc. In the center of Sekey's room to the rear there is a living room called pores. Pores is where there is a bedroom called a tetekelan or gorem on the left and right. Tetekelan or bedroom has a window on the outside wall. The pores room is a place to meet family with relatives and relatives who still have family relationships. And the back room is a dining room called nawu. Lesar, sekey, pores, tetekelan and nawu have a platfond made of wooden planks with a platfond height of 2.70 meters floor. The lesar, sekey, pores, tetekelan and nawu have a platfond made of wooden boards with a platfond height of 2.70 meters floor. The lesar, sekey, pores, tetekelan and nawu have floorboards. The attic part of the house is called soldor where in the soldor room the family keeps the rice, corn, and the harvested crops from the garden. To climb to the soldor, use the staircase in the dining room. The kitchen is generally built separately with the main house and built on the ground because ancient times there has been no stove and cooking community using fireplace furnaces and firewood. Bathrooms and latrines are also built separately and separate from house and kitchen buildings. In general, the bathroom is near the well while the latrine is separate and the back is separated somewhat behind the bathroom. The roof of a traditional house is a roof of rumbia with a roof structure made of bamboo.

METHODS

The method used in the research is qualitative-descriptive. This method through the stages of research are literature studies, observations and field surveys, data collection in the

field, data processing and analysis, and conclusions. Each stage can be developed into sub-stages where all of this is aimed for research to be directed and produce an accurate final conclusion. The literature study is basically an attempt to obtain secondary data. The literature study was conducted with reference to the theories used in both journals and textbooks. The literature study is carried out in stages, namely: exploring the theory of acculturation and adaptation and its implications for architecture, deepening aspects of life and culture and traditions of Kampung Jawa Tondano community. Study the house building procedure in Kampung Jawa Tondano by tracing the idea of building a house, the actions of building a house before construction, during construction and post construction. Studying Minahasa homes especially using wood materials includes philosophy, tradition and procedures for building houses, home construction, house spaces, decorations, meanings and symbols, and other aspects of Minahasa homes.

Field observations and surveys were conducted to obtain primary data. Field observation is the activity of identifying six traditional wooden houses. This data collection is carried out in stages, ie: making administrative maps, making thematic maps focusing on the placement and distribution of wooden houses, both traditional wooden houses and wooden houses, making drawings on the situation of six old wooden houses, making pre-design drawings (floor plans, facade, and sections) and drawing plans from the six traditional wooden houses, drawing detailed construction details of the houses described above, listing the building materials of the houses, making notes on the interior of the room, exterior and comfort of the house, listing the year of building the houses and the ownership of the houses and people involved directly in the process of building new houses, and creating photo albums as well.

A field survey was conducted to obtain primary data on Kampung Jawa Tondano community in relation to the house. The survey is divided into 2 types of survey. The first is a survey with a questionnaire to gain public perception of culture, tradition, and home. The questionnaires will be arranged so that the intended outcome is to get an idea of how the people of Kampung Jawa Tondano build houses starting from the idea of building, planning, preparation of building, building construction, and post-construction activities. The second is a survey by conducting direct interviews to the community by interview method and purposive sample selection. Data processing and analysis were carried out simultaneously with other words that any data obtained directly studied and concluded without having to wait for other data. Data processing is done by examining each primary data and secondary data found. The conclusions obtained from data processing are arranged in a report and presentation materials. This research method can be derived into a flowchart as seen in figure 2.

