BALE BANJAR PEKANDELAN LEGIAN AS AN ARCHITECTURAL IMPLEMENTATION WITH ENVIRONTMENTALLY FRIENDLY BUILDING CONCEPT IN KUTA

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ABSTRACT

Bale banjar is a space where Balinese traditional communities gather and carry out their social and cultural activities together. Bale banjar is a form of culture that has maintained the existence of Balinese society to this day. The concept in building it also uses the benchmarks of Traditional Balinese Architecture, namely, Tri Hita Karana, Tri Angga, Tri and Sanga Mandala, and Asta Kosala Kosali. These concepts are concepts that are full of respect for nature and the environment. Now in the modern era, these concepts are being increasingly promoted due to the trend of environmentally friendly buildings amidst the rise of large-scale development. Environmentally friendly means architecture that is based on the idea of "minimizing energy use without limiting or changing the function of the building, the comfort or productivity of its occupants." Based on these thoughts, it was deemed appropriate to introduce Bale Banjar as one of the architectural buildings that applies an environmentally friendly concept to minimize pollution that occurs in the surrounding area. The location of the bale banjar in question is also in the Kuta tourist area which is full of buildings supporting tourism facilities and tends to ignore the concept of being one with the environment. The writing method used is descriptive qualitative with a case study approach. The results obtained are that Bale Banjar Pekandelan Legian is useful for supporting the surrounding environment as a building with an environmentally friendly concept.

Keywords: Bale banjar, environmentally friendly, pollution, Kuta

1. INTRODUCTION

Bale banjar is a term that is familiar to Balinese people and observers of all things Bali. The mention of the term/word "banjar" began in the prehistoric era of Bali. In 836 Caka or 914 AD in the Gobleg Pura Desa inscription which was in Old Balinese language. In the inscription it is stated "......ser tunggalan banjar di indrapura." It means ".... single joint supervision for the environment or group in Indrapura." The history of Banjar in Bali is also obtained from the story contained in the manuscript of Maha Rsi Markandeya in relation to Taro Village (Salain, 2017). Bale banjar in the sense that can be generally understood is a public building where traditional Balinese people gather and carry out their daily activities or social life within the framework of customs and religion. Usually a bale banjar consists of sacred buildings (Pengulun Banjar Temple), meeting room, bale kulkul, kitchen/ perantenan, and warehouse/loji/place for storing goods (Wijaatmaja, Mahastuti, & Utami, 2020).

Bale Banjar is a traditional Balinese architectural building designed to blend in with the surrounding environment. This unified design is reflected in every dimension, material, decoration, space pattern, zoning, and everything attached to it. The design blends with the surrounding environment in line with the Tri Hita Karana concept as its basis, namely Parahyangan (harmonious relationship with God), Pawongan

(harmonious relationships with humans), and Palemahan (harmonious relationship with nature). Based on this concept, the Balinese ancestors have actually prepared a guideline so that their successors (especially in designing and building) are always in harmony with everything around them. The Tri Hita Karana cosmological concept is a strong Hindu philosophy of life. This philosophy has a meaning that can preserve cultural and environmental diversity amidst the incessant influence of globalization and homogenization (Parmajaya, 2018). According to (Dwijendra, 2003), Tri Hita Karana means three causes of well-being, which originate from a harmonious relationship consisting of: Parahyangan, Pawongan, and Palemahan. The Tri Hita Karana concept is very influential in the lives of Balinese Hindus which can be seen in the order of norms and customs that have been passed down from generation to generation. The Tri Hita Karana concept does not escape the concept of traditional Balinese architecture as a basis for arranging spatial patterns, both metaphysically (Tri Hita Karana) and physically (Tri Angga) as its derivative. The Tri Hita Karana concept emphasizes the concept of metaphysical space, while the Tri Angga concept emphasizes the concept of physical space, where the concept of physical space which divides space based on the concept of division of the human body (head, body, and legs) embodies the concept of metaphysical space which divides space based on the human relationship with God (Parahyangan), with fellow humans (Pawongan), and with the natural surroundings (Palemahan). The principle of implementation must be balanced and in harmony with one another and this balance will be achieved if humans strive for and even avoid all actions that are bad for the environment.

