



RESEARCH ARTICLE

PLANNING OF THE CONSERVATION-VILLAGE MODEL THROUGH RURAL COMMUNITIES
EMPOWERMENT: CASE STUDY IN THE VILLAGE OF BANGKAT MONTE, SUMBAWA BARAT,
INDONESIA

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ABSTRACT

Empowerment of communities around the forest area conservation village of Bangkat Monteh done to improve the welfare of life through active participation in the activities of utilization, safety and preservation of the community achieve independence. This study aimed to conservation village development planning models. The research method used descriptive qualitative approach, with the determination of research subjects using snowball sampling. The results showed that the implementation of development planning model of conservation village, in the village of Bangkat Monteh conducted through nine phases: build understanding with stakeholders, develop the institutional level of the village, preparing facilitators, training Participatory Rural Appraisal (PRA), the implementation of the pre, capacity building society, the development of productive economic activities, building partnerships and business networking, monitoring and evaluation.

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INTRODUCTION

Forests are natural resources that are beneficial to human life. Tropical forest ecosystem is one that has a wealth of animal and plant species are diverse and very vital. Indonesia is one country that has the third largest tropical forest after Brazil and the Congo, with the highest deforestation rates in the world. Tropical forests are very important for biodiversity conservation and climate change mitigation (Gibbs et al., 2007; Pimm et al., 2014). However, in many locations tropical forests have a high level of loss due to degradation and not protected (Lawson et al., 2014; Wright, 2010). Increased development activities in line with human needs to be one cause of tropical forest loss. Forest degradation caused by logging in most tropical forests is not sustainable to have a negative impact on the livelihoods of local communities (Blaser and Zabel, 2015). Shearman et al. (2012) explains that the forest is the main source of livelihood and income for millions of people who depend on forests.

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Based on data from the Ministry of Forestry until 2011 there were more than 1.6 million households, or 5 million people residing in villages surrounding the 3500 conservation area (MoF, 2011). Most people around the forest is classified as poor (Santosa, 2004). Bangkat monteh village is one of the villages in the region of West Sumbawa of West Nusa Tenggara province, which is located around the area of conservation. Data KCA Brang Rea (2013), shows that most of the villagers Bangkat Monteh has a job as a farmer (394), consisting of farmers and farm workers and owners of agricultural fields is a primary election to meet the needs of life of people living around the forest. The low income of the villagers Bangkat Monteh one of the problem of poverty and underdevelopment in comparison with other villages. The concept of trickle-down effect that is run by the government in the development, impact on the welfare gap in society that have or do not have access to benefits. This is the condition which gave rise to a conflict between the public interest with the interests of conservation. The vulnerability of socio-cultural and economic communities (forest), compounded by the forestry business environment that is not conducive. Sustainable forest management can be done by the government together with the community.

The active involvement of the community is needed to preserve the forest resources and the successful management of protected areas (Robertson and Lawes, 2005). Creating awareness about the importance of local community involvement in the process is one of the best ways to sustainable forest management (Agbogidi, 2005; Gough, Innes and Allen, 2008). Community empowerment is necessary for people to be more independent and more prosperous, so do not rely on forest resources for a living subject (Brodie *et al.*, 2016; Moktan, Norbu and Choden, 2016). Community empowerment according PHKA (2004) is to improve the ability of community and self-reliance in a sustainable forest ecosystem. Community empowerment is essentially a concept centered development community to grow and improve the creative initiative of society, increasing the independence and prosperity of society (Hishiyama, 2013; Sianipar *et al.*, 2013; Mudege *et al.*, 2015; Dolinska and d 'Aquino, 2016). Empowering people around the region through the construction of a model conservation village is very important. Model conservation village is one of the safeguard and preservation of protected areas by involving the community in a participatory manner. Conservation Area is the last bastion of tropical forests that serve as life support systems, and should be maintained and managed optimally and sustainably. Basic policy is needed in managing forests by implementing development paradigm of sustainable forestry, relies on a balance between the continuity of the function of economic, ecological and social culture of forest management is not centralized by building community self-reliance (Siry, Cabbage and Ahmed, 2005; Cabbage, Harou and Sills, 2007; Andrés-Domenech, Martín-Herrán and Zaccour, 2015; Brandt, Nolte and Agrawal, 2016; Brown, Pröbstl-Haider and Koch, 2016; Moktan, Norbu and Choden, 2016). The study aims to determine the model of development planning in the conservation village Desa Bangkat Monte.

