

1 **Payment for what? The realities of forestry benefit sharing under joint forest**  
2 **management in a major teak plantation region of Java, Indonesia**

3  
4 Masahiko Ota<sup>1\*</sup>, Misa Masuda<sup>2</sup>, Kaori Shiga<sup>3</sup>

5 <sup>1</sup> Institute of Liberal Arts, Kyushu Institute of Technology, 1-1 Sensuicho, Tobata, Kitakyushu 804-8550, Japan

6 <sup>2</sup> Faculty of Life and Environmental Sciences, University of Tsukuba, 1-1-1 Tennodai, Tsukuba 305-8572, Japan

7 <sup>3</sup> Department of Forest Policy and Economics, Forestry and Forest Products Research Institute, 1 Matsunosato, Tsukuba  
8 305-8687, Japan

9 \* **Corresponding Author:** Masahiko Ota, Tel: +81-93-884-3452, E-mail address: ota@dhs.kyutech.ac.jp, ORCID ID:  
10 0000-0003-3959-3125

11  
12 **Abstract** This paper explores the realities of forestry benefit sharing under joint forest management  
13 in a major teak plantation region of Java, Indonesia, with reference to empirical information about the  
14 uses and effects of monetary benefits in terms of stakeholder power relations. The authors intend to  
15 enrich current understandings of the pitfalls of benefit-sharing mechanisms at the local level. The  
16 analysis focuses on institutional designs of benefit sharing, recent statistical realities of shared benefits,  
17 the uses of monetary benefits in villages, and the livelihood and conservation implications of shared  
18 benefits through household surveys. The results confirm that the benefit-sharing system has been  
19 neither effective nor equitable economically (ineffective investment, a distribution policy preferring  
20 villages' wants, and a lack of attempts to improve general farmers' livelihoods and pro-poor  
21 arrangements), ecologically (little change in forest protection systems and continuing illegal logging  
22 and unofficial forestland cultivation), and in terms of governance (elite capture and a lack of  
23 downward accountability). Limited capacity, downward accountability of committee executive  
24 members and a laissez-faire attitude of forest administrators were also observed. A laissez-faire policy  
25 of forest administration under the frameworks of joint forest management can create room for elite  
26 capture as well as ineffective conservation and poor livelihood outcomes and should thus be avoided.  
27 Appropriate and supportive facilitation and collaboration from the outside to develop the capacity and  
28 downward accountability of village-level decision makers is needed. These issues are increasingly  
29 important in the context of Reducing Emissions from Deforestation and Forest Degradation Plus  
30 (REDD+).

31  
32 **Keywords** stakeholder, power bargaining, forest administration, elite capture, encroachment,  
33 livelihood

34 **Introduction**

35

36 Politics and trade-offs inevitably arise when discussing which functions of forests are to be prioritized  
37 for whom. Forest policy can be defined as a “social bargaining process which regulates conflicts of  
38 interest in utilizing and protecting forests according to the programs of the forest sector” (Krott 2005,  
39 p.12). Analyzing a policy in terms of power bargaining among stakeholders is a meaningful task in  
40 the forest sector, particularly when the object of analysis is community-based forest resource  
41 management or joint forest management. Community-based initiatives are increasingly recognized as  
42 being mostly driven by the interests of powerful stakeholders, which in turn affect social, economic,  
43 and ecological outcomes (Schusser et al. 2015).

44 It could be beneficial to examine stakeholder power bargaining in state–community joint forest  
45 management with special reference to some local realities of benefit sharing. Benefit sharing can be  
46 traced to pilot projects of community forestry in the 1970s (Arnold 2001), when the concept was  
47 introduced as a means to induce forest-dependent local people to participate in reforestation and forest  
48 conservation in anticipation of opportunities to improve their livelihoods. In recent developments  
49 involving Reducing Emissions from Deforestation and Forest Degradation Plus (REDD+), the concept  
50 has included far more diverse and complex mechanisms for sharing both monetary and non-monetary  
51 benefits beyond the village level, as well as beginning to encompass broader forms of social  
52 accountability and responsibility (Luttrell et al. 2013; Pham et al. 2013). Pham et al. (2013) have  
53 proposed some possible patterns of REDD+ benefit sharing, including fund-based approaches, forest  
54 concessions, access and benefit sharing, market-based instruments (e.g., payments for environmental  
55 services and clean development mechanisms), land fees, community-based natural resource  
56 management, and joint forest management.

57 In benefit sharing at the local level, the meaning and intention of benefit sharing vary according  
58 to stakeholders. For the forest administration, benefit sharing is the most important incentive for  
59 transforming the behavior of local peasants in a way that does not harm forest resources. In that light,  
60 along with coercion and trust, incentives rank among the three elements of power (Krott et al. 2014).  
61 For villagers, on the one hand, monetary benefits could primarily represent a new opportunity or  
62 resource for community development. On the other hand, villages are not monolithic, and because  
63 benefits are tangible, they could be subject to elite capture. Elite capture can be defined as “the process  
64 by which local elites—individuals with superior political status due to economic, educational, ethnic,  
65 or other social characteristics—take advantage of their positions to amass a disproportionately large  
66 share of resources or a flow of benefits” (Persha and Andersson 2014, p.265). Thus, the intentions of

67 the stakeholders can be contested and manipulated by each other (Krott 2005; Schusser et al. 2015).

68 As a result, securing the 3Es—equity, effectiveness, and efficiency—is always a challenge under  
69 benefit-sharing mechanisms (Wong et al. 2017). Equitable processes are typically difficult to realize,  
70 because powerful stakeholders often, both intentionally and unintentionally, dominate or manipulate  
71 decision-making processes and, in turn, gain greater benefits than ordinary participants do (Pham et  
72 al. 2013; Persha and Andersson 2014; Andersson et al. 2018), whereas the identities or values of less  
73 powerful stakeholders may be ignored (Martin et al. 2016). In such circumstances, efforts toward  
74 forest conservation and livelihood development can often be ineffective in terms of outcomes as well  
75 as inefficient in terms of costs.

76 No matter how broad and complex benefit-sharing mechanisms become in the era of REDD+,  
77 delivering benefits at the local level in equitable, effective, and efficient ways presents a persistent  
78 challenge. Thus, it is important to accumulate detailed knowledge from existing programs or projects  
79 about how attempts at sustainable forest management with benefit-sharing arrangements can fail, for  
80 such knowledge can inform us about possible pitfalls of policy implementation and ways to avoid  
81 them.

82 To acquire such knowledge, it is necessary to empirically examine how benefits are disbursed to  
83 participants and used at the local level by referring to concrete stakeholder relations. However, such  
84 examinations have been limited. Chhetri et al. (2012) and Pham et al. (2014) have presented detailed  
85 information about how monetary benefits were distributed and used in a community forestry program  
86 in Nepal and a payment-for-environmental-services program in Vietnam, respectively. Nevertheless,  
87 neither of those investigations sufficiently explored the aspects of contestation among stakeholders—  
88 that is, who benefited on the ground. Moreover, although other studies have focused on stakeholder  
89 power bargaining in relation to community forestry (Maryudi 2011; Nath et al. 2016), they have rarely  
90 provided empirical information about benefit sharing.

91 This paper explores the realities of forestry benefit sharing under joint forest management in a  
92 major teak plantation region of Java, Indonesia, including empirical information about the uses and  
93 effects of monetary benefits in terms of stakeholder power relations. As examined throughout the  
94 paper, the case involved benefit sharing that had not been functioning equitably, effectively, or  
95 efficiently. The research question of the paper is what kind of stakeholder power relations could be  
96 confirmed in the case and how such stakeholder relations have been responsible for the ineffectiveness,  
97 inefficiency, and inequity observed. Ultimately, the authors aim to enrich the current understandings  
98 of the pitfalls of benefit-sharing mechanisms at the local level to contribute to building equitable,  
99 effective, and efficient forest management practices.

## 100 **The Context of Java, Indonesia**

101

102 The island of Java in Indonesia has been at the forefront of social bargaining processes over state  
103 forestland. Unlike in other parts of Southeast Asia, a rigid forest administration has been in place in  
104 Java since the Dutch colonial period. Since 1972, *Perum Perhutani*, or the State Forestry Corporation  
105 (SFC), has managed Java's production forests and protected forests as a forest administration body.  
106 Production forests in Java comprise mostly high-value teak (*Tectona grandis*) and pine (*Pinus*  
107 *merkusii*) plantations, for which the SFC has established and operated an intensive management  
108 system with clearly demarcated forestlands, systematic and detailed management plans, and  
109 professional foresters. The SFC is a state-owned enterprise and, as such, is subject to the supervision  
110 of state authorities, including the Ministry of Environment and Forestry.