On the other hand, we are all equally aware that currently the planet Earth, which is inhabited by various species, including humans, has recently experienced the threat of global warming as a result of rapid development and industry that is growing rapidly due to modernity and advances in technology. Global warming is a term that indicates an increase in the average rate of plants, wild life and humans. When scientific experts talk about the problem of climate change, what becomes the center of attention is global warming caused by human activities. It may be difficult to imagine how humans could cause changes to the Earth's climate. However, experts agree that human activities are causing large amounts of greenhouse gases to be released into the atmosphere and causing the earth to become hotter (Samidjo & Suharso, 2017). Starting from this thought, the concept of environmentally friendly buildings emerged to reduce the negative impacts of global warming. The importance of the environmentally friendly building concept itself is that it provides many benefits by approaching the natural conditions and climate around the area for operations (buildings) that are more environmentally friendly. In principle, the concept of environmentally friendly buildings is oriented towards sunlight and maximizing the climate through plants, greenery and water (Husnan & Prayogi, 2021). Apart from the concept of environmentally friendly buildings, on the other hand, building concepts known as green buildings are also starting to emerge. Development that carries the green building concept must pay attention to the following material and energy aspects, including: (1) Use of environmentally friendly materials such as wood, (2) Utilization of sun light as natural lighting, (3) An air ventilation system with many openings for more natural room ventilation, (4) Optimization of a number of areas for reforestation, (5) Effective use of remaining building materials, and (6) Good waste management.

Green building is not just about buildings, but also about building a more sustainable future for future generations. By understanding the benefits, we can together create a healthier, more efficient and more environmentally friendly environment for everyone. Based on these thoughts and growing concerns, Bale Banjar Pekandelan Legian is considered to fulfill an example of a building that cares about an environmentally friendly concept which also includes green buildings. This article has a main problem, namely how Bale Banjar Pekandelan Legian implements the concept of environmentally friendly buildings in its operations. Meanwhile, the

purpose of writing this article is to understand the application of architecture with the concept of environmentally friendly buildings in public spaces, in this case the bale banjar. How does it operate, in what parts is the environmentally friendly concept visible, and what is its role in the surrounding environment.

2. RESEARCH METODOLOGY

This article uses a qualitative approach to describe object selection techniques, data collection methods and techniques, data analysis techniques, and techniques for presenting data analysis results. According to (Moleong, 2018), a qualitative approach is a research procedure that produces descriptive data in the form of written (spoken) words from the object/thing observed. This is possible because qualitative research does not use a population (Sugiyono, 2008), but it has been demonstrated in cases in social situations. In accordance with the research method used, namely the qualitative method, the research instrument is the researcher himself. In collecting valid qualitative data, it is also supported by several instruments such as: interview guides, cameras, smartphones. The interview guideline carried out was not based on official guidelines for which steps had been made but referred to one main question, namely: how local residents are trying to preserve their environment through the form of bale banjar. From there the next questions flowed following the answers given by the resource person, namely the banjar administrators (Prejuru Banjar) or local residents (krama banjar). Direct observations were also carried out through photo recordings obtained from cameras or smartphones, thus strengthening the results of interviews that had been conducted previously.

3. LITERATUR REVIEW

This article takes several examples of literature which are used as references to strengthen the results of this article. The first article used as a literature review is the article with the title Konsep Tri Hita Karana dan Tri Angga pada Pola Ruang Luar Pura Penataran Agung Dalem Jawa Blambangan (Achmad & Antariksa, 2018). This article contains the understanding that Tri Hita Karana is a forming element Bhuana Agung (macrocosm) and Bhuana Alit (microcosm). Elements on a macro scale include Atma/soul. (Pratama; The One Almighty God), Prana (natural enery; (Maharlika, 2010), and Angga (Panca Maha Bhuta). In Bhuana Alit, Tri Hita Karana divided into regional (village), building (banjar and house) and human scales.

