

Tisza River Basin - addressing management issues in a complex environment

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on behalf of the Hungarian and Ukrainian

Tisza Case Study Team

and the NeWater colleagues involved

Outline

- ▶ Major topics stressed in NeWater
- ▶ Sustainable Floodplain Management
 - CM
 - Game
- ▶ Flood risk and vulnerability
 - CM & GMB
 - KnETs game
- ▶ Training for trainers
 - Stakeholder Issues Analysis
 - Knowledge Elicitation Tools (KnETs)
- ▶ Conclusions

Major topics stressed

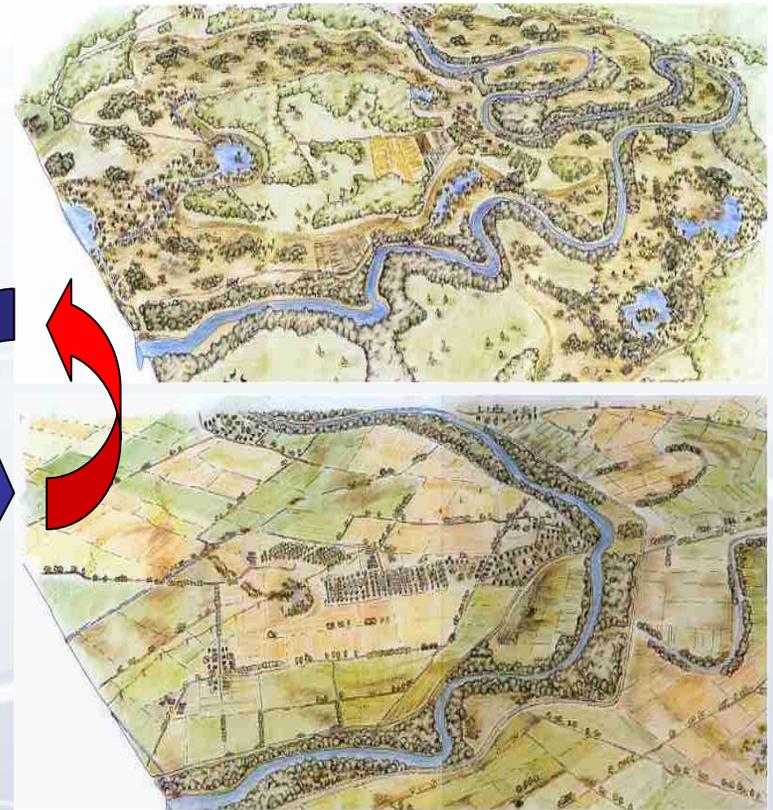
1. Sustainable management of the highly valuable Hungarian Tisza floodplains in order to secure both ecosystems and income.
2. Adapt better to flood risk due to climate change and to reduce vulnerability.





