

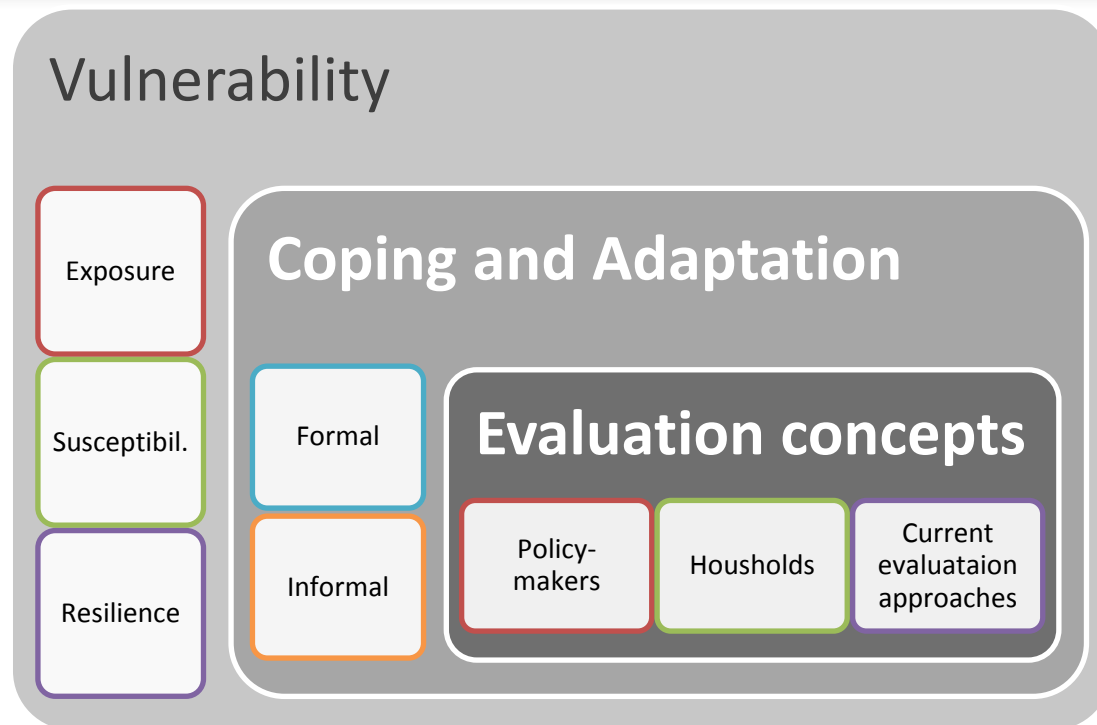


Evaluating coping and adaptation processes in the light of change

An analysis of formal and informal strategies in the context of flooding and salinisation in rural areas of the VMD

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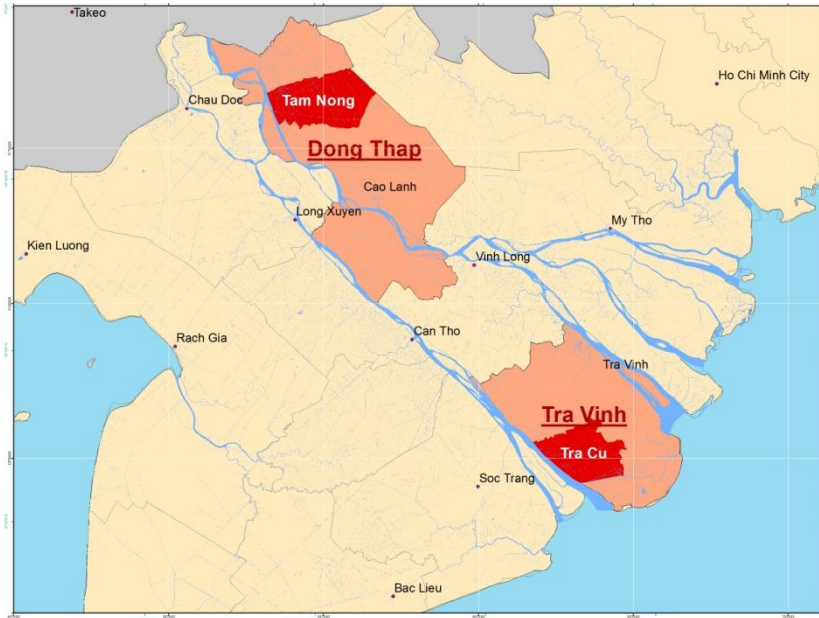


