Adat community and climate change adaptation measures: case of Kasepuhan Karang

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Abstract. Adat community (AC) needs for being adaptive to survive against the negative impacts of climate change and unexpected extreme conditions. They are very dependent on forest resources and practices of local wisdom to survive from various climate conditions. This paper aims to analyze the adaptation strategy of Kasepuhan Karang AC, Lebak District, Banten Province, towards climate change. Data are analyzed using descriptive analysis. The results show that the AC has no knowledge of climate change. However, the local wisdom reflected in their customary rules has until recently been able to make the AC to maintain their customary forest cover and manage it sustainably. They have never experienced a shortage of food and water, and are free from the huge flood disasters that hit several areas around it. This customary rule has proven that they are able to remain survived. But the increase of population and the development process has formed its own challenges. Their adaptation efforts are intended to improve the biophysical environment, expand business opportunities, and seeking breakthroughs in the use of their inherited land. Local wisdom is able to make AC survived, to anticipate population development, to adapt to climatic conditions and extreme conditions, and to make AC not being exposed towards climate change.

1. Introduction
Adat Community (AC – masyarakat adat) is a group of people who have lived in a region for a long time, where their livelihoods are highly dependent on the surrounding land and natural resources [1]. They depend on these diverse ecosystems to encounter their nutritional, economic, cultural, social and spiritual needs. Its livelihood also depends on nature resource. When livelihoods are damaged by climate change, they would not adapt to the effects of these changes. Climate change impacts would be dissimilar and very complex in various sectors [2]. In the forestry sector as natural resources are the essential needs for AC, climate change is able to provide impact towards the productivity of flowers and fruit [3-4]. Another impact of climate change is a decrease of rainfall intensity which causes high forest fires as have occured on the island of Borneo [5]. Climate change is able to have various targetted parties, both urban and rural community in and around forests, capable and incapable group of communities. However, for rural communities in and around forest (including AC), there is a close relationship between humans (including AC) and the ecosystems whereas they live and develop, developing new knowledge, systems of values and norms that is aimed for better nature management (Garna, 1986 in [6]; [3]. They also have the knowledge and ability to overcome life's challenges and
be able to survive up to recently [7] (Sylviani & Sakuntaldewi, 2010; Hendar Hendrawan, 2011 in [6].

Hutan Adat (adat forest) is one of the social forestry schemes under forest management that provides space to the Masyarakat Adat (Adat Community - AC) to manage the forest in accordance to their local wisdom and traditional knowledge, which is based on the specific impression of the integration of their soul to the natural environment. AC, under their humble knowledge of forest management, is able to maintain their environment and forest biodiversity. Climate change adaptation based on local wisdom with the involvement of all AC elements has been implemented within AC Kasepuhan Karang in the form of prohibitions and obedience to their Adat leader.

Climate change affects natural resources and the lives of adat community Kasepuhan Karang, whose living depends on the forest resources. They have to adapt to the existing change in order to survive. Climate change in various sectors is very complex because it covers various aspects of human life. If start serious handle is not initiated, this can be a disaster and it will have a very wide impacts. These impacts can include economic, socio-cultural to political aspects. The impacts of climate change must be done by adat communites. Therefore, it is significant to observe Adat Community Kasepuhan Karang towards their customary activities. Their understanding on the relation of their customary activities to support climate change is important.

Based on Iskandar in [8] AC and traditional agriculture are two objects of cultural studies that are not possible to be separated. Traditional agriculture managed by AC includes three aspects of the system namely biophysical, economic, and socio cultural systems. This paper is to provide an overview and to distinguish the impacts of climate Change on the environment, especially ALC living in and around the Kasepuhan Karang forest community area, Muncang subdistrict, Lebak distrik, Banten province, and also their vulnerability, and community adaptation strategies to survive in various climate conditions.

