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Analysis of factors affecting the success of planting of watershed (DAS) sub DAS Lahung, Murung Raya District

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Abstract

Forest and Land Rehabilitation activities are carried out through reforestation, afforestation, maintenance, plant maintenance, or application of vegetative and civil technical conservation techniques on critical and unproductive land. This study aims to Analyze the factors that influence the success of planting rehabilitation activities in the Watershed (DAS) in the Lahung Sub-watershed, Murung Raya Regency. Primary data collection was carried out using a number of techniques, namely collection techniques and interview techniques to obtain supporting data in determining the Watershed Rehabilitation (DAS) Holders of the Forest of SKK Migas-Salamander Energy (Bangkanai) Forest Area Permit Limited with respondents and informants. The most important factor in the success of planning is the conservation and management of pests and diseases and forest disasters because the most important factor in its success is the development of forest fires.

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Introduction

Agriculture is one of the dominant sectors in community income and has an important role in Indonesia because the majority of Indonesia's population works as farmers (Dimas, 2011). Subsistence agricultural development is expected in an area, in this case the role of government is needed in agricultural development, especially to facilitate facilities and infrastructure needed by farmers themselves (Taufik, 2011).

The seedlings are from Banjarbaru for Cempedak, Rambutan, superior rubber and some of Sengon and then there are also Jengkol, Sengon and Karet seeds with local species by empowering seeds from the local community. Seedlings derived from the selection based on land suitability analysis, land suitability is the suitability of a land for a certain type, more specifically the suitability of the land in terms of the nature of its physical environment consisting of climate, soil, topography, hydrology and drainage parameters in accordance with a farming business or certain commodities, namely productive forestry plants (Tim Research Center for Land and Agro-climate, 1993).

A watershed is generally defined as a stretch of an area /area bounded by a topographic barrier (ridge) that receives, collects rainwater, sediments, and nutrients and flows through tributaries and exits the main river into the sea or lake (Asdak, 2007). Linsley (1980) in Asdak called the watershed as "A river of drainage basin in the entire area drained by a stream or system of connecting streams such that all flow originating in the area is discharged through a single outlet". Meanwhile IFPRI (2002) in Asdak states that watersheds are "A watershed is a geographic area that drains to a common point, which makes it an attractive unit for technical efforts to conserve soil and maximize the utilization of surface and subsurface water for crop production, and watershed is also an area with administrative and property regimes, and farmers whose actions may affect each other's interests "meaning".

A watershed is defined as an area bounded by topographic separators that receive rainwater, collect, store, and drain into rivers and so on into lakes or into the sea (Weber, 2001 in Asdak, 2007). Watersheds also include basins, watersheds, and cacthment areas. In summary, this definition has the meaning that a watershed is one of the mainland areas that receives rain water, accommodates it, and flows it through the main river into the sea / lake. A watershed is separated from the surrounding area (other watersheds) by topographic natural separators, such as ridges and mountains. Land rehabilitation is an attempt to repair, restore and improve the condition of damaged land so that it can function optimally both as an element of production, a regulatory medium water system, as well as an element of nature and its environmental protection (Wahono, 2002).

Forest and Land Rehabilitation activities are carried out through reforestation, afforestation, maintenance, plant maintenance, or application of vegetative and civil technical conservation techniques on critical and unproductive land. According to Supriyanto (1996) reforestation and afforestation activities are generally carried out on critical land and logged-over areas. Both of these activities require large quantities of good quality seeds.

Watershed rehabilitation by IPPKH holders is an implementation of Government Regulation No. 76 of 2008 concerning Forest Rehabilitation and Reclamation. The Ministry of Forestry has also issued several supporting regulations, namely: (1) Minister of Forestry Regulation Number P.60/Menhut-II 2009 concerning Guidelines for Assessing Success in Reclamation of Forests; (2) Minister of Forestry Regulation Number P.04 / Menhut-II / 2011 concerning Forest Reclamation Guidelines; (3) Minister of Environment and Forestry Regulation No. 89 / Menlhk / Setjen.1 / 11/2016 concerning Planting Guidelines for Holders of Borrowing and Use of Forest Areas.

