



SMART RIVER Projekat - 1042

Deliverable D.T2.1.2

**LOCAL FLOOD HAZARD, VULNERABILITY AND RISK ASSESSMENT
REPORT**

Bosna River Basin, Ilijaš Municipality

Executive summary



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Key words: *Floods, flood hazard, flood risk, Ilijaš municipality*

Introduction

Short and long-duration precipitation and melting snow are the most common source of flooding in the municipality of Ilijaš. The cause of flooding is the lack of river training, inadequate drainage of rainwater, and insufficient construction of protective structures that would prevent flooding of populated areas and arable land. Most watercourses in Ilijaš municipality have a torrential character with specific characteristics, especially in terms of flood hazard.

River Basin and Environmental context

Ilijaš municipality is characterized by a very dense hydrographic network. The watercourses belong to the Bosna River Basin, i.e. Black Sea Basin. Most of them are mountain watercourses with a steeper slope and with torrential characteristics. Municipality includes the upper course of the Bosna River, in a length of approximately 14.5 km. The altitude ranges from 400 to 1400 meters above sea level. The municipality covers an area of 308.6 km². It is characterized by flat-hilly and mountainous terrain. According to the official results of the 2013 Census, 19,603 inhabitants live in Ilijaš municipality.

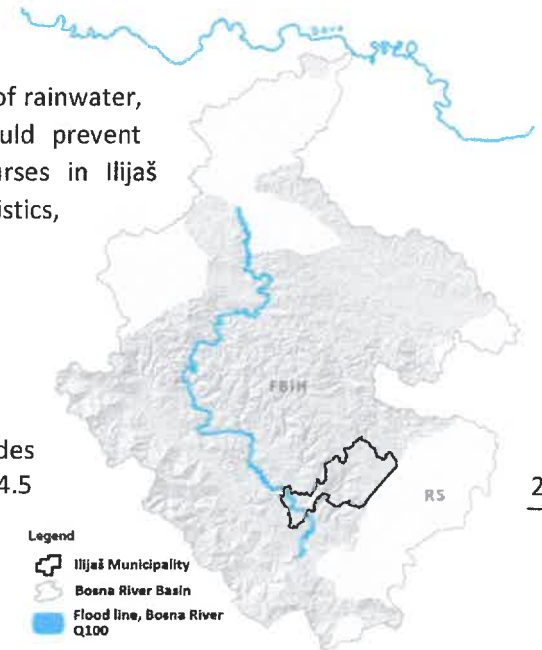
Looking at the land cover, the dominant class is coniferous forests covering 27.17% of the total land cover, followed by the broad-leaved forest class with 27.09%, complex cultivation patterns with 11.05%, pastures with 10.53%, mixed forest with 9, 76%, and land principally occupied by agriculture with significant areas of natural vegetation with 9%. The other present classes have a share of less than 5% in the total land cover of Ilijaš municipality.

The area is characterized by two climate types: a continental climate and a mountain type of moderately continental climate characterized by long and cold winters, short periods of spring and autumn and warm summers. The average annual temperature is 10°C, the warmest months of the year are July and August with average temperatures of 18.6 to 22°C, while the coldest month is January with an average temperature of -4.8 to +4.1°C.

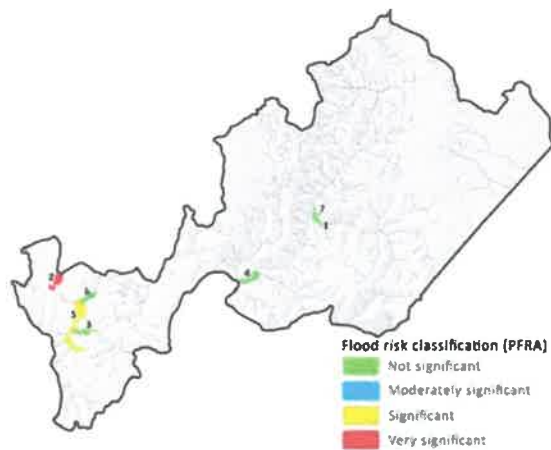
Flood Hazard and Flood Risk mapping

The framework for flood risk assessment with the aim of reducing the harmful effects of floods in the Federation of Bosnia and Herzegovina (FBiH) was established by the introduction of the Flood Directive into the FBiH legal system.