Main research questions

- How do and could formal and informal stakeholders cope with and adapt to flooding and salinisation related hazards?
- How are these strategies evaluated by different stakeholders and what implications arise for decision rational and their outcome?
- What is successful coping and adaptation and how can it be strengthened?

Concept	Research field
Social ecological systems	Vulnerability approach
	Coping and adaptation context
	Multi-scale interactions and interconnectivities
	Social-ecological outcomes
Actor-orientation	Risk perception as motivational energy
	Stakeholder-specific priorities and evaluations
	Decision-making processes
Institutions and governance	Interaction between formal and informal agents and processes
	Compatibility of formal and informal goals
	Conflicts and negotiations between agents due to differential distribution of costs and benefits

• Dong Thap:



- Most flood-prone region in the Delta
- Flood-related resource base
- Changing flood context due to flood-related interventions and changes in the flood regime



• Tra Vinh

- Exposed to salinity and tidal flooding
- At risk of sea-level rise
- Regulated water-environment
- Socio-ethnic differentiation



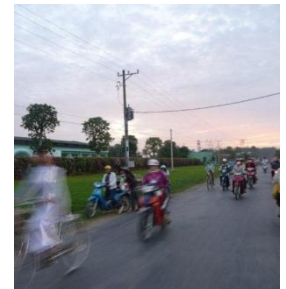
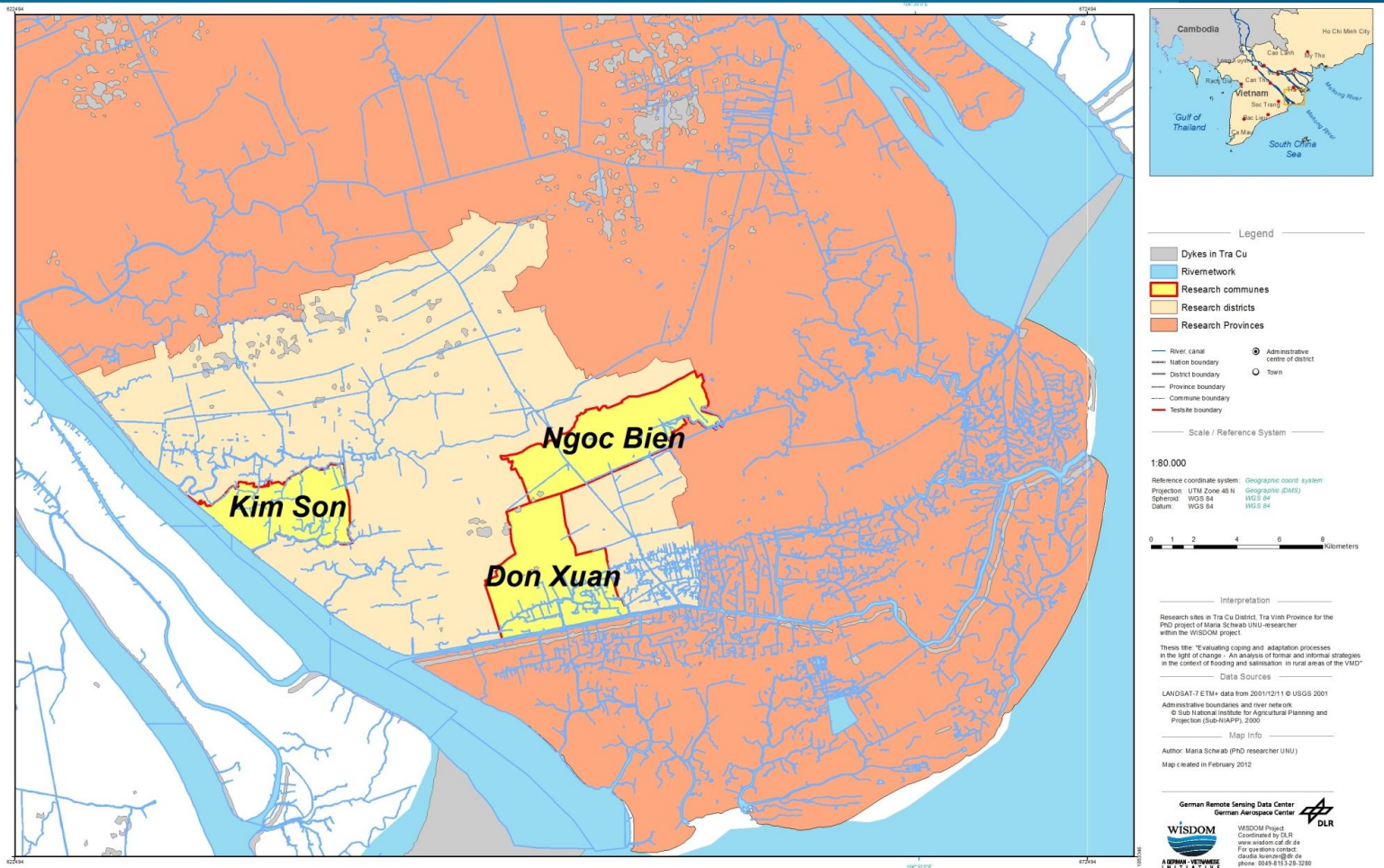
• Research sites

