

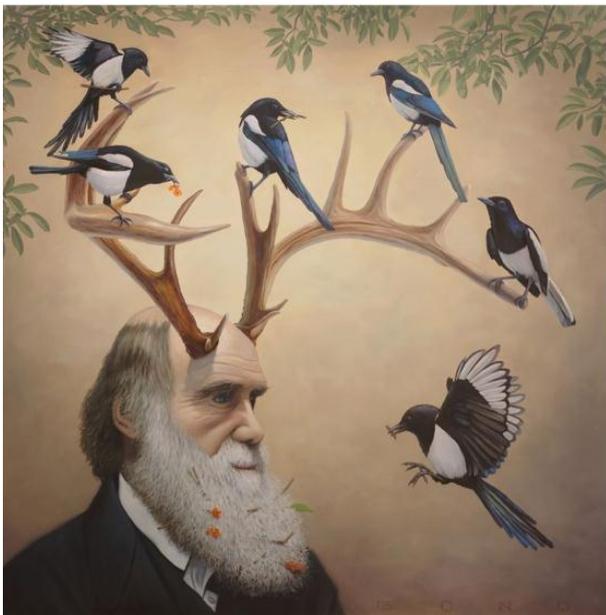
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Women Farmers In The Forest Area

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Abstract

This study aims to analyse the socio-economic and gender aspects of water and soil resource management, biodiversity, and climate change in the Bangsri watershed. Specifically, efforts to (1) present the results of the research on the socio-economic and gender aspects in 5 research areas in the Bangsri Watershed, Malang, East Java; (2) analyse the socio-economic conditions and gender profiles and (3) to formulate draft recommendations for project interventions to improve the socio-economic and gender conditions in the 5 Micro-DAS research areas. This research used Focus Group Discussions, Rapid Rural Appraisal (RRA), in-depth interviews, and secondary data studies at the village level. This survey was conducted in 5 Micro-DAS research areas, namely Bangsri Watershed, Wajak District, Malang Regency in four selected villages; Bambang, Dadapan, Patokpicias, and Bringin and one village in Turen, Sanankerto village, involving 120 respondents in total. The results show that 1) the community is aware of the limitations of biodiversity and climate change, 2) the community uses local wisdom to plant crops and 3) decision-making in the village is still gender biased, as males in society take on the role of production while women get traditional roles.

Keywords: Forest Area, Women Farmers, Gender

Mujeres Agricultoras En El Área Forestal

Resumen

Este estudio tiene como objetivo analizar los aspectos socioeconómicos y de género de la gestión de los recursos hídricos y del suelo, la biodiversidad y el cambio climático en la cuenca de Bangsri. Específicamente, los esfuerzos para (1) presentar los resultados de la investigación sobre los aspectos socioeconómicos y de género en 5 áreas de investigación en la cuenca de Bangsri, Malang, Java Oriental; (2) analizar las condiciones socioeconómicas y los perfiles de género y (3) formular proyectos de recomendaciones para intervenciones de proyectos para mejorar las condiciones socioeconómicas y de género en las 5 áreas de investigación de Micro-DAS. Esta investigación utilizó Discusiones de grupos focales, Evaluación rural rápida (RRA), entrevistas en profundidad y estudios de datos secundarios a nivel de aldea. Esta encuesta se realizó en 5 áreas de investigación de Micro-DAS, a saber, Cuenca de Bangsri, Distrito de Wajak, Regencia de Malang en cuatro aldeas seleccionadas; Bambang, Dadapan, Patokpicis y Bringin y una aldea en Turen, la aldea de Sanankerto, involucrando a 120 encuestados en total. Los resultados muestran que 1) la comunidad es consciente de las limitaciones de la biodiversidad y el cambio climático, 2) la comunidad utiliza la sabiduría local para plantar cultivos y 3) la toma de decisiones en la aldea todavía está sesgada por el género, ya que los hombres en la sociedad asumen papel de producción mientras que las mujeres obtienen roles tradicionales.

