



Preliminary activities on heavy rain risk management in Central Europe

RAINMAN Project CE 968

Integrated Heavy Rain Risk Management



GOBIERNO
DE ESPAÑA

MINISTERIO
PARA LA TRANSICIÓN ECOLÓGICA

CONFEDERACIÓN
HIDROGRÁFICA DEL
GUADALQUIVIR, O.A.



16th “EUROPE-INBO 2018”
17-20 October 2018, Seville



With the support of:
**AGENCE FRANÇAISE
POUR LA BIODIVERSITÉ**
ÉTABLISSEMENT PUBLIC DE L'ÉTAT



RAINMAN PP9/Institute of Meteorology and Water Management, Poland



PRELIMINARY ACTIVITIES ON HEAVY RAIN RISK MANAGEMENT IN CENTRAL EUROPE RAINMAN PROJECT CE 968

Main Problem

Sudden local flood (Flash Flood and pluvial flood) is a flood with:

1. large volume of water,
2. short duration - lasting from several minutes to few hours,
3. local scale,
4. occurring after heavy rain (the most common cause),
5. can happen almost everywhere,
6. not necessarily associated with the river,
7. can also be an urban flood, causing flooding of certain areas of the city.

This phenomenon is very dangerous, causing significant material damage and even fatalities



City of Graz in **Austria** 16th of April 2018. The storm lasted almost 5 hours and brought over 90 litres of rain per square metre.

<https://steiermark.orf.at/news/stories/2907343/>)

City of Karcag in **Hungary** was hit by a rain event on 29th of May 2018. 30,5 mm of rain where registered within 30 minutes.

www.interreg-central.eu/Content.Node/Heavy-Rain-Event-in-Karcag.html

Rokita Forest District in **Poland** July 2017 - 334 mm per month. Average sum of year is 700 mm

<http://www.rokita.szczecin.lasy.gov.pl/>

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Main Problem

Examples of disasters from heavy rain events in last period in Spain



9-10 October 2018 heavy rain has occurred on the Spanish island of Mallorca. Sant Llorenç des Cardassar and S'illot were the most damaged by floods; 10 fatalities.

A state of natural disaster was announced on this largest Balearic island. According to the Spanish weather agency, about 220 millimeters of rain fell in the night in just four hours in Mallorca.

On 11.10.2018 heavy rainfall also occurred in Catalonia and Andalusia. In Malaga, 19 expressways were closed due to heavy rainfall. Even 80 liters of rain per square meter fell. The emergency services recorded more than 500 calls due to heavy rain.



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In the project **RAINMAN** financed by Interreg Central Europe, 10 partners from 6 countries have joined to develop and test innovative methods and tools for the integrated management of heavy rain risks by local, regional and national public authorities.