2. Methodology

2.1. Conceptual Framework

Adaptation to climate change in this study refers to some adjustments made in a response to the effects arising from actual or predicted climatic conditions towards the ability to survive, and if possible will tend to take advantages of opportunities to develop. According to UNDP definition quoted UNEP (2008) in [9] , adaptation is a process by which strategies aiming to moderate, cope with, and take advantages of consequences of climate events are enhanced, developed and implemented. There are various types of adaptation based on their nature character: autonomous adaptation vs. planned adaptation, anticipatory adaptation vs. reactive adaptation, and individual adaptation vs. collective (community) adaptation. Although there are some differences or variations, the main general target is to lead to the risks minimization of climate impacts. This means to increase the resilience and to reduce vulnerability to non-conducive climate conditions [IPCC, 2001; Lasco et al., 2011 in 10 - 11]. According to IPCC (2001) that adaptation is an adjustment that is due by both naturally or by the human system in response to the actual or predicted climate stimuli and their impact, it is becoming a moderate threat or exploiting beneficial opportunities. Adaptation can occur spontaneously or planned to react to climate change. Adaptation has the potential to reduce the impacts of climate change and increase the impact of benefits, so there are no victims. Adaptation strategies are needed at all scales to mitigate efforts on impact mitigation (IPCC , 2001 in [12].

Autonomous adaptation is an adaptation effort that has been independently applied by farmers without government intervention (Lasco et al., 2011 in [10]. On the other hand, planned adaptation is an adaptation that involves development institutions and policies, with the goal of strengthening the adaptive capacity of farmers by maximizing new technologies and infrastructure (Dolan et al., 2001; Clements et al., 2011 in [10]. Reactive adaptation is an adjustment that is undertaking when the impacts of climate change has occurred, while anticipatory adaptation is an adaptation that is proactive and carried out before the full impacts of climate change is perceived (Dolan et al., 2001 in [10]. One
strategy that is considered to be more effective in reducing disaster risks is adaptation to climate change based on local wisdom. The impact of climate change is very real, and is perceived by the adat community of Kasepuhan Karang.

The study would like to investigate adaptation measures on Adat Community context. F.D. Hollenmann develops four categories of adat community, namely religious, communal, concrete, and magical religious. This is also referring to the academic document of the District Regulation of the Lebak Regency in 2015, the definition of adat community is acknowledged by Cornellis van Vollenhoven who states that customary rules that grow in certain communities is called as rechtsgemenschappen. Holleman then defines van Vollenhoven’s rechtsgemenschappen as an adat law community (ALC), which is a social organization unit of adat community (AC) that has a special and autonomous arrangement for the life of their people live because of two factors: (1) the existence of a representation of local authority (adat leadership); (2) the existence of communal property, mainly land, which allows the community to carry out its arrangements ([13]).

2.2. Study Location
This research is conducted in Jagakarsa Village, Lebak District, Banten Province due to several reasons, i.e.: this location is chosen with consideration that Adat Community Kasepuhan Karang has already been legalized by the Ministry of Environment and Forestry since 2017, their customary characteristics fulfill the criteria for undertaking this research. The village of Jagakarsa, where ALC Kasepuhan Karang lives, lies at an altitude of 433 asl (BPS, 2017). The village is surrounded by mountainous forest. They remain in good condition. Illegal logging is not found in the Kasepuhan Karang forest area. In managing the village landscape, the ALC Kasepuhan Karang places paddy fields in the areas that are not prone to disasters. They build houses not on the banks of the river but in the areas that are relatively safe from landslides. They maintain forest cover to maintain water resources for the benefits of the community. Thus, villages, housing and food sources are safe from the effects of extreme weather, protected from floods and landslides that hit other areas in their sub-districts and in three other sub-districts.

Figure 1. Map of Lebak district
2.3. Data Collection
Data collection includes primary data at the village level and secondary data at the provincial, district and village levels. Primary data is focused on community’s understanding of the patterns of forest community management, climate change such as seasonal change and water source availability, their impacts and their adaptation strategies. Secondary data are collected in the form of climate and weather conditions, village monographs and are taken from related regulations.

