

***Jaga Satru*: Environmental Conservation of Tenganan Pegringsingan Village Community, Bali for Sustainable Development**

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Abstract. This article discusses *Jaga Satru*, the concept of living in the village of Tenganan Pegringsingan as an effort to conserve the environment. It focuses on how the implementation of *Jaga Satru* contributes to environmental conservation by utilising the traditional knowledge and practices of local communities. Using descriptive qualitative research methods, this article shows that *Jaga Satru* plays an important role in maintaining ecosystem balance and conserving natural resources while preserving local cultural traditions. The implementation of *Jaga Satru* in the context of sustainable development can be seen from three main aspects, *Jaga Satru* as an awig-awig of settlement spatial planning, a symbol of community belief, and traditional ceremonies. All three can be seen in daily life practices such as customary forest management, organic farming and the creation of environmentally friendly areas. The implementation of *Jaga Satru* in the Tenganan Pegringsingan village community provides dual benefits, protecting biodiversity and vulnerable ecosystems while strengthening cultural identity through active community participation in environmental conservation. As such, *Jaga Satru* has proven to play an important role in achieving environmental and social sustainability.

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1 Introduction

Various new changes towards sustainable development are the goals of the creation of the Sustainable Development Goals (SDGs), which are divided into 17 development targets. The decline in environmental quality is one of the main problems to be addressed in the SDGs because it is still prevalent in global media coverage, both in developed and developing countries. Various land closure activities due to development, industry, and the provision of facilities for residential interests often ignore the impacts on the natural and social environment [1]. According to the Badan Pusat Statistik (BPS), Indonesia's land cover area in forest areas in 2021 reached a considerable figure, namely 108,913.6 ha consisting of 22,597 ha of conservation forest cover, 28,975.9 ha of protected forest cover, 26,537.2 ha of limited production forest cover, and 30,803.5 ha of permanent production forest cover [2]. The data shows a very worrying condition considering that an increase in the rate of forest destruction will reduce the function of forests in preventing pollution [3]. The rampant land closure in the rural environment causes the level of pollution of the village environment to continue to increase. Seeing this condition, sustainable development is needed in the village area that can go hand in hand with the wise management of ecological resources by local communities [4].

Sustainable development that involves the role of the community has actually been contained in various local wisdom in Indonesia, especially in several villages in Bali. Bali Island is known to have quite complex tourism dynamics with more than a hundred years old [5]. However, capitalization and the tourism industry pose various risks that are not environmentally friendly, socio-ecological impacts, and culture that focuses on the participation of local communities in tourism [6]. This is slowly destroying the spatial layout of residential areas in Balinese villages, which has actually been regulated in customary rules called *awig-awig*. However, there is one village in Bali that has successfully implemented the concept of fortifying itself in *awig-awig* as an effort to maintain environmental sustainability, namely Tenganan Pegringsingan Village.

Tenganan Pegringsingan Village is located in Manggis Sub-district, Karangasem Regency, Bali is one of the three Bali Aga villages or original Balinese villages. This village has a uniqueness related to the spatial layout of residential areas that have not changed for hundreds of years [7]. This is based on the application of the *Jaga Satru* concept as the foundation for the formation of *awig-awig* (customary rules) in this village which is a hereditary tradition. *Jaga Satru* is a concept to fortify

oneself from external attacks, either directly, or attempts to damage the mentality of the community [8]. This concept is then implemented in *awig-awig* (customary rules) which in writing regulates the spatial layout of the Tenganan Pegriingsingan Village settlement area which seems to be fortified from the outside area due to the walls surrounding the village settlement [9]. The governance of the village area is intended to control outside cultural elements and give direction to cultural development so that Tenganan Pegriingsingan Village can keep up with the times without damaging its environment [8]. In addition to Tenganan Pegriingsingan Village, studies on environmental preservation based on Balinese local wisdom have actually been carried out by several researchers, such as studies on regional divisions in Badung Regency, Bali using conflicting concepts, such as Luan-Teben (Hulu-Hilir) and Kaja-Kelod (North-South) [10], as well as on civic culture in the culture of the Bali Aga community in Trunyan Village related to the application of *Tri Hita Karana* [11].

