CLIMAAX
climate ready regions

Deliverable Phase 2 – Climate risk assessment

PREMMA M16

Montenegro / Municipality of Bijelo Polje

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2.0	24 September 2026	PREMMA / Municipality of Bijelo Polje	Corrected and updated assessment with strengthened local flood/WUI evidence, Phase 1–Phase 2 comparison and supporting documentation.

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Abbreviations and acronyms

Table 1. Acronyms used in this report.

Acronym	Meaning
APSFR	Area of Potential Significant Flood Risk / područje značajno ugroženo od poplava
CRA	Climate Risk Assessment
FRM	Flood Risk Management
GIS	Geographic Information System
HQ10	10-year flood scenario / high-probability flood layer
HQ100	100-year flood scenario / medium-probability flood layer
HQ500	500-year flood scenario / low-probability/extreme flood layer
M16	Month-16 deliverable milestone; also used as a prefix in local map and layer identifiers.
OSM	OpenStreetMap; source of building, road, place-name and land-use reference data.
PREMMA	Name of the Municipality of Bijelo Polje's CLIMAAX sub-project.
WIS	Water Information System / national water geoportal service
EFFIS	European Forest Fire Information System
FIRE	CLIMAAX wildfire hazard and risk workflow family
FWI	Fire Weather Index
WUI	Wildland-Urban Interface

“Source-reported” identifies a value read directly from the cited report or source attributes. Reproduced or calculated values are identified separately, and every count is reported using its documented spatial support.

Executive summary

This deliverable presents the PREMMA Phase 2 climate-risk assessment for the Municipality of Bijelo Polje, covering four flood-risk locations along the Lim and its tributary/contact zones and a wildfire/Wildland–Urban Interface (WUI) planning branch.

Phase 1 already assessed hazard, exposure and risk; it was not limited to displaying hazard maps. Phase 2 adds national flood-risk context, locally refined inventories, information on protection and channel conditions, named WUI locations and location-specific interpretation. Table 2 explains the progression through analysis focus, data sources, spatial resolution, methodological changes and resulting differences in the assessment.

The flood assessment quantifies how the retained local building inventories intersect the official WIS HQ10, HQ100 and HQ500 depth surfaces. The scenario results are 1/2/6 for Nikoljac, 37/41/42 for Lješnica, 100/211/213 for Kanje–Voljavac and 5/6/6 for the Srđevac direct set. The broader Srđevac context set increases from 0 at HQ10 to 3 at HQ100 and 12 at HQ500. These findings distinguish protection maintenance at Nikoljac, channel and blockage sensitivity at Lješnica, floodplain use and access at Kanje–Voljavac, and confluence conditions at Srđevac. Tables 3–4 document the inventory denominators and marginal-overlap sensitivity. [R17]

For wildfire/WUI, the verified source preserves consistent classifications for 162 unique zones and identifies 25 very-high-risk zones. Across the 6,042.27 ha screening footprint, the source records 8,815 building footprints, an indicative population of 9,311.6, 466.15 km of roads, 4,001.59 ha of agricultural/open land and 1,122.47 ha of forest. The separate hazard and risk fields show where exposure raises planning priority even when the hazard class itself is not very high.

The practical outcome is a differentiated basis for verification, maintenance, preparedness and adaptation-option development. Flood and wildfire priorities are developed through hazard-specific assessments and inform the same municipal Phase 3 planning process. Flood results guide protection, channel, floodplain and confluence actions, while WUI results guide field review of buildings, access, vegetation and prevention measures. Each branch retains the method, indicators and spatial support appropriate to that hazard.

Key take-away messages. The Phase 2 conclusions are supported by a clear Phase 1–Phase 2 bridge, a fixed-inventory flood scenario comparison, verified WUI source tables and a tight evidence chain. The practical direction is unchanged: maintain existing protection, prevent blockage, manage floodplain/agricultural exposure and verify high-priority WUI zones before selecting adaptation measures.

1 Introduction

1.1 Background

Bijelo Polje is a mountain-valley municipality in northern Montenegro. The Lim valley links settlements, roads, public services, agriculture and local access. The municipal Flood Protection and Rescue Plan places the municipality in the catchments of the Lim, Bistrica, Ljubovića and Lješnica. This setting gives the four selected sites different exposure and capacity questions. [R1]

The local settings include a protected urban riverbank at Nikoljac, a regulated tributary and bridge/blockage point at Lješnica, agricultural floodplain parcels along Kanje–Voljavac and a confluence/contact zone at Srđevac. The 2024 plan update is treated as an annex, read together with the original plan for operational and capacity context. [R1]

This report refines the approved Phase 1 flood and wildfire assessment. The flood branch translates official WIS context and local inventories into practical questions for four M16 locations; the wildfire/WUI branch is set out in Section 2.7. Neither branch replaces national hazard mapping or municipal emergency planning.

In addition to river-corridor hazards, Bijelo Polje has a significant wildfire-relevant WUI context because settlements, hamlets, roads, agricultural plots, open land and forested slopes are spatially close to each other. The wildfire branch asks where people, buildings and access routes meet burnable vegetation. It combines the approved CLIMAAX Phase 1/M6 wildfire outputs and local GIS evidence with the municipal Assessment of Vulnerability to Fire and the December 2024 fire-planning update to define named municipal priorities for preparedness and Phase 3 review.

1.2 Main objectives of the project

The objective of the M16 Phase 2 work is to strengthen the local decision relevance of the approved flood and wildfire assessment. Phase 1 already included hazard and exposure/risk components; Phase 2 adds named sites, local inventories, mechanisms and capacity information that support more specific municipal priorities.

Specific objectives are:

- Use the CLIMAAX Phase 2 framework to deepen the flood-risk assessment beyond Phase 1 screening outputs.
- Use HQ100 as the main detailed presentation reference and the dated HQ10/HQ100/HQ500 fixed-inventory comparison to identify where frequent and rarer-event conditions require different local review and preparedness.
- Combine official WIS HQ100 flood hazard and risk services with local QGIS vector interpretation.
- Identify differentiated risk patterns across the selected M16 locations, including protection-dependent residual risk, channel/blockage risk, agricultural/floodplain risk and confluence/floodplain exposure.
- Translate site-level findings into practical municipal priorities for inspection, maintenance, preparedness, targeted protection and Phase 3 adaptation-option development.

- Integrate wildfire / WUI priority evidence by translating the CLIMAAX M6 FIRE workflow outputs and local QGIS WUI layers into named municipal planning priorities, final map annexes and Phase 3 field-verification tasks.

The expected outcome is a traceable and visually supported flood and wildfire/WUI assessment that can inform adaptation planning, operational preparedness and future updates of local protection documents.

1.3 Project team

The work was prepared by the PREMMA / Municipality of Bijelo Polje project team with technical support for GIS-based local refinement, scenario interpretation and report preparation. The municipal role is central because the interpretation relies on local knowledge of riverbank protection, flood-prone corridors, access routes, exposed buildings and priority areas for operational preparedness.

1.4 Outline of the document's structure

Section 2 covers scoping, the flood assessment and findings, proposed Phase 3 work and wildfire/WUI refinement. Sections 3–6 contain conclusions, progress, supporting documentation and references. Separate statistical units are explained under "Reading the statistical units" in Section 2.7.3; verification evidence is summarised in Section 6.1.

2 Climate risk assessment – phase 2

Table 2 distinguishes the baseline analysis from the Phase 2 refinement across the five CLIMAAX comparison dimensions. [R2]

Table 2. Phase 1–Phase 2 comparison across the five CLIMAAX dimensions.

CLIMAAX dimension	Phase 1 baseline	Phase 2 local refinement	Difference / practical use
analysis focus	Municipality/AOI-scale river-flood hazard, building and population exposure, land-use damage and wildfire risk. Exposure and risk were already included.	Four local flood settings and named WUI planning locations, with existing protection, channel/blockage mechanisms, floodplain use, confluences and settlement-edge context.	Phase 2 converts the municipal baseline into four flood-site assessments and named WUI priorities while retaining the Phase 1 exposure and risk evidence.
data sources	JRC/CEMS-EFAS flood depths, OSM buildings, GHSL population, LUISA land use and JRC damage curves; additional Aqueduct material. FIRE inputs include terrain, land cover, historical fires, ECLIPS2.0 climate and vulnerability information.	Official WIS hazard/risk context, inherited RP100, local exposure/measure layers and municipal plans; named WIS depth surfaces for the 18 September 2026 three-scenario check. WUI sources remain OSM/Geofabrik, historical points and EFFIS-derived context.	National/local sources supplement the baseline. Distinguish an original input's period, local records' actual dates, later publication, and a locally derived product.
spatial resolution	JRC source grid: 3 arc-seconds; approximately 73.35 m reported after reprojection in the river notebook. The land-use calculation uses 100 m inputs; the executed FIRE workflow uses a 100 m working grid. Buildings were already vectors.	Individual footprints, local polygons and named WUI areas provide detailed analysis units. A 50 m contact distance is a selection/reference distance; WMS rendering is a display product. Distance controls distinguish EPSG:3857 from local metric calculation.	Individual footprints and local polygons provide finer decision units; the native source grids and official hazard services remain the methodological basis.
methodological changes	Raster preparation, exposure extraction and depth–damage analysis; ML wildfire susceptibility and risk classification. Core building/population results use RP10/50/100/500; other river material includes RP200 and Aqueduct RP250 scenarios.	Local GIS selection and interpretation with protection, mechanisms, urgency and capacity. HQ100 is the detailed reference. Phase 2 adds a dated HQ10/HQ100/HQ500 overlay on fixed inventories, with a 1 m² sensitivity check. WUI identifier/class/source checks remain separate.	Adds location-specific decision support, three-scenario testing and verified WUI source reconciliation using the existing authoritative and local evidence base.
resulting differences in the assessment	Broad flood-corridor patterns, return-period exposure/damage outputs, and historical/near-future wildfire risk patterns and road-risk information.	Differentiated local priorities, supplemented by scenario-specific intersections rather than relabelled inventory totals. Kanje–Voljavac increases most from HQ10 to HQ100; Srđevac nearby/context increases from 3 to 12 in HQ100/HQ500. WUI verification locations are retained.	Produces differentiated Phase 3 priorities. The 162-zone hazard distribution is 23/22/117 and the risk distribution is 25/31/106; the exposure totals are confirmed by the recovered source.

