Chapter 8

Forestation Boom in Java: Afforestation in Nonstate Forest in Rural Java

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Abstract

Today forestation is happening in many places in Java Island, with people enthusiastically planting *sengon* (*Paraserianthes falcataria*, *sengon jåwå* [Javanese], *jeungjing* [Sundanese]). The activity takes place more in privately owned land rather than in the government-designated forest area (*kawasan hutan*). In 1998–2000, there had been many illegal logging sites in Java, as there are today in Sumatra and other islands. In many cases these illegal activities have been taking place in government-designated forest areas, emphasizing the need for tighter government controls.

This study sheds light on the irony of illegal logging in government-designated forest areas, and forestation in lands not considered "forest area." The author has studied the forestation phenomenon in Java Island using the data collected in 2012 mainly in the north coastal flat areas in Pemalang District, Central Java Province, where the government did

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not impliment a systematic forestation program. The survey showed that upper-class farmers, or people with jobs in the nonagricultural sector, tend to plant relatively large numbers of these trees in agricultural land, or home gardens.

One of the reasons for the forestation boom is that tree planting is considered a livelihood or investment strategy among local people. Another reason is the deregulation of the logging permit for timber in privately owned land. This study discusses the meaning of forestation in the context of the use of the home garden and the dynamism of the rural economy, and compares it with the reforestation program in the state forest

Keywords: forestation, Java Island, privately owned land, timber tree, government-designated forest area, home garden, dynamism of rural economy

8.1 INTRODUCTION

Deforestation, illegal logging, and smuggling are common newspaper reports in Indonesia (for example, *Gatra*, 9 August 2006). Illegal logging and smuggling had prevailed especially after the economic crisis in 1998, although reform policies had been implemented, such as decentralization policies promoted by Act No. 22 on Local Administration, and community involvement in forest management and the assurance of transparency in the process of concession insurance stipulated by Act No. 41 of 1999 on Forestry. The failure of sustainable forest management has been the cause of rampant deforestation and illegal logging. Vast areas of forest have vanished: An average of 3.2 million hectares of forest disappeared from 1997 to 2000 (Kato, 2005).

The failure of sustainable forest management has been attributed partly to institutional confusion arising in the transition period to a new system of government decentralization and community involvement in forest management (Kartodihardjo, 2002). Illegal logging involving strongmen

in local politics and the military are a common phenomenon in Kalimantan (Morishita, 2005) arising from weak law enforcement. This was particularly apparent after the economic crisis in 1998 (Dudley, 2002).

In contrast, there is the phenomenon of forestation in Java Island. Going around Java Island by car, train, or plane, one finds many new forests consisting of tree varieties, especially *sengon* or *jabon* (*Anthocephalus cadamba*), in hilly areas or in the flats along the river and roads, besides those in agricultural land. Cassava used to be planted all the way to the summit of hills at least around 1985, but now these hills are now covered by trees.

Mittenen et al. (2011: 2266) have pointed out that Java is the only island to have seen forest recovery in the island zone of Southeast Asia between 2000 and 2010. They analyzed the forest change in the region during the period. Forest Watch Indonesia/Global Forest Watch, an international nongovernment agency (NGO), said that the forest in Java increased in area to 600,000 hectares between 1985 and 1997 (Forest Watch Indonesia, 2009).

Not many articles discuss the reasons for the forestation, rather than deforestation, taking place in Java Island. Nibbering (1999) has talked about the long-term forest changes in the Seu mountain area in Gunung Kidul, Yogyakarta. He said that deforestation took place there until the 1960s, while forestation efforts began a decade later, in the '70s. He noted that forestation came about following the government's policy to send villagers to outer Indonesia (outside of Java Island) to ease population pressures, the absence of pasturage, the increase in the price of fruits and other agricultural produce, the "costless" livelihood strategy of tree planting among villagers, and the government's vigorous forestation campaign. Loulla (2013) has discussed the case of forestation in the Comal area of Central Java using data shared with this paper, pointing out that people plant timber trees—those sold as plywood and building material—in their own land. She cited the limitation of the meaning of forestation to the local people, especially among the landless.

This study will also examine the recent boom in tree planting using both national data and those collected in the author's fieldwork, and locate the

phenomenon in its historical context, especially insofar as what regulation/deregulation means to the local people.

Nawir et al. (2007) has discussed the forestation policy in Indonesia since the Soeharto era and mentioned forestation outside the government-designated forest area. He said forestation efforts had always fared better outside of the government-designated forest area. Hence the target for forestation set by the Ministry of Forestry was also always higher in places outside the government-designated forest area.

