The role of community local wisdom for nagari development in Sijunjung District, West Sumatera

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Abstract. The purpose of this study is to uncover and analyze the role of local wisdom of the community for development in Nagari Paru, Sijunjung Regency, West Sumatra. This study used a quantitative and qualitative method to figure out the role of Rimbo Larangan as one of the local wisdom applied in the community. The results of this study indicate that: the existence of the local wisdom of the community in the form of the Rimbo Larangan originated from forest destruction that occurred several years ago so that it has an impact on people's lives. The community in Nagari Paru has a perspective that the environment needs to be treated properly so that it can produce benefits in the form of improving health, happiness and increasing nagari development. The community is accustomed to managing the environment, because there is a recommendation from the Niniak Mamak, and it must be improved because it is important to their life. Since people in Nagari Paru are generally farmer, who need water every day for their fields and life, so the availability of water become their main concern. Although maintaining the Rimbo Larangan in Nagari Paru is still an agreement but it is effective enough to bind the community not to cut wood in the jungle, meaning that the community is accustomed to maintaining the jungle for life. Quantitative analysis showed a significant role of the local wisdom particularly in the nagari development as confirmed by the regression equation.

1. Introduction
The exploitation of natural resources is believed to be one of the causes of the decline in environmental quality. Such conditions are further aggravated if exploitation is carried out without regard to carrying capacity and ecological functions wisely. Some factors that may be the cause of the unnoticed carrying capacity and ecological functions are; 1. ignorance of the public about the consequences of their behavior; 2. pressure on meeting the needs of life; 3. lacking of knowledge about the balance and function of ecosystems; 4. for some parties, commercial considerations are more dominant in the exploitation of resources, and 5. implementation of legal sanctions related to violations of environmental crimes that are still running below than expected [1].

In some traditional communities, local policies often become one of the social institutions that apply for generations and become part of the local culture of the community. These legal regulations are usually generated from a sign-based understanding and occurrence of natural ecosystems and are intended to maintain the sustainability of ecosystems and the social values of the people prevailing at...
that time. Because of its nature accommodating local conditions and situations according to their
needs, these policies and institutions are referred to as local wisdom.

West Sumatra which is mostly inhabited by the Minang tribe has a lot of knowledge, beliefs,
understandings, insights as well as customs or ethics that are sourced and developed endemic among
these local communities. Furthermore, there is a philosophy that nature is “a teacher”, meaning that
people learn from nature. Nature for the Minangkabau community is not only a place of birth and
death but also a place of life and development. So that many cultural values that emerge and develop
in West Sumatra are familiar with the principles of natural harmony that are usually taught and passed
down from generation to generation.

The rapid intervention of globalization has resulted in changes in people's lifestyles to become
consumptive. Living in harmony with their nature is almost disappeared which could be caused by
shifting community experiences and perspective. Coupled with the pressure of increasing population,
the pressure of more food needs becomes an actual problem. Unfortunately, efforts to fulfill increasing
food often ignore the aspect of sustainability which is characterized by an affirmation of the role of
local wisdom so that it causes a rapid decline in environmental quality.

Formally, the government recognizes the position of local wisdom in developmental processes. This
can be seen in articles 30 and 31 UU No. 32 th. 2009 concerning environmental protection and
management [UUPPLH] which includes the role of local wisdom in environmental and natural
resource management, but in the realization, the values of local wisdom are often neglected. The
government with all its power often plans and implements development programs unilaterally without
involving and respecting the values of local wisdom of the local community. Local wisdom is a
process of how people adapt to the surrounding environment, which is inherited from generation to
generation so that it can become a way of life in utilizing natural resources [2]. Many of the slogans
living in the Nagari Paru community are originated from the natural signs, like *alam takambang jadi
guru* [nature is positioned as a teacher] or *gabak di hulu tando kahujan* [Black clouds upstream sign
that it is going to rain].

Based on the above-mentioned background, this study was carried out. The main objective is
looking at the role of local wisdom in development activities, especially at the nagari level where the
role and technological interventions are relatively small.

