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**Assessing land rehabilitation in Indonesia:  
A case study in Karanganyar District,  
Central Java Province**

**Susi Abdiyani**

**2014**

**Assessing land rehabilitation in Indonesia:  
A case study in Karanganyar District, Central  
Java Province**

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for the degree of Master of Environmental Management  
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**Susi Abdiyani**  
**2014**

*Dedicated to my father, abah, who instilled me  
with honesty, kindness and discipline.  
He instantiated treatment and care of  
other people and the environment.  
He also convinced me that I can reach all  
goals as long as it has no harm to others;  
He always reminded me that  
I will be happy if people around me are happy too*

## ABSTRACT

The Ministry of Forestry (MoF) has established hundreds rehabilitation projects to improve productivity of degraded land under the National Movement of Forest and Land Rehabilitation (GN-RHL/*Gerhan*) scheme. In Karanganyar Regency, Java, MoF's two-year assessments of these projects have shown high seedling survival rates and detailed the extent of the rehabilitated area but there is no subsequent information on tree growth and the maintenance of rehabilitated areas.

This research assessed the longer term success of the *Gerhan* projects. Stand density, stem diameter and height of timber species: teak (*Tectona grandis*), mahogany (*Swietenia macrophylla*), red cedar/*suryan* (*Toona sureni*) were measured. The productivity of Multi Purposes Tree Species (MPTS) in three sub-districts (10 villages) and area planted-maintained were also observed and estimated. At each village four 0.04 ha circular plots were established. Species, stem diameter and height of all trees in each plot were recorded. Mean height and diameter for the main timber species in each sub-district were compared with growth model (Harbagung, 2010; Orwa et al., 2009) predictions, while MPTS productivity was compared to Ministry of Agriculture (MoA)'s guidelines. The extent of the area maintained was also compared to the MoF standard of 55%. All projects below this standard were considered unsuccessful.

Stand density ranged from 575-2,488 stems/ha in different districts, higher than the MoF minimum (400 stems/ha), a result of supplementary planting by farmers. *Albizia* (*Paraserianthes falcataria*) was the most commonly planted supplementary species. Comparison of mean stem diameter and height for each district revealed that stem diameter for teak and mahogany, 11.5–12.7 cm and 9.8-11.3 cm respectively, generally exceeded the diameters predicted by the growth models, 10.4 cm and 10.0 cm respectively. In contrast, heights, 7.8-11.8 m and 6.7-7.8 m for teak and mahogany respectively, were lower than those predicted by the models, 13.4 m and 11.4 m respectively while diameter (10.0-11.3 cm) and height (6.9–8.9 m) for *suryan* were similar to those predicted by the growth model (11.2 cm and 7.2 m respectively). The area maintained varied; 3 villages in Tawangmangu ranged from 61-91%, while those in Jumantono and Matesih ranged from 21% to 34%.

In terms of tree growth, the projects can be categorised as successful, especially for teak and mahogany suggesting that species selection was appropriate. For MPTS productivity, all No villages achieved success with MPTS projects mostly because of poor management. Using the criteria of planted area maintained, the *Gerhan* was unsuccessful in Jumantono and Matesih but that in Tawangmangu was categorised as successful.

**Keywords:** GN-RHL/*Gerhan*, Karanganyar District, stand density, diameter, height, teak, mahogany, *suryan*, Multi Purposes Tree Species

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## LIST OF ABBREVIATIONS

amsl	:	above mean sea level
<i>Badan Litbanghut</i>	:	<i>Badan Penelitian dan Pengembangan Kehutanan (Forestry Research and Development Agency)</i>
<i>Baplan</i>	:	<i>Badan Planologi Kehutanan (Forestry Planning Agency)</i>
<i>BKSDA</i>	:	<i>Balai Konservasi Sumber Daya Alam (Institute for Natural Resources Conservation)</i>
<i>BPDAS</i>	:	<i>Balai Pengelolaan Daerah Aliran Sungai (Watershed Management Centre)</i>
<i>BPK</i>	:	<i>Badan Pemeriksa Keuangan (Audit Board)</i>
<i>BPTH</i>	:	<i>Balai Perbenihan Tanaman Hutan (Forest Tree Nursery Centre)</i>
<i>BTN</i>	:	<i>Balai Taman Nasional (Institute for National Park)</i>
<i>CIFOR</i>	:	<i>Center for International Forestry Research</i>
<i>Dirjen RRL</i>	:	<i>Direktur Jenderal Reboisasi dan Rehabilitasi Lahan (The Directorate General for Reforestation and Land Rehabilitation)</i>
<i>Ditjen BPK</i>	:	<i>Direktorat Jenderal Bina Produksi Kehutanan (Directorate General of Forestry Production Management)</i>
<i>Ditjen PHKA</i>	:	<i>Direktorat Jenderal Perlindungan Hutan dan Konservasi Alam (Directorate General of Forest Protection and Nature Conservation)</i>
<i>Ditjen RLPS</i>	:	<i>Direktorat Jenderal Rehabilitasi Lahan dan Perhutanan Sosial (The Directorate General for Land Rehabilitation and Social Forestry)</i>
<i>DR</i>	:	<i>Dana Reboisasi (Reforestation Fund)</i>
<i>FWI/GTZ</i>	:	<i>Forest Watch Indonesia/</i>
<i>GN-RHL/Gerhan</i>	:	<i>Gerakan Nasional Rehabilitasi Hutan dan Lahan (National Movement on Forest and Land Rehabilitation)</i>
<i>Gol</i>	:	<i>The Government of Indonesia</i>
<i>GPS</i>	:	<i>Global Positioning System</i>
<i>Itjen</i>	:	<i>Inspektorat Jenderal (Inspectorate General)</i>
<i>MoA</i>	:	<i>Ministry of Agriculture</i>
<i>MoF</i>	:	<i>Ministry of Forestry</i>

MoW	:	Ministry of Welfare
MPTS	:	Multi Purposes Tree Species
NGO	:	Non Government Organisation
OBIT	:	One Billion Indonesian Trees
OMOT	:	One Man One Tree
<i>Puslitanak</i>	:	<i>Pusat Penelitian Tanah dan Agroklimat</i> (The Centre for Soil and Agro-climate Research)
<i>Sekjen</i>	:	<i>Sekretaris Jenderal</i> (The Secretary General)
<i>TNI</i>	:	<i>Tentara Nasional Indonesia</i> (Indonesian National Army)