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Heavy rain risk on the agricultural areas in Central Europe - case study Poland

RAINMAN Project Interreg CE 968 Integrated Heavy Rain Risk Management



Ympäristöministeriö
Miljöministeriet
Ministry of the Environment



Ministry of Agriculture
and Forestry of Finland



Centre for Economic Development,
Transport and the Environment



17th “EUROPE-INBO 2019”

17-20 June 2019 Lahti Sibelius Hall, Finland

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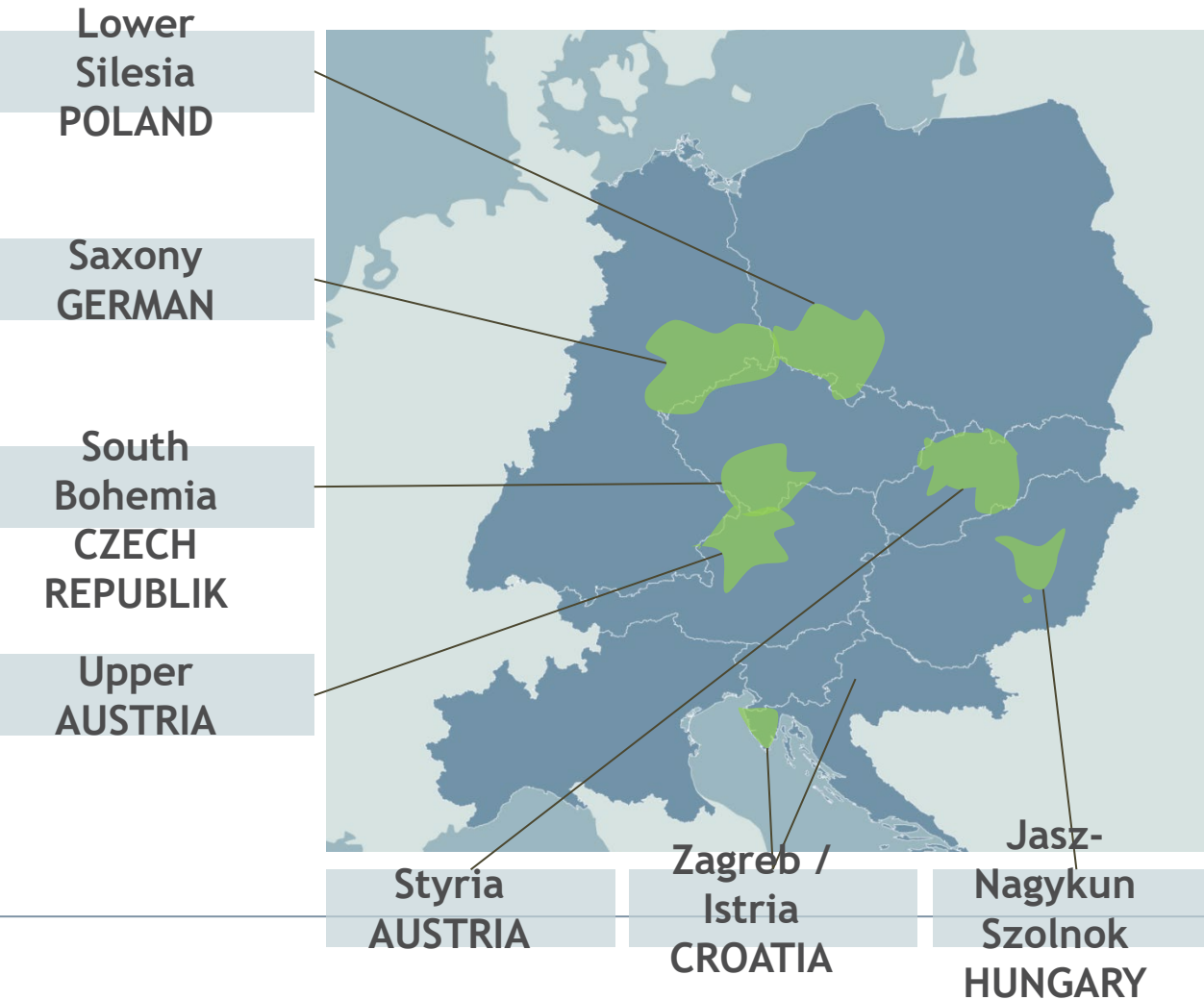
RAINMAN PP9/Institute of Meteorology and Water Management, Poland



