

Ecotourism at Nuraksa Forest Park Area of West Lombok - Indonesia

Muji Rahayu and Baiq Nurul Hidayah

Assessment Institute for Agricultural Technology (AIAT), West Nusa Tenggara Province, Indonesia
Email: rahayu_yusuf@yahoo.com, baiqnurul@pertanian.go.id

Abstract—Indonesia is one of the destination countries of ecotourism, and Lombok Island of Indonesia become one of the best places to visit. This study aims to: (1) Determine the potential of ecotourism development at Nuraksa Forest Park (NFP) area of West Lombok - Indonesia; (2) Obtain the government policy formulation concepts in the management of ecotourism at NFP; (3) Understand ecotourism development model at NFP; and (4) Understand community's attitude towards ecotourism development at NFP. The study was conducted at West Lombok in 2016. Qualitative method was used during the study, while data were collected by observation, in-depth interviews, documentation, focus group discussion, and triangulation. Data were analyzed based on Miles and Huberman model as well as analysis of strength, weaknesses, opportunities and threats (SWOT). Results showed that: (1) NFP is a potential area to be developed as ecotourism area; (2) Development of ecotourism should be harmonized with the social and economic conditions of the community and does not conflict with government conservation project; (3) Agrosylvo tourism (ecotourism) model at NFP is a model of participation-partnership between government and community; and (4) Most people (86.67%) in the surrounding area were agree and support the development of NFP as ecotourism area.

Index Terms—agrosylvo, ecotourism, Nuraksa Forest Park, West Lombok, Indonesia

I. INTRODUCTION

Ecotourism is now defined as "responsible travel to natural areas that conserves the environment, sustains the well-being of the local people, and involves interpretation and education". Education is meant to be inclusive of both staff and guests [1]. The definition promise of ecotourism and delivers social, economic, and environmental benefits in the region [2]. Ecotourism is a sub-component of the field of sustainable tourism. Ecotourism's perceived potential as an effective tool for sustainable development is the main reason why developing countries are now embracing it and including it in their economic development and conservation strategies [3]. The development of ecotourism is encourage by massive dissatisfaction with the simplistic travel packages offered by travel firms and a desire for more educative and challenging vacations [4].

Ecotourism has become an important economic activity in natural areas around the world. It provides opportunities for visitors to experience powerful manifestations of nature and culture and to learn about the importance of biodiversity conservation and local cultures. At the same time, ecotourism generates income for conservation and economic benefits for communities living in rural and remote areas [5].

Indonesia is one of the destination countries of ecotourism, and Lombok Island in West Nusa Tenggara (WNT) Province become one of the best places to visit. WNT Province is one of the provinces in Indonesia which has reached 1,071,722.83 Ha of forest area, consisting of the protected forest areas (41.73%), conservation forest area (16.20%), and forest production area (42.06%). In terms of the forest area, WNT has a huge potential in the development of ecotourism tropical forest area. The forest area in this region that can serve as a tourist area based environment is conservation areas (national parks) covering an area of 41.330 Ha, forest parks 3.155 Ha, natural park 21.976 Ha, the nature reserve zone (animal sanctuary) 21.675 Ha, reserve nature 36.833 Ha, protected forest 447.272 Ha and production forests 450.814 Ha. The goal in the development of ecotourism is the preservation of nature and culture as well as social welfare. While utilization conducted only on the aesthetic aspects of the services, knowledge (education and research) on ecosystems and biodiversity, the use of paths for tracking and adventure [6], [7].

The tourism sector (including ecotourism) in WNT is one of the leading sectors in order to support the local economy and national development of the tourism sector in this region has been stipulated in the Master Plan for the Acceleration of the National Economic Development and tourism as one of the major sectors in order to prop up the economy area. For that, the WNT provincial government has sought to develop a range of potential uniqueness of nature that exist through the promotion and arrangement of regions that have development potential.

