

# Household risk management strategies for coastal aquaculture risks: The case of clam farming in Thaibinh Province, Vietnam

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## PROBLEMS

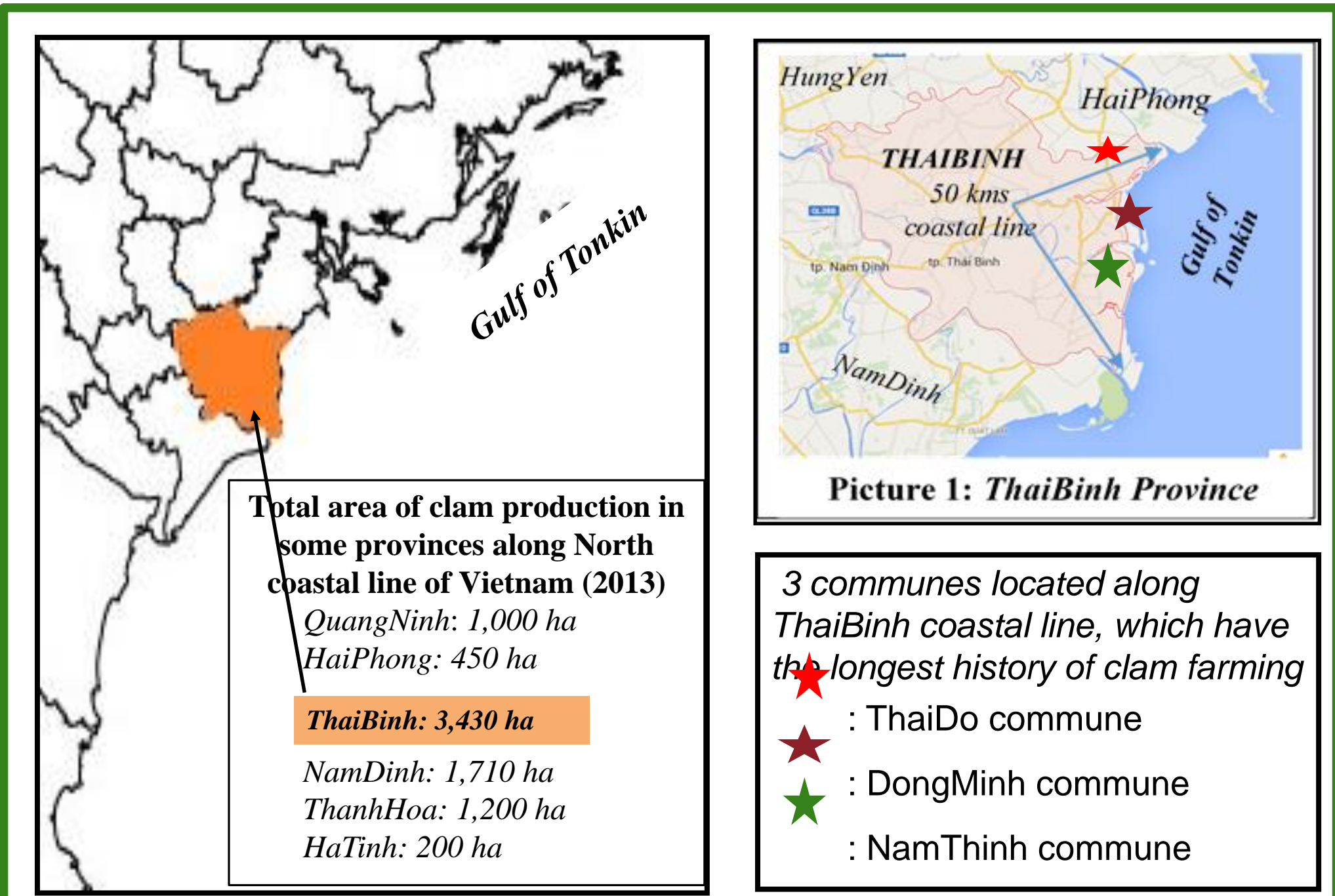
- With over 3,260 km of coastal line and 112 estuaries, Vietnam is the 6th country in the world in terms of the population living in coastal areas. Vietnamese aquaculture average growth rate estimated at over 17% from 2000 with export value of \$6,700 mil in 2015 (VASEP, 2016).
- Vietnam had been ranked as 18th position in world risk index ranking in 2014, with the vulnerability index is 52% (lack of coping capacities 77% and lack of adaptive capacities: 51%) (Mucke et al., 2014).
- Thaibinh province has the largest clam farming area and production among coastal provinces in the North Vietnam (Thaibinh DARD 2014). In period 06-12, clam farming positively contributed to improve the life of farmers in this coastal area. But since 2013, several shocks happened to clam farming sectors which significantly impacted to their livelihood
- In Thaibinh coastal area, farmers have to applied many household risk management strategies for the clam farming risks. However, not all of them succeeded with their strategies. Beside the group of farmers who gained a lot from clam farming, there were the farmers who seriously lose and could not be resilient.



