

## **Environmental Education Model for Millennial Generation in Era 4.0 (Case Management Forest TNBTS In Ngadas Traditional Village Ethnic Group Perch)**

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### **Abstract**

*This scientific work aims to discuss the implementation of the local wisdom of the indigenous people of Ngadas Village in managing forests and its meaning in environmental education for the millennial generation in the 4.0 era. As form study qualitative, research data obtained through observation, study bibliography, and interviews deep with 11 informants, i.e., observer tourist Malang culture in Village custom Sounds bad. The collected data were analyzed descriptively and qualitatively. Study results show that law custom in a manner consistent applied in management forest tour village Sounds bad . Community local very comply and implement local wisdom, among others, with the realization that they are part of the natural local, no damage forest flora and fauna potential, as well as utilize results forest in a manner adaptive. Application wisdom local in managing forests Sounds bad adaptively has direct implications for cultivating behavior that supports efforts to preserve the environment. The attitude and behavior of the Ngadas people in adaptively managing the forest is a model of direct education for local millennial children in an effort to preserve the environment.*

**Keywords:** Education, Environment, Generational, Era 4.0, TNBTS.

### **Introduction**

Tourism is a leading sector in the world. Tourism is estimated by the World Tourism Organization (WTO) in Sabri (2006) as a prospective sector that will continue to grow, with tourist visits reaching 1.6 billion to various parts of the world in 2020. In the last 30 years, Budeanu (2007) said that tourism has been successful. become the prima donna sector and experience significant development.

According to Wang and Wall (2005), tourism development as an industry is strongly influenced by environmental factors. Buck and Law in Pitana and Gayatri (2005) view the image of the tourism industry as becoming an increasingly important priority in line with the increasing intensity of global market growth. The image of tourism is something that is fought for in gaining tourist loyalty through strengthening direct impressions and advertisements (Piskorski, 2011). Malang Tourism is an icon of Indonesian tourism in the eyes of the world.

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Malang tourism has become a barometer of the development of national tourism because it is considered to have developed rapidly and contributed significantly to national development. Wihadanto and Firmansyah (2013) said tourism is the leading sector in the Malang region. (Bungin, 2015). Malang tourism is increasingly known after the closeness between Javanese culture and Malang culture was found in 1930 (Picard, 2006). Thus, the development of cultural tourism has become a representation of Malang tourism, where the services and products of Malang cultural tourism are most in demand by tourists when in Malang and are still always offered to tourists.

The determination of Malang cultural tourism in Malang tourism development was inaugurated based on Malang provincial regional regulation number 2 of 2012 concerning Balinese Cultural Tourism. This regulation replaces the Regional Regulation of the Province of Malang Number 3 of 1991 concerning Cultural Tourism, which is considered no longer in accordance with national tourism policies. In line with the national tourism policy, tourism development in Malang also includes ecotourism. Ecotourism is a form of conservative tourism for regional welfare and the preservation of the natural environment (Damanik et al., 2006).

Ecotourism is a form of solution to improve the negative image of tourism development. Richardson and Fluker (2004) say that tourism has had an impact on environmental change. Damage and environmental imbalance due to the lack of green land post-tourism development create a negative image for tourism (Budeanu, 2007). As an alternative to tourism, Koslowski and Travis (2010) say that ecotourism is a typical tourism activity that favors ecological sustainability in tourism development.

The tourism sector that relies on the potential of the natural environment (ecotourism) is a type of tourism that has been successfully developed and is sustainable in the traditional village of Poncokusumo. Considering that Ngadas is known as a Ngadas village because it has a Tengger cultural tradition that is different from other villages in Malang, it has great potential to develop sustainable cultural tourism. However, in the traditional village of Ngadas, ecotourism has actually developed, which until now has also been able to be sustainable in the traditional village of Ngadas, Malang.