One of the forest areas in WNT that can be developed for tourism development activities, in particular ecotourism is Mount Rinjani and the surrounding area, where one of them is Nuraksa Forest Park (NFP) area. This area is located in West Lombok District with an area of 3.155 Ha. NFP area is a nature conservation area

Manuscript received June 20, 2017; revised November 1, 2017.

for the purpose of collection of plants and animals that are natural or not natural, original type and or non-native species, which are not invasive and is used for research, science and education, cultivation support, tourism and recreation [8]. To support the development of the NFP area as one site for tourism, then the block management of traditional use in the area should be designed so that it will get a model of ecotourism development that has four principles which is a comprehensive primer in nature tourism development sustainable (ecotourism) namely: (1) Creation, in this case the natural and cultural education; (2) Education, in this case is the education of the local community and tourists about how to realize a sustainable tourism activity; (3) Participation of local communities to forest tour that lets people feel valued and have the travel resource and (4) A community-based economy arising out of by and for the local community. Based on the above, which is the case in this study were: (1) How can the potential of ecotourism in the area of NFP developed?; (2) How does the formulation of government policy concepts in the management of ecotourism in the NFP?; (3) How is the formulation of a model of ecotourism in the NFP?; and (4) What is the community attitude towards the development of ecotourism in the NFP?

The study aims to determine: (1) The potential for ecotourism at NFP area; (2) Formulation of government policy concepts in the management of ecotourism in the NFP area; (3) The formulation of a model of ecotourism in the NFP area; and (4) The attitude of society towards the development of ecotourism in the NFP area.

II. RESEARCH METHODS

This research was conducted in the NFP area of West Lombok District, WNT Province using 2016 primary data and 2015 secondary data. The method used in this study is a qualitative method. Types of data collected included primary data and secondary data. Primary data were collected by observation, in-depth interviews, documentation, Focus Group Discussion (FGD), and triangulation. Meanwhile, secondary data obtained from related institutions/agencies. Data were analyzed with a model of Miles and Huberman [6]. In this case, data analysis performed interactively and runs continuously until the data becomes saturated. Data analysis in the model of Miles and Huberman include: reduction of the data (data reduction), presentation of data (data display), and the conclusions/verification (conclusion drawing / verification). Data reduction is selecting activities and focus on important data and create categories, while the presentation (display) of data is done by presenting the data reduction results into certain patterns. The series of data analysis model of Miles and Huberman described in Fig. 1. The data in this study also uses Strong, Weakness, Opportunity and Threat (SWOT) analysis model. SWOT analysis is used to identify relationships between ecotourism resources with other resources [9].

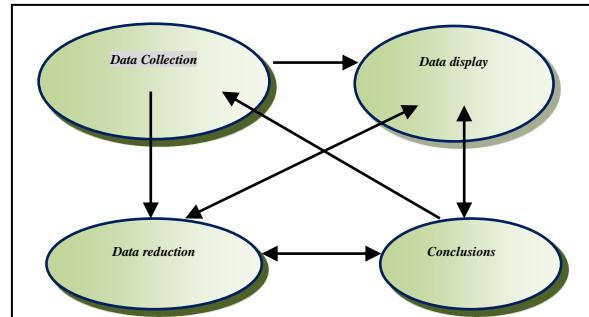


Figure 1. Interactive model of qualitative data analysis (Miles and Huberman Model)

III. RESULTS AND DISCUSSION

A. Overview of the Research Area

NFP area located in the area of Mount Rinjani in West Lombok District administration with an area of 3.155 Ha. Geographically located between 116°03' - 116°44' East Longitude and 8°15' - 8°35' South Latitude. By territorial boundaries NFP area is as follows: North side: Mount Rinjani Protected Forest; East side: Aiq Beriq Community Forest; South side: land belongs to the community; and West side: Mount Rinjani Protected Forest. The topography of this region stretches at an elevation of 500 m to 1,000 m above sea level (ASL). Based on the slope grade scale of 1: 25,000 landform NFP varies from flat area, sloping, somewhat steep to very steep with gradients of 15-40% and 5-15%.

The population in the study site (Pakuan Village, Sub District of Narmada, West Lombok) as many as 665 people, made up of 338 men and 327 women with its main livelihood is farming, farming on land either owned or in the protected forest area with the pattern, in addition to the population living as traders, laborers, masons and motorcycle taxi and others. Religious affiliation of the majority (98%) of people in the Pakuan Village is Islam, and only 12 people (2%) had embraced Hinduism. Tribes that inhabit the area around the NFP is Sasak and still thick and uphold customs (*awiq-awiq*).

Type of art in the NFP area is a kind of traditional art namely *Kamput Cilokak*, *Kecimol*, and *Qasida*. This traditional art is an art form existing and developing communities in society. Moreover, it can be seen also in terms of community participation form or join associations organize village institutions in the form of cooperatives, farmers' groups. Moreover, it can be seen the public has long been actively revive traditional institutions and meeting (*sangkep*) customary. Community through *sangkep* customary of local government resulted in an agreement or rules - the rules that govern everyday life both are closely related to traditional norms, moral norms, as well as other norms relating to social interaction with the environment.