Evidence basis: approved D1 report, manifest and archived flood/fire workflow packages. Phase 1 and Phase 2 indicators retain their documented source periods, resolution and spatial support. [R1–R7]

2.1 Scoping

2.1.1 Objectives

The climate risk assessment supports municipal decisions by relating hazard information to exposed buildings, agricultural/floodplain use, access, existing protection, channel/confluence mechanisms and WUI settings. The flood and wildfire/WUI analyses use hazard-specific methods and indicators and feed the same Phase 3 municipal planning process.

The results feed into policy and decision-making by:

- supporting municipal prioritisation of inspection, maintenance and preparedness tasks;
- clarifying where existing measures require monitoring rather than being treated as absent;
- identifying locations where blockage prevention and channel maintenance are central risk controls;
- highlighting agricultural/floodplain exposure that may not be sufficiently visible if only building counts are considered;
- providing report-quality figures and data lineage for future updates of municipal plans and Phase 3 adaptation options.

The assessment covers four selected flood settings and the wildfire/WUI evidence described in Section 2.7. Phase 2 uses official WIS services, Phase 1 results, local inventories, municipal plans and local GIS analysis to quantify exposure and derive site-specific priorities. Results are interpreted within the stated scenarios, source dates and spatial supports.

2.1.2 Context

Flood risk in Bijelo Polje has been handled through municipal protection and rescue planning, national flood hazard/risk mapping services and previous CLIMAAX screening outputs. The municipal flood plan provides the local context: hydrographic structure, exposed settlements and infrastructure, emergency response arrangements, evacuation-related documentation and structural/non-structural measures. The 2024 update adds revised climate, demographic, infrastructure, operational and flood-intervention information through an annex system.

The wider governance context includes municipal protection and rescue responsibilities, national water-management and flood-risk services, WIS geoportal data, and the CLIMAAX framework for transparent and harmonised climate risk assessment. Relevant sectors include population and housing, local roads and access routes, critical municipal services, riverbank and channel maintenance, agriculture, forestry/floodplain land use and emergency response.

Possible adaptation interventions include maintaining existing riverbank protection, inspecting and clearing critical channels and bridge/culvert sections, managing floodplain and agricultural exposure, preserving access-route continuity, improving local warning/preparedness and using scenario-sensitivity results to test whether measures remain relevant under frequent or extreme flood conditions.

2.1.3 Participation and risk ownership

Participation in this Phase 2 assessment was organised around municipal interpretation and technical review of local GIS outputs. The assessment uses official municipal documentation, local QGIS refinement and map-review decisions to identify practical municipal priorities. Risk ownership is shared across functions: municipal authorities and the protection/rescue service own local preparedness and response; water-management and infrastructure actors support official hazard/risk information and structural measures; local communities, households and land users are the exposed stakeholders whose risk is being interpreted.

Responsibility for identification and assessment in this report lies with the PREMMA / CLIMAAX local assessment team. Responsibility for mitigation and response is linked to the municipal protection and rescue system, relevant public-utility/infrastructure actors, and national water-administration functions where official flood hazard and risk information is maintained.

The flood branch considers urban riverbank residents at M16-01, settlement-edge households and infrastructure users at M16-02, agricultural land users at M16-03 and confluence/access users at M16-04. The wildfire/WUI branch considers the recorded settlement–vegetation interfaces and related building, land-use and access evidence. Together they identify the municipal functions and exposed groups relevant to review, preparedness and adaptation planning.

Figure 1 summarises the Phase 2 institutional roles and risk ownership used in the assessment and shows how assessment, implementation and exposed-stakeholder functions connect.

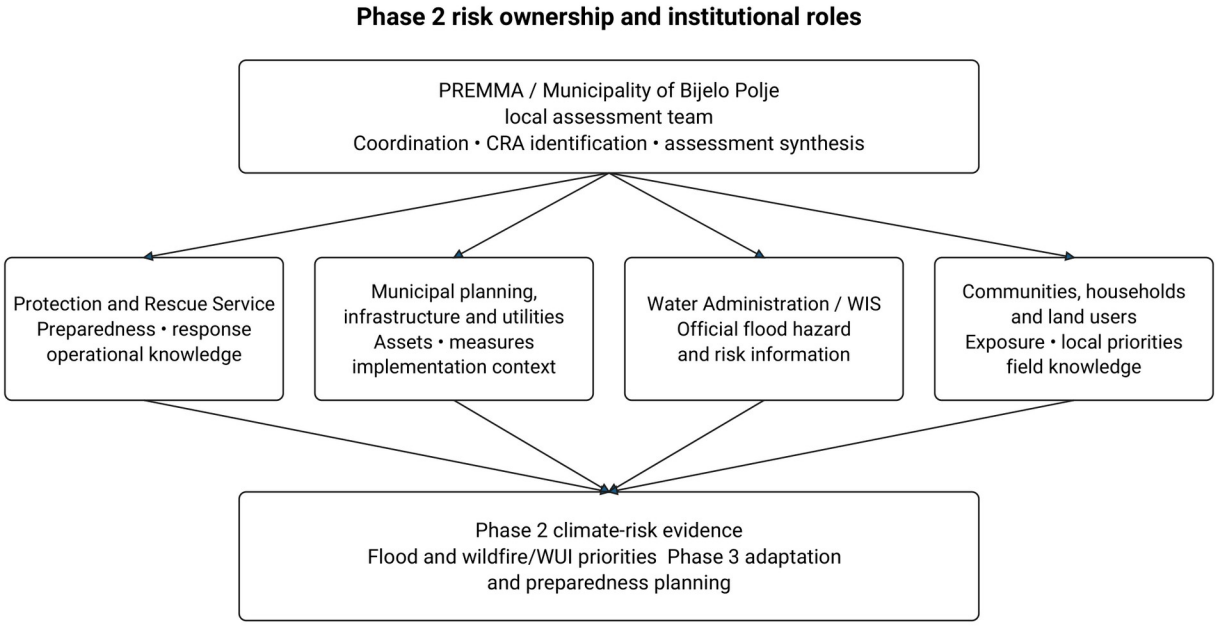


Figure 1. Phase 2 risk ownership and institutional roles. The diagram summarises the governance functions described in Section 2.1.3 and the stakeholder groups in the Individual Follow Up Plan. It shows the assessment, implementation and exposed-stakeholder functions used in the municipal planning process.

2.1.4 Application of principles

The assessment applies the following CLIMAAX principles:

The report relates hazard information to exposure and vulnerability/capacity while preserving each evidence source and analytical unit. For flooding, this links inherited screening to official WIS context and local QGIS interpretation. For wildfire/WUI, Section 2.7 links inherited FIRE outputs, municipal planning context, zone classifications and location inventories. The two branches inform the same municipal planning process while retaining hazard-specific methods and indicators.

- Social justice, equity and inclusivity: the analysis focuses on people, buildings, access routes and agricultural/floodplain livelihoods rather than only on hydraulic extent. It distinguishes locations where residents, farmers or settlement-edge households face different risk mechanisms.
- Quality, rigour and transparency: official WIS services are distinguished from local QGIS refinement layers; the raster screening output provides the corridor-scale baseline; and building counts are reported consistently as planning-scale building footprints/assets.
- Precautionary approach: HQ100 remains the detailed local reference. Tables 3–4 now document the dated HQ10/HQ100/HQ500 overlay for fixed site inventories; Table 5 retains the separate

historical population-label comparison. Further claims beyond these inventories or about protection performance require their own evidence.

2.1.5 Stakeholder engagement

The Municipality's public event report confirms the seminar on 29 April 2026 and identifies the national emergency-management sector, municipal Protection and Rescue Service and EU Office. It records agreement on developing local data, refining priority areas and linking results to planning and protection. [R12/M01]

The invitation dated 24 April and the agenda scheduled a one-day event at Hotel Franca from 11:00, covering the CLIMAAX method, flood and wildfire results, practical benefits and discussion. Together with the public event report, photograph and signed attendance list (10 participants), these records document the seminar design, participation and subject matter. Their source text is documented in the Annex M evidence dossier. [R12/M02–M03]

These records demonstrate institutional engagement and dissemination around local data, priority areas, planning and protection. The earlier D1 stakeholder summary is retained as complementary project communication evidence. [R12/M04–M06]

Box 1 links the recorded engagement themes to their use in D2 and the Phase 3 planning pathway.

Box 1. Engagement themes and proposed use of the assessment.

Recorded theme	Proposed use in D2 / Phase 3	Resulting planning value
Local evidence [M01]	Use Sections 2.6 and 2.7.6 to record the location, source version, observation and follow-up decision.	Location-specific evidence and verification tasks are carried forward into Phase 3.
Priority areas [M01]	Use the four flood settings and named WUI locations to organise a documented municipal review.	Supports structured municipal review and prioritisation of local action.
Planning and protection [M01]	Separate the assessment finding, possible measure, competent actor and next decision.	Connects assessment evidence to responsible actors and the next planning decision.



Figure 2. PREMMA/CLIMAAX seminar in Bijelo Polje, 29 April 2026. The invitation, agenda, municipal event record and signed attendance list (Annex M, redacted) provide the associated engagement evidence.

Official municipal event record: https://www.bijelopolje.co.me/index.php/arhiva-istaknutih-vijesti/8128-u-bijelom-polju-odrzan-seminar-eu-projekt-climaax

2.2 Risk Exploration

2.2.1 Screen risks (selection of main hazards)

The deliverable addresses two priority hazard branches: river flooding and wildfire/WUI. The flood branch focuses on four Lim-corridor and tributary/contact settings selected for their exposure, municipal relevance, WIS context and Phase 1 baseline. The wildfire/WUI branch in Section 2.7 follows the approved FIRE baseline through named local planning contexts and recorded zone classifications. [R1–R3]

Building on the Phase 1 exposure and risk assessment, Phase 2 develops site-specific interpretation for a protected urban bank, a narrow tributary/channel setting, an agricultural floodplain corridor and a confluence/contact zone.