In contrast to previous studies, the main problem in this article is the decline in environmental quality in today's global society and the contribution of *Jaga Satru* of Tenganan Pegriingsingan Village, Bali to sustainable environmental preservation. These problems are discussed more specifically in two questions, namely first, what are the local wisdom values in the concept of *Jaga Satru* that are lived and practiced by the people of Tenganan Pegriingsingan Village? Second, how is the correlation between the concept of *Jaga Satru* of Tenganan Pegriingsingan Village and the Sustainable Development Goals (SDGs)?

2 Method

Descriptive qualitative method was used in this research through three stages starting with data collection, then data analysis, and finally data presentation [12]. Data collection was conducted through literature studies to obtain relevant literature sources and in-depth interviews with traditional leaders of Tenganan Pegriingsingan Village. The collected data were then analyzed through a process of reduction, categorization, synthesis, and conclusion drawing. The analysis is carried out with the interpretation of components and data which aims to explain in depth about the concept of *Jaga Satru* and how the concept is practiced by the community. Then, the results of the research are presented through the preparation of a paper that harmoniously explains the study of the concept of *Jaga Satru* as an effort to realize local wisdom-based SDGs. Data presentation aims to communicate research results to readers and present them in a systematic writing.

2 Result and Discussion

2.1 The People of Tenganan Pegringsingan Village, Bali and the Values of *Jaga Satru*

Tenganan Pegringsingan Traditional Village is one of the traditional villages located in Manggis District, Karangasem Regency, Bali. Tenganan Pegringsingan Village is still preserving the noble culture of the ancestors as *Bali Aga* or the community is still thick with the original Balinese cultural values with Indra Hinduism. The population of Tenganan Pegringsingan Traditional Village is currently recorded at 232 households (KK) or \pm 670 people [13]. Tenganan Pegringsingan Village also consists of three banjars, namely Banjar Adat Kauh, Banjar Adat Tengah, and Banjar Kangin (Banjar Pande). The village is located \pm 2 km from the seaside with an altitude of about 70-400 m above sea level with an average temperature of about 20^o C in the dry season [14]. The average livelihood of the people of Tenganan Pegringsingan Village is as farmers and breeders. In addition, the origin of this village has two historical versions that come from the Ujung Inscription and the folklore of Indra (God of War). Etymologically, Tenganan comes from the word "middle" while the word Pegringsingan comes from the word *gering* and *sing* which means that the village centered in the middle will avoid disease and other bad influences so that Tenganan Pegringsingan Village is a pure village free from outside influences [14].

Tenganan Pegringsingan Village is an area that is committed to preserving the environment by maintaining their local wisdom. The people of Tenganan Pegringsingan Village have the concept of *Jaga Satru* which is a guideline in maintaining a harmonious relationship between the village community and nature. The concept of *Jaga Satru* is interpreted by the local community as a concept of fortifying themselves from the outside environment that has a negative impact on the environment [8]. The concept of *Jaga Satru* is based on the community's belief about their ancestors who worked as soldiers because in general the village community worshiped Lord Indra as the god of war so that it was called the Indra Hindu sect [7]. The realization of the concept of *Jaga Satru* is manifested in three forms, namely the form of *Jaga Satru* as *awig-awig* (customary law) of Tenganan Pegringsingan Village settlement spatial planning, the form of *Jaga Satru* in various symbols used by the community, and the form of *Jaga Satru* contained in the village traditional ceremony.