### Table 1. Method of Data Collection

| No | Method               | Data Source/Respondent                                                                 | Remarks                                           |
|----|----------------------|--------------------------------------------------------------------------------------|--------------------------------------------------|
| 1  | In depth Interview   | Group of community representative                                                   | Village (Adat leader, village leader, Senior Community member, 30 respondents) |
| 2  | Field Observation    | Land management technique, situation and condition of forest, etc.                   | Village Jagakarsa                                 |
| 3  | Focus Group Discussion | Stakeholders                                                                         | District, Lebak and Village Jagakarsa            |

2.4. Data Analysis
Data are analyzed qualitatively descriptively through identifying the effects of seasonal changes on the environment of forest resources in advance, including communities, and the conditions of residential environment. From the results, it is undertaken the classification of the types of effects of seasonal changes on the forest environment and community’s lives.

### Table 2. Processing and Analysis

| Data Type | Method of Data Processing and Analysis |
|-----------|-----------------------------------------|
| Types of seasonal changes impact on AC local wisdom | Methods:  
  a. Identify the type of adat forest management pattern managed by AC  
  b. Identify the AC local wisdom  
  c. Identify the type of season and rainfall in HA area  
  d. Risk Analysis |
| Type of adaptation and constraint of society in adapting to climate change | Methods:  
  a. Identify the adaptation format on community scale  
  b. Classify the social and economy obstacles towards adaptation process on community scale  
  c. Adaptation Assessment |

2.5. Adaptation towards climate change
In this research, it has been identified community’s responses towards environmental changes, their knowledge about social, local culture in managing adat forest and local institutions as the impacts of climate change. Furthermore, it is undertaken the determining community choice in responding to environmental conditions as a result of climate change. Adaptation is able to be distinguished as being reactive (responding) and being anticipative (reducing risk), or segmented and multi-segmented. In this study, it is able to be observed the effectiveness of the adaptation format of adaptive effort carried out by the community, which are influenced by, among others, the location and socio-economic situation.

3. Result and Discussion
3.1. Climate Condition in Lebak District
The most impact that occurred due to climate change in Indonesia is climate anomalies. This phenomenon causes shorter rainy season but with increasing intensity and dry season which lasts
longer than in normal conditions. High intensity of rainfall is not able to be accommodated by water bodies, so it flows quickly to the sea and a relatively longer dry season results in drought [14].

Lebak District has a geographical location between 105º25'-106º30 'EL and 6º18'-7º00 'SL. Prasetiawan, (2015) research results for 21 years, it shows that from 1993 to 2014, Lebak district is obtaining the peak of rainy season on January, while the peak of the dry season is on July. The average annual rainfall is 2170 mm, while the average monthly rainfall can be seen in Table 3.

**Table 3. The average monthly rainfall category in Lebak district**

| No | Category   | Rainfall average/month | Month                        |
|----|------------|------------------------|------------------------------|
| 1  | Low        | 60 – 100 mm            | June, July, August           |
| 2  | Medium     | 100 - 200 mm           | March, April, May, September, October |
| 3  | High       | ≥ 200 mm               | January, February, November, December |
| 4  | Dry month  | < 60 mm                | ---                          |

Source: Prasetiawan 2015

Table 3 shows that the dry season in Lebak District occurs for 3 months per year, i.e.: on June, July and August, with monthly rainfall ranging from 60 - 100 mm. The rest of Lebak District has medium category rainfall (100-200 mm) and high (≥ 200 mm). In addition to monthly rainfall, Prasetiawan, (2015) also obtained the highest average level of monthly rainy days on February, with 18 rainy days. While the lowest level of rainy days occurred on August for 7 rainy days. Other months, the range is from 8 to 15 rainy days. The data illustrates that during the year there is no dry month in Lebak District, where even during the dry season, the level of rainy days is quite large. Thus they are able to continue to cultivate their land and never experience a bad season. The aforementioned table 3 shows the common rainfall range used that could be found in Lebak District.