Palabras clave: área forestal, mujeres agricultoras, género

1. INTRODUCTION

Since the traditional era, people rely heavily on nature and the environment, and they make land their main asset. In rural society, men and women as farmers really count on nature but this is not in accordance with the steps needed to save nature itself. As the result, there is a decreasing quality of the environment. Since the people are not able to manage the natural resources, they live in poverty and have a traditional lifestyle. Ecosystem management is necessary to ensure people's prosperity and endurance. In this case, the government has a big responsibility in terms of conserving biodiversity, mitigating climate change adaptation, preventing desert and land degradation, chemical use and compost heap management, and de-

creasing disaster risks. Ecosystem development must meet the needs of the current generation without harming the needs of generations to come and be considered fairly in accordance with regulations on environmental protection and management (LESTARI & FIRDAUSI 2017). Thus, it formulates some prevention strategies to face the environmental matter in the nation and through sectorial development plans by applying resource management and sustainable development programs. It also enables the government to realise the Multilateral Environment Treaty, and this relates to the 15th Sustainable Development Goal of protecting, recovering and promoting sustainable ecosystem utilisation in forest management, fighting against the desert, stopping land degradation and the vanishing biodiversity, and other goals such as poverty, management, and inclusive development.

In the case of water management in Malawi, there is evidence that shows that various development programs have been successful but unsustainable (Lindquist, 2016). Moreover efficiency, effectiveness, equity and affordability became the primary approach that comes with the gender approach. Every development program, including forestry management, requires detailed attention to be paid to the social reality during the planning and executing program. As BASNETT stated, (2017) gender equality and rights must be central in restoration to avoid perpetuating gender inequalities, to incentivise women and men to contribute to the restoration efforts and to provide greater opportunities and enhanced wellbeing for women and men alike. It is the intention of rightful participation in restoration ingenuities to produce a broader market and improved capabilities. The survey further shows that conditional to owning land, female-headed households have less land than male-headed households. Furthermore as KIPTOT (2015) argues, in Tanzania, existing regulations grant equal land ownership and legacy rights for men and women. However customary laws put women out of access. Regarding tree tenure, men and women have separate rights when it comes to different parts of the tree. However, women's rights are mostly confined to byproducts such as the branches, fodder and indigenous fruits. These byproducts are considered to be secondary of no significant economic importance.

The rural ecosystem is affected by aspects such as the outer ecosystem, inhabitant development, climate change, urban development, increasing agricultural and industrial needs, increasing natural source tension and

productive land source degradation. The declining of the ecosystem and continued land exploitation can potentially cause disasters. Food, energy, and water are people's basic needs, therefore they must be saved for the sake of fulfilment and preservation. Gender and forestry are one of the focuses that will help to reinforce the basic capacity (systemic, institutional, and individual) in order to reduce natural resource tension by applying land management techniques, identifying and assessing innovative funding to forest sustainability that is targeted to save the river streams and looking into the main synergy and best practice of assessing impact and the usage of the ecosystem.

Social-economic aspect and gender are some of the important components needed as a part of the basic data about human behaviour as individuals. This examination was systematically conducted by the local institutions introduced by the outside stakeholder. People are the main subject of the sustainability of the environment and related disasters. Ordinarily, women are identical to nature. Therefore, the destruction of nature is closely related to the oversight of the women's role, specifically in the procurement of food, water, and energy for the collective human race.

The general objective of the study was to analyse the social economic and gender aspects related to land and water conservation resources, biodiversity, and climate change in Bangsri. The specific purpose of this research was to analyse the gender aspect by 1) presenting gender aspects in the forest areas of Bangsri micro-watershed, Malang East-Java related to sustainable watershed management, 2) examining the socio-economic conditions and gender profiles, including information and the analysis of income distribution, poverty and livelihoods, survival strategies and any interventions needed, and 3) formulating draft recommendations for interventions to improve the socio-economic and gender conditions in the forest areas.

2. METHOD

This research was conducted in Bangsri Micro Watershed, Wajak sub-district, Malang district in four chosen villages; Bambang, Dadapan, Patokpicis, and Bringin and Sanankerto village located in Turen sub-district. The first research phase focused primarily on Bambang village. The data was collected through FGD sessions with experts, Rapid Rural Appraisal (RRA), in-depth interviews, and secondary data at the village level. The second phase of the research was conducted using survey techniques, in-

depth discussions with the community and secondary data studies at the village level.