The government has tried to conserve and protect the forest since the colonial period, directing its policies mainly at the state forest governed by the Forest Service (*Het dienst van Boschwezen*) during the colonial era, or the government-designated forest area (state forest*)* after the Forestry Act in 1967. However, the Soekarno administration in 1955 started a reforestation program in lands outside the state forest (*penghijauan*), to differentiate it from forestation efforts in the state forest (*rebiosasi*). To cope with the serious deforestation in the 1950s, the government deemed it essential to include privately owned land in the reforestation program. Forestation in private lands continued during the Soeharto era (since 1966), with the government setting its sights on wastelands or the land covered by the *alang-alang* (*Imperata cylindrica*) weed (Departemen Kehutanan 1986b). After democratization, the Forestry Act of 19991 stipulated the rehabilitation of forest and land (*rehabilitasi hutan dan lahan*) that includes forestation in both the state forest and lands outside it. In 2003, the government rolled out the National Movement for the Rehabilitation of Forest and Land (*Gerakan Nasional Rehabilitasi Hutan dan Lahan*, or GN-RHL), which targeted the rehabilitation of 3.1 million hectares by 2008. Of these, 1.6 million hectares lay outside the state forest. Private land and land covered by customary law were also included as program targets.

Many studies have been conducted on GN-RHL. Iwanaga et al. (2009) pointed out that villagers who derived income from nonagricultural sectors tended to be active in tree planting on their own land in anticipation of future income; on the other hand, those who join the program merely for the financial incentive were not active at all. Iwanaga et al. (2012b) pointed out that almost

no forestation program in land outside the state forest succeeded because of the bottleneck in sales; hence the partnership program (*pola kemitraan*) between the timber process company and foresters was introduced, according to the survey in West Java.

Based on the literature above, the forestation program was generally advanced in private land or land outside the state forest, as pointed out by Nawir et al. (2008). However, Iwanaga et al. (2012a) pointed out that privately owned area covered by voluntary tree planting (outside of the government forestation program) had a higher rate of participation than that in private land under the government forestation program. Unfortunately, no study had been conducted on tree planting in areas not covered by the government forestation program. So, this study focuses on afforestation in privately own land outside the government program as the important part of the phenomenon of forestation in Java Island.

There are also numerous studies on social forestry programs recently introduced by the Indonesian government (Inoue, 2003; Djamhuri, 2008; Fujiwara et al., 2012), community-based forest management (Suwarno et al., 2009; Nawir, 2013), community-based timber plantation programs (Noordwijk et al., 2007; Obidzinski, 2010), and the financing of such programs (Nugroho et al., 2013). Most of these studies are related to the government policy to involve the people in the community in the forestation program in the state forest, hence these did not discuss forestation or deforestation in privately owned land.

This study intends to situate the phenomenon of afforestation in the economic and social context of society in Java Island. One point is in relation to the home garden (*pekarangan*). Soemarwoto et al. (1985) defined home gardens as land surrounding houses whose structure resembles that of a forest with solutions to the people's socio-economic and cultural needs. Almost all home gardens are on privately owned land. Home gardens have a lot of trees and have existed since the old days. Then how is the recent forestation phenomenon in Java Island different from forestlike home gardens? Or are there some similarities between the recent forestation and home gardens?

This study will seek to answer the following economic questions pertaining to the societies in Java: What percentage of the people plant trees in their own land? If the percentage is high, why is that so, and if the opposite is true why would that be? What does this imply for the rural social economy?

This study will also show the difference between reforestation in private land and that in state-designated forest area. Nawir et al. (2008) have shown the poor performance of reforestation program in state-designated forest area. What accounts for the difference between the two?

This paper discusses the tree planting in privately owned land of less than 0.25 hectares. Government regulation defines people's forest (*hutan rakyat*) as the forest located outside the state forest, with a minimum area of 0.25 hectares and where more than 50% of the land is covered by trees and other plants.[2] However, to understand the real changes taking place in Java Island, such as the phenomenon of reforestation, timber planting in plots less than 0.25 hectares is also important.

This study investigates the meaning of forestation in Java Island, especially forestation in privately owned land vis-à-vis in the traditional forest like home gardens, using data collected by the Comal Project in 2012.

8.2 METHODOLOGY

8.2.1 Research Location and Data Collection

Field research was conducted in six villages (*desa*) in the northern coastal area in Central Java Province. The selection of the surveyed villages and the manner of data collection were also discussed in the Introduction of this volume. The area is flat; four subdistricts (*kecamatan*) of the six surveyed villages belong to have the towns that subdistrict office was located. All of the towns were 15 meters above sea level (Badan Pusat Statistik Kabupaten Pemalang 2013). Traditionally, sugarcane had been cultivated intensively in the area.

2 Departemen Kehutanan, 2007, Pedoman Teknis Gerakan Nasional Pehabilitasi Hutan dan Lahan (GN-RHL/Gerhan), (Lampiran Peraturan Menteri Kehutanan Nomor: P.22/Menhut-V/2006 Tanggal: 20 Juni 2007) and Peraturan Menteri Kehutanan Nomor: P.70/Menhut-II/2008 tentang Pedoman Teknis Rehabilitasi Hutan dan Lahan.