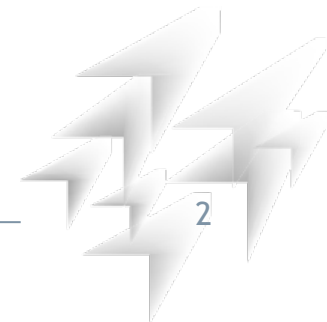


RAINMAN PILOT ACTIONS

In the project **RAINMAN** financed by Interreg Central Europe 10 Partners from 6 countries jointly develop practice oriented innovative methods and new tools to reduce heavy rain risk.



Agricultural area
are located in 2
Pilot Action:
Poland and
Czech Republik
and rural area in 4
Pilot Action:
German, Hungary,
Poland, Austria





WORK PACKAGE 1

MAPPING RISKS

In a first step, the partnership will develop methods to assess heavy rain risks under different categorized physical conditions and land uses of areas in Central Europe.

Read more...



WORK PACKAGE 2

REDUCE RISKS

The partners will jointly create a tool and a strategy to reduce the risks of heavy rain events.

Read more...

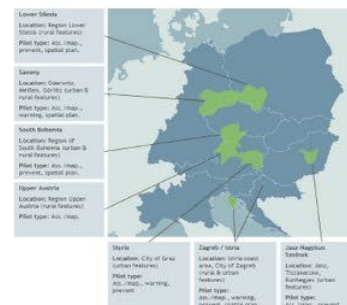


WORK PACKAGE 3

PILOT ACTIONS

Pilot activities in all participating partner regions are implemented to test the developed joint methods and tools and to prove their feasibility and applicability.

Read more...



WORK PACKAGE 4

RAINMAN-TOOLBOX

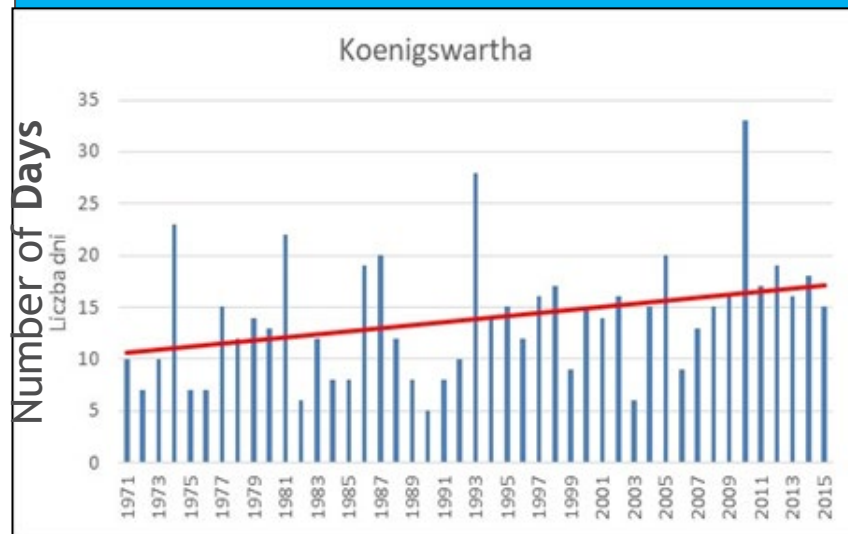
The partners develop jointly a transferable toolbox with five tools to reduce heavy rain risks and to support the integrated environmental risk management of regional and local administrations.

Read more...



