Behavior Change of Peatland Farmers Through Farmer Field Schools to Support Green Economy in Indonesia

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Abstract. Peatland fires in Indonesia produce toxic smog and release greenhouse gasses globally, and have an impact on public health, the environment, and the economy of Indonesia and surrounding countries. Efforts to restore peat damage are carried out through peat restoration, which is carried out through 3R approaches rewetting (R1), revegetation (R2), and community economic recovery/revitalization (R3). It is also supported by local institutional approach, and behavior approach. This behavior approach is manifested in Peatland Farmer Field School Program (SLPG) which was conducted by Peatland and Mangrove Agency of Indonesian (BRGM). This article examines changes in the behavior of peatland farmers in accordance with the green economy concept using literature-based study method, documents study, and study on the experience of SLPG's cadres. Peatland farmers are actors who play an important role in peatland management. In order to change the peatland farmers behavior for farming more environmentally friendly, BRGM implements the SLPG that is a participatory way of community learning in agriculture in processing peatland without burning, the training participants get knowledge through the experience of practicing learning materials in the field and practicing environmentally friendly farming in their respective demonstration plots. The SLPG places farmers as subjects who must be educated on their awareness, knowledge, and skills in the conservation of peatland ecology, which produces skilled local farmers from peatland areas that are pioneers in peatland conservation. In fact, if we were to utilize peatland wisely it will be economically, socially, and environmentally beneficial which can support the green economy in Indonesia.

Keywords: peatland restoration · peatland farmer · green economy; field school

1 Introduction

Peatlands are the most efficient terrestrial carbon store on Earth, and deliver multiple other ecosystem services including climate regulation, water purification, preservation of ecological and archaeological records, etc. [1]. Indonesia's recurrent peatland fires generate toxic haze and release globally significant amounts of greenhouse gasses, with

Y. A. Yusran et al. (Eds.): BIC 2022, AEBMR 235, pp. 395–409, 2023.
https://doi.org/10.2991/978-94-6463-140-1_40

severe impacts on public health and economy within Indonesia and neighboring countries (e.g. Malaysia, Singapore) [2]. Today, more than 90% of the peatlands on Sumatra and Borneo are disturbed [3], with the consequence that the former CO2 sinks have turned into CO2 sources of global relevance [4]. The conflict between conservation and use of peatlands in those countries is particularly prevalent because population densities are high and pressures from competing land use prevail [5]. Addressing these conflicts requires an integrated understanding of peatland functions and a clear appreciation of how disturbances and restoration of these habitats affect society [6]. The economy and the environment currently achieve a high degree of interaction due to the environmental awareness of society, taking into account the damage that productive activities cause to the natural environment [7]. These activities cause pollution processes in water, air, soil, and biodiversity resources, affecting social dynamics [8]. Economic activities are increasingly carried out in modern conditions, a situation which is often linked to a negative impact on the environment. They have now reached such a level that they can be considered a real factor in climate formation and modeling. Such a trend has generated a lot of initiatives and strategies aimed at a green economy development [9].

In Indonesia, peatland restoration is carried out by several institutions, including the Ministry of Environment and Forestry (MoEF) and Peatland and Mangrove Restoration Agency of Republic of Indonesia or BRGM (Indonesian: Badan Restorasi Gambut dan Mangrove Republik Indonesia). BRGM is a government non-structural agency focused on sustainable restoration for Peatlands and Mangrove in Indonesia. BRGM established as continuation of BRG in 22 December 2020, through Presidential Regulation of the Republic of Indonesia Number 120 of 2020, has the task of facilitating the acceleration of the implementation of peat restoration and efforts to improve community welfare in the peat restoration work area in 7 provinces covering an area of approximately 1,200,000 hectares and carry out the acceleration of mangrove rehabilitation in work areas in 9 provinces covering an area of 600,000 hectares for a period of 4 years.