The area of Pemalang District is around 101,000 hectares, of which 38,000 hectares have been thought of as degraded area (*lahan krisis*)[3] outside the state forest. That is why many programs to conserve the river basins, dams, and ponds, as well as programs to rehabilitate the forest and land, have been conducted mainly in the subdistricts, such as Pulosari and Moga, which are 200 to 914 meters above sea level. On the other hand, in the flat areas where this research was conducted in four subdistricts, mangrove rehabilitation programs were carried out in the coastal area of Ulujami Subdistrict.[4] Another program distributed seedlings all over the district (Pemerintah Kabupaten Pemalang 2012, and Pemerintah Kabupaten Pemalang 2015); however, the distribution is not correlated with systematic reforestation programs such as GN-RHL. So, it can be said that because six villages surveyed are located in the flatlands that had historically seen intensive cultivation of sugar and rice, no intensive forestation program had been conducted even at the time of GN-RHL[5] except for the mangrove project in Pesantren Village, according to the six village heads and an officer at the Forest Department of Pemalang District. The data collected in the 2012 survey will show the forestation initiatives in private lands by locals outside the government program. Some 1,000 households surveyed as samples of six villages somewhat represented the households in the north coast of Java Island, thus showing the extent of reforestation progress in privately owned land in the area.

3 Badan Pemeriksa Keuangan, Hasil Pemeriksaan Semester II Tahun Anggaran (TA) 2007 atas Kegiatan Rehabilitasi Hutan dan Lahan (RHL) di Propinsi Jawa Tengah, Auditor Utama Keuangan Negara IV, Badan Pemeriksa Keuangan, 2008.

4 According to a officer of Department of Agriculture and Forestry, District Pemalang, 80% of GN-RHL and related forest and land rehabilitation program was conducted at hilly and mountenous area, and the rest 20% was conducted at mangrove area at the north coastal area of the district, Author's interview on October 2nd 2015.

5 According to the village heads at 6 village surveyed, no program of GN-RHL or related program of forest and land rehabilitation were conducted at the area of those village, except mangrove rehabilitation program at coastal area. Author's interview conducted from October 2nd to October 5th 2015. A Japanese NGO jointed the mangrove rehabilitation program.

8.3 RESULTS

8.3.1 Recent Forestation in Java Island

As Mietettinen et al. (2011) have pointed out, the phenomenon of forestation in Java Island is very much alive. As Nawir et al. (2008) have suggested, this phenomenon has been taking place in privately owned land. Can this be ascertained from the statistical data?

Yearly Statistics of Indonesia published by the government's Central Body of Statistics announces the forest area based on the Forest Use Consensus (*Tata Guna Hutan Kesepakatan*) of each province. The Department of Forestry also shows the data on forests based on the survey using geographic information system (GIS). Data from Indonesia's Department of Forestry show that the areas covered by trees outside the state forest increased from 488 thousand hectares in 2000[6] to 1,781 thousand hectares in 2009[7]—nearly three times as much as in 2000. On the other hand, the state forest area covered by trees increased far less, from 1,872 thousand hectares in 2000 to 2,237 thousand hectares in 2009[8] —or an increase of only 19% compared with 2000.

From these data, it is apparent that forestation takes place more outside the state forest area, although there is a slight increase in forest area in the government-designated forest area.

8.3.2 Planting Timber Trees in Privately Owned Land Amidst Socio-Economic Changes

a. *What Trees are Planted?*

Among the 1,000 households surveyed, how many planted both timber trees and multipurpose trees? First, the team checked the status of the planting of timber trees such as *sengon*, teak (*Jati*, *Tectona grandis*), *jabon*, and *mahoni* (*Switenia macrophylla*).

6 Departemen Kehutanan, Kehutanan Indonesia, 2001, Jakarta, Departemen Kehutanan.
7 Departemen Kehutanan, Kehutanan Indonesia, 2010, Jakarta, Departemen Kehutanan.
8 Same with footnote (v) and (vi).

Table 8.1 shows the number of households that plant timber trese, average number of timber tree planted, average age of the tree, and so on.