MATERIALS AND METHODS

The study was conducted in the village of Bangkat Monte situated between 08°29'00 " - 09°06'00 " LS and between 116°42'00 " - 117°05'30 " BT Sumbawa Barat, Indonesia in February-April 2015. The village Bangkat Monte is one of the definitive village in the district Brang Rea, West Sumbawa regency. Monte Bangkat village is the village that will be used as a model village conservation and utilization of the existing potential for the welfare of people who are poor and reduce the pressure on forests for subsistence. The method used is descriptive qualitative approach, considering that the area is in the conservation area which are reserved for the empowerment model conservation village. The data collection was conducted at the Bangkat Monte, and determination of the object using snowball sampling. Sources of data in this study came from informants, documents and events. The technique of collecting data through observation, interviews and documentation.

RESULTS AND DISCUSSION

Monte Bangkat village is the village that will be used as a model village conservation and utilization of the existing potential for the welfare of people who are poor and reduce the pressure on forests for subsistence. Determination Bangkat Monte village into a model village of the region based on a combination of criteria and levels of welfare village.

The layout of the village is strategically located around the State forest area, and is easily seen by other villagers. Society has a strong dependence on the protected areas. Have a pretty good potential institutional and local knowledge that supports the sustainability of forest resources. Monte Bangkat village has a forest farmer groups in the field of breeding and cultivation of forest, covering an area of 100 hectares, with a production of 13.333 m³. Based on identification that has been done by the stakeholders, some potential Bangkat village Monte grouped into: (1) Potential Agriculture and Plantation, namely: plant rice and pulses for potential agricultural and plantation commodities such as bananas, coconut, and mango; (2) Potential of Fish Farming Freshwater Ecosystems, namely: the potential for freshwater fish farming is done in the pond .; (3) Potential, namely: waterfalls, stalactite cave, traditional arts and their habitat; (4) Potential of Household, namely: domestic industry that has grown potato chips, but its operation is still small and this time only to meet the needs of their own families; (5) Potential of Human Resources; potential potential than the villages in the surrounding areas, with a population of about 2709 inhabitants of about 8 people already have a background in higher education (high school graduates). Implementation of the Conservation Village of Bangkat Monte. Empowerment of communities near protected areas is integrated in the area of participatory management through community involvement in the management of protected areas and coordinated with the Regional Government of West Sumbawa. Based on survey results revealed that the implementation of the phases of development activities MDK Bangkat Monte village, is based on the guidelines of criteria and indicators of community development in conservation areas PHKA 2007.

Build Understanding with stakeholders

Based on the guidelines according to PHKA 2009, in conducting the development of understanding with stakeholders on the benefits and functions of protected areas management can be done with a variety of activities, one of them through a discussion held at any level of government. Development of understanding with related parties (stakeholders) is useful to provide a role in accordance with the duties and functions of each. The results showed that the discussions on the construction of a model conservation village in the Village Bangkat Monte involving various stakeholders, namely: local authorities, village, community, public figures, representatives of organizations or institutions do to provide opportunities for the public and stakeholders in the formulation and maturation plan development community empowerment program (socialization), to the public (prospective implementing development activities of community empowerment) and stakeholders. Development of Understanding, done by giving space to the community is expected to impact the community participation in the implementation of the activities of the model village program so that it can provide benefits to the community around the area evenly. Parties that play a role in building understanding: 1) the parties as policy makers, 2) local beneficiaries and 3) external beneficiaries. Parties who act as policy-makers, and local government. Local beneficiaries are public, community leaders and CBOs (community based organizations), and external beneficiaries are Governmental Organization (NGO) locally located around the area. The main parties involved in the process of implementing the model village is a community, while the local government, and NGOs playing a supporting

role. Bakhtiar (2000) explains that the Community Forestry forest management is a concept that puts the community as the main subject. Participatory empowerment program requires a deeper understanding (Danielsen *et al.*, 2009, DeCaro and Stokes 2008). Understanding performed includes knowledge about the understanding of the concept and program. Based on interviews conducted in several public figures, concluded that most people want to be involved on all the activities programs model village, will promote the welfare of his life. Chomitz *et al.* (2007) explains that successful community management also depends on the strength of community organizations, the regulations they face, as well as economic and cultural incentives to maintain forests.