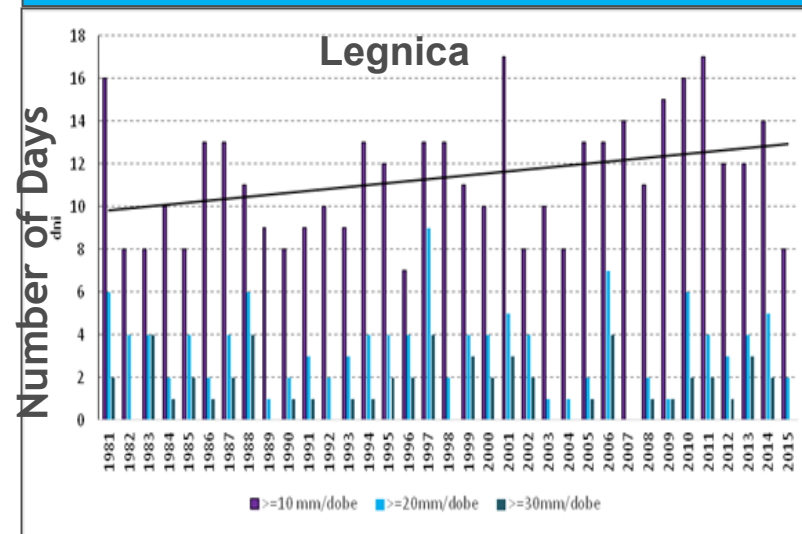
- Analyses of historical data as well as climate projections indicate an increase of heavy rain events frequency and days without rainfall.
- In the future, there may be an increase in the number of extreme events related to both the occurrence of heavy rain events and periods of days without precipitation.
