MINISTRY OF EDUCATION AND TRAINING

MINISTRY OF AGRICULTURE AND RURAL DEVELOPMENT

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STUDY ON SOLUTIONS TO IMPROVE THE EFFICIENCY OF PERFORMANCE OF FORESTRY COMPANIES IN THE CENTRAL HIGHLANDS

Major: Forest Inventory and Planning

Code: 62.62.02.08

ABSTRACT OF DOCTORAL THESIS IN FORESTRY

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1 The thesis is completed at: Vietnam National University of Forestry

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PREAMBLE

1. The nescessity of the thesis

The Central Highlands include 5 provinces Kon Tum, Gia Lai, Dak Lak, Dak Nong and Lam Dong and have a total natural area of 54,638 km2, accounting for 16.8% of the population of the country of 5.1 million people. It is important strategic area for the economy, politics, security, national defense and environment in the South Central Coast, South East and the Lower Mekong. The Central Highlands have the second largest natural forest area (after the Northeast) but the area of planted forest is very low. The region's forest cover was 46.08%, ranking third among eight other regions of the country.

Implementing the policy of enterprise renovation in the past years, state enterprises in the Central Highlands in genera and forestry enterprises in particular have made many changes, playing important role in the economy. However, there are many weaknesses, the scale of MB organization is not matched with the requirements and available capacity in the management and development of forest resources. After the project of transforming operation model of the FC in the Central Highlands, the Prime Minister approved the model. In 55 Forestry One Member Limited Companies are converted into 100% state-owned 36 Forestry One Member Limited Companies performing public-utility tasks, 02 100% state-owned Forestry One Member Limited Companies perform MB tasks; 02 forest protection forest management board; 08 Two-member s Limited Companies; privatize 01 One Member Forestry Company and disintegrate 06 Forestry One Member Limited Companies due to MB losses.

The Government has approved a plan for arranging performance model for the FC in the Central Highlands, but there are currently no research or solutions for the FC to manage and an appropriate MB to improve performance. Based on this fact, the thesis "***Study on solutions to improve the performance of Forestry Companies in the Central Highlands***" is conducted to contribute to the proposal of effective performance for the FC in the Central Highlands in particular and in the whole country in general.

2. Objective of the thesis

2.1. General objective

Evaluate the situation and factors affecting the performance of the FC in the Central Highlands; suggest directions and solutions to improve the performance of these companies in the next time.

2.2. Specific objective

i) Evaluate the situation and performance of the FC in the Central Highlands.

ii) Identify and analyze the factors affecting the performance of the FC in the Central Highlands.

iii) Develop and propose orientations for restructuring and solutions to improve the performance of the FC in a stable and sustainable manner.

3. Subject and scale of the study

Subject of the study are management activities and MB of the FC converted from the former state-run forestry farms in the Central Highlands.

Scale of the study on management activities and MB of 47 FC.

4. The scientific and practical significance of the thesis

- Scientific significance: The thesis contributes to build and supplement the theoretical and practical basis and propose solutions to improve the performance of the FC in the current period.

- Practical significance: Identify the factors affecting the performance of the FC in order to introduce effective models to apply to the practice of the FC in the present time in the Central Highlands.

5. New points of the thesis

i) By the method of evaluating the situation and effectiveness of the MB, the thesis has quantified the synergy effect of performance of the FC in the Central Highlands, contributing to the theoretical foundation on performance of the FC in general and the Central Highlands in particular.

ii) Identify the affecting factors and quantify the relationship between these factors and MB performance of the FC in the Central Highlands. From there, we propose some solutions to improve MB performance of the FC.

Chapter 1: OVERVIEW OF STUDY

1.1. Foreign

1.1.1. Forest management in the world

MB in the forestry sector in the world was shaped and developed from the early years of the industrial revolution. Since then, foresters have developed appropriate mechanisms and policies for each period to make forestry an indispensable economic sector in the world economy. Each country has a policy framework for forestry development that is appropriate to its economy. All management and MB performance aim at economic, social and environmental benefits to contribute to the general development of the country.

1.1.2. Models of forestry business

Model 1: The Forest Management Agencies are assigned to undertake two tasks: forest management, rearing - afforestation and forest exploitation (referred to as "self-cultivation").

Model 2: Separate rearing - afforestation tasks and forest exploitation tasks and assign to two different types of organizations.

Model 3: Integrate state management of forests and functions of state forestry enterprises and assign them to an implementing organization.

Model 4: Separate state management of forest business functions from the responsibility of forest management of state agencies to establish a separate forest business organization.

1.1.3. Studies on sustainable forest management in the world

The concept of SFM appeared from the beginning of the 18th century, initially focused on exploiting and using timber continuously for a long time. With the development of science, technology and socio-economic development, SFM has converted from managing

timber business to managing the general business of forest resources. MB based on strict, comprehensive criteria and standards in economic, social and environmental sectors.

1.2. Domestic

1.2.1. Some terms, concepts, definitions

1.2.2. State management in the forestry sector in Vietnam

* *State management of forestry:* The state management system of forestry in Vietnam is organized in three levels from central to local.

* *State management of forestry includes the following main contents:*

- State management of forests and forestry land
- State management of forestry

* *MB management of forests:* The objective of MB management is to make profits in the MB process; in addition, the enterprise must also be responsible for the local socio-economic development and the protection of the ecological environment.

1.2.3. Forest management in our country

Lessons from forest management in our country are:

i) Need to acknowledge the right position and content of sustainable forest management
ii) Need to receive and apply the forest management trends in the world in forest management and forest business management in Vietnam.
iii) Promote the development of private economy, cooperative economy and development of various economic sectors in forestry business and forestry.
iv) Renew management organization of Forestry One Member Limited Companies and Forest Management Board should be set up as a clear and concrete content and closely link to the reform and improvement of forestry policy and restructuring of State enterprises in the new period.
v) Clearly identify the role and interventions of the State

1.2.4. Forestry production and business in Vietnam

MB in forestry sector is currently organized according to the following models:

- **Model 1:** Corporation - Company, member enterprise.
- **Model 2:** Independent forestry enterprises.
- **Model 3:** Farm and household MB.

1.3. Policy system related to forest management

1.4. Studies on the FC in the Central Highlands

Through a number of studies, the authors conclude:

- The state-run forestry farms distribute in strategic locations in economics, politics, security and national defense so they need to be maintained, strengthened and developed.

- The state-run forestry farms should be developed to be the core in building, managing and protecting forest resources and forestry economic development in the area.

- In order to renew the management of the state-run forestry farms, it is necessary to apply a synchronous system of solutions in many aspects, in which the renovation of the management mechanism is considered as the most basic solution.

1.5. Basic features of the Central Highlands

Table 1.1. Summary of some basic information in the Central Highlands

No.	Targets	Whole region	Kon Tum	Gia Lai	Dak Lak	Dak Nong	Lam Dong
1	Natural area (ha)	5,464,377	968,960	1,553,692	1,312,810	651,561	977,354
2	Forest area (ha)	2,561,969	617,874	627,013	526,534	258,433	532,095
3	Proportion of forested land (%)	46.08	62.30	40.30	39.20	39.10	53.10
4	Population (person)	5,607,900	495,900	1,397,400	1,853,700	587,800	1,273,100
5	Population density (people/km2)	100.4	51	90	141	90	130

(Source: Statistics of General Statistics Office -2015)

1.6. Discussion:

- Clarify the theory that forests are a resource or an asset when the FC manages and operates on the corporate law, as the basis for management, MB.

- Forests are assigned to many FC are not yet certified forests (FSC).

- Access to loans is very difficult because forests are not verified as asset.

- The current rate of tax on forest resource is 10-40%, so the more the FC exploits, the more losses occur.

- FC currently operates on the Enterprise Law but still has to ensure the public utility task assigned by the province such as poverty reduction, social security...