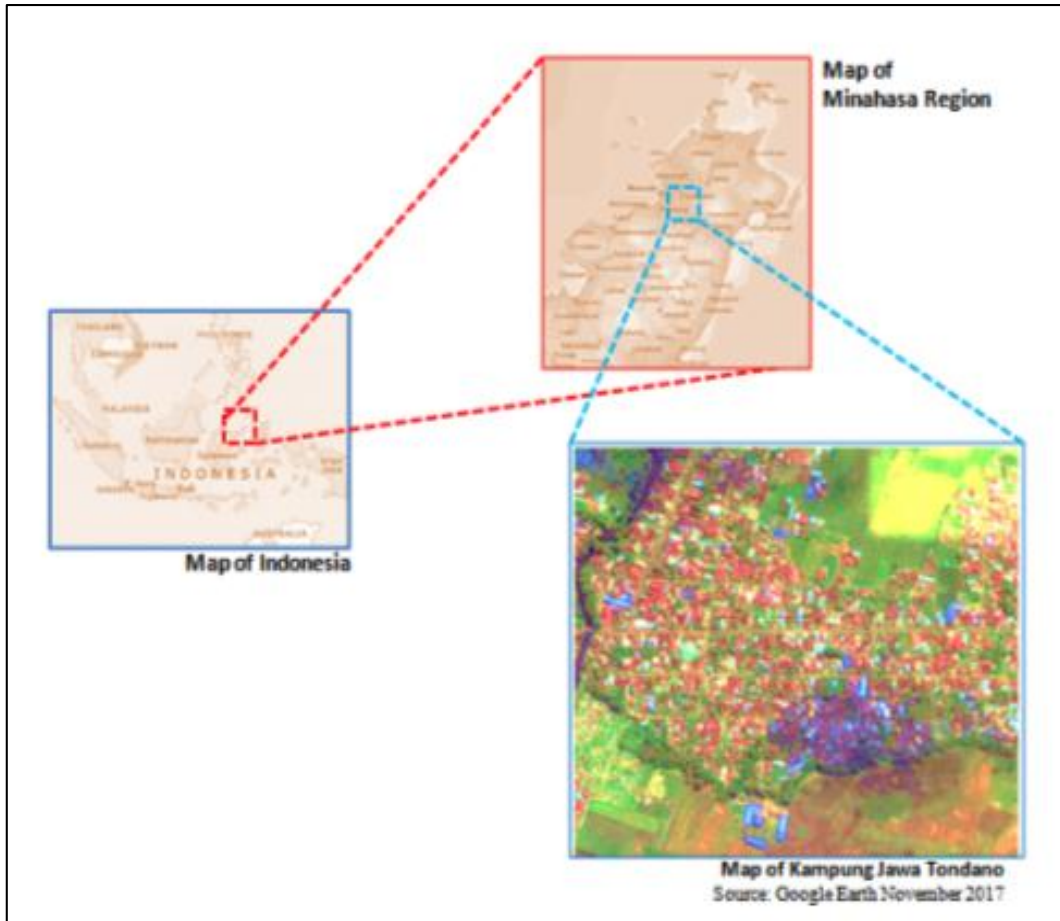


Figure 1. The Location of Kampung Jawa Tondano

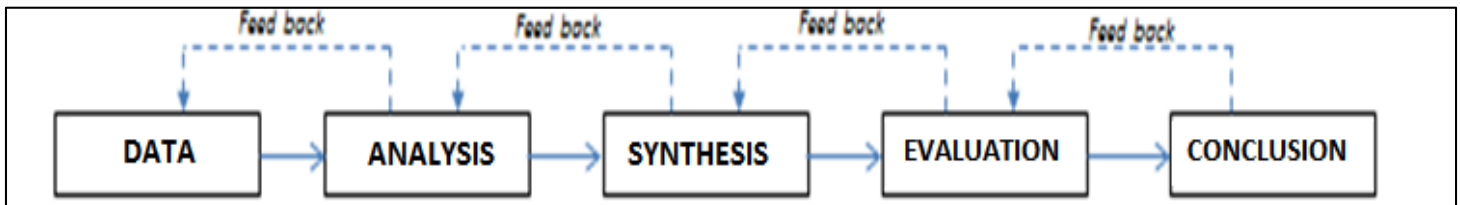


Figure 2. Flow Chart of Research Methods

RESULTS AND DISCUSSION

Type of house inhabited by the community Kampung Jawa Tondano is currently very varied. Judging from the materials used, some people inhabiting houses with brick-concrete and some wooden houses and some are wooden houses combined with concrete houses. In total there are 325 houses consisting of 90 permanent houses, 232 semi permanent houses and 3 non-permanent houses. Because the entire community is Muslim then the religious building here only mosque amounted to 3 (three) pieces. The number of wooden houses in Kampung Jawa Tondano is 188 units. These houses are made up of houses with a whole wooden material and a wooden house on stilts whose lower part has been developed

with a brick / concrete house. Kampung Jawa Tondano are divided into 6 (six) sub regions. If specified per sub-region then the number of existing wooden houses in sub-region I is 28 units, in sub-region II are 54 unit, in sub-region III is 37 units, in sub IV is 32 units, in sub-region V is 31 units, and In sub-region VI are 6 units. Of the total wooden houses in this village, there are 6 houses that have been identified as a traditional house with a wooden architecture form the stage, has a house looks symmetrical and very unique and unique and has aged around 100 to 150 years.

