

THE PERFORMANCE OF HEALTH AND SAFETY OF TROPICAL FORESTRY WORKER IN INDONESIA

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熱帯雨林における労働者の安全と健康

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要旨

この研究の目的は熱帯雨林での労働者の健康と安全性についてアンケートに基づいて明らかにし、労働者の健康と安全性の条件を改善することにある。

本研究ではインドネシアの森林で働いている労働者を調査対象にした。データは、スマトラ、ジャワ、カリマンタン島の幾つかの会社から集めた。

調査結果によると、森林労働者の59.6%は仕事に満足しているが、40.4%は満足していないこと、給料について満足度を直接質問したところ66.5%は満足しており、33.5%は満足していないことが分かった。森林労働者はよく腰痛に悩まされていることが分かった。安全面に関しては、47.3%が仕事に事故を経験していた。

結論として我々は、森林労働者にとって安全装備、給料、教育と訓練、輸送手段等の改善が必要であることを確認する。

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Abstract

The objective of this study is to clarify the performance of health and safety of tropical forestry workers using a questionnaire and to improve their health and safety conditions. In this study, we conducted the research on health and safety of forestry workers who work in Indonesia. The data are collected from several forestry companies, such as, from Sumatera, Jawa and Kalimantan Island. According to the result, 59.6 % of forestry workers investigated in this study are satisfied with their jobs while 40.4 % are not. As a result of a direct question on satisfaction with their salary, 66.5 % are satisfied while 33.5 % are not. It is said that forestry workers often suffer from lower back pain and the result showed that 68.2 % suffer from it. With respect to safety conditions, 47.3 % have experienced an accident during work. Finally, we identify what they need or is needed to improve, such as, safety equipment and salary, training and education, public transportation, etc.

INTRODUCTION

In Indonesia, it often is the case that working and living conditions of forestry workers are unfavorable because their work is heavy, dirty and dangerous with bad working postures and exposure to noise and vibrations. Moreover, they often live in poor life conditions with poor infrastructure and hygiene compared with people living in cities. In fact, there are no statistics on forestry workers' health and safety in Indonesia.

The objective of this study is to clarify the performance of health and safety of tropical forestry workers using a questionnaire and to improve their health and safety conditions. In this study, we conducted the research on health and safety of forestry workers who work at forestry companies in Indonesia, such as, in Sumatera, Jawa and Kalimantan

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Island.

In this study, we asked forestry workers about satisfaction with job, unsatisfactory reason, satisfaction with income, job-change experiences, former jobs and reasons of job-change. With respect to forestry workers' life and health, we also asked them about time to work place, holidays, habit of smoking, cigars smoked a day, habit of drinking alcohol, lower back pain, its frequency, sore or stiff shoulders, its frequency, other physical disorders, time to go to bed and time to get up. Furthermore, experience of accidents, situations when accidents happened, frequency of experiencing near miss incidents and personal protective equipment used were asked to know their safety conditions. Finally, we asked them to identify what they need or is needed to improve.

METHOD

We conducted the research using a questionnaire and collected 334 responses. Table 1 shows the forestry company, the island where is the company located and the number of respondents of each company.

Tabel 1. Data of Forestry Company, Island and Number of respondents.

No	Company	Island	Total
1	Perum Perhutani	Jawa	7
2	PT Bara Induk	Sumatera	17
3	PT Musi Hutan Persada	Sumatera	87
4	PT RAPP	Sumatera	65
5	PT Kiani Lestari	Kalimantan	9
6	PT Tanjung Redeb Hutani	Kalimantan	14
7	PT Sari Bumi Kusuma	Kalimantan	70
8	PT Suka Jaya Makmur	Kalimantan	65
			334

Table 2 shows the summary of respondents to the questionnaire. According to this table, all respondents are male and most respondents' age ranges from 20 to 50. About 73 % of respondents are married. Most of them were born and came from Jawa or Kalimantan. They graduated from at least elementary school and they have enough high education level. Only 26 respondents, 8 % of all, had income from a side job and most get along only depending on salary from the company. The period of employment of few workers

is less than one year. Almost all workers have worked in this company for 1 to 20 years. Type of work of respondents, 25 % of all is a machine operator.