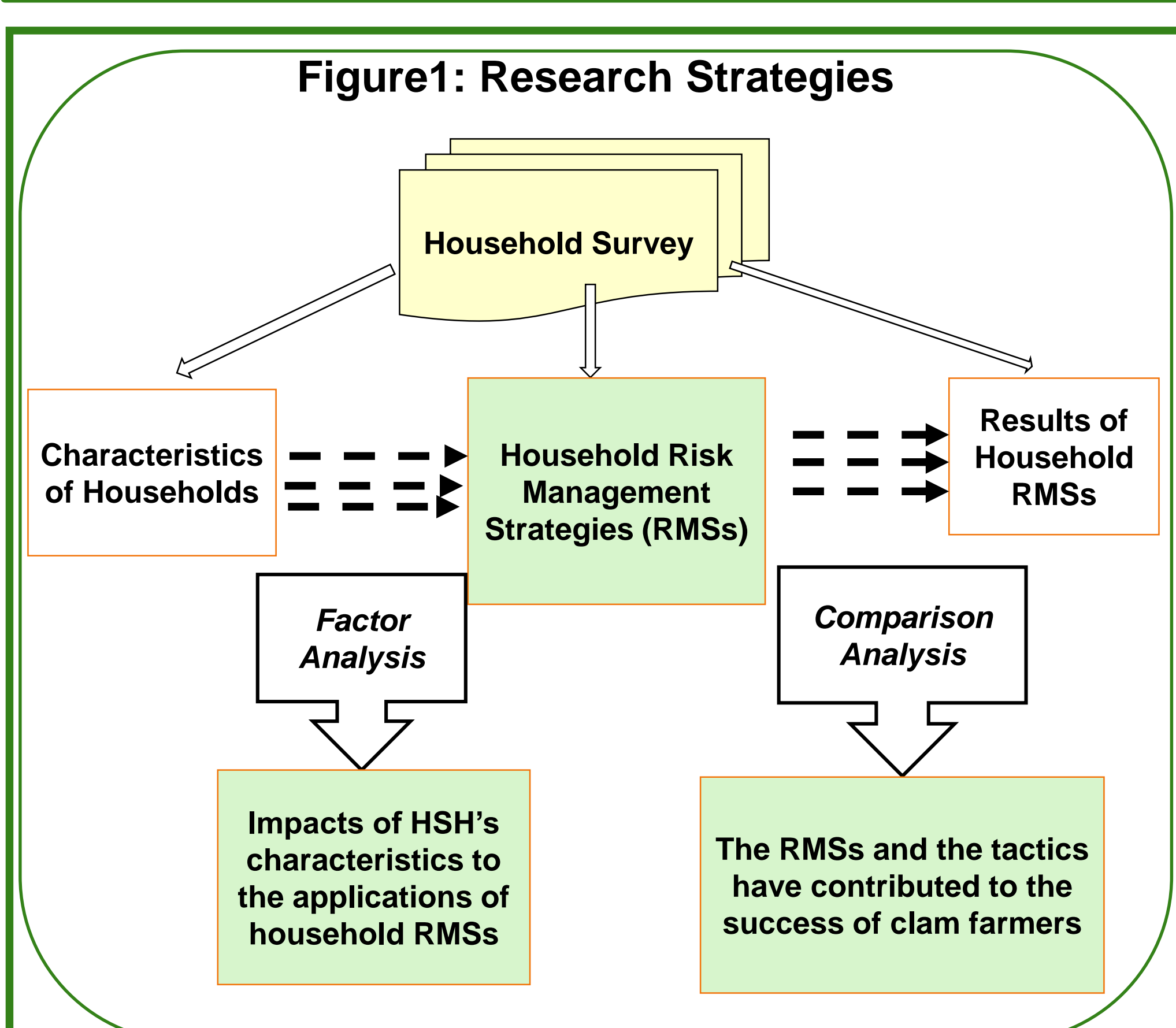
## RESEARCH QUESTIONS

- Which are the household risk management strategies for clam farming in Thaibinh coastal area?
- How did the household's characteristics impact to the application of their risk management strategies?
- Which are the strategies or tactics significantly contributing to farmer's success in their household risk management strategies?

## RESEARCH SITE



## METHODOLOGIES



### Data collection

- Focus Group Discussion (FGDs).** One FGD was conducted in each selected commune with a participation of 8-10 farmers having experience with clam farming; aimed to explore the name of HRMs which have been applied in research area and the characteristics of households which probably impacted to the applications of those strategies.
