Environmental Ethics in Local Knowledge Responding to Climate Change: An Understanding of Seasonal Traditional Calendar PranotoMongso and Its Phenology in Karst Area of GunungKidul, Yogyakarta, Indonesia

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Abstract

Ethics concern on human relation to nature, where people are considered as moral agents due to their conscience. Water and land are provided by nature to be explored and managed in a wise and sustainable way. Any human induced activities, such as agriculture, settlement, mining, and water pumping could have an impact on the environment and have therefore contributed to Climate change within decades despite of the nature cycles. This study describes human nature relationship, socio spatial process embedded as environment ethics in a community level of farmers in GunungkidulKarstic region, South Java, Indonesia. People struggle, survive, and cope with harsh conditions particularly during dry season due to annual water scarcity that lead them to explore and apply knowledge, skills and available resources to sustain their livelihood, and live in harmony with Karst environment. Karst landscape in Gunungkidul reflects the human relation with their nature or environment in Karst regions and empirically describes their environmental ethics. In this study, the way people value their environment was explored through field observation and participatory approach on their understanding of local knowledge called PranotoMongso a traditional seasonal calendar. They have faced changing economic, social, and climatic factors in the past decade. This affected the application of the traditional seasonal calendar and has changed some people’s behavior and perception on the environment. Media sharing knowledge is important to reach individual and collective participatory environment ethic behavior.

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1. Introduction

There have been long discussions regarding local or traditional knowledge between Western and non-Western as well as science based and local knowledge base [1] used for decision making or sustainable development and [2] it has been argued on the dichotomy discussion on that. Every culture is affected by ecosystem and local knowledge [3] and it shows the human response to their surrounding environment. Subsistence communities, whose livelihood depend on nature, surely show synergy relationships with nature on their adaptation process. However, in this 21st century, the relationship of culture and environment is determined to very extent by the degree of cultural development [4].

This study focuses on local knowledge which is also considered as a traditional knowledge, known as the Javanese traditional seasonal calendar Pranoto Mongso, originated from a combination of the Western Gregorian, solar, calendric system and the Javanese astronomy based, agricultural time keeping [5]. Like many other traditional local knowledge practiced on Earth, i.e. the Aborigin’s, the Inuit’s and the Indian’s Pranoto Mongso, it has been facing frontal arguments with science due to climate changes, whilst in certain ideas overlap and synergize with it. This study tries to correspond and communicate the understanding of seasonal calendar Pranoto Mongso as local knowledge in southern part of Gunungkidul Regency, which is prone to water scarcity during dry season due to its Karst characteristics.

Field observation and Focussed Group Discussion (FGD) were conducted to validate desk study or literature review in exploring the essence of Pranoto Mongso with its Phenology as local knowledge for environmental ethics guidance and values in managing the environment. Fig. 1 presents Gunungkidul’s Karst features during wet season and dry season. Cultural landscape describes how local inhabitants occupy available space and cultivate the land with adjustment of water availability. Farmers in Karst Gunungkidul have identified when nature needs to follow the ecological cycles i.e. when to do nursery seed, and fallowing the land. People value land and water as the community to which the farmers belong to [6]. Human environment relationship can be spatially identified on the cultural landscape and defined the humanity essence from it, as proposed by Drenthen’s work on reading the landscape to define the environmental ethics using phenomenology hermeneutic approach [7].

2. Methods

Ethics mostly concern on doing things either right or wrong, which is scientifically challenged and has a locality aspect despite of common global or international values. Managing environment in the sense of human is most likely different to nature senses. This study tries to explore environment ethics based on local knowledge of traditional seasonal calendar Pranoto Mongso with its Phenology or bioindicator, applied by people of Karst Gunungkidul Regency in Indonesia.

Mixed methods were applied, namely desk study or literature review, field observation, and participants approach through Focused Group Discussion (FGD), and applied phenomenology hermeneutics [9] to describe and analyze the meaning of Pranoto Mongso as text or media to communicate and engage between people and the environment.

Fig. 1. Conical Hills Gunung Sewu in wet season (a) and dry season (b), pictured by Scholz [8]
This study works on qualitative data which was collected during field observation and participant approach on environment issues based on their knowledge and understanding of Pranoto Mongso with its Phenology. Then the correlation between community’s local knowledge of seasonal calendar with their environment knowledge concerning ethics has been analyzed. The research was conducted in two main steps.