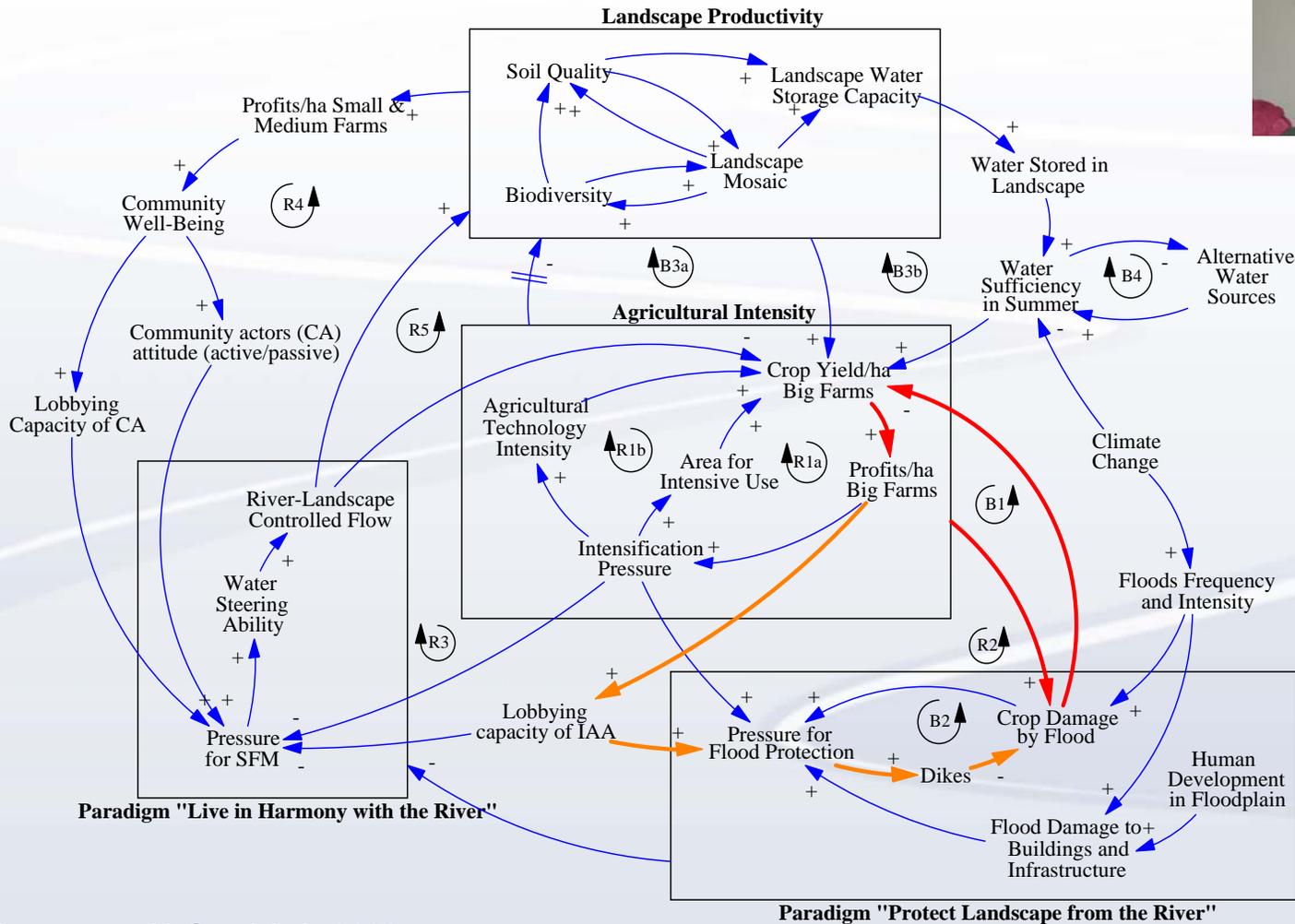
Sustainable floodplain management

- ▶ Tisza River length was reduced by >400 km by cutting meanders to straighten the river (transport).
- ▶ Floodplain area declined from 38,500 to 1,800 km² (90%) by river embankment measures (dikes) to enlarge the agricultural area.
- ▶ **What are options to modify or change the current regime from “protect from river” to “live with river”?**
- ▶ **Who are the actors?**
- ▶ **Where are niches for AM?**



Sendzimir et al.

Conceptual Modelling, CLD



Training for trainers

Floodplain Management Game: Modeling human-landscape interactions in river valleys



Participants:

A set of N symmetric agents

Roles:

Farmer,
Water Manager

Farmers' Decision:

Intensive or
Extensive or
Abandoned

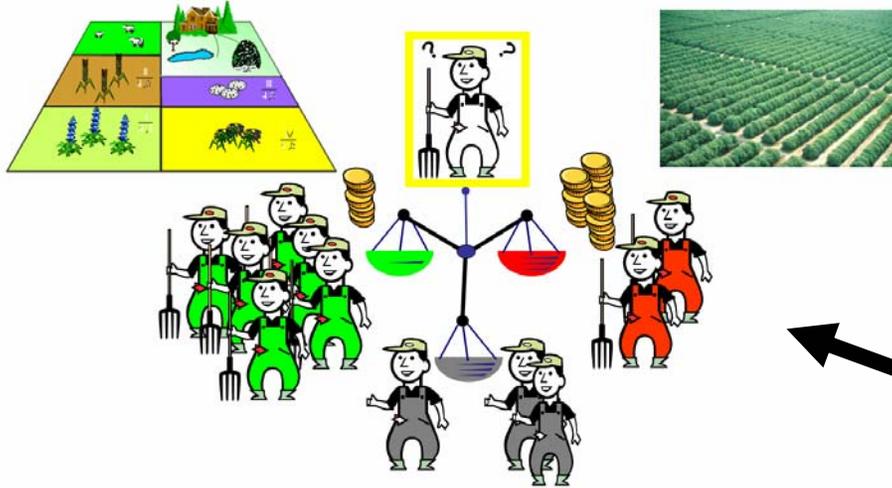
Water Manager's Decision:

Floodplain
Connectivity –
Natural or **Reduced**

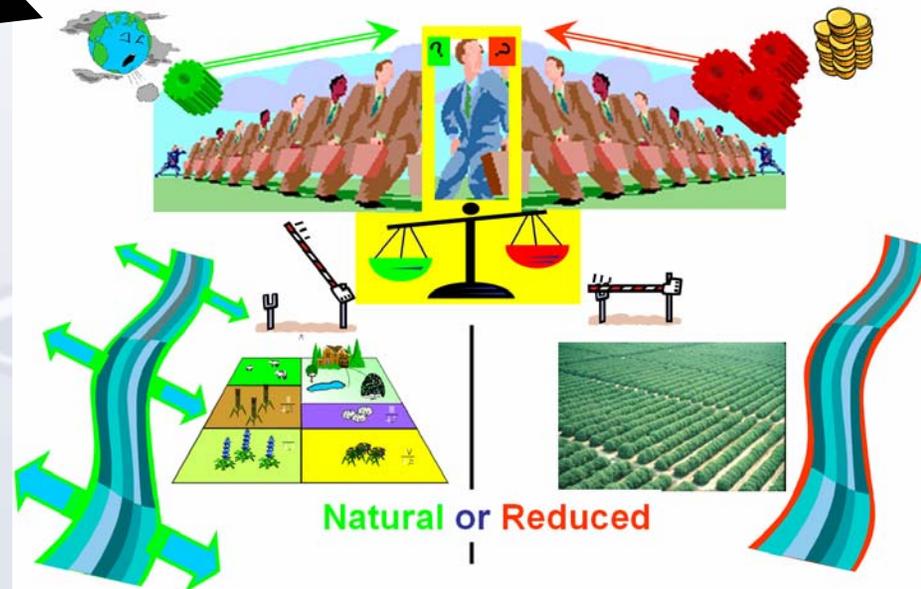


Floodplain Management Game

Farmers' Strategy: **Extensive** or **Intensive** or Abandon



Water Manager's Strategy: **Floodplain Connectivity**



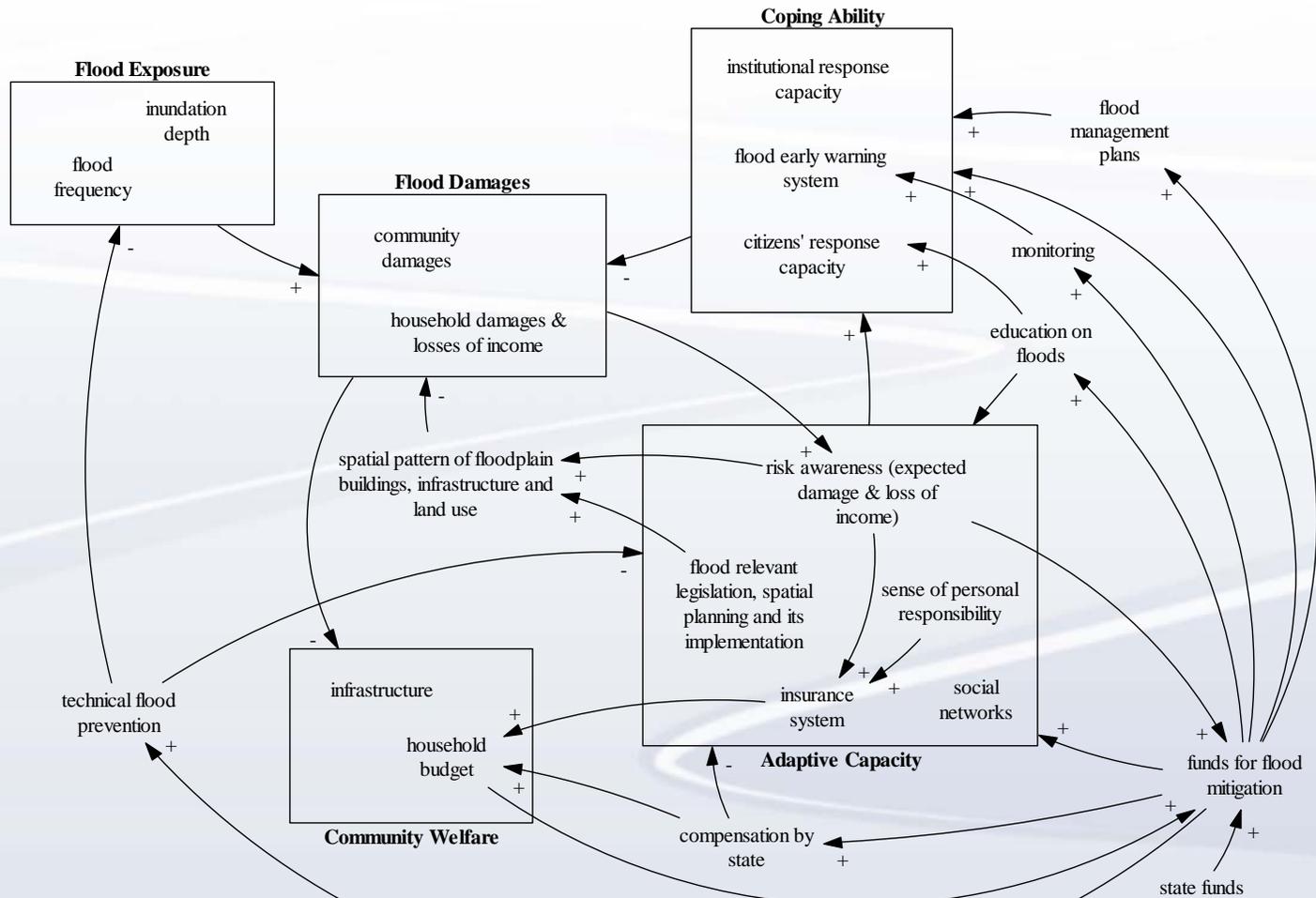
... more on this on
Thursday morning!

