



Agricultural Development for Sustainable and Foreseeable Agroecology in the Red River Delta, Vietnam

Nguyen Thi Trang Nhung ^{1*}, Bui Hong Quy¹

¹Faculty of Accounting and Business Management, Vietnam National University of Agriculture, Hanoi 100000, Vietnam

*Corresponding author: nttnhung@vnua.edu.vn

1. INTRODUCTION

Red River Delta is seen as an important area of the economic & social development of Vietnam: 1,405.39 thousand ha of agricultural land. This area has mostly plain areas, fertile soil, mild climate, relatively developed infrastructure, high educational level, etc. However,

- Agri. development with improper activities => loss of environmental service & wild species extinction; farms discharge large quantities of contaminants (chemicals, organic matters, drug residues, sediment, etc.)
- Resultant water pollution pose demonstrated risks to aquatic ecosystems, human health & productive activities.

How the agricultural production in this delta are **designed** and **managed** to:

- Reduce the negative impacts of farming activities on the environment
- Enhance the positive impacts of conservation on the environment



Objectives:

This research has sought to analyze the agricultural development in the Red River Delta, Vietnam with perspectives on agroecology.

2. METHODOLOGIES

Time	Stakeholder	Sample (n)	Population (N)	Location	Information	Method
2017	Headers of agricultural cooperatives	05		Communes	- Objectives - Agricultural issues	Key-informant
2017-2018	Integrated Aquaculture Mangrove (IAM) farmers	84	102	Communes	Agroecology approach (Objective-Practices-Outcomes)	Structure questionnaire
	Intensive shrimp (ISH) farmers	54	64			
	Rice-based (RB) farmers	96	2,337			
2019	Farmers	11 (05 RB, 03 ISH, 03 IAM)		Communes	Constraints	RAAIS: Multi-stakeholder workshop
	Authorities	8 (03 staff, 02 technician of input companies, 03 district-communal authorities)		Communes	Causes of constraints	RAAIS: In-depth interview
	Farmers	234 (84 IAM, 54 ISH, 96 RB)		Communes	- Effectiveness of agricultural advisory services on farming activities.	RAAIS: Site visits

3. RESULTS

3.1 Objectives of Stakeholders

Objectives	Farmers	Communes
Increase yield	Primary	Primary
Increase profit	Primary	Primary
Maintain employment	Primary	Primary
Reduce chemical fertilizers	Secondary	Secondary
Reduce chemical pesticides	Secondary	Secondary
Reduce agricultural waste/sludge	Secondary	Secondary
Improve other env. quality	Secondary	Secondary