111 In terms of demography, Java is an area with high population density, i.e., more than 1,000  
112 people/km<sup>2</sup>. As a consequence, mediating intense demand from local peasants for smallholdings inside  
113 forestland has been one of the greatest challenges for the SFC. One notable method applied has been  
114 *tumpangsari*, an agroforestry-cum-reforestation system in which contract farmers plant and tend teak  
115 trees on certain plots of forestland. In exchange, the farmers are permitted to cultivate annual food  
116 crops between the rows of teak trees for three years, by which time the tree canopy closes and  
117 precludes the growth of such crops (Whitten et al. 1996). The *tumpangsari* reforestation system not  
118 only afforded peasants temporary cultivation plots within forestland but also allowed the SFC to secure  
119 a labor force for reforestation. However, even with the implementation of the system, peasant demand  
120 for agricultural fields remained extremely high. Peluso (1992) characterized such conventional  
121 situations of rural Javanese forestry areas as having "rich forests, poor people," for the SFC's rigid  
122 control over forest resources had typically perpetuated the impoverishment of local peasants. In the  
123 1980s, under the influence of donors, academics, and nongovernmental organizations (NGOs), the  
124 SFC developed a social forestry program out of its earlier initiatives geared toward local peasants  
125 (Shiga et al. 2012; Siscawati 2012). Forestry and other ways of supporting local livelihoods were  
126 partly included in that social forestry initiative.

127 The relationship between forest administration and local communities on Java has changed  
128 drastically since 1997. Triggered by political economic turmoil due to the Asian financial crisis and  
129 the collapse of the Suharto regime, the looting of plantation forests in the form of illegal logging and  
130 the encroachment into forestland intensified sharply in the late 1990s (Wulan et al. 2004). As the  
131 structure that the SFC had established became paralyzed, forest management became impossible to  
132 control. To cope with the situation, the SFC introduced *Pergelolaan Sumberdaya Hutan Bersama*

133 *Masyarakat*, or Joint Forest Management (JFM), in 2001. JFM is a community forestry initiative in  
134 which committees, known as *Lembaga Masyarakat Desa Hutan*, are formed at the village level, and  
135 the SFC cooperates with them in managing state forests based on formal contracts. Official benefit  
136 sharing mechanisms from forestry production represent one of the most distinctive features compared  
137 to earlier trials of social forestry.

138 Overall, scholarly evaluations of JFM have been mixed. Despite some indications that JFM has  
139 contributed to local livelihoods (Fujiwara et al. 2012; Yokota et al. 2014) and forest restoration  
140 (Prasetyo et al. 2012), some researchers have pointed out that benefits for ordinary peasants remain  
141 inadequate (Maryudi 2011) and that the effects on forest restoration remain dubious (Shiga et al. 2012).  
142 In terms of governance, JFM has been criticized for not providing proper information or transparency  
143 and for being prone to the elite capture of resources (Maryudi 2011; Djamhuri 2012; Fujiwara et al.  
144 2012; Shiga et al. 2012). Indeed, Maryudi's (2011) comprehensive analysis of stakeholder power  
145 relations indicated that the JFM's process had often been manipulated and captured by powerful  
146 stakeholders, namely the SFC and the village elite, which had hindered the empowerment of general  
147 peasants working with JFM as a result.

148 As mentioned, the sharing of monetary benefits generated from forestry production by the SFC  
149 with JFM committees is one of the most significant institutional changes brought about by JFM, in  
150 teak and pine plantation areas alike. However, despite its importance and the presence of a few  
151 empirical (Djamhuri 2012) and theoretical (Lee et al. 2018; Kubo et al. 2018) studies, comprehensive  
152 accounts on benefit sharing under JFM have remained unavailable.

153 In the following sections, the authors first explore the institutional designs of benefit sharing,  
154 some statistical realities of shared benefits, the uses of monetary benefits in villages, and the livelihood  
155 and conservation implications of shared benefits. The paper demonstrates that JFM and its benefit-  
156 sharing initiative have been neither effective nor equitable in terms of the economy, ecology, or  
157 governance. Second, the authors attempt to explain why the policy instrument has resulted in such  
158 ineffectiveness and inequity, with specific reference to the political relations among stakeholders.  
159 Following Maryudi (2011) and Shiga et al. (2012), the paper focuses particularly on the SFC (forest  
160 administration), executive members of JFM committees (forest user group representatives), and  
161 general villagers as the most important stakeholders under JFM.

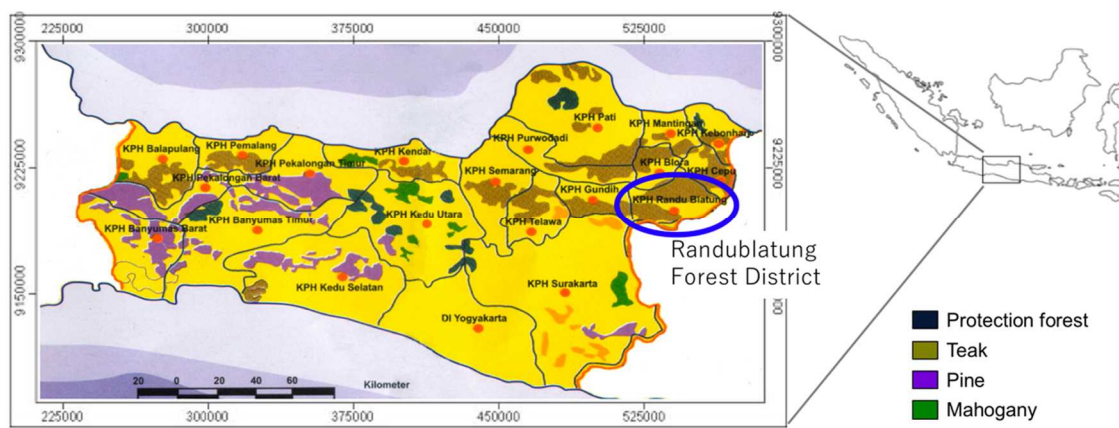
162

### 163 **The Study Site**

164

165 The SFC has its own administrative units that do not align with general administrative units (Fig. 3).

166 This paper focuses on the Randublatung Forest District (equivalent to a district) of the Central Java  
167 Regional Division (equivalent to a province) (Fig. 1). The forest district is located within the  
168 administrative boundaries of the Blora District of Central Java Province, with an area of 32,464 ha.  
169 The state forests in the Randublatung Forest District are all categorized as production forests, and all  
170 of them are teak plantations. The Randublatung Forest District was selected due to it being a major  
171 teak plantation area and providing the greatest monetary amount of shared benefits to JFM committees  
172 in Central Java at the time of the authors' fieldwork.  
173



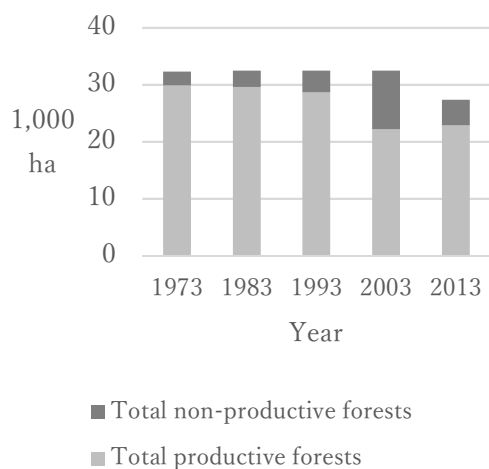
174

175 Fig. 1 Location of the Randublatung Forest District in Central Java (adapted from Randublatung Forest  
176 District 2016)

177

178 Similar to other parts of Java (e.g., Maryudi et al. 2016), the state forests in the Randublatung  
179 Forest District have been severely degraded, particularly due to widespread illegal logging and  
180 encroachment during the insurgent period of 1997–2003. Before 2003, the extensive looting of forests  
181 prompted a drastic increase in nonproductive forest areas (Fig. 2); however, the damage was not so  
182 severe as to denude all forest areas in the forest district.