Table 1. The Tri Hita Karana Concept in the Composition of the Cosmos

Element	*Atma* (Soul)	*Prana* (Power)	*Angga* (Physique)
Universe (*Bhuana Agung*)	*Paramaatman* (The One Almighty God)	The Power that Moves Nature	Panca Mahabhuta Elements (solid, liquid, light, air, and space)
Village	*Kahyangan Tiga* (Desa Temple, Puseh Temple, Dalem Temple)	*Pawongan* (Villagers)	*Palemahan* (Village Area)
Banjar	*Parahyangan* (Pengulun Banjar Temple)	*Pawongan* (Banjar Residents)	*Palemahan* (Banjar Area)
House	*Pamerajan* (Small Temple)	Family Members	House Yard
Man (*Bhuana Alit*)	*Atman* (Human Soul)	*Sabda, Bayu, Idep* (Voice, Energy, Thought)	Human Body

Source: (Budihardjo, 2013)

The *Tri Angga* concept divides the body into three large parts, namely the head (*Utama Angga*), body (*Madya Angga*), and legs (*Nista Angga*). In its application to space, the *Tri Angga* concept divides the quality and function of space which is taken from the three parts of the human body.

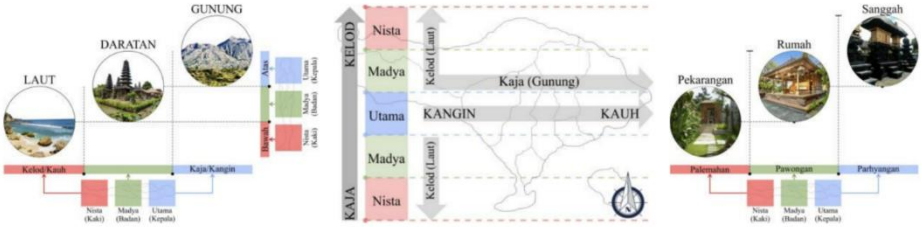

Figure 1. The Tri Angga concept on nature and the residential environment.
Source: (Achmad & Antariksa, 2018)

The second article used as a reference contains the understanding that bale banjar (as included in the *Bhuana Alit* category on a building scale) consists of the words bale and banjar. Banjar is further viewed from the origin of the word "banjah" which means parallel. Alignment leads to the meaning that banjar is a group of people who have the same rights and obligations (equally). Banjar is a residential area in a village in Bali. Banjar is one level below traditional villages. In a traditional government system in Bali, the banjar is headed by a *Kelian Banjar*. Banjar in the official government system is parallel to the community association (Juniastra, 2021). There are several buildings/rooms that are usually found in Bale Banjar, namely:

(1) Bale Banjar itself, as a building where local residents gather, functions as a meeting place (*sangkep*), deliberation (*paruman*), and also for preparing facilities and infrastructure that will be used in religious ceremonies. Apart from that, bale banjar is also used for other social activities (socialization of government programs/activities, a place to carry out training and gamelan activities and dance performances, women's organization activities (*PKK*), youth activities (*Sekaa Teruna*), cremation ceremony activities or borrowed by local residents to hold preparations for wedding activities, and/or also as a voting place during general elections.
(2) Bale Kulkul as part of *bale banjar* is a means of non-verbal communication to disseminate information or notifications to local indigenous residents. Information that is usually conveyed through the sound of *kulkul* (drum made from bamboo or wood which is struck to sound an alarm) is about meetings (*sangkep*), news of deaths (*kelayonsekaran*), marriages, or mutual cooperation (*tedun krama*).
(3) Pengulun Banjar Temple is a sacred area for Hindu religious ceremonial rituals in Bali. At certain moments according to the Balinese calendar, a religious ceremony (*piodalan*) is held at Pengulun Banjar Temple as an expression of gratitude to God for having been given the gift of salvation, a peaceful and peaceful atmosphere, as well as an expression of gratitude for this life.
(4) Kitchen (*perantenan*) which functions as a place for cooking activities and processing ingredients that will be used for ceremonies or for consumption by banjar residents.
(5) Toilets are an embodiment of maintaining the cleanliness and health of the banjar environment. As well as being the lowest zone in the layout of traditional Balinese buildings.

The next article is from (Imran, 2018) who states that maintaining a beautiful, clean environment and of course having a healthy impact on all elements of society is indeed something that is not easy but needs to be done. There are so many ways and various creative innovations that humans do, but it all requires consistent time and quite a lot of money. Not just protecting the environment and caring for it.