2.1. Desk study (literature review)

Questioning the wisdom and meaning of PranotoMongso with its Phenology or bio-indicators nowadays is similar to questioning phenomenology and hermeneutics in philosophical term on deriving meaning from different media beside text or script. Environmental modifications, adjustments, adoptions and adaptations have been taken based on PranotoMongso, reflecting the understanding of the basic essence of the knowledge and how far people can access it and develop eco-culture ethics. The understanding of the ecological wisdom from seasonal traditional calendar PranotoMongso will lead to environmental ethics.

Climate change involves serious ethical issues, especially in its global, intergenerational, and ecological dimensions. This study tries to connect ethical issue from local knowledge of seasonal calendar in Central Java, Indonesia, and takes unique Karst characteristics of Gunungkidul Regency in South Java. Several ethical concepts based on geographical, philosophical and anthropological approach are studied and analyzed and reviewed on fact findings. Respective authors and scholars who are considered related to this study in geography, landscape, environment ethics, and philosophy subjects and issues are Leopold with his ‘‘Land Ethics’’ concept [10], Müller [11] and Gardiner [12] with ethical issue and philosophical ethics on Climate change, Ricoeur with his hermeneutic phenomenology [13], Kant with his philosophy of geography [14], Ritter with his landscape concept [15], and Sauer with his paper “The Morphology of Landscape” [16].

Pranoto Mongso is an inherited seasonal calendar which has been acknowledged and considered as part of cultural identity in middle Java’s agriculture based community. Exploring the community’s knowledge and knowledge of people dealing with agriculture, is crucial to determine their norms, values, and belief in regards to their activities, particularly in the area of water and land management. The way how people develop such knowledge by understanding their environment through observation and experiences determine the specific group of people’s knowledge [17]. The story telling has been used to transmit PranotoMongso knowledge through generations and facing various social and physical changes which in turn challenge people’s perception, understanding, values, norms, and beliefs individually, communally, or institutionally as also mentioned by Gardner to Deckens [18]. PranotoMongso is included in tacit knowledge, it uses require observation and experience to explore the environmental ethics and the ecological wisdom and therefore is in scientific terms ‘‘tested and validated’’.

2.2. Field observation and Focused Group Discussion (FGD)

Field observation and FGD were conducted and proceed from October 2012 – January 2013, in the transition time period between dry season to wet season. There are ten sub districts which were visited and observed, geomorphologically classified as Karst area in Gunungkidul Regency namely Ponjong (6 villages), Semanu (3 villages), Girisubo (8 villages), Rongkop (8 villages), Tepus (5 villages), Tanjungsari (5 villages), Saptosari (7 villages), Paliyan (2 villages), Panggang (6 villages), and Purwosari (5 villages) as stated on the Spatial Plan of Gunungkidul Regency 2010-2030 (Rencana Tata Ruang Wilayah KabupatenGunungkidul 2010 – 2030). The FGDs were conducted by inviting participants who deal with water and land related issues representing their villages, 25 persons in total. The participants’ age ranges between 20 – 60 years old, in consideration of heterogeneity of information expected from understanding and application of the local traditional seasonal calendar PranotoMongso. The information was collected focusing on the traditional seasonal calendar PranotoMongso and climate related issues and community behavior towards Karst environment.

2.3. Data analysis

Data was compiled based on qualitative information derived from participatory approach through FGDs and then validated using triangulation method by interviewing key persons who inherited PranotoMongso knowledge, expert
on Karst Gunungkidul characteristics, informants from water management of Gunungkidul regional government and heads of the Karst sub-districts and villages. A critical analysis on the concept of environment ethics considering spatial and location context was derived from the understanding of geographical philosophy and the relation between human and environment in anthropology context, and exercise phenomenological hermeneutics concept to interpret the environment ethics based on seasonal calendar PranotoMongso from people’s perspective due to climatic variability.

3. Description of Study Area

It is important to describe the study area to further understand the correlation between physical condition and social characteristics of the study area. This study focused on Karst region which administratively located in Gunungkidul Regency, Yogyakarta Special Province, South Java, Indonesia. Fig. 2 shows the location of whole Karst Gunung Sewu, in which Gunungkidul is one of its Karst region. Physical features of Karst in Gunungkidul regency in the southern part the region are unique which represents and is correlated to water scarcity and poverty as the region’s cachet. On the other hand, the people are also well known as hard worker in consequences of their harsh environment.