Based on architectural forms, especially wooden houses, these houses are divided into two categories: traditional wooden house and wooden house. The difference between these houses can be clearly seen in figure 3.

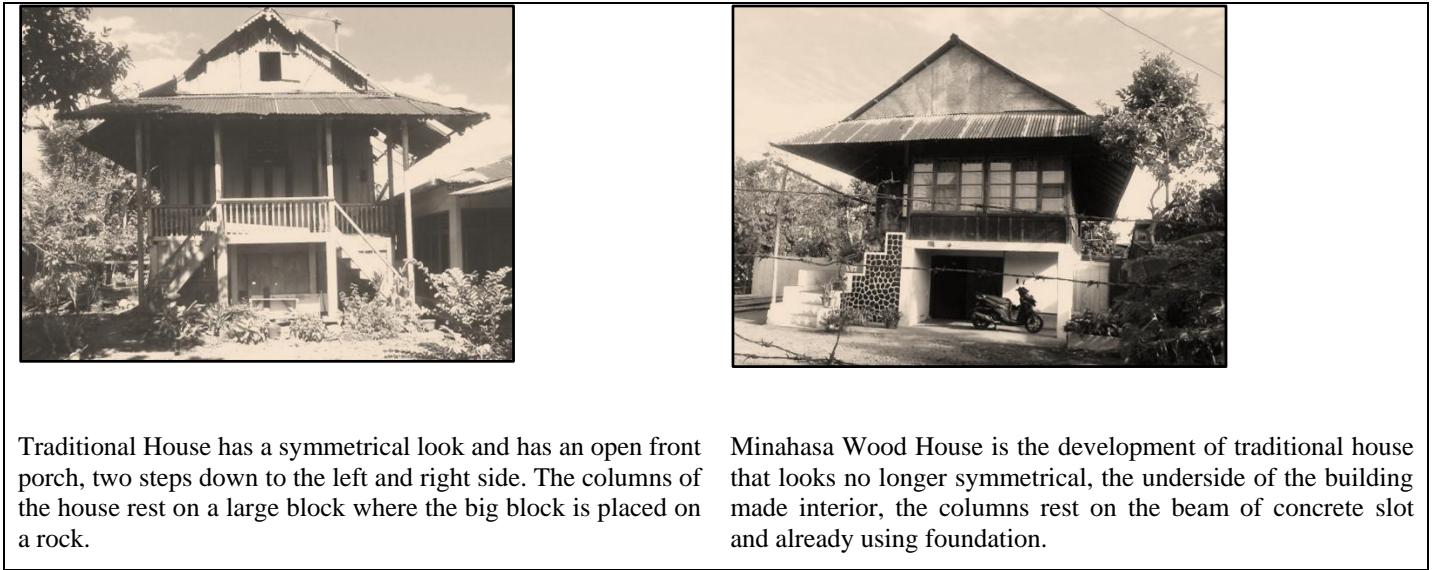


Figure 3. The Difference between Traditional House and Minahasa Wooden House



Figure 4. Geography position of Six Traditional Houses in Kampung Jawa Tondano

A traditional house is built through a series way of ceremonies. The ceremony began since the family planned to build a house. In ancient times, when the wedding ceremony was completed, the new family would live together with one of the parents. When this family is established and has the ability to live independently and resources for a custom procession of building a house then this plan will be submitted to the traditional leaders of tonaas and walian. Tonaas is the leader of a settlement, and walian is a spiritual leader. Tonaas are the only people who are entitled to determine the type of tree to be cut down through a custom procession. In ancient times only Wasian Tree or Wood Cempaka (*Elmerrillia ovalis*) which became the material of the house (Lumempow F, 2006). This tradition indirectly contains the value of nature conservation because not everyone is free to cut trees so that forest preservation around the settlements can be guaranteed. When a tree has been established, it must be torn down to the

southeast as a tribute to the opo-opo (the gods of the Minahasa people) and should not be torn down westward. By merely breaking down in one direction then this tradition contains the principle of preservation that is selective logging. Because not all trees are likely to be torn down to the southeast so that the wasian trees that emphasize towards the others become protected and can not be felled.