Table 2. Summary of respondents.

<i>Items</i>	<i>Categories</i>	<i>Number</i>	<i>Items</i>	<i>Categories</i>	<i>Number</i>
Sex (0)	Male	321	Period of Employment	1>	24
	Female	13		1	11
Marital status (0)	Married	238		2	20
	Single	90		3	68
Age (0)	20>	6		4	43
	21-30	217		5	15
	31-40	89	>5	88	
	41-50	15	Supervisor	36	
	51<	5	Type of work (3)	Choker	9
Educational Background (1)	Elementary school	54		Machine operator	32
	Junior high school	97		Chainsaw operator	16
	High school	147		Weeding worker	24
	College/University	15		Plantation	82
	Others	8		Road Maintenance	20
Income from a side job (4)	Yes	26	Other	50	
	No	285			

Note: Values inside parentheses mean number of N/A

RESULTS

Table 3 shows whether forestry workers are satisfied with their jobs or not and 199 respondents, 40 % of all, are satisfied while 60 % of all, are not. We received this satisfaction rate as higher than we had expected, as we believed forestry workers were often living on poor social and economic conditions. Table 4 shows unsatisfactory reasons and most of them are 'salary'. Then, we asked directly whether they were satisfied with their salary or not. As shown in Table 5, 222 respondents, 66.5 % of all, are

satisfied while 33.5 % of all, are not. Generally speaking, we always wish higher salary, but recent Indonesian economic conditions might affect this unsatisfactory rate.

Table 3. Satisfaction with jobs.

Answer	%
Yes	40
No	60

Table 4. Unsatisfactory reasons.

Reasons	%
Salary	81
Work hours	5.3
Work Partner	1.3
Hard Work	6.2
Distance	4.9
Others	1.3

Table 5. Satisfaction with salary.

Answer	%
Yes	66.5
No	33.5

As shown in Table 6, 196 respondents, 58.8 % of all, have experiences of job-change.

Table 7 shows time to work places of the respondents. Most of them can reach their work places up to 1 hour.

Table 6. Job change experience.

Answer	%
Yes	58.8
No	41.2

Table 7. Time to work place.

Time (in hour)	%
1>	37.9
1	8.3
>1	53.8

We asked what day their holidays are and the result is shown in Table 8. They do not take regular holidays and they take holidays only on religious days and national holidays.

Table 8 shows smoking habit of forestry workers and 210 respondents, 63 % of all, answered that they smoked. Table 9 shows how many cigars they smoke a day and many of them smoke 16 (equal to one box) or less than 16 cigars a day.

Table 8. Habit of smoking.

Answer	%
Yes	63
No	37

Table 9. Cigars smoked a day.

Number of cigars	%
12>	17
12	42
13 – 23	29
24	10
24<	2

According to Table 10 only 23 respondents drink alcohol and they also answered that they drank alcohol only once a week. This result came out from the fact that Indonesia is the Islamic country.

Table 10. Habit of drinking alcohol.

Answer	%
Yes	7
No	93

According to Table 11, 227 respondents, 68 % of all, suffer from lower back pain. Table 12 also shows how often they suffer from it. According to this table, their lower back pain was not frequent and most answered they suffered from it occasionally.

Table 11. Lower back pain.

Answer	%
Yes	68
No	32

Table 12. Frequency of suffering from lower back pain.

Answer	%
Often	11
Occasionally	89

According to Table 13, 207 respondents, 62 % of all, suffer from sore or stiff shoulders and such respondents are fewer than those who suffer from lower back pain

Table 13. Sore or stiff shoulders.

Answer	%
Yes	62
No	38

Table 14 shows whether they have any other physical disorders or not. According to this table, 70 respondents, 21 % of all, answered that they had other physical disorders. We did not identify them, as their privacy is considered as important.