The high rainfall in Jagakarsa Village as an object of research that is above 200 mm causes the temperature to be low, this has a positive impact on the growing season in the arable land of indigenous people. They do not experience a long dry season and do not affect the community's arable land, it can be said that the community is not difficult to adapt to climate change.

The above conditions provide great benefit to Kasepuhan Karang AC who cultivate rice fields as their main activities. Based on the Oldema climate classification system which is used mainly in dryland paddy fields, it states that rainfall is greater than or equal to 200 mm per month and it is considered sufficient for lowland rice management, and a minimum rainfall of 100 mm per month is considered sufficient for crops. The 5-month rainy season is considered sufficient to cultivate wetland rice for one season. In Lebak District, the average monthly rainfall with an intensity of ≥ 200 mm occurs for 4 months and the average monthly rainfall with an the intensity between 100-200 mm occurs for 5 months.

Although the rainfall data for 21 years from the year of 1993-2014 shows that it is suitable for cultivating lowland rice; the results of Prasetiawan, (2015) study has projected that in 2050 there would be an increase in the temperature average of 1ºC (scenario B2) and an increase by 1.2ºC ( A2 scenario). The assumption used in B2 scenario is that the effort to resolve economic, social and environmental problems locally and the global population continues to increase but at a rate of slightly lower than the A2 scenario and economic development at a moderate level. The assumptions used in scenario A2, assumption used is if the conditions between regions are very diverse and economic development is very regionally oriented, therefore the fragmentation would occur between regions. The increase in the average annual temperature has the potential to cause changes in rainfall distribution where the rainy season would get wet and in the dry season it would dry out and last longer as a result of climate change.
3.2. Extreme Weather and Vulnerability of Kasepuhan Karang AC

Huge floods hit four sub-districts in Lebak District on March 22, 2019, a night after heavy rains which resulted in overflowing of 3 rivers, namely the Cibeurih river, the Ciberang, and the Cilaki River. Some media such as Kompas.com dated on May 23, 2019, Merdeka.com dated on May 23, 2019, Republika.co.id dated on May 27, 2019, and Kabar-banten.com dated on May 28, 2019 spread the incident information. The four sub-districts are Leuwidamar, Muncang, Sajira and Cimarga.

Based on data from Lebak District Disaster Management Agency (BPBD), the disaster caused the damage in three bridges and also at least 209 housing units submerged, 56 of which are damaged and washed away by the river, and hundreds of people have to evacuate. The worst affected area is the Sajira Subdistrict because of most of the residents lives on the Cibeurih River bank. The Lebak District Leader, Iti Octavia Jayabaya, states that this huge flood is the most severe incident that occurs in Lebak District in the last 53 years. Previous flood incident are only in the form of overflowing water but not damaging houses. As it happened in 1994, the flood only submerged dormitory building which was only about 20 meters from the edge of the Cibeurih River.

Head of BPBD Lebak District, Kaprawi, says that the huge floods occur very quickly, when people are breaking their fast. According to him, the occurrence of huge flood is triggered by the high intensity of rain. Three rivers overflows (namely the Cibeurih River, the Ciberang, and the Cilaki River) and strikes residents in four sub-districts. High rainfall triggers land movement and landslides. Furthermore, Lebak District has been categorized as a flood and landslide area because there are rivers, hills and mountains. If the rainfall is high, it is definite that a number of rivers overflow, and this results floods which is striking the settlements on the riverbank. The people of Lebak District, especially those who are living on the river banks, are vulnerable to be the victims of flash floods and landslides.

Kaprawi says that he has written a letter to the Ministry of Environment and Forestry (KLHK) to investigate the condition of the Halimun forest as a water absorption area and conservation area to eliminate the huge flood disaster. Meanwhile, Banten Province Environmental and Forestry Service (DLHK) says that they have not received any reports on deforestation in Mount Halimun yet. But if there is any tree logging, it is believed that it is illegal logging. DLHK Banten Province has not been able to distinguish the precise reasons of the huge flood in Lebak because it has not yet conducted an investigation. The cause of huge flood is also due to extreme rainfall that was not being absorbed by the soil. According to him, his responsibility was to monitor the state of the forest by synergizing with communities such as with the Forest Farmers Group (KTH). There is also supervision carried out by Forestry Police (Polhut), and Perhutani.