The forms of community contributions in forest management has been quite a lot, the public together with the local government in this case the WNT Forest Service and the West Lombok District Forest Service jointly maintain and preserve forests through various activities such as forest and land rehabilitation,

reforestation, conservation of water sources and so forth [9].

B. Nature Potential

The potential of nature tourism (ecotourism) that can be developed in the NFP area grouped within a potential, among others:

1) Potential of flora and fauna

Potential of NFP's flora in the region has its own peculiarities. Besides biodiversity because it is an integral part of the area of Mount Rinjani, NFP area also has traditional use area managed community with fruit trees. In the areas where stands a good condition as in block protection can meet the typical landscape of tropical rain forests such as large trees with diverse types that will provide an exciting experience for the cross and when seen from a distance would result in overlay green and beautiful trees. The identification results and interviews with approximately obtained 40 types of plants which 25 species have potential as a medicinal plant. These crops are dominated by: mahogany (*Swietenia mahogany*), kesambi (*Seleichera oleosa*), Klokos (*Syzygium javanica*), rosewood (*Dalbergia* sp.), *Ficus indicus*, rajumas (*Duabanga moluccana*), *Palaquium poetida*, harrow (*Disoxylum* sp.), Albizia (*Paraserianthes falcataria*), durian (*Durio zibethinus*), jackfruit (*Artocarpus integrifolia*), kapok, rambutan, linings, coffee, hazelnut (*Aleurites moluccana*), and others. As for the lower-level vegetation is dominated by: orchid (*Cymbidium simulans* Ropke), nail mountains (*Pteris* sp.), fern forest (*Angiopteris evecta*). Photos of flora in the NFP are shown in Fig. 2 – Fig. 3 [10].



Figure 2. *Syzygium javanica* in the NFP area. Adapted from Rahayu (2016)

Potential fauna were identified either encounters directly or based on the information from the society in the NFP area there are 38 types, among others: lizard (*Varanus salvator*), monkey (*Macaca* sp.), wild boar (*Sus vittatus*), monkey (*Presbitis cristata*), deer (*Rusa timorensis*), python (*Python timorensis*) and porcupine (*Hystrix Brachium*). For wildlife species of aves dominated by jungle fowl (*Gallus specdiv*), bird (*Zosterops palpebrosus*), coax-cawing birds (*Philemon buceroides*). Photos of fauna in the NFP are shown in Fig. 4 – Fig. 5 [10].



Figure 3. *Voacanga* sp. in the NFP area. Adapted from Rahayu (2016)



Figure 4. *Macaca fascicularis* in the NFP area. Adapted from Rahayu (2016)



Figure 5. *Zosterops palpebrosus* in the NFP area. Adapted from Rahayu (2016)

2) Potential of mountains

NFP area are located at an altitude of 500-1000 meters ASL with land slope conditions vary from flat, sloping, somewhat steep to very steep with gradients of 15-40% and 5-15%. With a higher elevation than the surrounding area, at certain points at NFP area we can see the beautiful natural scenery of the area beneath it. Varying slope conditions also have the potential to become tourist attraction. Combined with walkways shaded by dense vegetation still in some locations could be an attraction for those who want to enjoy cross-country activities or wildlife observation activities. Diverse slope conditions are also suitable for sporting events of special interest such as mountain bikes.

3) Potential of water

The distinctive feature of mountain areas with good conditions that still stands is the abundance of water potential. Can be springs, rivers and waterfalls. The main rivers in the region are NFP Stipa River that flows along NFP. The existence river Stipa be an attraction for some point have a beautiful view that can be used by visitors as a place to rest after tracing the path on NFP. Issued fountain of fresh water that could even be drunk directly or can be used to cleanse the body for those who want to feel the fresh mountain water as shown in Fig. 6 [10].