Technological advances as a result of advances in human thinking continue to develop, resulting in ideas that are able to create concepts that are beneficial for humans and the environment. The application of environmentally friendly buildings is usually also called green construction, namely at the planning stage it can be seen in several construction designs that have received awards as energy efficient building designs, namely building systems designed to reduce electricity consumption for lighting and air conditioning.

The last article is from (Silfia & Sudarti, 2022), it contains about global warming which arises due to human activities such as the use of motor vehicle fuel, coal, petroleum and natural gas. Motorized vehicles emit carbon dioxide ($CO2$) as a result of exhaust. Apart from that, there are other gases such as water vapor ($H2O$), Chloro Fluoro Carbon (CFC), Nitrous Oxide ($N2O$), Methane ($CH4$), Ozone ($O3$) which are known as greenhouse gases that enter the atmosphere. This incident resulted in the retention of the sun's heat reflection from the earth and resulted in the sun's heat being reflected back. Temperature conditions in the atmosphere have increased drastically. All the sunlight that is reflected towards the earth is not all absorbed. The rest of the sunlight will be reflected back through the clouds. However, if there is no global warming, the temperature on earth will cool down, living things cannot live in it. The heat generated by the greenhouse effect makes the earth warm. Apart from causing global warming, the greenhouse effect also causes climate change. Climate change is an important problem that poses a serious threat to all humans on earth. Climate change can affect human life, such as health problems, for example disease outbreaks such as dengue fever, skin diseases, coughs and colds. Climate change can also cause crop failure in the rice, sugar cane, vegetable and other sectors. This can have an impact on economic growth. This disrupts the normal natural balance, such as storms due to changes in rainfall, drought due to increasing temperatures and increasingly scarce water.

4. RESULTS AND DISCUSSION

The location of this research is in Bale Banjar Pekandelan Legian which is located on Jalan Raya Legian Number 430, Legian Tengah Environment, Legian Village, Kuta District, Badung Regency, Bali Province, Indonesia. The regional boundaries of this banjar neighborhood are:

North : Legian Kaja Environment
East : River/Tukad Mati
South : Legian Kelod Environment
West : Indian Ocean

Becomes part of the Legian Traditional Village area which oversees three banjars (Banjar Legian Kaja, Banjar Pekandelan Legian, and Banjar Legian Kelod). This bale banjar has two floors in its embodiment. The ground floor is in the form of a wantilan (meeting room) along with a warehouse/lodge, toilet, kitchen/Perantenan, and Bale Kulkul. The second floor contains the Pengulun Banjar Temple, traditional bale/bale adat, ceremonial equipment storage warehouse, and bale gong. Bale banjar also applies the Tri Hita Karana and Tri Angga concepts to the physical form of the building with the Pengulun Banjar Temple located in the main zone, the North-East zone.

During its development, bale banjar underwent three repair or renovation processes (which were documented by local residents). In the three renovation processes that have been carried out, all three generally used environmentally friendly and local building materials/materials and did not use an artificial air conditioning system. Besides, the nature of the building is open (open space), so air circulation runs smoothly. The wantilan/open building concept is maintained because it is in accordance with the general concept used in bale banjar buildings in Bali.

The significant changes in appearance can be seen not only from the increase in the number of floors and the addition of traditional Balinese decorations given to the newest Bale Banjar building, but also from the location of the Parahyangan, Pengulun Banjar Temple. Initially it was located on the first floor, then Pengulun Banjar Temple was moved to the second floor. This action was taken as a step to show the respect and importance of the spiritual aspects of the local community towards God Almighty and resides at the Pengulun Banjar Temple in the form of Ida Betara Begawan Penyarikan and Taksu Pregina. Elevating it from a literal and figurative understanding. The evolution of bale banjar is proof of the adaptability of local culture in responding to the challenges of facing changing times.