Table 8.1 shows that majority of the households plant the *sengon*, which is also the most planted variety. These grow quickly—between five and ten years—and after the tenth year, *sengon* trees grow to almost 1 m^3, and the log of 1m^3 can be sold for IDR500,000[9] to IDR800,000, while rough lumber is worth IDR1 million or more. Once a tree is planted, not much labor is required. If a person plants 700 trees in one hectare, he or she can get sales of IDR700 million after ten years. But people tend to sell earlier. If the cost is half of the sales, the planting of *sengon* is considered profitable. Average age of harvest is young, partly because the boom in tree planting is a recent phenomenon, and partly because the household cannot wait for ten years and prefers to sell the three- or four-year-old trees for cash.[10]

Table 8.1 Average number of timber tree planted per household, ages of trees planted

	Sengon	**Teak**	**Jabon**	**Mahoni**
Average number of tree	69.3	39.4	18.8	3.6
Maxim number of tree	300	500	80	10
Average age of tree	3.3	11.9	2.9	1.0
Median number of the tree	50	3	5	2
Mode number of the tree	20	1	1	1
Number of households planted those trees	27	17	9	7

Source: Survey results from 1,000 households in Comal area, Central Java

9 Average exchange rate of Indonesian Rupiah to US dollar in 2012 was Rp.9,793/US dollar. (Bank Indonesia 2015).

10 Author's interview with a respondent at Cibiyuk Village, Anpelgading Subdistrict on September 20th, 2012.

Table 8.1 shows that a household can plant up from 300 to 500 *sengon* or teak. In the case of *sengon*, the average number of trees planted was 69 (median 50, mode 20). This large number of trees per household is quite different from the common practice of tree planting in home gardens where more plant species are planted but the number of trees is quite small.[11]

b. *Who Plants the Trees?*

Table 8.2 shows the number of trees planted per household and the size of agricultural land owned. The size of agricultural land owned is often used to present socio-economic strata in rural Javanese society. Too avoid unnecessary complexity, Table 8.2 equates the number of trees with the sum of trees for various kinds of timber tree species. It shows that some upper-class households plant many trees; however, there are many households that do not have agricultural land or own less agricultural land, which also plant trees—sometimes more than 100. Regarding operated land, 23 households that do not have operated land planted timber trees; 7 households without operated land planted more than 21 timber trees; and 1 household among them planted as many as 250 timber trees.

Why do many people plant trees even if they do not have agricultural land? Very likely, the development of the nonagricultural sector and the planting of trees in home gardens have something to do with this trend.

11 For example, home gardens at a village in East Java had the number of species, 69, 138, 138 respectively, and no dominant tree/plant were not found. The SDR (Summed Dominance Ratio) was 32.0%, 18.0%, and 16.2% at most respectively (Christanty et al 1985).

Table 8.2 Number of households according to the number of timber tree planted and area of agricultural land

(Number in row is the number of timber trees; number in line is the area of agricultural land in hectare)

	1–20	**21–40**	**41–60**	**61–80**	**80–100**	**100–200**	**200–**	**Total**
0	16	1	2	1	0	1	2	23
0–0.25	7	1	2	0	0	0	0	10
0.25–0.50	3	0	0	0	1	2	1	7
0.50–0.75	0	0	0	0	0	0	1	1
0.75–1.00	1	0	1	0	0	0	0	2
1.00–2.00	2	0	0	0	0	0	0	2
2.00–	0	0	0	1	0	1	0	2
Total	29	2	6	1	1	4	4	47

Note: The number of agricultural lands includes fish ponds

Source: The same as Table 8.1

In order to check the assumption, the author created Table 8.3, which shows the relationship between the number of timber trees planted and the main occupation of the household head. This table shows that more than half of the people are engaged in nonagricultural occupations, although there were many farmers who planted timber trees.

Table 8.3 Number of households according to the number timber tree planted and the main occupation of household head

(Number in row is the timber tree planted, and information in line is the main occupation of household head)

	1–20	21–40	41–60	61–100	101–200	201–	Total
Farmer of agriculture or aquaculture	7	1	2	2	1	2	15
Labor or artisan	9	0	2	0	0	0	11
Teacher, public works, and school employee	3	1	0	0	2	0	6
Self-employed traders	2	0	1	0	0	1	4
Self-employed business of service and transportation	4	0	0	0	0	0	4
Self-employed business of manufacturing	0	0	0	0	1	0	1
No occupation	4	0	1	0	0	1	6
Total	29	2	6	2	4	4	47

Note: "No occupation" includes the pensioner

Source: The same as Table 8.1

Seeing the households that planted more than 200 timber trees shows the dynamism of the rural economy in the surveyed area. A self-employed trader was a fruit trader. A household plants 15 mango trees in the home garden and trades the mangoes in the market while buying the mangoes from neighbors. A household rents 0.9 hectares of agricultural land and plants red peppers, red onions, and wet paddy, and had planted 300 *sengon* trees in rented agricultural land just two years before the survey in 2012. A villager who lists government employee as a major job operates the 3.2-hectare wet-rice field, hires many agricultural laborers, and had planted 200 *sengon* trees in 0.13 hectares of agricultural land just a year before the survey. A rice

miller who is listed as manufacturer in Table 8.3 keeps a 0.32-hectare home garden, where he had planted 200 *sengon* trees just two years before the survey. A villager who listed "pension" as a major source of income is a coconut trader and had planted 200 *sengon* in the 0.1-hectare home garden just one year before the survey.