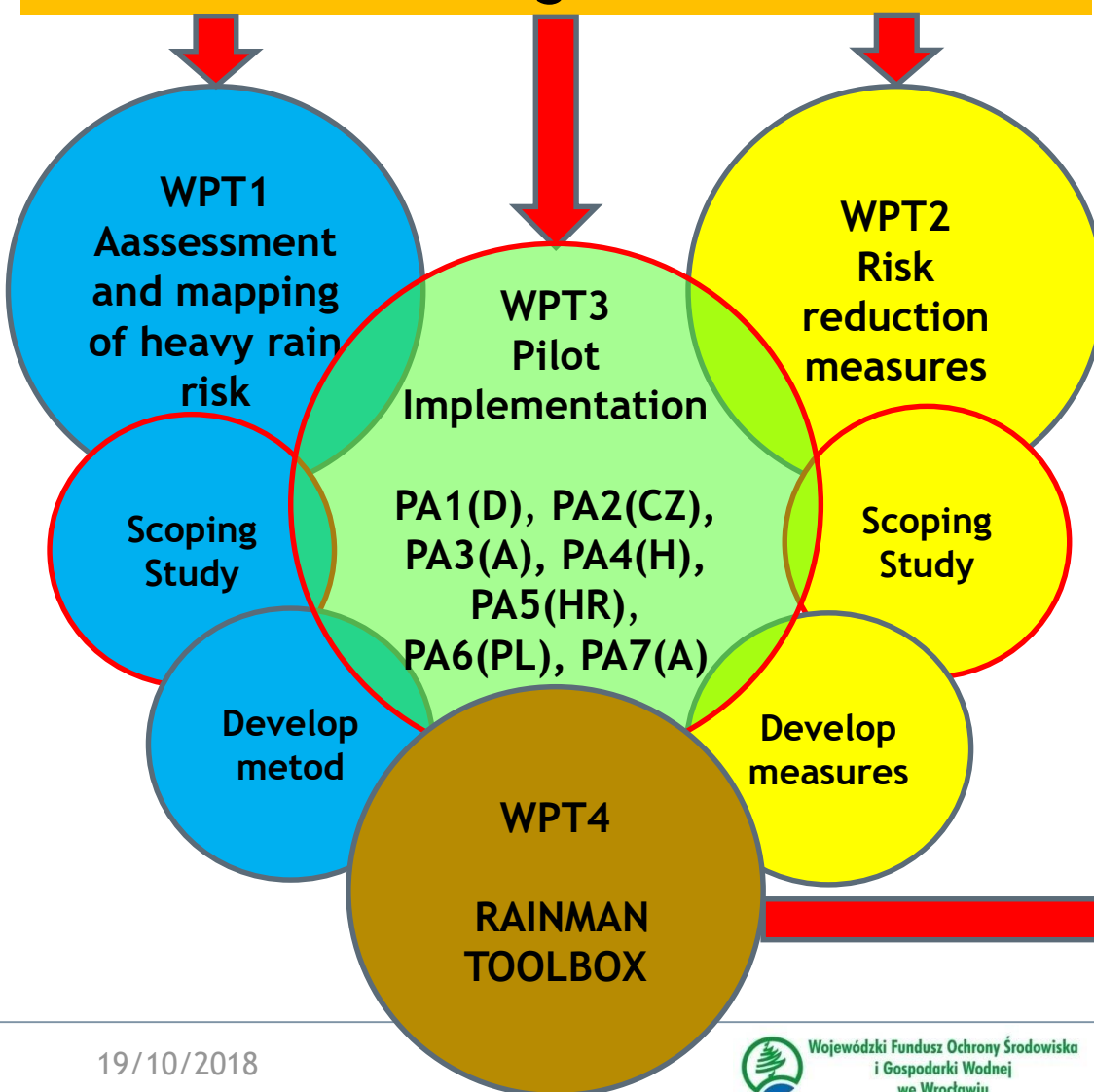


In the **RAINMAN** project, testing of risk mapping methods and implementation of activities against heavy rain will take place on following functional area selected in Central Europe:

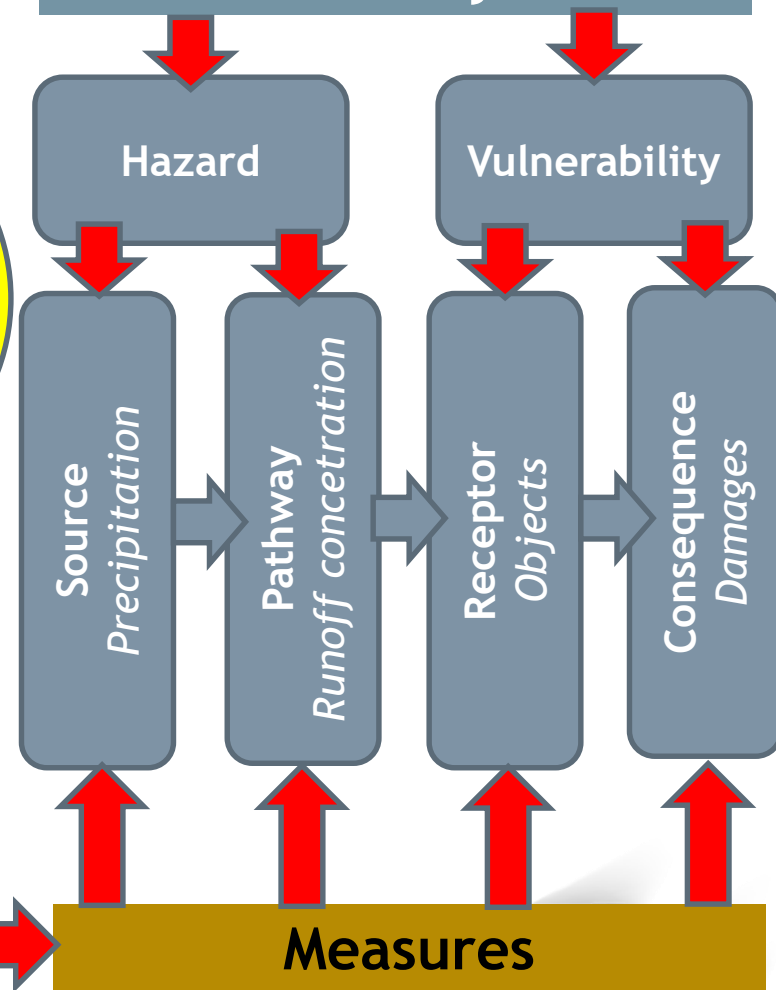
- 4 urbanized areas,
- 4 rural areas,
- 2 semi-urban areas,
- 2 agricultural areas,
- 1 coastal area.