- Upon reviewing, arranging and converting performance models into FC group according to Decree 118/2014/ND-CP of the Government, what are the most influencing factors, what are suitable solutions for the FC to exist, operate and develop to ensure the environment, security, socio-economic in the Central Highlands?

Chapter 2: CONTENT AND METHOD OF THE STUDY

2.1. Content of the study

2.1.1. Theoretical and practical basis for evaluating the performance of the FC

2.1.2. The situation of the performance and the efficiency of the FC in the Central Highlands

2.1.3. Factors affecting the performance of the FC in the Central Highlands

2.1.4. Propose solutions to improve the performance of the FC in the Central Highlands.

2.2. Study Method

2.2.1. Viewpoint and methodology

The study based on: (1) System Access Theory, (2) Institutional approach, (3) Participatory approach.

2.2.2. Study Method

2.2.2.1. Study and analyze secondary data

The thesis inherits the relevant documents published from 2012 to 2016, including: Arrangement and renovation plan of Forestry One Member Limited Companies;

Arrangement and renovating overall plan of the FC in 05 provinces in the Central Highlands; Financial statements of Forestry One Member Limited Companies; Forest organization or management plans of Forestry One Member Limited Companies; Decision approving by the Prime Minister on the reorganization and renovation of agricultural and forestry companies in the Central Highlands; Scientific works, study titles related to the thesis...

2.2.2. Primary data collection method

The thesis directly synthesizes data from the reports sent by the FC in the Central Highlands on the characteristics of the company, the use of resources, the MB situation, and the MB performance in the period from 2012 to 2014. Thesis combined with survey and semi-directed questionnaire for FC staff, departments, institutes and experts in the sector of study. Additional investigation and verification of results at Department of Enterprise Management; Ministry of Agriculture and Rural Development; General Department of Forestry; The FC in the Central Highlands.

2.2.2.3. Method of analyzing data and documents

a. Descriptive statistics method

Use economic statistics tools such as descriptive statistics, statistical analysis ... to calculate and verify statistical indicators of collected data.

b. Economic analysis method

Economic analysis method calculates the MB performance indicators, analyzes the factors affecting the MB performance and the forest management efficiency of the FC.

c. Expert method

Organize discussion, consultation with experts, management boards of companies, forest management boards.

d. SWOT analysis method:

First, list the strengths, weaknesses, opportunities and threats in order of priority in the corresponding boxes. The next step is to compare each pair corresponding to the factors. From then, the research has made a general assessment, as well as the orientation to improve the performance of the FC.

e. Econometric model method

The thesis uses the Cobb-Douglas function to analyze the effect of some of the inputs used by the FC on the performance of these companies.

The Cobb-Douglass function model used in this thesis has the form as follows:

$$Y= e^{\alpha 0}.Xi^{\alpha 1}.X2^{\alpha 2} \ldots .Xi^{\alpha i}$$

In which: Y: the performance indicator of Forestry Companies

Xi: Usage level of the production factor No. i of these companies

αi: Elastic coefficient of aggregate performance indicator subject to using factor No. i

When taking two-dimensional logarithms, the model can be put on the form as follows:

$$LnY= \alpha 0 + \alpha 1 LnX1 + \alpha 2 LnX2 + \ldots + \alpha i\ LnXi$$

Table 2.1. Describe the variables included in the analytical model

No.	Variable name	Symbol	Expectation
1	Total land area managed by the company	TLA	Variable with dependent variable
2	Forestland area of the company	FLA	Covariates with the dependent variable
3	Number of employees of the company	NE	Covariates with the dependent variable
4	Annual revenue of the company	AR	Covariates with the dependent variable
5	The scale of equity capital of the company	EC	Covariates with the dependent variable
6	Forest cover level	CL	Covariates with the dependent variable
7	Dependent variable: Ehq aggregate performance indicator of the forestry company	Ehq	

2.2.3. Indicator system used in study

2.2.3.1 Evaluation indicators of economic performance in the forest business of the FC

**** Total revenue/ha of forestry land***

This indicator shows the revenue of the companies gained from 01 ha of forestry land.

$$\text{Main product revenue/ha forestry land} = \frac{\text{Revenue}}{\text{Total area of forestry land}} \quad (2.1)$$

In which: Revenue includes revenue of MB and other income; Total area of forestry land is the total area of forestry land managed by the company.

**** Profit/revenue margin***

Profit/revenue margin shows how much profit is generated from 01 net revenue of the Company.

$$\text{Profit/revenue margin} = \frac{\text{Profit}}{\text{Revenue}} \quad (2.2)$$

In which: Profit gross profit, profit before tax or profit after tax depending on the purpose of study; Revenue includes revenue from MB performance and other income.

**** Profit /MB capital margin*** *(Profit on MB capital margin)*

This indicator shows how much profit is made from 01 unit of business capital. The formula is as follows:

$$\text{Profit margin on business capital} \quad \frac{\text{Profit}}{\text{MB capital}} \quad (2.3)$$

Meaning: The higher coefficient of profit margins on business capital, the better business performance and the healthier the financial situation are, and vice versa.

**** Profit margin/fixed capital*** *(Profit margin on fixed capital)*

Profit margin indicator of fixed capital shows how much profit is made from one fixed capital participating in MB performance in one period.

$$\text{Profit margin of fixed capital} = \frac{\text{Profit}}{\text{Fixed capital}} \quad (2.4)$$

Meaning: The higher the profitability of fixed capital, the better the business performance and the higher the competitiveness of the Company are, and vice versa.

**** Profit/working capital margin*** *(Profit on working capital margin)*

Profit margin indicator of the working capital shows how much profit is made from 01 working capital, participating in the MB process in one period.

$$\text{Profit margin on working capital} = \frac{\text{Profit}}{\text{Working capital}} \quad (2.5)$$

Meaning: The higher the profitability of working capital, the better the business performance and the higher the competitiveness of the Company are, and vice versa.

2.2.3.2. Evaluation indicators of forests and forestland management level of the Company

**** The proportion of forestland having completed legal procedures of the companies***

This proportion indicates that the area of forestland, allocated with certificate of land use right, accounts for how much percentage of the total land area under the management of the Company.

$$\text{Proportion of forestland area having completed legal procedures} = \frac{\text{The area allocated with certificate of land use right}}{\text{Total land area}} \times 100 \quad (2.6)$$

**** Proportion of forested land***

This proportion shows the total land area, managing by the Company, has how much percentage of forested land

$$\text{Proportion of forested land} = \frac{\text{Forested land area}}{\text{Total land area}} \times 100 \quad (2.7)$$

2.2.3.3. Evaluation indicators of social performance of the FC

* Number of working days on 01 ha of forestry land/year.

* Number of local employees participating in the MB of the enterprise

* Average income of local people participating in forestry production

* Average revenue/employee

$$\text{Average revenue/employee} \quad \frac{\text{Total revenue}}{\text{Total number of employees}} \quad (2.8)$$

Average revenue/employee indicator shows the revenue generated by 01 employee in a given period (month, quarter, and year).

**** Average profit/employee***

$$\text{Average profit/employee} = \frac{\text{Total profit}}{\text{Total number of employees}} \quad (2.9)$$

This indicator shows the dedication level of each employee in the Company in generating profit to accumulate extensive re-production.

**** Number of employees/01ha of management land***

$$\text{Number of employees/1ha of management land} \quad \frac{\text{Total number of employees}}{\text{Total land area}} \quad (2.10)$$

This indicator shows the number of employees managed by the Company on 1 ha of land. This is an important indicator to evaluate the performance of forest protection and management of the Company.

2.2.3.4. Evaluation indicators of ecological performance

- Protect soil, prevent erosion, and consolidate the sedimentation of lakes, rivers and streams.

- Regulate and maintain water sources for production and life.

- Protect species diversity of the forests. Protect the natural landscape and preserve the biodiversity of forest ecosystems for tourism services.

