

International Conference on Climate Change Impacts and Adaptation for Food and Environmental Security

LIVELIHOOD CAPACITY AND ADAPTIVE STRATEGIES TO CLIMATE CHANGE OF RICE – BASED FARMING HOUSEHOLDS IN THE MEKONG DELTA, VIETNAM

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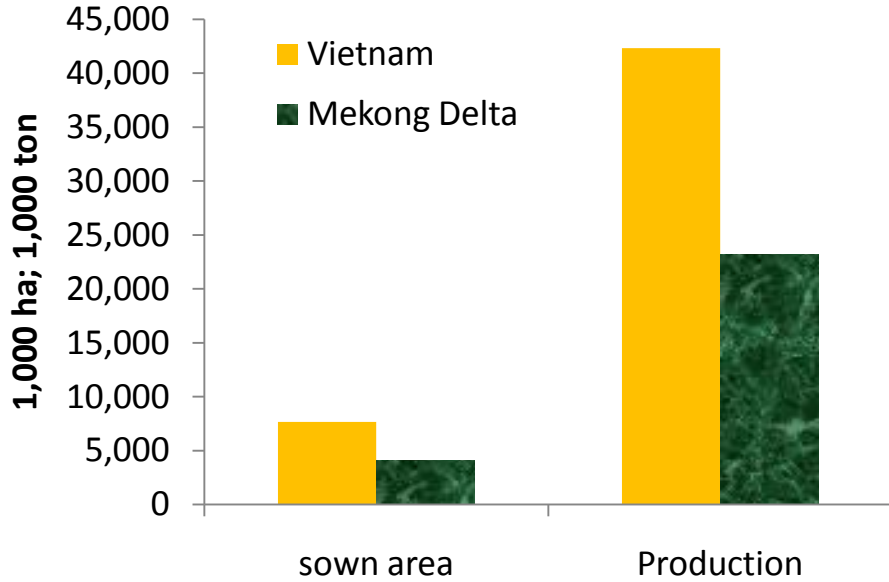


Outline

- Rationale
- Objectives
- Methodology
- Results & discussion
 - Livelihood capitals
 - Main hazards & responses
 - Rice variety – communication pathway & preference
- Conclusion & Implication

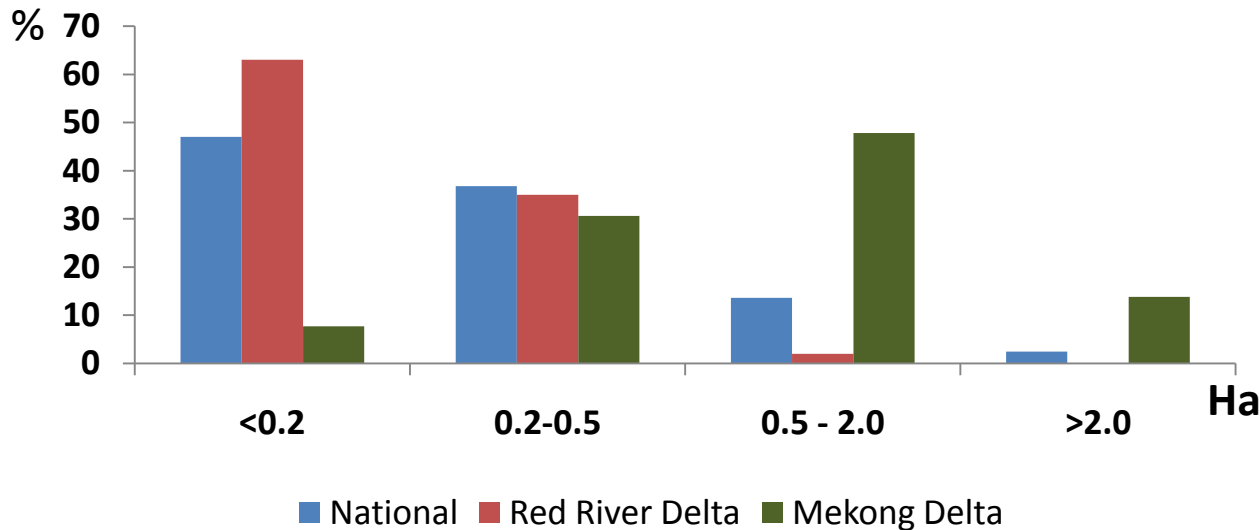
Rationale

Rice production in the Mekong Delta



- Export and Food security
- Small farmsize
- Climate change

Source GSO, Vietnam (2011)



Livelihood assessments – why ?

- Rice and rice-based farming being highly vulnerable to weather and/or hydrological extremes
- Farming activity = a component of household system:
 - Improved adaption of farming activity = improved adaptation of household → livelihood capacity
 - Livelihood elements: household and community or higher level
- Livelihood assessments in the context of “CC”:
 - Strengths ?
 - Weakness ?
 - Needs for further improvements ?