Flood risk and vulnerability

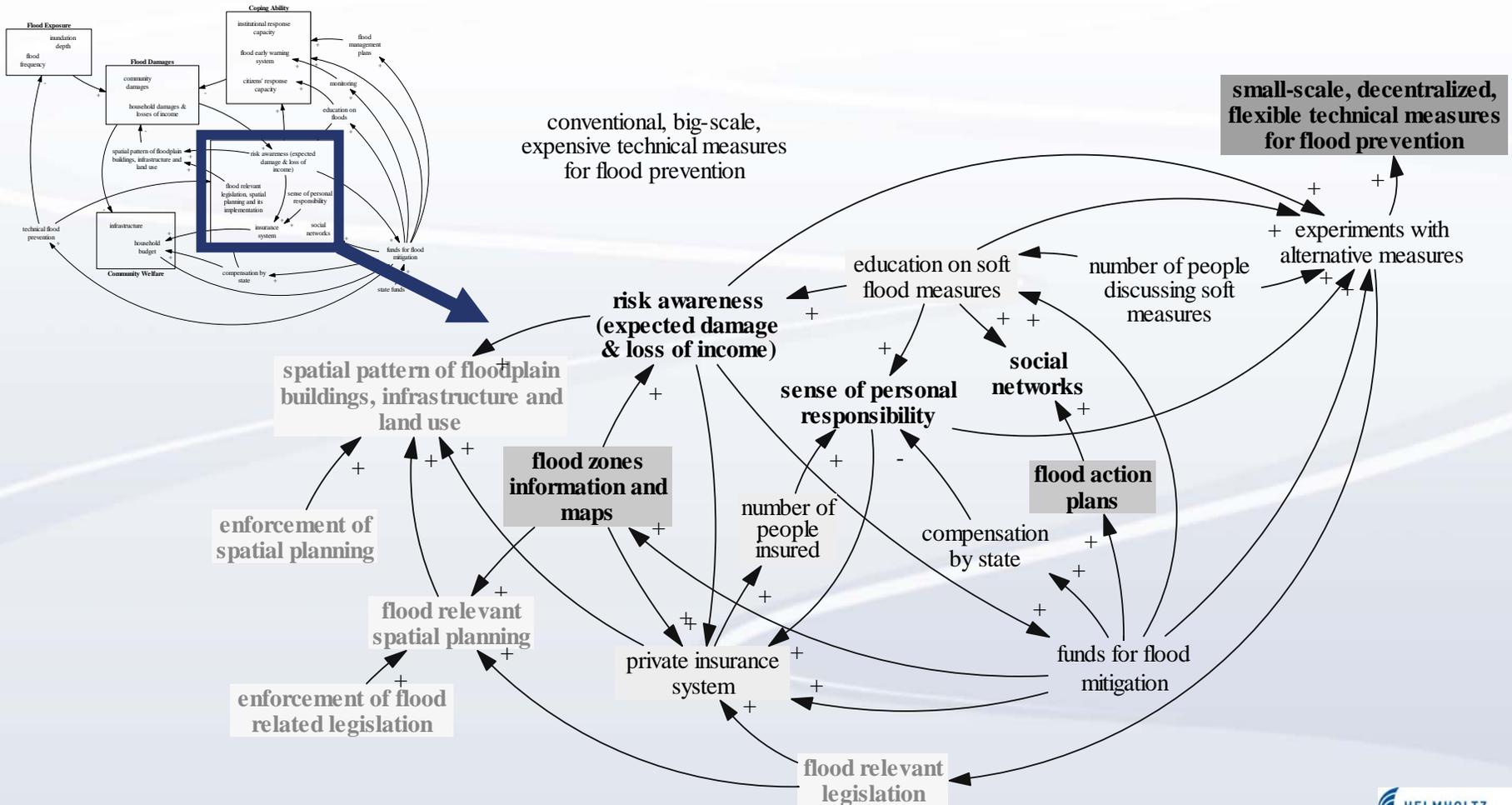
- ▶ Hazardous flood events regularly produce enormous damage in an area with very limited financial budgets.
- ▶ Local monitoring systems are based administratively on sectoral, technical and data collection related objectives. They ignore the complex situation of the “risk of being flooded” for local municipalities.
- ▶ Water management institutions and local municipalities do not address the complex flood context, as they are not clearly linked to local decision makers’ needs and perceptions of risk.
- ▶ Communities are extremely vulnerable since these needs are not being addressed.
- ▶ There is a need to implement a more participatory flood management analysis to identify ways to reduce flood risk by enhancing local capacity for coping with or adapting to the situation (e.g. using existing knowledge, social networks and resources).