Among the farmers, too, there is a trend to plant timber trees. A farmer who owns a 0.66-hectare agricultural land planted to jasmine/wet paddy planted 500 teak trees in their own agricultural land. The husband of the household is engaged in the business of wedding equipment rental as the second job. The wife trades clothes in the market. The farmer-households that plant teak is deeply engaged in nonagricultural businesses.

Thus, far it can be seen that the households that mentioned nonagricultural work as main occupation are tightly related to agriculture, and the households that listed as farmers for major occupation are also engaged in nonagricultural work. Among these households, planting of timber tree is considered an important livelihood and business strategy.

c. *Planting in Agricultural Land or Home Garden?*

From the description above, it is clear that the timber trees are planted both in agricultural land and the home garden. Is the latter also meaningful as a place for forestation?

As mentioned earlier, there is a strikingly high percentage of households (78%) that do not have their own agricultural land; however, households that do not have the home garden are quite few, thus 98.9% of the households have their own home garden. Among these, 94 households have a home garden of more than 0.1 hectare, and 16 households have home gardens of more than 0.25 hectares.

Table 8.4 shows the ratio of home garden on the land planted with timber trees among the surveyed households.

According to Table 8.4, *sengon* trees planted in home gardens account for 73.1% of all *sengon* trees planted by the surveyed households. However, for households that plant more than 20 *sengon* trees, the percentage of timber trees planted in home gardens decreased to 53.3%. This means that households that plant *sengon* in large numbers tend to plant these more in agricultural land. On the other hand, the meaning of the home garden as the location of afforestation in Java Island is recognized.

Table 8.4 Area/ratio of home garden on the land planted with timber trees among household surveyed (%)

	Sengon	**Teak**	**Jabon**	**Mahoni**
Whole households surveyed	73,1	81,3	83,3	100
Households that planted 20+ timber trees	53,2	60,6	-2	-2

Note: 1. Area/ratio of home garden means the ratio of the number of timber trees planted in home gardens to the number of timber trees planted in the land owned bythe surveyed households.

2. The number of households that planted 20 timber trees more was less than 4, so the information was removed.

Source: The same with Table 8.1

8.3.3 Procurement of Seedlings

Among 18 households that planted more than 20 timber trees, the author interviewed 12 in October 2015. Of the 12, 10 households said they bought the seedlings themselves, and 1 household head said that he bought 30% of the seedlings himself, while 70% came from the government. A household that had 56 timber trees and 19 multipurpose trees was given 54 *jabon* tree species by a trader free of charge; however, the trader controlled 60% of the grown *jabon* while but 40% was owned by the household. According to the household, 50 households in the same

village had been following this type of contract with the trader since 2010. It was also found that many households have planted the timber trees at their own initiative/expense. Partly they had been supplied seedlings by the government as well as traders who organized the agreement with people to plant timber trees.[12] A household said that if the government distributes seedlings, the household would want to make use of these.[13]

An officer at the Pemalang District department of agriculture and forestry said that the situation had changed. Where before people who were given seedlings by the local government under the reforestation program were reluctant to use these, people were now eager to plant trees even at their own expense.[14]

8.3.4 Meaning of Multipurpose Trees as the Choice for Afforestation in Java Island

Table 8.5 shows the average number of multipurpose trees per household, average age of trees, media, mode, and the number of households that plant these trees. Compared with the case of timber trees presented in Table 8.5, the average number of trees is quite small, the average age of trees relatively older, and the number of households that plant these trees far more than those that plant timber trees.

12 According to a officer of Department of Agriculture and Forestry, Pemalang District, 30% of seedling used by local people was supplied at the market (meant local people bought the seedling at the shops, or from trader), 40% was supplies by local government, and 30% was supplied by the company without charge under the scheme of CSR, or by sawmill companies or plywood companies. Author's interview on October 2nd, 2015.

13 These interview with local people was conducted from October 2nd to October 5th, 2015. A household at Pesantren Village answered that they planted 100 mangrove seedlings. They collected seedling of mangrove at the location by themselves. Mangrove was not included in the questionnaire used in July-September 2012. As a result, Table 1 and 5 did not list mangrove.

14 Author's interview on October 2nd, 2015 to a officer of the Department of Agriculture and Forestry, Pemalang District.

Table 8.5 Average number of multipurpose trees planted per household, ages of trees planted

	Mangga	**Kelapa**	**Nangka**	**Jambu Batu**	**Rambutan**	**Jambu Air**
Average number of tree	3.4	4.6	2.0	1.4	1.9	1.3
Average age	9.4	17.0	11	7.0	6.5	7.9
Maximum number	255	60	15	5.0	20	4
Median number of the tree	2	2	1	1	1	1
Mode number of the tree	1	1	1	1	1	1
Number of households	376	169	90	57	38	38

Source: Same as Table 8.1

Manga (*M. indica* L.), Coconat (*Kelapa*, *Cocos nucifera* L), *Rambutan* (*N. lappaceum* L), and *Jambu air* (*Syzygium aqueum*) are typical trees in a home garden. There is a long tradition of home gardens in Java Island (Soemarwoto, 1995), which is reflected by the trees in the home gardens of the survey area. This is why many surveyed households keep their trees, and relatively older ones, small number of trees per household.