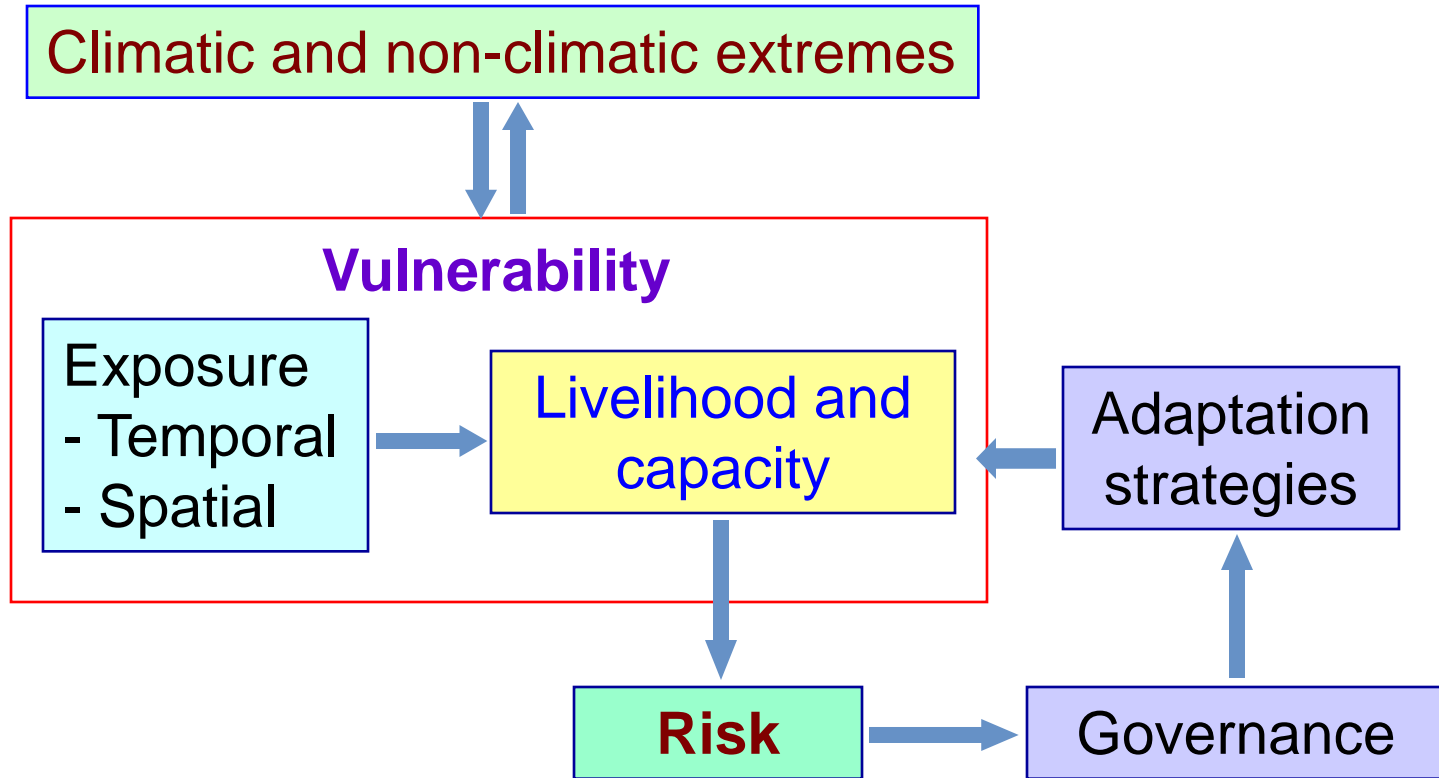
OBJECTIVES

Livelihood assessments aim to:

- Identify the biophysical and socio-economic factors that enable and constraint the capacity of farmers to adapt to climate change
- Identify needs for adaptive livelihood strategies of households

Methodology

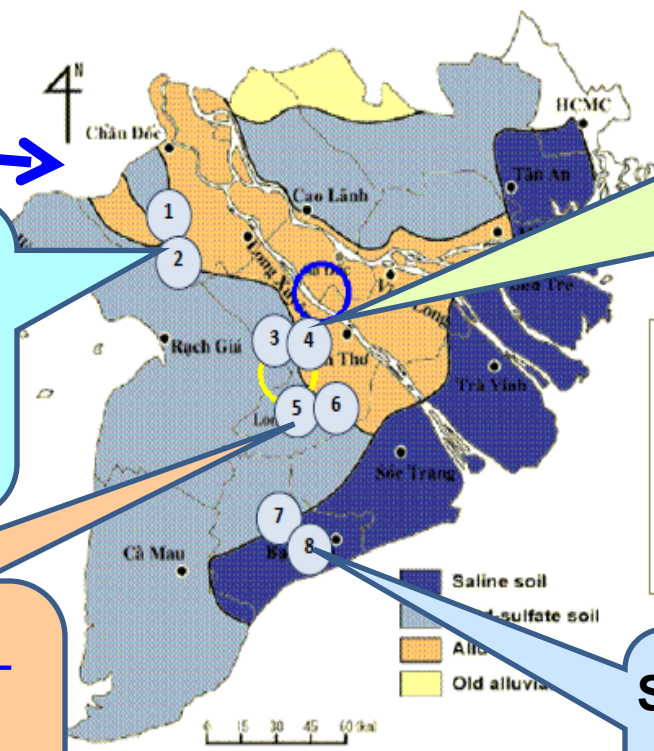
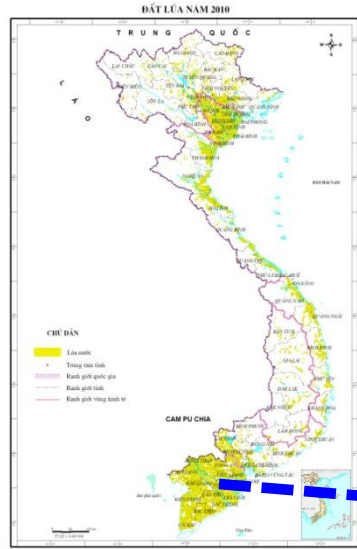
Conceptual framework