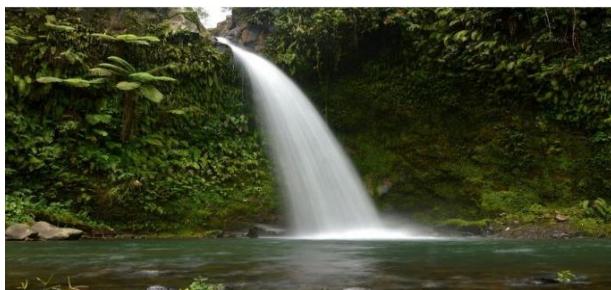


Figure 6. Segente waterfall at the NFP area. Adapted from Rahayu (2016)

The main attraction of the potential of the waters in the area of the Segenter waterfall is located about 2.8 km from the gate of NFP. This waterfall can be reached on foot or two wheels motorbike. The existence of these attractions are well known by the public, so that people come to visit the Pakuan village. A constant flow of water is the main attraction for the public to enjoy the coolness of the waterfalls, especially during the dry season. Besides the Segenter waterfall, there was one more waterfall although located outside NFP area namely Elenpati waterfall. While they are outside the NFP area, panorama of Elenpati waterfall is interesting as a tourist destination and is also supported by a good road access.

4) Potential of caves

In the NFP area, cave frequented visited by the public, namely Goa Pengkoak. The natural attractions in the form of cave filled by the flow of water is quite clear. Goa Pengkoak appeal is contain religious stories that developed in the community that invites interest for a trip there. Most people who visit Goa Pengkoak to perform the ritual activities of cultural / religious so Goa Pengkoak's existence by the local community is still considered to have a religious value. Location of Goa Pengkoak within 1 km of the Segenter waterfall to upstream (north).

5) Analysis of ecotourism in NFP area

NFP area as one of the attractive tourist locations in the island of Lombok and WNT Province in general already widely known to the public at local, national and foreign. The high expectations of domestic and foreign tourists to enjoy tours given by the region would have to be supported by greater government support to offer a grand design and appropriate policy and sustainable ecotourism in order to keep the region's natural beauty of

NFP. However, before entering at the level of policy will be delivered existing condition NFP ecotourism in the region with some of the criteria used by Gunn in [11].

Generally NFP area save natural resources where very interesting to be developed as an area of agrosylvo tourism (ecotourism). There are many factors that reinforce why this region is relatively better protected from environmental degradation problems, among others: (1) the community is still resistant to make this area as a conventional tourist areas such as construction of hotels, resorts and other development. This makes the NFP area maintained its authenticity; (2) Accessibility to enjoy the beauty of the NFP area not easy to pass, which the traveler must cross the territory of the forest on foot for approximately 2 - 3 hours; (3) Region of NFP area is still a conservation program and reserves the government so that the natural resources are also protected by the government.

With this power, the development of the NFP area as a tourist spot is appropriate to be done by the government, while maintaining aspect of society, environment and economy. In this context strengths or advantages possessed by NFP area, among others: first, the natural wealth of unspoiled and natural. In this case, tourists can enjoy a wide range of interesting adventure experience ranging from crossing the forest, waterfall baths, up to the cave. The tourists can enjoy the sights and activities of NFP surrounding communities. Journey by foot across in this region can be reached for 2-3 hours. Road infrastructure in the region that still use dirt roads and footpaths, as well as coloring rocky forest travel trip is very interesting. An exciting adventure trips and a little dangerous because of passing through walkways and cliffs.

In addition to the natural wealth offered in the NFP area, tourists can also enjoy the life of people around this area are still simple and traditional. In these places tourists can see how the activity of farmers who use forest products such as fruits and firewood. This is what can attract tourists to enjoy the forest in the NFP area. But apart from the powers that be in the territory of the region as a place of ecotourism, there are also weaknesses that are a barrier to progress this area. Problems existing: First, distance to the location of NFP area from capital city (Mataram) relatively remote and access vehicles still limited requires effort that is quite large, so make this area is still the main choice of regional tourists from city of Mataram and other cities in the island of Lombok. Secondly, it should be understood that the condition of the infrastructure and facilities in the surrounding area is still inadequate. It can be seen from the streets in the area a dirt road and can only be passed by a two-wheeler condition is still broken. In addition, conditions of infrastructure such as public toilets and so on are not sufficient and make this place to be inadequate to support the basic needs of travelers. Third, the role of government and the community to develop areas along the NFP area as ecotourism locations have not been fully successful. It is seen from the absence of a special program to develop the region

becomes more valuable and weighty. Even vigorous promotion of the territory just done by the government in this case the Forest Service of NFP. In addition, people in the village only participate in the delivery of both tourists and take the result block of NFP land use in the region and has not been formed to be an active travel community. Fourth, the government is still not doing conservation and preservation of this area closely. It can be seen from the lack of strict enforcement at the community.