This shows how the community has succeeded in making the traditional function of Bale Banjar survive while still adapting its form to suit today's needs (Mahastuti & Wijaatmaja, 2024). This action was also taken to adapt to the increase in the number of residents and the social, religious and economic activities carried out there. Apart from that, because the economic situation of local residents has improved with the support of tourism, they have been able to repair or renovate the condition of the bale banjar so that the newest bale banjar has a more sturdy and representative appearance. It is also hoped that this will be an example for the younger generation in building/renovating in the future so that they will also pay attention to traditional building philosophies and the environmental sustainability that accompanies them.

The next discussion focuses on the materials/building materials used in creating the newest bale banjar, the thing that is maintained as the main raw material is red brick material as the main material for building walls, also something that confirms that this bale banjar was built in the Badung Regency area. This area is identical to the Bebadungan building style. The word Bebadungan from an etymological point of view is understood as everything that is connected to Badung (region). In relation to architecture, the word Bebadungan is generally used to express the form or style of architecture that commonly develops in the Badung area (and its surroundings), which is also related to the city of Denpasar and is dominated by the use of red brick material in its embodiment.

The red bricks that were installed were not in a simple pattern or model but were also carved and shaped in several parts by traditional Balinese artists to obtain traditional Balinese decoration according to placement according to *Tri Angga* regulations. These decorations are related to beautiful forms of plants, animals and other forms that can be imitated from the natural surroundings. Apart from red bricks, this bale banjar building is also combined with the use of wood and palm fiber in applying building materials to one of the forms of space. Wood material is used in several beams on the ground floor and in the traditional bale building on the second floor. Wood material is also used in several parts of the supporting pillars typical of traditional Balinese architecture. Meanwhile, palm fiber is used in one part of the Pengulun Banjar Temple, namely, Pelinggih Tajuk. In this case, fiber is used as roofing material. This is commonly done in Bali, where most of the sacred buildings use roofing materials made from palm fiber. Apart from considerations of sacredness/sanctity, it is also because of the ease of obtaining this building material.

Figure 2. Use of local building materials in Pelinggih Tajuk and Bale Adat
Source: Mahastuti, 2023