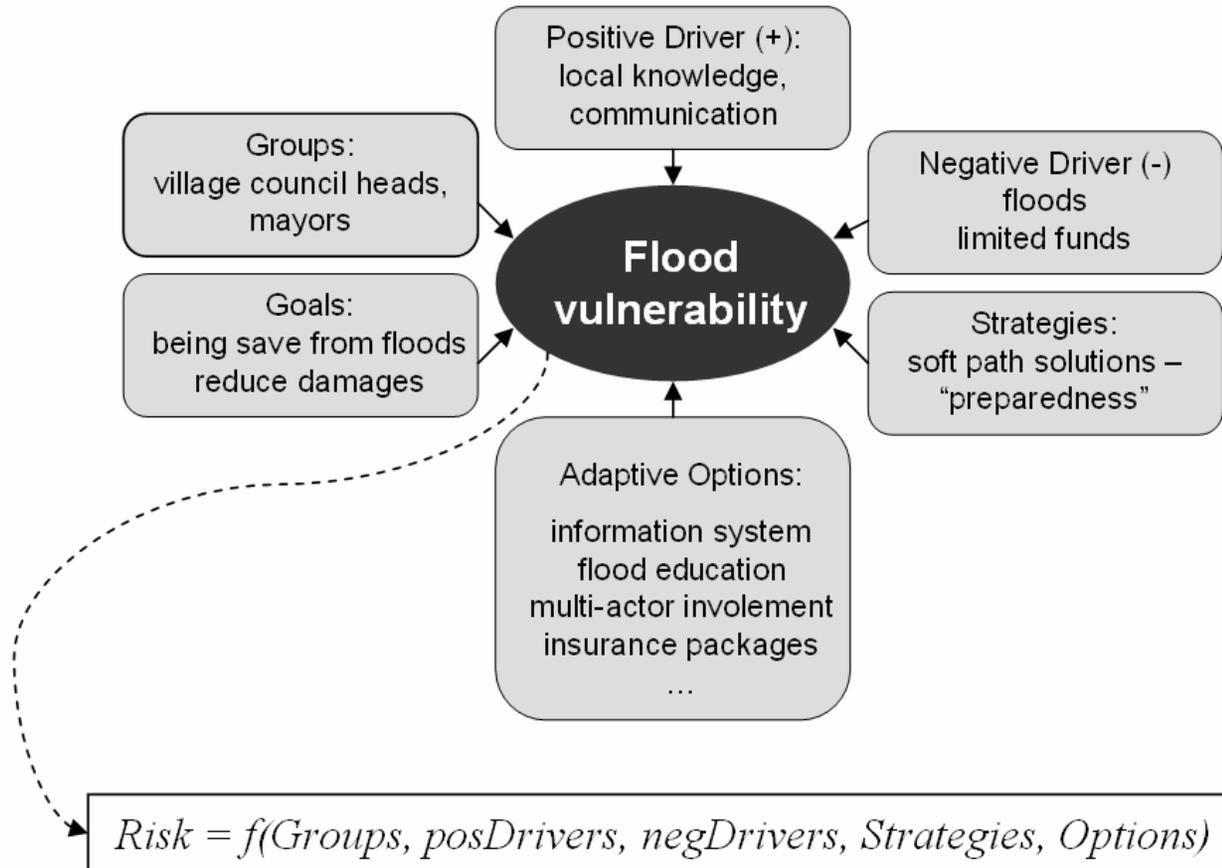
Conceptual Modelling and GMB



Conceptual Modelling and GMB



KnETs game





KnETs game

New Interview

File Edit Eval Help

General Interview

Low precipitation
na
na
Awareness: na
Economy: na
Goal: Prepared
8. Relocate vulnerable places:

Scenario: 4
Climate: Low precipitation
Awareness: na
Economy: na
Goal: Not Prepared