The survey was conducted involving 120 respondents consisting of (1) farm households (women and men), (2) land tenure/pesanggem in the forest area (Kelompok Tani Hutan), (3) the home industry/Batik crafts in Bringin village, (4) the village government and (5) community leaders. The informants consist of government staff, farmers, land workers, home industry stakeholders and groups of farmers.

The data was analysed quantitatively and qualitatively. The quantitative data was presented using a crosswise table from SPSS while the qualitative data used verbal data and the informant's perceptions. The analysis was categorised into 4 levels: 1) the level of the household and individual women, 2) the rate of the trends (site specific criteria), 3) at the micro-level (the level of the village as the research setting) and 4) the level of meso (sub-district level, regency level, and province level).

The analysis used instruments. These were 1) KAP analysis (Knowledge, Attitude, and Practice) in accordance with bio diversity, land degradation, climate changes, and the practices conducted by the informants in anticipating these three issues (best practice). 2) Agroecosystem analysis with the criteria of productivity; stability; equitability and sustainability. Productivity is seen from the extent to which the main produced commodities can be harvested; this also addresses the stability of the environment viewed from the biodiversity organised by the farmers, and perennials are dominant. Equitability is the extent to which the level of household income is involved such a condition. Sustainability refers to the environmental sustainability of the land at the site of the research setting.

Gender analysis was adopted from the Gender Analysis Framework (GAF)/ Harvard approach. This approach is better applied to project plans rather than when formulating programs or policies as a part of determining strategies related to gender needs (OVERHOLT, ANDERSON, CLOUD, and AUSTIN, 1985). This framework consists of a matrix that collects data at the micro level (society and household) and this is known as a Gender Analysis Matrix (GAM). The stages of GAF cover the activity profile analysis of the triple roles that include the public role with productive activities, the domestic role with reproductive activities, and the society role

with social and cultural activities. This relates to the access profile and control of the sources, and the factors affected.

The main three sets of the data needed were 1) Who does what, when, where, and how much time is spent? This data is known as an activity profile; 2) Who has access and control (like making policies) related to particular sources? This profile is known as the access and control profile. Who has access to and the control of benefits, like food production and money, which is known as benefit analysis, and who examines its impact on the men and women in society? 3) The factors that influence the different jobs based on gender, access and control in the activity profile and in the access and control profile.

In a schematic way, the research method has been described as follows:

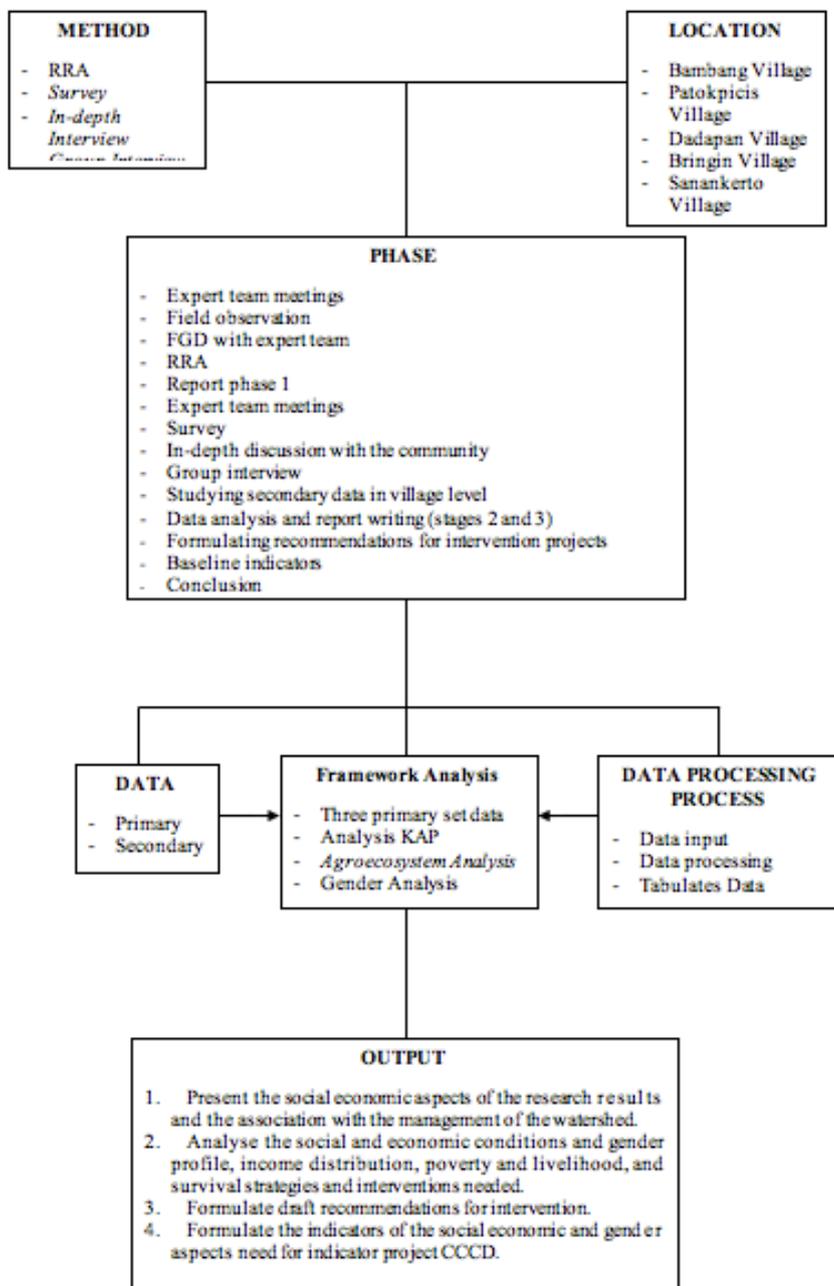


Figure 1: Research Flowchart

3. RESULTS AND DISCUSSION

The setting of the research was in Bangsri micro-watershed in Wajak sub-district Malang regency and especially in Bambang, Dadapan, Patokpicias, and Bringin with the overall territory being 3,684,578 Ha. The condition of the area is hilly and rugged with a sandy surface. The land is used for agriculture, PERHUTANI forest and sand mining (upland and river sand). The majority of the people are farmers (6,318 people / 56.03 %) working their own land, farm labourers, workers for PERHUTANI (tetelan), and sand miners in their own land or in the river. The ethnic majority are Javanese.

The total number of men is greater than women, estimated to be 13,845 people (50.08 %) and 13,800 people (49.92 %) receptively. Besides, the greatest number of people are in the age range of 11-20 years old which means that the five villages have the greater number of inhabitants who are of working age (15-64 years old) versus non-working age.

The main income source of the people in DAS Mikro Bagsri comes from agriculture, as there are farmers with their own land, farmer labourers, for-ester (pesanggem) and workers in the forest. Other jobs that exist include sand miners that are occupied by the young people, especially in Bambang Village and Patokpicias Village and cow breeders, sheep, and chicken family labourers especially in Bambang Village, Patokpicias Village, and Dadapan Village. In Dadapan Village, there are sengan seedlings to sell. This activity is done by the women because the work place is located in their house. In Bringin, the Batik industry is also managed by women. The women also work finding bamboo shoots in the forest while looking for honey is performed by the men.

Table 1. Informants' Jobs

Village	Agriculture				Non- Agriculture			
	Man		Women		Man		Women	
	n	(%)	n	(%)	n	(%)	n	(%)
Bambang	23	92	17	68	2	8	8	32
Patokpicias	19	76	18	72	6	24	7	28
Dadapan	13	52	6	24	12	48	19	76
Bringin	17	68	17	68	8	32	8	32
Sanankerto	17	85	13	65	3	15	7	35

Source: Primary Data (Survey), 2018

Non-agricultural jobs are commonly done by women, such as vending, Batik making, artisanal crafts and breeding. Women have a tight schedule. They start working at 06.30 a.m and go through until 04.00 p.m, and then they do domestic work in their house, like cooking. Before they go to work, they have to prepare breakfast for their family. They also have the same working responsibilities as the men, like hoeing. Unfortunately, they get lower wage of Rp.40,000, whereas the men are estimated to get Rp.50,000. They get the same wage of Rp.45.000 if the women do another job instead of just hoeing. There is also migration to other countries which causes the number of women farmers to decrease. This limitation means that the men and the women do the same jobs in the field and they have the same wage. The culture also allows the women work and do the household chores at the same time.