Watershed rehabilitation activities are carried out with an area as large as the total area of IPPKH plus an area of IPPKH that is not reclaimed (L3). The area that is the focus of the implementation of this activity is the forest area which is included in the criteria of

critical land and is prioritized to be in the same watershed area as the IPPKH location. The implementation of watershed rehabilitation activities refers to the Minister of Forestry Regulation Number P.09 / Menhut II / 2013 concerning Implementation Procedures, Supporting Activities and Provision of Incentives for Forest Rehabilitation Activities and their changes listed in LHK Minister Regulation P. 39 / Menlhk / secretary general / kum.1 / 4 / 2016.

One of the obligations related to watershed rehabilitation has been regulated in Minister of Environment and Forestry Regulation No. 89 / Menlhk / Setjen.1 / 11/2016 concerning Guidelines for Planting by Holders of Borrowing and Use of Forest Areas Permits in the context of Watershed Rehabilitation. In the Minister of Forestry Regulation Article 7 paragraph (1) states that the holder of a lease-to-use forest area permit for an area subject to planting provisions in the context of rehabilitation of a watershed of at least an area of IPKH with a ratio of 1: 1.

Watershed rehabilitation by IPPKH holders must also refer to planning because it is an integral part of the government's forest and land rehabilitation efforts. According to the Minister of Environment and Forestry Regulation No. 89 / Menlhk / Setjen.1 / 11/2016, the planning of watershed rehabilitation by IPPKH holders consists of an Annual Planting Plan (RPT) at a predetermined location, and a Draft Planting Activity in the planting block area according to the RPT (Articles 11, 12).

The obligation to rehabilitate the SKK Migas-Salamander Energy (Bangkanai) DAS Limited begins with the issuance of the Minister of Forestry Decree No. 507 / Menhut-II / 2012 concerning the lease-to-use forest area permit (IPKH) for oil and gas exploitation activities in 46 ha forest area and the Minister of Forestry Decree No 575 / Minister of Forestry-II / 2014 covering 37 hectares located in North Barito Regency, Central Kalimantan. Furthermore, based on the Minister of Environment and Forestry Decree No. SK 6033 / Menlhk-PDASHL / KTA / DAS.1 / 11/2017 dated November 8, 2017 established an area of 83 ha of watershed rehabilitation plantations in Permata Intan District, Murung Raya Regency.

Watershed rehabilitation activities in Kalimantan are often faced with locations where land is marginal / critical, so that many experience failure at stage P0 (first year evaluation). Watershed rehabilitation is an obligation that cannot be avoided for IPPKH holders, as a form of obligation Watershed rehabilitation will create environmental improvements in the ecology of the watershed. Therefore, watershed rehabilitation is required in order to obtain high success. Various factors that influence the success of planting, improvement measures are sought to improve and guarantee the success of the rehabilitation of the watershed, therefore modifications and strategies need to be made as a guarantee of the success of the rehabilitation program of the watershed.

The general technical work on planting in the field includes preparing land, breeding and planting, fertilizing and maintaining, procuring facilities and infrastructure, protecting and protecting forests, and involving labor. The author is a formalities and land acquisition field at SKK Migas-Salamander Energy for company licensing including forestry, in this case IPPKH and its watershed rehabilitation obligations, so the authors take this research because later the recommendation is much related to the work of the author in the field of forestry licensing.

Materials and methods

Material

Subjects are Managers, Field Implementers and communities involved, Objects are core plants (Sengon, Jengkol, Cempedak, Rambutan, Rubber) and intercrops (Kaliandra). While the tools used in this study are stationery, calculating equipment, cameras, laptops, GPS, maps of research locations, questionnaires, and statistical data processing programs.

Method

The study was carried out precisely in the Rehabilitation of Watershed (DAS) Holders of the Borrowing Use Forest Area SKK Migas-Salamander Energy (Bangkanai) Limited Covering an Area of 46

Ha and 37 Ha in the Production Forest Area of Sungai Gula Village, Permata Intan District, Murung Raya District, Central Kalimantan.

The stages of research objectives for the analysis of these success factors include:

a. Sketch of planting location includes planting area, type of plant, crop pattern and map of planting area,

b. Identification of factors that influence success with the method of work identification in the field with the planting process

Results and discussion

Until May 2018, the performance of activities in Block 46 ha amounted to 16.25% and 15.47% in Block 37 ha. The low performance is due to the weather situation which is still at the beginning of the dry season conditions so that physical activity in the field including planting cannot yet be carried out. This is non-technical due to the delay factor in the disbursement of Term I, which was just received in early May 2018.