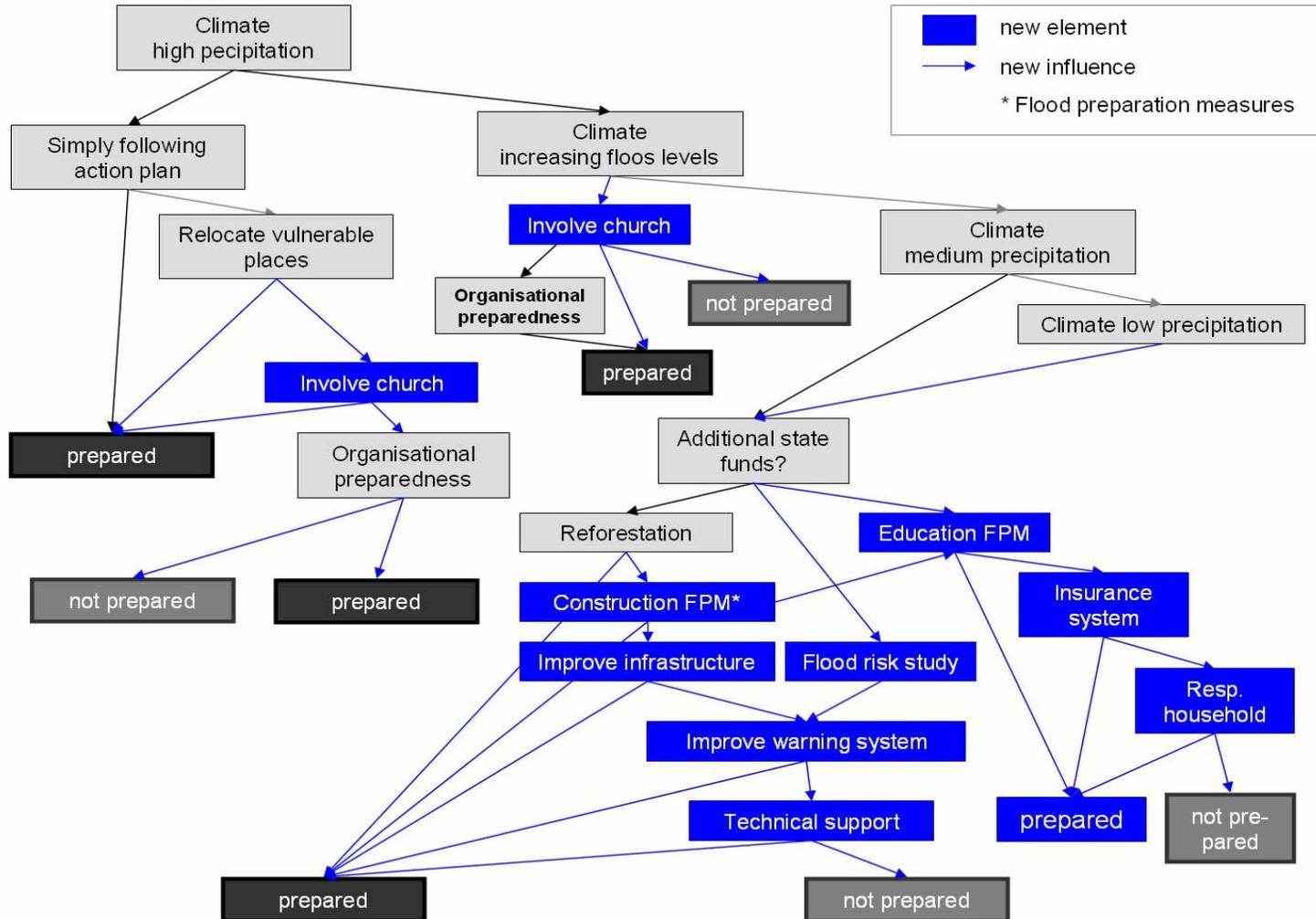
Prepared
Not Prepared

1. Improve informational network and strengthen social network
2. Improve warning system
3. Technical support (computer, Internet access)
4. Involve church
5. Simple following action plan
6. Insurance system
7. Asking for flood risk study
8. Relocate vulnerable places
9. Education on soft FPM and Flood education at school
10. Construction FPM (to build/reconstruct dike, Strengthen river channel, Bank reinforcement)
11. Organizational preparedness
12. Fill up first aid resources
13. Trainings of rescue team
14. Reforestation
15. Improve of infrastructure conditions
16. Responsibility of separate household

No choices or alternatives
No experience yet
Do not have institutional support
No state funds
It is tradition

Next Run Export Knowledge

KnETs game





Training for trainers

- ▶ Conceptual modelling and management game
- ▶ Stakeholder issues analysis; Knowledge elicitation tools (KnETs)





Conclusions: Newater in the Tisza River Basin ...

- ▶ ... added new knowledge about water management to existing one and uncovered some of the underlying and shadow processes and structures,
- ▶ ... elicited knowledge in flood risk decision-making,
- ▶ ... identified niches for AM to modify / change prevailing WMR “protect from river” to “life with river”
- ▶ ... created new networks of communication.
- ▶ **Climate Change adaptation is still a challenge.**
- ▶ **Data availability (e.g. cross-section data, water quality data) has to be further improved.**