In agricultural activities, women and men have the same workload, starting from hoeing, planting, cleaning weeds, and caring for the plants in harvest period, followed by post-harvest, and marketing. Female and male farmers start their work in the morning and finish at noon (12 p.m). The women have to cook, prepare their children to go to school, clean their house, and do another household work as well. Sometimes the women finish their household work in the evening after working in the field. They bring grass or other leaves in from the field and woods for their cows or goats. Women with the same working load get the same wage as the men, which is Rp.20,000 for a half day (at 12 p.m).

Migration to other countries means that the number of female farmers has decreased. This limitation means that men and women do the same jobs in the field and they have the same wage. This culture also allows the women to work and do the household chores at the same time. They plant corn, chilli, vegetables, and grass for the livestock. They also plant sengon because the coffee tree in Bambang Village has become extinct because of the damaged habitat. Therefore, it needs more attention and care.

As VILLAMOR (2013) suggests, the higher number of women participating in forest management activities have similar characteristics as in the upland area. Moreover, the results of the research show a clear similarity in upland areas as well as lowland areas. The research showed that gender was a significant variable in the upland at the individual level, where the roles of females was as significant as the male roles. Labour readiness of-

ten varies by gender as well as by the time of day and season. The division of labour in the household mainly rests with the male head of the household while the females constitute the major part of the labour force. It is a commonly held view that the male members of the household are less devoted to farming than the female members. Men and their male children perceive certain farm and household duties such as weeding, firewood collection, harvesting and shelling as degrading work that should be left to the females.

3.1. Local Wisdom in Forest Area to Climate Change, Biodiversity, and Land Degradation

People in Bangsri micro-watershed feel that there has been climate change over the last 1-5 years. The changes include an increase in temperature, a decreasing amount of precipitation and water level and a longer dried season. The climate changes also affect the output of the agricultural plants because of the water limitations and pests. Therefore, people do irrigation and wells to save the precipitation and they plant trees to produce water such as Trembesi, the Banyan tree and Lo tree around the water sources. This is to prevent landslides because the landslides happen due the land for the tree being used by another village (Sumber Putih Village) to plant vegetables. Besides, many villagers still use firewood for daily use such as for cooking and for livestock. In Bambang Village, people use the woods approximately 75% and LPG 25%. Therefore, landslides cannot be avoided.

The fluctuation of the agricultural output is affected by pests, climate change, and unhealthy sengon. The digging into the sand affects the land erosion and makes the water brown-coloured. The ups and downs of agricultural produce attack the chillies because of disease epidemics and climate change is also considered to be a disruption. The wrong understanding of the land and water management, biodiversity, and climate change needs to get attention.

Although many fauna are endangered such as eagles, deer, small birds, ravens, mongoose, wild boars, hedgehogs, and tigers in addition to endangered flora like orchids and vanillas and endangered trees like mahogany, pine, sengon, johar, and Kayu Kambang, not all people are aware of this problem. There is no special attention paid and there are no steps made as a result. They still hunt endangered animals in the forest, do illegal logging,

and sell the endangered flora. Luckily, people in Bambang are aware of the problem, so they do not catch small birds, hunt deer, deforest and they do socialisation to save the forest. This is in addition to planting mahogany and pine. They choose someone to protect the forest from illegal logging and they adhere to the policy of the PERHUTANI area in that they cannot fell the trees and make the new field.

The people also know about the land degradation from insecticides, herbicides and chemical fertilizers harming the environment. The steps taken include planting trees, using organic fertilizers and lowering the use of insecticides and chemical fertilizers. They also plant bamboo, avocado, small grass, and lamtoro along the river. They also make wells to save the precipitation water, manage the water level, clean the river, and repair the irrigation system.

However, NYONG (2007: 795) warns us that it is important to note that not all indigenous practices are beneficial to the sustainable development of a local community. Not all indigenous knowledge can a priori provide the right solution for a given problem. Consequently, before accepting indigenous knowledge, incorporating it into development programs or even publishing it, it needs to be scrutinised for relevance just as any other knowledge. In addition to scientific evidence, local wisdom and the socio-cultural background in which the practices are inserted also need reflection to take place in the procedure of authentication and assessment.