In an prevention effort for undesirable impacts, the Provincial Disaster Management Agency (BPBD) Director provides “Warning of vigilance in relation to bad weather which is still likely to occur again under the coming heavy rain and strong winds and lightning strikes”. He also issues an early warning letter so that the community is aware of the natural disasters. Early warning is distributed to sub-district and village staffs and volunteer officials to increase the alertness of natural disasters.

Based on the information above, as it is said by Mr. Kaprawi, the huge floods that hit Lebak District occurs not only because of extreme weather, but it is as the combination of extreme rainfall with bad weather geomorphological conditions, and it is aggravated by human activities such as deforestation in the upstream area.

3.3. Local Wisdom as an Adaptation Strategy for the Kasepuhan Karang AC

Kasepuhan Karang, as it has been chosen as the study site, is located in Jagaraksa Village, Muncang Sub-district, Lebak District. Jagakarsa village and the population is 2,433 people (1,249 male and 1,184 female) under a total of 739 households. They generally obtain their income as farmers and laborers. Jagaraksa village has an area of 578 hectares which is divided into 7 villages (BPS, 2017). Of the total village area, it is around 84% (485.366 hectares) that are adat forest areas. According to the land status, it is around 462 hectares (95%) of adat forest area that is part of Halimun Salak Mountain.
National Park (TNGHS) area and the rest are in the APL area (Areas of other purposes, non-forest area). The results of the interview finds that the Adat community recognised that most of the area was inside the forest area.

The AC Kasepuhan Karang has managed their customary forests since the Dutch colonial period in 1677. They have their own rules that is engaged to the rules of environmental harmony. According to the forest function, it is around 389.207 hectares of the Kasepuhan Karang adat forest are covered and entrusted forest, and the remaining of 96 hectares are managed under the main conservation preferences. The management of the customary forest follows the traditional management rules of Kasepuhan Karang, Tatali Paranti Karuhun. [1].

After the adat forest of Kasepuhan Karang declaration, there is undertaken some traditional regional spatial rules as it follows:

- **Aub Lembur**, it regulates spring water as a sacred area,
- **Gunung Kayuan**, the area consists of various woods and is prohibited from being cut down,
- **Leuweung Caiwisan**, the reserved land or area for plantations and rice fields,
- **Lamping Awian**, a steep land that must be planted with landslide prevention plants,
- **Datar Imahan**, a flat area that is intended for settlement.

The landscape zonation as it is defined above is intended for forest protection and meeting sustainable community needs. Another important purpose under ‘sustainable’ goals in this sense is that their natural resources must be protected from various potential disasters, and those resources are to be able to fulfill their needs [8]. It is seen that in order to harmonise between the environment and community those needs has to be considered. For example, **Gunung Kayuan** is filled with a variety of wood that is forbidden to be cut down and should be planted in highland areas, steep places, and for protection purposes. The prohibition on cutting down is intended to maintain landslide hazards and to function the area as water system and animal protection. **Leuweung Caiwisan** or land reserved for gardens and rice fields is intended to fulfill family food needs. AC leader has realized that they need food, but they also realize that the allocation of land for food fulfillment must have different criteria than 'Gunung Kayuan', i.e.: the location is flat (not steep), near water sources, easy to accesses, facilitate the transportation of crops, etc. **Datar Imahan**, or land for residential purposes would be chosen in a flat location, it is supposed to avoid being submerged by flood, not close to river banks. The rules that they have agreed is that they need to provide a balance between protection, conservation and land utilization.

The land utilization pattern and arrangements that they have made are strategies for forest utilization but with respect towards aspects of protection. They have identified several potential disastrous areas, such as critical, and semi-critical areas. [15].