Pilot areas of the RAINMAN project

Work Packages RAINMAN



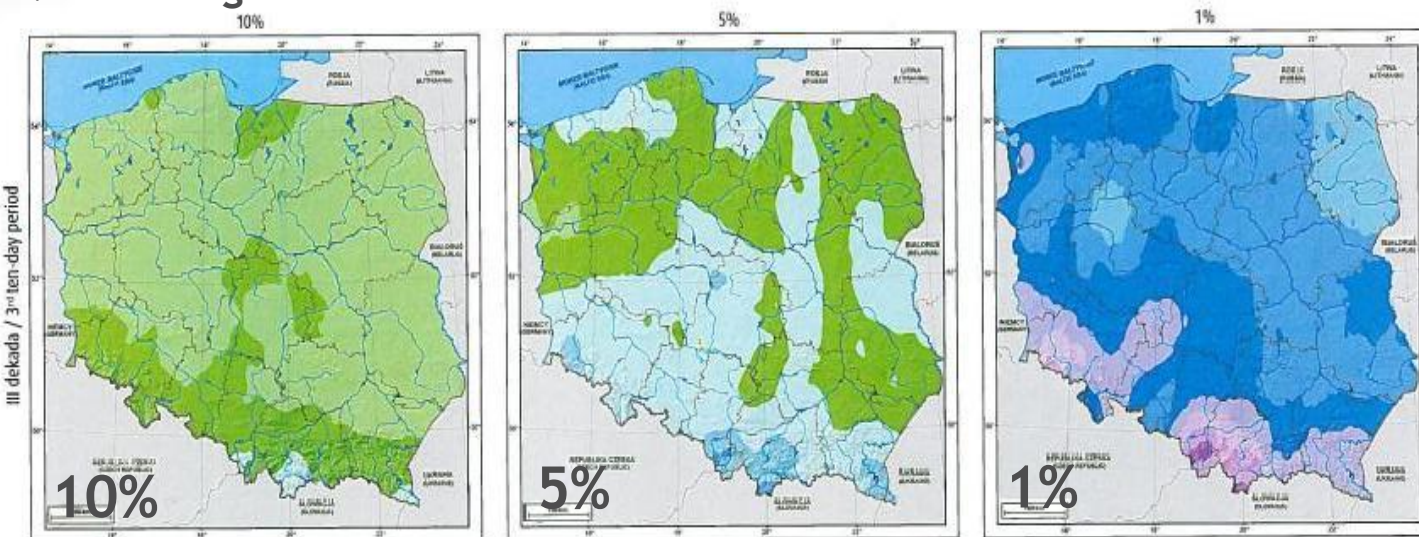
Risk analysis



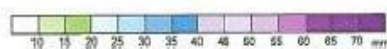
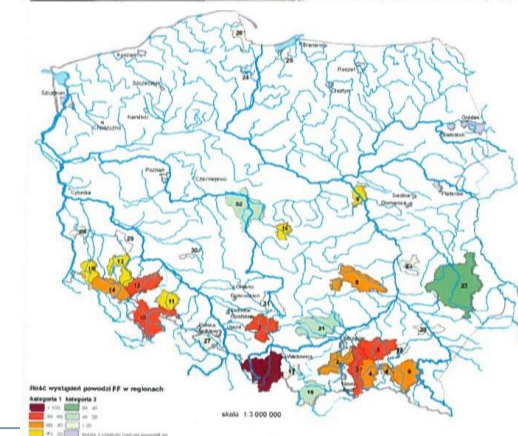
Source-Pathway-Receptor-Consequence
(SPRC- adapted from ICE 2001)