The existence of ecotourism in the era of the Industrial Revolution 4.0 is becoming increasingly important. Industrial Revolution 4.0, or The Fourth Industrial Revolution, is an era in which digitalization and automation technologies are increasingly playing an important role in various economic activities, especially in the manufacturing industry activity sector. There are several key technologies that characterize this era, such as artificial intelligence, the Internet of Things (IoT), supercomputers, genetic engineering, automation technology, and several other digital-based technologies.

Commitment to maintaining harmonization of the earth and the environment can be further optimized through the use of information technology based on Internet of Things (IoT) solutions through the Nusantara Earth Observation Network (NEOnet) and the Deputy for Natural Resources Development Technology (TPSA) at BPP Teknologi. Optimizing the adoption of the Industry 4.0 concept for the earth (Earth 4.0) as well as for managing the environment and natural resources (SDA) in accordance with the principles of natural sustainability has great potential to support the government's efforts towards the Industrial Revolution 4.0 (Anonymous, 2018; Research and Technology Higher Education, 2019).

Ngadas Traditional Village is a village in the Poncokusumo District of Malang Regency. Ngadas Village is one of the 36 Tengger Tribes spread over four districts or cities, namely Malang Regency, Pasuruan Regency, Lumajang Regency, and Probolinggo City. Located in the middle of the Bromo Tengger National Park area, Semeru (TNBTS), Ngadas is a TNBTS enclave where the air is cool and relatively cold because it is at an altitude of 2150 masl and has an area of about 395 ha with a hilly topography. With stunning mountain panoramas, Coco/K is perfect for travelers seeking serenity. Ngadas was

designated as an Indigenous Tourism Village by the Government of Malang Regency because it has the potential for authentic Tengger tribal culture that needs to be preserved and a variety of natural resources with highland characteristics.

In this regard, the purpose of this study is to discuss: (1) How is the implementation of the local wisdom of indigenous peoples in managing forests in Ngadas Traditional Village? (2) What does adaptive forest management in Ngadas mean for environmental education for the millennial generation?

## **Research Methods**

The research was conducted from May 2022 to June 2023 in Bromo Tengger Semeru National Park and focused on the people of Ngadas Village, Poncokusumo District, Malang Regency, East Java. This scientific work is the result of qualitative research on forest management in the Ngadas customary god. The research data were obtained through observation, literature study, and in-depth interviews with 11 informants, namely cultural tourism observers in Malang and traditional prajuru of Ngadas Village. The collected data were analyzed descriptively and qualitatively. It is hoped that through this publication a valuable lesson can be learned that local wisdom, in the form of law and custom, holds an important position in the lives of indigenous peoples and supports efforts to preserve the environment and develop sustainable tourism.

### **Data Exposure and Discussion: Local Wisdom of Indigenous Communities IN Ngadas Forest Management**

Ngadas is a village in the Poncokusumo District, Malang Regency, East Java Province. Ngadas is one of the 36 villages of the Tengger Tribe, which are spread over four districts or cities. Located in the middle of Bromo Tengger National Park Semeru (TNBTS), Ngadas is a pocket (enclave) of TNBTS and is at a height of 2150 m with an area of about 395 ha with a hilly topography (see Figure 1). Most of the people work as farmers, with Javanese Buddhist beliefs at 50%, Islam at 40%, and Hinduism at 10%. Pramita, NH; Indriyani, S.; and Hakim, 2013). Because it is located at an altitude of more than 2200 meters above sea level, the air temperature in Ngadas tends to be cold; the temperature around Ngadas ranges from 0°C to 20°C. Since 2007, Ngadas has been designated as a tourist village by the Government of Malang Regency because of its variety and potency in nature.



Figure 1: Ngadas village forest in the highlands

Tribal society of Tengger has its own local wisdom that is still maintained. When viewed from the perspective of the participation of the community in natural management. The concept of natural wisdom can usually be found in songs, proverbs, sesanti, advice, mottos, and ancient books that are inherent in the behavior of everyday life. The problem

faced by the people there is not realizing that the influence of local wisdom is there and that it is prone to modernization because it is open to the public.