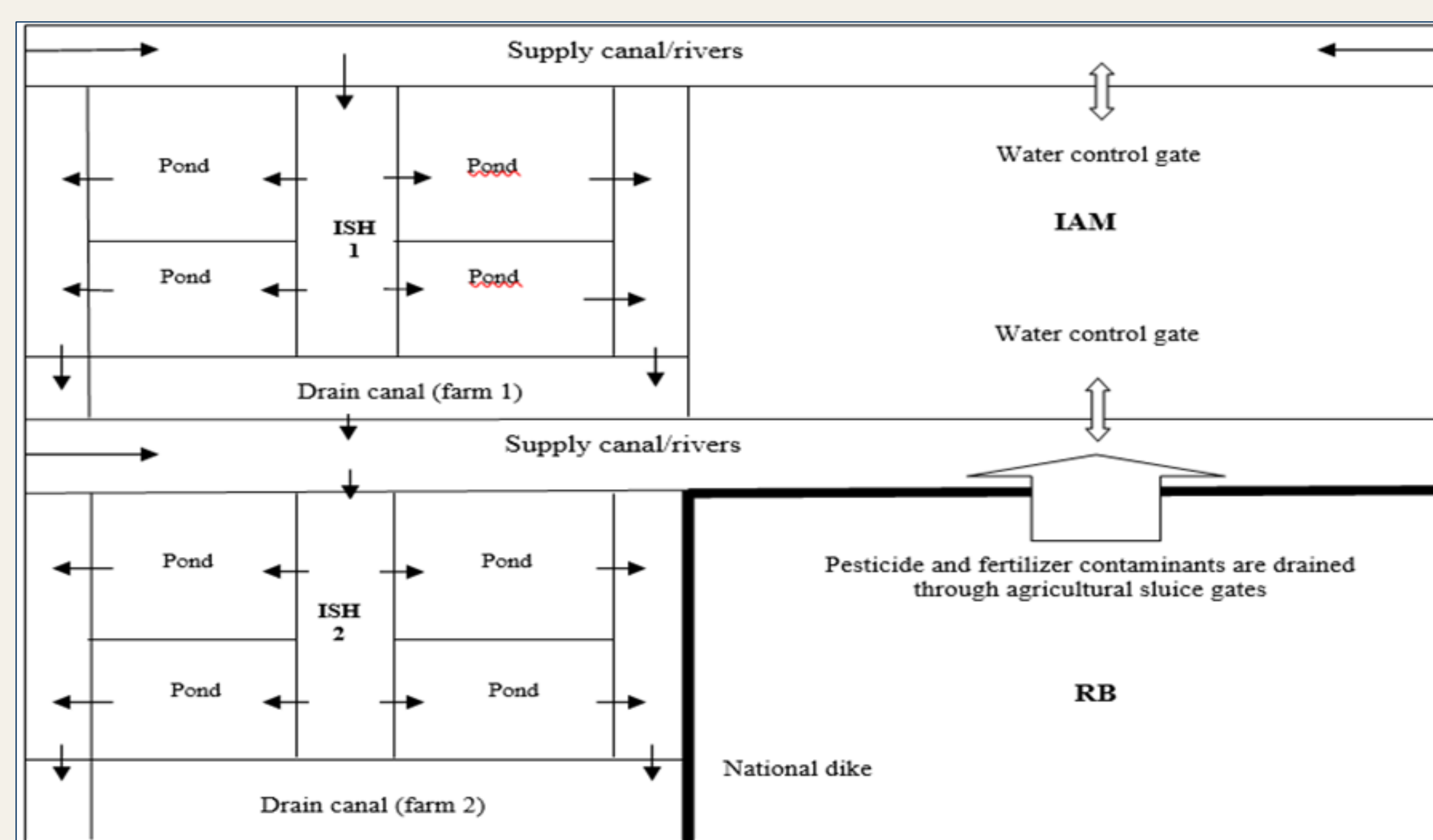
3.2 Farm Design and Management Practices

Diverse farming systems:

ISH: Intensive shrimp pond

IAM: Integrated aquaculture mangrove pond

RB: Rice-based



INTENSIVE SHRIMP (ISH)



INTERGATED AQUACULTURE MANGROVES (IAM)



RICE-BASED (RB)