3.1. Physical setting (geomorphology, geology, hydrogeology, soil)

Karst landscapes forms in areas with carbonate bedrock, which is subjected to slow dissolution process as result of the combination temperature, chemistry, and soil acidity make Karst area unique yet prone to environmental disturbances. Karst geomorphology in Gunungkidul is conical hill and distinguished into three main types, i.e. labyrinth, polygonal, and residual cone Karst [19]. Geologically, the study area is dominated by Miocene limestone of the Wonosari Formation, which consists of massive coral reef limestone [20, 21]. Hydrogeologic units of Karst Gunungkidul are divided into Panggang sub-system, Bribin-Baron-Seropan sub-system, and Ponjong sub-system.

Parent material in particular location of the Gunungkidul region influences the soil formation. Thick soil in Gunungkidul Karst area occupies disperse space of closed depressions bottom or dry valleys [22]. By observing and memorizing the geomorphological and hydrogeological characteristics, inhabitants of Karst Gunungkidul have learnt to develop geohydro cultural behavior, which determine their ethical response to available resources. Physical settings lead human to ‘manipulate’ the ecosystem for sustaining their livelihood.

3.2. Social Demography and Cultural Setting

Field observation (2012) revealed that 70% of inhabitants in each sub-district of Karst Gunungkidul graduated from junior high school. The old farmers who still follow PranotoMongso at age 50’s above still own the land (owner status). PranotoMongso is currently still applied to determine the cultivation time, crops selection and other daily activities [23].

Fig. 2. Landsat ETM depicting GunungSewu Karst, where Karst Gunungkidulis located and the surrounding areas[19].
Cultural identity and social value arise from physical setting of Karst characteristics. The landscape relates to decision making due to physical characteristics and the environment’s quality for human life. Understanding the physics of Karst is also discerning the nature of it from hydrology, geology, geomorphology, and climate settings. Nature has shaped local community of Karst Gunungkidul in such culture which relates to water and land or space availability. Some locations still conduct annual activities to preserve and conserve water retention area by symbolizing the spot as sacred location. This represents human’s relationship with their surrounding environment reflect on action based on belief due to physical characteristics.

3.3. Climate setting in Gunungkidul Region

Climate regulates dryland ecosystems such as Karst area with quite different micro-climates from non Karst area in Gunungkidul, therefore managing Karst area requires specific regulation and policies as stated on Millennium Ecosystem Assessment for dryland ecosystem [24]. Gunungkidul Region has faced increasing threat of climate change due to temperature and rainfall calculation [25]. The variability of climate factors has been recently recognized by local people of Karst Gunungkidul and in certain year causing crops yields failure (FGDs, 2012), especially during El Nino or La Nina years. Climate leads to the creation of unique ecosystem culture in adaptation and strategies environment. Some people locally have applied the concept of reduce, reuse and recycle concept due to hydroclimate condition of Karst Gunungkidul. Climate characteristic are generally described by text and symbols in traditional seasonal calendar PranotoMongso for each seasonal change.

4. Result and Discussion

4.1. Traditional knowledge PranotoMongso and its Phenology or bio-indicator in Karst Gunungkidul

The Gunungkidul Region was formally and legally established in 1831 under Daerah Istimewa Yogyakarta Province in Java. Meanwhile in 1855, Sri Susuhunan Pakubuwono VII, the King of Surakarta in Central Java introduced PranotoMongso a seasonal traditional calendar based on solar system which derived from long-term history observations of farmers before designated formally (see Fig. 3). Javanese calendar becomes cultural identity as agriculture dominates particularly in central part of the island. The seasonal calendar PranotoMongso teaches people to develop relationship with the environment on the cycle combined with the Gregorian calendar.

Understanding Pranoto Mongso as a language to learn, observe and recognize how nature works in certain places with different characteristic - in this case Karst region - during periodical time, is liberating people to gain abundance knowledge. Rural communities in Gunungkidul, particularly farmers, are familiar with PranotoMongso and apply it mainly on their agriculture based activities. Field observations and FGDs (2012) has shown a difference in people’s perceptions on the traditional seasonal calendar and visualized the way they managed land and water in agriculture. Due to climatic changes experienced and observed by the farmers, particularly the elder ones at age 40 – 60 years old, they are now questioning the effectiveness of PranotoMongso and the novelty of it in recent changing environment, yet they still value this as their cultural identity of agriculture people.