Mapalus is a tradition in Minahasa which means working together. Mapalus is done on job-work that takes a lot of people. Mapalus Wale is working with a group of people to build a house. This group builds its member houses one by one until it is completed with certain arrangements where at the time of each construction has been determined each member to provide home material or cash equivalent value. (Umbas V, 2011). At this time, the tradition of mapalus wale

or mapalus house which is a very valuable local wisdom, is no longer done along with the development of the modern world.

The position of 6 (six) Minahasa traditional houses in Kampung Jawa Tondano can be seen in figure 4.

The first stone laying ceremony is the tradition of laying the watulaney rocks in the right-front position at the location of the house that has been prepared. The second watulaney stone and so on are placed in a circle counterclockwise. This tradition arranges the layout of the house to be well ordered. Indirectly this tradition contains the meaning of the arrangement of the system of the structure of the building has been bordering the border of buildings and road borders. This can be proved by the orderliness of the houses in the former settlements. The laying of the first stone is still done today but its meaning has changed.

Traditional house construction is made using wood material. In general, wood is a building material that is environmentally friendly because it is renewable or can diperharai and taken from renewable resources. The beam joints use 'straight-lipped wooden joints' and 'sloping wooden joints'. There is also a 'straight-linked connection'. In column beams use 'straight notch connections', 'pen connections and open pits' and 'pen connections and closed loopholes'. Wooden connections do not use nails or certain metals. A large grounding pad called watulaney, used as the foundation of a

house that channels all forces to the ground. Above this watulaney rock is located a large beam above this beam the poles of the house (local: tombul) stands with a hollow wooden pen joint. The number of poles is 16 to 18 piles. (figure 5).

Above the lower-columns there are main beams where the above beams are placed on the house-based beams where the floor boards are instaleed. The home columns are also connected to house-based beams. Wallboard is also mounted on these beams. The upper house column is connected to the ring beams and the beams on which the platfond board is installed. On this ring beams the roof construction is installed.. From the beam ring made the connection out to create a roof hall which is a smaller corner of the roof construction. Part of the construction of the hall roof and the hallway beam creates a distinctive roof shape and is considered as one of the architectural houses of Minahasa. The roof cover in ancient times is the roof of rumbia but now it has changed with zinc layer roof. Traditional houses do not have a main pillar in the roof construction, instead of installing a horizontal confinement in the center of the roof construction and on this horizontal beam mounted several bamboo as a wind beam extending the house. The underside of the godong is a pedestrian wheel, a manual corn mill and a warehouse for farming tools such as hoes, spades, etc. See figure 6.