According to the World Tourism Organization (UN-WTO, 2010), tourism is one of the fastest-growing industries in the world. Tourism is even the main source of state revenue. In addition, tourism also provides many benefits for a country, such as employment opportunities that can help revitalize the local economy. The tourism sector of a country must be developed so that it can attract tourists to visit.

Ngadas Traditional Village has conditions of a forest village locality that are still relatively beautiful because of the life of flora (plants, trees, fruits) and fauna (livestock) that exist and are still protected. Because management has been done. The behavior wisdom environment to do public Tengger, explained by the State (2010), confirms that the Ngadas people do not sell land to people outside their territory. In fact, the people in Ngadas village set customary provisions regarding the value of five non-commercial trees in the Bromo Tengger Semeru National Park (TNBTS) area, equivalent to 50 sacks of cement, and planted 300 fir trees in the former logging site.

Apart from that, in forests, there is a ban on cutting down trees in the forest with a penalty of cutting 1 and planting 100. This also applies to springs by not destroying the surrounding area, and will not commodify the water source for use by other villages. In addition, the Ngadas people also conduct self-introspection on their behavior towards the environment through the consistent implementation of traditional ceremonies such as Kasada, Karo, Unan-unan, Pujan Mubeng, Barikan, and Leliwet.

The people of Ngadas Village use the Tengger Sand Sea and Mount Bromo areas as locations for traditional ceremonies such as Yadnya Kasada, Mendhak Tirta, and the Kenduri Ritual at Watu Kutha. Collecting firewood and grass is a form of interaction that is often carried out by the community. The habit of people looking for firewood is difficult to get rid of because, apart from being used for cooking, it is also used as a space heater.

The problem of encroachment on areas by communities directly adjacent to the TNBTS area often occurs in the TNBTS area, especially in Ngadas Village. The Ngadas Village community expanded their land by hoeing the land and moving or shifting the boundary markers so that the land that was originally included in the TNBTS area entered community land. Purwaningrum (2006) states that people living in enclave areas carry out encroachment because they are motivated to obtain relatively fertile land with the hope of obtaining relatively high agricultural yields.

Another form of community interaction is the utilization of water from within the area by constructing storage tanks and water pipelines. The pipe network and storage tanks were built by water users on their own. The TNBTS enclave community also uses the TNBTS area for traffic to other villages, such as Ngadisari and Mororejo Villages.

According to Astuti (2005: 2) indicates that the knowledge, attitudes, and behavior of the community based on the score obtained by each indicate that the community does not know and understand correctly about the forest area, or TNBTS. However, the community is starting to realize that forest destruction can result in water shortages in their village.

Moderate attitudes indicate that the community has a preference for attitudes that are less concerned about preserving and do not reject the existence of forests or TNBTS, and behaviors that indicate that communities still interact negatively with forest areas or TNBTS but do not cause serious damage to the area. (Senasri, 2008).

#### Indigenous Forest Conservation Education

Bromo Tengger Semeru National Park has realized activity education conservation, or build love for nature, fine through track schools around area conservation, as well as

through groups of the public such as PAM SWAKARSA, the Fire Care Society (MPA), as well as porters and guides on tours. Build love naturally through track school has already been realized for primary and secondary schools that are in the originating TNBTS buffer zone from Subdistrict Poncokusumo and District Wajak, Malang Regency (BTNBTS, 2006).

In 2006, it was also carried out, Build Love Natural, for students of SMP Negeri 1 Poncokusumo who participated, including student council members and representatives of the chairman class. The methods used are lectures, discussions, and, at the end, activity evaluation For knowing and understanding the participant. Material learning covers conservation sources, natural biodiversity and its ecosystem, the introduction of TNBTS, as well as protected species of flora and fauna. Besides, it is also done in activities like widya tours to areas of ex-situ conservation.