2.2.3.5. Indicators of overall performance of forestry companies

The thesis uses the composite efficiency coefficient to evaluate the general performance of the FC in the Central Highlands.

$$Ehq = \frac{1}{n}\left[\frac{Hi}{Hmax(opt)} + \cdots + \frac{Hmin(opt)}{Hi}\right]$$

In which: *Ehq: Composite efficiency coefficient*

Hi: Component efficiency value No. i

Hmax (opt): is the largest and the best value of the component value No. i (if the largest is the best).

Hmin (opt): is the best and smallest value of the component value No. i (if the smallest is the best).

Ehq will have a value between 0 and 1. FC with Ehq as close to 1, the higher the composite efficiency and vice versa. This indicator is important when comparing the composite efficiency of different FC during operation.

Chapter 3: RESULT OF STUDY AND DISCUSSION

3.1. Performance situation of the FC in the Central Highlands

3.1.1. Development of the FC system in the Central Highlands

In the former period, there were 64 forestry enterprises and 5 FC in the Central Highlands. Upon implementing the Resolution No. 28/NQ-TW of the Politburo and Decree No. 200/ND-CP of the Government on the further arrangement and renovation of state-run forestry farms, forestry enterprises have been arranged and converted into 56 FC, 11 forest management boards have been established and converted.

Implementing the Resolution 30-NQ/TW and Decree 118/2014/ND-CP of the Government on reviewing and conversion arrangement helps improving performance. To December 2015, the Prime Minister has approved the conversion arrangement plan of the FC in 05 provinces in the Central Highlands, specifically as follows:

Table 3.1. Summary of FC arrangements in the Central Highlands according to Decree 118/2014/ND-CP

No.	Province	FC arrangement plan						
		Total	100% State-owned-Public utility	100% State-owned MB	Protection Forest Management	Two-member Limited	Equitized	Disbanded
1	Kon Tum	**7**	6	1	-	-	-	-
2	Gia Lai	**11**	11	-	-	-	-	-
3	Dak Lak	**15**	6	-	1	8	-	-
4	Dak Lak	**14**	5	1	1	-	1	6
5	Lam Dong	**8**	8	-	-	-	-	-
	Total	**55**	36	2	2	8	1	6
	Proportion	**100%**	**65.45**	**3.64**	**3.64**	**14.56**	**1.81**	**10.90**

(Source: Summary of approval decisions of the Prime Minister approving the conversion arrangement of the FC in 05 provinces in the Central Highlands-2015)

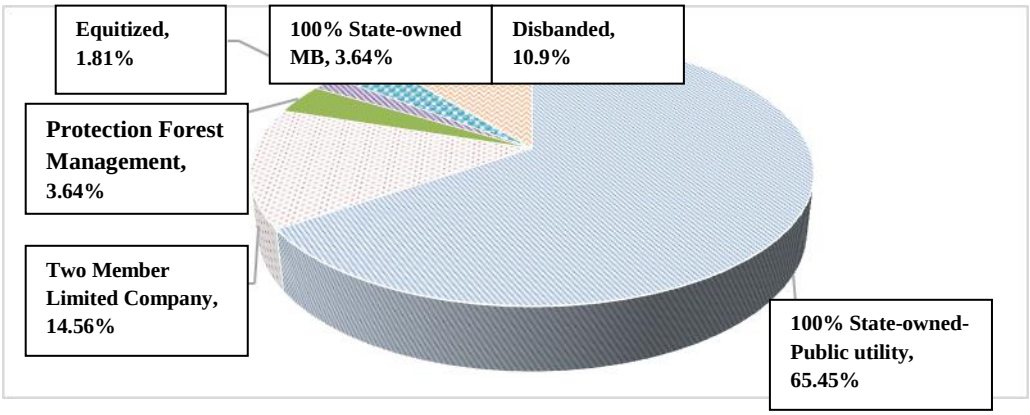

Figure 3.1: Proportion of FC by form of performance

As seen from the Figure, FC in the form of 100% state capital performing public utility tasks account for the highest number.

3.1.2. The resource status for the MB of the FC in the Central Highlands

3.1.2.1. Land status

Table 3.2. Land structure of the FC in the Central Highlands

No.	Indicator	Area (ha)	Proportion (%)	Average/ 1 FC (ha)
	Total land area	**876,128.28**	**100.0**	**19,912.01**
1	**Agricultural land**	**874,405.02**	**99.80**	**19,872.84**
1.1	Land for agriculture production	17,404.35	1.99	395.55
1.2	Forestry land	856,283.07	97.73	19,460.98
1.3	Aquacultural land	0.70	0.00	0.02
1.4	Other agricultural land	716.90	0.08	16.29
2	**Non-agricultural land**	**1,160.76**	**0.13**	**26.38**
3	**Unused land (not included in forestry land)**	**562.50**	**0.06**	**12.78**

(Source: Synthesized from survey data and reports on reviewing, arranging and converting performance models of the FC in the Central Highlands-2015)

The total land area of 47 FC under management is 876,128.28 ha. Agricultural land occupies 874,405.02 ha, accounting for the most of the total natural land area (99.8%), of which 856,283.07 ha is forestry land, accounting for 97.73%. The unused land occupies modest proportion and is not forestry land. The land structure as mentioned above is entirely reasonable because of the characteristics of the FC. Because the area of forestry land is large, it is the foundation for the development of the forestry sector in the Central Highlands because the forestry land is an important resource.

3.1.2.2. Land and forest resources status of the FC

a. Characteristics of forestry and forestland of the FC in the Central Highlands

Table 3.4: Characteristics of land and forest resources of FC in Central Highlands

No.	Indicator	Total (ha)	Function		01 Company on average		Proportion (%)		
			Production	Protection	Production	Protection	Total	Production	Protection
		856,283.07	**774,007.59**	**82,275.48**	**16,468.25**	**1,750.54**	**100.0**	**90.39**	**9.61**
1	**Natural forestland**	**672,555.72**	**605,277.49**	**63,913.81**	**12,878.24**	**1,359.87**	**78.54**	**70.69**	**7.46**
11	Timber forests	575,888.50	524,305.12	48,218.96	11,155.43	1,025.94	67.25	61.23	5.63
a)	Rich forests	61,104.54	49,017.12	12,087.42	1,042.92	257.18	7.14	5.72	1.41
b)	Medium forests	301,291.28	282,323.73	16,929.55	6,006.89	360.20	35.19	32.97	1.98
c)	Poor forests	171,858.68	154,906.40	15,652.66	3,295.88	333.04	20.07	18.09	1.83
d)	Forests without reserves	41,607.20	38,057.87	3,549.33	809.74	75.52	4.86	4.44	0.41
12	Bamboo forests	9,639.51	8,971.37	668.14	190.88	14.22	1.13	1.05	0.08
13	Mixed woodlands	86,911.51	71,884.80	15,026.71	1,529.46	319.72	10.15	8.39	1.75
14	Rocky forests	71.40	71.40	0.00	1.52	0.00	0.01	0.01	0.00
15	Coniferous forests	44.80	44.80	0.00	0.95	0.00	0.01	0.01	0.00
2	**Forested land**	**43,881.24**	**40,278.05**	**3,603.19**	**856.98**	**76.66**	**5.12**	**4.70**	**0.42**
21	Timber forests	38,061.34	34,573.65	3,487.69	735.61	74.21	4.44	4.04	0.41
22	Bamboo forests	27.60	27.60	0.00	0.59	0.00	0.00	0.00	0.00
23	Special timber forests	5,792.30	5,676.80	115.50	120.78	2.46	0.68	0.66	0.01
3	**Non-forested land**	**139,846.11**	**128,452.05**	**14,758.48**	**2,733.02**	**314.01**	**16.33**	**15.00**	**1.72**
31	Upland fields	67,338.45	61,703.89	8,934.56	1,31.85	190.10	7.86	7.21	1.04
32	Land without regenerated trees	42,996.96	39,980.70	3,080.68	850.65	65.55	5.02	4.67	0.36
33	Land with regenerated trees	21,546.60	19,739.76	1,806.84	419.99	38.44	2.52	2.31	0.21
34	Rocky mountains without trees	879.50	688.00	191.50	14.64	4.07	0.10	0.08	0.02
35	Other land	7,084.60	6,339.70	744.90	134.89	15.85	0.83	0.74	0.09

(Source: Synthesized from reports on reviewing, arranging and converting performance models of the FC in the Central Highlands-2015).