- In combination with the expected increase in air temperature, intensification of the drought phenomenon may occur.

**Annual number of days with daily rainfall
> 10 mm**



Year

**Annual number of days with daily rainfall
≥10, 20 i 30 mm**



Year



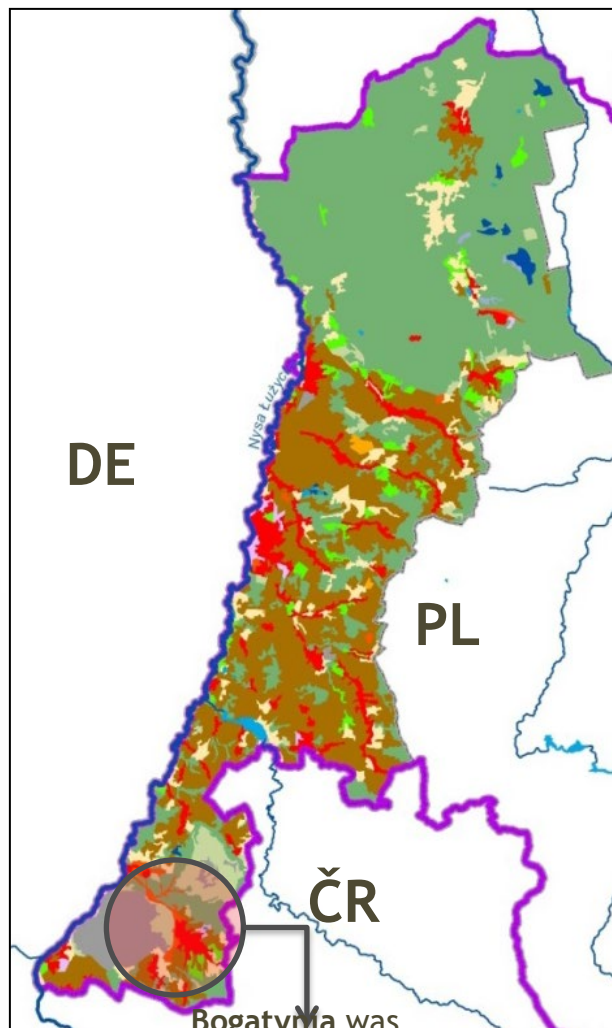
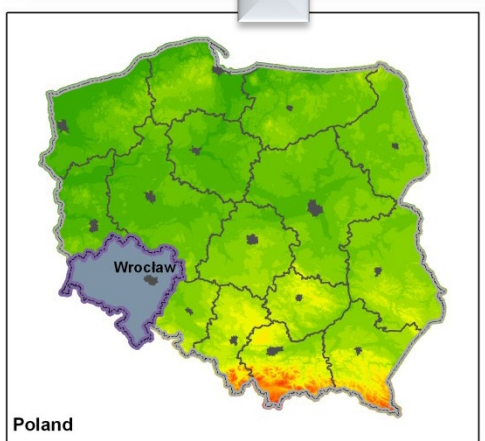
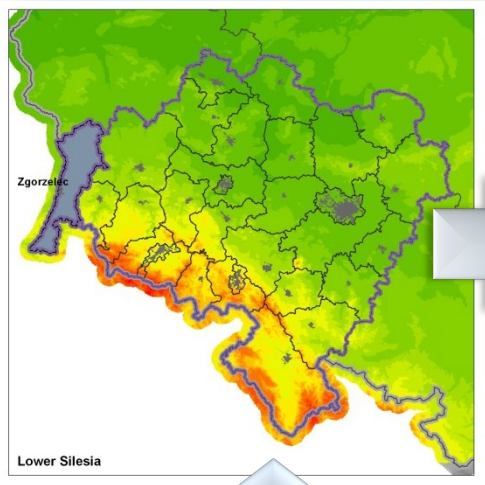
EFFECTS OF HEAVY RAINFALL IN THE PILOT CATCHMENT POLAND