In carrying out the peatlands restoration, BRGM has approaches called 3R activities namely rewetting (R1), revegetation (R2), and revitalization (R3) of livelihoods. Rewetting is carried out to increase the moisture content of the peatlands by constructing peatland rewetting infrastructure in the form of canal blocking, deep wells, and canal backfilling. Revegetation is carried out by planting a variety of suitable plants on peatlands especially in burnt areas and also endemic plants that previously existed in the area. Revitalization of livelihood is carried out by providing economic assistance to the community as a form of compensation for the community around the administrative area for the development of peatland rewetting infrastructures including three activities based on land, water and fisheries resources, also environmental services. In order to support the proper implementation of 3R activities, BRGM uses another approaches, namely local institutional approach, and behavioral approach. Local institutional approach is carried out by establishing a peatland care village (Indonesian: Desa Mandiri Peduli Gambut or DMPG). DMPG aims to prepare the community to participate and gain the advantages from peatland restoration activities, also to ensure the integration and sustainability through integrated village development. DMPG also integrates activities into village development by facilitating the preparation or revision of the Village

Medium Term Development Work Plan (RKPDes) and facilitating the preparation of village legal products that support peat restoration efforts. Behavioral approach is carried out by field school for peatland farmers or SLPG (Indonesian: Sekolah Lapang Petani Gambut). Peatland farmer field school is a participatory education approach that brings together a group of small-scale farmers to learn together and solve farming problems in peatland. The training curriculum is based on the needs of farming in peatland area without burning, sustainable organic farming techniques, and pioneering campaigns in the peatland ecosystem.

Social cognitive theories highlight the idea that most human learning takes place in a social environment [10]. Individuals acquire and maintain behavior, while also considering the social environment in which individuals perform the behavior. By observing others, people acquire knowledge, rules, skills, strategies, beliefs and attitudes. Then, SLPG will also be analyzed from perspective of social ecological system which is a more cohesive, integrated system characterized by strong connection and feedback within and between social and ecological components that determine their overall dynamics [11, 12]. Therefore, this paper is particularly interested in gaining a more profound understanding of the implementation of peatland farmer field school from behavior change perspective, especially social cognitive theory. The objective of this paper is to describe the process of peatland farmer field school in changing behavior for farming in peatland to be more environmentally friendly and to analyze its role in establishing the green economy in Indonesia.

2 Methods

This article describes the experience for program implementation of field school for peatland farmers that have been carried out by the Peatland and Mangrove Restoration Agency in Indonesia from 2018 to 2022. This article then examines changes in the behavior of peatland farmers from social learning theory perspective, in accordance with social ecological system and green economy concept using literature based study method, documents study, and study on the experience of SLPG cadres.

3 Results and Discussion

3.1 SLPG 4 Quadrant Approach

SLPG is a participatory adult education approach that brings together a group of small-scale farmers to solve problems of farming in peatland through more natural and sustainable agriculture. The SLPG approach offers space for hands-on group learning, enhancing skills and observation and critical analysis and improved decision making by local communities. It brings together concepts and methods from agro-ecology, experiential education and Group community development. More specific themes in SLPG are farming without burning and using natural or organic ingredients for natural fertilizer. Implementation of SLPG has four phases are as follows: 1) Training of SLPG cadres/facilitators; 2) Learning Process Between Farmers in Groups; 3) Developing PLTB Demonstration Plots; 4) Disseminating of Success (Fig. 1).

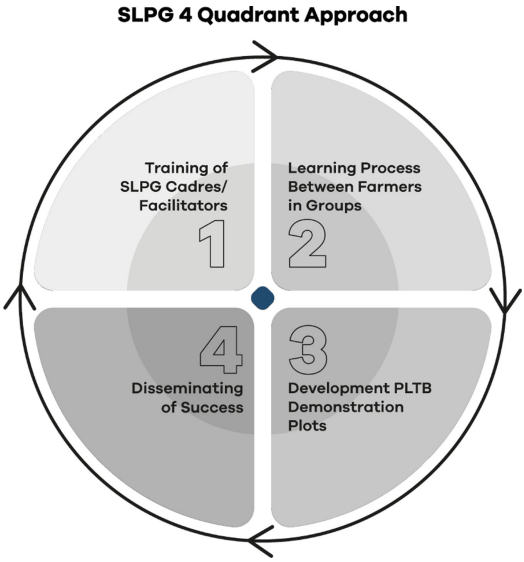

Fig. 1. SLPG 4 Quadrant Approach

3.1.1 Training of SLPG Cadres/Facilitators

The first phase in the SLPG is training for field school cadres. Later these cadres can practice land management without burning with their groups. They also carry out educational activities for farmers and other community groups independently. SLPG cadres are farmers that represent the community from DMPG who have attended the Training of Facilitators (ToF) for SLPG and have passed. SLPG cadres have a role as agent of change who is someone who promotes and enables change to happen within any group or according to Havelock (1973) in Soekanto (1992) agent of change is a person who facilitates social change or planned change within social groups.