183



184

185 Fig. 2 Areas of productive and non-productive forests in the Randublatung Forest District according  
 186 to 10-year forest management plans (Randublatung Forest District 2016)

187

188 In the Randublatung Forest District, JFM has been in place since around 2003, and as of the  
 189 beginning of 2018, a total of 34 JFM committees were established in each of the 34 villages in the  
 190 district. As mentioned, according to forest districtwide data for Central Java, the monetary amount of  
 191 benefit sharing under JFM is largest in Randublatung.

192 Regarding socioeconomic conditions, the population density in the Blora District in 2014 was  
 193 466 people/km<sup>2</sup>. That population density is high for rural forestry areas in Java. By land use, the Blora  
 194 District includes approximately 50% forest, 25% paddy fields, 14% dry fields, 9% gardens, and 2%  
 195 other uses. 99% of the forests are state forests. Irrigation is limited, and 65% of paddy fields are rain-  
 196 fed only. Since 2011, annual rainfall has ranged from 1,300 to 1,400 mm/yr. As income sources in  
 197 rural areas have become limited, increasingly more young people have migrated from rural to urban  
 198 areas. In fact, statistics show that the 20–29-year-old population in the Blora District is significantly  
 199 less than other age groups, for both men and women. It is the general understanding that people in the  
 200 Blora District are not materially well-off (Statistics Indonesia 2015).

201

## 202 **Research Methods**

203

204 The study presented here involved various methods of data collection and diverse sources of  
 205 information (Table 1). First, the authors visited the Central Java Regional Division office and the  
 206 Randublatung Forest District office of the SFC in March 2016, August 2016, January 2017, and  
 207 January 2018 to collect official documents and statistics related to forestry, benefit-sharing institutions,

208 the disbursement of shared benefits, and profiles of JFM committees. The authors communicated with  
 209 several foresters in the Randublatung Forest District to clarify the organizational structure and  
 210 implementation of JFM; on those occasions, the authors also obtained information about their  
 211 perceptions of JFM and local peasants. The statistics collected supported classifying the JFM  
 212 committees in the Randublatung Forest District into large, medium, and small committees according  
 213 to the total amount of shared benefits received (Fig. 4).

214

215 Table 1 Methods of data collection

Method	N	Note	Source of information
Statistical analysis of shared benefits	34	All JFM committees in the Randublatung Forest District	Official documents and statistics provided by the SFC
Committee-level surveys on JFM activities and the uses of shared benefits	14	14 randomly selected committees of all 34 committees	Surveys based on face-to-face interviews with presidents and executive members of committees
Household surveys on awareness of JFM and implications for livelihoods and conservation	48 and 43	48 randomly selected households in two subvillages in Nala 43 randomly selected households in two subvillages in Bodang	Surveys based on face-to-face interviews with heads of households

216

217 Of the 34 JFM committees established in the Randublatung Forest District, 14 committees (41%  
 218 to the total) were randomly selected and directly visited by the authors in August 2016 and January  
 219 2017. Guided by official staff members and SFC employees, the authors conducted surveys for the  
 220 presidents and other executive members of the committees about basic characteristics of the  
 221 committees, uses of shared benefits in the village, and activities conducted by the committees. The  
 222 characteristics of the executive members of committees were also confirmed, where possible. The  
 223 authors directly interviewed with the informants face-to-face in Indonesian, with a help of SFC  
 224 employees who accompanied with them. The interviews lasted approximately an hour on average, and  
 225 the data collected were summarized as descriptive statistics.

226 Household surveys were conducted to examine the implications of shared benefits for the  
 227 livelihood of locals and conservation efforts, which cannot be fully understood from the information  
 228 provided by presidents and executive members alone. The authors selected two villages,  
 229 pseudonymously called Nala and Bodang, from the 14 villages (i.e., JFM committees) visited for  
 230 household surveys; Nala was selected from the group of large committees and Bodang from the group  
 231 of medium committees (Fig. 4). The authors acknowledge that information about two villages does



232 not represent an adequate overview of the Randublatung Forest District. The authors' intention was to  
233 derive implications regarding the extent to which the benefits committees received could improve  
234 forest conservation and local livelihoods. The authors did not conduct household surveys representing  
235 the small committees, for it was expected that little could be observed among them in terms of benefit  
236 sharing due to the small amounts of money available.

237 The villages of Nala and Bodang consist of seven and four subvillages, respectively. In both  
238 villages, two subvillages were strongly engaged with JFM, whereas the other subvillages have little to  
239 do with the system, primarily because they are geographically distant. Thus, the authors focused on  
240 the two active subvillages in each village and randomly selected households therein for surveys.  
241 Ultimately, 48 households in Nala and 43 households in Bodang were interviewed, representing 14%  
242 and 19%, respectively, of the total households in the two subvillages in each village.

243 The authors directly visited the houses of informants guided by leaders of neighborhood  
244 associations in the subvillages and conducted face-to-face interviews with them based on  
245 questionnaires. Informants (i.e., household heads) were asked about the basic characteristics of their  
246 households, livelihoods, gross incomes, and knowledge and perceptions of JFM and benefit sharing.  
247 As an ethical protocol approved by the first author's institution, the authors explained at the beginning  
248 of the interviews that all personal information obtained would be used for academic purposes only.  
249 The interviews lasted approximately an hour on average. The household surveys were performed for  
250 Nala in January 2017 and for Bodang in January 2018. The data obtained were summarized as  
251 descriptive statistics. The authors also performed chi-squared tests to confirm the statistical  
252 significance of relationships between household characteristics and whether their cultivation plots  
253 were located within forestland.

254 The visits with 14 committees and household surveys in two villages—supplemented each other;  
255 the former quantitatively confirmed the uses and activities involved with shared benefits, particularly  
256 corresponding to equity aspects, while the latter deeply examined the effects of shared benefits,  
257 particularly in terms of effectiveness and efficiency.

258

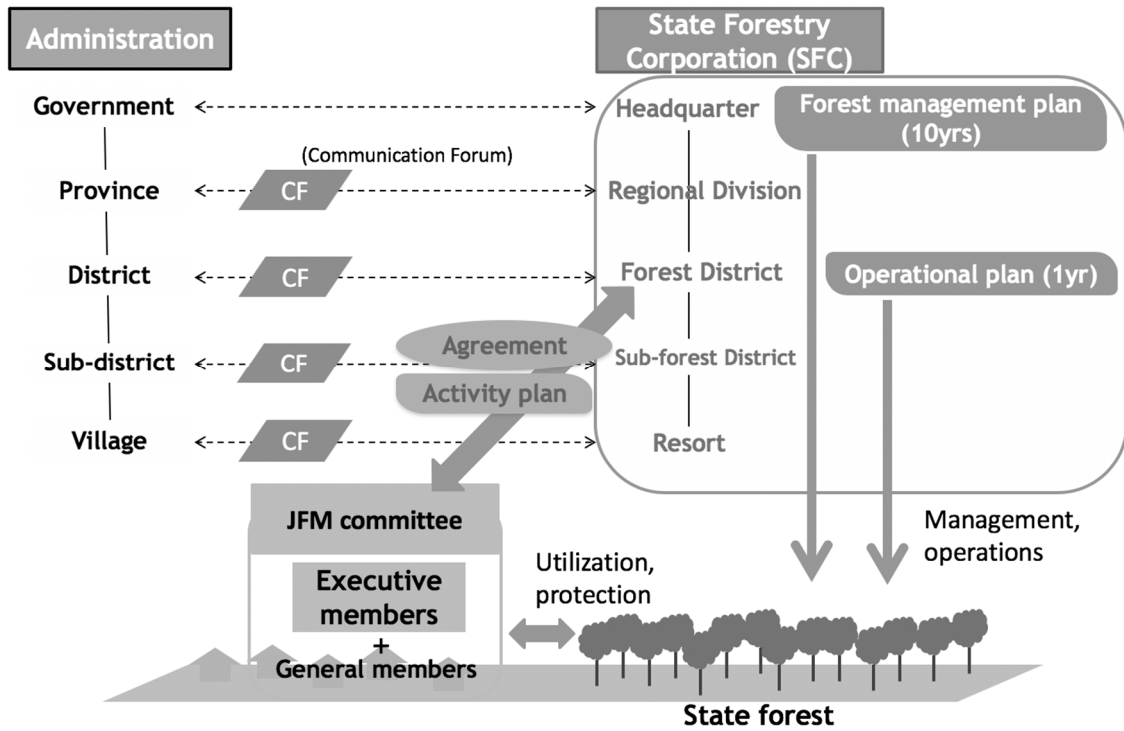
## 259 **Results**

### 260 **Governance structures of JFM**

261

262 JFM committees are formulated at the village level, and certain areas of state forests are designated to  
263 each committee. Committees and the SFC sign formal contracts with JFM. Committees consist of  
264 executive members and general members. Committees, with the cooperation of the SFC, formulate