Within the flood branch, the fluvial scenarios are complemented by local interpretation of rapid tributary response, channel constriction, blockage and confluence effects. Wildfire/WUI remains the second hazard branch and is developed in Section 2.7. Phase 2 retains the approved Phase 1 hazard selection and refines it with local WIS and FIRE/WUI evidence.

2.2.2 Choose Scenario

Completed fixed-inventory comparison — 18 September 2026

The same retained building footprints were tested against each scenario. For every scenario, the union of the five named WIS depth-layer responses was used once; overlapping threshold layers were not added as independent exposure. Computation was in EPSG:32634. The reported values count building footprints from the retained inventories that intersect the official WIS depth surfaces. A positive intersection is area > 0.000001 m². [R17]

Table 3. Retained inventory size and building-footprint intersections with WIS depth surfaces.

Retained inventory	N	HQ10	HQ100	HQ500
Nikoljac — first-impact	31	1	2	6
Lješnica — first-impact	67	37	41	42
Kanje–Voljavac — local “direct” subset	225	100	211	213
Srđevac — local “direct” subset	7	5	6	6
Srđevac — nearby/context	14	0	3	12

Table 4. Sensitivity control: number of footprints with overlap ≥ 1 m².

Retained inventory	N	HQ10	HQ100	HQ500
Nikoljac — first-impact	31	1	2	4
Lješnica — first-impact	67	36	40	40
Kanje–Voljavac — local “direct” subset	225	97	209	213
Srđevac — local “direct” subset	7	4	5	6
Srđevac — nearby/context	14	0	3	12

The ≥1 m² filter is a numerical sensitivity check for marginal overlaps; it is not used as an official damage or safety threshold. For example, an HQ100 Lješnica overlap of about 0.000007 m² is counted in Table 3 but not Table 4, and two Nikoljac HQ500 matches are smaller than 1 m². Buildings without a mapped intersection in the analysed WIS scenarios should not be interpreted as free from flood risk; the results are specific to the analysed scenarios and source datasets. Annex E retains the feature identifiers, wider-inventory controls and source-query manifest.

The scenario-analysis inventories remain 31, 67, 225, 7 and 14 records. At Srđevac, the June Annex A/B cartography labels 10 nearby buildings within 50 m, while the 18 September scenario analysis uses a broader 14-record context inventory. Both are retained as distinct analytical supports.

Published hazard inputs and robustness checks

Fifteen named WFS queries (five depth layers × three scenarios) were retrieved on 18 September 2026. Returned and matched counts agree for each recorded query. Five self-intersecting input features were repaired in memory for analysis, and the alternative repair yielded identical counts in all 21 inventory/scenario checks. This confirms the reproducibility of the stated computation across the documented inputs and geometries. [R17]

The separately inspected public GeoJSON contains 643 water-related thematic records (mainclass 8; cat_legend 4) and is retained as a separate water-theme reference. Scenario calculations use the named hazard depth surfaces, while consequence/risk themes and local reference polygons retain their respective analytical roles.

HQ100 is the common detailed reference for the four local flood settings. It allows the report to explain exposure, protection and local mechanisms on a consistent nominal scenario basis, while the local first-impact, direct and nearby/context inventories retain their documented selection definitions.

Additional scenario evidence is available from the paired official flood-risk/impact sheets for APSFR 13 / DRB / Lim07, dated September 2022. They have the same main-map geographic control points and a stated scale of 1:5,000 on A3. The population legend defines the displayed ratio as affected inhabitants divided by total inhabitants. The following values reproduce those approximate labels. [R7]

Table 5. Historical population-label context from APSFR 13 / DRB / Lim07.

Map label	HQ100	HQ500	Documented difference
BIJELO POLJE	~109 / 4,817 ~2.3%	~118 / 4,817 ~2.4%	Approximately nine more affected inhabitants in the map label.
RAKONJE	~3 / 2,291 ~0.1%	~3 / 2,291 ~0.1%	No change at the precision printed on the paired sheets.

The paired printed labels provide historical, approximate population context and are kept separate from the fixed-footprint scenario analysis. Tables 3–4 therefore add site-level exposure detail without changing the archived sheet labels.

HQ10 now has explicit footprint-overlap evidence within the specified inventories, alongside HQ100 and HQ500. Return periods remain distinct from future climate years, emissions pathways and socioeconomic scenarios. The results provide scenario-specific exposure evidence for planning; separate engineering analyses would be used to test defence performance, blockage behaviour or future climate and socioeconomic change.

ANALYTICAL SCOPE — Annex E records the inventory/scenario comparison and evidence record 79. At Srđevac, the June Annex A/B maps retain seven directly exposed buildings plus 10 nearby buildings within 50 m, while the dated scenario comparison uses seven direct records and a broader 14-record context inventory. The cartographic and scenario-analysis products are used for their documented purposes. [R6, R17]

2.3 Regionalized Risk Analysis

Table 6 presents the evidence chain used to distinguish official services, inherited workflow outputs, local processing and the reported records.

Table 6. Data traceability from source through processing to reported output.

Input	Origin	Processing / use	Reported output	Verification route
Phase 1 RP100 river-flood raster	CLIMAAX/JupyterHub Phase 1 workflow	Municipal/AOI baseline; qualitative corridor reference in M16	Screening raster and D1 record	D1/Zenodo baseline and GeoNode dataset 276.
HQ100 flood hazard/risk services	WIS / Water Administration of Montenegro	Official hazard and risk context for QGIS viewing, clipping and local interpretation.	HQ100 context maps and risk interpretation	GeoNode datasets 277–288; WIS service
Building and local exposure layers	OSM/Geofabrik and municipal/local refinement	First-impact, nearby-building, road and land-exposure overlays	M16 site evidence and counts	GeoNode datasets 297 and supporting local package
Municipal flood plans	Municipality of Bijelo Polje, 2013 plan and 2024 update	Document review and capacity/measure interpretation	Existing-measure and operational-context narrative	Supporting-document package
CLIMAAX M6 FIRE outputs	CLIMAAX FIRE workflow family	Municipal-scale baseline used as methodological bridge	Wildfire/WUI refinement baseline	D1/M6 evidence package and report Section 2.7
Local EFFIS mask / historical points	WMS-derived 2025 local mask; historical subset 2001–2020	Contextual comparison; separate UTM metric control	33 mask polygons and comparison records; 211 historical points	GeoNode 367, 378 and 379; evidence records 20, 23, 27
WUI exposure layers	OSM/Geofabrik plus local QGIS processing	Source class labels and exposure attributes; source-table numerical reconciliation completed against the recovered 162-zone June 2026 source	Named WUI priority zones and exposure summaries	GeoNode 380, 382–386 and 391, reviewed derivatives and evidence records 13–15 and 27.
Stakeholder evidence	Invitation, agenda, public event record and previously embedded source photograph	Planning records, event confirmation and proposed input-to-use linkage are separated	Institutional engagement; Box 1 planning interpretation	Section 2.1.5 and Annex M evidence dossier.
HQ10/HQ100/HQ500 depth surfaces	Named official WIS WFS responses, 18 September 2026	Scenario unions and fixed-inventory overlays in EPSG:32634; positive-area and ≥1 m² counts	Tables 3–4; local interpretation; Annex E	R17; evidence record 79, query/source hashes and per-feature membership

2.3.1 Hazard #1 – River flooding: fine-tuning to local context

2.3.1.1 Hazard assessment

Phase 1 established a municipal/AOI baseline with flood hazard, building and population exposure, and land-use damage analysis. Phase 2 adds official WIS context, locally refined inventories and explicit protection/site mechanisms, together with an HQ10/HQ100/HQ500 comparison for the same retained footprints. This enables specific maintenance, preparedness and rarer-event review, while the inherited RP100 and official WIS products provide complementary corridor- and site-scale evidence. [R2, R17]

2.3.1.2 Risk assessment

The flood workflow separates hazard, exposure, capacity and priority. WIS HQ100 hazard services provide the hazard backdrop; WIS risk layers provide additional official consequence/context information. Locally refined footprints, first-impact subsets, nearby/context layers, floodplain interpretation and channel/bridge features add exposure and mechanism evidence. Existing protection, access and municipal response considerations support qualitative capacity interpretation.

This provides a methodological and decision-use continuation of the CLIMAAX baseline by connecting Phase 1 screening with official WIS services and local vector evidence.

Table 7. Data overview and role in the Phase 2 flood-risk assessment.

Dataset / information layer	Source / status	Use in assessment	Source and interpretation note
WIS HQ100 flood hazard layers	Official WIS / Water Administration service	Main hazard backdrop for local refinement and final maps	Official server-rendered hazard service used as supplied.
WIS HQ100 flood-risk layers	Official WIS risk context	Population, object, infrastructure, settlement, forestry/agricultural and watercourse risk context	Official consequence context interpreted with the service legend.
Local building footprints and first-impact layers	QGIS local refinement / OSM-supported building inventory	Building-level exposure interpretation and counts	Planning-scale building footprints with documented source and geometry.
Floodplain / agricultural exposure layers	QGIS local refinement	Identifies agricultural/floodplain risk, especially M16-03	Planning reference polygon used with building, land-use and access evidence.
Municipal plan and 2024 update	Official local protection and rescue planning documents	Capacity, operational context, existing measures, planning linkage	Plan and Annex are read together.
Phase 1 RP100 raster	CLIMAAX/JupyterHub screening output	Consistency check with WIS/QGIS flood-prone corridors	Corridor-scale baseline used with the more detailed WIS and local-vector evidence.

2.3.2 Local rapid-runoff, flash-flood and blockage mechanisms

2.3.2.1 Hazard assessment

Within the flood branch, local rapid-runoff, flash-flood and blockage mechanisms are assessed through mapped channel constrictions, bridge and culvert conditions, rapid tributary response and confluence settings. These mechanisms complement the official fluvial scenario evidence and help explain site-specific exposure and urgency. Wildfire/WUI is addressed as the second hazard branch in Section 2.7.