Training of Facilitators (ToF) SLPG has three levels of cadre with different curricula at each level, as follows:

a. Training of Facilitators (ToF) Basic SLPG
   The training is carried out with total of 32 learning hours (45 minutes in each learning hour), it consists of 13 Learning Hours (LH) theoretical and 19 LH practical. This training produces peatland farmers basic level cadre. After completing this training, participants should apply Land Management Without Burning or PLTB (Indonesian: Pengelolaan Lahan Tanpa Bakar) techniques and natural agriculture using local resources in their demonstration plots. These cadres are prepared to run the SLPG with their comunity.
b. Training of Facilitators (ToF) for Skilled Cadres of SLPG
   The training is carried out with total of 36 learning hours (45 minutes in each learning hour), it consists of 16 theoretical JP and 20 practical JP. The trainees are selected from cadres who are active in peatland farming by applying the innovations that have

been learned and the demonstration plots have developed. After completing this training, participants can facilitate the learning process effectively in the implementation of the SLPG.

c. Training of Facilitator (ToF) Field School of Advanced Cadre
The training was carried out with a total of 32 learning hours (45 minutes in each learning hour) consists of 15 theoretical LHand 17 practical LH. The trainees are selected from skilled cadres who have shown success in farming or have carried out activities to facilitate farmer learning and learning to other communities. After completing this training, participants can build, manage and develop a Peatland Farmer Learning Center or PBPG (Indonesian: Pusat Belajar Petani Gambut).

SLPG activities aim to provide direct benefits to SLPG cadre farmers who have received training and farmer groups who are learning by practicing the innovations that have been learned. Other beneficiaries are other peatland farmers who are in DMPG and other peat farmers in surrounding villages who are educated by SLPG cadres. The number of SLPG cadres from 2018 to 2022 by region is shown in the following figure.

Based on the table above, the number of SLPG cadres spread across seven provinces is 1.930 people, of the total number of cadres 82% are male and 18% are female. The highest number of SLPG cadres is in West Kalimantan Province with a total of 470 SLPG cadres (Table 1).

Table 1. SLPG Cadres in 7 Provinces

NO	PROVINCE	Gender		Total (person)
		Male	Female	
1	RIAU	369	74	443
2	JAMBI	136	41	177
3	SOUTH SUMATERA	270	56	326
4	WEST KALIMANTAN	384	86	470
5	CENTRAL KALIMANTAN	281	78	359
6	SOUTH KALIMANTAN	110	14	124
7	PAPUA	23	8	31
TOTAL		1.573	357	1.930

3.1.2 Learning Process Between Farmers in Groups

The second stage after training SLPG cadres/facilitators, is mentoring the learning process among farmers in groups. The cadres who have received knowledge in the training and the facilitators of DMPG together with group members re-learn and practice various farming innovations on peatlands that have been obtained during the training. The dynamic of learning in this stage refers to the dynamic and reciprocal interaction of person/individual, environment and behavior (LaMorte, 2019).

The lessons learned in SLPG using various methods adopted to learning needs, including group meetings, practices, field visits, and innovation and appropriate technology for peatland agriculture. Group meetings in SLPG activities are carried out independently by village facilitators and SLPG cadres with practical activities and discussions. Learning practice activities are carried out in demonstration plots jointly by farmer groups. These activities are also practiced and followed up individually on each farmer group's members. For example, after all participants have learned together the practice of making compost, the participants will practice it in their respective fields. The progress and results of the composting practice were observed and discussed at the next SLPG meeting. Field visits were carried out at demonstration plots belonging to other SLPG groups/cadres who have developed in implementing land management without burning.

In the practice of PLTB, there are several innovations introduced by the resource persons/teachers/SLPG cadres in the manufacture of various natural agricultural inputs. The innovations produced include soil repairers, namely F1 embio, Local Micro Organisms (MOL), husk charcoal, and compost. There is also a Growth Regulatory Substance (ZPT) for the growth and fertilization period such as leaf nutrition, flower nutrition, and fruit nutrition. SLPG cadres also study a variety of natural pesticides to deal with insects, bacteria, fungi and other pests. These innovations are taught to farmers who are trained so that farmers can use natural ingredients that are around them to be used as nutrients for plants.