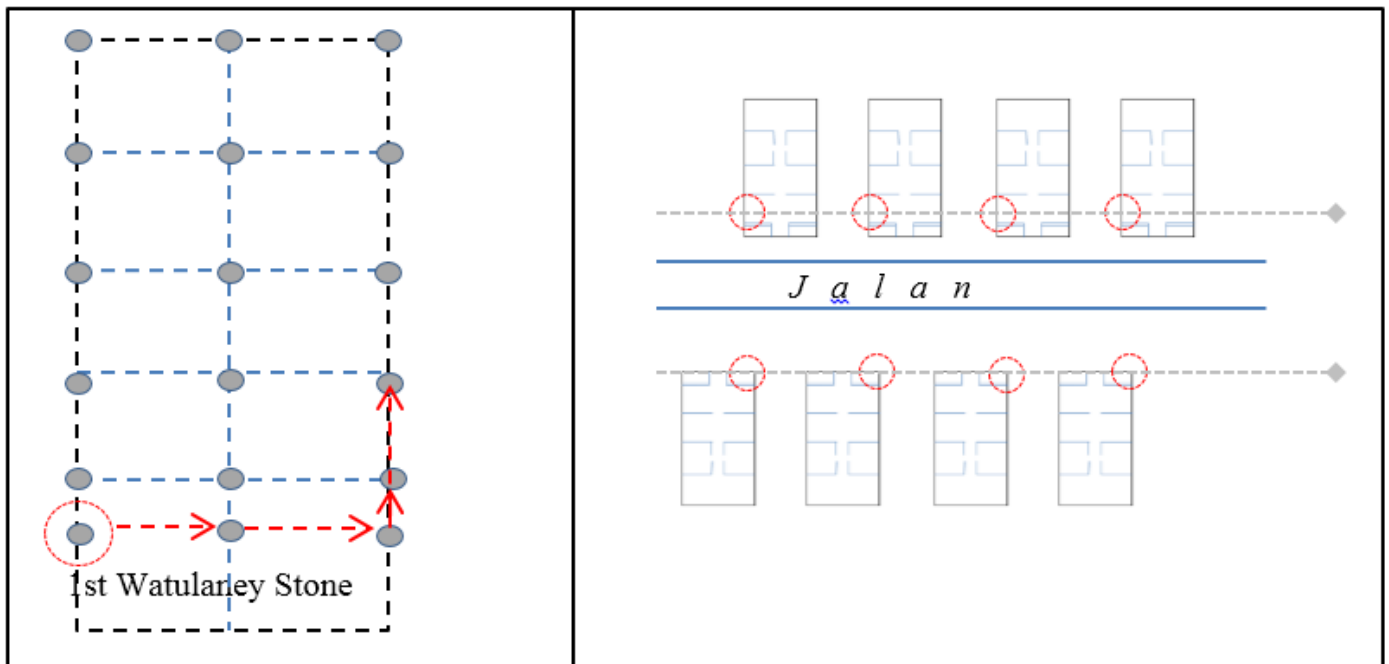


Figure 5. The Tradition of Laying the First Stone Becomes Key of Setting Layout of the Housing Area that is well-ordered







1		<p>The house is located in Sub Area 4. Built in 1900s and has 110 years old. This house is located on Tondano City Main Street. In 1950-1960 on the main street there were many houses like this. When built this house is thatch roofed and the thatch was replaced with Zinc the 1950s also part under the house was given a wall into space. By 2014 this house is not inhabited and in very damaged condition.</p>
2		<p>This house is located in Sub Region 4 and was built in 1943 and is now 73 years old. This house at the time was built roofed rumbia and in the 1960s replaced with Zinc. Paltfond House uses the skin of a particular Tree. All building construction has not changed and is still like when it was built.</p>
3		<p>This house was built around the late 1890s and is already 126 years old. It is located on the middle road of Kampung Jawa Tondano where on this street also until the 1950s there were many traditional houses. Zinc replaced rumbia in about 1950. Homeowners determined to take care of this house.</p>
4		<p>This house is located opposite the Mosque of Al-Fallah Kyai Mojo into sub region 3. The house is estimated to have aged over 125 or built around the year 1890 based on its location adjacent to the Mosque and the Complex is a central area that originally occupied by Kyai Mojo and his Followers. This house was allegedly built by one of Kyai Mojo's followers. Zinc roof used since the 50s replaces the roof of thatch.</p>
5		<p>This house is inside the sub region 1 of Kampung Jawa Tondano and still in place. This house also changed the roof of the roof from thatch to zinc roof in about 1950. The underneath is still like when it was built and the big beam under the base stone base has been cut in order to enter the bendi.</p>
6		<p>This house is in sub area 2 of Java Tondano village. Zinc was used around the year 1950. Building blocks functioned as inner space in 1976 due to the increase of family members.</p>

Figure 6. Building Facade of Six Traditional Houses in Kampung Jawa Tondano

Traditional house is a house that meets the requirements as a green building because in the development process that is starting from looking for wood material in the forest until the construction period almost did not use water. Also it does not use concrete because the concrete is a material that is very damaging the nature. The process of natural wood preservation is made by soaking in water and not using chemicals so it is safe and does not affect human health. Sangkertadi (2014) revealed that viewed from the aspect of thermal comfort, in the same environment the old wooden house is significantly more comfortable than the concrete house. This proves that the Minahasan community was wiser in constructing the house because the comfort of thermal interior of the house was better.

Figure 6 and 7 shows the facade and typical section of Traditional wooden houses in Kampung Jawa Tondano. The house also shows excellent thermal comfort. By using the thermohygrometer, the measurement in the Sekey room or the living room in six traditional houses in Kampung Jawa Tondano at 7.00 hrs to 7 pm, the highest temperature (t): 25,5 °C occurred at 12.30 to 13.30 and Highest Relative Humidity (RH): 65%. These data show that although during the day, traditional houses in Kampung Jawa Tondano still meet the requirements of thermal comfort room in Indonesia based on the Convenience Standard Foundation (LPMB) Ministry of Public Works, Government of Indonesia, Bandung is a