Establish / develop village-level institutions

Based PHKA guidelines in 2007 that the development / institutional development is a means of planning, implementation, and monitoring-evaluation of community development activities as well as a place of learning communities by establishing and developing the village institutions. This institution is a means of meeting, the board of management as needed democratically elected by the people. Availability of institutional villages in locations empowerment as a container of planning, implementation, and monitoring-evaluation of community development activities as well as a forum for community empowerment. The results showed that the village has had a monte Bangkat institution, consisting of the Village Representative Body, PNPM, Posyandu, Family Welfare Guidance (PKK), farmers' groups, youth. Institutional development through the creation of a model conservation village can be a means to channel the aspirations of the people. The development of forestry institutions will be able to ensure local accountability and responsiveness of local government more broadly. The local government is expected to stimulate the emergence of participation and the role of all user groups, for the sustainability of resources. Institutional existing community partnership with other parties including financial institutions and other private parties in order to easily obtain capital loans, inputs, and facilities for business development and marketing.

Preparing facilitators / assistants

Based on the guidelines according to PHKA 2007 explains that the form of training activities Training of Trainers (TOT), is the availability of a facilitator or a companion who is able to assist people continuously on the location of empowerment. The results showed that the preparation of the accompanying didesa Bangkat Monteh derived from forestry extension, agricultural extension and other field extension in the location MDK, as well as existing NGOs. Mentoring process has a very important role for the success of the model village concept. Adjacent to the community is very helpful to develop people's understanding of the problems and potential ecological, social, economic and cultural community that need to be developed according to the aspirations and participation, done through mentoring, counseling, coaching and training to encourage community participation in order to be able to understand, plan and implement and solve its problems by building institutional able to encourage the implementation of the management and use of protected areas.

Training PRA village

Based on the guidelines according to PHKA 2007 explained that the training activities is expected PRA village

communities to implement the PRA in the village and be able to analyze the potential and problems in their villages. The results showed that the PRA training activities in the village of Monte Bangkat involving village and attended by people who understand the condition or state of the local village. People who attended this event came from components and professions diverse so as to analyze the problems and solutions related to socioeconomic conditions and the potential to boost the economy, which are grouped into the potential of agriculture and farming, the potential for freshwater fish farming land, tourism potential, industrial potential household.

Implement PRA in a village location and surroundings

Based on the guidelines according to PHKA 2007 explained that the implementation of participatory rural assessment (PRA village). PRA results of this village used as a basis for development planning at the village level. Based on the potential of the community and the companion can plan training based on the needs of the people's aspirations. The results showed that the implementation of the PRA around the forest area of conservation have involved many parties, among others: local government, Bappeda, Department of Forestry, Plantation and Agricultural Agencies / Institutions outside the ranks of the Department of Forestry, Plantation and Agricultural Assistants (Agricultural Extension, Community Leader) Governmental Organization (NGO), Community Groups, Business Performer, Researcher, Security forces (police and military). Implementation of PRA conducted in accordance with plans that have been established with the community with a companion. According Wijajanti (2011), the empowerment process is characterized by the ability of the public in making the problem analysis, planning, implementation and evaluation of a program of empowerment.

To increase community capacity

Based on the 2007 guidelines according PHKA explained that capacity building is done through skills training communities through PRA techniques at the village level, the implementation of the PRA village, as well as the preparation of village profiles. This activity is expected to be composed PRA village based on potential and existing problems, structured planning village activities that are physical and non-physical, the availability of Plan Group activities, the availability of family profiles of every household in the target village community empowerment, and the availability of Family Business Plan.

While skills training is done through technical training in accordance with the economic development potential of the village action plan, plan group activities, and plan a family business. These activities are expected to farmers or people who are empowered to master the technology development of existing activities in accordance with its potential in planning. The role of actors need to be improved in knowledge and skills in order to provide support in facilitating the success of sustainable community development. Focus program community capacity building in the village of Bangkat Monteh planned for the development of freshwater fish farming, tourism development of the cave as a tourist area that is interesting is the effort to reduce population pressure on natural resources in protected areas such as forest loss and the volume of water and reduced average income of local residents.

Strengthening local participation, promote local innovation centers, expanding access of information to local communities, the empowerment of local luminaries, as a strategy to empower rural communities (Constantino *et al.*, 2012; Darmawan *et al.*, 2013).