Risks of heavy rain events are increasing they cause numerous damage to agriculture



POLISH PILOT AREA

Zgorzelec County is located in south-western Poland

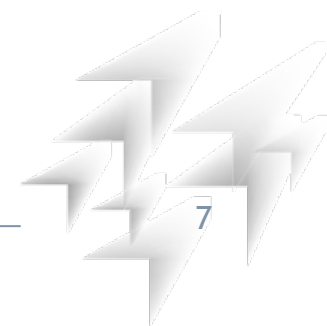
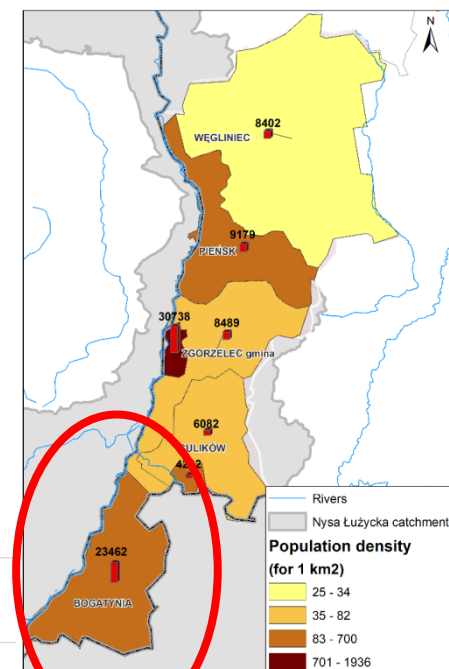
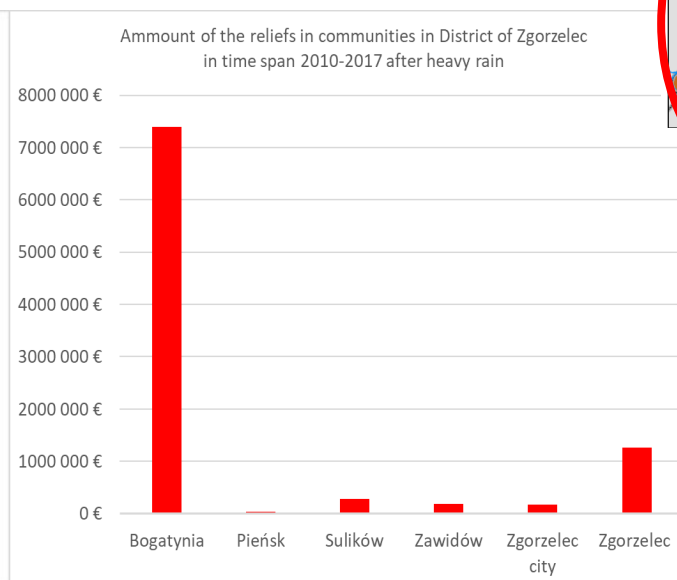
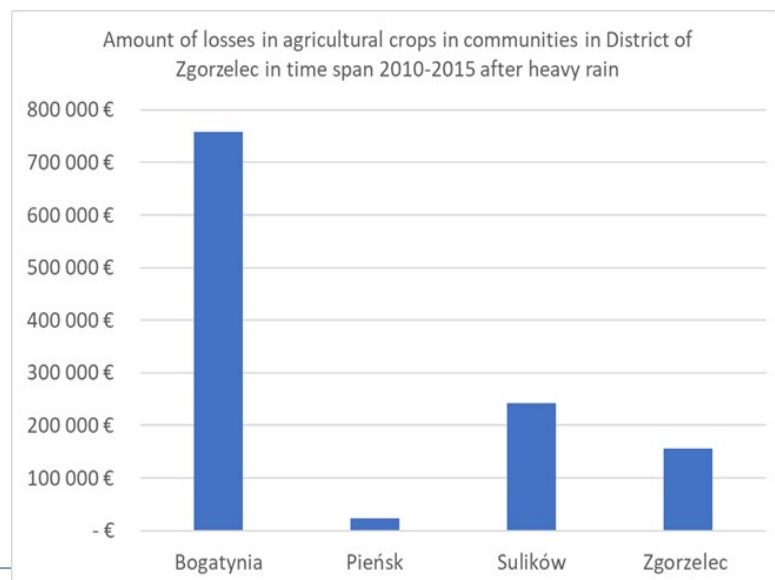