The results show that the total area of forestry land of the companies is 856,283.07 ha, in which 672,555.72 ha of natural forests accounts for the highest proportion - 78.54%; 43,881.24 ha of planted foresst accounts for the lowest proportion (5.12%) and 139,846.11 ha of non-forested land accounts for 16.33%.

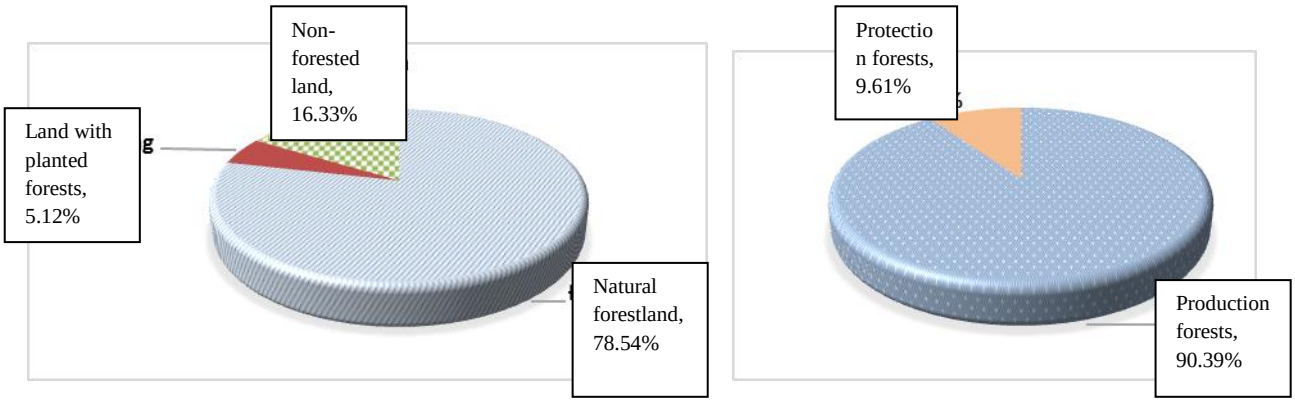

Figure 3.2: Agricultural land structure and forest types of the FC in the Central Highlands

The total area of forestry land of the Companies is 856,283.07 ha. Functionally, 90.39% area is production forests accounting for 774,007.59 ha; protection forests account for 9.61% with 82,275.48 ha.

b. Usage and management of forestry land of the FC in the Central Highlands

Land use situation shows that self-organizing production of the FC is 595,285.38 ha, accounting for 67.95% of the total area of management; the contracted area is 180,072.10 ha, accounting for 20.55% and other area is 100,770.80 ha, accounting for 11.5%.

Table 3.5: Land use situation of the FC in the Central Highlands

No.	Land use situation	Total (ha)	The area of each location (ha)					01 Company on average	Proportion %
			Dak Lak	Dak Nong	Gia Lai	Kon Tum	Lam Dong		
1	**Self-organizing production area**	**595,285.3**	**137,123,7**	**114,383.2**	**128,468.3**	**182,424.1**	**32,886.1**	**12,665.6**	**67.95**
2	**Contracted area**	**180,072.1**	**17,922,30**	**90.00**	**4,119.90**	**35,515.80**	**122,424.1**	**3,831.32**	**20.55**
2.1	Subject to Decree No.135	9,906.40	4,640.70	90.00	0.00	163.30	5,012.40	210.77	1.13
2.2	Subject to Decree No.01	2,337.80	2,337.80	0.00	0.00	0.00	0.00	49.74	0.27
2.3	Contracted management protection	163,537.5	10,773.30	0.00	0.00	35,352.50	117,411.7	3,479.52	18.67
2.4	Contracted land	170.50	170,50	0.00	0.00	0.00	0.00	3.63	0.02
2.5	Other contract	4,119.90	0.00	0.00	4,119.90	0.00	0.00	87.66	0.47
3	**Other land**	**100,770.8**	**23,781.5**	**11,080.0**	**10,495.4**	**36,410.8**	**19,003.10**	**2,144.06**	**11.50**
3.1	For rent	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.2	For lending	28.20	0.00	0.00	28.20	0.00	0.00	0.60	0.00
3.3	Disputed	7,286.50	0.00	0.00	3,296.60	3,989.90	0.00	155.03	0.83
3.4	Encroached	66,525.20	20,742.20	10,765.90	6,044.40	14,327.90	14,644.80	1,415.43	7.59
3.5	Duplicated	17,988.40	0.00	0.00	1,095.40	16,614.50	278.50	382.73	2.05
3.6	Joint venture, investment cooperation	8,942.50	3,039.30	314.10	30.80	1,478.50	4,079.80	190.27	1.02
Total		**876,128.3**	**876,128.3**	**178,827.5**	**125,553.2**	**143,083.6**	**254,350.7**	**174,313.3**	**18,641.0**

(Source: Synthesized from reports on reviewing, arranging and converting performance models of the FC in the Central Highlands-2015)

3.1.2.3. Human resource situation

The total number of employees in the Central Highlands in 2014 is 2,159. According to the labor qualification, there are 523 university graduates, 11 company has 01 people on

average, corresponding to 23.58%; College level - intermediate level has 509 people, 01 company has 10 people on average, corresponding to 22.95%; Technical workers have the lowest number of 228 people, 01 company has 05 people on average, corresponding to 10.28%; The number of common labors accounts for the largest proportion – 958 people, 01 company has 20 people on average, corresponding to 43.19%.

3.1.2.4. Situation of MB capital

Total assets of 47 FC in the Central Highlands are 183,517,051,392.93 thousand VND. In which, short-term asset is 53,723,036,529.06 thousand VND, accounting for 29.27% and long-term asset is 129,794,014,863.87 VND, accounting for 70.73%. The conflict here is that the area of forestry land is up to 856,283.07 ha but the long-term asset is worth only 129,794,014,863.87 thousand VND because forestland is not considered as the asset of the enterprises.

Table 3.7: Manufacturing business capital of the FC in the Central Highlands

Indicator	Amount (thousand VND)	01 Company on average (thousand VND)	Proportion (%)
Capital by source of foundation	**2,095,972,185**	**44,599,152**	**100**
Equity capital	734,114,666	15,619,461	35.0
Loan capital	1,361,857,519	28,975,692	65.0
Capital by using purpose	**2,095,972,185**	**44,599,152**	**100**
Long-term asset	1,642,472,833	34,946,230	78.4
Short-term asset	453,499,352	9,648,922	21.6

Source: Synthesized from reports on reviewing, arranging and converting performance models of the FC in the Central Highlands-2015)

Likewise, upon considering the capital resource of 47 Companies, the total amounted liabilities is 1,361,857,519 thousand VND, accounting for more than half of the total capital (65.0%). In the meantime, the equity capital of the Company is 734,114,666 thousand VND, accounting for 35.0%. This shows that the financial autonomy of the FC is very low.

3.1.3. Situation of management structure of the FC in the Central Highlands

3.1.3.1. The number of FC in the Central Highlands

Prior to the implementation of arrangement and conversion plan on performance models of the FC subject to Decree 118/2014/ND-CP, there are 55 FC in the Central Highlands. Upon implementing the arrangement and conversion plan, there are 47 FC remain.

3.1.3.2. Organizational structure of the FC in the Central Highlands

The organizational structure of the FC is relatively complete and suitable to the practice, meeting requirements of forest management and development. However, the weakness of the Companies is the development of services sector, which are almost nonexistent, or are concurrently held by different functional departments so that they do not really bring revenue to the Company. With the FC having affiliated factories such as timber processing enterprises; Forestry enterprises ... These are the affiliated units that perform various tasks to meet the small-scale production objectives in the previous period.