The development of productive business community

Based on the guidelines according to PHKA 2007 explains that shape development activities of society's productive economic activities carried out by elicits activity / commodity according to the plan that has been created at the village level, groups and families. Increase the income and welfare of the community through community economic development efforts, carried out by increasing society's ability to obtain the capital necessary to run and develop the business of formal financial institutions, the ability to sell the results smoothly with decent prices and sustainable. The results showed that the development of economic business community in the village of Monte Bangkat regard to the potential, locations, aspirations and demands of local communities by adopting appropriate technologies and environmentally friendly cultivation is done by the system or way of working that can improve productivity and product quality.

Rehabilitation and conservation of land through the efforts of the nursery or seed breeding, cultivation of vacant land, maintenance and environmentally friendly cropping patterns. Training composting by utilizing local raw materials. Fish farming and fruit plants productive. Poultry and goat-scale household. Construction and maintenance of facilities of water supply, sanitation and drainage channels and the development of rural tourism based on local natural potential. Organizations and local institutions must have adequate carrying capacity, especially with financial support and human resources, so that performance can be optimized (Sukardi, 2007). Residents who are members of the community with all its local poptensi can undertake productive activities and at the same time preserving the forest (Sugiarto *et al.*, 2013).

Build productive business partnerships and networking

Based on the guidelines according to PHKA 2007 explained that the training activities on patterns of partnership in accordance with the needs and partnering with stakeholders in the framework of technical assistance and product marketing. The results showed that the activities resulted in the availability of institutional level. Village, woke up that partnership, provided assurance market, increasing people's skills in building partnerships, rising incomes powered measurably. The development of productive activities are carried out through community development activities is part of the strengthening of the economy. Partnerships between large-scale economic enterprises to community empowerment. Patterns partnership is mutually beneficial to both parties were created, based on the assets held by each of these parties, with the provision of facilities, among others, coaching and guidance, supervision and capital with low interest / software and affordable by the community (Darmawan *et al.*, 2013). In connection with efforts to develop networks of social capital and business partnership, there are several styles-institutional social fabric that was developed in the village Bangkat Monteh. Some social networks that can be developed are: a). institutional tangle between researchers, extension workers and residents of rural communities; b) the institutional fabric of

counseling, among government agencies; c) businesses, researchers, extension workers and residents of rural communities; d). institutional tangle between business people with ordinary villagers (Darmawan *et al.*, 2013; Suprakto *et al.*, 2014).

Monitoring and evaluation

Monitoring conducted an observation and recording of facts that are used to measure MDK development criteria and indicators. The results showed that the implementation of the monitoring and evaluation of policies in the Village Bangkat Monteh based on motivation and a strong desire of the perpetrators, with the principle objective, professional, transparent, participatory and timely manner so as not to deviate from the agreed plan and authorized and carried out by coordinating body formed which has the function of monitoring. Understanding the relationship between resource monitoring and local empowerment in the tropics shows that the participation of local institutions to promote empowerment in various ways (Lawrence, 2006, al. Garnett *et al.* 2009, Danielsen *et al.* 2010a; Bahtiar, *et al.*, 2013). Empowerment of institutions depends on the local context and the strategies used in the program implementation and monitoring (Danielsen *et al.*, 2009; Sugiyo *et al.*, 2013).

Conclusion

Community Empowerment in the conservation area village Bangkat Monte is an effort that aims to continuously improve the empowerment participatory manage natural resources sustainably, conducted in nine stages: build an agreement among the parties, mentoring, training PRA, the implementation of the PRA, the business development of the creative economy productive society, building productive business partnerships and networking, and monitoring and evaluation. Understanding built between policymakers, local beneficiaries, beneficiaries external to institute community as a forum for participatory village planning preparation and passage of mentoring is one indicator of the success of the development.

REFERENCES

- Andrés-Domenech, P., G. Martín-Herrán and G. Zaccour. 2015. Cooperation for sustainable forest management: An empirical differential game approach. *Ecological Economics*, 117: 118-128
- Bahtiar, A.S., K. Hidayat, Soemarno, B.Y. and anuwadi, 2013. Institutionalizing Interaction between Local People and Protection Forest: A Model Proposed. *Journal of Environment and Earth Science*, 3(9): 66-xx.
- Bakhtiar, I. 2000. Community Forestry in Nepal: Lessons for the Decentralization and Devolution of Forest Resources Management in Java. *Journal of PSDA.*, (Online), <http://www.arupa.or.id/download/Jurnal%20PSDA%20Vol.1-2.pdf>. diakses 31 Mei 2016. In Indonesian.
- Blaser, J. and Zabel, A. 2015. Forest crime in the tropics. In M. Köhl&L. Pancel, editors. *Tropical forestry handbook*. Springer, Berlin, Heidelberg.
- Brandt, J.S., Nolte, C. and Agrawal, A. 2016. Deforestation and timber production in Congo after implementation of sustainable forest management policy. *Land Use Policy*, 52: 15-22.