The form of *Jaga Satru* as *awig-awig* of settlement spatial planning can be seen in the people of Tenganan Pegringsingan Village who have

agreed on a number of customary laws (*awig-awig*) since long ago concerning restrictions on acts of environmental destruction so as to create a balance between humans and the environment. *Awig-awig* based on the concept of *Jaga Satru* regulates the spatial layout of village settlements so that *Jaga Satru* also influences the spatial form of community settlements in this village to limit environmental destruction due to uncontrolled development. *Jaga Satru* appears in the form of Tenganan Pegringsingan Village settlements that resemble barracks or fortresses with doors located on all four sides of the village. The chapters of the *awig-awig* are written in Sanskrit on lontar leaves that are currently kept on the roof of Bale Agung [15]. The *awig-awig* regulates the prohibition of planting certain crops, trees that are forbidden to be cut down, fruits that should not be picked, how to collect crops in the village area, the care and release of animals, and sanctions for violations such as stealing fruit or cutting down prohibited trees. All of these regulations are explained in several chapters of *awig-awig*, including chapter 3, 8, 10, 13, 14, 38, 51, 61 [15], as follows:

Table 1. The chapters in the *awig-awig* regarding environmental preservation.

Chapter	Content
3	The punishment given to a thief who steals garden produce where they are obliged to pay a fine and also receive a <i>sikang</i> penalty (prohibited from entering certain places in the village).
8	Prohibition on planting several types of plants in the village, such as the prohibition on planting tarum trees, shallots, and garlic. In addition, there is also a prohibition on making alcoholic beverages. If violated, a fine will be imposed.
10	Regulates fines given if there are people outside the village who use forest products from Tenganan Pegringsingan Village.
13	There is an obligation for all the people of Tenganan Pegringsingan Village to make donations in the form of agricultural products to one of the village people who is

	carrying out traditional ceremonies.
14	Contains rules regarding what types of trees can be planted in village areas and prohibitions on cutting down and burning trees in certain areas.
38	Contains rules regarding what crops are forbidden to take, such as a banana tree that bears fruit for the first time and may not take more than one handful of betel leaves
51	Migrants who are in the village of Tenganan Pegringsingan are prohibited from releasing animals in the fields and rice fields of the village.
61	Regulate the utilization of forest products affected by natural disasters. If there are wooden trees fallen by the wind in the Tenganan Pegringsingan Village area, such as durian and tingkih trees, they may be collected by the people in Tenganan Pegringsingan. However, if the trees that fall are teap, jackfruit, cempaka trees, then it is prohibited to take them and all of the wood should go into the village storage. If someone violates it will be fined.

In addition, the village *awig-awig* also regulates the division of three village areas, namely *main mandala* (inner area), *madya mandala* (middle area), and *nista mandala* (outer area). *Nista mandala* or the outer area is an area that strengthens the application of the *Jaga Satru* concept for environmental conservation in this area because there is a village border area called *karang ngembang* which is deliberately vacated as a separator between the Tenganan Pegringsingan Traditional Village and other villages. In addition, the *nista* area also includes areas of green open space called *awangan* which are sanctified by the people in the Tenganan Pegringsingan Traditional Village and also surrounded by grave areas in the east and west of the village. The location of this *awangan* area may not be built as a preventive measure for environmental damage.

Jaga Satru as environmental conservation is also seen in other forms, such as in the use of symbols contained in the gringsing woven fabric as one of the commodities of the Tenganan Pegringsingan Village community. One example is the *lubeng* motif which resembles stars in the

sky, red, black, and white, and is accompanied by a scorpion motif that symbolizes animals that guard the four cardinal directions. This motif means that in Tenganan Pegringsingan Village there are four entrances from all directions. The shape of the motif that resembles a scorpion animal has the function guarding of the entrance to Tenganan Pegringsingan Village so that negative things coming from outside will not be able to damage the environment in the village. In addition, the form of *Jaga Satru* can be seen in several traditions of this village, such as the *matruna nyoman* ceremony which contains a procession of *ngintarang ketekung* where teenage boys will be introduced to the environment of rice fields, forests, gardens, and sacred places and how to preserve them. There is also a *pandan war (mekare-kare)* as a representation of the concept of *Jaga Satru* or self-fortification and means maintaining the balance of the relationship between *main*, *middle*, and *nista* in their bodies first and then can be applied to the preservation of the village environmental area.