- **Research in DT not possible** => Focus on Tra Vinh
 - no answer to permit request

• Research focus

- **Interconnectivities**
 - Replacement by intraprovincial conflict in regard of sluice gate operation
- In-depth **analysis of some adaptation strategies**
 - Production structures
 - Migration
- **Different hazard- and socio-economic patterns**
 - Selection of communes with different risk profiles within Tra Cu district

Research sites in Tra Cu District

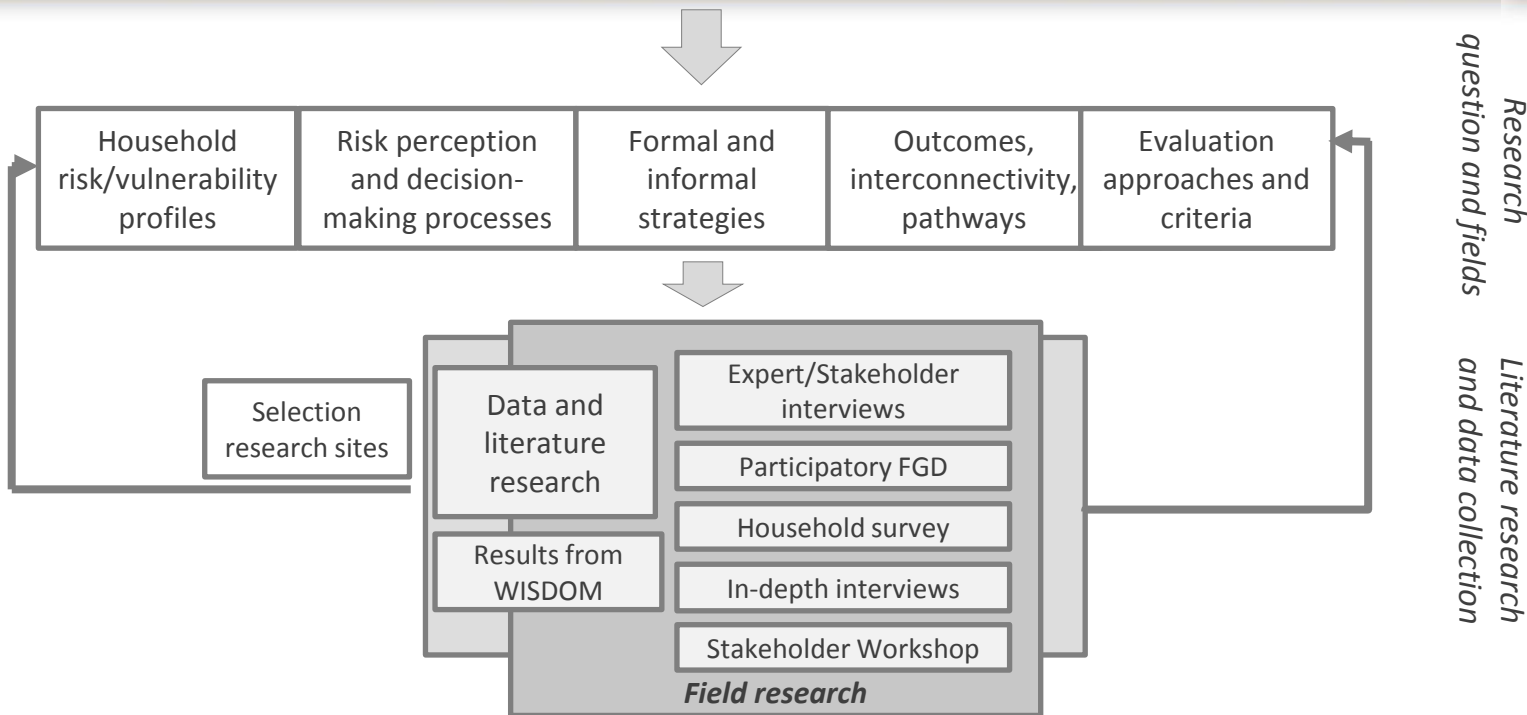


Main research tasks:

Examine and evaluate different coping and adaptation strategies of selected stakeholders in rural areas in the context of climate change and natural hazards.

WISDOM

A German - Vietnamese Initiative



Jan 2011 –
Sept 2011

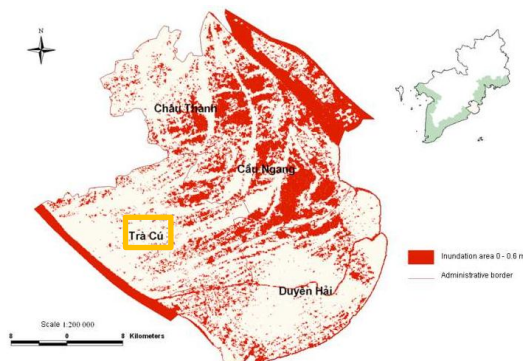
Sept 2011 –
May 2012

May 2012 –
Spring 2013

Spring –
Autumn 2013



Inundation in Tra Cu in case of 0.6 m of SLR



Source: LeAnh Tuan 2010
(Data: SIHYMETE 2009)

Salinity in case of 1 m in the VMD



Saline ranks



Source: Le Anh Tuan 2010 (Data: SIWRP,2008)

- Hazard patterns in 2011
 - **Salinity levels** were higher than in any other years in this decade and came unexpectedly early
 - **Flood tide** also was most severe compared to the last decade
- Changes in hazard patterns
 - Prediction of an inundation of 6% of Tra Cu's total land size (0.2 m sea level rise) (Le Anh Tuan 2010)
 - Increased drought risk
 - Infrastructural measures (e.g. Sea dyke)
- Risk perception
 - Salinity / Tidal Flooding are among the three most important risks
 - Governmental institutions are aware of CC; households are not
 - Both find that it is not CC but the operation of the sluice gates and infrastructural measures which determine future water related risks