3.1.3 Developing PLTB Demonstration Plots

The third stage of the process series of SLPG is practice in developing PLTB demonstration plots. The output of this phase is a manifestation of the behavior of peat farmers who are farming in an environmentally friendly behavior using natural materials at their demonstration plot. PLTB demonstration plot is an implementation of the SLPG, by encouraging community self-reliance who are members of the group. The demonstration plot encourages practical learning at the site level by SLPG cadres to better understand the knowledge that has been obtained and encourages cadre innovation in utilizing local wisdom to increase production and welfare. The PLTB demonstration plot has an important meaning for the sustainability of the peatland ecosystem, the PLTB demonstration plot is also a form of mitigating peatland fires because farmers do agriculture without burning so that the more PLTB demonstration plots, the more protected the peatland ecosystem.

The objectives from building a PLTB demonstration plot are: to build the independence of farmers in meeting agricultural inputs by using local resources; develop environmentally friendly farming behavior by practicing land preparation without burning; demonstration plots as learning media for group members and local farmers in implementing appropriate and efficient natural and non-burning farming approaches; media for disseminating stories about sustainable natural and non-burning farming approaches in Peat Care Village (DMPG).

Several stages in the implementation of this demonstration plot are as follows: determining the location of the demonstration plot, choosing one that is close to settlements and/or located on the edge of a village road that is easy for farmers to pass; preparation and processing of demonstration plot plots using non-burning techniques as taught and

practiced in the SLPG; manufacture of soil enhancers, growth regulators, and various natural pesticides according to field needs; determination of plant types, preparation and sowing of seeds of the types of plants to be cultivated; the planting of the demonstration plot land that has been processed and given the first stage of fertilizer is immediately planted with the prepared seeds; second stage fertilization and plant maintenance from weeds, pests, and diseases; carry out harvesting and post-harvesting according to the techniques taught during the SLPG.

The implementation learning in this stage is generally carried out in 8 (eight) group meetings. The learning duration varies from 3-4 hours per material according to the farmer's understanding. In a cycle, 2-4 group meetings can be held according to the participant's understanding. The SLPG learning materials are: location of the demonstration plot, land preparation and processing, manufacture of soil improvement materials, growth regulators, and natural pesticides, determination of plant types, preparation of seeds, and seeding, planting, fertilization and maintenance, harvest and post-harvest, and monitoring and evaluation.

The learning process of peatland farmer groups is realized by building demonstration plots for peatland agriculture without burning and environmentally friendly. Building an agricultural demonstration plot on peatlands as a continuation of the activities of the SLPG which has been attended by SLPG cadres representing community groups that formed by the community in DMPG. All theories and practices of agriculture on peatlands are recommended to be implemented in the form of self-supporting agricultural demonstration plots.

The number of SLPG mini demonstration plots based on their distribution can be seen from the following (Table 2)

Based on the table above, the total number of mini demonstration plots that have been built by SLPG cadres from 2018-2021 are 409 mini demonstration plots in 7 provinces (Riau, Jambi, South Sumatra, West Kalimantan, Central Kalimantan, South Kalimantan,

Table 2. Mini Demonstration Plot in 7 Provinces

No.	Province	Number of DMPG with Mini Demonstration Plot			Total Mini Demonstration Plot
		2018 - 2019	2020	2021	
1	Riau	51	25	20	96
2	Jambi	30	4	10	44
3	South Sumatera	54	14	8	76
4	West Kalimantan	54	12	18	84
5	Central Kalimantan	40	15	19	74
6	South Kalimantan	19	3	1	23
7	Papua	10	2	0	12
Total		258	75	76	409