265 activity plans and implement them, with the rights for receiving forestry benefit sharing and the  
 266 responsibilities for protecting designated forests (Fig. 3).  
 267



268  
 269 Fig. 3 Governance structures of Joint Forest Management (adapted from Shiga et al. 2012)  
 270

271 JFM has an official structure involving various stakeholders. First, the village, subdistrict, district,  
 272 and provincial governments officially engage in JFM processes by way of Communication Forums  
 273 (Fig. 3), which are official meetings for coordinating, sharing information, and promoting activities  
 274 under JFM. The forums generally include the heads of each level of government, namely elected  
 275 politicians. Although there are few rules about the eligibility, executive members of JFM committees  
 276 generally include village functionaries and other influential people at the village level, who could be  
 277 called the village elite (Djamhuri 2012). Thus, JFM is implemented not inside the jurisdiction of the  
 278 forest administration alone; governments represented by political leaders and the village elite are also  
 279 involved in the process.

280  
 281 **Arrangements and statistics of benefit sharing**  
 282

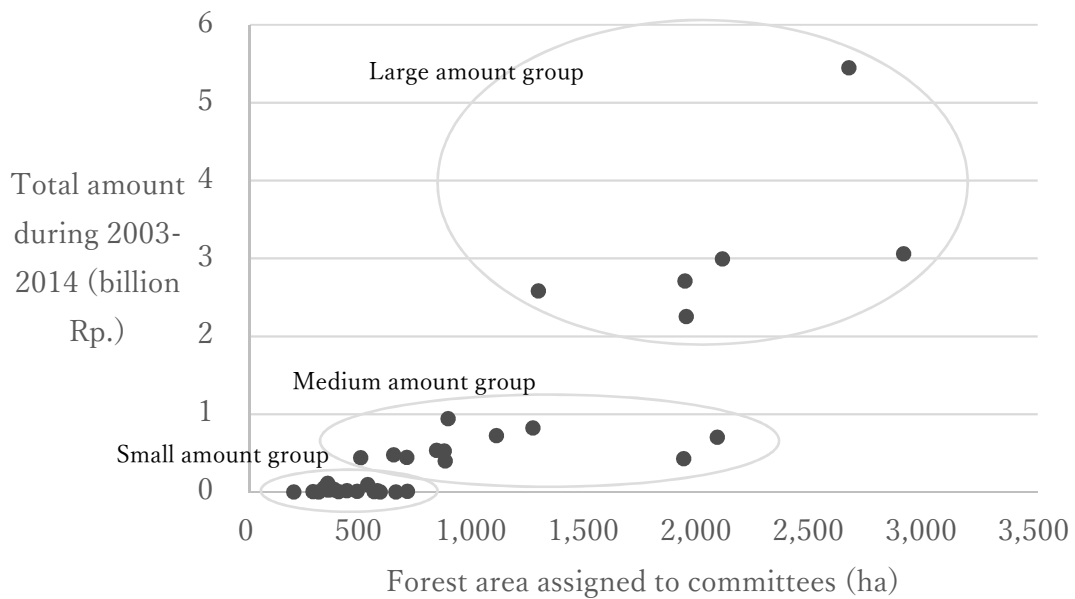
283 As the SFC had developed substantive forest management systems before the introduction of JFM,  
 284 forestry operations are administered according to SFC's long-term and short-term forest management

285 plans even under JFM (Fig. 3). Hence, the locations and timings of thinnings and final harvests are  
286 determined by the SFC, taking forest age structures and conditions into consideration (Djamhuri 2012).  
287 In this sense, there was little room for JFM committees to add their opinions on the system of forestry  
288 operations, except for tree plantations established by committees based on JFM agreements (e.g.,  
289 Fujiwara et al. 2012).

290 Profits derived from each harvesting site, or coupe (*anak petak*), where timber operations were  
291 conducted were precisely recorded and calculated by the SFC. There were fixed formulas for  
292 calculating the total amount of gross share due to a JFM committee. Variables included the times when  
293 the trees had been planted on the coupe, when the JFM agreement had been made, and when timber  
294 was harvested on the coupe, as well as some correction factors (e.g., the extent to which the trees on  
295 the coupe had been damaged due to illegal logging by the time of final harvest). The possible  
296 maximum share for JFM committees from a coupe is 25%. After deducting tax, the net amounts of  
297 benefit for each committee are fixed. With the system of correction factors, the method of benefit-  
298 sharing provision could be said to be a performance-based system to some extent.

299 Figure 4 shows the total cumulative disbursements to JFM committees from 2003 to 2014 in the  
300 Randublatung Forest District. It is confirmed that the amounts varied significantly across committees.  
301 Some committees had received quite large amounts. The greatest value was around Rp. (Indonesian  
302 rupiah) 5.5 billion, approximately USD 379,500. On the other hand, a large portion of committees  
303 were allocated less than Rp. 1 billion. Several committees had received nominal amounts of timber  
304 benefit sharing of less than Rp. 100 million for 11 years. These differences can be attributed to whether  
305 the designated forest areas contained high value timber trees and whether harvesting operations are  
306 scheduled in the designated forest areas in the SFC's long-term forest management plan. Focusing on  
307 areas of designated forests, based on the presumption that the larger the designated forest areas are,  
308 the more likely they will contain high value timber trees and schedules of final harvesting, it was  
309 confirmed that committees with large areas had received larger amounts (Fig. 4); the correlation was  
310 significant at the 1% level ( $p=0.000$ ).

311



312

313 Fig. 4 The amounts of shared benefits from 2003 to 2014 and forest areas assigned among the all JFM  
 314 committees in the Randublatung Forest District (n=34) <sup>a</sup>

315 <sup>a</sup> The amount of “cross-subsidies” is not included

316

317 For committees with nominal amounts of benefit sharing, a cross-subsidy (*subsidi silang*) system  
 318 had been applied in the Randublatung Forest District. Based on an agreement, committees with large  
 319 amounts allocate part of their annual benefits to those committees with no or nominal shared benefits  
 320 (at most Rp. 10 million) so that these committees can at least provide honoraria for committees’  
 321 executive members and can conduct some business activities.

322 The principles of how to use shared benefits were decided every year through official meetings  
 323 between the subsection of Environmental Development at the Randublatung Forest District office and  
 324 the 34 committee presidents. The allocations for the year 2014 were as follows: 30% for business  
 325 activities, 15% for village infrastructure, 17% for administrative costs, 15% for forest management,  
 326 10% for social purposes, and 13% for contributions for other stakeholders. These allocations could be  
 327 modified at the committee level according to actual situations.

328

329 **The uses of and activities with shared benefits by committees**

330

331 Table 2 indicates the kinds of business activity (30% of the total use) and numbers of committees that  
 332 had tried these activities among the 14 committees surveyed. It was confirmed that activities were

333 mostly non-forestry ones, such as cooperatives, rearing of cows or goats, renting of ceremonial tools,  
 334 etc. Rich committees were likely to have conducted rental activities, such as ceremonial tools,  
 335 minibuses, or corn shellers, which require considerable capital and have greater profitability.  
 336 Business activities were to improve the village economy so that the prosperity of villagers could be  
 337 raised.