Table 8.6 Area/ratio of home garden on the land planted with multiple purpose trees among surveyed households (%)

	Mangga	**Kelapa**	**Nangka**	**Jambu Batu**	**Rambutan**	**Jambu Air**
Whole households surveyed	98,1	97,3	97,4	100	94,3	100
Households that planted more than 20 timber trees	77,3	92,9	92,9	-2	-2	

Note: 1. Area/ratio of home garden means the ratio of the number of multiple purpose trees planted in home gardens to the number of multiple purpose trees planted in the land owned by surveyed households.

2. Number of households that planted 20 trees more was less than 4, so the information was removed.

Source: The same as Table 8.1

Of the households surveyed there were those that planted 255 mango trees or 60 coconut trees. The survey also showed that among 467 households that planted multipurpose trees, 31 households planted the 21 more multipurpose trees.

Are those trees really planted in the home garden?

To answer this question, Table 8.6 was made to show the area/ratio of home garden on the land planted with multiple purpose trees among the surveyed households.

Table 8.6 shows that almost all multipurpose trees were planted in the home garden, but some people planted mango in agricultural land. Tables 8.4 and 8.6 show that the ratio of multiple purpose trees planted in agricultural land is higher than in home gardens.

It is clear from that many households plant a small number of tree per species in home gardens. But some people plant 100 trees more (both

multiplepurpose trees and timber trees) sometimes in agricultural land and sometimes in the home garden.

a. ***Who Planted More Than 21 Multiplepurpose Trees?***

Table 8.7 shows the households that plant more than 21 multipurpose trees according to the size of land ownership. It also shows that among 31 households that plant 21 multipurpose trees more, 16 do not own agricultural land. Household without agricultural land can plant multipurpose trees in the home garden or rented agricultural land.

Table 8.7 Number of households according to the number of multipurpose trees planted and area of agricultural land

(Number in row is the number of multipurpose trees; number in line is the area of agricultural land in hectare)

	1–20	**21–40**	**41–60**	**61–100**	**101–**	**Total**
0	331	6	7	1	2	347
0–0.25	68	3	2	1	1	75
0.25–0.50	21	2	2	1	0	26
0.50–0.75	4	0	0	1	0	5
0.75–1.00	3	0	0	0	0	3
1.00–1.50	1	0	0	0	1	2
1:50–2.00	4	0	1	0	0	5
2.00–	4	0	0	0	0	4
Total	436	11	12	4	4	467

Note: The number of agricultural land includes fish ponds
Source: The same as Table 8.1

Or households without agricultural land may have nonagricultural occupations.

Table 8.8 shows the main occupation of households that plant 21 multipurpose trees more to check this assumption.

Table 8.8 Number of households according to the number of multiple purpose tree planted and the main occupation of household head

(Number in row is the multipurpose tree planted, and information in line is the main occupation of household head)

	21–40	**41–60**	**61–100**	**101–**	**Total**
Farmer of agriculture or aquaculture	3	3	2	2	12
Labor or artisan	4	1	2	0	7
Teacher and school employee	1	4	0	0	5
Manufacturer	0	0	0	1	1
Trader	0	1	0	0	1
No occupation	1	3	0	1	5
Total	9	12	4	4	31

Note: "No occupation" includes the pensioner

Source: The same as Table 8.1

Table 8.8 shows many households that plant 21 multipurpose trees more are engaged in occupations outside of agriculture. Among the 31 households that plant 21 multipurpose trees more, 12 are headed by farmers; on the other hand, 19 households are headed by nonagricultural occupation holders.

Some 13 household heads that were engaged in nonagricultural sector and their household planted 41 multipurpose trees (Table 8.8) more. Their nonagricultural occupations include a construction

worker, a construction worker's foreman (*mandor*), a factory worker, 4 schoolteachers and guards of school, a metal processer, a drinks retailer.

A self-employed household head whose occupation is metal processor planted 100 bamboo trees and 3 mango trees in their 0.05-hectare home garden. A mango trader planted 255 mango trees in 4 plots of a 1.22-hectare rented agricultural land. When the mango trees turned 10 years old, he traded the fruit, with sales amounting to IDR106.6 million—an impressive price.