Table 14. Other physical disorders.

Answer	%
Yes	21
No	79

Table 15 shows what time they go to bed. According to this table, most go to bed from 21:00 to 22:00. Table 16 shows what time they get up and almost all respondents get up at 4:30 or 5:00.

Table 15. Time to go to bed.

Time	%
20:00	8
20:30	4
21:00	8
21:30	6
22:00	28
22:30	3
23:00	12
23:30	21
24:00	6
24.00<	4

Table 16. Time to get up.

Time	%
4:00≥	1
4:30	39
5:00	16
5.30	39
6:00	5

Table 17 shows whether they have ever experienced an accident during work. According to this table, 157 respondents, 47 % of all, have experienced it. In Table 18, situations when accidents happened on forestry workers are shown. According to this table, many car accidents such as 'car crash' and 'car slipping' happened. It is quite important to establish traffic rules on forest roads. Two cases of 'felling tree hit a worker' also happened and this kind of accidents is very typical in forestry sector. This table also shows days off the accidents caused them to have, and it can be imagined how serious the accident was.

Table 17. Experience of accidents.

Answer	%
Yes	47
No	53

Table 18. Situations when accidents happened.

Situations	Number	Days off
Car turned over	1	1
Two trucks/cars crashed	4	2,7,5,75
Car slipped off the road	3	4,7,8
When crossing the river, I fell into the river and my head hit a stone	1	240
Felled tree hit a worker	2	2
Left arm was caught in the car door	1	3
Car fell down suddenly while changing its tire	1	3
Sparks flew into my eye while welding	1	3

Table 19 shows how often they experienced near miss incidents during the last one year. Near miss incidents mean that workers nearly caused or were involved in accidents. Such cases are said to include potential factors of real accidents. According to this table, most responses are 'rarely' or 'none', but it is supposed that many people may have easily forgotten such cases, as they had no actual injuries.

Table 12. Frequency of suffering from lower back pain.

Answer
Often
Occasionally

According to Table 12 and such respondents

work. According to Table 13, 18 situations

quite important to a worker, also

This table also identifies the

Table 14. Experience of accidents.

Answer
Yes
No

Table 15 shows that

Table 16 shows that

to go to work

Time
00:00
00:15
00:30
00:45
01:00
01:15
01:30
01:45
02:00
02:15
02:30
02:45
03:00
03:15
03:30
03:45
04:00
04:15
04:30
04:45
05:00

Table 19 shows how often

Near miss incidents mean that workers nearly caused or were involved in accidents. According to this table, most

responses are 'rarely'

forgotten such cases, as they had no actual injuries

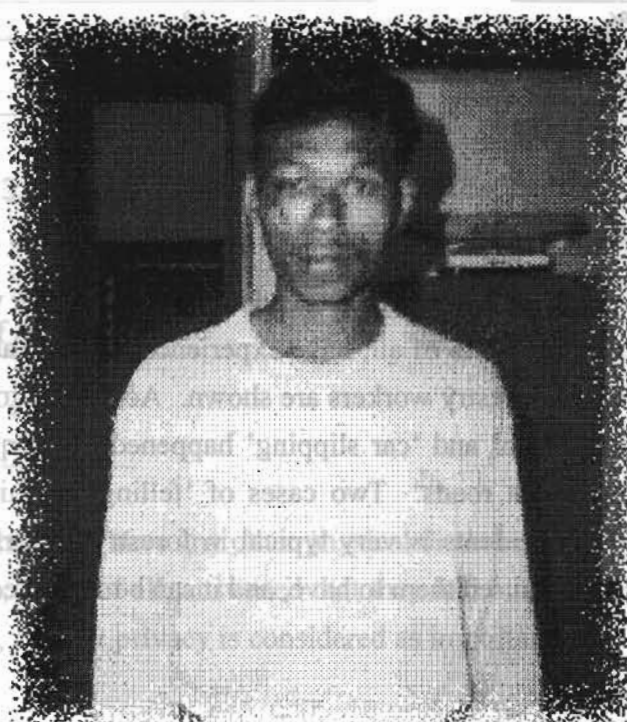


Photo 1. Accident of forestry worker

Table 16. Time to get up

Time
≤00:40
00:40-01:00
01:00-01:20
01:20-01:40
01:40-02:00
02:00-02:30
02:30-03:00
03:00-03:30
03:30-04:00
04:00-04:30
04:30-05:00
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22:00-22:30
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Table 17 shows whether