3.2. The performance of forestry companies in the Central Highlands

3.2.1. MB situation of the FC in the Central Highlands

3.2.1.1. Forest protection and development activities

a. The natural forest structure of the FC

The total area of managed natural forests of the FC is 879,702.9 ha. Each Company manages 17,953.1 ha of natural forests on average. According to management function, the natural forest area of the FC is mainly production forests with an area of 606,034.2 ha, corresponding to 88.1%. While the area of protection forests is only 79,709.7 ha, corresponding to 11.6%. In terms of forest management, timber forests account for the largest proportion – 85.3%, followed by mixed woodland - 12.9%, the remaining forest types, which are bamboo forests, rocky forests, coniferous forests, account for only 1.8%.

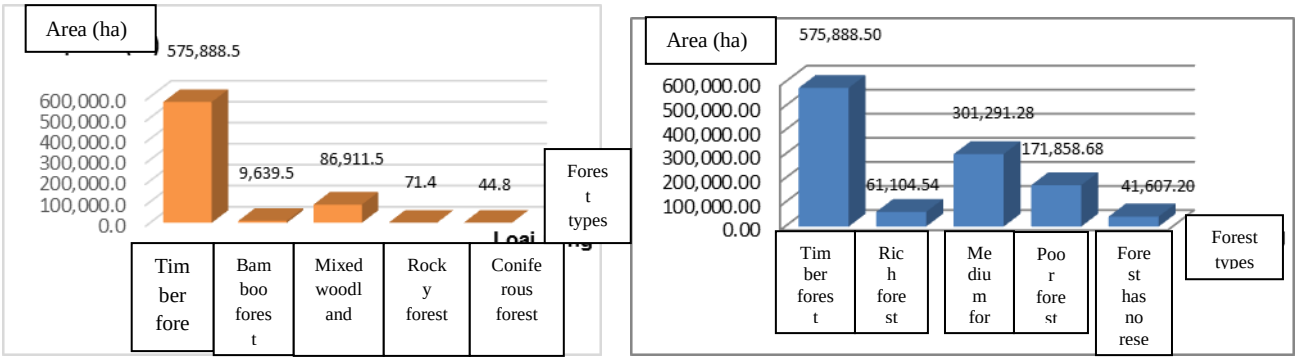

Figure 3.6. Structure of natural forest and timber forest area according to the situation of the FC in the Central Highlands

Type of timber forests by situation shows that the FC mostly manage medium and poor forests. Particularly the area of rich forests accounts for 11.8%; Medium forests - 51.6%; Poor forests - 29.7%; Forests without reserves - 6.9%. The area of nature forests that the Companies manage is enormous. In which production forests, which are mostly timber forests, dominate.

b. Natural forest management activities of the Companies

Most of the FC has forest management teams and subdivisions, mobile teams under the forest protection and management department. Forest management and protection include: i) prevent and control forest fire, ii) organize patrolling, checking, dealing with illegal exploitation hot spots, iii) propagandize forest protection and management to the village adjacent to the forest management of the Company.

3.2.1.2. Afforestation

Table 3.10. Statistics of planted forest area in the Central Highlands

Indicator	Total area (ha)	01 Company on average (ha)	Proportion (%)
Total area of planted forests	**44,902.43**	**955.37**	**100**
1. Production forestland	41,611.74	885.36	92.67
2. Protection forestland	3,290.69	70.01	7.33

(Source: Synthesized from survey data and reports on reviewing, arranging and converting performance models of the FC in the Central Highlands-2015)

The major crops are Acacia, Eucalyptus, Pine, Blackwood, Teak, Perfume timber (Gia Lai)....

3.2.1.3. Timber harvesting and processing activities: In the preceding period of the " close forests" policy, some FC with the advantage of annual timber production often invest in one more workshop or timber processing enterprise such as FC Loc Bac, Tam Hiep ...

3.2.1.4. Exploitation and development of non-timber forest products:

The Central Highlands is an advantageous region for the development of non-timber forest products of high economic value such as: Scaphium macropodum, Coscinium usitatum, Eurycoma longifolia (Lam Dong, Kon Tum), Song, May, Hoang Dang (Gia Lai) ... In the former period, non-timber forest products in the FC mostly exploited from nature, little interest in preservation and afforestation.

3.2.1.5. Other business activities

Plywood and chopsticks production line (Gia Nghia FC). Production line of handicrafts with timber products is designed in 3D and CAD (Dai Thanh FC). Commercial services such as trading construction timber, petroleum, fertilizer business, plant seeds, non-timber products, providing consultancy services for surveying and designing agricultural and forestry projects.

3.2.2. Performance situation of the FC in the Central Highlands in general

3.2.2.1. MB performance of the FC

Table 3.11. MB results of the FC in the Central Highlands (2012-2014)

Unit: thousand VND

Indicator	Year of 2012	Year of 2013	Year of 2014	AG rate (%)
1. Sales and services revenue	471,169,912.8	382,692,413.9	380,567,984.5	90.3
2. Deductions from sales	580,139.4	124,200.0	0.0	10.7
3. Net revenue of sales and services	470,589,773.4	382,568,213.9	380,567,984.5	90.4
4. Cost of goods sold	374,755,619.9	294,947,112.5	285,978,506.3	87.8
5. Gross profits of sales and services	95,834,153.5	87,621,101.4	94,589,478.2	99.7
6. Revenue from financial activities	13,981,302.3	10,271,908.6	10,979,542.9	90.2
7. Financial expenses	3,371,560.3	2,637,314.4	1,253,163.8	62.9
- In which: interest expenses	3,357,922.9	2,632,284.5	1,240,091.3	62.8
8. Sales expenses	1,959,284.1	1,251,954.6	1,390,870.8	87.5
9. Company management expenses	86,032,757.9	75,118,361.5	89,671,247.6	103.3
10 Net profit from business activities	18,451,853.5	18,885,379.4	13,253,739.0	86.3
11. Other incomes	10,176,922.8	45,093,092.3	48,329,772.0	275.1
12. Other expenses	6,945,624.6	24,997,964.0	25,227,558.7	230.4
13. Other profits	3,231,298.2	20,095,128.3	23,102,213.3	368.4
14. Gross accounting profit before tax	21,683,151.7	38,980,507.7	36,355,952.3	136.5
15. Current corporate income tax	8,748,643.6	10,781,145.6	9,297,522.3	104.7
16. Reimbursement of corporate income tax	57,614.1	115,798.4	-	100.5
17. Profit after corporate income tax	12,876,894.0	28,083,563.7	27,058,430.0	157.2

(Source: Synthesized from reports on reviewing, arranging and converting performance models of the FC in the Central Highlands-2015)

Annual revenue in 2013 and 2014 decreased, compared to 2012, and tend to increase in 2015. However, cost of sales decreased more with an average growth rate of 87.8%, in 2012 was 374,755,619.9 thousand VND, in 2013 was 294,947,112.5 thousand VND and in 2014 was 285,978,506.3 thousand VND, increased in 2015. Total gross profit before tax and average profit after tax for 47 companies increased, but in fact only 21/47 companies accounted for 44.68% with an average growth rate of over 100%. The remaining 26/47 companies accounted for 45.32% growth rate of less than 100%.

Beside some companies perform business effectively, there are still many companies do not perform effectively, the speed of development shows downward trend. The main causes are:

- The FC are characterized enterprises with small capital, the capital in the forests has not been specified, the performance has many risks due to the impact of natural disasters, epidemics; operational area is mainly in rural, remote, in which traffic, communication and infrastructure are undeveloped. Most of the employees are not trained, management capacity is weak.

- The capital and fixed assets of the FC upon converting remain too small; no collateral for banks to invest in MB performance so the efficiency is low.

- The financial situation, organizational capacity of the MB of the FC are weak, low self-control and do not link to forestry production activities from afforestation, exploitation and processing to goods and services commercial marketing, unable to mobilize investment.