338

339 Table 2 Kinds of business activities and numbers of JFM committees that had ever tried them among  
 340 the committees surveyed (n=14)

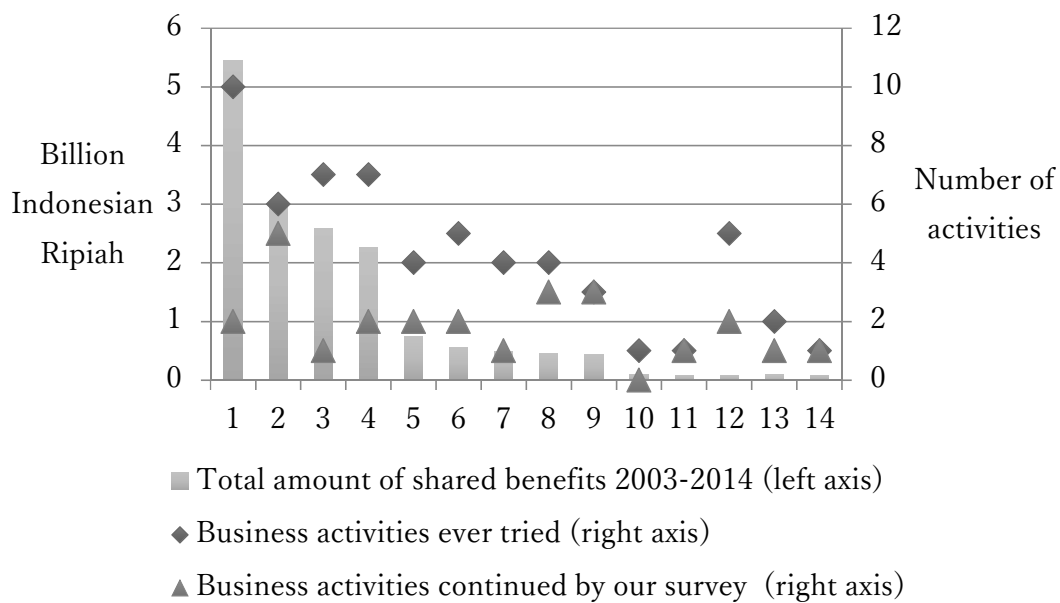
Kind of business activities <sup>a</sup>	Number of JFM committees
Cooperatives	10
Rearing of cows	7
Rental of ceremonial tools	6
Cultivation of <i>temulawak</i> ( <i>Curcuma zanthorrhiza</i> )	5
Rental of minibuses	3
Rental of corn shellers	3
Cultivation of <i>porang</i> ( <i>Amorphophallus muelleri</i> )	3
Rearing of goats	3

341 <sup>a</sup> Activities conducted by three or more JFM committees are listed

342

343 Figure 5 demonstrates that rich committees were likely to have implemented more business  
 344 activities, and yet the percentages of the business activities that had been continued by the time of the  
 345 authors' visits were lower in rich committees. Although the authors could not completely determine  
 346 how much money was spent, considering the larger amounts of benefits, it is safe for the authors to  
 347 infer that considerable amounts of money had been used inefficiently.

348



349  
 350 Fig. 5 Numbers of business activities that had ever been tried and that had been continued by the time  
 351 of the authors' visits among the committees surveyed (n=14)  
 352

353 The authors confirmed that shared benefits had been used for various village infrastructural  
 354 projects (15%), including road improvements, water tank installations, the creation of small reservoirs,  
 355 and mosque renovations. For example, the richest committee had spent most of its money on  
 356 improving and extending roads because the village is in a remote area. However, the authors could not  
 357 obtain quantitative data of the numbers and kinds of village-level infrastructural projects for all 14  
 358 committees.

359 Table 3 lists the items spent for social purposes (10%) and their amounts in the richest and  
 360 second-richest committees in 2013, based on the annual accounting document that the authors were  
 361 able to confirm. Social purposes mostly consisted of monetary support for teachers, religious  
 362 places/leaders, youth groups, etc. It is evident that these expenses have little link to forest management.  
 363 These purely represented monetary support for the social sectors which were likely lacking sufficient  
 364 funds for activities.

365  
 366  
 367  
 368  
 369  
 370

371 Table 3 Items for social purposes in the richest and second-richest JFM committees in 2013

	Item	Amount (million Rp.)
Richest	Support for voluntary teachers	6.4
	Increase of nutrition	1.6
	Support for worship places ( <i>tempat ibadah</i> )	2.8
	Salaries for elderly women	1.2
	Expenses for the village council and farmers' groups	18.6
	Expenses for youth organizations ( <i>karang taruna</i> )	3.2
	Expenses for social communication	3.4
	Total	37.2
Second-richest	Support for Islamic schools ( <i>madrasah</i> ) and kindergartens	6.0
	Support for youth organizations ( <i>karang taruna</i> ) and the arts	5.0
	Support for worship places ( <i>tempat ibadah</i> )	4.0
	Treatment and compensation for the bereaved	4.7
	Others	5.0
	Total	24.7

372

373       Regarding forest management (15%), money from the shared benefits was used mostly for hiring  
374 villagers as watchmen; contract planting or forestry enterprise activities by committees were not  
375 confirmed in this forest district. A total of nine committees had conducted patrol activities. Of these,  
376 only the four richest committees, which can afford to pay for hiring watchmen, had been continuing  
377 patrol activities by the time of the authors' visits. In Java, as already mentioned, forestry operations  
378 including patrol activities had been continuously administered by foresters of the SFC, irrespective of  
379 the presence of committees. Systematic operating and patrolling systems had been in place by forest  
380 guards and forest police. Hence, for the SFC, even without committees' patrolling and watching  
381 activities, it was still possible to continue their forestry operations.

382       Administrative costs (17%) included necessary expenses for committee activities and honoraria  
383 for committee executive members. Contributions for other stakeholders (13%) included honoraria for  
384 members of Communication Forums at the village, subdistrict, and district levels (Fig. 3), many of  
385 whom were part of the village elite. It was confirmed that at least 30%, generally more, had been used  
386 for administrative purposes, including honoraria.

387       Regarding the characteristics of the executive members of JFM committees, the authors were  
388 able to derive complete information from two committees, where household surveys were conducted.  
389 Table 4 shows that committee executive members were likely to be people with official positions,

390 greater influence on village issues, and greater socioeconomic statuses, who can be regarded as village  
 391 elites; this finding is in line with Djamhuri (2012).

392

393 Table 4 Characteristics of JFM committee executive members at the villages of Nala and Bodang

	Village assembly member	Village administra- tion member	Influential person in village affairs <sup>a</sup>	SFC staff <sup>b</sup>	Employee	General farmer	Total
Nala	2 (6.5%)	7 (22.6%)	5 (16.1%)	4 (12.9%)	6 (19.4%)	7 (22.6%)	31 (100.0%)
Bodang	0 (0.0%)	5 (50.0%)	5 (50.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	10 (100.0%)

394 <sup>a</sup> *Tokoh Masyarakat, Tokoh Agama, etc.*

395 <sup>b</sup> Residing in Nala or Bodang but working outside the jurisdiction of those villages.

396

397 During fieldwork, the authors were told by a couple of forest guards that “uses of shared benefits  
 398 are a matter of the village.” This implies that they are thinking that as benefit sharing is an issue of the  
 399 village, it would not be appropriate to advise or say something about the uses of shared benefits, as  
 400 such advice could be seen as a type of intervention. Although forest rangers and forest guards were  
 401 generally part of the executive members of committees as supervisors or advisors, they appeared not  
 402 to be the persons who advise on or facilitate the use of shared benefits.

403

#### 404 **Impacts of benefit sharing: Household surveys in two selected villages**

405

406 Table 5 summarizes several important figures for the villages of Nala and Bodang. The percentages of  
 407 state forestland in each village were outstandingly high - 89.4% in Nala and 95.7% in Bodang -  
 408 meaning that these villages were surrounded by teak plantation forests. The forest areas designated to  
 409 the JFM committees were 2,100ha and 1,928ha, respectively. Nala had received the third-largest  
 410 amount of shared benefits from 2003 to 2014 (Rp. 2,993 million), being part of the “large amount  
 411 group” in Fig. 4. Bodang has received Rp. 429 million during the same period, being part of the  
 412 “medium amount group”.

413 The effects of severe looting during 1997–2003 were not significant in Nala. Teak plantation  
 414 forests surrounding the village had been well maintained, despite some evidence of continued illegal  
 415 logging. By contrast, teak plantations surrounding Bodang were severely affected during 1997–2003,  
 416 and a large amount of forestland had been denuded. In the early 2000s, teak trees were replanted,



417 which required the SFC to hire villagers, meaning that replanting was not strictly a JFM activity;  
 418 however, the authors understood from communicating with villagers that the villagers had considered  
 419 the activity to be associated with JFM. Forest recovery appeared to have occurred mostly in places  
 420 that were once completely denuded. The situation may thus have been similar to the case reported by  
 421 Prasetyo et al. (2012), in which JFM positively influenced reforestation following severe looting and  
 422 denudation. However, illegal logging and unofficial cultivation inside forestland remained evident.