It can thus be said that most of the multipurpose trees are mainly planted in home gardens, with some planted in agricultural lands. However, there are some cases in which the household plants several multipurpose trees, especially mango, as a livelihood strategy, both in home gardens and agricultural lands, including rented agricultural lands.

b. ***Comparison with Timber Trees***

Timber trees were originally planted in the home garden in limited numbers as building material. Even now we find *sengon* planted in home gardens but find more of these in agricultural land with a large number of trees. Limited numbers of multipurpose trees have been planted in home gardens, but these days, many species of multipurpose trees have been planted in agricultural land in somewhat large numbers—a testament to the afforestation boom in rural Java.

8.4 DISCUSSION

8.4.1 Deforestation and Reforestation

If the forest area in Java Island has been increasing at a steady rate, how does one reconcile this with news of deforestation, timber looting and

theft, or illegal logging in Indonesia? Are these reports out of Indonesia's forests false?

First, the author has shown that the forestation boom and deforestation are quite different between Java Island and in outer Indonesia, such as Sumatra. Deforestation still takes place in many parts of outer Indonesia. Second, in Java, at around 2000 there had been looting at the forests, especially in state forests (Mizuno, 2016a).

At the Cianjur District, West Java Province, where the author conducted a survey from 1998 to 2007, there was serious looting in the government forest managed by Perhutani (State Forest Company) between 1999 and 2002; on the other hand, there was no looting in the private forest (*hutan hak*) (Mizuno et al., 2006; Mizuno, 2016b).

Thus, it can be said that forestation tends to happen more in private land, while looting and deforestation occur in state forests. The reasons for these, or the slower progress of forestation in state forests, vary. Mizuno (2023) focuses on the idea of "forest" and the formation of the forest policy in Indonesia. This study discusses the deregulation of timber sales in private forests as the reason that promotes forestation in private lands.

8.4.2 Sales Deregulation for Trees on Private Land

Profit is one of the drivers of the increase in the area of private forests. The development of the nonfarm sector has boosted employment opportunities. People tend to plant these trees in marginal lands that they had used for tedious terracing agriculture, such as hilly or mountainous areas. Planting these trees is labor saving.

Table 8.5 shows that traditional home garden trees such as coconut palm or mango are easily accessed by many people; on the other hand, access to *sengon*, *jabon*, or teak is relatively limited in the research area. Perhaps more people in the hilly areas have access to these tree businesses that lead to forestation.

An important factor that promotes enthusiastic planting is deregulation as a government policy.

Local people who cut their own trees in their own land and brought them to town needed the official letter, SKAU (*Surat Keterangan Asal Usul*), which had been issued by the village head since 2005 for particular trees.[15] Following this, the coverage of particular trees was enhanced.[16] Earlier, local people who cut their own trees and sold in towns needed the SKSHH (*Surat Keterangan Sahnya Hasil Hutan*), which certified that the tree was owned by bearer of the letter and was issued by P2SKSHH (*Pejabat Penerbit Surat keterangan Sahnya Hasil Hutan*, officer of department of forestry who issued the SKSHH) and the PHH (*Penguji Hasil Hutan*), as well as the certificate of the forest owned, map of the forest accorded by the sub-regency head (*camat*), and so on.[17] Regulation in 1999 stipulated that the owner of the private forest should bear SAKM (*Surat Angkutan Kayu Milik*), the certificate of the origin of the tree, which would be issued by the forestry office of the district (*kabupaten*).[18] People who did not follow these regulations were penalized.

When the author surveyed the Bengkalis area, Riau Province, where peatland is seriously degraded and where deforestation has proceeded apace, a villager said he knew how to plant trees in degraded land, but he refused to do so because he hated the permit procedure at the forest office of the district government. People who wanted to bring the old rubber tree to sell in town still needed permit from the local government. People who did not wish to be bothered by the procedure could only burn the old

15 Peraturan Menteri Kehutanan Nomor P.26/Menhut-II/2005 tentang Pedodman Memanfaatkan Hutan Hak.

16 Regulation in 2006 stipulated that kinds of *sengon* (*Paraserianthes falcataria*), rubber tree (*Hevea braziliensis*), and coconut tree (*Cocos nucifera*) are covered by this regulation. (Peraturan Menteri Kehutanan Nomor: P.51/Mewnhut-II/2006 tentang Penggunaan Keterangan Asal Usul (SKAU) untuk Pengangkutan Hasil Hutan Kayu yang Berasal Dari Hutan Hak). Regulation in 2007 stipulates 21 trees including the three trees mentioned in Peraturan Menteri Kehutanan Nomor: P.51/Mewnhut-II/2006 are covered by this new regulation. (Peraturan Menteri Kehutanan Nomor: P.33/Menhut-II/2007 tentang Perubahan Kedua Atas Peraturan Menteri Kehutanan Nomor: P.51/Mewnhut-II/2006 tentang Penggunaan Keterangan Asal Usul (SKAU) untuk Pengangkutan Hasil Hutan Kayu yang Berasal Dari Hutan Hak).