- In salinity-affected hamlets most of the harvest lost
 - High salinity levels and early onset in 2011
 - Prolonged dry season 2009/2010 (Late seeding)
 - Introduction of a 3rd season of rice production



- In flood-affected hamlets
 - Individual dykes broke and saline water influenced plant growth
 - Embarkments around ponds broke

Coping	Risk specific	Short-term V. impact	Adaptation	Risk specific	Long-term V.impact
Reproduce	S (F)	- res	Build an individual dyke	S	- sen
Pump water in and out of the field	S	- res	Build embankment around pond	F	- sen
Repair the embankments	F	+ sen	Change crop calendar	S	- sen
Increase input factors	S	- res	Change to another crop	S (F)	- sen
Reduce input factors	G	+ res	Long-term migration	G	+ res / - ex
Buy food on credit	G	+ res	Seek other alternative jobs	G	+ res/sen
Sell productive assets	G	+ res	Invest in Assets	G	+ res
Short-term migration	G	+/- res			
Take a loan	G	+ res			
Increase the scope of your work	G	+/- res			

F = Flooding
S = Salinity
G = General

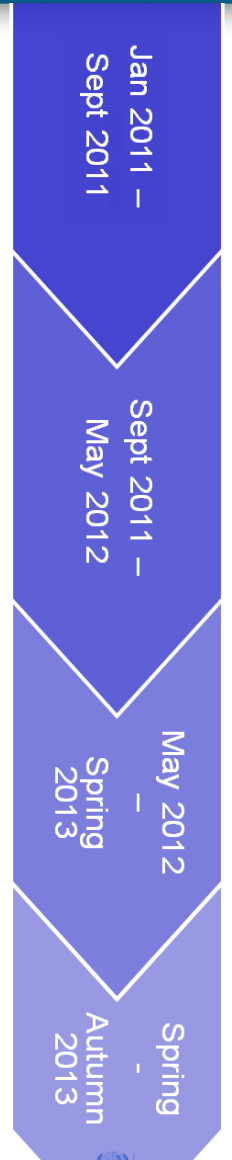
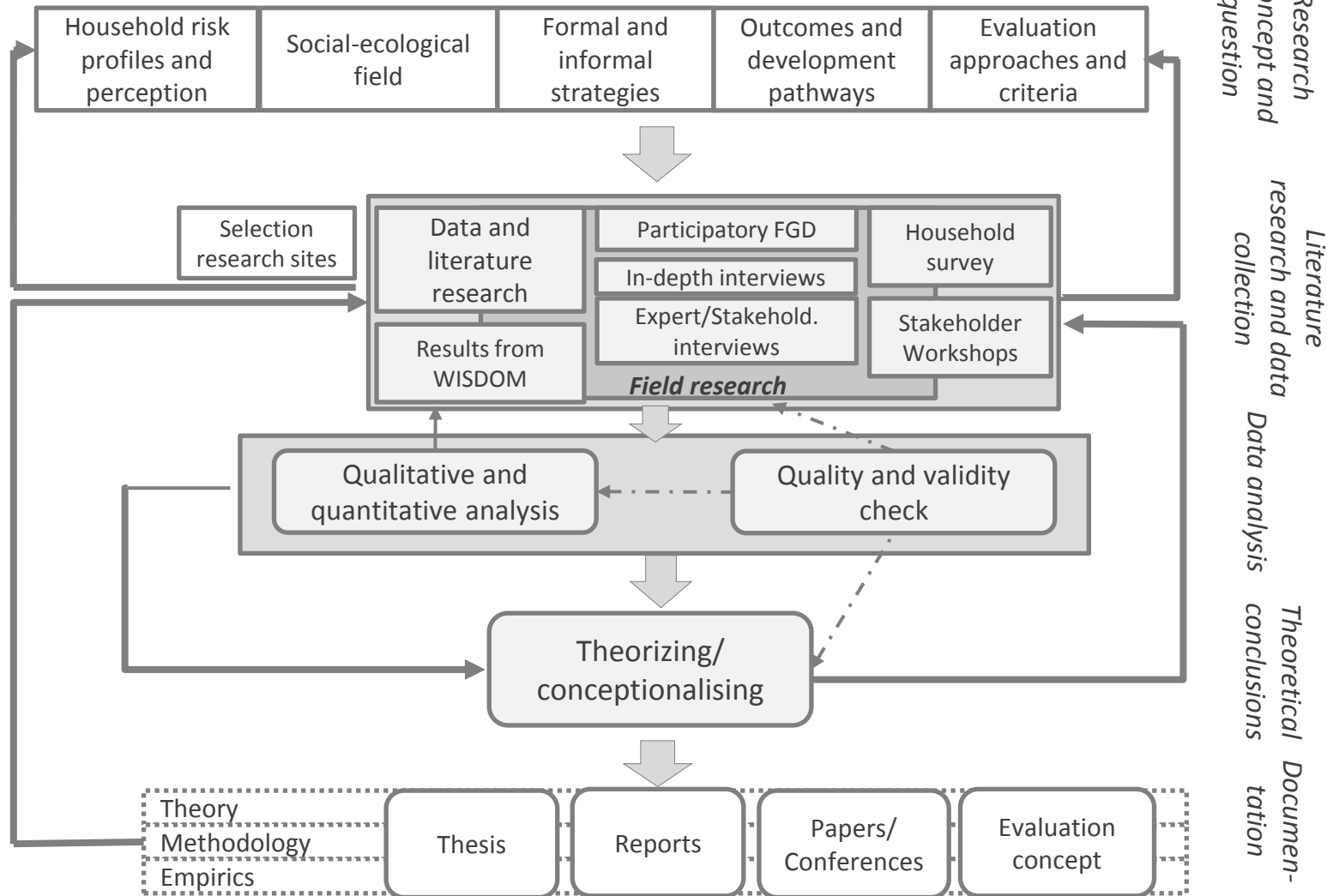
ex = Exposure
sen = Sensitivity
res = Resilience