2.3.2.2 Risk assessment

At Lješnica, the source interpretation identifies a bridge/blockage point and a regulated channel section. At Srđevac, it identifies a confluence/floodplain setting. These local mechanisms explain potential flow obstruction, exposure and urgency, and are considered together with existing capacity and access conditions.

2.3.3 Additional assessments based on local models and data

2.3.3.1 Hazard assessment

The additional local assessment consisted of QGIS-based local refinement and risk-context mapping for four M16 sites. The work added local building footprints, first-impact and nearby-building subsets, verified or interpreted local measures, floodplain/agricultural exposure areas and site-specific risk mechanisms. These outputs provide municipal-scale risk-context maps and practical priority categories. Indirect impacts are addressed qualitatively through access-route continuity, agricultural/floodplain functions and potential service disruption.

Methodological bridge with CLIMAAX Phase 1 and the CRA Toolbox

Phase 1 included municipal/AOI flood hazard, building and population exposure and land-use damage analysis. The M16 assessment carries that baseline forward while adding official WIS context, selected local inventories, protection knowledge and explicit site mechanisms. The benefit is a more specific planning interpretation rather than the first addition of exposure or risk.

At corridor scale, the inherited RP100 screening and the WIS/QGIS refinement identify the Lim corridor and the same four priority settings. The WIS services and local vectors then add scenario- and site-level exposure detail. Because the products originate from different source models, consistency is interpreted spatially at corridor and site scale.

The earlier raster check recorded an angular grid of approximately 0.000833 degrees. The detailed local vectors improve the resolution of exposure interpretation and communication at building and site level, while the source flood products retain their documented native resolution. [R2]



Figure 3. Phase 1 RP100 corridor-scale screening illustration. Annex F provides the full-detail figure and raster.

Native model resolution, local vector detail and display scale are therefore reported separately. Annex E documents the site-level overlay through the dated computation and source manifest.

2.3.3.2 Risk assessment

Final HQ100 risk-context map package and annex references

Annex A contains six HQ100 risk-context maps with stable identifiers A.1–A.6. The full-resolution PDFs preserve the cartographic detail, while Figure 3 provides the reduced Phase 1 corridor-scale preview. The operational local risk maps are referenced by their Annex A identifiers.

Annex A maps are part of the evidence base for Sections 2.3 and 2.4. The PNG copies are intended for viewing and optional insertion in communication material; the PDF copies are the archival cartographic outputs with scale bar, legend and source note preserved.

Annex map	Final map file(s)	Purpose in the report
Map A.1	M16_01_WIS_HQ100_Risk_Context_Map.png / .pdf	M16-01 Nikoljac / Lim: managed residual risk along the urban riverbank corridor.
Map A.2	M16_02_WIS_HQ100_Risk_Context_Map.png / .pdf	M16-02 Lješnica: local channel / blockage risk, bridge/critical section and settlement exposure.
Map A.3	M16_03_WIS_HQ100_Risk_Context_Overview_Map_FINAL.png / .pdf	M16-03 overview: elongated Lim-Bistrica floodplain and agricultural risk corridor.
Map A.4	M16_03_WIS_HQ100_Risk_Context_Detail_1_Map_FINAL.png / .pdf	M16-03 detail 1: settlement-edge exposure and agricultural/floodplain overlap in the first mapped section.
Map A.5	M16_03_WIS_HQ100_Risk_Context_Detail_2_Map_FINAL.png / .pdf	M16-03 detail 2: second mapped section of the floodplain-risk corridor.
Map A.6	M16_04_WIS_HQ100_Risk_Context_Map_FINAL.png / .pdf	M16-04 Srđevac / Tronoša–Lim: the Annex A source map shows 7 directly exposed buildings and 10 nearby buildings within 50 m. The F-04 scenario atlas separately uses the same 7 direct records plus a broader 14-record context inventory; the two statistical supports are not interchangeable.

Source note for Annex A: WIS / Water Administration of Montenegro HQ100 hazard and risk services; PREMMA municipal/local QGIS refinement; orthophoto/satellite basemap context. The June 2026 exports are retained as the authoritative Annex A cartographic set.

Local refinement maps retained as Annex B evidence

The earlier local-refinement maps are retained as Annex B, not replaced by the risk-context maps. They are the visible bridge between the Phase 1 screening raster and the final HQ100 risk-context interpretation. Annex B documents the hazard/exposure refinement stage: first-impact buildings and riverbank protection at M16-01, blockage/channel and building exposure at M16-02, agricultural/floodplain and settlement-edge exposure at M16-03, and direct/nearby building exposure at M16-04.

Annex A and Annex B therefore serve different purposes. Annex B shows how the local exposure evidence was built and checked. Annex A shows the final risk-context interpretation after official WIS HQ100 risk layers were added. Reading the two annexes together makes the Phase 2 workflow transparent: screening raster -> local hazard/exposure refinement -> official WIS risk-context mapping -> municipal risk priority.

2.4 Key Risk Assessment Findings

The local interpretation identifies four different planning settings and relates hazard context, exposure, capacity/vulnerability and urgency to proposed measures. Each site inventory retains its documented selection rule, while cross-site priority is derived from the local mechanism, exposure, urgency and response capacity.

This distinction matters operationally. A house behind a maintained riverbank, a bridge where debris can obstruct a tributary, a farm parcel in a long floodplain corridor and a building at a confluence do not lead to the same type of measure. Tables 9–12 therefore compare severity, urgency, resilience capacity and priority using the report's documented qualitative criteria.

Table 8. Cross-site HQ100 flood-risk interpretation for the four M16 local refinement sites.

Site	Risk interpretation	Main local evidence	Risk-management priority
M16-01 Nikoljac / Lim	Managed residual flood risk	31 first-impact records and 72 wider-inventory records; existing riverbank protection. Main-inventory overlaps HQ10/100/500: 1/2/6; ≥1 m²: 1/2/4.	Maintain and inspect existing protection; monitor erosion/scour and functionality after high-flow events; maintain preparedness.
M16-02 Lješnica	High local channel / blockage flood risk	67 first-impact records and 126 wider-inventory records; regulated channel and bridge/blockage point. Main-inventory overlaps: 37/41/42; ≥1 m²: 36/40/40.	Channel maintenance, blockage prevention, bridge/critical-section inspection and local preparedness for rapid response.
M16-03 Kanje–Voljavac / Lim–Bistrica	Mixed floodplain and agricultural risk	225 retained building footprints; HQ10/HQ100/HQ500 overlaps: 100/211/213; ≥1 m²: 97/209/213. Local floodplain/reference polygon and access context.	Floodplain/agricultural risk management, settlement-edge preparedness, access-route monitoring and targeted measures where buildings/parcels/access overlap with HQ100 risk.
M16-04 Srđevac / Tronoša–Lim	Local confluence / floodplain flood risk	7 records in the local direct subset and 14 records in the broader scenario context inventory. Overlaps: 5/6/6 and 0/3/12 respectively; the 14-record context result is unchanged by the 1 m² filter. Annex A/B separately show 7 directly exposed buildings plus 10 nearby buildings within 50 m; that cartographic subset is retained and not equated with the 14-record scenario-context set.	Confluence monitoring, floodplain/channel maintenance, targeted local protection, access-route continuity, post-event inspection and community preparedness.

2.4.1 Mode of engagement for participation

Phase 2 engagement combined municipal documents, local knowledge, GIS work and the documented seminar process in Section 2.1.5 and Annex M. Phase 3 will use the maps and options with the relevant municipal functions and exposed communities, recording the source, date and resulting decision for each contribution.

Local layers, map exports, site texts, cross-site synthesis and the recorded scenario calculation provide the evidence base for communication and municipal review.

2.4.2 Gather output from Risk Analysis step

The risk analysis outputs gathered for interpretation are:

- existing HQ100 risk-context maps for the four sites, including the M16-03 overview and two detail sheets;
- site-specific local layers: first-impact buildings, wider building inventories, nearby buildings, agricultural/floodplain exposure, verified riverbank protection, blockage point/bridge and regulated channel section;
- official WIS HQ100 flood hazard and flood-risk layers used as authoritative risk context;
- the completed fixed-inventory HQ10/HQ100/HQ500 overlays in Annex E, with the historical official-sheet population labels retained only as separate context;
- the inherited RP100 screening illustration and recorded resolution limitations;
- municipal planning context from the Flood Protection and Rescue Plan and its 2024 update.

Together, these outputs support not only spatial mapping but also severity, urgency, resilience capacity and priority decisions.

2.4.3 Assess Severity

This assessment uses the qualitative severity categories limited, moderate, substantial and critical. The interpretations below consider exposed assets, local mechanisms, floodplain use and access, providing a consistent site-level basis for comparing consequences and planning response.

Table 9. Severity interpretation for the M16 HQ100 flood-risk sites.

Site	Severity	Rationale	Main consequence
M16-01	Moderate to substantial	Exposure exists; protection is part of the capacity context.	Residual risk depends on protection condition.
M16-02	Substantial	Building exposure plus narrow-channel/blockage mechanism.	Rapid local impacts are possible.
M16-03	Substantial	Broad floodplain/agricultural exposure; 100/211/213 scenario overlaps in the retained inventory.	Buildings, land and access can be affected.
M16-04	Moderate to substantial	Confluence setting; direct and context inventories respond differently by scenario.	Local building/access impacts require targeted review.

2.4.4 Assess Urgency

The source urgency categories are retained as qualitative planning labels: no action needed, watching brief, more action needed and immediate action needed. They define the required planning timeframe and immediate practical implication for each site.

Table 10. Urgency interpretation for the M16 HQ100 flood-risk sites.

Site	Urgency	Reason	Immediate practical implication
M16-01	Watching brief / more action needed	Existing protection needs inspection and maintenance.	Maintain inspection and post-event checks.
M16-02	More action needed / immediate blockage prevention	Bridge/blockage and regulated channel can worsen impacts quickly.	Inspect and maintain the critical section.
M16-03	More action needed	Broad floodplain/agricultural and settlement-edge exposure.	Prepare land-use, access and preparedness measures.
M16-04	More action needed	Context overlaps increase from HQ100 to HQ500.	Review confluence/access contingencies.