(own drawing based on Birkmann et al 2012)

Selection of sites, farming systems and households

- 4 zones x 2 sites (favourable and unfavourable)
- 6 farming systems
- Household livelihood surveys (HLS): 480 households



Flood zone:
 - 2 rice, 3 rice & 2 rice-vegetables
 - 99 households (HLS)

Alluvial zone:
 - 2 rice, 3 rice, 2 rice fish & 3 rice-fish
 - 139 households (HLS)

Acidic zone:
 - 2 rice, 3 rice, 2 rice-vegetables, 2 rice-fish & 3 rice-fish
 - 137 households (HLS)

Saline zone:
 - 3 rice & rice-shrimp
 - 78 households (HLS)

- Research site: ①...⑧
- 1: Ta Danh
 - 2: Vinh Trach
 - 3: Truong Xuan A
 - 4: Thoi Tan
 - 5: Hoa An
 - 6: Vi Dong
 - 7: Phuoc Long
 - 8: Minh Dieu

Data collection and analysis

Considered data related to:

- Household's livelihood elements
- Communication pathway of new technology accessibility
- Risk management strategies to natural hazards
- Farming inputs and outputs

Data analysis:

- 2-way ANOVA: zone x site
- Determinants of income and adoption of new technologies

Results & Discussion

Household's livelihood – human capital

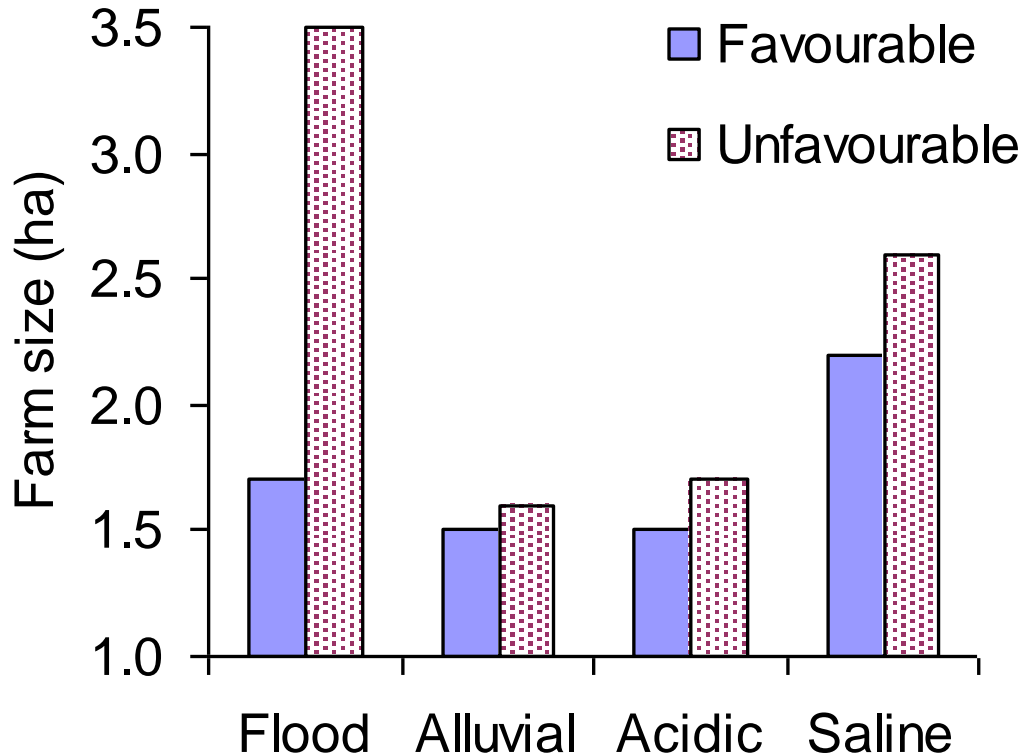
Low availability of farm labour and low perception of female on “CC”

- Household size: 4.4 members – delined !
- Family labour: 3 (2 engaged with farming)
- Low availability and poor accessibility of rural labour
- ➔ new technologies: labour-extensive

- Poor perception of HH's female on “CC” and adaptive strategies
- ➔ Increased participation of female in new technology development

Household's livelihood – natural capital

Smaller farms in alluvial and acidic zones



Rice fields sharing > 80% of farm land

- Relatively smaller farms in alluvial and acidic zones → rice intensification pressure ?
- ➔ Farming diversification and improved resource uses in those zones ?