- ▶ **Newater activities did not cover major river basin impacts by the energy sector and navigation ... BUT developed a range of tools which are very suitable to tackle them.**



Products

▶ Papers

- Haase, D., Bohn, C., 2007. Flood vulnerability and preparedness: model approach to mitigate the risk for local communities. In: Schumann, A., Pahlow, M., Bogardi, J.J., van der Zaag, P. (eds) Reducing the Vulnerability of Societies Against Water Related Risks at the Basin Scale. IAHS Red Book Series 317, 1-7.
- Krysanova, V., H. Buiteveld, D. Haase, F. F. Hattermann, K. Van Niekerk, K. Roest, P. Martínez-Santos and M. Schlüter 2008. Practices and Lessons Learned in Coping with Climatic Hazards at the River-Basin Scale: Floods and Droughts. Ecology and Society 13 (2): 32.
- Sendzimir, J. et al., 2008. Assessing the Resilience of a River Management Regime: Informal Learning in a Shadow Network in the Tisza River Basin. Ecology and Society 13 (1): 11.
- Various papers and conference contributions by Flachner, Z., 2007, 2008
- 2 papers (Haase, D., Huntjens, P., Schlüter, M., Hirsch, D., Kranz, N. on Group Model Building and Kuptsova, S., Haase, D., Bharwani, S., Fischer, M.D., Downing, T.E. on KnETs) submitted and under revision. Ecology and Society.

▶ Reports

▶ Tools

- KnETs game
- Floodplain Management Game
- Series of CM for the Hungarian and Ukrainian part of the basin

Thank you.

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