As part of the preliminary flood risk assessment, historical floods were identified, the potential harmful consequences of future floods were assessed, and the floods were classified according to their importance.

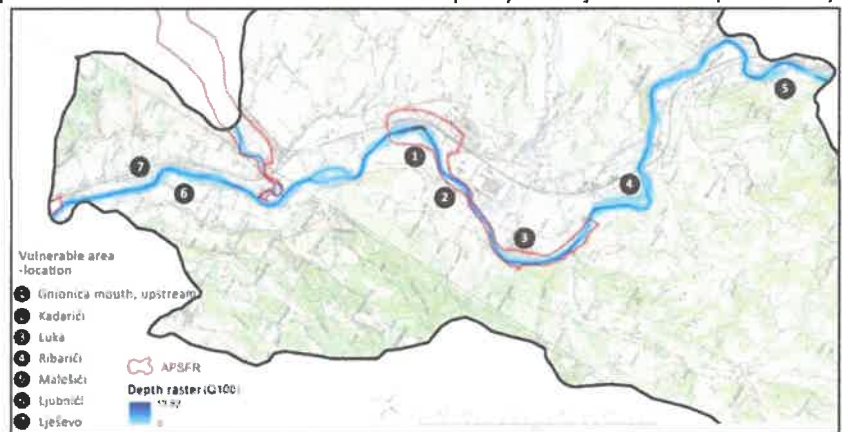


In Ilijaš municipality, seven flood areas have been identified, two of which are classified as areas with potentially significant flood risk (APFSR areas). For APFSR Ilijaš on the Bosna River and for APFSR Podlugovi on the Stavnja River, hazard maps and flood risk maps were prepared.



Flood hazard is the potential threat that floods pose to people, property, the environment and cultural heritage. However, flooding is only a risk when people, property, businesses, farms, infrastructure, the environment or cultural heritage can potentially be affected or damaged by flooding. Hazard maps are based on the results of hydraulic models simulated for three flooding scenarios (T=20, 100 and 500 years).

The flood hazard analysis indicated the most vulnerable areas in the municipality of Ilijaš. In this regard, the urban area of Ilijaš stands out, downstream and upstream from the old ironworks facility up to the Ribarići settlement. This location has been identified as an APFSR through the PFRA and there is a set of measures for it within the FRMP. It is important to emphasize that the analysis of the hazard maps indicated new areas in the municipality of Ilijaš with a potentially significant flood risk. For them, a detailed assessment is recommended in the next cycle, i.e. in the new PFRA. Along the Bosna river, identified areas with a potentially significant flood risk are located in the Ribarići, Malešići, Ljubnići and Lješevo settlements.



The flood risk maps presented the possible adverse consequences of the scenarios shown on the hazard maps. They were prepared on the basis of calculated flood risk factor in the APFSR area, i.e. based on the flood risk coefficient and the number of exposed socio-economic and ecological assets (flood risk receptors) per unit area. Five thematic flood risk maps were created: a risk map for the population, for the economy, protected areas, cultural and historical heritage and IPPC facilities. Population, industrial plants and agricultural land are at the greatest risk of flooding in the municipality of Ilijaš.

Climate Change effect

An overview of changes in climate variables due to climate change was carried out, and possible impacts on the risk of flooding were derived accordingly. It was concluded that primarily due to more extreme rainfall events, it is expected that heavy and/or prolonged rainfall (both regional and localised) will increase surface flows and flooding. On the other hand, an increase in average temperature will lead to faster snowmelt and greater mobilisation of water, particularly in mountain central regions.