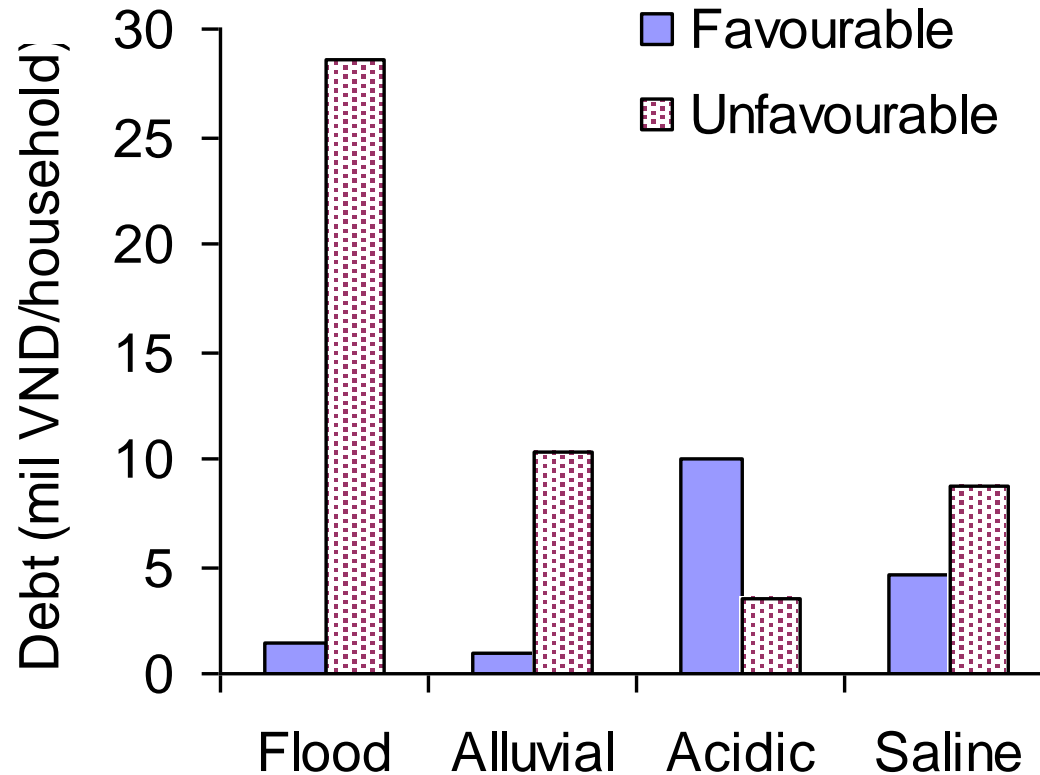
Household's livelihood – physical capital

High availability of communication but low availability of farm and sanitation facilities

- > 90% owning TV & phone
 - ➔ future extension channel
- <10% owning farm implements (tractor, rice harvester) ➔ promote farm input services and farming organization ➔ policies and institutions ?
- 50 -60% having sanitation and safe water storage facilities ➔ human health
 - ➔ agro-chemical uses and farm resources management for future farming practices

Household's livelihood – financial capital

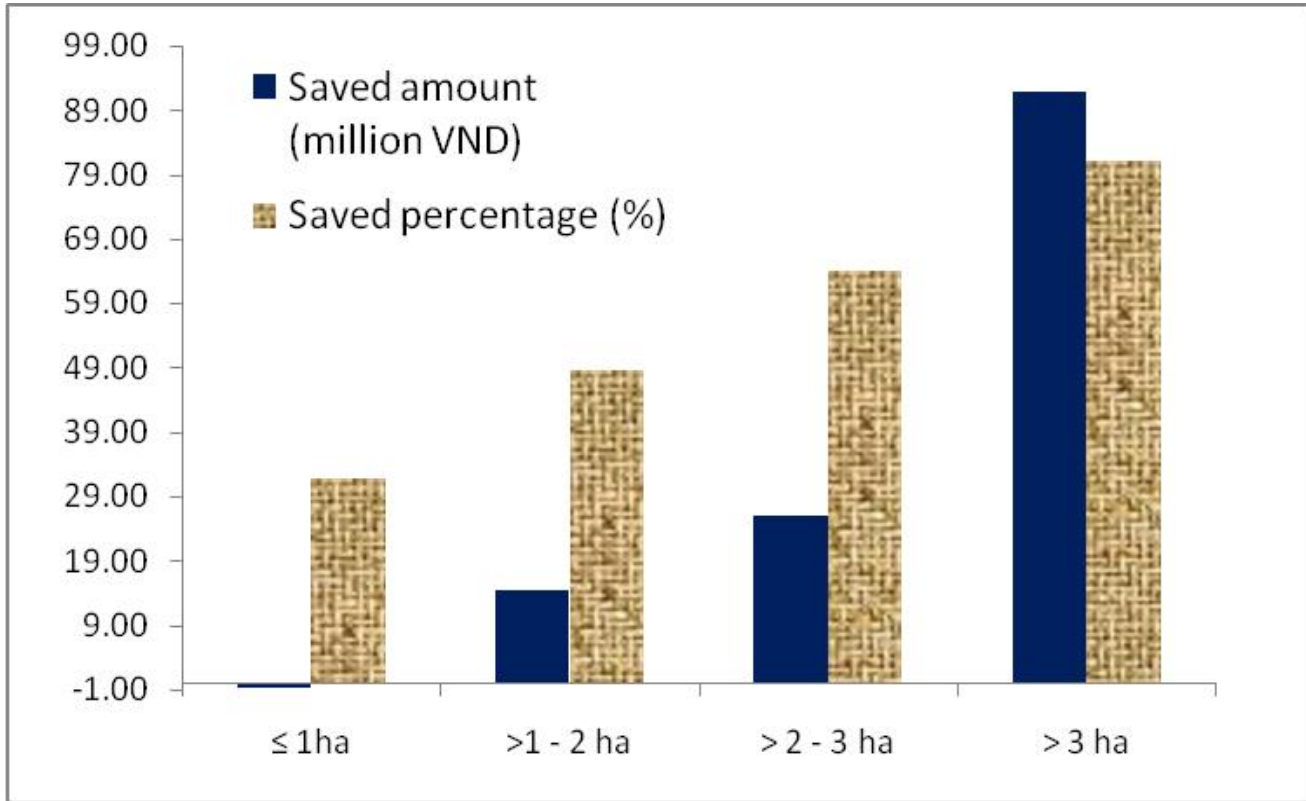
Being in debt and a need for favourable micro-credits