Departing from the weaknesses and strengths that exist, the government (WNT Provincial Forestry Office and NFP) and the public should be able to develop these areas to be able to take the opportunities and anticipate threats that may arise. Opportunities ecotourism region as an attractive travel choice can be seen from the interest of people to enjoy a selection of different travel usual, both for outbound, training to education. Furthermore, it is the Sub District of Narmada as a research location, where the popular tourist city municipal and may be potential opportunities for students travel, because this type of travel is very popular among young people. Even so, the threat that there also must be anticipated by the local government and the community, as with the development of this region as a tourist area would cause serious environmental damage if not treated and closely monitored.

6) Ecotourism development policy at NFP area

Based on the potential that exists, especially the condition of the NFP area, there are some things that need to be done by policy makers, for the development of ecotourism in the NFP area:

1. Strengthening the ecotourism concept for NFP. This area has the potential for very interesting nature needs to be developed more seriously by the government. It is done in order to enhance the economic value of this region for strengthening the economy of surrounding communities. However, to reduce the negative impact to the environmental damage it would require a special effort to mitigate them. One of the concepts appropriate to address this problem is to develop the concept of ecotourism. In this context NFP area will be directed so that development does not disturb or in harmony with environmental conservation efforts and positive impact on the development of the welfare of the local community. Local community welfare development should be done in addition to support the sustainability of conservation as well as to encourage the economic improvement of the surrounding communities. However, in developing and reinforcing the concept of ecotourism to develop local public welfare required a precise understanding of the community and local government. Local governments and communities can play an active role and become stakeholder which interested in the development of this region. One way is to develop the rural economy unit (*BUMDes*) in cooperation with the NFP Center to support the activities and needs of the tourists, ranging from food business unit, souvenirs, toilets, transportation, lodging, and parking up to the tour guide.

2. Promote the linkage with travel agents. Development of a tourist area can not be separated from the existence of the alloying travel and travel agents. Because the tour guides and travel agents are the spearhead leading directly related to the tourists or the stakeholders, so it's easier to develop an ecotourism will require their further participation. Tour guides and travel agents can be controlled. Moreover, the desire of the tourists can be easily captured, so that tourism development is more focused and in accordance with the wishes of stakeholders. However, in developing a relationship with the travel agency needed an agreement on the concept of ecotourism development in the region. It is intended to offer travel packages given does not interfere with conservation efforts are also need to be done in this region.

3. Encouraging community participation and empowerment of travel. The local community is actually not a constraint for the development of ecotourism, because they should not have an integral role in the programs of travel. This community-based management is one of the natural knowledge management approach and environmental awareness of local communities as the basis for its management. Plus the transfer between generations which makes sustainable management into making this the most effective way, than the other way.

4. Encouraging business units are located. With the development of NFP tourist area, the need for ancillary business units are also needed such as venue, where parakeets, souvenir business, stores (design), where public toilets, to restaurant. All business units are expected to be outside NFP neighborhood, close to residential areas, to preserve the purity of biological nature and naturalism high side. In the context of the development of the business unit also required a good institutional forms to develop socio-economic side simultaneously (social entrepreneurship) as *BUMDes* concept.

5. Carry out a vigorous campaign. Growing NFP area will be better if the promotion is done too aggressively, in order to instill a strong tourist image of the region. Vigorous campaign than can be attributed premises of existing programs in the course of the agent can also be done by promoting it through the website.

6. Encourage the participation of student activity units and scout for nature lovers doing conservation program regularly. Increased conservation efforts in the region can be done by local governments also can be coordinated with the units of activity nature lover students from various colleges and scouts. This can continue to bedone with environtment friendly activities, such as maintaining nature reserve.

7) Formulation of ecotourism model at NFP area

In principle, the concept of ecotourism model in the NFP area implements the principle of participation-partnership between the government and the community. Where the government establishes a policy of ecotourism development in the NFP area, while the community is involved in participating in the process of managing and securing the NFP area especially on traditional blocks.

NFP area manager provides the main facilities and support ecotourism development in the area. The community through the community groups / forums utilize and maintain and manage environmental services after being agreed with the Center NFP. In addition, another model that can be developed is a partnership between the government and the private sector and the community. Private sectors can manage and utilize traditional block utilization areas through government approval by involving the community in securing them.