Evaluation criteria household strategies	FGD households		
	Xoai Rum	Sa Van A	Bau Sau
Total financial costs	10	5	5
Income	8	12	11
Level of autonomy			1
Flexibility	6		
Implementation time	1	2	
Implementability		2	
Environmental protection	0	4	
Long-term impact			4
Other			<i>Risk (5)</i>

Evaluation criteria formal strategies	FGDs in Kim Son Commune	
	Households in Xoai Rum	Commune Authorities
Income	9	3
Total costs		
Accountability	1	
Proportion of beneficiaries	6	1
Participation of target population		4
Flexibility and independant benefits		
Farmer Implementability	7	5
Implentation time	2	
Environmental protection		6
CC-proof		7
Other		<i>Productivity</i>

Formal Strategies Kim Son	FGD Households	FGD Commune Authorities
<u>Agricultural Training classes</u>	2	2
Vocational Training classes		
Mobilize local people to build individual dyke		
Repairing the broken dyke		
Repairing damaged/build roads	(option)	
Support from 167 and 74 program and IMPP		
Compensation (only few people)		
<u>Give loan</u>	3 (option)	3
<i>Widening the canal to get freshwater (option)</i>		
<i><u>Build dyke and sluice gates (option)</u></i>	1	
<i><u>Capital support for production (option)</u></i>		
<i>Capital support for upraising the dyke (option)</i>		
<i>Loan to landless households (option)</i>		

Next steps



- Expected Outcomes and contribution to WISDOM
 - Good practice indicators and criteria
 - Evaluation concepts and tools
 - Strategy indices depicting resilience
 - Appropriate adaptation plans and strategies

Thank you for your attention and comments!