- Household survey:** had been carried out with the sample containing 157 households (randomly selected from 1310 clam households in 3 communes). The data about the cost, profit of clam farming, the application of HRMs and its tactics had been collected to measure the magnitude of damage with respect to mortality rate and loss as well as the result of those HRMs (period 2006-2014)
- Case study:** Several cases had been studied with in-depth interviews to explain for the quantitative analysis results from data of household survey.

## RESULTS AND DISCUSSIONS

### Basic characteristics of Clam Households (Time period: 2006-2014)

Figure 2: JUVENILE CLAM RAISING MODEL

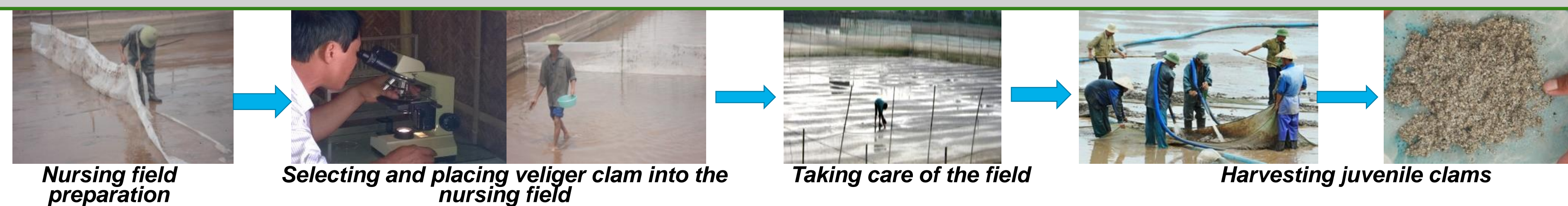


Figure 3: ADULT CLAM RAISING MODEL



- Notes:**
- Adult clam raising model: 1000 heads/kg --> 70 heads/kg; Cycle time: 18 months; Density: 500 heads/m<sup>2</sup>
  - Average invested capital for adult clam raising model in 18 months is 17,000 - 18,000 USD/ha