423

424 Table 5 Characteristics of the villages of Nala and Bodang and information from the household surveys

	Nala (n=48)	Bodang (n=43)
% of state forestland to village area	89.4	95.7
Forest area designated to the committee (ha)	2,100	1,928
The amounts of shared benefits from 2003 to 2014 (million Rp.)	2,993	429
% of households having cultivation plots (both official and unofficial) inside forestland to the total sample households	64.6	69.7
Average area of cultivation plots (both official and unofficial) inside forestland among the sample households (ha)	0.51	0.76
Average annual gross income (year 2016) among the sample households (million Rp.)	28.1	20.8
% of the gross income derived from cultivation plots (both official and unofficial) inside forestland among the sample households	23.7	27.4
Of the sample households having cultivation plots inside forestland, % of households whose plots are suspected to be unofficial	2.1	90.0

425

426 Table 6 presents informants' knowledge and perceptions of JFM. It was confirmed that  
 427 informants who knew about JFM, the uses of shared benefits, and their committee's forest patrolling  
 428 activities were greater than those who did not know in both villages. However, the influence of  
 429 geographical location was also clear; informants from the subvillages of Koli and Maliraga knew less  
 430 than those from the subvillages of Nguro and Semuko (the names of these subvillages are  
 431 pseudonyms). That situation reflects the facts that Nguro and Semuko were the major parts of the two  
 432 villages and that JFM activities targeted those subvillages. Some informants who knew about JFM  
 433 and benefit sharing explicitly told the authors, for example, that "JFM is an issue for executive

434 members, so ordinary villagers are not really involved.” Such reports implied the domination of  
 435 decision making by executive members.

436

437 Table 6 Knowledge and perceptions of JFM among the sample households

Village Subvillage	Nala (n=48)		Bodang (n=43)	
	Nguro (n=28)	Koli (n=20)	Semuko (n=29)	Maliraga (n=14)
Know about JFM	27 (96.4%)	12 (60.0%)	29 (100.0%)	4 (28.6%)
Know about the uses of shared benefits	28 (100.0%)	14 (70.0%)	24 (82.8%)	5 (35.7%)
Know about committee’s forest patrolling activities	28 (100.0%)	13 (65.0%)	No patrolling is conducted by committee	

438

439 Few effects of shared benefits were identified in household-level income data. As shown in Table  
 440 2, most of the committees’ business activities were collective ones, which may not directly contribute  
 441 to the livelihood of households. Businesses activities engaged included the rental of ceremonial tools,  
 442 minibuses, and corn shellers in Nala and the rental of corn shellers in Bodang. Profits from such  
 443 businesses were pooled and reinvested by the committees, and there was little evidence that ordinary  
 444 villagers received support for their livelihoods. As Maryudi (2011) has posited, the effects of shared  
 445 benefits on improved livelihoods are often not significant. In Nala, only one respondent answered that  
 446 he had continued cultivating *temulawak* (*Curcuma zanthorrhiza*), which can be considered to  
 447 represent a single direct contribution to income from the use of shared benefits.

448 Regarding the effects of shared benefits on forest protection, the study focused on the unofficial  
 449 occupation of forestland, which could be implicitly confirmed during surveys. In short, if a plot is  
 450 located in an official *tumpangsari* coupe, then that plot should be legal; otherwise, the plot is suspected  
 451 of being unofficial. In Nala, only one case (2.1%) of unofficial cultivation was identified from surveys  
 452 (Table 5). In that village, forest conditions were good, and final cuttings had continued for the past  
 453 several years. Opportunities for official *tumpangsari* were abundant, because *tumpangsari* contracts  
 454 were made at the time of final cuttings and when the replanting of teak trees commenced. However,  
 455 in Bodang, among the households with cultivation plots inside forestland, 90.0% were suspected to be  
 456 cultivating unofficial plots on such lands (Table 5)—that is, plots having nothing to do with official  
 457 *tumpangsari* or that had exceeded the three-year *tumpangsari* contract period. In terms of forest  
 458 management from the SFC’s viewpoint, the situation in Bodang was volatile.

459 Peasants' dependence on opportunities for cultivating forestland, either officially or unofficially,  
460 was high (Table 5). Percentages of gross income derived from cultivation plots inside forestland  
461 represented 23.7% and 27.4% in Nala and Bodang, respectively. In addition, performing a chi-square  
462 test, sample households who do not own agricultural fields were statistically more likely to have  
463 cultivation plots inside forestland (p-value=0.041).

464 To sum up the matter of forest protection in general, without opportunities for *tumpang Sari*,  
465 villagers are very likely to be engaged in the unofficial occupation of forestland. If there are enough  
466 opportunities for *tumpang Sari*, as in Nala, then villagers' needs for forestland plots can be  
467 accommodated and their use of forestland can be legal; if not, as in Bodang, then peasants are daring  
468 to pursue unofficial cultivation. Such phenomena are natural, for cultivation, whether official or  
469 unofficial, in state forestland has been an important safety net for peasants in remote areas of Java  
470 (Inoue et al. 2003), where available land is scarce due to high population density and the high  
471 percentage of state forests (Peluso 1992). Moreover, benefit sharing is not functioning as a meaningful  
472 instrument to replace forest cultivation. If a sort of livelihood could be ensured by making use of  
473 money from shared benefits, then peasant households may prefer that livelihood to unofficial  
474 forestland cultivation. However, such a situation has not been realized by any means. It is evident that  
475 JFM and its benefit-sharing mechanism have never been effective in addressing peasant pressure on  
476 forestland, although they might have had some positive influence on the implementation of  
477 reforestation from severe looting and denudation in the early 2000s.

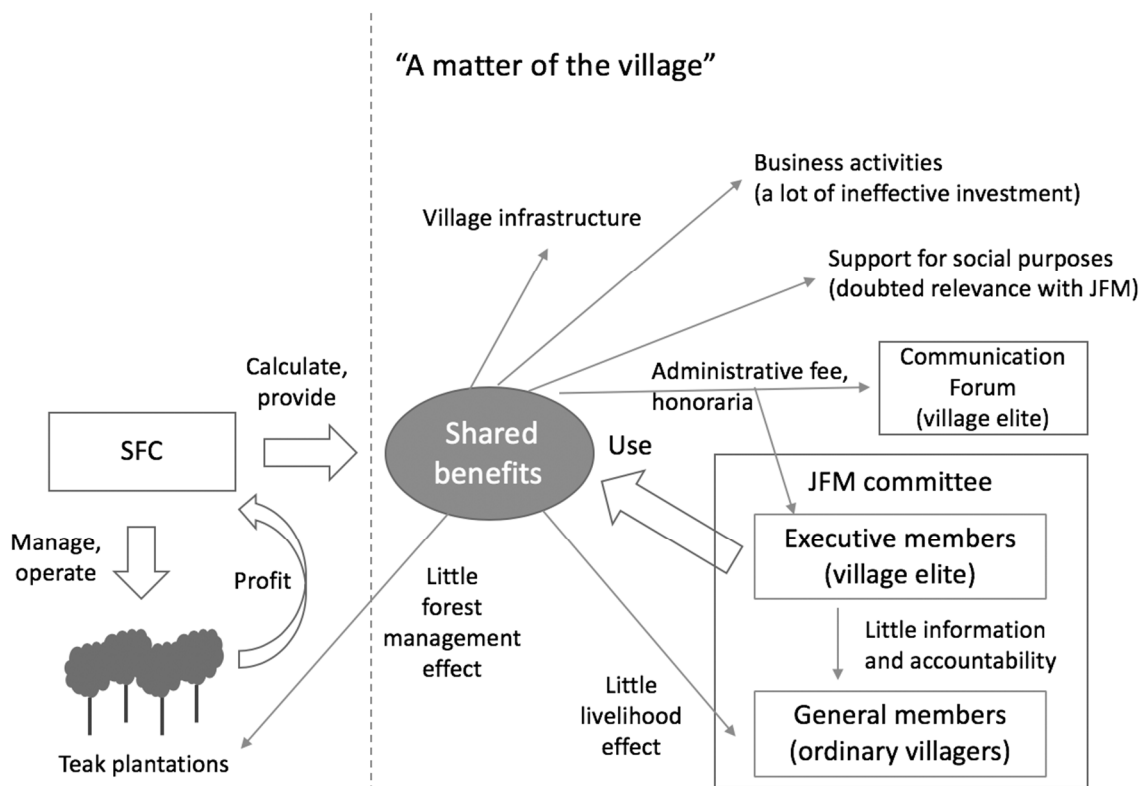
478

## 479 **Discussion**

480

481 None of the 3Es—equity, effectiveness, and efficiency—of benefit sharing under JFM at the study  
482 site had been fully realized. Although the development of village infrastructure might have contributed  
483 to a village's prosperity to some extent, few successes in business activities were confirmed,  
484 particularly in rich committees that had invested large amounts of money from shared benefits. Even  
485 in committees with successful business activities, profits from such activities were generally pooled  
486 and reinvested by the committees, and ordinary villagers had not enjoyed profit allocation to improve  
487 their livelihoods. The authors do not deny the significance of allocation for social purposes, as such  
488 support may create positive attitudes of villagers. However, the allocation for social purposes observed  
489 might represent village's "wants", rather than "needs", which have little connection with both forest  
490 management and livelihoods. In terms of forest protection, changes in systems and physical intensity  
491 had been few, except for the addition of some watchmen in areas associated with rich committees.