to this table, 157 resp

when accidents happo

car accidents such as

establish traffic rules

happened; and this s

showed that the acc

accident was

Answer
Yes
No

Table 18. Experience of accidents.

most had to go to work

Table 19 shows that

When crossing the river, my head hit a stone

Sparks flew into my eyes

Car fell down suddenly

Left arm was caught in door

Felled tree hit my head

Car slipped on the road

Two trucks collided

Car turned over

Table 19. Frequency of experiencing near miss incidents.

Answer	%
Very often	11
Often	7
Sometimes	19
Rarely	19
None	44

Table 20 shows what kinds of personal protective equipment they use. According to this table, many respondents use gloves and safety boots, but safety jackets or ear muffs are not used. Skidder operator is exposed to heavy noise for long time, so it is recommended that he should wear ear muffs. Helmet is an essential item as personal protective equipment because injury to head sometimes might be fatal. Therefore, all workers should wear helmets during work time.

Table 20. Personal protective equipment used.

Protective equipment	%
Helmet	41
Gloves	18
Safety boots	29
Safety jackets	6
Safety trousers	5
Eye protection	1
Ear muffs	0

In the final question, we asked respondents to identify what they need or is needed to improve and Table 21 shows the result. According to this table, more than five people needed or needed to improve 'Safety equipment', 'Salary', 'Training and education', 'Public transportation', 'Reforestation or sustainable forestry' and 'Equipment for work or life'. It is very interesting that more people want safety equipment rather than salary and not a few people think that reforestation or sustainable forestry is necessary. It would be beneficial to the company as well as workers, if more opportunities of education could be given to workers and they could get more knowledge and experiences and enhance their skills. Transportation is important for workers because they live in the forest far from cities where public transportation system is developed and it is not easy to move when they want to move to other places.

Table 19. Frequency of experiencing near miss incidents.

Answer
Very often
Often
Sometimes
Rarely
None

According to this
 ear muffs are
 recommended
 personal protective
 equipment, all workers



Table 20 shows what
 table, many responded
 not used. Skidders are
 that he should wear
 equipment because
 should wear helmets

Table 20. Personal protective equipment.

Protective equipment
Helmet
Gloves
Safety boots
Safety jackets
Safety trousers
Eye protection
Ear muffs

is needed to
 five people
 education,
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 than salary
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 and enhance
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In the final question
 improve and Table
 needed or needed
 'Public transportation
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Photo 2. Near Miss Incident of Forestry Worker

Table 21. Items forestry workers need or needed to improve.

Items	%
Safety equipment	25
Salary	23
Training and education	17
Transportation	14
Reforestation or sustainable forestry	10
Equipment for work or life	10
Amusement facility	7
Facility for Health	6
Sports facility	3
Work hours	3
Communication system	1
Equipment and organization against forest fire	1
Cooperation between company and government	1
Holidays	1
Insurance	1
Religious facility	1
More vegetable	1
Improvement of forest road planning	1
Rules for traffic on forest roads	1

CONCLUSIONS

- There are many forestry workers are feel unsatisfied with their jobs and with their salary. they also are exposed to unhealthy conditions.
- Many of them have experience an accident during work. To prevent such accidents, it is quite important to establish traffic ruler even on forest roads.
- Need a personal protective during Work
- Safety and salary might be the key item affecting their satisfaction with work and life.
- The awareness of health and safety of forestry workers at all level management must be enhanced. They also need 'training and education' which is considered as important not only to satisfy their needs but also to enhance potentials of human resources.

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