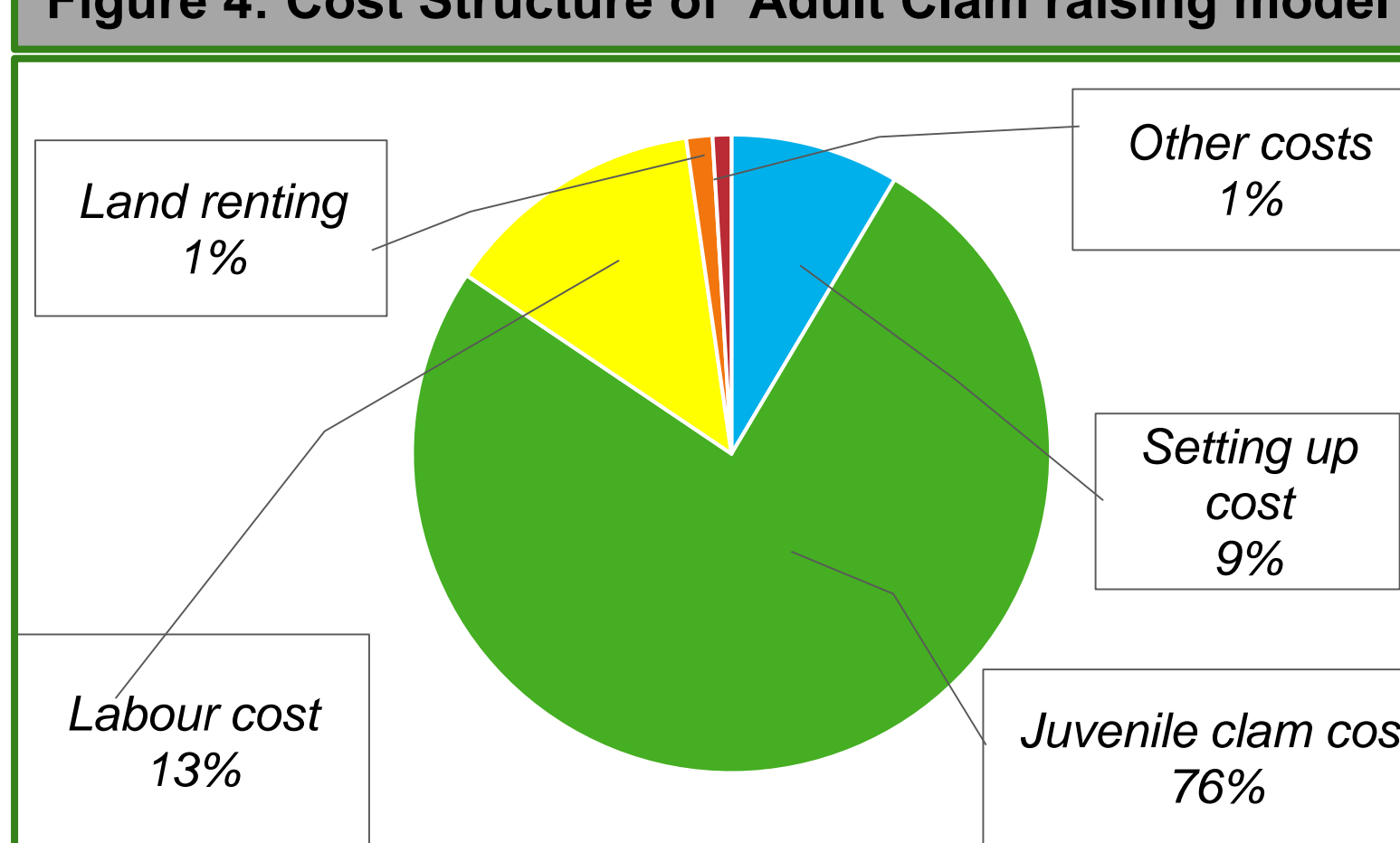
Table 1: Clam farming size

	Mean	Min	Max
Number of clam plot/HSH	Plots 1.82	1	5
Total clam production area/HSH	Ha 2.63	0.2	20

**Classification HSHs based on total clam production area of HSH**

- <= 1ha 30%
- 1ha < And <=2ha 27%
- 2ha < And <= 3 ha 20%
- 3ha < And <= 5 ha 13%
- > 5 ha 10%

Figure 4: Cost Structure of 'Adult Clam raising model'



### Other special characteristics of clam farming:

- Clam is extremely sensitive to the environment conditions, so that easily be impacted by the climate change.
- Clam raising model is kind of "Non-fed raising model" but very risky. In Thaibinh province, the probability of loss in clam production investment in each raising cycle is estimated at 52%.
- Biologically, after 18 months in field, clam products can be ready for sale. However, in reality, the length of clam crops have been heavily depended on market conditions.