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Scoping study on existing methods for assessment and mapping of risk zones for heavy rain events - case of Poland Meteorological Hazard Atlas of Poland

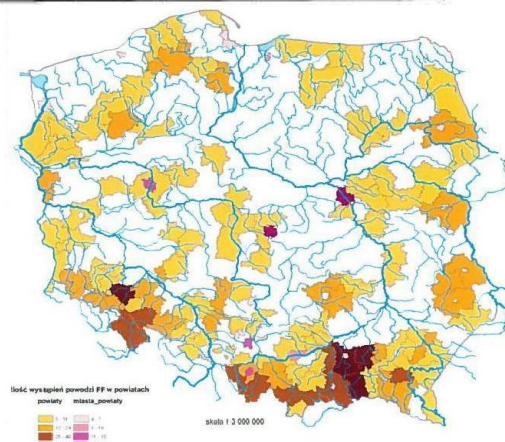


Maximal precipitation totals of probability of exceedance 10 %, 5 % and 1 % in particular decades of August, on the basis of 1966-2010 data (Source: Ustrnul et al., 2014)



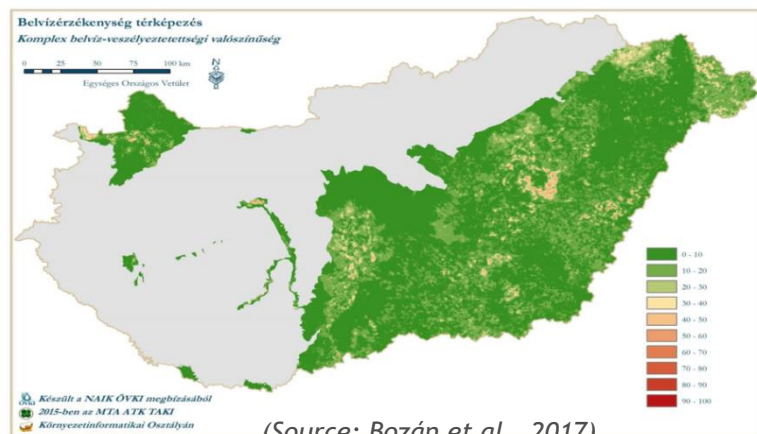
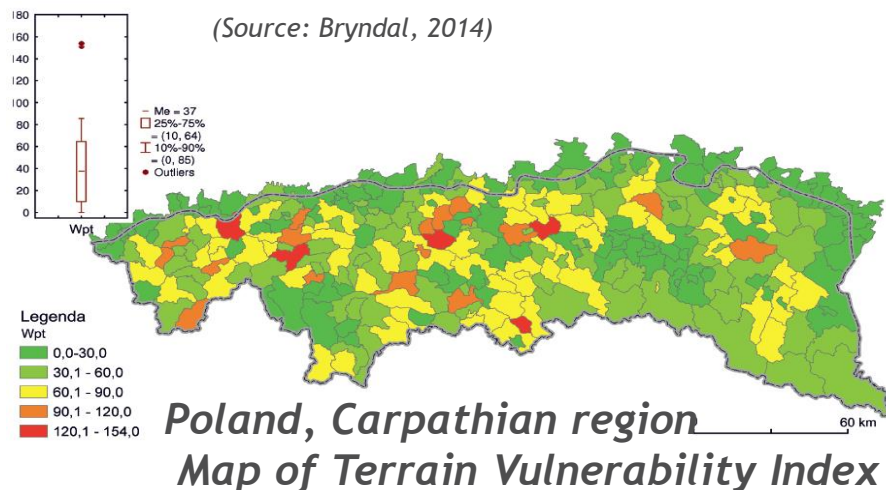
Areas of the most frequent flash flood events in Poland in 1971-2010 (Source: Ostrowski et al., 2012)