temperature range of 22.8 °C to 25.8 °C at RH 70 % Or based on Indonesian National Standard (SNI) 6390-2011 on the Energy Conservation of Air Circulation System Building that is temperature range 24 °C to 27 °C and RH range 55 % to 65 %. This comfortable condition is still achieved although the roof cover material of the six traditional houses in Kampung Jawa Tondano have been replaced from the thatch roof to zinc roof. It is clear that with the condition of traditional houses like this, it is not necessary artificial air conditioning system because passively, traditional house construction still supports the thermal comfort of the interior of the room especially in Kampung Jawa Tondano. Figure 8 shows the plafond, the wall as well as the roof of the traditional house in Kampung Jawa Tondano these part of the house play a very significant role in comforting the interior of the house. This thermal comfort occurs because the construction of stilt houses and window blinds and air ventilation in traditional houses strongly supports the continuous air change. Air flows freely through the roof space and prevents heat transfer through plafond. The airflow flows through the top surface of the plafond causing the top surface of the plafond to cool and the plafond made of planks and there are still small gaps that allow indoor air to be infiltrated through board cracks and exhaled by the airflow.



Figure 7. Typical Traditional House Facade and Side View of Traditional House Sketch in Kampung Jawa Tondano

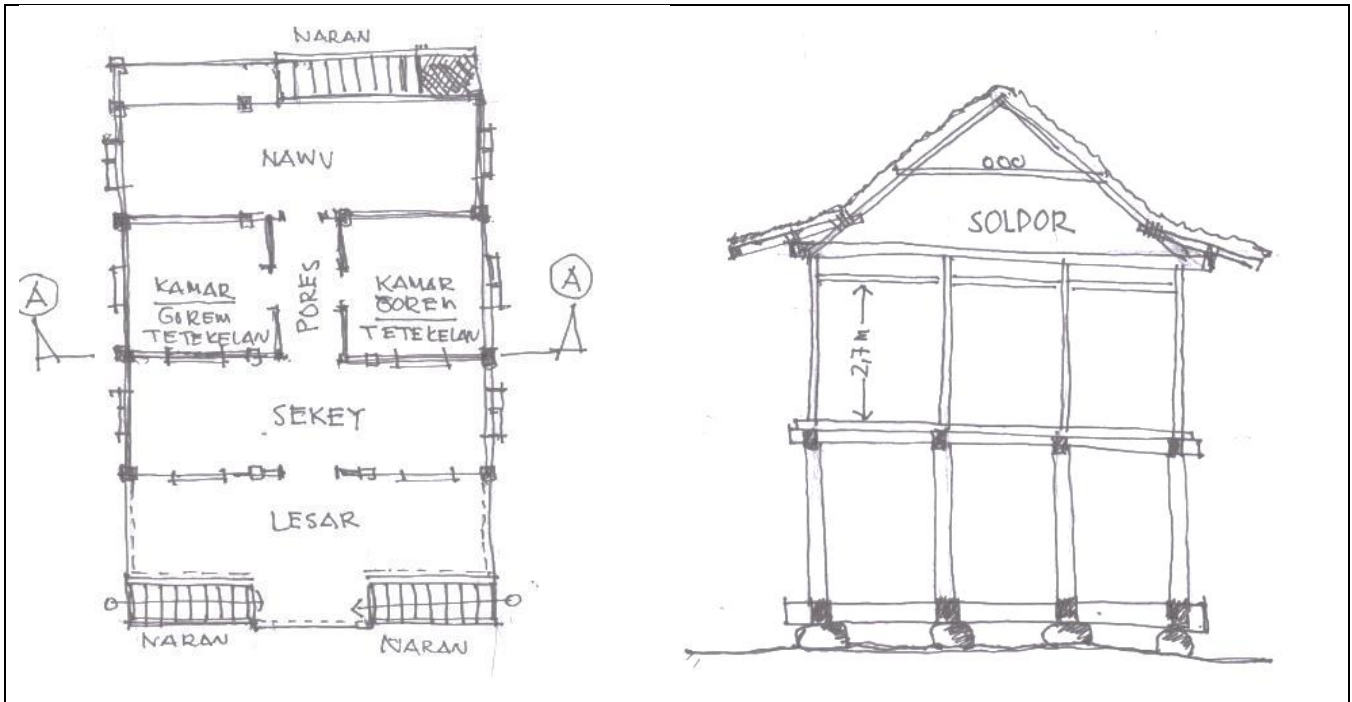


Figure 7. Typical Plots and Section of Minahasa Traditional House In Kampung Jawa Tondano



Ceiling Boards and Teritist Roof Terraces and Kreyyak Window Causes Air Circulation on the Interior of Traditional House Spaces



On the front and back of the roof is given Window. It aims to provide openings for air circulation in the roof space. This rooftop room is called 'soldor' and is used as a storage place for rice, dried corn and other garden products.