![Fig.3. PranotoMongso Seasonal Calendar](image_url)
Physical features of Karst Gunungkidul are host for unique creatures which develop adaptation to Karst condition, including some bio-indicators as early warning or cues of changing season. Rainy season is identified from the bud of Gadung (DioscoreahispidaDennst) indicating rising humidity in the air and the starting time of dry season identified from the outbreak of cotton tree (Ceibapentandra) or the sound of coconut bug Kwangwung (Oryctes rhinoceros) indicating decreasing humidity. All participants from FGDs know vegetation and animals as indicators for seasonal changes. Issues arise when bio-indicators on Phenology science are decreasing or even worse disappear. During participatory approach in FGDs (2012), 90% of participants were unable to correspond and relate the disappearing of certain plants to environment changes, particularly due to climate changes, only those who have access to information through formal education and other media sharing, were capable to correlate. However, old farmers who did not get any access to information from outside their living place can also identify changes through keen observations and correlate the memories (data, and records in term of science) they inherited as their tacit knowledge.

The disappearances of certain animals and plants indicates biodiversity disturbances and relates to changes of people’s perceptions or view on environment ethics because they pursue and consider the economic value merely for human benefits. In the Karstic region of Gunungkidul Regency, people have learnt that during dry season they could not cultivate any crops due to the physical condition of the land and water non-availability, but they said they will consider cultivate paddy twice or three times a year when water and soil science innovation could support water availability and better soil management, for example the collaboration project of Integrated Water Resources Management (IWRM) between Indonesian and German government. This project itself suggested that a cultural approach is necessary to introduce and apply new technology and innovation to local people of Karst Gunungkidul, although this project mainly focus on water and sanitation.

95% participants of FGDs (2012) from ten sub-districts were unable to correlate the meaning of each bio-indicator during generative and vegetative phases with climatic variability which lead to environmental changes. Age, gender, education, status, and social economy background predispose their knowledge on environmental subjects. A lesson learnt from Wareng village, geomorphologically located in Wonosari plateau, [23] concluded that PranotoMongso is applied on agriculture based activities and daily activities only by certain people due to:
- The existence of elderly people and farmers who know and understand PranotoMongso and are able to communicate and share this tacit knowledge;
- The farmers themselves trust and are willing to implement PranotoMongso as the guidance in agriculture;
- Land ownership by parents determines the decision making in agriculture activities, i.e. crops selection, time of start cultivation, harvesting time.

Based on participatory approach (2012), it is confirmed that the reason younger generation at age 18 – 25 years become farmers is that they do not find off-farm jobs and that farming or doing agriculture requires no particular skills. They can just follow their parents and then make changes in their own way, join local agriculture organizations (kelompoktani), and apply governmental agriculture institutional programs. Therefore, at one point they have no idea how to explain ecosystem services and ecological issues which have been described in PranotoMongso concept. Only those young farmers, who do observation and experiences on their field and who record or memorize, gain knowledge from the environment, for instance distinguishing soil fertility and suitability, which responds to certain crops on different water availability. Wisnubroto [26] stated in his book that each gatra seasonal time in Pranoto Mongso has agroclimate factors for crops’ growth requirements and also animal’s life supporting. People can modify and adjust climate and weather to certain level for their livelihood, considering the effect to the environment. Farmers and non-farmers, who can interpret the essence of PranotoMongso and correlate the climate affected bio-indicators on their Karst region, understand the nature cycles with recent challenge from climate change and perform environment ethics behavior (field observation and FGDs, 2012).

4.2. Environmental and Ecological wisdom of PranotoMongso and responsibility for environment ethics

Memories and records from individual experiences and observation vary (participatory approach, 2012) and the need of recording is important here for others to learn and find appropriate values and moral. By following the land during dry season (see Figure 1), people have considered land ethics based on Leopold’s theory only when people understand that the land needs time to recover itself.
Some policies related to environmental and ecological issues have been implemented in Indonesia, particularly in Java since colonialism era until recent government (2013). Those policies reflect social cultural turn and tried to support environment ethics, but still showing no improvement on environment ethics. For example, Pranoto Mongso was introduced when Indonesia was still ruled under Netherland’s colonialism and their Cultuurstelsel concept was forced to be applied, especially in Java, which resulting famines and epidemics in the 1840s. It was designated as ecological policy in environment ethics from The Netherland’s government viewpoint at that time and no consideration of local livelihood. Recent Indonesian governmental institutions have tried to integrate environmental and ecological issues but it requires good political will or good governance and a participatory approach on the process.