- > 80% household in debt → favourable micro-credit programs with in-kind loan going along with new technology development → poor farmers

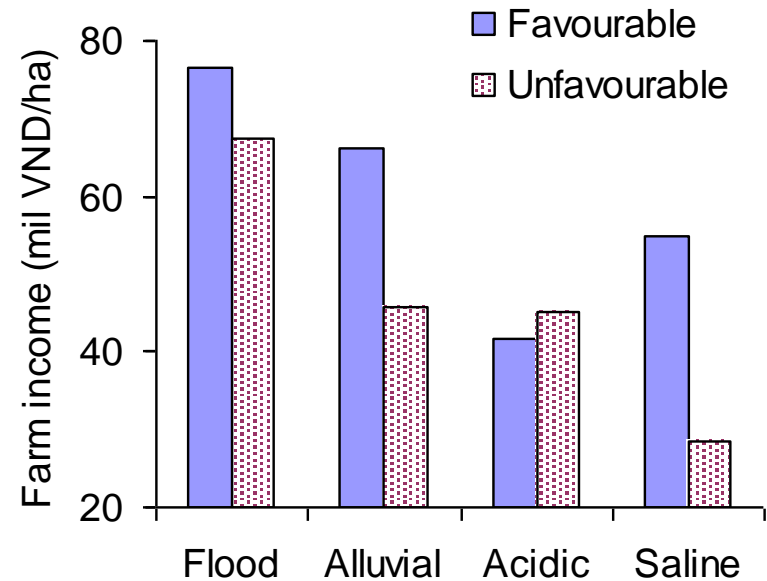
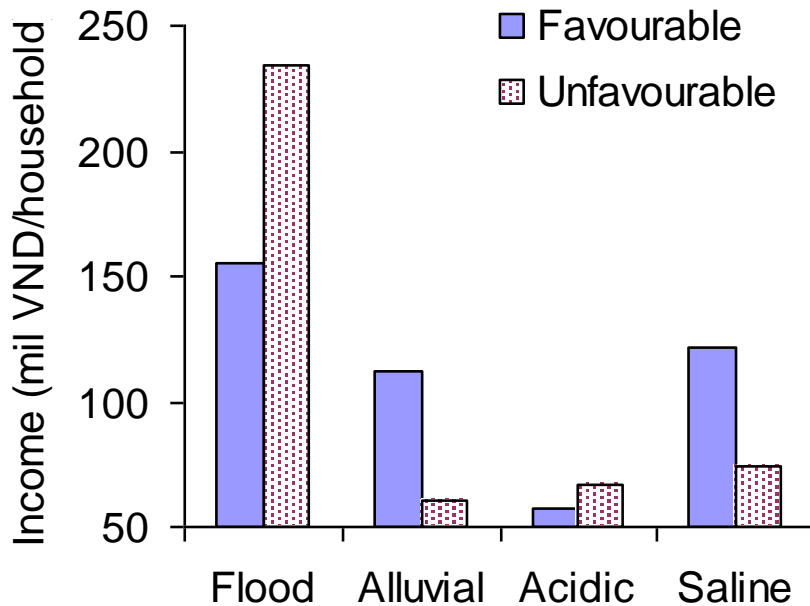
Household's livelihood – financial capital

*No and small saving amount of the small-land holder
 → highly vulnerable → need micro-finance program
 for small farm holders*



Household's livelihood – financial capital

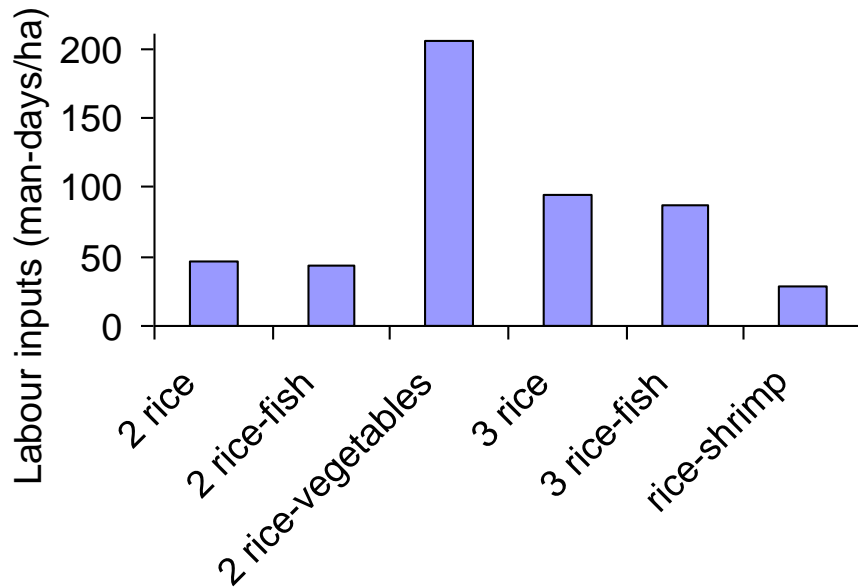
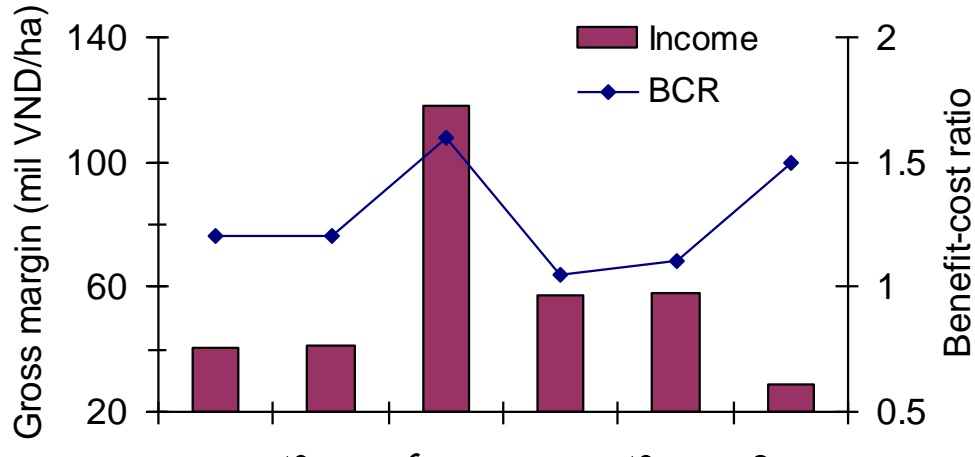
Farm resources use efficiency being declined to the downstream