2. Materials and method

The research was done at Nagari Paru positioned at 0°64’46” S and 101°13’47” E and located at an
altitude of 208 m above sea level [ASL]. The Nagari is part of Sijunjung District, Sijunjung Regency,
Province of West Sumatra. The Sijunjung District covers an area of 748.00 Km², which involves 9
Nagaris, crossed by 19 rivers. The area of the Nagari Paru covers 129.57 Km² that’s why the Nagari
Paru belongs to the second widest Nagari in Sijunjung District. The four biggest rivers namely: Batang
Mangan River, Batang Tabek River, Batang Nunuk River, and Batang Ngaringgiang River are located
along this Nagari [see Figure 1]. The nagari is inhabited by 1,992 households [HHS]. Based on this,
the sample size was determined by 5% and giving the number of households used in this study to 99.6
HH [fulfilled to 100 HH].
Figure 1. The Nagari Paru administrative area covered in the study

This research was designed as quantitative research with a target to elucidate the role of local wisdom application to development in Nagari Paru. In addition, several instruments are also used to access qualitative data employing interview forms. The quantitative data were collected from the questionnaire in the form of statements [quantitative] and questions [qualitative]. Data was also obtained from direct observation to the research location and discussion by determining key informants.

3. Results and Discussion

3.1. Rimbo Larangan as Local Wisdom in Nagari Paru

Hydrological conditions of Nagari Paru are influenced by climate, weather and land cover conditions. The climate is tropical, with temperatures between 26°C–33°C; rainfall average is 192 mm/year which is classified as high. Like West Sumatra, Nagari Paru has two seasons, rainy and dry. Previously, the people in Nagari were very dependent on the rainy season to water their rice fields, but with the preservation of “Rimbo Larangan [prohibited forest]”, the people are no longer relied on rain to irrigate their fields. The large number of trees in Rimbo Larangan can store water reserves in the ground so that it becomes a source of water that flows into Nagari Paru, which can be used by the community for their needs throughout the year.
The local wisdom of the community in the form of the Rimbo Larangan, was initiated from a forest destruction story that occurred since 1985. The destruction has caused negative impacts on people's lives, namely the number of trees felling and the impact of prolonged drought in Nagari Paru. Deforestation is done by the local community as well as not the local community but they have permission from the local Niniak Mamak. The forest damage has caused no water for their rice field and when heavy rains occur, the community face landslides and even floods damaging their agricultural fields. This lasted for a long time until there were community members who had the idea to make the forest in Nagari Paru, a "Rimbo Larangan of Nagari Paru". However, in the beginning, the idea could not be applied. Therefore, they discussed with Wali Nagari and received a welcome to make it happen. When the idea was heard by some other people, they were not happy and opposed the idea. Therefore, Mr. Iskandar as Wali Nagari called and discussed with the resistant people. Finally, there was an agreement to implement a Ban Forest Reserve in early 2000. The Rimbo Larangan area is around 4,500 m² consisting of Rimbo Larangan Bukik Mandiangi and Rimbo Larangan Sungai Durian.

Regulated provisions stated by the Rimbo Larangan agreement for example: taking forest products are allowed to only take rattan [Calamus axillaris] and manau [Calamus manan] for domestic purposes, not for sale. Good forest management conducted by the community produced already
results. The community forest management was appreciated as the winner of the “2016 Sustainable Competition”, with the category of forestry care village at the level of West Sumatra Province covering a forest area of 24,026 Ha. The impact of such good forest management provided a sustained availability of water for their rice fields which amenable for the community to cultivate their rice fields at any time regardless of the season. The forest is also making the availability of plenty of clean water for the daily needs of the community in Nagari Paru and also the surrounding communities.

However, the policies or collective agreements on the management of these Rimbo Larangan have not yet existed in the Nagari Regulation [Peraturan Nagari], only in the form of collective agreements. Even though this regulation is only a collective agreement, the community can comply with the rules they agreed on. The community formed a group of guards, protectors and cared for the Rimbo Larangan, namely the Forest Concern Group [KPPH], chaired by Wali Nagari Paru, who became Tuo Rimbo, namely Ali Pikir Dt Mangguang and Sahirman Dt. Gadang Jalelo. Forestry Monitoring of Rimbo Larangan is not only the duty of the KPPH but also the community. Even so, there are still people who carry out logging and capture forest animals in secret. The existence of several violations normally will be charged by a kind of sanction that has been agreed i.e.: paying a fine for maximal one million rupiahs. If the fine is not paid then they will be given such moral sanctions in the form of not being included in any event held by the community until they pay it. This case was handed over to the chairman of Ninia Mamak from their own tribe. If it is paid, then the sanction would be lifted. In this case, Ninia Mamak is responsible for the behavior of the nephew in ensuring the regulation. A similar practice is also reported by Sukawati et al [3], studying Ammatoa’s local wisdom in preserving forests in Bulukumba District, North Sulawesi. They used even three different classes of protected forests: Borong Karamaka [Sacred Forest], Borong Batasayya [Border Forest] and Borong Luara’ [community forest].