Activity education aimed at conservation for the general public is done through activity counseling or pasted into the manufacturer's agreement with society. Other approaches are through group public specials such as porters and guides tourism, PAM SWAKARSA, and Community Concerned Fire (MPA). TNBTS also provided education skills for the public, like training in the cultivation of orchids in an effort to empower the surrounding community area. Activity education aimed at conservation For visitors to Park National is done with methods serving examples of life in nature as well as linkages with the environment around them, which are displayed in the center's information center for visitors, trails interpretation, brochures, leaflets, posters, board directions, and board interpretation.

Bromo Tengger Semeru National Park: Keep going and make an effort to grow and improve awareness about conservation sources of power, natural biodiversity, and its ecosystems among society. Conservation education will be formally conducted in enclave schools and around the area. The same is true with the Department of Local Education, starting at the school level until medium. TNBTS will develop a module called Love Nature For students and their nature, Still integrated with science lessons.

Besides that, we will hold a training special for local teachers in the TNBTS area. Conservation Education by Parties Parties involved in activity education conservation in TNBTS consist of institutions of education, Paramitra Institute East Java, and students. Activity education and conservation by each party served in Table 1

Table 1. Conservation education by stakeholders

<b>PARTY</b>	<b>Type Of Activity</b>	<b>Information</b>
<b>Educational Institutions</b>	Integrate material education environment with science lessons	Teachers come from the school concerned
	Invite student to forest	Student introduced to trees forestry
<b>Institution Paramitra East Java</b>	Carry out planting	Planting done in the yard school
	<i>Pride Campaign</i>	Campaign proud conserve natural cooperate with RARE
<b>College Student</b>	Planting plant drug family (toga) Games conservation Ethnobotanical studies	Activity education conservation become part from activity Studying Work Real Brawijaya University students

Tribal Society Tengger in general enclave village own level relative education \_ low , that is SD, so that No all information or message submitted conservation \_ can accepted with ok . The enclave village community has the presumption that education is limited to reading, writing, and calculating, and there is also an assumption that looking for more money is more important than education.



Implementing HR education conservation Still less , fine from facet amount nor ability . Implementation education conservation at school limited by lack teacher's knowledge and understanding of material education conservation . Limitations in time practice by students and implementation of the proud (pride campaign) campaign by Lembaga Paramitra East Java cause not enough conveyed messages about conservation to society.

Main strategy: development, education, community conservation. Tengger on TNBTS-based approach: SWOT matrix: organize education, conservation-based wisdom traditional, and focused on improvement Skills public in management source: Power local. Conservation education need developed with based wisdom traditional Because wisdom traditional is the basic capital owned public For participate active in TNBTS and environmental preservation around . Enclave societies have strong mental and emotional bonds with the surrounding forest, especially Mount Bromo and the Sea Sand (see picture 2). They consider him a part of nature. However , moment This wisdom traditional start faded and abandoned by society as consequence the process of acculturation culture , so need turned on back.



Figure 2: Hill Area Ritual Place of Ngadas Traditional Village

Education Strategy Improvement: Focused Conservation: Skills Public in Manage Resource Local is a Working Strategy To Avoid Threats There is a perception in society that considers education only limited read-write-count and taking care of the fields or looking for more money important than education. Enhancement Skills intended for society willing and able manage resource local so that can made product superior valuable local economy height you can increase well-being society .

Main strategy can achieved with carry out various key strategies and supporting strategies in a manner side by side . Necessary aspects considered in educational strategy development and conservation are HR aspects as executor education conservation; HR as participant education or group target; materials, media, and methods implementation; funding; and cooperation or partnership (KLH 2005). Key strategies and supports from each aspect are provided in Table 2.