Provision of fertilizer in the form of fertilizer (organic fertilizer / manure and NPK fertilizer). Before the seeds are planted, the planting hole that has been made will be given organic fertilizer at a dose of 0.5kg per planting hole. The use of organic fertilizers is felt quite appropriate because in addition to having a long enough durability for the availability of nutrients for plants, it is also quite economical. The use of artificial fertilizers / chemicals is applied after the plants are 2-4 weeks old with a dose of 40gr / stem (0.04kg / btg).

The herbicide formulation used is liquid, a type of systemic herbicide, containing glyphosate at a dose of 6 liters / ha by mixing 20 milliliters of herbicide for every liter of water. Glyphosate herbicides function to control grasses and broadleaf weeds.

Ajir is a sign where the planting hole must be made. The stake used is made of bamboo with a diameter of ± 3cm and a minimum length of 50cm. Ajir installed after clearing the land. Seedling needs for this activity were met from Sungai Gula Village and third-party partners of the Faculty of Forestry Unlam in Central Kalimantan with forestry plants in the form of Sengon, Rubber, Cempedak, Jengkol, and Rambutan as many as 1,100 stems per hectare (Planting distance of 3 x 3m). The number of seeds needed for the current year (PO) is 55,660 stems for Requirements Seed with good physiological physical quality that is 50 - 75cm high, ready for planting, healthy, stem diameter of at least 5 mm, single trunk and woody root neck, not attacked by disease pests, polybag, andgrowing media must be compact and easily released from polybags without having to damage the plant's root system.

Table 1. Identification of factors that influence success with the method of identifying work in the field with the planting process.

No	Data Type	Data Variable	Description
1	Origin of seeds	- Origin of seeds - Plant raw materials - At CSO or SSO	- Procurement of seeds from Banjarbaru and available local superior seeds around the planting area, - Raw materials in the form of local parent seeds and clones in good condition - Cempedak seeds, Rambutan, superior rubber (CSO) and some Sengon then there are also Jengkol, Sengon and Rubber seeds with local species by empowering seeds from the local community (SSO).
2	Nursery	- Location of nurseries - Nursery equipment - Seedlings - Nursing seedlings - Age of seeds - Transportation	- Location of nurseries in Banjarbaru - Polybags, scales, plastics, packaging, seed incubation / storage equipment, transport equipment such as trucks, - Top soil - Seedlings are treated intensively so that the quality is good for planting - Minimum age of seeds is 2.5 months in a poly bag - Transport using a means of transportation that is the truck directly to the nursery planting location.

No	Data Type	Data Variable	Description
3	Seedling transportation	- Location distance - The condition of seed transport accessibility	- ≥300 km - The condition of asking for seed transportation from the location of the city of Banjarbaru to the Regency of Murung Raya asphalt road access and to the location of planting is a company road in the form of a dirt / unpaved road.
4	Planting	- Installation of stake - Plant spacing - Types of seeds planted	- Stakes are installed in each planting hole - 3 x 3 m - Cempedak, Rambutan, Jengkol, Sengon Karet and a small portion of Gamal and Kaliandra
5	Maintenance	- Weeding - Fertilizing - Weeping	- Weeding and weeding are carried out routinely to keep the watershed rehab plants from lack of nutrients because they cannot compete with plants that first grow before the watershed rehab plants are planted, - Fertilization is carried out in the current year maintenance activities by using Compost Fertilizer (put in the planting hole before planting) at a dose of 1kg / stem, and NPK Fertilizer at a dose of 100gr / stem (sown after the plant is ± 1 month old).
6	Forestry Security and Control	- Security patrol and forest fire hazard monitoring - Firefighters - Security from pests	- 1 x 24 hours by a team of 3 (three) people. - The Fire Concern Community cooperates with Manggala Agni and BNPB - Gamal and Kaliandra planting as hedges.

Based on Table 1 shows the results of plant research in the last 2 years, the factors that led to the success of activities in 2018 - 2019 also because in the year 2019 planting system / mechanism of implementation has been improved from the previous system where the activities in 2018 stages of activities are not carried out as a single activity intact, but rather a separate activity, starting from the activities of nurseries, planting and maintenance, so that the timeliness of the implementation of each stage of its activities is not sustainable. The most influential factor in the success of planting is the maintenance and control of pests and forest fires because the most influential factor in causing the low success of planting is forest fires.

Conclusion

The most influential factor in the success of planting is the maintenance and control of pests and forest fires because the most influential factor in causing the low success of planting is forest fires.

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