Table 2: Household Risk Management Strategies in clam farming

Clam farming risks	Strategy	Tactics	Code of tactic	
Production risks	RMS1: Enlarging clam plots size	o Hiring land	T1.1	
		o Forming up share group	T1.2	
	RMS2: Actively controlling clam production by farming experience and innovation	o Choosing good place for clam plot (1) & harvesting the clam crop	T2.1	
		o Actively controlling the point for starting	T2.2	
		o Applying techniques innovations	T2.3	
Market risks	RMS3: Searching for more clam market channels, for both input and output market	o Actively searching for good juvenile clam source	T3.1	
		o Diversifying in clam selling channel (2)	T3.2	
	Financial Risks	RMS4: Diversifying livelihood activities	o Carrying out other aquaculture activities	T4.1
			o Carrying out rice production	T4.2
			o Carrying out livestock activities	T4.3
		o Carrying out other activities	T4.4	
	RMS5: Accessing to more secured sources of capital	o Using family/relatives saving money	T5.1	
		o Forming up share group	T1.2	
		o Trying in access the formal credit market	T5.3	

**Notes:**  
(1): Applied only in Dongminh and Namthinh commune

Table 3: Result of Households Risk Management Strategies (Period 2006-2014)

Result of clam farming	Percentage of households (%)		
Success in all clam raising seasons	15 <sup>(A)</sup>		
		Resilience after clam losses	
		Restarted <sup>(1)</sup> and Recovered <sup>(2)</sup>	Restarted but not Recovered yet
Success for more than 80% of clam farming investment <sup>(*)</sup>	5	5 <sup>(A)</sup>	0
Success for and less than 80% of clam investment	62	25 <sup>(B)</sup>	31 <sup>(C)</sup>
Lost in all clam raising seasons	18	0	13 <sup>(C)</sup>

- Notes:**
- Restarted: Household restarted a new clam crop after the loss in previous clam crop.
  - Recovered: The loss from previous clam crops had been covered by the profit of the clam crops started after that.
  - Farmer in FGDs revealed that if about 80% of their investment in clam farming is lost, then it does not effect on their cash investments (for juvenile clam, facilities), but no return for their labors. In this case, they can secure the capital for reinvestment on new clam raising season.
- (A): Group A:** Households had not been impacted, or had been slightly impacted by the risks and good resilience (31 households, accounted for 20%)
- (B): Group B:** Household had seriously impacted by the clam farming risks but had been able to restart clam production and recover from losses (39 households, accounted for 25%)
- (C): Group C:** Households had been able to restart clam production but had not yet recovered from losses and households had been unable to restart clam production (87 households, accounted for 55%)