- Low household income in alluvial, acidic and saline zones
- In flood and saline zones, land use intensity strongly contribute to household income
- Economic efficiency of farm resource uses being lower towards downstream → natural and human capital ?
more vulnerable to hazards ?

Household's livelihood – financial capital

Land use intensity and sustainability of farming systems



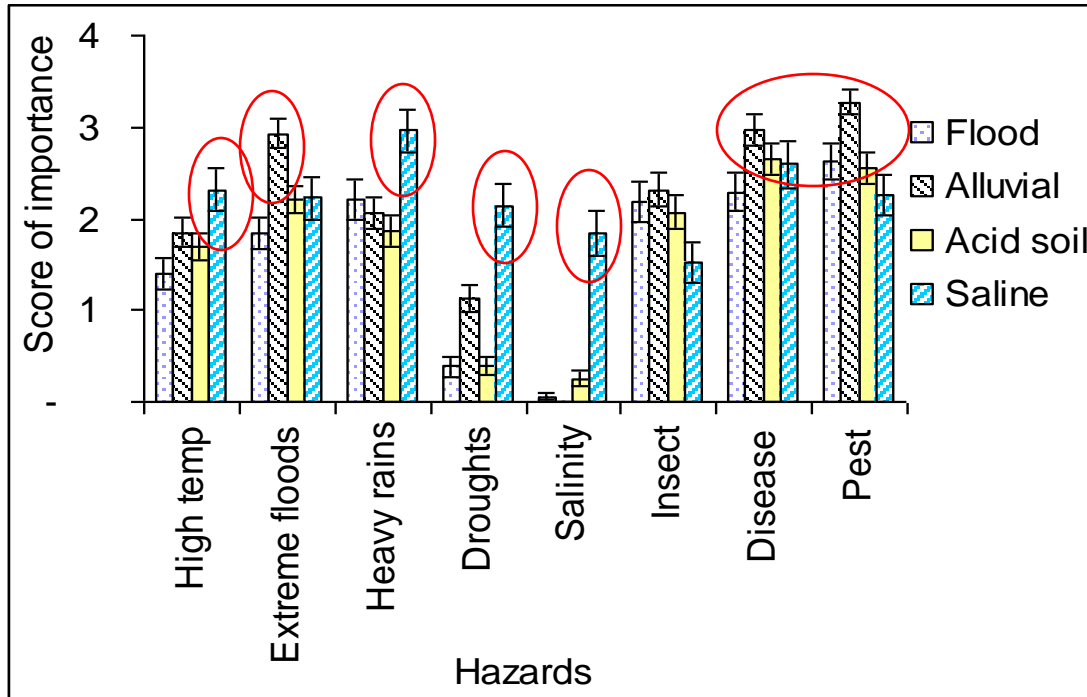
- Rice-vegetables: promising BUT labour and market !
- Rice-fish: the use of dikes?
- 3 rice: long-run sustainable ?
- Rice-shrimp: improve rice component?

Household's livelihood – social capital & communication pathways

- 17 - 33% participate in agriculture-related CBOs;
the percentages are lower:
 - towards the downstreams
 - in unfavourable sites

→ contributing to resources use efficiency?
- TV and neighbour: important channels of accessing to weather and new rice variety information
- Role of informal institutions in increasing adaptive capacity