- Bourdieu, P. (1977): Outline of a theory of practice. Cambridge: Cambridge University Press.
- Ellis, F. (2000): Rural livelihoods and diversity in developing countries.
- Grothmann, T.; Patt, A. (2005): Adaptive capacity and human cognition: the process of individual adaptation to climate change. In *Global Environmental Change Part A* 15 (3):199-213ff.
- Helmke, G.; Levitsky, S. (2004): Informal Institutions and Comparative Politics: A Research Agenda. In *Perspectives on Politics (PPS)* 2 (04): 725.
- Le Anh Tuan (2010): Impacts of Climate Change to the Mekong River Delta in general and Tra Vinh Province in particular. Sub-project "Climate Proofing of Local Development Planning in Tra Vinh Province". Dragon Institute, Can Tho University. Tra Vinh, Vietnam, 8/12/2010.
- Miller, F.; Osbahr, H.; Boyd, E.; Thomalla, F.; Bharwani, S.; Ziervogel, G. et al. (2010): Resilience and Vulnerability: Complementary or Conflicting Concepts? In *Ecology and Society* 15 (3): 11.
- Sakdapolrak, P. (2007): Water Related Health Risk, Social Vulnerability and Pierre Bourdieu. In Koko Warner (Ed.): Perspectives on Social Vulnerability. Bonn (SOURCE - Studies of the University: Research, Counsel, Education, 06/2007):50–59ff.
- Turner, B. L.; Kasperson, R. E.; Matson, P. A.; McCarthy, J. J.; Corell, R. W.; Christensen, L. et al. (2003): A framework for vulnerability analysis in sustainability science. In *Proceedings of the National Academy of Sciences* 100 (14):8074–8079ff.

Coping	Risk specific	Short-term V. impact	Commune-specific	Adaptation	Risk specific	Long-term V. impact	Commune-specific
Compensation payment	S	+ res	CS	Financial support for individual dyke	S	- sen	CS
Repair the dyke	S (F)	-sen/ex	CS	Build a dyke	S	-sen/ex	Op
				Control gate operation	S	-sen/ex	Op
				Dredge canal	F	-sen/ex	CS
				Agricultural training classes	S / F	+ res	All
				Promote crop calendar changes	S / F	- sen	All
				Promote crop species changes	S	- sen	All
				Loan for production	G	- sen / + res	Op
				Support for building/repairing a house	G	- sen	CS
				Vocational training classes	G	- ex	All
				Support formation of a cooperative	G	- sen / + res	CS

S = Salinity *ex = exposure* *CS = commune specific*
F = Flooding *sen = sensitivity* *All = in all communes*
G = General *res = resilience* *Op = option*

Hamlet	Commune	Risk exposure	Main production	Ethnicity	Poor + Near Poor
1 Tra Cu C	Kim Son	Tidal Flooding	Sugar cane	Khmer (98%)	53%
2 Xoai Rum	Kim Son	Tidal Flooding	Sugar cane	Khmer (81%)	41%
3 Bai Xao Doi A	Kim Son	Tidal Flooding	Sugar cane	Khmer (99%)	54%
4 Bau Sau	Don Xuan	Tidal Flooding	Aquaculture	Kinh (86%)	35%
5 Lo Soi B	Don Xuan	Tidal Flooding	Aquaculture	Kinh / Khmer	35%
6 Ba Giam A	Don Xuan	Salinity	Rice	Khmer (75%)	43%
7 Xom To	Don Xuan	Salinity	Rice	Khmer (95%)	50%
8 Sa Van A	Ngoc Bien	Salinity	Rice	Khmer (80%)	44%
9 Rach Bot	Ngoc Bien	Salinity	Rice	Kinh (58%)	58%
10 Ba Cum	Ngoc Bien	Salinity	Rice	Khmer (97%)	44%