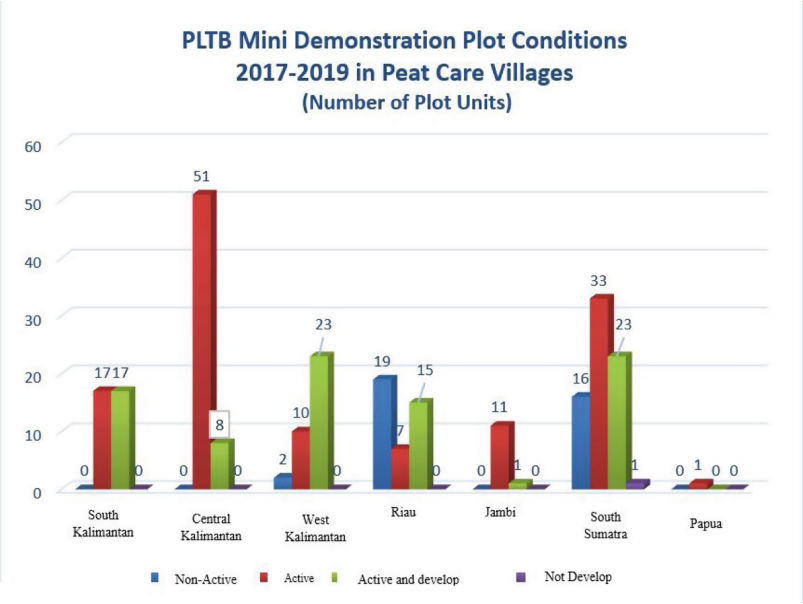

Fig. 2. PLTB Mini Demonstration Plot Conditions [13]

and Papua). To continue the programs that have been implemented by BRGM, it is necessary to have community self-reliance in developing PLTB demonstration plots and supported by integration with various stakeholders for the sustainability of the program. One of them is by budgeting village funds for activities to protect peatland ecosystems.

According to result of evaluation from BRG in 2019, in 7 provinces of peat restoration in the working area of BRGM (South Kalimantan, Central Kalimantan, West Kalimantan, Riau, Jambi, South Sumatra and Papua), there are 255 PLTB demonstration plots developed by SLPG cadres, 43% of demonstration plots or a total of 87 demonstration plots are active and developed, as many as 130 demonstration plots or 51% of the total demonstration plots that were built where is very active condition, while 15% or a number of 37 demonstration plots that had been built were in an inactive condition. The conditions for agricultural demonstration plots in DMPG from 2017 to 2019 were presented in the image below (Fig. 2).

3.1.4 Disseminating of Success

The fourth stage of SLPG means dissemination of success. To measure the commitment and success of implementation of SLPG and the development of agricultural demonstration plots for land management without burning by SLPG cadres and groups in their villages, the Deputy for Education and Socialization, Participation and Partnership of BRGM conducted monitoring and evaluation activities. This activity was carried out under the supervision of village facilitators through filling out monitoring and evaluation sheets. The indicators of success include aspects of technology, environmental conditions, economy, human resources, and institutions.

Indicators of technological aspect are SLPG cadres practicing land preparation technology without burning in their demonstration plots and agricultural; SLPG cadres practice the use of natural/biological fertilizers and pesticides in demonstration plots and their land; SLPG cadres monitor fires/potential fires in demonstration plots and surrounding areas; as well as monitoring instruments for peatland moisture in the demonstration plots used by SLPG cadres. Indicators in the aspect of environmental conditions are demonstration plots not burning for a year; subsidence in the demonstration plots decreased for a year; there is good water management in the demonstration plot; the variety of suitable plants on peatlands in the demonstration plots increases; and there is a balanced combination of perennials and annuals.

Indicators in the economic aspect are plants growing well and yielding results; there is an increase in farmer groups income from their demonstration plots; there is an increase in household income of SLPG cadres from agricultural activities on owned land using SLPG technology; and there are commodities from demonstration plots that have continuous market access. Indicators in the aspect of human resources are the number of SLPG cadres who are actively surviving; there are SLPG cadres who have advanced and proficient knowledge and skills; the number of other farmers outside the SLPG cadres who participate in PLTB practices increases, SLPG cadres are trusted to provide education to other farmer groups; and demonstration plots to become centers for learning agriculture on peatlands. Indicators in the institutional aspect are farmer groups having an organization with a clear structure; the group has working group rules; village government supports the development of demonstration plots; and the village's government makes regulations that support the SLPG mission.

In various regions, SLPG cadres who have received training independently disseminate information to surrounding communities living in peat ecosystems. One of them is Theti Numan Agau, a cadre from Mentangai Hilir Village, Mentangai District, Kapuas Regency, Central Kalimantan Province. In her daily life, Mrs. Theti together with the female farmer's group in her village independently develop plants to their daily needs such as family medicinal plants. According to her, women should also be able to be involved in environmental conservation activities. Another SLPG cadre from Riau, Ismail is currently a PLTB teacher for the surrounding community. On his initiative, Ismail disseminated information about zero-burn agriculture on peatlands and empowering family welfare in his village and surrounding villages.