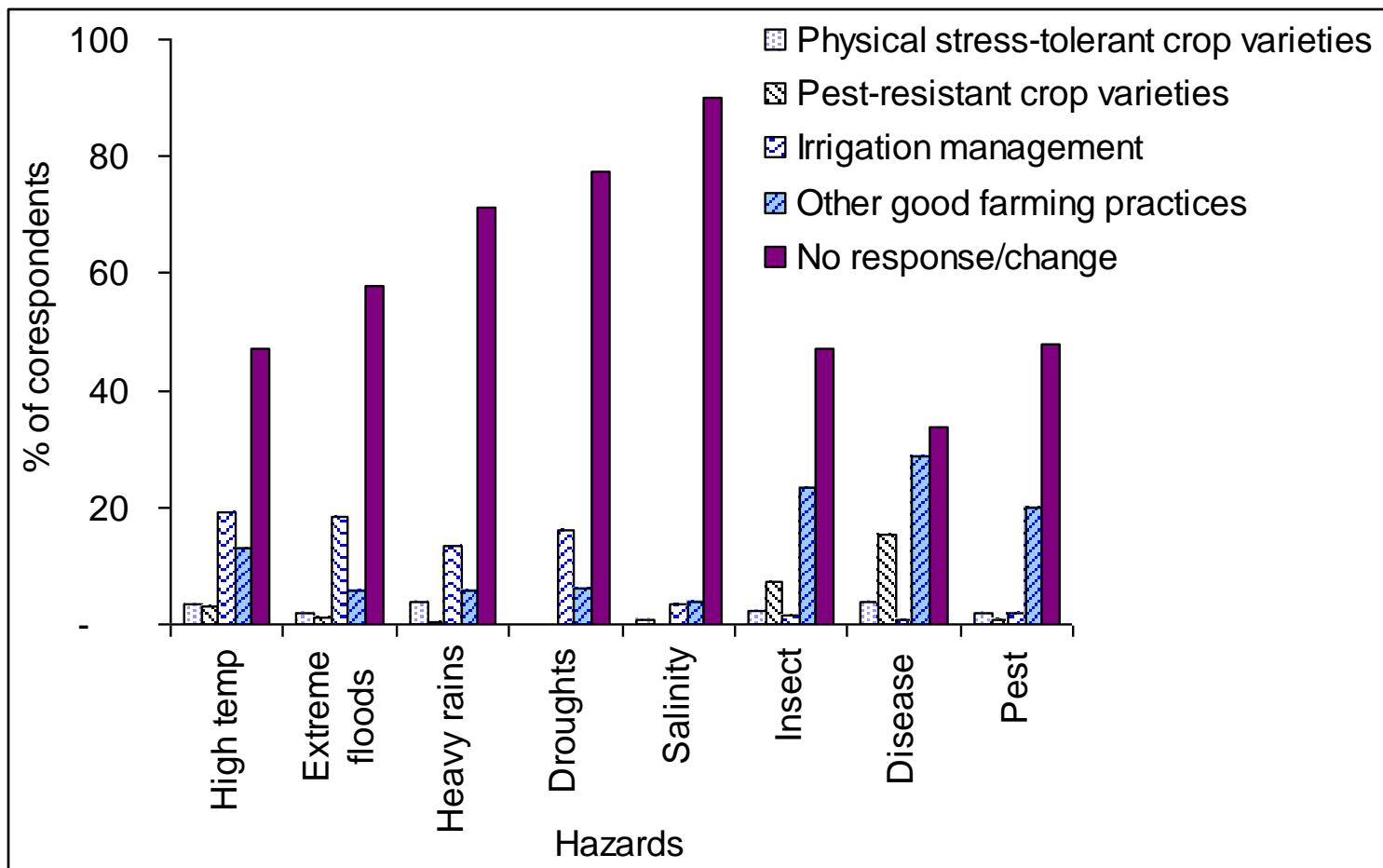
Main hazards by zones



- Flood zone: disease, pest, insect, flooding?
- Alluvial zone: flooding, disease and pests
- Acidic zone: flood, pest, disease?
- Saline zone: heavy rains, droughts, salinity