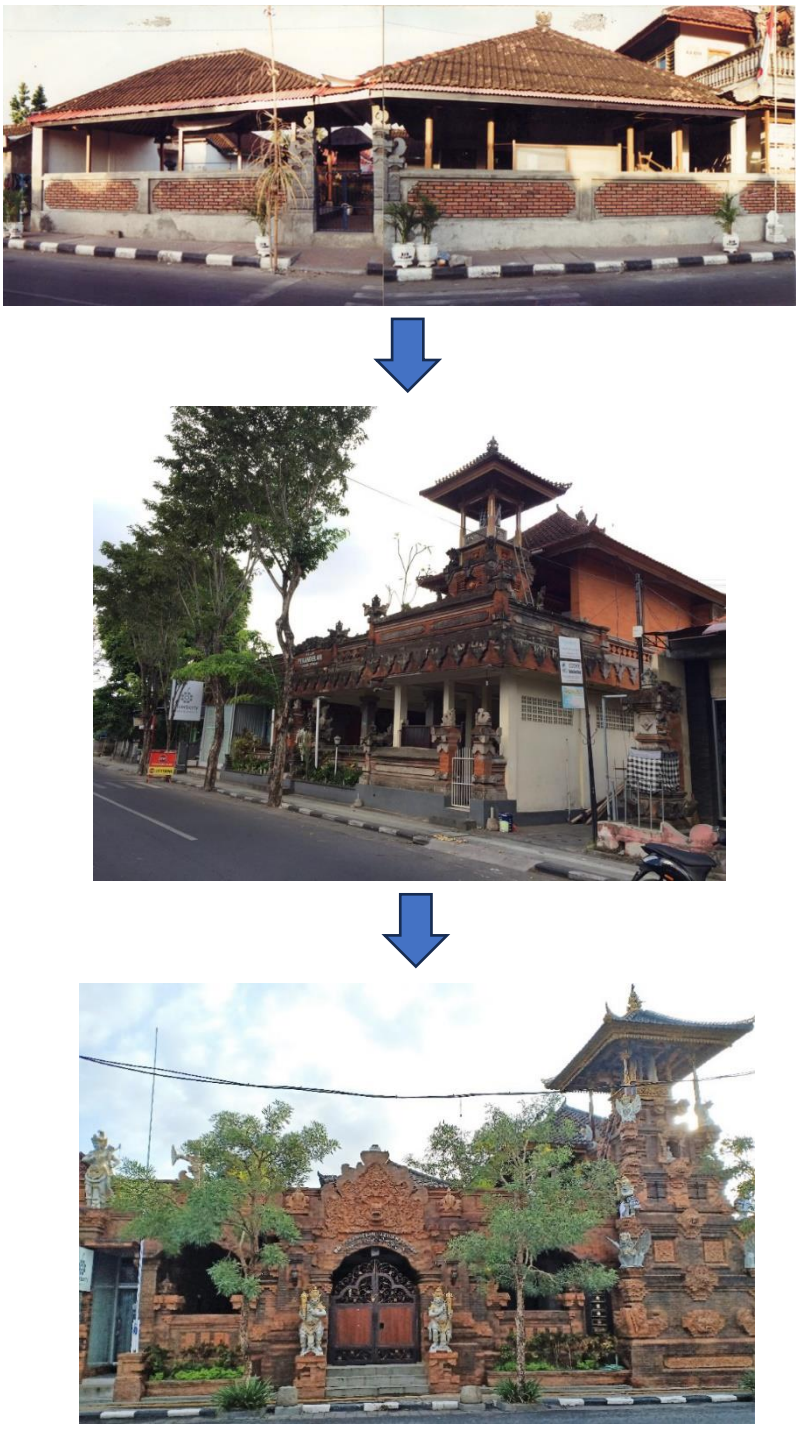

Figure 3. Changes that occurred at Bale Banjar Pekandelan Legian. All three have in common the use of red brick material as their constituent material.
Source: Suama, 1990 and 2005, Mahastuti, 2018

Bricks are an environmentally friendly material that has been widely used since ancient times. Bricks are used as a building material by playing in pairs, so that from this a special, unique architectural form is created and at the same time becomes a certain characteristic. This form is possible due to the basic nature of bricks as a building material which has limitations, has pores/small holes, is brittle/easily brittle or breaks easily, and is modular/has its own standard size. Red brick is made from a mixture of organic materials in the form of clay and other additional ingredients. In

western countries, brick or adobe brick is made from a mixture of clay and straw. Brick is superior in terms of its ability to dampen sound so it is suitable for use in busy areas, so this material is deemed suitable for use in the Legian area where motorized vehicles pass by. This material has an aesthetic appearance and can be used with or without additional layers, and it is easy to carve and process into decorations. Architects can also be creative with the shape and angle of installation for more attractive results. Apart from that, buildings made from red brick are also an implementation of a return to the Bebadungan style (the original architectural style of the Badung/Denpasar area and its surroundings). Apart from that, other benefits of red brick as an environmentally friendly material are that the building structure created will be stronger and more resistant to damage, healthier because it uses 100% natural materials, and can prevent mold because red brick can absorb moist air more quickly.

Apart from using environmentally friendly materials, this bale banjar also applies vegetation arrangements to the front of the building facade. As can be seen in the picture recorded using the tabebuya (a type of plant that originates from Brazil and is a type of large tree. This plant is often mistaken for a cherry blossom plant by most people, because when it flowers it looks similar to a cherry blossom) tree as a shade which functions as a barrier from sunlight in the afternoon, apart from that it also functions as an added aesthetic element to this bale banjar. Then the use of several ornamental plants and shrubs is also displayed on the front of this building. As is well known, plants have many benefits for the continuity of the ecosystem. Among them are producing oxygen and reducing carbon dioxide in the air. Oxygen is a gas that humans and animals need to breathe. Meanwhile, trees have the ability to carry out photosynthesis which produces oxygen gas and glucose compounds. At the same time or while photosynthesis is taking place, plants suck in or absorb carbon dioxide gas. Apart from that, plants also have the benefit of preventing the rate of water and erosion so that they can prevent or reduce flood levels, maintain soil fertility, make the environment more comfortable (a shady environment with lots of trees will feel more pleasant, cool, prevent noise and heat, and adds to the beautiful scenery), apart from that it also reduces air pollutants (air pollution which produces toxic gases such as carbon dioxide, sulfur dioxide and sulfuric acid which have the potential to produce acid rain and cause skin damage and corrosion).

