

Factors affecting the transition to the long-rotation plantations of smallholders A case study in Quang Tri province, Central Vietnam

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INTRODUCTION

- In Vietnam, plantation forests as an important source to sustain the material supply.
- Approximately half of the plantation forests is under the management of smallholder households.
- Acacia hybrid (*Acacia auriculiformis* x *Acacia mangium*) gains popularity.
- Long-rotation plantations as a potential manner to mitigate climate change impacts.
- Management practice of small-scale timber producers is at a low level.

METHODOLOGY

- Case study: Quang Tri province, central Vietnam.
- Interviewed 315 household heads, following stratified random sampling approach.
- Binary Logistic Regression and Bayesian Network models.
- Group discussions and expert interviews.

KEY FINDINGS

General characteristics of surveyed households

Parameter	Long-rotation plantation decision				Total		Sig. value for t-test (2 tailed)
	Short-rotation		Long-rotation		Mean	Std. Dev.	
	Mean	Std. Dev.	Mean	Std. Dev.			
Age (years)	55.13	11.49	52.68	9.85	53.90	10.76	.040**
Education (Schooling years)	9.56	2.15	10.13	1.98	9.85	2.08	.014**
HH size (No.)	3.39	1.33	3.78	1.37	3.58	1.36	.011**
Total land area (ha)	3.44	2.83	6.01	4.79	4.72	4.13	.000***
Forestland area (ha)	2.67	2.51	4.92	4.72	3.80	3.93	.000***
Distance to plantations (km)	2.85	1.60	4.73	9.45	3.79	6.82	.015**

Note: *** p<0.01, ** p<0.05, *p<0.10, NS: Not significance (two-tailed tests), HH: Household

- Domination of middle and upper age classes of HH heads with availability of family labor.
- Long-rotation smallholders show higher educational level and larger plantation area
- Long-rotation smallholders have to travel for a longer distance.

Result of binary logistic regression model

Variable	B	S.E.	Wald	Sig.	Exp(B)	Exp(B) adjusted
Constant	-1.087	1.659	.429	.512 ^{NS}	.337	2.967
Lack of capital	-6.609	1.401	22.250	.000***	.001	1000.000
FSC participation	7.456	1.579	22.285	.000***	1730.136	1730.136
Assurance of seedling source	4.132	1.095	14.238	.000***	62.310	62.310
Typhoon impact rate	-1.650	.694	5.658	.017**	.192	5.208
Understanding of large-sized timber market	3.048	.834	13.348	.000***	21.073	21.073
Distance to plantation site	1.875	.803	5.448	.020**	6.520	6.520

Dependent variable: Long-rotation plantation decision by households (1=Long-rotation; 0=Short-rotation)

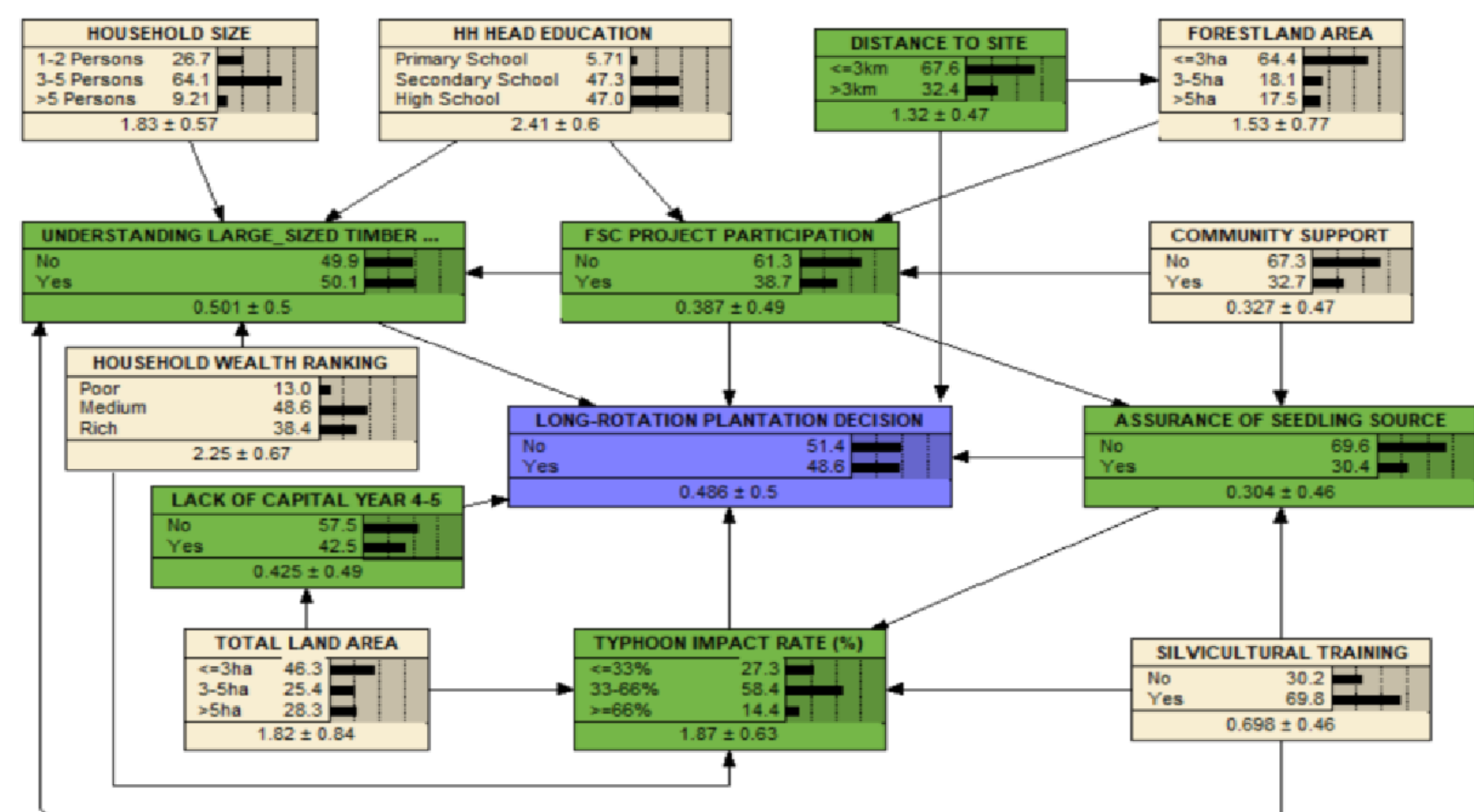
Six key factors: Lack of capital for investment (-), FSC project participation (+), assurance of seedling source (+), typhoon impact rate (-), understanding of large-sized timber market (+) and distance from house to plantation site (+).