Responses of households to hazards

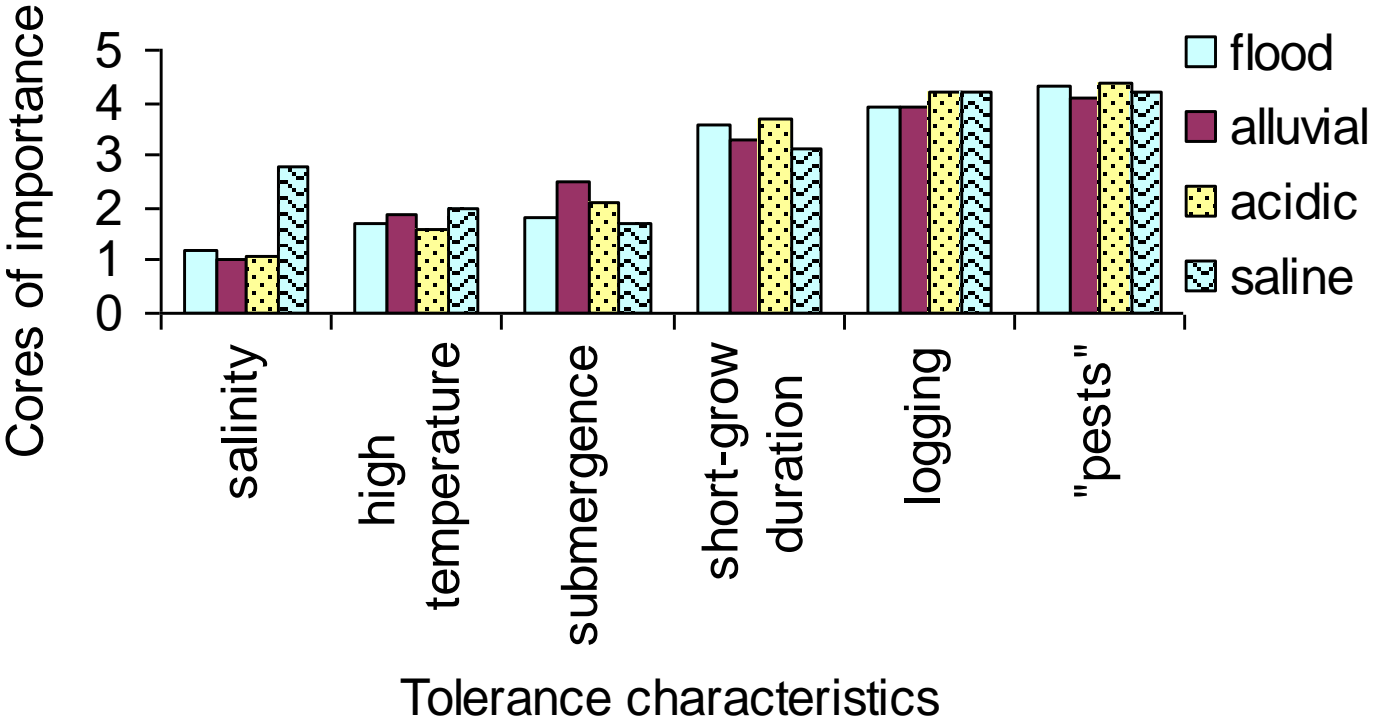
Coping rather than adaptation



- Low response to hazards - coping rather than adaptation
 - More attention to rice “pests” and water on-farm management
- ➔ Weaknesses in internal & external livelihood capacities?

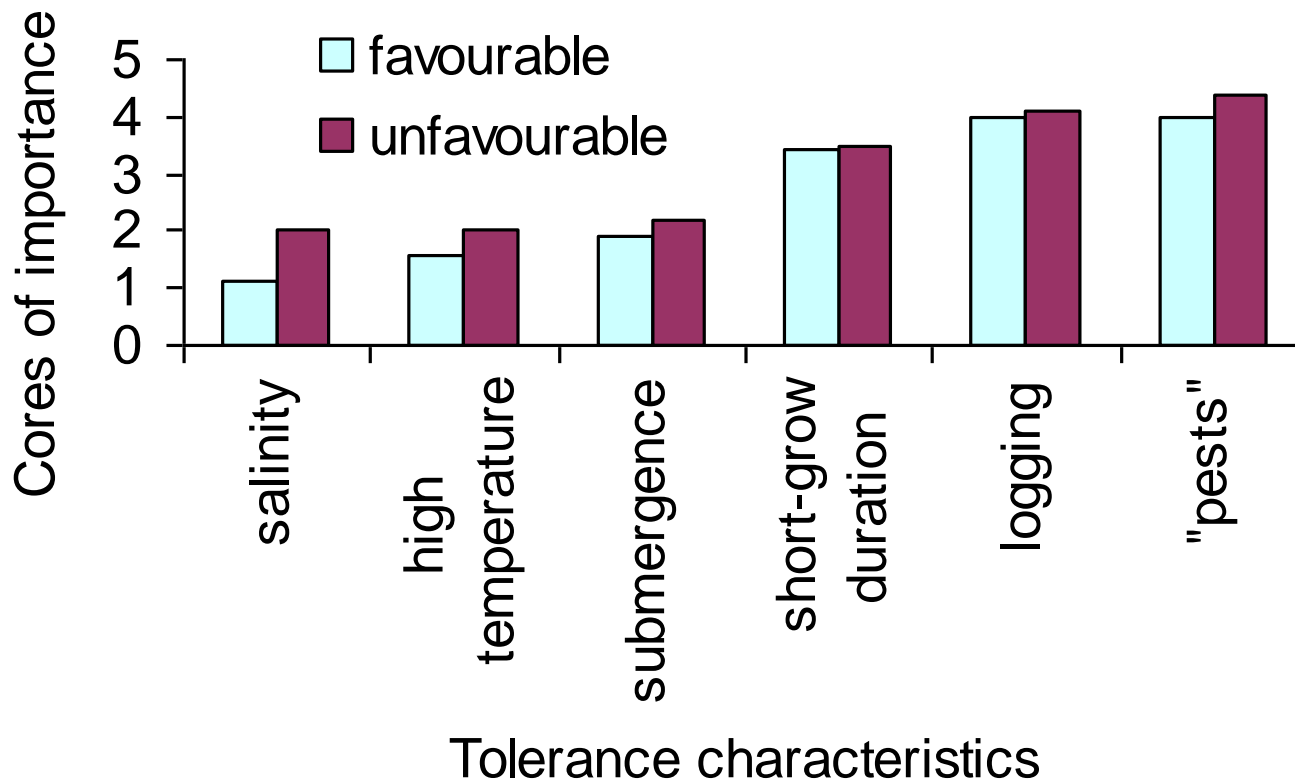
Farmers' preference for future rice varieties

Inclined to coping and intensification



- being inclined to short-growth duration, logging and “pest” tolerance
- Adaptation perception, availability of and accessibility to information/services for rice variety?
- Role of water management structures

Farmers' preference for future rice varieties *towards coping and intensification*



Conclusions and implications

- Farmers have encountered a combination of climatic and non-climatic extremes.
 - integrated solutions to adapt to changes
- Climatic extremes: rains, droughts, salinity and flooding, which are strongly influenced by water infrastructure and land use types.
 - Structural investments and land use planning by the government are of importance, which strongly determine needs of technology innovation and adaptive capacity.
- Livelihood elements and institutions → adaptive capacity: weaknesses and strengths are site-specific
 - New technology development needs going along with livelihood capacity building and institutions

Conclusions and implications (cont.)

- The closer to the downstream the more vulnerable to hazards, resulting from a combination of livelihood and biophysical constraints
- Priority actions in saline and acidic zones ?
- Improve land use intensity through rotational and/or integrated farming systems could be an option for improved rice-based farming systems
- Considering:
 - Output market
 - Labour
 - Organization and input services
 - 3 rice cropping: short-term BUT not long-term
- Technological innovation uptake by farmers are strongly influenced by both internal and external factors of household system.

Thank you for your attention!