Table 2. Key and supporting strategies achieving the main strategy development education conservation public TNBTS enclave

ASPECT	Key Strategy	Supporting Strategy
<b>HR as Implementing Conservation Education</b>	Increase quality and quantity of implementing human resources education conservation in TNBTS	Involve NGOs ( Paramitra Institute East Java ) and students / colleges tall in activity education conservation in TNBTS <i>Training of Trainer</i> in a manner intensive for assigned manager _ as executor education conservation in TNBTS Training for teachers in the village TNBTS <i>enclave</i>

ASPECT	Key Strategy	Supporting Strategy
<b>HR as Students or Target Group</b>	Approach to traditional healers	Increase the ability of traditional shamans in delivery message conservation Increase ability organization social local as agent conservation Increase Skills public <i>enclave</i> in manage source Power local
<b>Material, Media, and Method of Implementation</b>	Utilise source Power local , wisdom tradition , and potential TNBTS physics and biology in development materials , media, and methods education conservation	Develop educational programs possible conservation _ increase well-being public <i>enclave</i> , like method farming attention cabbage _ principles conservation , processing fennel as plant medicine. Develop a program for turn on return wisdom traditional public <i>enclave</i> ( matter about wisdom traditional public in guard sustainability Sea Sand Tengger and the region forest around , the laws custom in force _ community and management land agriculture ) Develop educational programs conservation with capable material _ grow awareness will importance TNBTS sustainability and the environment For life public <i>enclave</i> Develop educational programs sustainable conservation _ Arrange various module education conservation for executors and participants Implementation education conservation through ceremony Tengger Hindu customs and religion like Yadnya Kasada

**The Meaning of Ngadas Forest Management as a Life Education Model Millennial Generation in Era 4.0**

In essence, education includes training and educating activities in the framework of better student development. Education is necessary for a better social life and ease of employment. Furthermore, he said that education is a long process so that students can survive in their changing lives. Muhammad Saroni (2011:10).

The attitude and adaptive behavior of the Ngadas indigenous people in managing the local forest is a medium of education for children regarding human attitudes towards their natural environment. The Ngadas indigenous people have involved children and the millennial generation from an early age in managing the potential of the local forest. This means that efforts to preserve the forest (environment) in the Ngadas Traditional Village area have included the millennial generation through a process of cultural inheritance from generation to generation through a learning process that takes place both formally and informally. The formal learning process takes place from early childhood education to tertiary education, while the informal education process takes place through enculturation and socialization within the family. As Anthony Giddens (2003) said, the role of parents is very important in socializing and enculturating (the acculturation process) cultural values in children as the next generation.

Ngadas children has obey wisdom local For akeep natural environment. They are trained to behave in ways that support environmental preservation efforts. Application wisdom

local to managing adaptively in the Ngadas forest has direct implications for cultivating behavior that supports environmental conservation efforts. Environmental preservation efforts are a form of sustainable development, which is a development process that optimizes the use and suitability of available natural and human resources. "Sustainability" can be interpreted as sustainability involving physical, social and political aspects by taking into account resources management which includes forests, land and water, managing the impact of development on environment, as well human resources development. This condition can be achieved if the institutional apparatus incorporates multi-sectoral elements, which include the government, private sector, NGOs, and international agencies.

Efforts to preserve the environment in the Ngadas Traditional Village are also a constructive step in supporting tourism development. Tourism, as one of the development sectors, cannot be separated from the sustainable development that has been proclaimed by the government in accordance with national development goals. Multisectoral tourism is a very complex phenomenon and difficult to define in a standard way for universal acceptance. Thus giving rise to various perceptions of the understanding of tourism, both as an industry, as an activity, or as a system.