2.2 Correlation of *Jaga Satru* Practices in Tenganan Pegringsingan Village Community, Bali with *Sustainable Development Goals* (SDGs)

Tenganan Pegringsingan Village as a Bali Aga Village has an environmental concept that is in harmony with nature called *Jaga Satru*. The existence of the *Jaga Satru* concept applied in residential areas, is a solution in realizing SDGs number 11 relating to "Sustainable Cities and Settlements". This is because the *Jaga Satru* concept considers behavior in building settlements by sourcing traditional building forms that are oriented towards the center. The behavior carried out is like a fort-shaped building arrangement characterized by four sides of the door according to the cardinal directions and a residential area placed in the middle [9]. Behavior that considers the arrangement of buildings aims to minimize natural disasters such as flooding and ensure safe access to settlements. In addition, behavior based on *Jaga Satru* is also practiced in the selection of materials such as bamboo, wood, palm fiber, and stone sourced from local materials. The material selection is considered to have superior quality because it utilizes renewable materials from nature. Not only that, the settlement pattern that prioritizes green open space (*awangan*) is a place for life and its manifestation in maintaining harmony in Tenganan Pegringsingan Village. Open space for the community is a way of survival to maintain plants and fertility. This is very relevant to SDGs number 11, especially the provision of safe green open space and sustainable forest management [16].

The relevance of *Jaga Satru* values to the SDGs is also evident in the

strong relationship between the practice of *Jaga Satru* by the people of Tenganan Pegringsingan Village and SDGs number 15 relating to "Terrestrial Ecosystems". The SDGs target for terrestrial ecosystems, one of which prioritizes increasing the implementation of sustainable management of all types of forests, stopping deforestation, restoring degraded forests and significantly increasing forests and reforestation globally. The concept of *Jaga Satru*, embodied in the *awig-awig* (customary law) of settlement spatial planning, has clearly regulated this matter, which concerns the mechanism for cutting trees in the village, which requires permission from local elders and what natural resources may or may not be exploited for the benefit of both the village and the family. The interesting thing is that *Jaga Satru*, which is manifested in the *awig-awig* of settlement spatial planning, is not just a rule contained in a written document, but is actually implemented in reality by the entire village community so that it can be seen in reality that Tenganan Pegringsingan Village is able to prevent deforestation and control forest utilization. In addition, the practice of *Jaga Satru* also appears relevant to another SDGs target number 15, namely the mobilization and significant increase in financial resources from all sources to conserve and sustainably utilize biodiversity and ecosystems. The utilization of biodiversity can be seen from the livelihoods of residents who generally work as farmers and have handicraft businesses, such as gringsing weaving and lontar handicrafts where the raw materials are utilized from commodities produced in the village.

3 Conclusion

Based on the description above, it is concluded that Tenganan Pegringsingan Village has a unique concept, namely *Jaga Satru* which is the foundation for the formation of *awig-awig* or customary law that applies in the village. *Jaga Satru* is interpreted as the concept of fortifying oneself from external influences that come from the beliefs of the village community with its Hindu Indira teachings. *Jaga Satru* in Tenganan Pegringsingan Village has three forms, namely *Jaga Satru* as *awig-awig* for settlement spatial planning, *Jaga Satru* in community symbols, and the concept of *Jaga Satru* contained in several village ceremonies. This concept has a close relationship with environmental preservation so that it is also relevant to realizing the Sustainable Development Goals (SDGs), especially in SDGs number 11 regarding "Sustainable Cities and Settlements" and SDGs number 15 regarding "Land Ecosystems". With this relevance, Tenganan Pegringsingan Village can actually become a model for implementing local wisdom in realizing SDGs for other areas as a preventive measure and solution to uncontrolled environmental damage.

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