- Brodie, J.D., Smith, C. T., Tappeiner II, J.C. and Boyle, J.R. 2016. Economic Considerations for Sustainable Forestry. Reference Module in Earth Systems and Environmental Sciences, 2016.
- Brown, P., Pröbstl-Haider, U. and Koch, N.E. 2016. Social and Political Aspects of Sustainable Forestry. Reference Module in Earth Systems and Environmental Sciences, 2016.
- Chomitz, K.M., Buys, P., De Luca, G., Thomas, T.S. and Wertz-Kanounnikoff, S. 2007. In Conflict?. Perluasan Pertanian, Pengentasan Kemiskinan, and Environment in di Hutan Tropis. Salemba-Empat, Jakarta. In Indonesian.
- Constantino, P.A. L., Carlos, H. S. A., Ramalho, E. E., Rostant, L., Marinelli, C., Teles, D., Fonseca-Junior, S. F., Fernandes, R. B. and Valsecchi, J. 2012. Empowering local people through community-based resource monitoring: a comparison between Brazil and Namibia. *Ecology and Society*, 17(4): 22. <http://dx.doi.org/10.5751/ES-05164-170422>.
- Cubbage, F., Harou, P. and Sills, E. 2007. Policy instruments to enhance multi-functional forest management. *Forest Policy and Economics*, 9(7): 833-851.
- Danielsen, F., Burgess, N., Funder, M., Blomley, T., Brashares, J., Akida, A., Jensen, A., Mendoza, M., Stuart-Hill, G., Poulsen, M. K., Ramadhani, H., Sam, M. K. and Topp-Jørgensen, E. 2010a. Taking stock of nature in species-rich but economically poor areas: an emerging discipline of locally based monitoring. Pages 89-112. In A. Lawrence, editor. Taking stock of nature: participatory biodiversity assessment for policy, planning and practice. Cambridge University Press, Cambridge, UK.
- Danielsen, F., Burgess, N.D., Balmford, A., Donald, P. F., Funder, M., Jones, J. P. G., Alviola, P., Balete, D. S., Blomley, T., Brashares, J., Child, B., Enghoff, M., Fjeldså, J., Holt, S., Hübertz, H., Jensen, A. E., Jensen, J. Massao, P. M., Mendoza, M. M., Ngaga, Y., Poulsen, R. Rueda, M. K., Sam, M., Skielboe, T., Stuart-Hill, G., Topp-Jørgensen, E. and Yonten, D. 2009. Local participation in natural resource monitoring: a characterization of approaches. *Conservation Biology*, 23(1):31-42.
- Darmawan, R.P., Sukesi, K., Suyadi and Soemarno, 2013. Empowerment and Social Capital Model of Lapindo Mud Affected Community on Brick Maker Community. *American Journal of Sociological Research*, 2014, 4(2): 34-41.
- De Caro, D. and Stokes, M. 2008. Social-psychological principles of community-based conservation and conservancy motivation: attaining goals within an autonomy-supportive environment. *Conservation Biology*, 22(6):1443-1451.
- Direktorat Pemanfaatan Jasa Lingkungan dan Wisata Alam (Direktorat PJLWA). 2009. Pedoman Pembangunan Model Desa Konservasi Dalam Rangka Pemberdayaan Masyarakat Di Sekitar Kawasan Konservasi. Departemen Kehutanan Direktorat Jenderal Perlindungan Hutan Dan Konservasi Alam. Direktorat Pemanfaatan Jasa Lingkungan Dan Wisata Alam. Bogor.
- Dolinska, A. and P.d'Aquino, 2016. Farmers as agents in innovation systems. Empowering farmers for innovation through communities of practice. *Agricultural Systems*, 142: 122-130
- Farid, A., Soemarno, Marsoedi and Setiawan, B. 2013. Community social and culture characteristic in bawean island, indonesia. *Global Journal of Arts Humanities and Social Sciences*, 1(2): 30-42.
- Garnett, S.T., Crowley, G.M., Hunter-Xenie, H., Kozanayi, W., Sithole, B., Palmer, C., Southgateand, R. and Zander, K.K. 2009. Transformative knowledge transfer through empowering and paying community researchers. *Biotropica*, 41(5):571-577.
- Gough, A.D., Innes, J.L. and Allen, S.D. 2008. Development of common indicators of sustainable forest management. *Ecological Indicators*, 8(5): 425-430.