2.4.5 Understand Resilience Capacity

Resilience capacity is assessed as low, medium, substantial or high. It reflects existing protection, operational capacity, preparedness documentation, local access, ability to maintain structures and

the specificity of the risk mechanism. The municipal flood plan and the 2024 annex show that the local planning framework includes structural and non-structural measures, operational units, evacuation-related documentation, updated intervention information and coordination arrangements. The assessment therefore does not start from an absence of capacity; it identifies where capacity must be focused and maintained.

Table 11. Resilience-capacity interpretation for the M16 HQ100 flood-risk sites.

Site	Capacity level	Evidence	Weak spot / improvement need
M16-01	Substantial, condition-dependent	Existing riverbank protection is present.	Maintenance and erosion/outlet checks remain essential.
M16-02	Medium	Mechanism and critical section are mapped.	Debris/blockage can reduce capacity.
M16-03	Medium	Exposure corridor can be mapped and monitored.	Long corridor requires coordinated action.
M16-04	Medium	Direct/context inventories and confluence setting are documented.	Local works, access and post-event checks need repetition.

2.4.6 Decide on Risk Priority

Priority combines the source qualitative interpretations of severity, urgency and capacity. The prioritisation matrix is an ordinal municipal decision-support tool; it does not represent a probabilistic or monetary risk score. Selection and implementation of measures remain subject to responsible municipal review.

Table 12. Risk-priority decision table.

Site	Priority decision	Why this priority differs	Phase 3 adaptation direction
M16-01	Maintain and monitor existing protection.	Risk-management question is performance/maintenance of an existing measure.	Inspection and post-event functionality checks.
M16-02	Prevent blockage and maintain channel/bridge section.	Local mechanism can worsen rapidly.	Debris management and rapid-response protocol.
M16-03	Manage floodplain/agricultural and settlement-edge exposure.	Risk is broader than building counts alone.	Land-use, farm/access continuity and preparedness.
M16-04	Review direct exposure and rarer-event confluence/access contingencies.	Direct and context inventories have different scenario responses.	Targeted protection, monitoring and preparedness.

Site-specific interpretation

M16-01 Nikoljac / Lim is a managed residual-risk location: existing riverbank protection changes the management question from a broad new intervention footprint to maintenance, inspection and preparedness. The retained 31-record first-impact inventory yields 1/2/6 HQ10/HQ100/HQ500 overlaps, or 1/2/4 with the ≥1 m² sensitivity filter; the wider 72-record inventory adds no intersections in this test. These counts refine the exposure evidence and support the inspection and maintenance focus.

M16-02 Lješnica is a high local channel/blockage-risk setting. Risk is driven by the combination of settlement exposure, a regulated/narrow channel and the bridge/blockage mechanism, not by inundation extent alone. The 67-record first-impact inventory yields 37/41/42 HQ10/HQ100/HQ500 overlaps, or 36/40/40 at ≥1 m²; the wider 126-record inventory adds one HQ500 footprint. The comparison strengthens the case for channel maintenance, blockage prevention and rapid local response.

M16-03 Kanje–Voljavac / Lim–Bistrica is a mixed floodplain and agricultural-risk corridor. Building exposure matters, but the dominant spatial pattern is the broad floodplain/agricultural corridor and its settlement-edge and access implications. In the retained 225-footprint inventory, positive HQ10/HQ100/HQ500 intersections are 100/211/213, or 97/209/213 at ≥1 m². The strong increase from HQ10 to HQ100 reinforces the need to consider floodplain use and access, not only building counts.

The locally drawn Kanje–Voljavac reference polygon has a calculated area of 232.80 ha. Its intersections with the selected surfaces are 173.98 ha in HQ10, 226.25 ha in HQ100 and 227.34 ha in HQ500, representing approximately 74.7%, 97.2% and 97.7% of the polygon. The polygon is a planning reference, not a verified cadastral or agricultural-land-use mask; these overlaps are not net affected farmland or crop-damage estimates. They support floodplain-use, agricultural and access preparedness. [R17]

M16-04 Srđevac / Tronoša–Lim is a local confluence/floodplain hotspot with direct building exposure. Annex A/B show seven directly exposed buildings and 10 nearby buildings within 50 m. The dated scenario analysis uses the same seven direct records plus a broader 14-record context inventory; the two subsets are deliberately kept separate. HQ10/HQ100/HQ500 overlaps are 5/6/6 for the seven-record set and 0/3/12 for the 14-record context set (4/5/6 and 0/3/12 at ≥1 m²). This strengthens the rarer-event preparedness interpretation while preserving the distinct map and scenario inventories.

The separate reference-distance check found all 14 nearby/context footprints within 50 m of the local reference floodplain polygon, five within 50 m of the seven direct footprints and three partly overlapping the local polygon. This confirms that the broader 14-record context set is tied to floodplain proximity and is analytically distinct from the 10-building cartographic subset in Annex A/B.

2.5 Monitoring and Evaluation

Phase 2 demonstrates why local interpretation needs more than one data product: broad hazard and risk screening, detailed inventories, mechanism/capacity information and municipal planning context serve different purposes. Map readability and traceable definitions are part of using that evidence responsibly.

Monitoring retains the 7-direct/14-context scenario inventory and the 7-direct/10-nearby cartographic subset for their documented purposes. These stable definitions allow future inspections to record changes consistently across the same locations and indicators. [R6, R16, R17]

The evidence base combines map exports, site texts, cross-site synthesis, local exposure layers, raster evidence and QGIS reproducibility reserves, providing a traceable baseline for Phase 3 monitoring.

A monitoring system for the next phase will track: condition of existing protection at M16-01; blockage/clearance status at M16-02; floodplain/agricultural exposure and access-route disruption at M16-03; and direct-building/confluence exposure at M16-04. Post-event inspection after high-flow conditions will be recorded and compared with the mapped risk mechanisms.

Phase 3 monitoring baselines and targets will use the approved project indicators and dated municipal inspection records.

2.6 Work plan Phase 3

Phase 3 will translate the four risk patterns into differentiated adaptation options. This work plan includes technical, operational and communication tasks.

The Phase 3 review will connect named locations and local data to practical planning decisions. It will record who reviewed the evidence, what was confirmed or corrected, and how location, access, existing protection and feasibility affected the option chosen.

- M16-01: prepare an inspection and maintenance option package for existing riverbank protection, including erosion/scour monitoring and post-event checks.
- M16-02: develop blockage prevention, channel maintenance and bridge/critical-section inspection actions, with a rapid-response checklist for high-flow warnings.
- M16-03: develop floodplain/agricultural risk-management options, including access-route continuity, land-use guidance and settlement-edge preparedness.
- M16-04: develop confluence monitoring, targeted local protection, access and preparedness measures covering the seven-record direct set and the broader scenario-context set, with explicit review of the HQ500 context overlaps; retain the 10-nearby Annex A/B map subset as a separate cartographic reference.

The completed scenario comparison informs the next review through the rarer-event contingency for the Srđevac context group, the substantial HQ10–HQ100 change within Kanje–Voljavac, boundary-sensitive cases at Nikoljac and the blockage-related concern at Lješnica. Phase 3 will field-check these conditions and appraise options through assigned municipal responsibilities.

The flood and wildfire assessments contribute to one municipal planning process, but preserve distinct hazards, spatial units and evidence. Flood interpretation is organised around riverbank, channel, floodplain and confluence mechanisms. WUI interpretation is organised around assets, access and vegetation/fire context. Their shared contribution is to identify where local functions warrant checking and why a particular response may be appropriate.

Table 13. Shared Phase 3 decision pathway, retaining hazard-specific evidence.

Decision context	Proposed next action	Evidence to record
Nikoljac: existing protection	Inspect the relevant riverbank protection and define maintenance and monitoring needs.	Dated condition record, relevant photographs, responsibility and next inspection.
Lješnica: channel/blockage sensitivity	Review the bridge/channel section, debris conditions and practical clearance/response arrangements.	Inspection or clearance record and a locally agreed trigger or responsibility.
Kanje–Voljavac: agriculture and access	Review floodplain use and access constraints with the relevant local actors.	Site-specific option note, affected function and responsible service.
Srđevac: confluence and local footprints	Retain both supports explicitly: 7 direct + 10 nearby within 50 m in Annex A/B, and the broader 7 direct + 14 context inventory in the dated scenario atlas; review channel/access conditions without conflating the subsets.	Approved layer/legend choice and a dated local verification record.
Named WUI locations	Review access, water availability, building-edge vegetation and existing prevention measures.	Zone ID, date, reviewer, observed constraint and proposed option.

A shared register will coordinate inspections and local knowledge while preserving hazard-specific evidence and indicators. It links an identifiable place and finding to a responsible actor, a verification record and a feasible adaptation option.

2.7 Wildfire / WUI local risk refinement

2.7.1 Scope and local objective

The wildfire/WUI assessment remains the additional local refinement introduced in the submitted Phase 2 report. It focuses on settlement-edge and peri-urban locations where buildings, roads, agricultural/open land and forest-edge vegetation interact with wildfire hazard. The resulting planning product directs municipal preparedness and field-review priorities.

The purpose is to translate the Phase 1 wildfire baseline into named WUI locations for municipal and fire-service field review. The screening classes identify where verification, access review, vegetation management and prevention planning should start.

2.7.2 Alignment with CLIMAAX FIRE methodology and M6 baseline

The methodological bridge connects the Phase 1/M6 CLIMAAX FIRE machine-learning hazard and risk baseline with Phase 2 named WUI locations, locally interpreted building, road and land-use exposure, municipal fire-planning context and historical/EFFIS evidence. This makes the baseline more useful for settlement-edge, access and preparedness decisions.

The baseline evidence is the approved Phase 1/M6 FIRE package, including Hazard_assessment_FIRE_ML_outputs.html and Risk_assessment_FIRE_ML_outputs.html. Phase 2 uses these outputs as the municipal wildfire baseline and adds the local WUI evidence described below. [R2]

EFFIS fuel information, the locally stored 2025 burned-area mask and the dated 2001–2020 historical-point subset provide complementary vegetation, recent-event and historical context. Section 2.7.3 documents their source roles and metric controls.