3.2 SLPG Cadres in Social Ecological System and Green Economy

The concept of SES is based on the notion that the delineation between social and natural systems is artificial and arbitrary [14], emphasizing that people and nature are intertwined. Nature no longer merely sets the space in which social interactions take place; likewise, people are not just an external driver in ecosystem dynamics [15]. Social-ecological systems are therefore not merely social plus ecological systems, but cohesive, integrated systems characterized by strong connections and feedbacks within and between social and ecological components that determine their overall dynamics [16, 17]. The recognition that social and ecological systems are inseparable, and function as intertwined complex adaptive systems, offers researchers, policymakers and scholars an alternative entry or viewpoint for studying and engaging with the complex challenges

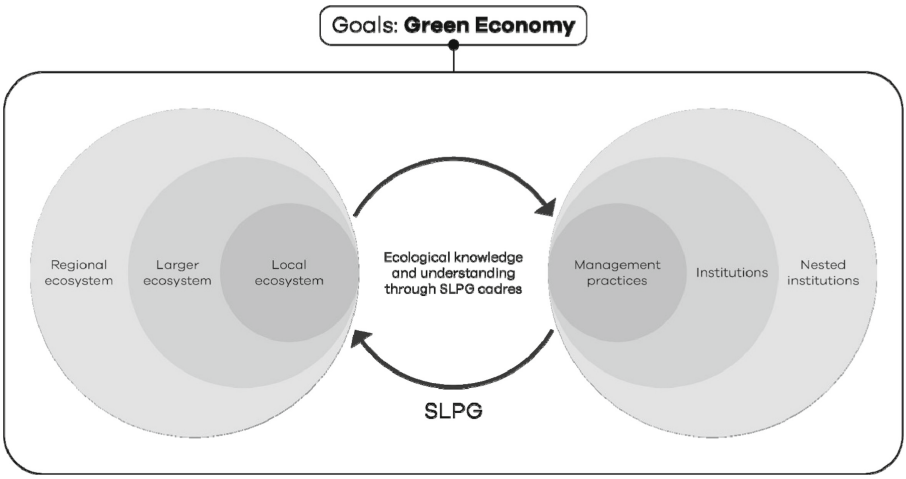

Fig. 3. Linked SES, Green Economy, and Behavior Change Framework of SLPG [14, 29, 30]

that arise from human– nature interactions [18]. In particular, it shifts the focus to understanding how macro level system properties emerge from the interactions of microlevel entities and their external environment, rather than separating social and ecological components and studying them in isolation [19].

There is a growing recognition, however, that people and nature are interdependent and coevolving, through multiple interactions or feedbacks. Ecosystem services, for example, are increasingly seen as co-produced by both people and nature [20, 21]; human behavior and individual and social identities are increasingly understood as relationally constructed and coevolving with the biophysical context [22; 23; 24]; and the interactions between human well-being or inequality and ecosystems are increasingly recognised as dynamic and reciprocal [25; 26]. Some of the most common frameworks currently in use to study and analyze SES include: the original conceptual framework of linked SES developed by [27] (Figure 3); the Panarchy framework depicting system resilience as an outcome of connected adaptive cycles at different scales [28].

The concept of economic growth that has increased social welfare needs to be expanded in terms of its meaning and benchmarks. It focuses not only on economic activities but also on how they impact all of society in the present and the future [31]. The green economy is an alternative vision for growth and development; one that can generate economic development and improvements in people's lives in ways consistent with advancing environmental and social well-being [32]. The green economy is a model of economic development based on knowledge of ecological and green economics. It is aimed for the interdependent solution between economies and ecosystems as well as the negative impact of economic assets, including climate change and global warming [33]. The green economy is defined as an economic system that aims to improve human welfare without sacrificing the rights of future generations to enjoy natural resources [34]. The concept of a green economy does not allow unlimited economic development, but to keep the economy in a steady state and does not threaten the lives of other creatures and the natural environment [35]. From an environmental management point of view

and despite its clarity, ten principles of the green economy. These are: (1) prioritizing use value, intrinsic value and quality, (2) following the flow of nature; (3) understanding the (economic) value of garbage; (4) working neatly and with diverse functions; (5) considering appropriate scale; (6) fostering diversity; (7) promoting self-ability and organization; (8) encouraging participation and democracy; (9) emphasizing on creativity and community development; and (10) respecting to the strategic role of the environment [35]. Green economy has the principle of recognizing the value of and investment in natural resources, reducing poverty and increasing employment and social equality [36].