492 Furthermore, the household surveys revealed that in Bodang, the cultivation of unofficial forestland  
 493 had not been halted. Official structures affording greater benefit flows for the village elite than  
 494 ordinary villagers were confirmed. Ordinary villagers' awareness of JFM and its benefit sharing was  
 495 not high. Thus, JFM and its benefit-sharing arrangements had not been effective or equitable in terms  
 496 of the economy (ineffective investment, a distribution policy prioritizing villages' wants, and a lack of  
 497 attempts to improve general farmers' livelihoods and pro-poor arrangements); the ecology (little  
 498 change in forest protection systems and continuing illegal logging and unofficial forestland  
 499 cultivation); or governance (official elite capture and a lack of downward accountability) (Fig. 6).



500

501 Fig. 6 Summary of the findings in the present study

502

503 In the institutions of JFM, the executive members of committees are at the core, and they decide,  
 504 among other things, the use of shared benefits (Fig. 6). If they have sufficient capacity and good  
 505 accountability, then JFM presents a variety of positive prospects; however, if they lack such capacity  
 506 and accountability, then activities will not be productive enough. Many of the study's cases fall into  
 507 the latter category, a finding largely in line with the results of previous studies on JFM (Maryudi 2011;  
 508 Shiga et al. 2012). The finding can also be regarded as a typical situation in terms of elite capture in  
 509 forest governance (e.g., Ribot et al. 2010; Persha and Andersson 2014; Torpey-Saboe et al. 2015).

510 After all, because elite or influential people are likely to occupy official positions on newly created  
511 committees, they are likely to have more sway in deciding rules and benefit flows in favor of elite or  
512 influential people such as themselves.

513 However, the executive members of committees are not the only ones responsible for such results.  
514 Overall, appropriate arrangements by the SFC, as the initiator of the joint forest management initiative,  
515 for the effective and equitable implementation of benefit sharing were not in place. The SFC had not  
516 developed a system of feedback in order to understand local realities and had not arranged facilitation  
517 or capacity-development systems so that shared benefits would be used effectively. Foresters had been  
518 instructed to focus on their conventional tasks, and organizational facilitation systems were not  
519 sufficiently developed. Moreover, attempts at cooperation with external stakeholders, including NGOs  
520 that work with rural development issues, were few. In the situation at the time of the study, the  
521 responsibilities of the SFC were merely to calculate shared benefits and provide money to committees.  
522 As a result, linkages between the incentive and good forest management practices were weak. At  
523 present, forestry benefit sharing initiated by the SFC for joint forest management is a sort of gift to the  
524 village elite, and such a laissez-faire attitude held by the administrative body is problematic. This  
525 viewpoint, that room for elite capture can be created under the frameworks of joint forest management  
526 due to a lack of proper engagement and the monitoring of forest administration, marks an important  
527 contribution to the previous literature.

528 In the context of Java, three factors can be identified as underlying such a laissez-faire  
529 implementation: one technical, one psychological, and one political. The technical factor is a lack of  
530 human resources at the SFC. The number of personnel is limited, and hence there might be little leeway  
531 to add village development or facilitation activities to frontline foresters' tasks. The psychological  
532 factor is a sense to simply follow conventional tasks among forest officials. Forest officials may claim  
533 that they have been trained to manage forests, not to contribute to village development and prosperity.  
534 The administrative system of the SFC had not been oriented to allow for JFM. This factor would reflect  
535 the historical legacy that the SFC was the sole decision maker on forest management, and they  
536 managed forest conflicts with strategies of repression (Peluso 1992). Lastly, the political factor is a  
537 hesitation among forest officials to intervene in village issues. As confirmed in the study's results,  
538 forest officials were likely to consider benefit sharing to be a matter of the village, thereby implying  
539 that they are not agents with any say about the use of benefits. Such hesitation might reflect the  
540 increasing voice of locals amid the decreasing authority of the SFC after 1997. Forest officials might  
541 have perceived that they should not advise villagers on the uses of shared benefits. Even when the  
542 effectiveness and equity of the uses are doubtful, they have just left them untouched and unresolved.

543 Scrutinizing the contextual information of local political settings can thus explain the observed  
544 realities of stakeholder relations.

545       Apart from the issue of the work of executive members of JFM committees and their relationship  
546 with the SFC, another important implication from the results is the dubiousness of whether shared  
547 benefits could have replaced existing unofficial cultivation inside forestland, even if shared benefits  
548 had been used for direct livelihood improvement. The household surveys showed that local peasants'  
549 dependence on and demand for forestland was high, which suggests that benefit sharing alone may  
550 not be an adequate measure for solving tenurial conflict in contemporary Java. Moreover, because  
551 places with higher local pressure on forestland and greater conflict between peasants and the SFC are  
552 likely to have forests with worse conditions, the amounts of shared benefits are likely to be smaller,  
553 which means lesser incentives for local forest protection.

554

## 555 **Conclusions and Policy Implications**

556

557 Focusing on a major teak plantation area, this paper has revealed the realities behind forestry benefit  
558 sharing under JFM in the context of stakeholder relations in contemporary rural forestry areas of Java.  
559 Although the payments of shared benefits had some positive aspects, they were basically not  
560 functioning as an effective, efficient, and equitable policy instrument, and had a consequence of being  
561 a gift to the village elite. The findings of the study suggest that a laissez-faire policy of forest  
562 administration under the frameworks of joint forest management can create room for elite capture as  
563 well as ineffective conservation and livelihood outcomes and should thus be avoided. Appropriate and  
564 supportive facilitation or collaboration from the outside to develop the capacity and downward  
565 accountability of village-level decision makers is needed. These points will be increasingly important  
566 in the context of REDD+, where achieving the 3Es, particularly equity, is regarded as a significant  
567 challenge (e.g., Pham et al. 2013; Andersson et al. 2018).

568       To make benefit sharing under JFM more effective, efficient, and equitable, the following  
569 improvements should be considered. First, transforming the mentality and working system of forest  
570 officials inside the SFC is important for substantive and meaningful joint forest management processes.  
571 Training for foresters could be a first step to that end, although that method alone will not succeed if  
572 the working environment and the organizational values of the SFC remain unchanged (Fleischman  
573 2014). Political commitment from top officials is pivotal to that change. Second, cooperation with  
574 external agencies such as NGOs or agricultural departments may produce better outcomes (Persha and  
575 Andersson 2014). For such collaboration to occur, however, it is important to remove the

576 psychological barrier of forest officials toward cooperating with external agencies. Political  
577 commitment from top officials is thus important on that point as well. Third, JFM committees should  
578 be consolidated or integrated into existing, smoothly functioning village organizations, if any, with  
579 greater inclusion of non-elites. Such suggestions are applicable to the design and implementation of  
580 REDD+ outside Java as well.

581

582 **Acknowledgements** This study was financially supported by JSPS KAKENHI Grant Numbers  
583 JP15KT0127, JP16K16240, and JP18K18235. The field research was conducted with foreign research  
584 permits from the Ministry of Research, Technology and Higher Education in Indonesia. The authors  
585 appreciate Prof. Lilik B. Prasetyo at Bogor Agricultural University for being the research counterpart  
586 as well as staff members of the Randublatung Forest District and village respondents for cooperating  
587 with the research. The data, analysis, and opinions presented in this paper are the sole responsibility  
588 of the authors.