17 Keputusan Menteri Kehutanan Nomor 126/KPTS-II/2003 tentang Penatausahaan Hasil Hutan.

18 Keputusan Menteri Kehutanan dan Perkebunan Nomor: 316/Kpts-II/1999 tentang Tata Usaha Hasil Hutan.

rubber trees at home. People who cut down their own trees and sold them needed the permit. The system dates back to the colonial era.

A regulation dated 4 September 1810, obliged people to pay a tax when they cut their own teak both for sales and their own use. It stipulated that everyone who needed timber could ask a permit from the resident. The tax varied according to the kind of tree (Departemen Kehutanan 1986a: 76). This kind of regulation has changed over time; however, people needed the permit anyway for cutting and selling their own trees. People who violated the regulation and cut the tree without permission were called out for illegal logging. Illegal logging takes many forms (Palmer 2001), but violation of the above-mentioned regulation was also called illegal logging. Hence the question: For whom is it legal and illegal?

Forestry has always been tied to government revenue. Partly, too, it is related to official private interests. Illegal logging is illegal for these institutions, but not for ordinary people.

8.4.3 Comparison Between Reforestation at the Government-Designated Forest

Nawir et al. (2008) account for the poor performance of reforestation in the government-designated forest as follows. The Indonesian way of selective logging (*Sistem Tebang Pilih Indonesia*) was not practiced at the HPH (*Hak Pengolahan Hutan*, logging concession); the reforestation program in the degraded land was promoted but failed because government policies changed several times over, so that many companies which secured HTI (*Hak Tanaman Industri*) and did clear cutting did not conduct reforestation. Moreover, there was too much government intervention in reforestation efforts in GN-RHL. In many cases people could not sell the trees grown in this reforestation program. Shimagami (2010) calls out the complicated procedure implemented by the provincial and district administration, and quick changes in local government policies.

On the other hand, in privately owned land, people can mobilize the resources flexibly as shown above, and can enjoy the fruits of planting

freely especially after the deregulation policy of the tree sales. These promote reforestation in privately owned lands.

8.4.4 Role of the Home Garden

At the flexible resource use by people, home garden plays an important role in reforestation. The home garden is like a forest where many kinds of plants have been made use of intensively. The home garden is also used for tree planting besides agricultural land.

8.4.5 Limitation of Reforestation by Timber Tree at Household

This study has shown the state of reforestation in Java Island based on the household survey in the flatlands of the north coastal area in Java Island. The percentage of households that planted more than 21 timber trees were 18, and more than 21 multipurpose trees 31, of the 1,000 households surveyed.

These were only 1.8% and 3.1%, respectively. The small numbers may be explained by the following. First, the survey was conducted in the flat areas; had it been carried out in the hilly areas the percentages could well be higher. Second, households have different motives for planting trees. This study has shown that they plant trees as a business/investment strategy. However, not all of them can afford to invest in this undertaking (trees take anywhere from four to ten years to grow). Also, tree planting is only one of the many options for people in rural Java. There are so many other business opportunities in the informal sector. Recent new enterprises in the research site include cake making, brick manufacturing, sports wear production, among others. The fact that the research site is located near the main Dandels road (connecting Jakarta and Surabaya at the north coastal area of Java Island makes the megacity of Jakarta (Jabodetabek) easily accessible by bus or train. Thus, they can work there in factories and other enterprises.

8.5 CONCLUSION

The recent boom in tree planting in Java Island makes clear many aspects of forests in Indonesia.

People are enthusiastically planting *sengon* in their land. Thus, now in Java deforestation is being replaced by forestation in the people's own land. In many cases these lands do not belong to the state forest (*kawasan hutan*). At around 1998–2000, there had been rampant illegal logging also in Java, which persists today in Sumatra and other islands. This usually happens in state forests.

This study has tried to shed light on the irony of illegal logging in state forests on the one hand, and forestation in areas not considered forest area on the other. Forestation in Java has been taking place in privately owned land; at around 2000, looting had been reported in state forest areas.

One of the reasons forestation is taking place today is that the economic dynamism of the rural area has promoted the planting of timber trees such as *sengon* as among the livelihood and business strategies of villages seeking opportunities in the nonagricultural sector. The *sengon* business is profitable: *sengon*, teak, and *jabon* are main timber trees being planted in increasing numbers not just by wealthy farmers who plant these in agricultural land, but also by those who work nonagricultural jobs. The latter consist of self-employed businesspersons in trading and manufacturing, as well as formal-sector workers such as teachers, local government employees, and pensioners. They plant those trees as livelihood /investment strategies for savings or profit making, in both agricultural land and home gardens.

Another reason is the deregulation of the logging permit for timber in privately owned land. In many cases this logging permit system has hampered forestation efforts in privately owned land, especially in outer Indonesia. People who cut trees in their own land to sell in town had been called out as illegal loggers. Now they have mobilized their resources freely and flexibly. The situation is different in state-designated forests that are governed by stringent regulations and control.

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1812–2012

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