Land use	area [%]
artificial	10,3
agriculture	36,4
forest and seminatural	52,3
wetlands	0,2
water bodies	0,8

Bogatynia was
affected 40 time by
pluvial flood from
the 16th century

IDENTIFICATION OF INCIDENTS AND CONTRIBUTIONS OF HEAVY RAIN (DISTRICT OF ZGORZELEC)

- Bogatynia commune was heavily affected during heavy precipitation events in 2010-2017;
- The losses in agricultural crops in case of Bogatynia commune exceeded 700 000 Euro, while in Sulików and Zgorzelec communes were higher than 200 000 Euro and 150 000 Euro respectively;
- Relief money paid for the families in Bogatynia commune exceeded 7 000 000 Euro. Over 1 000 000 Euro was spent in Zgorzelec.

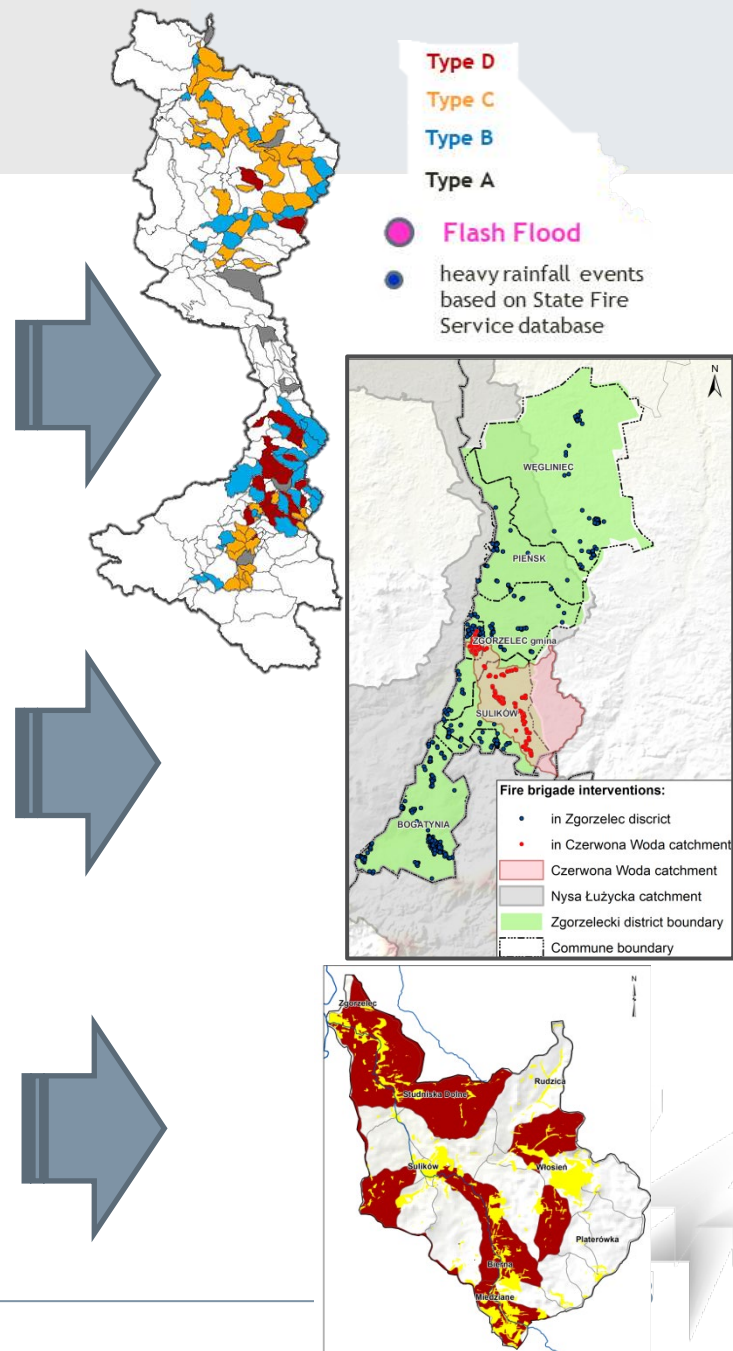


RESULTS OF HAZARD MAPPING

Cluster analysis for the typology of catchments prone to flash flood development (from selected part of Lower Silesia) for the catchments that varied in case of relief, land use structure and soil.

Identification places affected by heavy rain events based on the State Fire Service data base (base of fire brigades intervention due to heavy rain).

Identifying the areas with soil prone to water erosion - analyzes of the factors contributing to the occurrence of water erosion carried out in Czerwona Woda catchment (mostly located in Zgorzelec County)





- RAINMAN toolbox is the central output of the project

The toolbox contains 5 transferable tools:

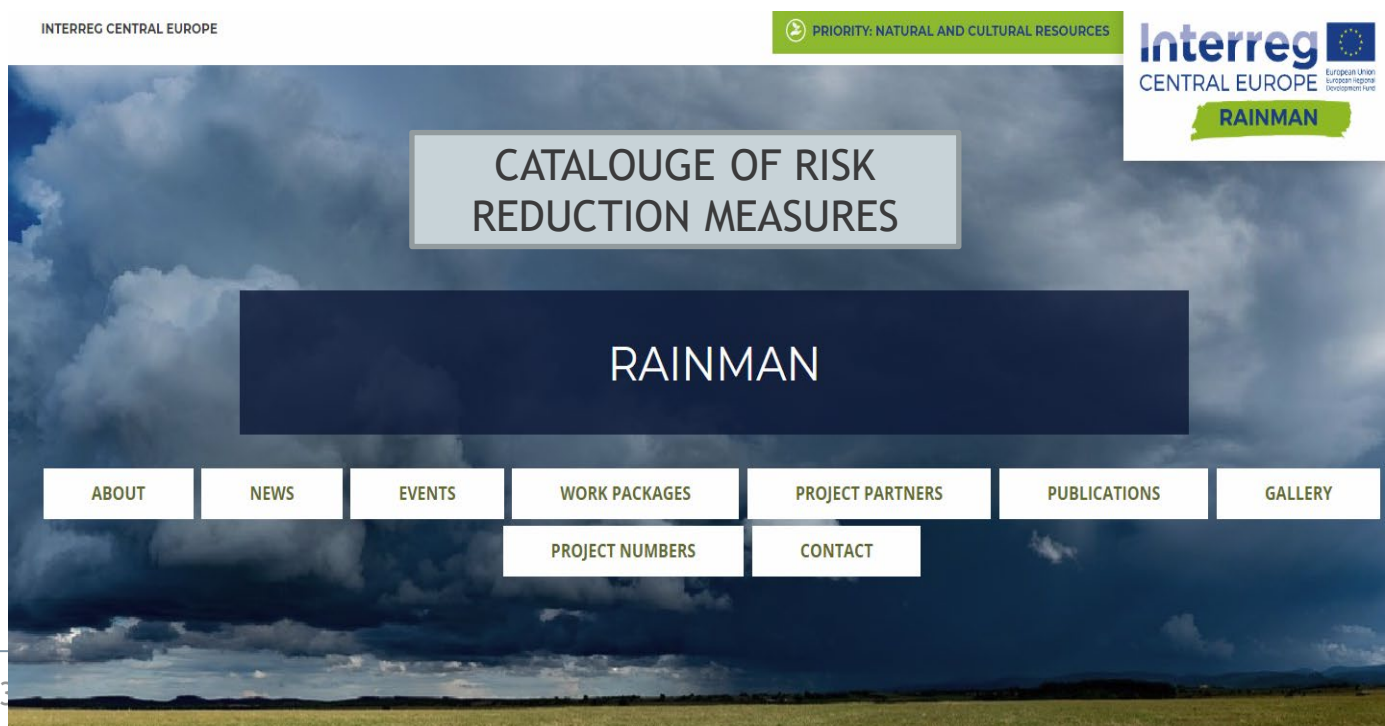
1. Assessment and mapping tool for heavy rain risks
2. **Implementation guide for risk reduction measures, warning and emergency response**
3. Recommendations for flood risk management plans
4. Awareness raising and stakeholder involvement tools
5. Catalogue of good-practise examples for the integrated reduction of heavy rain risks





