

Flood risk assessment is important for regions exposed to extreme weather events, especially as climate change increases the frequency and severity of floods. This project focuses on using Geographic Information Systems (GIS) to evaluate flood risks, combining spatial data analysis with nature-based solutions to develop a comprehensive flood management strategy.

The primary objective is to map flood-prone areas, assess potential flood hazards, and propose nature-based interventions such as wetlands restoration, riparian buffer zones, floodplain management, and enhanced green infrastructure. These solutions leverage natural processes, such as water absorption, soil retention, and the regulation of surface runoff, to reduce flood risks while promoting environmental sustainability.

The integration of nature-based solutions with GIS technologies aims to enhance flood resilience by restoring natural systems that regulate water flow and improve ecosystem services. For example, wetlands and riparian zones can help manage excess water during heavy rainfall, while sustainable land use practices can limit impervious surfaces, reducing surface runoff. This approach serves as a sustainable alternative to traditional engineering-based flood management, which often involves costly infrastructure and may not be as effective in the long term.

By combining GIS tools with nature-based solutions, the project will generate flood hazard maps and vulnerability assessments, providing valuable insights for policymakers and local authorities. These insights will support the development of adaptive strategies to protect communities, infrastructure, and ecosystems from flood risks, thereby ensuring long-term resilience against future flood events.

This approach highlights the role of innovation in regional development, focusing on the integration of nature-based solutions with GIS technologies as a foundation for more sustainable and effective flood risk management strategies. By restoring natural flood regulation processes and promoting biodiversity, the project aims to provide valuable insights and recommendations for policymakers and local authorities. These insights can support the development of adaptive strategies for flood risk management, enabling vulnerable regions to better prepare for and respond to flood events while promoting environmental sustainability, economic resilience, and social well-being.