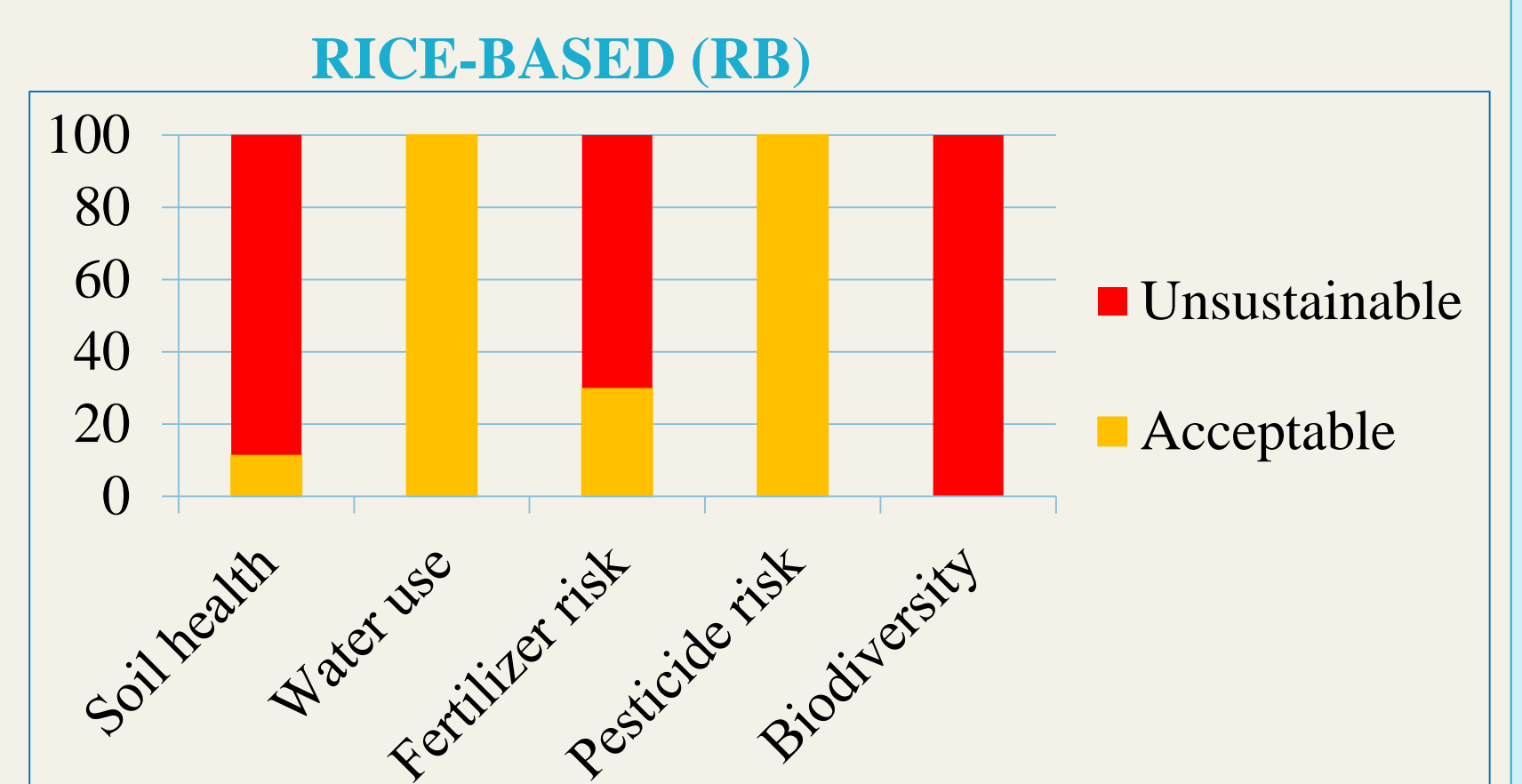
3.3 Outcomes toward agroecology

➢ Economic outcomes

	IAM	ISH	RB
1. Total revenue*	32.99	1,017.00	124.79
2. Total cost*	13.29	695.39	104.31
2.1 Variable cost*	10.70	643.66	103.20
Labor (hired & family)	4.48	73.98	61.66
Seeds	5.72	96.89	3.15
Feeds	0.75	243.11	-
Lime & sand	0.20	28.73	-
Drugs & chlorine	-	17.31	-
Antibiotics	-	42.33	-
Pro-biotic & supplement	-	77.02	-
Electricity & oil	-	64.29	-
Fertilizers	-	-	15.68
Pesticides	-	-	6.21
Rented machinery	-	-	16.50
2.2 Fixed cost*	2.59	51.73	1.11
Land annual rental	0.35	1.5	1.11
Interest on loans	0.40	16.93	0.00
Repairs	1.21	0.00	0.00
Depreciation	0.63	33.30	0.00
3. Net Farm Income*	19.70	321.17	20.48

❖ ISH gained highest level of income, so it becomes incentive for farmers and communes

➢ Environmental outcomes:



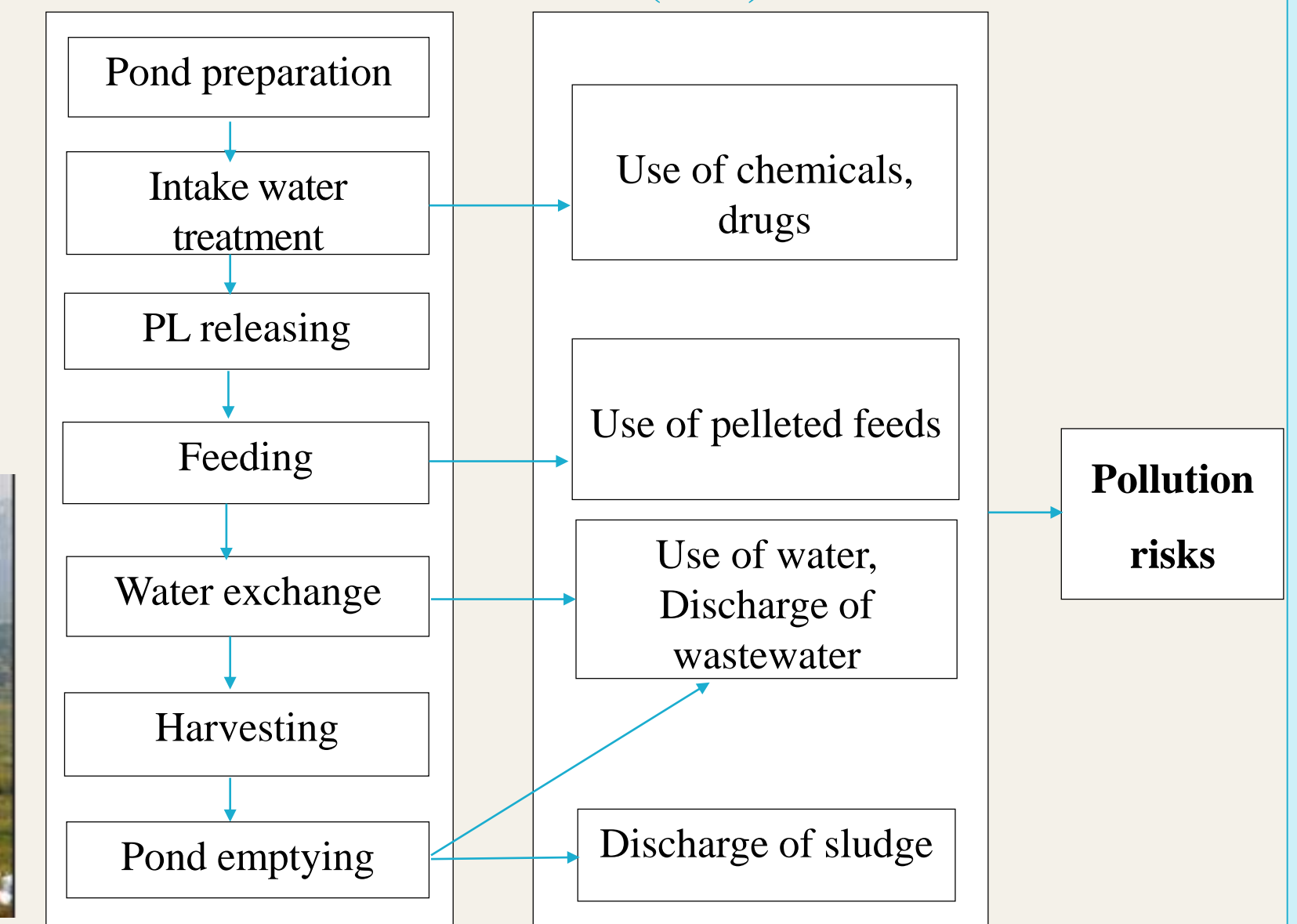
❖ None of ecological outcomes gains sustainable level, more % of farmers practices at unsustainable level (Traffic light method)

INTERGATED AQUACULTURE MANGROVES (IAM)

Wild-caught use	IAM (number of respondent)
>50%	72
From 25-50%	12
< 25%	0
No use	0
Biodiversity loss rate (BDL)	0.28

❖ The risk of biodiversity loss (BDL = 0.28): farmers use hatchery-produced seeds and capture wild fries (wild-caught post-larvae crabs/shrimp/fish) & use of miscellaneous habitats for feeding.

INTENSIVE SHRIMP (ISH)



❖ Diverse risks from use of chemicals, drugs, pelleted feeds, discharge of waste & sludge

3.4 Causes of constraints (RAAIS method)

- Poor policy development toward environmental protection:
- + Environmental protection is recognized, but works in practice focus mainly on orientation of intensification, high yield/farmed outputs (economic growth is given much ambitious)
- + Low enforcement capacity of regulatory
- + Environmental standards are recognized, but they have not materialized
- Agri. Advisory Services: not satisfied the plentiful needs of local farmers or improved the economic - environmental outcomes
- + Role of communes in development - conservation: not fully operated
- Knowledge and adoption agroecology: deficient

4. IMPLICATION