- Hishiyama, R. 2013. Sustainable Empowerment Models for Rural Pastoral Communities in Kenya. *Procedia - Social and Behavioral Sciences*, 85: 432-442.
- Lawrence, A., Paudel, K., Barnes, R. and Malla, Y. 2006. Adaptive value of participatory biodiversity monitoring in community forestry. *Environmental Conservation*, 33 (4):325-334.
- Lawson, S., Blundell, A., Cabarle, B., Basik, N., Jenkins, M. and Canby, K. 2014. Consumer goods and deforestation: an analysis of the extent and nature of illegality in forest conversion for agriculture and timber plantations. Available at: <http://www.forest-trends.org/illegal-deforestation.php>.
- Ministry of Forestry. 2004. Empowerment of the Rural Community Near the Conservation Zone. Directorate General of PHKA. Jakarta. In Indonesian.
- Ministry of Forestry. 2011. General Guidance of Development of Rural Community Forest based on Conservation . Jakarta. In Indonesian.
- Moktan, M.R., Norbu, L. and Choden, K. 2016. Can community forestry contribute to household income and sustainable forestry practices in rural area? A case study from Tshapey and Zariphensum in Bhutan. *Forest Policy and Economics*, 62: 149-157
- Mudege, N.N., Nyekanyeka, T., Kapalasa, E., Chevo, T. and Demo, P. 2015. Understanding collective action and women's empowerment in potato farmer groups in Ntcheu and Dedza in Malawi. *Journal of Rural Studies*, 42: 91-101.
- Pimm, S.L., Jenkins, C.N., Abell, R., Brooks, T.M., Gittleman, J.L., Joppa, L.N., et al., 2014. The biodiversity of species and their rates of extinction, distribution, and protection. *Science*, 344: 1246752. doi: 10.1126/science.1246752. pmid:24876501
- Santosa, I. 2004. Empowerment of the forestry-farmer through innovation of adaptive behaviour [dissertation]. Graduate School, Bogor Agriculture University. In Indonesian.
- Shearman, P., Bryan, J. and Laurance, W.F. 2012. Are we approaching "peak timber" in the tropics?. *Biol. Conserv.*, 151:17-21.
- Sianipar, C.P.M., G.Yudoko, A.Adhiutama, K.Dowaki. 2013. Community Empowerment through Appropriate Technology: Sustaining the Sustainable Development. *Procedia Environmental Sciences*, 17: 1007-1016
- Siry, J.P., F.W. Cubbage, and M.R. Ahmed. 2005. Sustainable forest management: global trends and opportunities. *Forest Policy and Economics*, 7(4): 551-561
- Statistical Office of West-Sumbawa District. 2013. Subdistrict of Brang-Rea Profile 2013. Statistical Office of West-Sumbawa District, Sumbawa. In Indonesian.
- Sugiarto, Sulistiono, R., Sudiarmo and Soemarno, 2013. Local Potential Intensification System (SIPLo) the Sustainable Management of Soil Organic Potatoes. Research Inventory: *International Journal Of Engineering And Science*, 2(9): 51-57.
- Sugiyono, Sukesi, K., Soemarno and Sugiyanto, 2013. Empowering Farmers in Conserving Soil and Water in the

- Sampeyan Watershed, Situbondo, East Java, Indonesia. *Journal of Environment and Earth Science*, 3(7): xx.
- Sukardi. 2007. Empowerment Analysis of the Cinta-Raja Resort, District of Conservation Zone IV Besitang. National Park of Gunung Leuser. *Journal of Forest and Community*, II(1): 188-198. In Indonesian.
- Suprakto, B., Soemarno, Marsoedi and Arfiati, D. 2014. Development of Mangrove Conservation Area Based on Land Suitability and Environmental Carrying Capacity (Case Study from Probolinggo Coastal Area, East Java, Indonesia). *International Journal of Ecosystem*, 4(3): 107-118.
- Wijajanti, K. 2011. Model of Community Empowerment. *Journal of Economics Development*, 12(1): 15-27. In Indonesian.
- Wright, S.J. 2010. The Future of Tropical Forests. *Ann. N.Y. Acad. Sci.*, 1195: 1–27. doi: 10.1111/j.1749-6632.2010.05455.x. pmid:20536814