An example of utilizing natural energy and storing good energy can also be seen from the open condition of the bale banjar on each floor, namely on the ground floor and second floor so that air and light circulation flows well. During the day, the lamps/artificial lighting do not need to be turned on because bright sunlight is able to illuminate almost all parts of the bale banjar, so it does not disturb and even helps when the activities of the residents take place inside. Likewise, this bale banjar does not use an air conditioning system made by AC (Air Conditioning). As already understood, one of the main negative impacts of using AC is high energy consumption. An air conditioner is a device that requires significant electrical power, especially when used excessively or with very low temperature settings. Some air conditioners with old systems use refrigerants (cooling agents) which according to experts can damage the ozone layer in the atmosphere, such as CFCs (Chlorofluorocarbons) and HCFCs (Hydrochlorofluorocarbons). This ozone layer functions to protect the earth from dangerous ultraviolet radiation. Even though there has now been a shift to refrigerants that are claimed to be more environmentally friendly, there are still old ACs that use this dangerous refrigerant. ACs that emit external heat as a byproduct of the cooling process can have an impact on global warming if the system is not running efficiently. This happens because a hard-working AC unit emits heat into the outside air, this heat can increase the temperature of the surrounding environment and contribute to climate change. Climate change can have an influence on activities on earth. Excessive use of AC can lead to greater dependence on fossil energy sources such as coal and petroleum. This has the potential to make the carbon emissions problem worse and

have a negative impact on the environment. Therefore, by not using an Air Conditioning System, this bale banjar contributes quite a lot to maintaining comfort and preserving the environment.

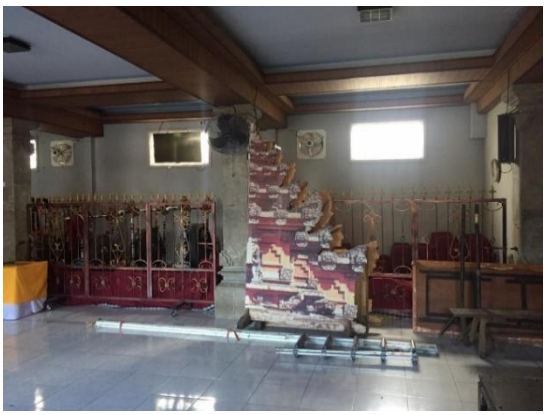

Figure 4. Utilization of sunlight for lighting during the day and the presence of vegetation in the form of trees as an oxygen producer.
Source: Mahastuti, 2023

5. CONCLUSION

Individually or in small groups, there is not much that can be done to store energy, utilize the largest energy source in the universe (sunlight), anticipate climate change and prevent air, light and sound pollution. However, in its implementation, the daily life of Bale Banjar, which is in the midst of the excitement of tourism, modernity and technological progress, is able to make a small effort as an effort to help preserve the environment. This effort is carried out with the concept of environmentally friendly buildings, namely buildings whose construction, design and operation aspects are environmentally based. The main goal of this concept is environmental and natural safety. This can be seen from the materials used to create the building itself, which is dominated by the use of red brick and some use wood and palm fiber, especially in the bale adat, bale kulkul, and Pengulun Banjar Temple. Likewise, the way it is built uses more traditional labor and involves cooperation or what local residents call mutual cooperation (gotong royong). Another way to do this is to maximize openings for air circulation/exchange or cross ventilation and utilize solar energy to illuminate the room during the day. This is considered very effective because it saves quite a lot of energy, especially in terms of the electrical power consumed. The rest is not using an artificial air conditioning system and the presence of shade trees to produce oxygen for the survival of living creatures. Thus, the overall concept of

environmentally friendly buildings can simply be applied to this bale banjar. One thing that still needs to be noted in this case is the application of technology in the application of several devices to turn on lights at night. It would be good to carry out further research to find a solution for storing solar energy and then using it as an electricity generator. In this way, the use of natural energy sources without damaging the environment can truly be maximized for a better future.

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