Figure 8. Platfond, Wall and Roof of Traditional House in Kampung Jawa Tondano

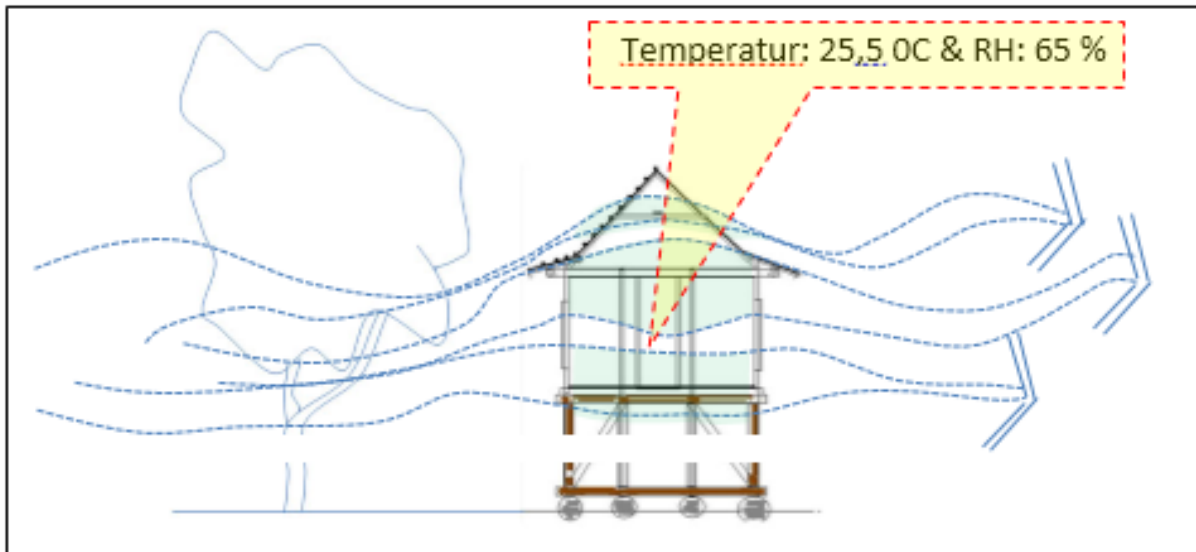


Figure 9. Pattern of Air Circulation and Thermal Comfort Condition at Traditional House in Kampung Jawa Tondano

The air flowing through the blinds and ventilation windows causes continuous air changes to satisfy the fresh air needs of the occupants. Free air flowing through the house also prevents heat transfer through the board floor. Air blowing on the surface of the wood is sufficient to maintain the surface temperature of the wood. Wall cracks, platfonds and floors also significantly contribute to the thermal comfort of the room. (Figure 9).

Almost all parts of traditional houses in Kampung Jawa Tondano use 'wood' as building material. These woods are locally and traditionally managed. Lumempow(2014) explained that the construction of traditional houses according to adat in Tombulu area covers the stages of the first is the preparation stage of building materials. Building materials will be taken from the forest around the village and this process is led by traditional leaders Tonaas. Inserts to look for wood as a building on one day at night in place of prospective homeowners by performing rituals. The next day while searching for the necessary wood, led by Tonaas. When a timber tree is found, the tonaas perform a rite of passage to ask permission of the Opo Empung who is the Lord of the natural ruler in order for the tree to be felled. Given the 'Tonaas' figures in the search for timber trees in the forest as traditional leaders, logging in the forest should not be careless. If this tradition is violated then there will be a disaster against the person. Traditional societies believe only Tonaas & Walian can relate to Opo Empung so that this tradition is indirectly a control system for forest sustainability. As is known, wood is the only building material that is 'renewable'. As long as the production forest management is done properly then this wood will never run out. The construction of wooden houses in Kampung Jawa Tondano is currently no longer led by Tonaas but as a substitute for the position of tonaas are public figures. These community figures are the Hukuntua as the village head and the religious leaders such as ulama.