From the various classifications, they have distinguished the utilization of customary forest areas; it is clear that ALC are very close to their interaction with forests. They have local wisdom in many ways related to:

- **Forest management.** In this case the forest area is divided into several zoning systems by considering various aspects (eg altitude, slope, location of water sources, etc.) for determining the utilization (agricultural land, forest, settlements, etc.).
- **Traditional farming, known as leuit paceklik**, is a rice granary system that is able to be functioned for food security for the community of Kasepuhan.
- **Daily life and natural resource management.** They have a tradition of paddy activities, at least once in a year. In planting for the second time, they call it as *ngebon* (gardening). The second time activity is considered as an additional income and it is not obligatory because it is not an obligatory of Kasepuhan habit [16].

Some of the traditions commonly carried out by AC in Kasepuhan Karang include:

1) The harvest season is conducted at the beginning of November
2) Hold the tradition of Mapag Pare Beukah (a ceremony to enter the rice harvesting process) into a barn or called leuit.

3) Permission from a traditional leader for working on the land.

4) Prohibition of entering the forest, two days in a week (Wednesday and Sunday) - to three days (Wednesday, Friday and Sunday)

5) The Seren Taun tradition of the year, as a form of gratitude and reports to God.

Local wisdom that regulates the utilization of the environment (forest) in the form of restrictions that are also intended to protect and preserve the forest is still quite effective. Some of these restrictions are made somewhat mystical. For example, the prohibition of taking wood in the forest which is actually intended to prevent forest destruction is conveyed to the community in other ways – as it is not triggering the anger of supernatural beings (Pasya, 2007; Mulyana & Pasya, 2015). at the time of when the research is conducted, both young and old people in the community still believe in mystical matters and obey them, without understanding the important message behind the prohibitions. Based on Adat leader, the message behind the prohibition is related to religion or belief, the balance between working with taking a rest, and reducing time for exploitation of nature. The various rules that are applied in AC Kasepuhan Karang environment are local wisdom in the form of knowledge, beliefs, and attitudes that have been prioritized for years. In this sense, their local wisdom is able to function as their efforts to adapt to environmental conditions, utilize natural resources, and overcome various problems. This situation is also concerned as their strategy to survive amid various environmental conditions around them.

Currently Kasepuhan Karang customary area is still relatively large, but there would be a potential challenge, such as population growth, in the future. They remain needing land for living and farming. If the land they have is continuously distributed to their offspring, it is very possible that there potentially would be a shortage of land for agriculture and the potential to penetrate areas under different purposes (eg for protection or conservation functions) would happen. In this case, the adat leader has also considered another approach. The intended approach includes:

a. Without an ongoing distributing land (inheritance), in the future, the commodity products are the one that they distribute – commodities that have been grown in their land. Thus, the land area for various functions is expected to be maintained and the choice of commodities that would be planted is an important aspect to be further considered. This idea has not been socialized to the members of AC.

b. The implementation of environmental services. The Adat community of Kasepuhan Karang realize the beauty of nature around them. The idea of selling their environmental services is implemented through the development of Forest for a tour of Pesona Meranti which was inaugurated by Lebak regent in 2017. Pesona Maranti that is located at an altitude of 900 meters above sea level is a traditional Meranti forest area in Kasepuhan Karang and it offers natural tourism destination, Kasepuhan culture, and environmental conservation education sites. In this area, tourists are able to have a camp an, outbound activities, and at the same time they may also enjoy the fresh air and the beauty of nature, interaction directly to the community, watching village people harvesting sap and cooking the sap into palm sugar, and visit the big place or residence of the Kasepuhan Elders and learn about the traditional Kasepuhan Karang. Through this natural tourism activities, it is expected that the community (including the younger generation) will increasingly appreciate environmental sustainability and realize that natural and cultural preservation has great potential to provide income.

c. The increased of biophysics. It is carried out by stipulating a prohibition for people to cut down trees in Leuwung Titipan. If it happens, then for cutting one tree down, it must be replaced by planting three seedlings at the same location.
3.4. Impact of Local Wisdom to AC Kasepuhan Karang

Forest is very useful area as a source of livelihood upon their high dependent on forest. Interviews conducted with AC informs that community members enter their adat forest, in average, once a week. The direct benefits that they may obtain from the forest are area of wood sources, non-timber forest products, intercropping, and water sources. The indirect benefit they received is that the forest functions as a flood and erosion controller, that it has extraordinary natural beauty and it is able to provide the coolness and comfort feeling [19].