Table 14. CLIMAAX FIRE component and Bijelo Polje local-refinement equivalent.

CLIMAAX FIRE component	Bijelo Polje local-refinement equivalent
Phase 1 / M6 CLIMAAX workflow outputs	Hazard_assessment_FIRE_ML_outputs.html and Risk_assessment_FIRE_ML_outputs.html used as baseline wildfire hazard/risk evidence.
Area of interest boundary	Bijelo Polje municipal boundary.
Vegetation / burnable land context	Land-use, agriculture/open land, forest context and EFFIS fuel context used with local verification.
Historical fire evidence	Local historical subset and locally derived EFFIS 2025 WMS mask, with explicit provenance and measurement controls.
Exposed elements	OSM/Geofabrik building footprints, roads and named places.
WUI / exposed population logic	Named WUI priority zones with building-footprint counts, indicative population exposure and road exposure.
Risk prioritisation	Combination of hazard context with buildings, population, roads, agricultural/open land and forest-edge exposure.

2.7.3 Data overview and source controls

Table 15. Data overview and role in the Phase 2 wildfire/WUI assessment.

Dataset / layer	Role in the assessment	Source and interpretation note
CLIMAAX M6 FIRE hazard output	Phase 1 baseline output from the CLIMAAX FIRE machine-learning hazard assessment for Bijelo Polje.	Municipal screening baseline for local priority interpretation.
CLIMAAX M6 FIRE risk output	Phase 1 baseline output from the CLIMAAX FIRE machine-learning risk assessment for Bijelo Polje.	Methodological baseline connected to the M16 WUI refinement.
Municipal boundary	Defines the Bijelo Polje analysis area and clipping extent.	Municipal extent used for local planning.
Historical fire points	211 records with dates 25 March 2001–4 September 2020 in the local export.	211 dated records interpreted as historical-point evidence.
OSM/Geofabrik buildings	Provides the building inventory used for local WUI exposure scoring.	Planning-scale building-footprint source used consistently across the WUI analysis.
OSM/Geofabrik roads	Supports road exposure and emergency-access interpretation.	Planning-scale access evidence for field review.
Land-use / agriculture / forest layers	Supports identification of open land, agricultural exposure and forest-edge conditions.	Checked against orthophoto/satellite context where available.
Population raster / local exposure support	Provides indicative exposed population estimates.	Indicative planning estimate derived from the documented population source.
UAV orthophoto and satellite basemap	Supports visual checking of buildings, vegetation, roads and local context.	Used for visual interpretation of buildings, vegetation, roads and local context.
EFFIS 2025 WMS-derived local mask	33 saved polygons used for local comparison/context.	Local WMS-derived context with a separate metric control.
EFFIS fuel map 2017	Contextual fuel-support layer.	Contextual fuel-support layer used for local interpretation.

The local package includes named WUI locations, scored footprints, road and land-use associations, historical points and reference layers. The full analytical source contains all 162 zones, while the official-plan-matched polygon export contains 24 zones and is used for local geometry and context. [R3]

Source-lineage control distinguishes three evidence families: the recovered 162-zone WUI source used for class and exposure summaries, the nominal 1 km location-context product, and the 33-record EFFIS/historical comparison. The recovered CSV/summary provides the WUI totals and selected-location values; the other products provide local context and metric support.

Table 16. Clarified provenance of local wildfire supporting products.

Source / product	Use in D2	Source-control statement
Historical local points	Context for inspected local fire history.	211 dated records from 2001–2020 used as historical context.
EFFIS 2025 local mask	Recent burned-area context and comparison.	WMS-derived 33-polygon local mask used with the documented metric control.
EFFIS fuel / land-use context	Vegetation/settlement-edge context.	Contextual classes reviewed alongside imagery and local evidence.
OSM/Geofabrik exposure	Buildings, roads and place/land-use reference.	Planning-scale reference for buildings, roads, places and land use.

Reading the statistical units

The preserved GIS package and recovered source tables were checked for lineage. The 162-zone WUI source, the 1 km location-context product and the EFFIS comparison remain separate analytical units; zero values or same-named locations in one product are not transferred automatically to another.

Metric basis of the named-location contexts

A geometry control confirms the nominal 1 km scale of the saved location contexts in UTM 34N, with anchor and field conditions addressed through the local review pathway.

Supplementary metric control of the archived EFFIS comparison

The EFFIS proximity control reproduced the archived distance fields and then repeated the threshold test in UTM 34N. Nine of 33 records change distance group under the metric calculation. This affects the proximity context only; it does not change the stored WUI hazard/risk classes or the recovered 162-zone totals.

Table 17. Distance groups for the same 33 saved polygons.

Exclusive group	Archived categories	Metric control
Overlap with a historical point	2	2
≤500 m, excluding overlap	4	8
>500 m to 1 km	8	9
>1 km	19	14
Total	33	33

2.7.4 Regionalized WUI risk analysis

The recovered BijeloPolje_WUI_priority_2025_FINAL_locations.csv contains 162 unique zone identifiers, WUI-001 to WUI-162, with zone-level hazard, risk and numerical exposure fields. The previously preserved derivative class extract agrees with the same 162 zone/location/hazard/risk tuples. The hazard distribution is 23 very high, 22 high and 117 medium; the risk distribution is 25 very high, 31 high and 106 medium. [R19]

The verified 162-zone source confirms two related but different classifications: priority/hazard = 23 very high, 22 high and 117 medium, while risk = 25 very high, 31 high and 106 medium. The difference is important for interpretation because a location can become a high-priority risk through exposure even when the hazard class itself is not very high; the cross-tab below keeps those two dimensions visible.

Table 18. Class counts traced through 162 unique zone identifiers.

Recorded class	priority	hazard	risk
Very high	23	23	25
High	22	22	31
Medium	117	117	106
Total unique zones	162	162	162

Table 19. Cross-tabulation: source priority/hazard versus source risk.

Source priority / hazard	Risk: very high	Risk: high	Risk: medium	Total
Very high	9	10	4	23
High	11	6	5	22
Medium	5	15	97	117
Total	25	31	106	162

Nine zones are very high in both fields. A further 16 are very high risk with high/medium hazard, while 14 are very high hazard with high/medium risk. These complementary review sets show where exposure changes municipal priority relative to hazard alone.

Reading the hazard–risk comparison for field review

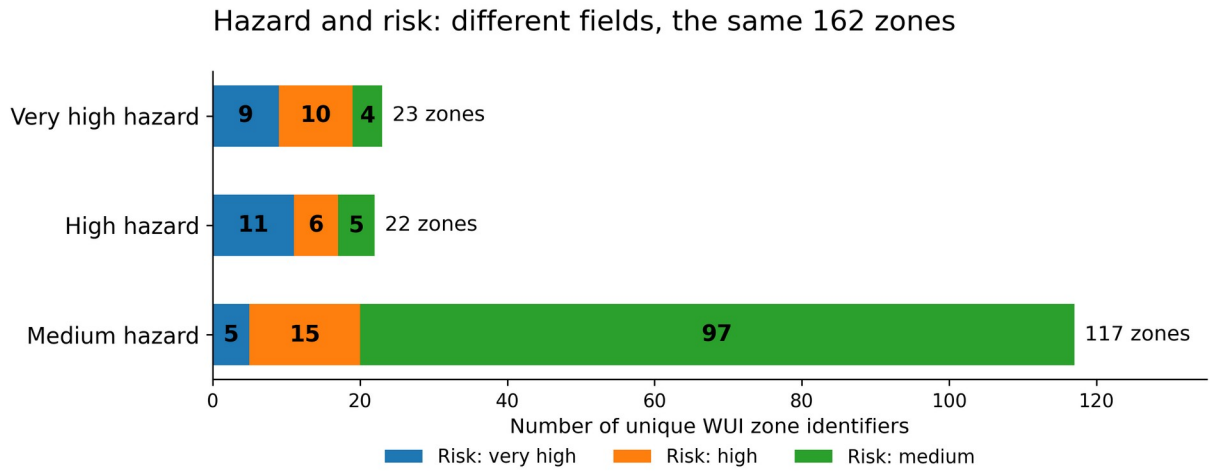


Figure 4. Recorded hazard and risk classes for the same 162 WUI zone identifiers. Bar segments show the Table 19 counts for direct comparison. Source: preserved class extract [R3, R10].

The same class is recorded in both fields for 112 zones and differs for 50, identifying the locations where exposure-sensitive prioritisation merits additional field review.

Table 20. WUI summary by source priority/hazard grouping.

The recovered 162-zone source reproduces the class totals and all six summary measures in Table 20 to the stated rounding, confirming the reported values.

Source priority / hazard class	Zones	Area (ha)	Building footprints	Population estimate	Roads (km)	Agriculture/open land (ha)	Forest (ha)
Very high	23	1,490.44	1,839	2,449.5	132.86	581.28	372.85
High	22	1,590.94	2,953	1,282.3	113.47	1,101.61	301.23
Medium	117	2,960.89	4,023	5,579.8	219.82	2,318.70	448.39
Total	162	6,042.27	8,815	9,311.6	466.15	4,001.59	1,122.47

The 162 zones cover 6,042.27 ha in the source table, approximately 6.54% of the commonly reported 924 km² municipal area. This prioritised WUI screening footprint concentrates the mapped exposure used to organise municipal and fire-service field review.

2.7.5 Selected locations in the source very-high-risk class

Table 21. Selected WUI locations in the source very-high-risk class.