When examined against the theory of green buildings, traditional houses can also be categorized as green buildings

are buildings that are on the structure and use of environmentally responsible processes. Buildings should also efficiently use resources throughout the life cycle of the building, from place selection to design, construction, operation, maintenance, renovation, and demolition. Simply green buildings are buildings that use energy, water, and other resources efficiently, protect occupant health and improve occupant productivity, and reduce waste, pollution and environmental degradation. During the process of building a traditional house, hardly use water directly. By the time the wood has been shaped into blocks and planks, these woods are soaked in water to break the supply of oxygen to wood-destroying agents such as termites and insects so that their termites and insects and other wood-burning agents will die. Usually the water used is river water or pond water. By using local wood material, the embodied energy used in this house becomes small.

Traditional houses do not use concrete so as not to damage the atmosphere due to release of Carbon Dioxide at the time of making cement. Reid H et al (2004) explains how wood is the best material for building materials. Replacing 1 M3 of concrete or brick with wood equals preventing 0.8 tons CO₂ contamination. The same thing happen when replacing 1 ton of glass building material is proportional to preventing the contamination of 1.1 tons of CO₂. Using 1 ton of metal equals to contaminate as much as 2.9 tons of CO₂. Therefore, when the traditional house is still original as it is built, it has a very high green building value but when the roof of the house is replaced by a zinc roof which is a kind of metal, then its green value decreased and to this day where wooden houses is constructed using glass windows instead of wood krepak windows, the value of green building is getting down. When people use concrete foundations to replace watulaney stone, the value of green buildings decreases more and more.

The results of interviews to the Kampung Jawa Tondano community found that in the 1960s the number of traditional houses in Kampung Jawa Tondano numbered more than 30

units with a land plot of 300 m² or 15 m x 20 m. All the houses were old and built by previous generations. Most of the houses are over fifty years old so that the building materials have been damaged by termites and finally torn down by the heirs. These heirs are rebuilding on the same site but the houses have changed. Some build wooden houses but not traditional houses and some build houses with concrete materials. In ancient times, the people of Kampung Jawa Tondano did not like the concrete house. This dislike can be understood because they are descendants of the Kyai Mojo group who fought against colonialism and for them the concrete is identical with colonialism because the concrete construction was introduced by the western people.

The results of this study indicate that the idea or idea of building a home community Kampung Jawa Tondano is as follows. 49% of people prefer to build concrete houses. 18% of people choose wooden houses that still have Minahasa-an style. No one wants to build a house that has a traditional style. 33% of the community did not make choices. The community's reason for building a concrete house rather than a wooden house is that the concrete house is stronger and can last longer. Concrete houses are more trendy and modern and have a higher degree of wooden houses. The influence of world development is the most dominant reason why old wooden houses are abandoned. Most people in Kampung Jawa Tondano think that traditional houses are the past despite the fact that local wisdom of traditional houses is highly accountable.

CONCLUSION

The conclusion that can be made is: the mindset and the idea of building a home has changed where the current generation considers that the traditional house is part of the past and in modern times they have to build concrete houses that have longer durability and stronger construction and style A more varied architecture. Local wisdom contained by traditional houses has a very high value. Since the planned and preparatory process, traditional houses contain the value of forest conservation. Implementation of selective logging with local preconditions and customs has an impact on forest sustainability. Logging is only a certain tree species and is carried out only by community leaders. In the process of building a traditional house, hardly use water. Utilizing the materials available around the settlements reduces energy embodied and therefore contains energy conservation values. All the main building materials are wood. Wood is the only renewable material so that the traditional house is environmentally friendly and qualifies as a green building.

The process of building a house since the beginning of the first stone laying ceremony is very determine the layout of the area so that the layout of houses and other buildings within the settlement area into a well-ordered area. Openings of doors, windows and vents combined with green environments ensure the comfort of thermal spaces, temperatures and humidity, since air circulation occurs naturally where wind velocities that have been reduced by shady trees are passed into the home room due to openings on all sides traditional house. Space as an open space as public space is a reflection of

public attitudes that are open and in this space there are many social activities everyday starting from just joking up to group activities.

Local wisdom of this traditional house has disappeared along with the disappearance of traditional houses in Kampung Jawa Tondano even throughout Minahasa land. Someday, future generations will not see this traditional house again. The local wisdom of this traditional house will only be memorable and written in history books about Kampung Jawa Tondano and Minahasa.

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