project KLIMAT

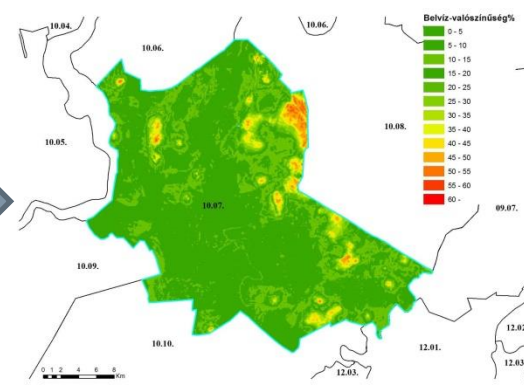
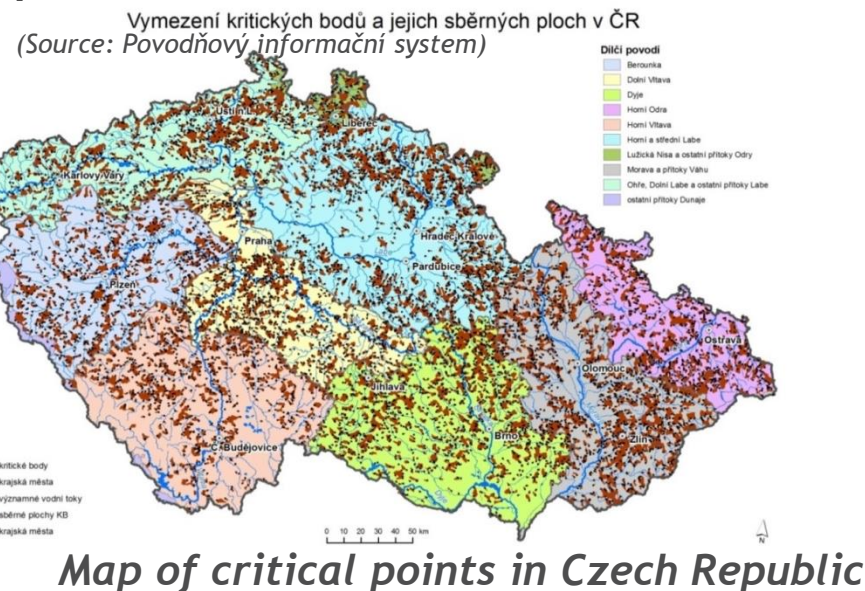


Districts with the highest flash flood hazards in 1971-2010 (Source: Ostrowski et al., 2012)

GIS Based Methods as a tools to identify potentially significant risk areas for pluvial flooding or potential hot spots in Central Europe