589

## 590 **References**

591

592 Arnold JEM (2001) 25 years of community forestry. Food and Agriculture Organization of the United  
593 Nations, Rome

594 Andersson KP, Smith SM, Alston LJ, Duchelle AE, Mwangie E, Larson AM, de Sassi C, Sills EO,  
595 Sunderlin WD, Wong GY (2018) Wealth and the distribution of benefits from tropical forests:  
596 implications for REDD+. *Land Use Pol* 72: 510-522.  
597 <https://doi.org/10.1016/j.landusepol.2018.01.012>

598 Chhetri BBK, Lund JF, Nielsen OJ (2012) The public finance potential of community forestry in Nepal.  
599 *Ecol Econ* 73: 113-121. <https://doi.org/10.1016/j.ecolecon.2011.09.023>

600 Djamhuri TL (2012) The effect of incentive structure to community participation in a social forestry  
601 program on state forest land in Blora District, Indonesia. *For Pol Econ* 25: 10-18.  
602 <https://doi.org/10.1016/j.forpol.2012.02.004>

603 Fleischman FD (2014) Why do foresters plant trees? Testing theories of bureaucratic decision-making  
604 in Central India. *World Dev* 62: 62-74. <https://doi.org/10.1016/j.worlddev.2014.05.008>

605 Fujiwara T, Septiana RM, Awang SA, Widayanti WT, Bariatul H, Hyakumura K, Sato N (2012)  
606 Changes in local social economy and forest management through the introduction of  
607 collaborative forest management (PHBM), and the challenges it poses on equitable partnership:  
608 a case study of KPH Pemalang, Central Java, Indonesia. *Tropics* 20: 115-134.

609 <https://doi.org/10.3759/tropics.20.115>

610 Inoue M, Tsurudome Y, Mugniesyah SSM (2003) Hillside forest land as a safety net for local people  
611 in a mountain village in West Java: an examination of differences in the significance of national  
612 and private lands. *J For Res* 8: 95-101. <https://doi.org/10.1007/s103100300011>

613 Krott M (2005) *Forest Policy Analysis*. Springer, Dordrecht

614 Krott M, Bader A, Schusser C, Devkota R, Maryudi A, Giessen L, Aurenhammer H (2014) Actor-  
615 centred power: the driving force in decentralised community based forest governance. *For Pol*  
616 *Econ* 49: 34-42. <https://doi.org/10.1016/j.forpol.2013.04.012>

617 Kubo Y, Lee JH, Fujiwara T, Septiana RM, Iwasa Y (2018) Profit sharing and agroforestry: a  
618 theoretical study of potential conflicts in managing illegal logging risk in tropical forests. *Theory*  
619 *Ecol* <https://doi.org/10.1007/s12080-018-0381-4>

620 Lee JH, Kubo Y, Fujiwara T, Septiana RM, Riyanto S, Iwasa Y (2018) Profit sharing as a management  
621 strategy for a state-owned teak plantation at high risk for illegal logging. *Ecol Econ* 149: 140-  
622 148. <https://doi.org/10.1016/j.ecolecon.2018.03.005>

623 Luttrell C, Loft L, Gebara MF, Kweka D, Brockhaus M, Angelsen A, Sunderlin WD (2013) Who  
624 should benefit from REDD+? Rationales and realities. *Ecol Soc* 18(4): 52.  
625 <http://dx.doi.org/10.5751/ES-05834-180452>

626 Martin A, Coolsaet B, Corbera E, Dawson NM, Fraser JA, Lehmann I, Rodriguez I (2016) Justice and  
627 conservation: the need to incorporate recognition. *Biol Conserve* 197: 254-261.  
628 <https://doi.org/10.1016/j.biocon.2016.03.021>

629 Maryudi A (2011) *The contesting aspirations in the forests: actors, interests and power in community*  
630 *forestry in Java, Indonesia*. Universitätsdrucke Göttingen, Göttingen

631 Maryudi A, Citraningtyas ER, Purwanto RH, Sadono R, Suryanto P, Riyanto S, Siswoko BD (2016)  
632 The emerging power of peasant farmers in the tenurial conflicts over the uses of state forestland  
633 in Central Java, Indonesia. *For Pol Econ* 67: 70-75. <https://doi.org/10.1016/j.forpol.2015.09.005>

634 Nath TK, Jashimuddin M, Inoue M (2016) *Community-based forest management (CBFM) in*  
635 *Bangladesh*. Springer International Publishing Switzerland

636 Peluso NL (1992) *Rich forests, poor people: resource control and resistance in Java*. University of  
637 California Press, Berkeley

638 Persha L, Andersson K (2014) Elite capture risk and mitigation in decentralized forest governance  
639 regimes. *Global Env Chang* 24: 265-276. <https://doi.org/10.1016/j.gloenvcha.2013.12.005>

640 Pham TT, Brockhaus M, Wong G, Dung LN, Tjajadi JS, Loft L, Luttrell C, Mvondo SA (2013)  
641 *Approaches to benefit sharing: a preliminary comparative analysis of 13 REDD+ countries*.



642 Center for International Forestry Research, Bogor

643 Pham TT, Moeliono M, Brockhaus M, Le DN, Wong GY, Le TM (2014) Local preferences and  
644 strategies for effective, efficient, and equitable distribution of PES revenues in Vietnam: lessons  
645 for REDD+. *Hum Ecol* 42: 885–899. <https://doi.org/10.1007/s10745-014-9703-3>

646 Prasetyo RB, Damayanti EK, Masuda M (2012) Land cover changes before and after implementation  
647 of the PHBM program in Kuningan District, West Java, Indonesia. *Tropics* 21: 47-57.  
648 <https://doi.org/10.3759/tropics.21.47>

649 Randublatung Forest District (2016) Profile of the Randublatung Forest District, Randublatung Forest  
650 District, Blora (in Indonesian)

651 Ribot JC, Lund JF, Treue T (2010) Democratic decentralization in sub-Saharan Africa: its contribution  
652 to forest management, livelihoods, and enfranchisement. *Environ Conserv* 37(1): 35-44.  
653 <https://doi.org/10.1017/S0376892910000329>

654 Schusser C, Krott M, Movuh MCY, Logmani J, Devkota RR, Maryudi A, Salla M, Bach ND (2015)  
655 Powerful stakeholders as drivers of community forestry: results of an international study. *For Pol*  
656 *Econ* 58: 92-101. <https://doi.org/10.1016/j.forpol.2015.05.011>

657 Shiga K, Masuda M, Onda N (2012) Changes in people's involvement measures by the State Forestry  
658 Corporation and challenges of joint forest management system in Java: policy design and  
659 implementation process. *J For Econ* 58 (2): 1-13. (in Japanese)  
660 [https://doi.org/10.20818/jfe.58.2\\_1](https://doi.org/10.20818/jfe.58.2_1)

661 Siscawati M (2012) Social Movements and scientific forestry: examining the community forestry  
662 movement in Indonesia. Dissertation, University of Washington

663 Statistics Indonesia (2015) Blora District in Figures 2015. Badan Pusat Statistik Kabupaten Blora,  
664 Blora (in Indonesian)

665 Torpey-Saboe N, Andersson K, Mwangi E, Persha L, Salk C, Wright G (2015) Benefit sharing among  
666 local resource users: the role of property rights. *World Dev* 72: 408-418.  
667 <https://doi.org/10.1016/j.worlddev.2015.03.005>

668 Yokota Y, Harada K, Rohman, Silvi NO, Wiyono, Tanaka M, Inoue M (2014) Contributions of  
669 company-community forestry partnerships (PHBM) to the livelihoods of participants in Java,  
670 Indonesia: a case study in Madiun, East Java. *Japan Agr Res Q* 48: 363-377.  
671 <https://doi.org/10.6090/jarq.48.363>

672 Whitten AJ, Soeriaatmadja RM, Arief SA (1996) The ecology of Java and Bali. Periplus Editions,  
673 Singapore

674 Wong GY, Loft L, Brockhaus M, Yang AL, Pham TT, Assembe-Mvondo S, Luttrell C (2017) An

675 assessment framework for benefit sharing mechanisms to Reduce Emissions from Deforestation  
676 and Forest Degradation within a forest policy mix. *Env Pol Gov* 27: 436–452.  
677 <https://doi.org/10.1002/eet.1771>  
678 Wulan YC, Yasmi Y, Purba C, Wollenberg E (2004) The analysis of conflict: the forest sector in  
679 Indonesia 1997-2003. Center for International Forestry Research, Bogor (in Indonesian)  
680