People learn, observe, memorize, and develop social, moral, and emotional responsibility to their environment. Values which arise from human interest defined the social control in Karst community Gunungkidul, following the concept of [27]. It is questionable if the value of local knowledge Pranoto Mongso is applicable for environmental ethics, because if people do understand the meaning, there should not be any disturbances or environmental stress. This study found that environment stress is the result of complex socio economy changes which failed to comprehend rural community livelihood in Karst region and stimulated people to exploit already limited resources competing with other inhabitants. Fig. 4 shows how people can value other norms and values from applying the social commitment to maintain and preserve forest for water management. Responsibility arises from social control and lead to environmental ethics.

In certain point people fail to interpret environmental ethics when the manipulation or innovation reach to the stage where nature gives different signs they have knowledge about. Young generation farmers at age range between 20 – 45 years old inherited the knowledge from their fathers or older farmers (FGD, 2012). The challenge is that there is no record on this knowledge and it is also not being taught formally in schools, even not in the agriculture school. Recent young farmers learn their knowledge on agriculture from experience, observation, memories, and stories from their elderly. This farmer generation knows Pranoto Mongso on the time frame cycle (seasonal cycle) and animal behavior and plants growth processes, despite of the essence of understanding Pranoto Mongso in ecological wisdom and environmental services.

Fig. 5a shows how local government tried to explain the cycle of Pranoto Mongso and the value it carries, but also questioning the environment changes due to climatic factors. Meanwhile Fig. 5b shows how non-governmental organization and academic institutions collaborate to record local knowledge from local people (Aborigines) due to seasonal changes in certain location of Australia [28]. Transfer knowledge using varied media has not been proceed in sharing knowledge regarding on seasonal traditional calendar Pranoto Mongso with its bio-indicators (Phenology). This study confirmed that environmental knowledge with ethical values from Pranoto Mongso can be used as starting point to develop participatory environment ethics considering locality, but sharing global challenges due climate changes.

Environment and ecological value of Pranoto Mongso and Phenology guide people to live in harmony with the nature for generations, until some interference such as non-ecological and non-environmental based development of agendas blurred the ethical value to the nature cycles.
Pranoto Mongso is a cultural science and it’s knowledge full of wisdom once the corresponding between people and the environment is understood and it embeds the sense of respect and belonging to the earth where human make living from.

Only particular people inherited the meaning or the wisdom of PranotoMongso and are able to interpret ecological value. These particular people share their knowledge but having obstacles to correlate the science behind in this 21st century. Therefore, they face challenges and interferences, such as non-ecological and non-environmental based development of agendas (the failure of development agendas on some cases due to short term projects and considered as one way additional aid). As phenomenological hermeneutics refers to the understanding of meaning, people can learn and understanding how ecosystems work and the impact of mankind has on the environment from PranotoMongso’s quintessence as whole text of understanding or encyclopedia. Reading signs from nature, known as “titen”, educate local people to be scientists, i.e. observe, record, analyze and test the hypotheses based on their knowledge. Interpreting the signs from surrounding environment, people in Karst Gunungkidul develop ethical ways of living with their environment and in a way to conserve, preserve, and maintain sustainability.

It is confirmed that people might not practiced the agriculture based on Pranoto Mongso, yet they still consider it as part of their Javanese culture, particularly in agriculture (FGDs, 2012). Pranoto Mongso has been left and neglected since the governmental program on self-support (swasembada) food production in 1970’s and the green revolution, i.e the application of agriculture technology on machinery, seedlings and chemical or non-organic fertilizer. The crops yields might show increasing in number, but when compared to the effect to the nature’s cycles, it leads to threatening environment stability (Field observation and FGDs, 2012). There is also ethical issue when 1/3 of farmers still practice Pranoto Mongso to determine the starting time of cultivation, yet the agriculture institution sees to be bias on ethical policy of this phenomenon.

PranotoMongso has a spatial context as mentioned by Daljoeni[29] and also the locality context where local specific characteristics distinguish on different places (field observation, 2012). Therefore, “ilmutiten” is related to identifying, recognizing, and recording their surrounding environment throughout life time. Local people on different sub-district of Karst Gunungkidul apply the same PranotoMongso, yet adapted and adjusted in consequence of their local resources and take into consideration from what so called modern technology of climatic forecasting or modeling. People, in particular farmers, still acknowledge traditional seasonal calendar PranotoMongso as part of cultural identity and environment ethics is still based on the wisdom of PranotoMongso as part of the identity.