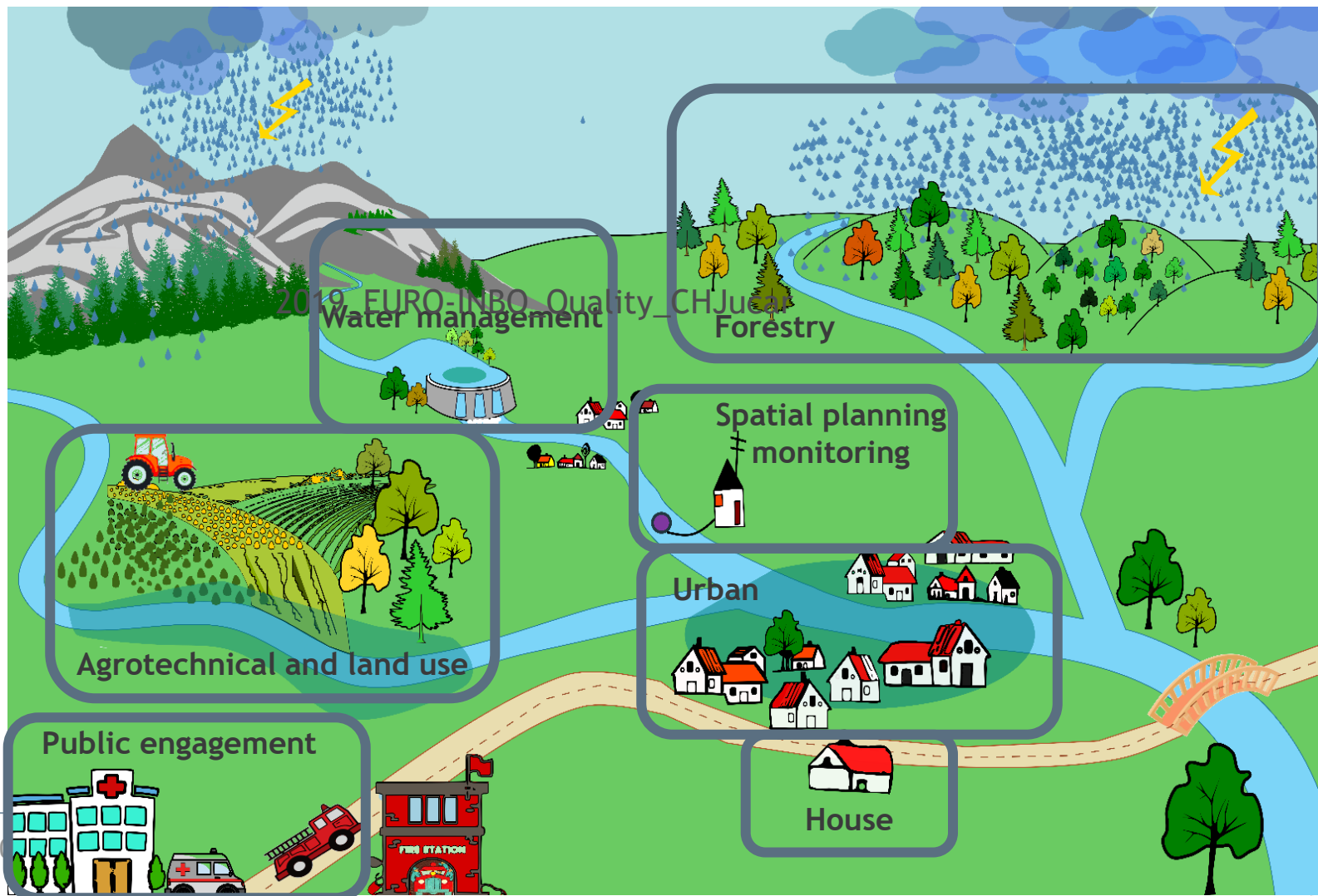
TOOL 2: Tool for reduction of heavy rain risks

- The partners will create one tool and one strategy to reduce the heavy rain risk
- Catalogue of risk reduction measures and guidance for selection and implementation of suitable measures





CATALOUGE OF RISK REDUCTION MEASURES





Agrotechnical and land use - EXAMPLES



Agronomic measures VUV



Mulching George N. Karuku



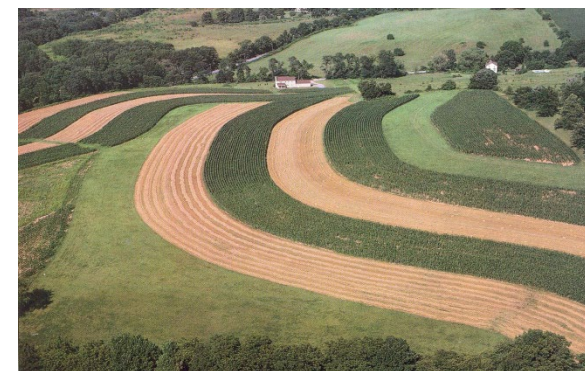
Stabilization of pathways VUV



Trenches VUV



Furrows VUV



Strips changing of crops VUV

1. Future climate change indicates an increase in the frequency of extreme events, including heavy rain.
2. The phenomenon of heavy rain can occur everywhere, including agricultural areas where it causes significant damage.
3. It is necessary to designate areas potentially endangered by high damage of heavy rain events.
4. For areas potentially endangered, technical and non-technical measures should be developed to prevent and reduce the risk of heavy rain.



THANK YOU FOR YOUR ATTENTION

Project Partner 9

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LANDWIRTSCHAFT
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www.interreg-central.eu/rainman



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