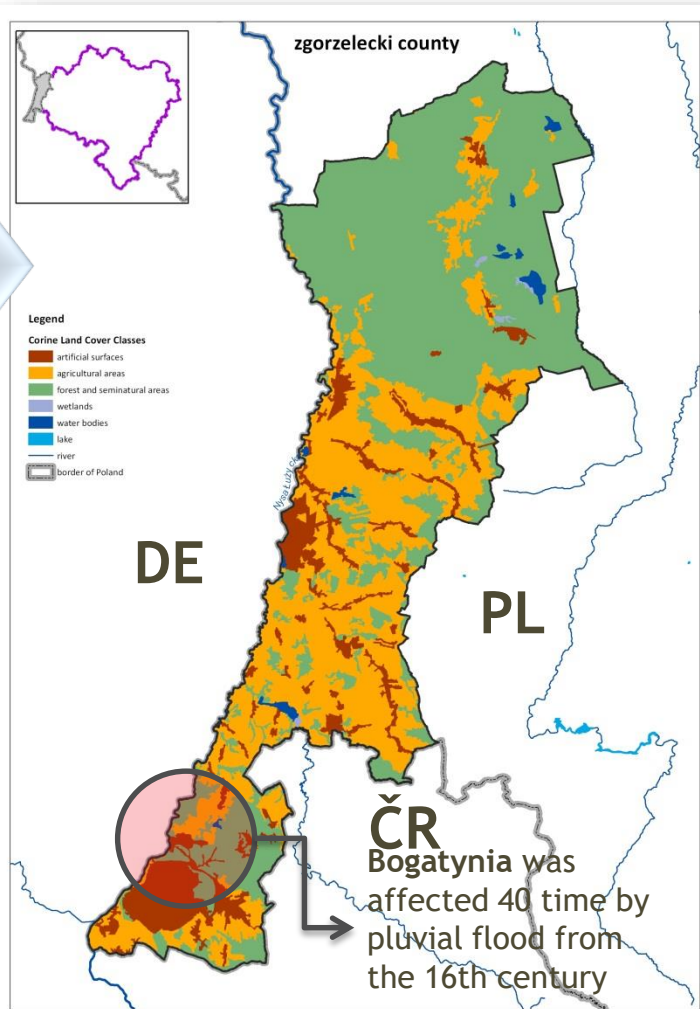
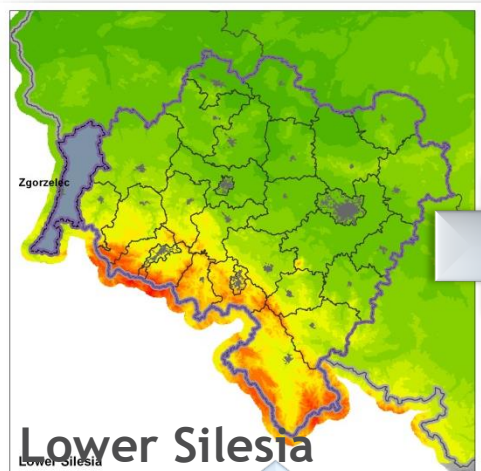


Hungary, Complex excess water hazard map



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Characteristic of Polish Pilot Area