Up to 2018, Kasepuhan Karang AC has not experienced lack of water. Based on field observations and interviews, it is found that all respondents states that abundant and very clear water are available. Water flows continuously both in the dry season and in the rainy season. Water is distributed to the homes using pipes stored in water tanks or reservoirs. However, wasted water is found as well because they generally have no pipe installation.

Water is used by villagers mainly for drinking, bathing and washing. In addition, 91% of respondents utilize water for irrigating rice fields beside for domestic purposes. In daily use of water, it is estimated around 5 - 20 liters of water is used daily (per household). The interview results that 94% of respondents states that the water from the forest is clear in quality and therefore they believe and agree that the forest must be maintained, not only for their purposes in recent time, but also for future generations.

Another benefits of forests for AC, mainly, are as a source of fuel wood (90% of respondents), carpentry (30% of respondents), and for resale (40% of respondents). The Adat leader is without any exception need to obey and implement this customary rules in the utilization and in cutting down trees from the forest area. Therefore, there is no specific limits on how much wood can be taken and sold by the community. The existing customary rules are limited to permit the agreed specific time that is forbidden for not allowing community to enter forest and to cutting down trees. They call it as the conservation zone or core zone and it is in the water spring area. The AC will provide sanctions by asking them to carry out replanting three trees in the same location.

Leuweung Garapan is community that is able to do cultivation in the area at Kasepuhan Karang. All respondents consider that the condition of their arable land is still fertile. The land ownership by the community varies from 0.26 - 0.5 hectares (50% of respondents), 0.25 hectares (23% of respondents), 0.51 ha - 1 hectare (20%), and only 7% respondents who have more than 1 hectare. The land is obtained inherited or distributed by their customary leader. The land cultivated by the community is planted by agricultural crops, plantation crops and forestry crops with intercropping systems. In order to meet daily food needs, 50% percent of respondents plant rice (Oryza sativa) and 30% of respondents plant other agricultural crops such as cassava, maize, taro, lemongrass, galangal, long beans, pumpkin, chili and vegetables for their own needs. Traditional wisdom and local knowledge of Kasepuhan community in managing natural resources have been proven successful with no famine up to recent time [20]. In relation to planting activities, the priority of the community is soil fertility, not productivity. It is believed that if the land is fertile, there would provide good production.

4. Conclusion

Kasepuhan community members consider customary forest areas as their customary territory for generations. AC divides their traditional territory under zoning areas for various purposes, such as arable land, protection, and settlements. The determination of zoning is carried out by considering various ecological aspects which has been the concept of Kasepuhan Karang Adat. Knowledge and local wisdom that are inherited as their characteristic of the Kasepuhan community is characterized by some consideration of the relationship between humans and nature and on how humans manage natural resources. This knowledge also directs towards the pattern of human adaptation to nature and the family livelihood system that relies on agriculture.
The elements in the Kasepuhan Karang Adat Law Community (MHA) are in accordance with the Hollenmann concept, which has a mindset based on people's beliefs about the existence of a ‘thing’ that is sacred (magical). They also have an assumption that every individual, community members are an integral part of society as a whole (natural communal). While the adaptation carried out by MHA Kasepuhan Karang is categorized as an autonomous adaptation, that is an adaptation that has been independently applied by the Kasepuhan Karang MHA as local wisdom. The adaptation is implemented independently through existing customary norms and laws. This study findings imply to the need of scale out and scale up of the Adat Community’s values for adaptation strategies on the other communities at different governance levels.

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