3.2. The Role of Social Capital related to Climate Change, Biodiversity, and Land Degradation

Social Capital is the social connection that makes someone realise a particular goal (PUTNAM in NARAYAN & CASSIDY, 2001). The social modality in Bangsri micro-watershed when facing climate change is focused on planting Trembesi and Lo trees. People believe that the trees can maintain the water sources. When it comes to protecting the biodiversity, people in Bangsri micro-watershed still experience negative norms. According to HASBULLAH (2006), norms are unwritten rules that are understood by the people that shape their behaviour. The level of awareness of saving the flora and fauna in Patokpicis Village, Dadapan Village, Sanankerto Village, and Bringin Village is low. On the other hand, the norm in Bambang Village is considered to be at a positive level according to some

of the actions taken to save the forest and animals therein.

Trust facilitates people to cooperate and help each other. For example, in Bambang Village, the people in this village together plant mahogany and pine, avoiding illegal logging. According to MAWARDI (2007), two social group relations are created based on lineage and needs. In Bambang Village, the social relations are made based on the need to preserve the forest by choosing a representative to protect the forest.

FUKUYAMA (2001) explains that norms create the group behaviour toward individual or group needs. Related to the land degradation in Bangsri micro-watershed, people make landslide and erosion prevention a group goal. They plant trees along the slope and plant bamboo, avocado, small grass, and lamtoro along the riverside to prevent land degradation. People use organic fertilizers, reduce their fertilizer use and medical chemistry and take land conservation actions, such as making wells to save the water, managing the water level, cleaning the river continuously, and maintaining the irrigation system.

The contribution of social capital as a conceptual understanding of the behavioural aspects of adaptation lies rooted in some argumentation. As PELLING and HIGH (2005, 308-319) suggest, social capital offers ways to understand the role of the fundamental social attributes that contribute towards building capacity for social collectives and individuals to respond to climate change. It offers the opportunity for such analyses to be situated in wider, scaled processes of social life and in a context of multiple risks. The focus of the existing studies on adaptation to the purposive material modifications is appropriate but insufficient alone. To maximise the utility of future research for policy-makers, work needs to exploit the full breadth and depth of the social capital. In particular, research can learn from ethnographic works on the nature of collective identity and action. At the same time, for individual studies to contribute to knowledge as a whole, there is a need for a debate within the climate change community on the extent to which common theoretical ground is achievable. The global reach of climate change makes this goal all the more important.

3.3. The Gender Profile in the Five Villages in the Bangsri Micro-Watershed

At the level of gender-responsive policy in various fields, since 2000 there has been the Presidential Instruction No. 9 on Gender Mainstreaming (PUG) followed by the Ministry of Home Affairs, the Ministry of Environment and Forests and the East Java province adopting such regulations and applying them in gender mainstreaming through field agriculture, forestry, and the environment. However, men get more access than women through the institutional groups of farmers (the majority of men) and the groups of Forest Farmers (the majority of men). Ownership of the land is generally more in the name of men than women. From the village government structure, the whole village is led by men. Women become chairman of formal groups such as PKK Team, the chair person of POSYANDU and Dasawisma. The non-formal women’s leadership has the opportunity for recitals such as yasinan whose members are women.

The summary of activity profiles based on gender has been presented in the following figure:

Figure 1. Profile of Gender Activity in the Bangsri micro-watershed

No	Activity	Female	Male
Production Activity			
1	Agriculture/Plantation/Pananggem		
	a. Tillage / hoeing	√	√
	b. Cultivating	√	√
	c. Fertilizing	√	-
	d. Weeding	-	√
	e. Spraying	√	-
	f. Harvesting	-	√
	g. Logging	√	√
	h. Drying	√	√
2	Hodge	√	√
3	Livestock	√	√
4	Handicraft household industry	√	√
5	Sand excavation	-	√
Reproductive activity/domestic			
1	Water retrieval	√	-
2	Fulfillment of wood fuel and animal feed	√	√
3	Cooking	√	-
4	Preparing clothes	√	-
5	Taking care of the child	√	-
6	Health	√	√
Reproductive activity/domestic			
7	Cleaning the house	√	-
8	Fixing the house	-	√
9	Shopping/selling in to market, household needs	-	√
10	Shopping/selling of farming commodities	√	-
Social Activities			
1	Voluntary work	-	√
2	Sambatan	-	√
3	PKK/Posyandu/Dasawisma	√	-
4	Recital (Yasinan, Yasinan, Pengajian)	√	√
5	Forest Farmer Group	-	√
6	Youth organization	-	√