By maintaining beauty and making efforts to preserve the environment, the people of the Ngadas Traditional Village have become the subject of sustainable tourism development in their village. Besides wanting to develop economic prosperity, they are still trying to preserve the environment (ecologically) and Balinese cultural traditions. Thus, the development of ecotourism in Ngadas is supported by the existence of ecological capacity (the ability of the natural environment to meet the needs of tourists), physical capacity (the ability of facilities and infrastructure to meet the needs of tourists), social capacity (the ability of the destination area to absorb tourism without causing a negative impact on the local community), and economic capacity (the ability of the destination area to absorb commercial businesses while still accommodating local economic interests).

Ngadas Traditional Village has become one of the places visited by domestic and foreign tourists. The attractiveness of Ngadas Village is not only its tourist attraction in the form of its natural beauty but also the unique cultural traditions of the local village community. Efforts to preserve the environment in Ngadas Village are in accordance with the principles of sustainable tourism development, namely the development of tourist objects and attractions, which is carried out by taking into account: (a) Ability to encourage increased development of economic and social life; (b) Religious values, customs, and views and values that live in society; (c) Cultural sustainability and environmental quality; (d) The continuity of the tourism business itself (UU No. 9/1990, Article 6).

Efforts to uphold local wisdom For the preservation and beauty of the environment in Ngadas Traditional Village are very required. This is in accordance with the Code of Tourism Ethics (WTO) which states that: "Tourism, a factor of sustainable development" (Article 3; WTO General Assembly, 1999). In addition, forest conservation efforts in the Ngadas Traditional Village strongly support the principles of sustainable tourism development in accordance with Tri Hita Karana, namely the concept related to the happiness of being born into inner Hindu society. According to Mantra (1996), Tri Hita Karana is the balance between humans and each other (Pagongan), humans and their environment (Palan), and the relationship between humans and God (Pahyangan). Efforts to uphold the principles of Tri Hita Karana (THK) will be meaningful for the sustainable tourism development of Malang. The sustainable cultural tourism paradigm includes maintaining the quality of natural and cultural resources, increasing the welfare of local communities, and realizing tourist satisfaction (Ardika, 2006).

The attitude and behavior of the Ngadas people in adaptively managing the forest is a model of direct education for local millennial children in an effort to preserve the environment. The educational process of the millennial generation that is adaptive to



nature is in accordance with the principles of education in the era of the industrial revolution 4.0 today which includes thought, thought, exercise, heart so that individuals who have healthy, intelligent, honest and integrity characters are created. caring, tough, independent, nationalist, and religious (Ristekdikti, 2018; Mulyana, 2004). Apart from that, the millennial generation is also obliged to protect the planet Earth, maintain the balance of the ecosystem, and be a pioneer in caring for and preserving the environment. At least, there are three attitudes of industrial development towards the environment in today's 4.0 era, namely redistributive, restorative, and regenerative attitudes. The redistributive industry is an effort to maintain a balance between economic factors and environmental preservation. The restorative industry is an industry that has paid attention to and improved the quality of the environment. Next is the regenerative stage, namely the economy which increases the carrying capacity of the environment. In addition, the era of industrial revolution 4.0 will make it easier to monitor polluters and global climate change through environmental data that can be easily accessed and is able to become an early warning system for overcoming existing problems (Anonymous, 2019).

## **Conclusion**

The main strategy for development education conservation for the public ethnic group Tengger in the village TNBTS enclave is to organize education conservation based on traditional wisdom and focus on improving Skills public in management source Power local

Customary law form in a manner consistent applied in management forest tour village. local very comply and implement law these, among others, with the realization that they are part of the natural local, no damage forest flora and fauna potential, as well as utilize results forest in a manner adaptive. Application wisdom local in managing forests Sounds bad adaptively has direct implications for cultivating behavior that supports efforts to preserve the environment. The attitude and behavior of the Ngadas people in adaptively managing the forest is a model of direct education for local millennial children in an effort to preserve the environment.

## **Suggestion**

Efforts to preserve forests and the environment in the 4.0 era are very important. For this reason, the involvement of the millennial generation in efforts to preserve the environment needs to be continuously developed.

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