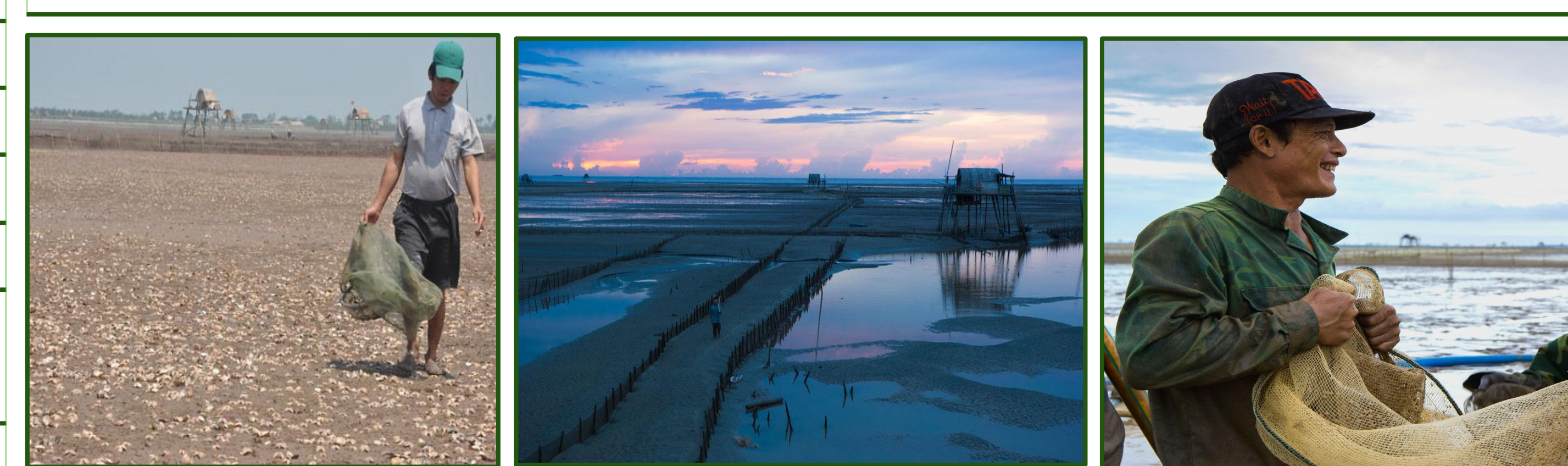
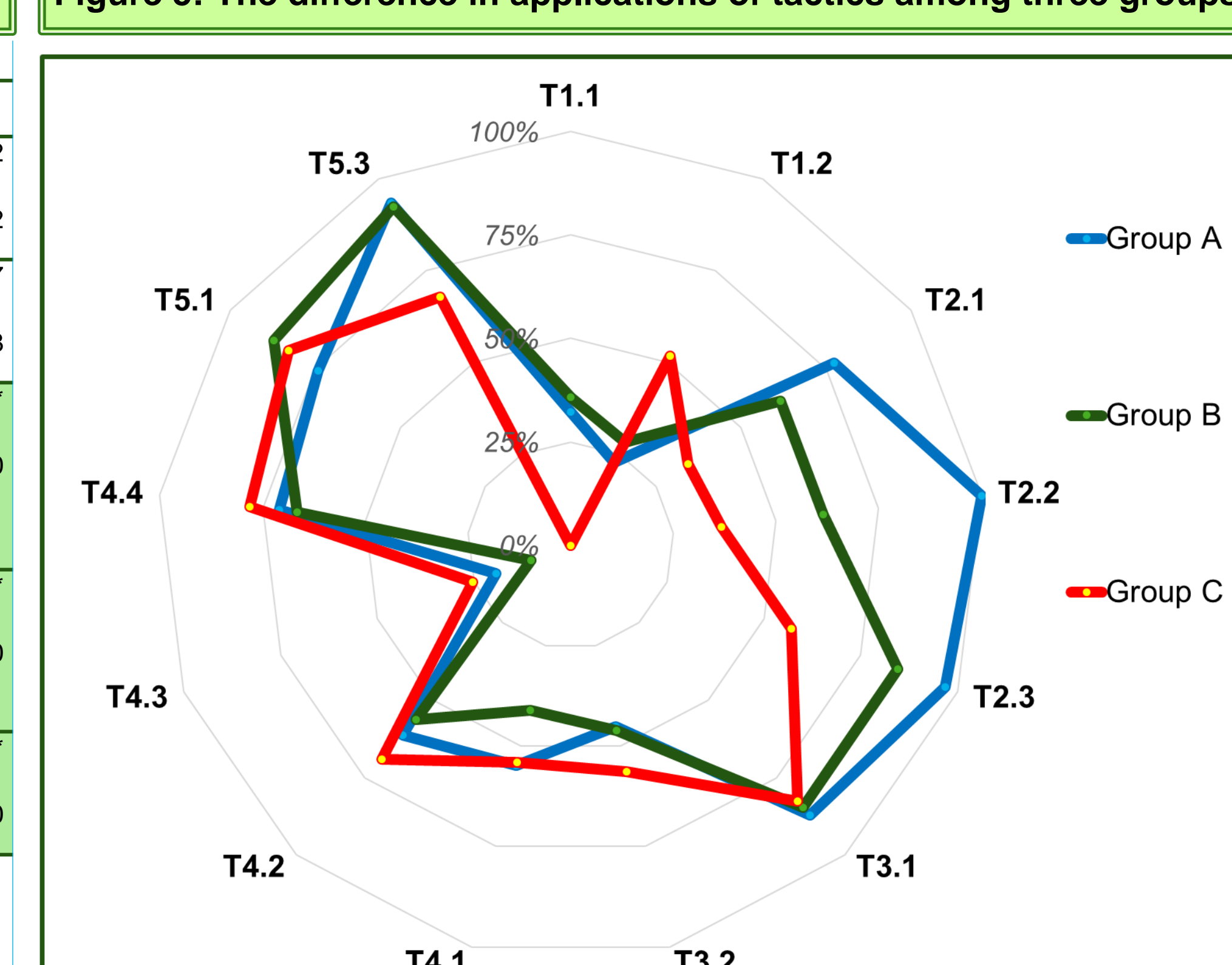