Recently, Indonesia has been conducting the implementation of a green economy. The core of green economics is a long-term national development plan. The Law No. 32/2009 regards the environmental protection and management of a strategy to achieve the goal of a green economy. The law uses the economic instruments to achieve a safe environment management without sacrificing economic growth and national targets for the reduction of CO2 emissions by the National Action plan. However, the Indonesian government has enormous challenges such as spending a large amount of its budget on fuel and electricity subsidies. Despite its emission reduction targets by 2020, Indonesia is still considered as the most advanced developing country committed to reduce emissions [33]. Local community development and improving people's living standards are the main aspects considered in the green economy [37]. Studies have shown that holistic approaches in development policies are vital for the success of the green economy [37]. Implementation of the green economy is dependent on the local communities, research institutions, the government and industries. Stating that its prime goals are to address economic disparities in an entire region and establish environmentally friendly societies. Such economic efficiency is made possible through the implementation of well targeted policies focused on the environment. The results obtained from the policies benefit policy makers in promoting low-carbon developments and establishing green areas [29].

One of the challenges in protecting peatland ecosystems is to build awareness and concern for the community and farmers at the site (village) level in managing peatlands into an environmentally friendly and sustainable way. These challenges are related to many things, such as local agricultural culture and traditions, human resource capacity and local institutions, low access to agricultural technology, limited access to information, and the efficiency of farming through burning. The Peat Care Village (DMPG) program which comes with Farmers field school (SLPG) as the prime activity seeks to overcome the challenges above through a curriculum for learning agriculture on peatlands that emphasizes a behavior change approach. Through this activity, the cadres are consolidated to become learners and pioneers of natural farming practices and farming without burning (PLTB), where cadres who have participated in the SLPG are given capacity building for human resources and institutions.

Behavior change of peatland farmers can be represented in the activities to develop demonstration plots. In theory of learned behavior, there are certain forms of behavior that all people have learned and followed because they have all been exposed to the same environmental factors [30]. This refined theory provides support to the idea of learning by doing. Peatland farmers have similar problems which they have to do farming for their living, but it is prohibited to use fire for land preparation.Whereas peatland is very susceptible to fire. Here are some changes in the behavior of peat farmers.

Table 3. Behavior Change of Peatland Farmer

No.	Previous Behavior	Expected Behavior
1	Land preparation by burning	Land preparation not by burning
2	Use chemical fertilizers in farming	Use organic eco-friendly fertillizers
3	Farmers' dependence	Farmer independence
4	Pessimistic that peat is unproductive	Optimistic that peat can be productive

Firstly, peatland farmers that previously used fire in their land preparation, then they have alternative methods of farming in peat without burning. There are some techniques of farming already learned from field schools. Second change of behavior is using organic and eco-friendly fertilizers. They learned to make organic fertilizer, and then they applied it to the demonstration plots. Thirdly, the change in behavior of peatland farmers to be more independent, because they can produce organic fertilizers. And finally, peatland farmers become more optimistic that peat can be more productive. Behavior changes on peatland farmers to become environmentally friendly are achieved through ecological knowledge and understanding through SLPG cadres. SLPG cadres learn and disseminate information and knowledge related to environmentally friendly peatland management to other communities or villages that will enlarge the network of environmentally friendly peat farmers. SLPG is in accordance with the social ecological system which views the environmental system and social system as an equally important unit in supporting peatland restoration in Indonesia. Farming on peatlands through SLPG has proven successful in preserving peatlands and increasing people's incomes that support the green economy in Indonesia (Table 3).

4 Conclusion

SLPG is an instrument that can be used to encourage changes in the behavior of peatland farmers from farming that was not environmentally friendly to environmentally friendly farming by implementing local innovations. Ecological knowledge and understanding through the SLPG cadres interlinked the social system and nature system which is a unified system to support the success of peat restoration in Indonesia. Environmentally friendly Farming disseminated by SLPG cadres to other communities/villages increase farmers' income and support the implementation of a green economy in Indonesia.

Acknowledgments. Authors would like to thanks to:
- Dr. Myrna Safitri -Deputy for Education and Socialization, Participation and Partnerships;
- Muhammad Yusuf, S.Si., M.Si - Head of the Participation and Partnership Division, BRGM;
- Ahmad Mony, S.Pi., M.Si - Expert Executive, D3 BRGM;
- Hilmayati Safitri, M.A. - Sub Professional, D3 BRGM;
for the data and information used in this paper, and for the suggestions and inputs to enrich the discussion in this paper.

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