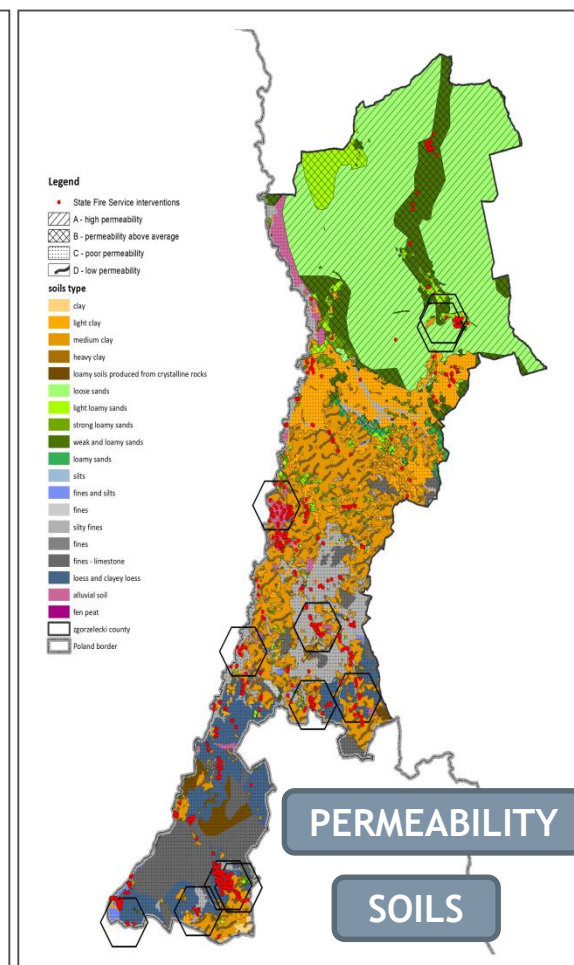
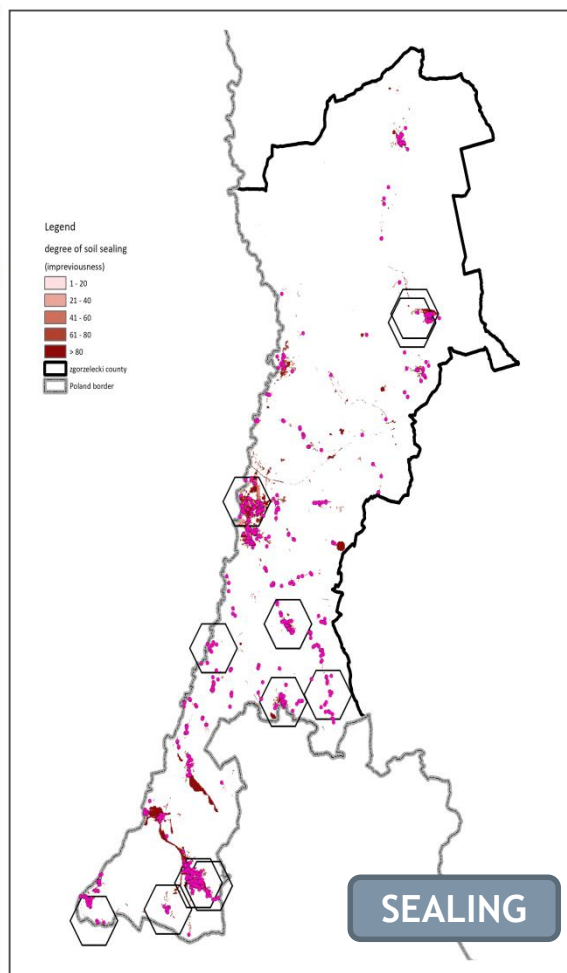
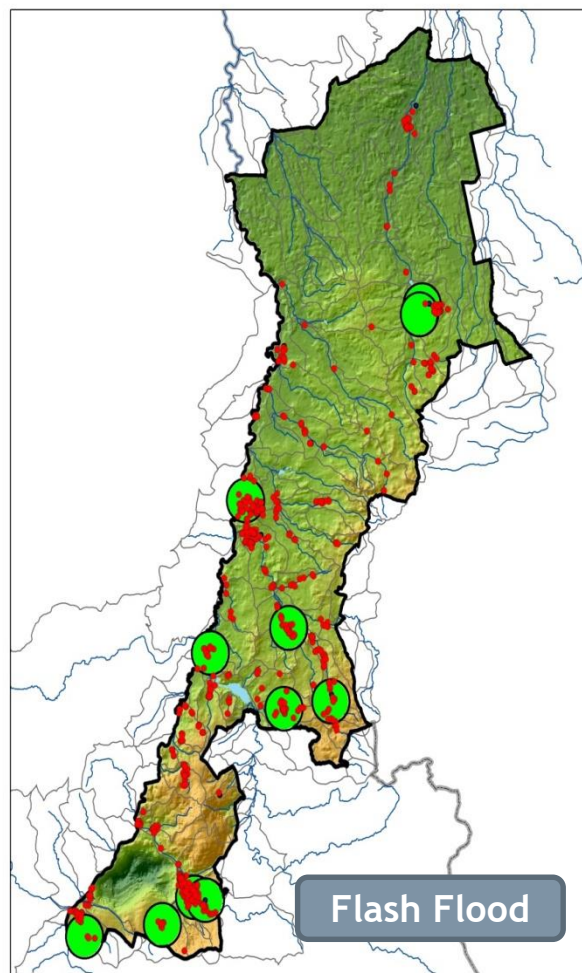
ZGORZELEC COUNTY

Area characteristic	rural agricultural
County area	839 km ²
Population	thousands
Zgorzelec county	91 258
Zgorzelec	31 089
Bogatynia	17 984
Pieńsk	17 984

Corine Land Cover Classes

10,3%	artificial surfaces
36,4%	agricultural areas
52,3%	forest and seminatural areas
0,2%	wetlands
0,8%	water bodies

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1049 of incidental rain events was recorded (2011-2017) FF 13

19/10/2018

3% of the county area has more than 20% soil sealing

Mostly domiantes clay soil



Wojewódzki Fundusz Ochrony Środowiska
i Gospodarki Wodnej
we Wrocławiu

CONTACT DETAILS

THANK YOU FOR YOUR ATTENTION

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www.interreg-central.eu/rainman

TAKING COOPERATION FORWARD

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