3.2.2.2. Performance evaluation of the FC in the Central Highlands

a. Evaluation of economic performance

Table 3.13. Economic performance in the FC (2012 - 2014)

No.	Indicator	Unit	Year of 2012	Year of 2013	Year of 2014	Average	AG rate (%)
A	**Information**						
I	**Total managed land area**	**ha**	**914,031.4**	**897,695.4**	**881,347.9**	**897,691.6**	
II.	**MB capital**		**381,528.1**	**411,496.5**	**437,336.6**	**410,120.4**	107.06
	Fixed capital	million VND	237,208.3	234,269.7	228,980.8	233,486.3	98.25
	Working capital	million VND	144,319.8	177,226.8	208,355.9	176,634.1	120.15
III.	**Sales and service revenue**	million VND	**471,169.9**	**382,692.4**	**380,568.0**	**418,651.7**	89.87
IV	**Profit before tax**	million VND	**26,433.5**	**38,838.9**	**36,389.9**	**33,961.3**	117.33
B	**Economic efficiency indicator**						
1	Revenue /01ha of managed land	million VND/ha	0.52	0.43	0.43	0.47	91.52
2	Profit/01 ha of managed land	million VND/ha	0.03	0.04	0.04	0.04	119.49
3	Profit /Revenue margin	time	0.06	0.10	0.10	0.08	130.55
4	Profit /MB capital margin	time	0.069	0.094	0.083	0.083	109.59

5	Profit /Fixed Capital margin	time	0.111	0.166	0.159	0.145	119.42
6	Profit /Working capital margin	time	0.183	0.219	0.175	0.192	97.65

(Synthesized from survey data and reports from reports on the Plan of arranging and converting of the FC in the Central Highlands)

As follows:

1) Revenue/01 ha of managed land: The "Revenue/1 ha of managed land" line shows that in 2012, 1 ha of managed land generate 520 thousand VND of revenue; the figure decreased to 430 thousand VND/1 ha of managed land in 2013 and 2014.

2) Profit/01 ha of managed land: Looking at the "Profit/1 ha of managed land" line we see a tendency of increase. Specifically in 2012, 011 ha of managed land generated 30 thousand of profit; the number increased in 2013 for every 01 ha of land of the company generated 40 thousand of profit and in 2014, every 1ha of managed land generated 40 thousand of profit.

3) Profit/revenue margin: Looking at the "Profit /Revenue margin" line, we see that every 1 million VND of revenue in 2012 generated 60 thousand VND of profit after tax. The number insignificantly increased to 100 thousand VND profit after tax/1 million of revenue in 2013 and 2014.

4) Profit/MB capital margin: Looking at the "Profit after tax/MB capital margin" line, we see that in 2012, one million VND of MB capital generated only 69 thousand VND of profit; in 2013, one million VND of MB capital generated 94 thousand VND of profit, and less than one million VND of MB capital generated 83 thousand VND of profit in 2014.

5) Profit/fixed capital margin: The "Profit after tax/fixed capital margin" line shows that this indicator is not only low but also showing a slight increase. Specifically, in 2012, one million VND of fixed capital generated 111 thousand of profit after tax. In 2013, one million VND of fixed capital only generated 166 thousand VND of profit after tax and only 159 thousand VND of profit after tax in 2014.

6) Profit/working capital margin: Looking at the "Profit after tax/working capital margin" line, we see that this indicator is very low and tends to decrease. On average in 2012, one million VND of working capital generated 183 thousand VND of profit; in 2013, one million VND of working capital generated 219,000 dong of profit, the figure dropped sharply in 2014, one million VND of working capital generated only 175 thousand VND of profit.

b. Social performance

Table 3.14: Some social performance indicators of the FC in the Central Highlands

No.	Indicator	Unit	Result
1	Managed land area	Ha	876,128.28
2	Number of employees	*Employee*	807,922
	- Number of irregular employees	*Employee*	*275,031*
	- Number of regular employees	*Employee*	*532,891*
3	Total revenue	1000 VND	463,772,721
4	Profit before tax	1000 VND	33,405,572
5	Profit after tax	1000 VND	24,033,457

No.	Indicator	Unit	Result
6	Number of staffs	People	2,218
7	Total income of employees	1000 VND/year	89,746,157
8	Total income of local people	1000 VND/year	34,208,466
9	Number of local employees	People	2,840
10	Number of employees/01 ha forestry land	Employee/ha	0.9
11	Average revenue/employee	1000 VND/employee	332,223
12	Average profit/employee	1000 VND/employee	26,950
13	Income of local people	1000 VND/people/year	12,044
14	Average income/employee	1000 VND/employee	71,219

(Source: Synthesized from reports on the Plan of arranging and converting performance models of the FC in the Central Highlands-2015)

In order to evaluate the socio-economic performance, it is necessary to evaluate these following criteria:

Number of local employees participating in the MB of the Company: Number of people involved in the production is 2,840. Participants in this MB are mainly non-regular employees involved in clearing, digging, planting and weeding, fertilizing for afforestation.

Average income of local people participating in forestry production: In recent years, the Companies have created jobs, contributing to improving the income of people in the area. The average income of local people is about 12 million VND/year, local people work mostly in the 6 months of the rainy season. Average revenue/staff is 332,223 VND/year. The average profit/staff is 26,950 thousand VND/year.

Average income/staff: Since the FC are state-owned enterprises, it should be paid according to the prescribed wage scale. Thus, the average income of the FC is 71,219 thousand VND/ employee/year, or the average income of employee is about 5.9 million VND/month.

Average income/family involved in forest protection and management: Through afforestation, contracted forest protection and non-timber forest products exploitation, create jobs for 800 local families to increase their incomes, contribute to reducing hunger and the number of poor families in the performance area of the Company. The average income/family subject to Decree 178/2001/ QD-TTG is about 2 million VND/year. Each family, receiving the contract subject to Decision 304/2005/ QD – TTG, receives about 3 million VND/year.

*c. Environmental performance**:*** The total area of 876,128.28 ha of forestry land managed by the FC has 712,532.0 ha of forested area with an average coverage of 78.85%.

3.2.3. Evaluate the performance of the FC

3.2.3.1. Overall evaluate the performance of 47 FC

Performance evaluations show that most of the FC have an Ehq coefficient <0.2, meaning that the performance of the FC between 2012 and 2014 is low. Some companies have average profit/ha with high negative value such as Nam Nung FC; Ea H'Leo Company; Chu

Pha Company has made the average profit of 47 FC reached low - 7,653,000 VND, of which the lowest is -242,986,460 VND, the highest profit/ha is 18,294,560 VND.

Table 3.17: Summary table of performance of 47 FC

Unit: thousand VND

Province	Coverage level	Revenue/1ha	Profit/1ha	Revenue/ utility capital	Profit/ utility capital	Revenue/employee	Profit/employee	Ehq
Dak Lak	67.91	498.02	-26.04	0.50	-0.03	108,950.05	-9,216.71	0.11
Gia Lai	87.20	422.06	24.43	2.04	0.07	208,275.90	15,452.98	0.29
Kon Tum	76.65	317.10	8.06	0.85	0.02	332,113.77	7,769.08	0.23
Dak Nong	78.73	1.111.31	42.69	0.79	0.05	229,222.26	23,644.39	0.31
Lam Dong	88.51	622.31	111.92	0.58	0.08	244,555.73	37,791.08	0.36
General average	***78.85***	***494.56***	***37.42***	***0.85***	***0.04***	***224,623.54***	***15,088.2***	***0.26***

Considering all 05 provinces in the Central Highlands, the Ehq composite efficiency coefficient is only 0.26; this means that performance is very low.

According to the proportion of the provinces, the FC in Gia Lai province tend to develop better than other provinces (Ehq = 0.36), meanwhile the FC in Dak Lak province are 0.11; in Dak Nong province are 0.31, which proves that the FC here are performing effectively.