3.2. Role of local wisdom for nagari development
In order to study the role of Rimbo Larangan local wisdom for the nagari development, we performed a quantitative analysis as can be seen in Table 1. Table 1, shows that the development in Nagari Paru is influenced by the local wisdom by 22.3%, while the remaining 77.7% is influenced by other variables.

| Model | R Square | Adjusted R Square | Standard Error of the Estimate | R Square Change | F Change | df1 | df2 | Sig. F Change |
|-------|----------|-------------------|-------------------------------|----------------|----------|-----|-----|--------------|
| 1     | 0.472a   | 0.223             | 0.215                         | 13.242        | 0.223    | 28.147 | 1   | 98           | 0.000       |

Analysis of variance [ANOVA test] exhibited an F value of 28.147 with significance 0.000. Since the probability value is much smaller than 0.05, then the regression model can be used to predict the development in Nagari Paru. For that purpose, we further performed a regression analysis [Table 2].

| Model   | Sum of Squares | df | Mean Square | F     | Sig.    |
|---------|----------------|----|-------------|-------|---------|
| Regression | 4935.529     | 1  | 4935.529    | 28.147| 0.000   |
| Residual | 17184.181    | 98 | 175.349     |       |         |
| Total    | 22119.710    | 99 |             |       |         |
Table 3. The coefficient of regression to measure the role of local wisdom in the nagari development

| Model     | Unstandardized Coefficients | Standardized Coefficients | t     | Sig. |
|-----------|-----------------------------|---------------------------|-------|------|
| 1         | [Constant]                  |                           |       |      |
|           | 84.748                      | 10.635                    | 7.969 | 0.000|
|           | local wisdom                | 0.847                     | 0.160 | 0.472|
|           |                             | 5.305                     | 0.000 |      |

We found a regression equation $\hat{Y} = 84.748 + 0.472$; meaning that if there is no local wisdom then the value of the development is only 84.748. The presence of local wisdom increases nagari development by 0.472. Comparing the $t_{\text{calc}}$ with the $t_{\text{table}}$ exhibited data 5.305 > 1.665, meaning that $H_0$ is rejected and thus $H_1$ is accepted, thus it is truly significant. Local wisdom in the form of Rimbo Larangan has a significant contribution to the development in Nagari Paru.

So far we know, this is the first quantitative study reported the role of local wisdom in environmental preservation. Many previous studies, in general, used qualitative analysis which was based on descriptive data [4], [5].

According to [6], the local wisdom of the people in Nagari Paru can be seen from four criteria, namely: knowledge, belief, understanding, and habits. Such criteria were also reported in the Nagari Paru based on the interview result with Mr Badarmin, Mr Madirman DT. Gindo Tamajo, and Mr. Alimnar. All three people are known as important public figures in the community of Nagari Paru. They include knowledge, beliefs, understanding, and habits of the community in managing forests, rivers, and land. Similar situations are also reported by [5] in the Osing community in preserving water resources in Kemiren, Glagah Sub-District, Banyuwang. Burirat et al [4] have reported the role of local wisdom in forest management at Ban Nong Hua Khon, Tambon Nong Muen Than, At Samat District, Roi-Et Province, Thailand.

The origin of local wisdom commonly originated from the thoughts of the people and then passed down to the next generation [7]. This local wisdom continues to be followed even today despite various changes as consequences of the globalization processes. This tradition has certain customary rules, which are made mainly to preserve the environment which requires ethics and awareness [8]. The purpose of such informal regulation is to make rules to improve people's attitudes and behavior towards their environment [3]. Without local wisdom, the community behaves according to their own wishes, such as cutting down trees and taking forest products excessively. But with the existence of local wisdom binding the community, the environment can be well preserved and the community can benefit the lives of prosperous life which in turn could positively impact the development of Nagari.

The significant role of local wisdom for environmental conservation was reported by [10], [11] and [12] even reported the role of local wisdom in public service innovation.

4. Conclusions
The local wisdom of the Nagari Paru community in the form of the Rimbo Larangan, originated from forest destruction experience that occurred several years ago so that it has an impact on people's lives. The Rimbo Larangan management has been proven to significantly contribute to the Nagari development process, although it is existing as a non-formal regulation, it has proven to be effective in preserving nature, for example, the availability of water that is always available throughout the year and is used by the community both for rice cultivation, as well as people's daily needs. Although formally, the recognition of the Rimbo Larangan is a form of local wisdom, the government recognizes its effectiveness through the award given to the community in Nagari Paru, Sijunjung Regency.
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