Table 4: Impacts of Households' characteristics to tactic applications

Household characteristics	TACTICS	TACTICS												
		T1.1	T1.2	T2.1	T2.2	T2.3	T3.1	T3.2	T4.1	T4.2	T4.3	T4.4	T5.1	T5.3
Average annual income	CC <sup>(*)</sup> Sig. (2-tailed)	.87***	-.65***	.47**	.47**	.57***	-.07	-.16	.10	-.56***	-.29	-.10	.15	.22
Education level	Kendall's tau-c	.00	.01	.02	.02	.00	.74	.46	.64	.01	.18	.67	.49	.32
	App. Sig.	-.09*	.25***	-.17**	-.04	-.09	.02	.16**	.24***	-.04	.08	.14**	.02	-.07
Experience about clam farming before starting own farm	Kendall's tau-b	.32***	-.02	.88***	.83***	.21***	.02	-.23***	-.09	-.17**	-.24***	-.12	.20***	.22***
	App. Sig.	.00	.77	.00	.00	.00	.84	.00	.24	.03	.00	.13	.01	.00
Learning experiences from other clam farmers	Kendall's tau-c	.24***	-.12	.91***	.92***	.33***	.04	-.24***	-.12	-.14*	-.20***	-.05	.14**	.257***
	App. Sig.	.00	.16	.00	.00	.00	.52	.00	.16	.08	.00	.49	.04	.00
Assessment about clam farming risks	Kendall's tau-c	.22***	-.14*	.50***	.44***	.29***	-.02	-.13	-.08	-.20***	-.18***	-.11	.11*	.46***
	App. Sig.	.00	.09	.00	.00	.00	.81	.14	.34	.01	.00	.14	.08	.00

**Notes:** CC: Correlation Coefficient of Spearman's rho Test  
\*\*\*: Correlation is significant at the 0.01 level  
\*\*: Correlation is significant at the 0.05 level  
\*: Correlation is significant at the 0.1 level

Figure 5: The difference in applications of tactics among three groups



## CONCLUSIONS

- There have been several HRMs were applied in clam households in Thaibinh coastal area, in which the strategies related to the clam farming technics and capital issues had significantly contributed to the success of farmers in coping with clam farming risks
- Some characteristic for clam households which have impacted to their application of HRMs, such as their family annual income, experience and their assessment about clam farming risks.
- To cope better with different risks in clam sector, besides the adjustment in RMSs of farmers themselves, it is necessary to have further interventions/policies from government (from national to local level) to address the aquaculture risks which the farmers cannot handle by themselves, such as (1) addressing the issue of polluted wastewater to the clam field; and (2) more focusing in supporting farmer in linkages to the both formal financial market and output market.
- In addition, supports for technical training targeting on improving farmer's skills and knowledge in farming decision making and market information is also of high value to clam farmers in coping with farming risks./

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