4.3. Taking risk under uncertainty conditions due to the climate change

IPCC and UNEP have stated that major environmental problems or challenges in the globe arise from climate change. The world commissions the risks that vulnerable people face now and in the future, the elements of their capacity to manage these risks and what they need from others to further strengthen their resilience. Lessons learnt
of local wisdom related to environmental concerns, namely Mitameshi the wisdom of Suido in Japan [30] and weather lore from rural population traditional knowledge in Vietnam [31], support this study that exquisite ability from local people to observeand interpret weather events on the basis of local characteristics and make use the science-based meteorological forecast to adapt to the changing environmental in particular for agricultural lifestyles, and decision making in ethical sense, including reducing risk. As local communities in many different places on earth face these changes, they might not put the word climate change in scientific manner, yet they understand that there have been changes in the climate.

Limited access to information leads to the increase of environmental risk and to human livelihood. People hardly understand environment changes due to climatic factors, but they agree there has been uncertainty related to climate when they have a different start of the rainy season in the past decade. Physical characteristics in the study area, as described previously, are affected by hydro-meteorological factors which correlate one another and in response showing differentiation on starting harvesting time. The eastern part of Gunungkidul Regency, namely sub-district Girisubo, in particular Tileng, Pucung, and Songbanyu villages, received earlier rainfall due to geographical setting and they have started harvesting time in the middle of February (2013), which differs from other villages in Karst Gunungkidul. This phenomenon is not only related to the climate changes, but also people’s perceptions on the cultivation starting calendar from Pranoto Mongso.

There is heterogeneity of farmers’ responses to climate change or variability. The climate field school program teaches farmers to start recording data on quantitative approach and transform tacit knowledge into explicit knowledge of agroclimate factors. In Karst regions like GunungKidul, timing and crop variety are considered important to adjust within given characteristic of physical setting. By reading the signs for rainy season, farmers start to plough and plant seeds known as awu-awu, even if the rain has not started yet. In this uncertain period of environmental changes, those who still practice awu-awu are taking risk of failing cultivation. Other farmers, mostly young generation farmers, will start to cultivate when the rain falls and avoiding the risk.

The cropping system namely as tumpang sari or mixed cropping has shown the effectiveness for Karst Gunungkidul farmers, yet the crop variety which had adapted to shifting rainfall or water availability in short time and mitigate exposure to climate change need to be considered. The head of Tileng village in Girisubo sub-district of GunungKidul Regency revealed that farmers in his area are actually aware of certain paddy seeds which can survive during shortness of water in dry season. Local specific knowledge like this needs to be recorded and mapped to be analyzed further for decision making and ethical issues involve.

5. Conclusion

Pranoto Mongso consists of ecological wisdom which shows ecosystem services. It is people’s values, beliefs, and norms that determine the function of ecosystem in Karst region Gunungkidul. The narrative process in transferring knowledge of Pranoto Mongso with its Phenology or bio-indicators is considered crucial in the climate change era followed by uncertain conditions. If local specific species in Karst is changing, it requires such observation and records to put together the cycles in Pranoto Mongso. When there is a challenge and changes, people develop adaptation and strategies to cope with their environmental changes, but the ethical issue is embedded with their understanding towards environment and livelihood. The cultural value of Pranoto Mongso and its Phenological essence should be integrated not only for agriculture sector, but more into the philosophy of environmental in daily activities. Local knowledge hybridization with scientific based knowledge serve as an adaptive strategy to encounter environmental change and the uncertainty due to climate changes or variability to reach individual and collective participatory environment ethic behavior.

By understanding the essence and knowledge of Pranoto Mongso, it is hoped to raise awareness of people on ecology and environment balance and ethics. The vanishment of PranotoMongso could lead to the decrease or even disappearance of the environment ethics of people in Karst Gunungkidul and the economical issue related to annual water scarcity could increase. PranotoMongso teaches people to take over responsibility for their resources and include the aspects of unavoidable impacts from climate changes, i.e. raising temperatures, high intensity of rainfall in rainy season and long period of dry season. Regarding environmental ethics in rural communities, Karst Gunungkidul is affected by local knowledge based on perceptions, observations, and experiences and also determined by age and education. This study proposes knowledge media sharing and cultural landscape approach based on climatic cultural behaviorinmanagingconical hills Karst Gunungkidul. Knowledge awareness of local people to unique characteristics of Karst should be re-emerged, raising the environmental ethics to minimize
conflicts and reduce risk. If such changes occur, it is urgent to seek that the effects also merge into the ecosystem and ecological balance. Local knowledge need to be negotiated into decision making of development by considering the changes possibilities.

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