8) Community's attitude to ecotourism development program in NFP area

The results revealed that most (86.67%) of the people around NFP area have a positive attitude towards the development of NFP area as an ecotourism area.

IV. CONCLUSIONS

Based on the results and discussion, the following conclusions can be formulated:

(1) NFP area is a potential area to be developed into an ecotourism area that appeals to local and foreign tourists who want to enjoy ecotourism.

(2) The development of ecotourism in the NFP area should be harmonized with the social and economic conditions of the community, and not to clash with the conservation efforts undertaken by the regional government in the region.

(3) The development of ecotourism in the NFP area should be able to maximally involve the community and local government in every process. This is done to provide a wide space for local people to enjoy the economic benefits of ecotourism development in the region.

(4) The pilot ecotourism model in the NFP area is a model of partnership between the government and the community.

(5) The majority (86.67%) of the community has a supportive attitude towards NFP development area as an ecotourism area, but there are some people who are still worried about the area will be managed by the government or the owner of the capital in a monopoly, while the society is neglected.

V. RECOMMENDATIONS

On the basis of the results presented in this work and implications discussed, the following recommendation are:

(1) The potential of ecotourism in the NFP area should be optimally developed, in order to obtain a great value without ignoring the sustainability of natural resources in it.

(2) Development of ecotourism in the NFP area shall maximally be able to involve all stakeholders including local community in every process of its management.

(3) It should be studied more deeply about the ideal ecotourism management model in the NFP area and economic valuation assessment contained in it.

(4) Increased cooperation needs to be improved with related institutions such as travel agents and student activity units of nature lovers, Scout to create creative ideas for ecotourism development in the NFP area.

(5) The policy of the NFP area development as an ecotourism area has provided mutual benefits for local communities and the environment. Therefore the program is very good and needs to be continued.

REFERENCES

- [1] M. Meyer, "Ecotourism: A brief introduction," in *Proc. European Ecotourism Conference*, Jachranka, Poland, 2015.
- [2] A. Zambrano and A. Maria, "Social and environmental effects of ecotourism in the Osa Peninsula of Costa Rica: The Lapa Rios case," *Journal of Ecotourism*, vol. 9, no. 1, pp. 62-83, 2010.
- [3] C. de Silva, "Ecotourism: Principles and concepts – A brief review," in *Proc. 1st Living Lakes Asia Conference*, Sri Lanka, 2007.
- [4] Dinas Kehutanan Provinsi NTB, Statistik Kehutanan Provinsi NTB, Mataram, 2015.
- [5] A. Drum and A. Moore, "An introduction to ecotourism planning. Ecotourism development: A manual for conservation planners and managers," The Nature Conservancy, Arlington, Virginia, USA, 2002.
- [6] C. Fandeli, "Pengusahaan ekowisata," Fakultas Kehutanan, Universitas Gadjah Mada, Yogyakarta, 2000.
- [7] Balai Tahura Nuraksa, "Laporan tahunan tahun 2013," Balai Tahura Nuraksa, Dinas Kehutanan Provinsi NTB, Mataram, 2015.
- [8] J. Damanik and H. F. Weber, "Perencanaan ekowisata: Dari teori ke aplikasi," PUSPAR UGM dan Penerbit Andi, Yogyakarta, 2006.
- [9] L. J. Molong, "Metodologi Penelitian Kualitatif," PT Remaja Rosdakarya, Bandung, 2005.
- [10] M. Rahayu, "Laporan Penelitian Model Ekowisata pada Kawasan Taman Hutan Raya (Tahura) Nuraksa, Kabupaten Lombok Barat, Provinsi Nusa Tenggara Barat, Indonesia," Unpublished, 2016.
- [11] T. Kiper, "Role of ecotourism in sustainable development," in *Advances in Landscape Architecture*, Intech, 2013.



Muji Rahayu is a senior researcher at the Assessment Institute for Agricultural Technology (AIAT), West Nusa Tenggara Province of the Republic of Indonesia. Muji graduated BSc degree (Agronomy) in 1988 and master degree (Land resources management) in 2007. She started working at the AIAT since 1990 and has published many papers related to agricultural sciences and environmental issues.



Baiq Nurul Hidayah is a researcher at the Assessment Institute for Agricultural Technology (AIAT), West Nusa Tenggara Province of the Republic of Indonesia. She started working since 2005 and currently she is leading agricultural division and dissemination laboratory. Graduated MSc on Plant Sciences from Wageningen University, the Netherlands.