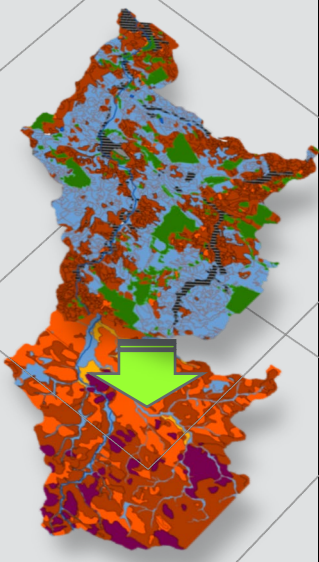


FACTSHEET RISK ASSESSMENT AND MAPPING ACTIVITIES

Mapping of areas vulnerable to soil water erosion - Determination of problem areas in the Czerwona Woda catchment (Case Study)

<p>Where was it implemented?</p>	<p>Map/Example visualisation</p>
<p>Czerwona Woda catchment - Zgorzelec district, Lower Silesian Voivodship, south-west Poland.</p>	
<p>Problem/background</p>	
<p>A large number of fire brigade interventions resulting from sudden floods caused by heavy rain. The occurrence of local floods caused by intensive precipitation events in the district of Zgorzelec is confirmed in the registry of fire brigades interventions. The most serious event of intensive rainfall that affected a flash flood in the Nysa Łużycka catchment in recent years took place on 6.-8. August 2010.</p> <p>Unfavourable influence of intensive precipitation has been also shown in historical sources. Most of historical floods in the Zgorzelec district were related to river floods, especially precipitation-type floods. Some of the floods were caused by heavy precipitation when surface runoff was observed. The flood in 2010 was a multi-genesis-type as dams at Niedów reservoir were additionally broken.</p>	
<p>Description of methodological background and outcomes</p>	
<p>Soil degradation might be a result of surface runoff caused by precipitation. Surface runoff is formed as a result of limited infiltration of water into the soil, resulting in a flood hazard in neighbouring areas. The occurrence and intensity of water erosion is affected by slope, soil type, rainfall intensity, and the way of land use.</p> <p>The methodical approach to determine the problem areas was a multi-criteria analysis of soil type, slope, and also the way of land use.</p> <p>Analyses were carried out in 4 stages:</p> <ol style="list-style-type: none"> 1. Analysis of soil susceptibility to water erosion, 2. selection of the areas with soils of considerable water capacity on impermeable undersoil, 3. detailed analysis of the slope map, and 4. analysis of land use. <p>The aim of the analyses was to identify the places where there are factors contributing to the occurrence of water erosion.</p>	
<p>Area and event characterisation</p>	
<p>Area type Rural</p>	<p>Topography Hilly</p>
<p>Land cover/land use distribution 60% non-irrigated arable land, 18% forests, 13% discontinuous urban fabric, 9% other agricultural areas</p>	<p>Event Not event-based</p>
<p>Receptors Buildings, technical infrastructure, agricultural land</p>	<p>Flood type Sudden weather phenomena that initialize surface runoff.</p>

Specifications of method/measure and data demands and outputs	
Level of complexity	2
Addressed SPRC element	Pathway, receptor, consequence
Method group	Process-based approach
Spatial scale(s) of application	Local
Time scale/resolution	No temporal resolution
Input datasets (type and scale/resolution)	Geological maps 1:50,000 Soil and agricultural map 1:50,000 DEM 250 m
Output datasets (type and scale/resolution)	Map of areas vulnerable to soil water erosion
Description of implementation	
Implementation • 03/2018 to 12/2018	Users (reported/designated) • Regional and local spatial planning departments
Initiator/responsible • IMGW-PIB/RAINMAN project	Involved stakeholders • Spatial development offices • Spatial planning departments • City planning department
Lessons-learned	
Main success factor: • Reduction of soil susceptibility to runoff	Main challenge: • Data for detailed multi-criteria analysis of the area.
Synergies/beneficial aspects: • Reduction of flood hazard in neighbouring areas.	Conflicts/Constraints: • Maps availability - identification of the areas • Future agricultural development in a given region
Key message to others starting with a similar task	Contact
“The analysis of a number of geophysical and natural aspects can contribute to better spatial planning.”	Dr Eng Mariusz Adynkiewicz-Piragas Dr Joanna Kryza Institute of Meteorology and Water Management National Research Institute (IMGW-PIB) Mariusz.Adynkiewicz@imgw.pl Joanna.Kryza@imgw.pl
References	
<p>Józefaciuk, A.; Józefaciuk, C. (1999) Ochrona gruntów przed erozją - poradnik dla władz administracyjnych i samorządowych oraz służb doradczych i użytkowników gruntów. Wydaw. IUNG, Puławy.</p> <p>Nowocien, E. (2008) Wybrane zagadnienia erozji gleb w Polsce. Ocena zagrożenia gleb erozją. In: Problem erozji gleb w procesie przemian strukturalnych na obszarach wiejskich. Studia i Raporty IUNG-PIB, Puławy, 10, 9-38.</p> <p>Paluszek J. (2011) Kryteria oceny jakości fizycznej gleb uprawnych Polski. Acta Agrophysica 191.</p>	