3.2.3.2. FC conversion proposal by group

a. 100% state-owned public utility FC group

Out of 36 FC In the Central Highlands, 10 FC had the negative average profit/employee after tax (Lo Ku, Krong Pa, Kong H'De, Dak Ha, Buon Wing; Ea Wy, So Pai, Ngoc Hoi, Kon Plong and Chu Pha FC). The Ehq efficiency coefficient of 36 companies in particular is very low, from 0.01 to 0.68.

b. Two-member limited company group

In the Central Highlands, there are 08 Two-member s Limited Forestry Companies with total revenue in 3 years from 2012 to 2014 is 28,509,465 thousand VND. The efficiency coefficient shows that the average profit/ha and the average profit/employee are negative. Ehq coefficient is bottom out in years, average profit/employee fluctuated from -37,419 thousand VND to 997.97 thousand VND. Most of the FC converted into two-member limited company performs without profit.

c. 100% State-owned FC Group performing MB

In the Central Highlands, there are 2 FC belonging to the group of 100% state capital performing MB with the total revenue in 3 years is 51,731.8 million VND, the total current assets is 847.70 million VND. The two companies are managing 59,576.4 ha, in which 48,323.7 ha are forested lands. Although MB performance did not make a loss, its profit for the Company and employees is still on a low level (slightly above 0.1%), compared to 47 FC in the Central Highlands.

d. Equitized FC group

Nam Nung Forestry Joint Stock Company holds 65% of the state-owned share. In the period from 2012 to 2014, although the revenue is quite large, the profit is very low, even

negative (especially in 2013 and 2014), the efficiency coefficient of 47 FC still reached 0.17.

3.3. Factors affecting the performance of the FC in the Central Highlands

3.3.1. Policy mechanism in forest management in the FC

a. Benefit policy

Policy on benefiting from forest management subject to Decision 178/2001/QD-TTg on November 12, 2001 of the Prime Minister. Therefore, the families contracted to forest protection will receive 100,000 VND/ha/year for the contracted forests. This level of contract contributes to increasing income but not eliminating the poor for the people, especially ethnic minorities.

b. Policy on management of exploiting forestry products

The FC are primarily based on indicator of exploiting natural timber forests. The Central to the provinces allocates this indicator annually, and then the provinces allocate the plan to each agency. For the FC not assigned to natural timber exploitation, the Provincial People's Committee shall finance for the management and protection of natural forests with budget and from standing trees of agencies with the indicator of natural timber exploitation.

c. Financial policy and other policies

Currently, the access to capital from commercial banks encountered many difficulties because the company has no assets to mortgage, access to bank loans means to have 30% counterpart funds. Charter capital allocated to the Company only to maintain normal MB performance, while land is mainly assigned to manage forestland so there is not enough capital to access banks.

3.3.2. The influence of the factors of production on the efficiency coefficient of the FC

Based on the statistics on the inputs used by the forestry companies in the Central Highlands and the Ehq composite efficiency coefficient of each company, the calculation results are given in table 3.22

Table 3.22. Table of estimated coefficients

Independent variables	Symbol	*B*	t	Sig.
Constant		-7.091	-8.677	0.000
Total area	TA	-0.177	-2.581	0.014
Revenue	R	0.079	3.955	0.000
Number of employees	E	0.227	3.318	0.002
Equity capital	EC	-0.014	-1.054	0.298
Level of forest cover	LFC	1.138	7.241	0.000

Dependent variable Y is the effective coefficient obtained by the forestry company.

Correlation reflects the relationship between the inputs using the Ehq composite efficiency coefficient of the forestry companies and has the form as follows:

$$LnEhq = -7.091 - 0.177\ LnTDT + 0.79\ LnDT + 0.227\ LnLD + 1.138\ LnDC$$

The table above shows:

Thus, four variables have statistical significance with value ≥ 1.98 and Sig. <0.05 as TA, R, NE and LFC.

Particularly, the EC variable with coefficient = -0.014, t= -1,054 and Sig. = 0.298 does not guarantee reliability and therefore is excluded from estimation.

The Adjusted R Square value = 0.616 indicates that 61.6% of the variation in Ehq composite variable is explained by the variables introduced into the model.

The coefficients of the variables indicate the following aspects:

- There are four factors influencing the composite efficiency of the forestry companies in the Central Highlands: Total land area managed by the company (TA); Revenue of companies (R); Number of employees of the companies (E) and Level of forest cover (LFC).

- The TA variable with the coefficient $\alpha 1 = -0.177$ indicates that a 1% increase in the total management area of the company would reduce the Ehq coefficient by 0.177%. This shows that the area for the FC in the region should not be increased.

- The R variable with the coefficient $\alpha 2 = 0.79$ indicates that if the revenue the company increases by 1%, the Ehq efficiency coefficient will increase by 0.79%. This also shows that in order to improve performance, the companies should expand their MB performance to increase revenue.

- The E variable with the coefficient $\alpha 3 = 0.227$ indicates that if the number of employees increase by 1%, the Ehq efficiency coefficient of the company will increase by 0.227%. In order to improve performance, the companies need to increase the use of employees in activities of the companies.

- The LFC variable with the coefficient $\alpha 4 = 1{,}138$ shows that if increase the level of forest cover by 1%, Ehq efficiency coefficient of the company will increase by 1.138%. This also shows that in order to improve performance, the companies need to strengthen forest development solutions and enhance the level of forest cover.

3.3.3. Other factors

- The sense of compliance with the law on forests of the people is low.

- Combination and coordination between forest owners and local authorities and relevant agencies in the area is lack of uniformity and coherence; large number of migrants.

- Overlapping, non-synchronous policies affect the MB of the companies; such as land policy, exploitation policy.

3.4. Solutions to improve performance of the FC in the Central Highlands

3.4.1. SWOT analysis for the FC in the Central Highlands

3.4.2. The foundation for proposing solutions to improve performance for the FC in the Central Highlands

- The regulations of the State on management activities and the MB of the FC.

- Current situation of management and human resource models of the FC.

3.4.3. Solution proposal

3.4.3.1. Organizational model of MB performance

There are four groups of MB performance: 100% state-owned performing public utility; 100% state-owned performing MB; Equitized and two-member s limited company. In the above models, if the companies only depend on the support of the state, they will encounter many difficulties, life of employees will be difficult to improve. Thus, models such as equitized or two-member s limited company excel in MB. The 100% state-owned

performing MB group also gradually asserted itself in the market economy, reducing its dependence on natural resources.

Agencies with ineffective performance turn to model of income-generating agency or agency with no potential for development, weak forest management and protection capacities shall disband and transfer forests and forestland to local communities to assign to families, communities and other companies with the capacity for the better performance of forest protection and management.

3.4.3.2. Solutions on MB performance

Focus on 2 options: Option 1: Close natural forests and Option 2: Still exploit natural forests and follow silvicultural techniques

a. Option 1: Close natural forests

(1) Financial support from the Government

Financial support from the Government is necessary to maintain forest management and protection activities.

(2) Create new revenue and autonomy for the FC

Financial support from the Government should be implemented only in a certain period. In the long term, the FC need to find other finacial sources that are not dependent on large timber business. Depending on the strength of each specific company that can conduct more business on seedlings, non-timber forest products, medicines ... to get more revenue for the company.

Thus the problem that needs to be resolved is: Close natural forests for how long? How much can be exploited to take advantage of forest resources while still ensuring " reduce greenhouse gas emissions from deforestation and forest degradation" in line with REDD + objectives and receiving a financial compensation from this source? Therefore, the Government and scientists need to study to provide a sustainable roadmap not only for the FC to perform their public utility tasks but also for the whole forestry sector in general.