The access and control over resources and the benefits between women and men in the 5 research areas in the Bangsri micro-watershed area show that women and men's access to the natural resources tends to be balanced, but the male control over the resources is more dominant. The social aspects of society are dominated by men. Similarly, the male control over social activities is more dominant than that of women.

Cultural factors are the dominant factors and they affect the norms and gender relations in production, reproduction and social activities. Economic factors are the factors that affect the production activity. Cultural factors also allow women to do work in the fields, forests and housekeeping, for which the women are still solely responsible.

3.4. Gender Roles in Land and Water Management, the Procurement of Fuel, the Procurement of Animal Feed, Household Food Provision, Institutions, and Access to Education

The water discharge varies each year due to the increasingly uncertain seasons and the increase and growth of the population. Many people who already have businesses, livestock, and nurseries require a lot of water. Piping done by the village government greatly assists the women when they are performing their domestic activities. Every day, women are responsible for fetching clean water, by the means of conveyance using used paint cans or directly using hoses/pipes. The women are also responsible for finding and carrying firewood and cattle feed weighing 30-50 kilograms and walking as far as 3-10 km. They also relay the animal feed by holding (women), or disuwun (overhead, for men). Some young farmers also ride motorcycles to transport their fodder or crops.

Women in this area do not stay at home but they are together with men as responsible for the fulfilment of their household food needs. They plant the yard of the house with various plants such as chilli, bamboo, woods, fruits and elephant grass. The planting and maintenance of the yard is done by women. The main outcome is that the crops are used for family purposes or they are sold to traders or to the markets.

Formal institutions that handle the empowerment of women include the PKK, POSYANDU, Recital, and Yasinan. There are no government programs and institutions that deal specifically with the empowerment of

women farmers and the empowerment of women in environmental management. However, discrimination against girls and women is high.

All in all, there is a division in the domains between women and men that results in a gender bias towards women's access to training and education. This is depicted from training given to mothers such as 1) training to make snacks, 2) training in the fertilizer and fermentation feed made by the agriculture office and 3) training related to the PKK function that is given to mothers. Training for the purpose of agricultural production activities is given to the fathers.

Discounting women in mitigating climate change means ignoring the priorities, strategies and knowledge of half of the population. Conclusions about what type of strategies to introduce in a degraded landscape and what areas should be arranged for refurbishment should be made within inclusive participatory processes. These processes should address the various interests of the community participants who depend on their gender-specific knowledge to deal with and maximise them. As VILLAMOR (2015, 213) suggests, the importance of gender-specific knowledge in the perceptions and priorities within agricultural landscapes highlights the need for tools designed to collect and apply such information.

4. CONCLUSION

The biodiversity of Bangsri micro-watershed area can be seen from the cropping pattern applied by the farmers. The community is also aware of climate change, the limitations of the biodiversity, and the land degradation in the Bangsri micro-watershed. This is depicted from the alterations in the farming activity pattern when facing pest attacks and the reduction of water discharge. The people also show some local wisdom in their farming activities, such as irrigation, wells for rainwater and well absorption, irrigation, rain-fed wells and absorption wells, reforestation, cleaning up the water activity, planting trees around the water source, intercropping, and the protection of wildlife.

However, the gender empowerment policy has not been applied at the village level. The role of production is dominated by men while women have roles in reproductive activities and institutional and education training, although it is still considered to be at a low level. In their limitations, women

have a significant contribution in land and water management, and in the procurement of fuel such as firewood as the main fuel in this area. They can carry firewood or cattle feed weighing 30-50 kilograms, and walk as far as 3-15 km carrying livestock feed.

The relations between biodiversity and gender are significant in the policy and execution of ecosystem-based approaches and in the advancement of current solutions for climate change adaptation.

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