Zone	Location	Hazard	Risk	Area (ha)	Building footprints	Population	Roads (km)	Agr/open land (ha)	Forest (ha)
WUI-005	Bijelo Polje	Medium	Very high	206.83	1,294	4,196.5	34.59	26.39	22.08
WUI-008	Rakonje	Medium	Very high	176.15	752	1,006.9	24.14	29.94	32.74
WUI-010	Nedakusi	Very high	Very high	184.34	498	874.8	24.10	56.05	25.91
WUI-014	Sutivan	High	Very high	174.34	473	0.8	13.08	133.31	26.07
WUI-009	Loznica	High	Very high	114.36	369	662.8	15.90	10.04	9.61
WUI-016	Prijeka	High	Very high	121.73	356	37.5	8.14	63.82	20.74
WUI-012	Potkrajci	High	Very high	124.05	316	100.5	8.92	91.96	13.06
WUI-026	Lješnica	High	Very high	111.78	298	277.0	7.65	36.34	41.05
WUI-064	Njegnjevo	High	Very high	111.45	265	14.0	6.02	121.26	22.95
WUI-018	Gubavač	Medium	Very high	69.71	253	58.4	5.13	80.72	8.19
WUI-007	Ugljak	Very high	Very high	123.80	245	662.5	12.45	31.61	34.46
WUI-006	Džafića Brdo	Very high	Very high	148.71	245	137.0	17.90	8.61	28.44
WUI-011	Resnik	Very high	Very high	120.36	238	601.9	17.28	13.77	0.11
WUI-065	Prestreke	High	Very high	70.36	236	54.5	6.25	32.63	8.85
WUI-025	Strojtanice	High	Very high	105.96	204	0.0	6.48	78.30	22.74

Table 21 presents 15 of the 25 verified very-high-risk zones and matches the recovered 162-zone source across identifiers, class labels and reported numerical fields.

The remaining 10 very-high-risk zones in the full source register are Kisjele Vode, Grabovnik, Oluja, Obrov, Pripčići, Kilavice, Rasovo, Rosulje, Radulići and Crnča. The complete 25-zone set is the reference for Phase 3 field review.

Reported WUI totals use the recovered source-table definitions. The derived OSM association layers provide supplementary building, road and land-use context and are reported separately.

For Phase 3, the WUI layer should be treated as a living planning product. The named zones provide the starting point for checking access, vegetation close to buildings, water availability and existing prevention measures. The first field-review priority remains the very-high and high classes, while any engineering or emergency action must follow local verification rather than the screening class alone.

The full-size Annex J maps provide the cartographic reference for all nine mapped locations. Their map-header 1 km context values and the zone-level statistics in Table 21 describe separate spatial supports and are read with their respective source definitions. [R11, R15]

2.7.6 Monitoring, evaluation and Phase 3 use

Monitoring should record whether priority WUI locations have been field-reviewed, whether access routes remain passable, whether vegetation management is needed close to buildings and what prevention measures already exist. These records provide the evidence trail for Phase 3.

Monitoring will record locations verified, inspections completed, access constraints documented and options reviewed. Contractual KPIs and verified project records provide the reporting baseline for Phase 3.

The proposed sequence is municipal/fire-service review of the full location register, targeted inspection of access, water availability and building-edge vegetation, and documented appraisal of practical prevention options. The complementary entry sets in Table 19 organise this review, and the resulting field schedule will be recorded against the approved project indicators.

2.7.7 Wildfire / WUI map annex references

Annex I contains the four overview/evidence maps M16-FIRE-05 to M16-FIRE-08, and Annex J contains the nine local PDF maps M16-FIRE-09 to M16-FIRE-17. The older archive labels Annex C and Annex D refer to the same map sets.

The full-size Annex I and J PDFs retain the map frames, legends and source blocks required for detailed reading. The Annex J PDF/PNG files use calibrated ground-distance scale bars; map frames and analytical values are unchanged. M16-FIRE-08 retains its corrected title.

Table 22. Existing FIRE/WUI PDF map identifiers and exact file references.

Annex	FIRE map	Stored PDF file
I	M16-FIRE-05 to M16-FIRE-08	4 overview/evidence PDFs in the public Annex I archive; filenames in 00_MAP_INVENTORY.csv.
J	M16-FIRE-09 to M16-FIRE-17	9 local-risk PDFs in the public Annex J PDF archive; filenames in 00_MAP_INVENTORY.csv.
K / L	M6 FIRE baseline / GIS reserve	Baseline workflow outputs retained; GIS reserve remains supporting reproducibility material.

3 Conclusions Phase 2 – Climate risk assessment

Phase 2 strengthens the local decision relevance of the approved Phase 1 assessment. The flood scenario comparison quantifies exposure across the retained local inventories and confirms distinct management priorities: protection maintenance at Nikoljac, channel and blockage control at Lješnica, extensive floodplain and access exposure at Kanje–Voljavac, and confluence preparedness at Srđevac.

The wildfire/WUI analysis verifies 162 zones and identifies 25 very-high-risk zones within a 6,042.27 ha screening footprint containing 8,815 building footprints, an indicative population of 9,311.6 and 466.15 km of roads. The hazard–risk comparison demonstrates where exposure raises the municipal priority beyond the hazard class alone.

Together, the hazard-specific findings provide the evidence required for Phase 3 inspection, maintenance, preparedness and adaptation-option appraisal. The next step links each mapped place and priority to local verification, a feasible measure, a responsible municipal function and a dated implementation record.

4 Progress evaluation

Table 23. Assessment results and evidence status.

Work component	Evidence in this deliverable	Status
Phase 1–Phase 2 comparison	Table 2 and the flood/wildfire bridge connect the approved D1 baseline to the Phase 2 local assessment.	Completed and documented across the five CLIMAAX comparison dimensions.
Expanded interpretation	Four flood-site priorities and verified WUI classification/exposure results are integrated into the assessment.	Integrated into the Phase 3 planning pathway.
Source traceability	Tables 6 and 16–19 and the public GeoNode records connect inputs, processing and reported outputs.	Source lineage and evidentiary use are documented.
Visual material	Figures 1–4, 13 FIRE/WUI annex maps and the flood atlas/package support the assessment findings.	Report figures and public map archives; see 00_MAP_INVENTORY.csv.
WUI numerics	The recovered 162-zone source supports the class tables, exposure totals and the selected-location register.	Twenty-five very-high-risk zones and the verified exposure totals are reported.
Flood scenarios	HQ10/HQ100/HQ500 overlays cover the retained inventories at all four flood settings, with a ≥1 m² sensitivity test.	Scenario comparison completed and incorporated into site priorities.
Engagement	The 29 April seminar, agenda, invitation and municipal event record connect engagement themes to D2 and Phase 3 use.	Documented institutional engagement and dissemination.
Reproducibility	QGIS/GIS reproducibility reserves are retained in Annexes G and L.	Retained in the municipal project reproducibility record; access is described in Section 5.1.
Dataset publication and metadata	Twenty-five unique GeoNode records are published and approved, with authenticated CRA metadata checks completed.	8 Hazard, 12 Risk and 5 Exposure records; NUTS2 Region = Crna Gora / ME00 confirmed across the set.

The Individual Follow Up Plan (Annex 1 to the Sub-Grant Agreement) defines six cumulative project KPIs, six numbered milestones, two phase-labelled items and a separate subcontracting item. Table 24 reports the contractual targets alongside documented M16 evidence using item-level records and consistent no-double-counting controls.

Table 24. Progress against Individual Follow Up Plan key performance indicators.

IFP KPI	Target	Documented position at M16	Evidence basis
Workflows successfully applied	3 workflows across D1, D2 and D3	D1 and D2 workflow applications are documented; D3 is the planned Phase 3 application.	Approved D1 record and this final D2.
Stakeholders involved	6 stakeholders	Approved D1 records 20+ organisations and groups engaged in risk management.	Approved D1 stakeholder sections and public record.
Communication actions	3 actions	Documented communication comprises the 12 March Virtual Regions Forum PICO presentation, the 29 April seminar and the official municipal web article.	R25; Section 2.1.5; seminar invitation, agenda and municipal event record.
Publications and dissemination actions	10 actions	Public outputs include D1, municipal and CLIMAAX web publications, regional-media coverage and 25 GeoNode dataset records.	D1 public record; Sections 2.1.5 and 5.1; R25; cited municipal, CLIMAAX and regional-media publications.

IFP KPI	Target	Documented position at M16	Evidence basis
Notes for policy makers	5 notes	Sections 2.4 and 2.7 provide recommendations for four flood locations and a WUI planning synthesis to support policy and decision-making.	Flood-site interpretations and WUI recommendations connect the assessment findings to the Phase 3 options in Sections 2.6 and 2.7.6.
Regional media articles mentioning the project	10 articles	Regional-media coverage includes one underlying story published by Balkan Green Energy News and republished by Danas.	Balkan Green Energy News (1 April 2025) and Danas (2 April 2025).

Table 25. Progress against Individual Follow Up Plan milestones.

IFP milestone	D2 / project status	Evidence / boundary
M1 – Attend the CLIMAAX workshop held in Barcelona	Project record	Supporting documentation is retained in the project record.
Phase 1 – Eurocode	IFP-labelled item	Exact signed-IFP wording retained.
M2 – Report on First Draft of CLIMAAX Framework Application made	Completed	Approved D1 is the Phase 1 baseline used throughout this assessment.
Phase 2 – Historical Local Data	Completed within the documented technical scope	Municipal plans, local flood evidence and historical fire inputs are traceably used in D2.
M3 – Report on Final Draft of CLIMAAX Framework Application made	Completed	This deliverable presents the final Phase 2 climate risk assessment.
M4 – Draft local adaptation strategy and action plan done	Phase 3 milestone	Scheduled for Phase 3.
M5 – Presentation of the results to policy and decision makers in our region	Phase 3 milestone	D2 defines the Phase 3 review pathway.
M6 – Attend the CLIMAAX workshop held in Brussels	Project milestone	Scheduled in the project timetable.
Subcontracting done in all three phases of Action implementation	Cumulative project milestone	Applies across all three implementation phases.

The report integrates the Phase 1–Phase 2 comparison, expanded flood and wildfire/WUI interpretation, source reconciliation, GeoNode publication/access checks and authenticated CRA-metadata review of the 25 in-scope records. Direct Edit Metadata review confirmed CRA metadata completeness, including NUTS2 Region = Crna Gora / ME00 on all 25 records.

5 Supporting documentation

Table 26. Supporting documentation and evidence status.