(3) Build effective MB models based on utilizing the available potential of the FC

- Link families with intermittent soils in the land of the FC for afforestation and non-timber forest products on allocated areas, create a belt for protection of natural forests inside, and create legal revenues from afforestation for the companies and families.
- Business model by product chain.
- Model for diversification of industries and services.

b. Option 2: Still exploit natural forests and follow silvicultural techniques

(1) Manage and use natural forests as production forests

The State must have policies to allocate and contract the management of natural forest protection with the benefit policy at a higher level than before, guarantee the life of the contracted people to ensure the effeciency of forest management and protection.

** Financial and credit policies*

For natural resource tax policy: Reduce natural resource tax for timber exploitation from natural forests. The provisions on natural resource tax shall be used only to re-invest in natural forests.

Quickly implement the policy on payment for forest environment services; Promote

the Carbon credit market; Develop direct benefit policy, generate income from forests to finance the companies to contract for forest protection. Where the revenue source is not yet available, it shall be regulated by the forest resource tax or the state budget shall support the forest protection contract.

Carry out inventory and revaluation of assets of the companies; verify the value of planted forests for incorporation into the capital structure and assets of the companies.

The State should have specific mechanism and policies on investment credit for forestry sector to borrow investment credit capital at preferential interest rates. The provincial People's Committee needs to supplement enough charter capital for the FC so that the companies can take initiative in afforesting production forests, managing and protecting the natural forests with high efficiency.

Production forests are poor natural forests, forests in the period of nurturing and restoring, which are not yet permitted for timber exploitation. The State shall provide financial supports for management and protection according to mechanisms applicable to protection forests.

3.4.3.3. Other solutions

a. Science and technology

The State and localities should pay attention in investing in science and technology to create conditions for the FC to perform forest protection and development tasks, such as: nursery seedling technology, technology of forestry seedling breeding, equipment for forest fire prevention and protection, forest protection support tools, etc.

b. Organize apparatus and human resources

Research, develop contents, programs and organize regular and periodical training on management skills for the management and professional staffs of the FC. Establish preferential mechanisms and policies on recruitment, training, wage and seniority ... to attract human resources to participate in forest protection and development.

c. Strengthen the mechanism of joint venture and association

Well implement policy of the State on linking 4 subjects: the State - the scientist - the business - the farmer so that the FC are proactive in the direction of creating sustainable production by chain.

CONCLUSION, CONSTRAINT AND PROPOSAL

1. Conclusion

1.1. Performance situation of the FC in the Central Highlands

At present, most of the FC in the Central Highlands do not perform very effectively. The management and organization of the MB is not corresponding to the potential of land allocated for management. Forest in the Central Highlands managed by the FC are mostly poor natural forests; Lack of forest enrichment measures, the investment in natural forests is mostly in the management and protection.

The FC have a relatively complete organizational structure and is appropriate to the situation. However, the FC in the Central Highlands are struggling to maintain their activities and have not yet created their own products to market, the FC are still depending on the support of the Government. The human resource of the FC in the Central Highlands is lacking in both quantity and quality; the number of highly qualified staffs can apply science and technology to production is not high. The FC do not have the training orientation, improving the quality of human resources for the agencies.

The capital requirements for the FC are very small, especially the capital for MB performance, the annual budget capital is not sufficient to maintain the forest protection and management activities of the FC, which leads to low performance of the FC. The capital and fixed assets of the companies upon converting remain too little, no collateral for banks to invest in MB so the performance is not high. Especially since the implementation of the "close forests" policy of the Government, the FC almost cannot self-manage capital to carry out forest management and protection tasks and MB performance.

Most of the FC have Ehq efficiency coefficient <0.6, meaning that the performance of the FC between 2012 and 2014 is low. Some companies with average profit/ha have a large negative value, indicating that the MB performance of the FC have not been effective, the companies have many difficulties, incomes of employees are low.

1.2. Performance of MB performance of the FC in the Central Highlands

Upon arranging, renovating, organizing the operation mechanism, some FC were initially changed to comply with the requirements of operating subject to the Enterprise Law 2014. Some companies have gone into stable MB, capital and assets of the companies are managed and used more effectively. However, at present, the problem is that the Government has arranged the operation model of the FC but the efficiency of production activities of the companies in the Central Highlands is still on a low level, due to:

i) Land conflicts of the FC are still going on.
ii) The FC have not dealt with all issues upon the arrangement: Land, redundant employee, assets, MB method.
iii) The implementation of policies from Central to local in the Central Highlands is still slow, not synchronous.
iv) Sustainable forest management options have not yet been improved and reconstructed according to standards.
v) MB management and organization has not been improved, operated and exploited all resources invested in MB.

vi) The perception of the role and position of former state-run forestry farms and the current FC is very different, not unified to solve constraints, difficulties and obstacles.

vii) Development and exploitation of available potentials such as land, forestry resources, non-timber forest products and human resources have not been invested.

1.3. Factors affecting the MB performance of the FC in the Central Highlands

The thesis shows the system of factors affecting the MB performance of the FC as follows:

i) System of policy mechanism: main policies, which are benefit-sharing mechanism, policies on management, exploitation of forest products, finance..., are still inadequate, causing difficulties for companies in the MB performance.

ii) The system of factors affecting the MB performance includes revenue of the companies, number of employees, and level of forest cover, which will improve the MB performance of the FC. If the number of total managed area of the FC increases by 1%, the Ehq efficiency coefficient will decrease by 0.177%. If the revenue of the companies, number of employees, and level of forest cover increase by 1%, the efficiency coefficient will increase by 0.79%, 0.227% and 1.138% respectively, in which the level of forest cover factor has the biggest significance.

The relationship between the inputs and the MB efficiency coefficients of the FC is simulated by the following correlations:

LnEhq = -7.091 -0.177 LnTDT +0.79 LnDT + 0.227 LnLD + 1.138 LnDCP

iii) Other factors such as local people's sense of responsibility, cooperation between stakeholders such as forest owners, local authorities, inter-agency and people in forest management, protection and development are lack of synchronism and not effective

1.4. Proposal of solutions to improve the MB performance of the FC in the Central Highlands

- Increase autonomy, self-responsibility for management, organization of MB performance of the FC.

- Group of solutions on MB organization model: There are 4 groups of MB performance: 100% state-owned performing public utility tasks; 100% state-owned performing MB, equitized or two-member limited company. Among those mentioned model, equitized or two-member limited company excel in the MB performance, 100% state-owned performing MB also gradually assert itself in the market economy, and reduce dependence on natural resources.

- Solutions on the MB performance: Focus on 2 options:

Option 1: Priority solution is to close natural forests: The State should have financial support mechanism, generate new income and autonomy for the companies, which can create MB models maximizing available potentials to make profit while still protect the forests.

Option 2: Still exploit natural forests and follow silvicultural techniques: Allow the FC to partially exploit natural forests in accordance with the procedures to generate revenue for the companies to reinvest in forests and reduce the pressure on the State budget.

- Other solutions: the State and the companies need specific policies for the Central Highlands, especially for the ethnic minorities. The FC need to invest more in science and technology in production and streamline administrative apparatus to match the current practice, strengthen the coordination between forest owners - rangers - local people - authorities in forest management, patrol and protection activities.

2. Constraint

The thesis has not studied on how the relationship between the impact of vertical and horizontal management policies of management levels at the Central and local levels affect the performance of the FC in the Central Highlands; The thesis has not studied in-depth performance of each FC group to propose specific solutions for each type of FC group.

3. Proposal

It is necessary to have in-depth studies on the performance of other FC groups in the Central Highlands as a foundation for replication of the FC across the country.

It is necessary to continue to study the relationship between the Central and local management policies, which affect the performance of the FC in the Central Highlands.

LIST OF PUBLISHED ARTICLES AND SCIENTIFIC WORKS

1. Au Van Bay (2016), The situation of performance of forestry companies in the Central Highlands, Journal of Agriculture and Rural Development, No. 20/2016, pages 20 – 30.
2. Au Van Bay (2016A), A number of solutions to improve the efficiency of performance of 100% state-owned forestry companies performing public utility tasks in the Central Highlands, Journal of Agriculture and Rural Development, No. 24/2016, pages 21 – 30.