The impact of institutional changes on land amelioration and land use in Odra River Valley, Poland

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BACKGROUND

**Issues in the CAVES Project**

- Social networks
- Land use change
- Agent Based Modelling
BACKGROUND

Issues in the Odra Case Study

- Land Amelioration System: drainage/irrigation
- Land use change
- Farmers’ decision making
BACKGROUND

Problem:
Land Amelioration System is not maintained properly due to institutional changes.
System in the past (before 1989)

- FARMERS
  - paying fees
- WATER PARTNERSHIPS
  - maintaining AMS
- LAND AMELIORATION SYSTEM
System now

The conceptual model will be presented (causal loop diagramming method) that was developed based on the results of field social research (semistructured interviews with farmers) in the study area.
Farmers maintaining LAS

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<th>Number of WP members</th>
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Net benefits from WP perceived by farmers

Net benefits from LAS maintenance perceived by farmers

Funds for LA maintenance

Net benefits from flooding and crop damage due to flooding

Farmers' maintenance effort
Farmers maintaining LAS
Land Amelioration System (LAS) quality
Number of WP members
No of farmers maintaining LAS on their own
Net benefits from LAS maintenance perceived by farmers
- Net benefits from WP perceived by farmers
+ Clarity of legal/formal rules and responsibilities
- Effective Maintenance of LAS by WP
+ Funds for LA maintenance
+ proper management/decisions about money spending
- flooding and crop damage due to flooding
+ Farmers maintaining LAS
+ Farmers' maintenance effort
Farmers maintaining LAS Land Amelioration System (LAS) quality

Number of WP members
No of farmers maintaining LAS on their own

Net benefits from WP perceived by farmers
Net benefits from LAS maintenance perceived by farmers

Effective Maintenance of LAS by farmers
Effective Maintenance of LAS by WP

Flooding and crop damage due to flooding

Clarity of legal/formal rules and responsibilities

Availability of tools
Availability of skills

Funds for LA maintenance

Proper management/decisions about money spending
Farmers' maintenance effort
Farmers maintaining Land Amelioration System (LAS) quality can be influenced by frequency of demanding attitudes and expected effectiveness of collective action. Legal pressure and availability of skills can affect farmers' maintenance effort. Clarity of legal/formal rules and responsibilities, proper management/decisions about money spending, and availability of tools also play a role.

Net benefits from LAS maintenance and perceived by farmers are influenced by farmers' general knowledge about LAS. Social pressure, legal pressure, and economic pressure (% income from farming) can also affect farmers' maintenance effort. Farmers' maintenance effort is influenced by effective maintenance of LAS by farmers and availability of skills.

Funding by State or local authorities can influence funds for LA maintenance and availability of skills.

Numbers of WP members and farmers maintaining LAS on their own can influence farmers' maintenance effort. Expected effectiveness of collective action and number of WP members can also affect effective maintenance of LAS by farmers.
Risk of crop damage due to flooding

LULC transition

Risk of crop damage due to flooding

grasslands

arable land

LULC transition
Figure. Maps show the changes of land cover in the Peclaw.
Landscape issues

Neglected ditches create good ecological corridors and improve overall landscape connectivity and diversity.