Annex / document	Role	Evidence status
Annexes A–H – flood evidence and reproducibility	Risk-context maps, local refinement, site texts, cross-site synthesis, scenario note, Phase 1 raster evidence, GIS reserve and municipal plans.	Public maps A/B accompany this report. Detailed source notes, scenario evidence, raster, municipal plans and GIS reserves are retained in the municipal supporting record; see Section 5.1.
Annexes I–L – wildfire/WUI evidence and reproducibility	Overview/local FIRE maps, M6 FIRE workflow baseline and GIS reserve.	Public maps I/J accompany this report. The M6 baseline is linked through the approved D1 record; detailed GIS reserves are retained in the municipal supporting record.
Annex M – stakeholder/public-data evidence	Invitation, agenda, public event record, signed attendance list and evidence ledger.	The municipal event report is publicly linked. The signed attendance list is included in this release in redacted form (telephone and e-mail removed); the original is retained by the Municipality. Invitation, agenda and the evidence dossier are retained in the municipal supporting record.
Response to Evaluation Comments	Point-by-point response to the 16 September evaluation.	Provided by e-mail to the CLIMAAX FSTP Coordination Team with report locators aligned to this version.
GeoNode dataset set	25 published/approved dataset records used by the assessment.	CRA metadata were checked through authenticated Edit Metadata; category split is 8 Hazard / 12 Risk / 5 Exposure.

5.1 Direct access to public datasets and supporting evidence

The table below summarises the 25 in-scope GeoNode records by CRA category. All 25 are published and approved. CLIMAAX-specific metadata were checked directly in the authenticated Edit Metadata form, including CRA category, relevant workflow/type fields and NUTS2 Region = Crna Gora / ME00.

Table 27. Summary of 25 existing GeoNode dataset records.

CRA category	Count	Record IDs	Access / verification
Hazard	8	276, 277, 278, 279, 280, 281, 367, 378	Published/approved; authenticated CRA metadata review completed.
Risk	12	282, 283, 284, 285, 286, 287, 288, 340, 379, 380, 382, 383	Published/approved; authenticated CRA metadata review completed.
Exposure	5	297, 384, 385, 386, 391	Published/approved; authenticated CRA metadata review completed.
Total	25	25 in-scope records	Published/approved; authenticated CRA metadata review completed.

Each record ID in Table 27 links directly to its public GeoNode record. Record-level titles, licences, CRS, publication state and project contact are documented in the supporting evidence register. Boundary ID 340 is the retained in-scope record; duplicate 381 is excluded from the 25-record set.

Supporting-material access

The 25 dataset records are publicly reachable through Table 27. Annexes A, B, I and J accompany the public report as map archives, and the redacted Annex M seminar attendance list is included as a PDF. Detailed source notes, municipal plans, stakeholder records and Annexes G/L are retained in the municipal project record; the public evidence index identifies their source and access route.

The approved D1 and municipal/CLIMAAX event reports are linked in the references and public evidence index. Supporting project material can be requested from the Municipality of Bijelo Polje PREMMA team at bpeu@bijelopolje.co.me.

The public Deliverable 2 record and the supporting files accompanying Version 2.0 are available through the Zenodo concept DOI: https://doi.org/10.5281/zenodo.21871731.

6 References

- PREMMA / Municipality of Bijelo Polje, Individual Follow Up Plan, Annex 1 to the CLIMAAX FSTP Sub-Grant Agreement.
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- Municipality of Bijelo Polje, Municipal Flood Protection and Rescue Plan, 2013.
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- WIS Geoportal / Water Administration of Montenegro, HQ100 flood hazard and risk layers used in QGIS.
- PREMMA / Municipality of Bijelo Polje, M16 local QGIS refinement layers and exported risk-context maps, June 2026.
- PREMMA / Municipality of Bijelo Polje, M16 HQ100 local refinement maps and local hazard/exposure report texts, June 2026.
- Phase 1 / CLIMAAX JupyterHub RP100 raster output and uploaded raster metadata (BijeloPolje_Phase1_AOI_RP100.tif).
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- Municipality of Bijelo Polje, Fire-planning update (Ažuriranje požari 2024), December 2024.
- CLIMAAX, CRA Handbook / Methodological Framework and Toolbox, official project handbook webpages accessed June 2026.
- CLIMAAX Toolbox documentation, including risk workflows, Jupyter notebook implementation and use of local hazard, exposure and vulnerability data.
- CLIMAAX Handbook, Framework and Toolbox pages, accessed June 2026. The toolbox describes risk workflows that combine hazard, exposure and vulnerability, and allows expert users to include their own local data and adapt methods to regional/local needs.
- CLIMAAX FIRE workflow repository and machine-learning wildfire workflow outputs used for the PREMMA / Bijelo Polje M6 FIRE screening package.
- PREMMA / Municipality of Bijelo Polje, M16 Wildfire / WUI priority and local refinement QGIS outputs, overview maps and local WUI maps, June 2026.
- European Forest Fire Information System (EFFIS), Copernicus Emergency Management Service, fuel and burned-area services used as supporting wildfire context.
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- CLIMAAX Handbook: https://handbook.climaax.eu/
- CLIMAAX GeoNode guide: https://handbook.climaax.eu/resources/geonode.html
- CLIMAAX GeoNode platform: https://climaax.kajoservices.com
- Approved Deliverable 1 record (Zenodo): https://zenodo.org/records/17229386
- Municipal stakeholder seminar article: https://www.bijelopolje.co.me/index.php/arhiva-istaknutih-vijesti/8128-u-bijelom-polju-odrzan-seminar-eu-projekt-climaax
- Municipality of Bijelo Polje - PREMMA Project Team, CLIMAAX M16 Deliverable 2 - Phase 2 Climate Risk Assessment for the Municipality of Bijelo Polje, Zenodo concept DOI: https://doi.org/10.5281/zenodo.21871731

6.1 Verification and supporting evidence

R1 — PREMMA M16 Phase 2 source material: municipal flood and WUI analysis package, local QGIS outputs, maps and site notes used in Sections 2.2–2.7.

R2 — Approved Phase 1 evidence: D1 Version 2.0 report, Manifest and archived M6 flood/fire workflow packages; used to verify the five CLIMAAX comparison dimensions in Table 2.

R3 — FIRE/WUI source lineage: the analytical source contains 162 unique zone identifiers; the 24 matched-zone polygon export is used separately for local geometry and context.

R4 — Historical-fire / EFFIS context: 211 dated historical-point records and 33 local EFFIS polygon records support provenance and local comparison.

R5 — Independent geometry/area controls confirm the stored FIRE/WUI geometries and EFFIS measurement logic used in the assessment.

R6 — Srđevac cartographic/statistical reconciliation: Annex A/B source maps show seven directly exposed buildings and 10 nearby buildings within 50 m. The F-04 scenario atlas uses the same seven direct records plus a broader 14-record context inventory (C1–C14). The two subsets are documented separately and are not treated as interchangeable.

R7 — Official APSFR13/DRB/Lim07 HQ100/HQ500 risk/impact sheets (September 2022) provide the archived paired-sheet population-label comparison; current local scenario intersections are documented separately under R17.

R9 — Archived D2 supporting package and exact Annex I/J map filenames; older C/D archive labels are treated only as historical aliases.

R10 — WUI class cross-tabulation for 162 unique zone identifiers: priority/hazard distribution 23/22/117, risk distribution 25/31/106, with the hazard–risk cross-table retained in Table 19.

R11 — Nedakusi map-header lineage: seven displayed measures match the separate 30-row 1 km location-context source, while Table 21 WUI-010 uses the distinct 162-zone analytical source. These products are not interchangeable.

R12 — Engagement evidence: public municipal event report (29 April 2026), agenda, invitation, signed attendance list (Annex M, redacted), earlier D1 stakeholder summary and event photograph.

R13 — Supporting-material access: Table 27 links the 25 public GeoNode records. Annexes A/B/I/J accompany the public report. The public evidence index identifies the remaining supporting project records and the municipal access contact.

R14 — FIRE analysis database inventory: 33 EFFIS local-mask records, 30 priority-location context records and 33 historical/EFFIS comparison records, used alongside the 162-zone analytical table.

R15 — Annex J shared-legend review: all nine local-map legend regions were pixel-identical; symbol meanings were read from the source legend and retained consistently.

R16 — 1 km context geometry control: all 30 saved context polygons are valid and measure approximately 995–1,005 m from calculated centre to vertices on WGS84; local anchors and field conditions are addressed through Phase 3 review.

R17 — Local flood-scenario overlay, 18 September 2026: five local source GeoPackages and 15 named WIS depth-layer responses support the HQ10/HQ100/HQ500 fixed-inventory comparison. Twenty-one inventory/scenario summaries were reproduced and support Tables 3–4 and the site-specific findings.

R18 — Full FIRE/WUI map set: all 13 Annex I/J PDFs retain the required map frame, title, legend, scale, north arrow and source block; the M16-08 release title is corrected in the supplied copy.

R19 — Recovered WUI 162-zone numerical source (27–28 June 2026): locations.csv contains 162 unique zones, reproduces Table 20 and matches all 15 Table 21 rows across identifiers, classes and reported numerical measures.

R20 — GeoNode and authenticated metadata audit, 18–19 September 2026: 25 unique in-scope records were confirmed as published, approved and publicly viewable/downloadable. Authenticated Edit Metadata review confirmed the CLIMAAX Risk Workflow, CRA Category, relevant type fields and NUTS2 Region = Crna Gora / ME00 across the set. Boundary reference 340 is classified Fire / Risk / Wildfires; place-name reference 391 is classified Fire / Exposure / Other.

R25 — CLIMAAX Virtual Regions Forum participation, 12 March 2026: the CLIMAAX email of 4 March 2026 confirmed the Municipality of Bijelo Polje PICO contribution under the Wildfires topic and scheduled Goran Prebiračević's intervention. The contemporaneous speaker notes document the wildfire-assessment content presented. The official CLIMAAX article of 18 March 2026 names Goran Prebiračević from Bijelo Polje as a contributor to the wildfire PICO session and provides the forum recordings: https://www.climaax.eu/insights-from-climaax-virtual-regions-forum/