OBJECTIVE

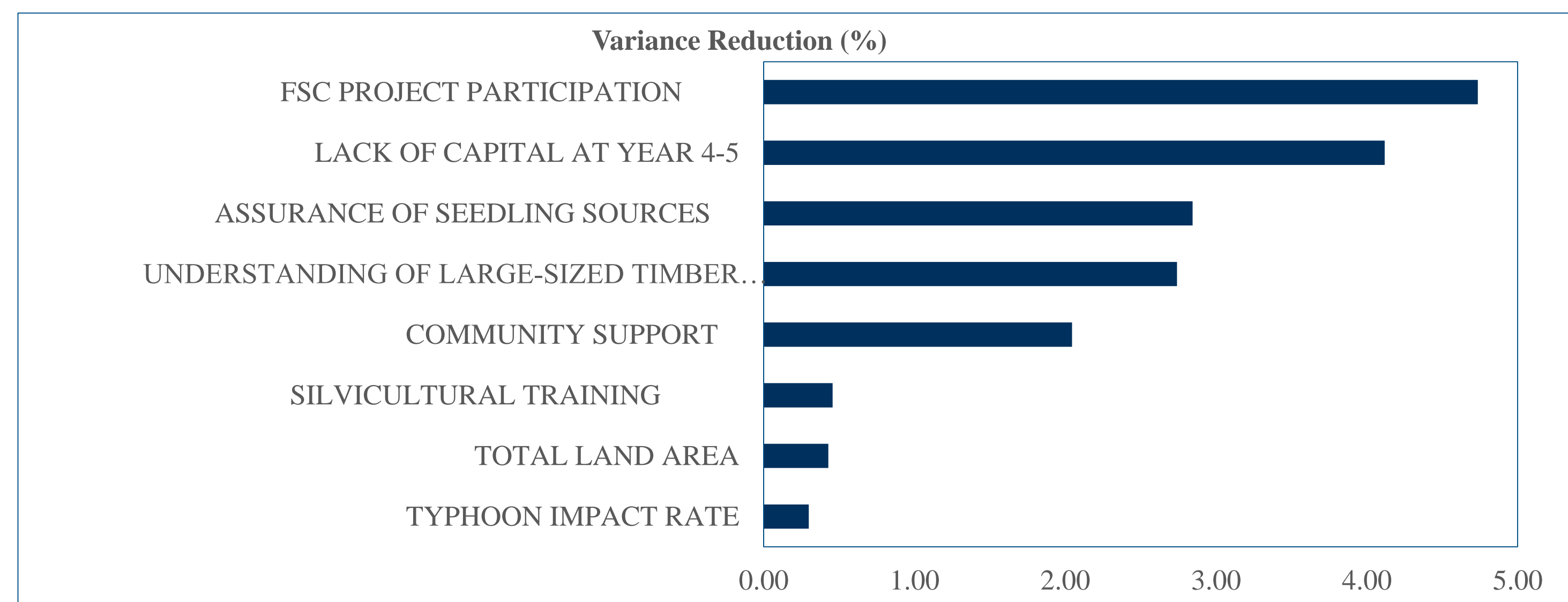
To elucidate key factors affecting the transition from the premature harvest to the long-rotation plantation of small-scale timber producers

KEY FINDINGS (cont.)

Result of Bayesian Belief Network and sensitivity analysis



Sensitivity analysis of long-rotation plantation adoption decision



CONCLUSION

Five key factors significantly impact the long-rotation plantation adoption:

- FSC project participation (1st)
- Availability of capital for investment,
- Assurance of seedling source,
- Understanding of large-sized timber market,
- Community support.

Producers' behaviors should be put in larger context to clarify profoundly their characteristics, activities and performances.

Roles of the government, supporting organizations and industry sectors

References

- Harwood, C. E., Nambiar, E. K. S., Dinh, P. X., Toan, L. X., & Quang, L. T. (2017): Managing wood production from small grower Acacia hybrid plantations on eroded soils in central Vietnam, *Australian Forestry*, 80:5, 286-293.
- IUCN. (2018b). *Strengthening Policies and Financing for Sustainable Development of Longer Rotation Forest Plantation in Vietnam*, Da Nang, Vietnam.
- Zhunusova, E., Sen, L. T. H., Schröder, J.-M., Ziegler, S., Dieter, M., & Günter, S. (2019). Smallholder decision-making on sawlog production: The case of Acacia plantation owners in central Vietnam. *Forests*, 10(11), 969.