Infrastructuring Nature

Case Study

Croatia — Bosnia and Herzegovina

GERDA HENKEL STIFTUNG

Border Violence Monitoring Network

THE WEAPONIZATION OF NATURE AGAINST PEOPLE ON THE MOVE AT THE CROATIAN-BOSNIAN BORDER

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List of Abbreviations

BCP	Border Crossing Point
BHMAC	Bosnia and Herzegovina Mine Action Center
BiH	Bosnia and Herzegovina
BMVI	Border Migration and Visa Instrument
BVMN	Border Violence Monitoring Network
CIRAM	Common Integrated Risk Analysis Model
CPD	Civil Protection Directorate
CPT	Committee for the Prevention of Torture
EU	European Union
EUROSUR	European Border Surveillance System
FIELDS	Frontex-Interpol Electronic Library Document System
HS	Hrvatske šume
HT	Hrvatski Telekom (Croatian Telekom)
HV	Hrvatske vode (Croatian Water - state owned)
IBM	Integrated Border Management
IOM	International Organisation for Migration
ISF	Internal Security Fund
IPA	Instrument for PreAccession
LCC	Local Coordination Center
MAS	Multipurpose Aerial Surveillance
MoL	Ministry of the Interior
MVI	Medical Volunteers International
NGO	Non Governmental Organisation
NISUDG	National Information System for State Border Management
POM	People on the Move / Person on the Move
PTZ	Pan, Tilt, Zoom
SBC	Schengen Borders Code
SGA	State Geodetic Administration
SGBiS	State Border Geoinformation System
SIS	Schengen Information System
TETRA	Trans-European Trunked Radio

Section I. Introduction

The Croatian-Bosnian border is one of the most intensively documented sites of violence within the EU border regime. Extensive evidence attests to the systematic use of pushbacks and other coercive practices against people on the move. Visual and testimonial material depicting masked men engaged in coordinated expulsions has rendered visible the otherwise concealed apparatuses of border enforcement. Academic and NGO research has contextualized Croatian border enforcement within the broader dynamics of EU enlargement and the ongoing project of EU border externalization.[1] As one of the earliest Western Balkan states to accede to the EU, yet excluded from the Schengen Area for several years, it has played a special role in EU border enforcement.[2] As early as the 1990s, scholars have observed how the Dublin Convention has effectively transformed Central and Eastern European states into a "buffer zone" for European migration control. [3]

Throughout the 1990s, migratory dynamics in the country were dominated by people fleeing the Yugoslav war and its consequences. In the ensuing years, conflicts in Kosovo and North Macedonia similarly precipitated forced movement toward Croatia. The EU accession process, culminating in Croatia's membership in 2013, further stimulated patterns of labor migration and reinforced its function as a transit country. This role became salient in 2015 when Croatia became part of the formalized corridor for people moving from Turkey to Greece towards Central Europe, which came to be popularly known as the 'Balkan route'.[4] Simultaneous reinforcement of border security at the Hungarian and Serbian borders shifted routes towards the more remote, mountainous areas of the Bosnian-Croatian With the signing on March 18th 2016 of the agreement between the European Union

[1] See for example: Leutloff-Grandits, C. (2023). "We are not Just the Border of Croatia; This is the Border of the European Union ... " The Croatian Borderland as "Double Periphery." Journal of Borderlands Studies, 38(2), 265–282. https://doi.org/10.1080/08865655.2022.2104340

[2] Pupavac, V., & Pupavac, M. (2024). Dual Migrations in Croatia: The Technopopulist Strains of Statebuilding in the New Borderlands of Europe. Journal of Intervention and Statebuilding, 19(1), 108–132. Available here.

[3] Koslowski, R. (1998) European Union Migration Regimes, Established and Emergent. In: Joppke, C., Ed., Challenge to the Nation-State: Immigration in Western Europe and the United State, Oxford University Press, Oxford. Available here.

[4] Hameršak, M., Hess, S., Speer, M. and Stojić Mitrović, M. (2020) The Forging of the Balkan Route, Movements Vol. 5, Issue 1; Beznec, Speer, and Stojić Mitrović 2016

borders.[5] In March 2016, a period of rapid securitisation spread across the region.

Within several weeks of each other, Macedonia, Croatia, and Slovenia all announced the closure of their frontiers to people in transit.[6] As a result of harsh violence and border enforcement measures, people got stuck at the Bosnian-Croatian border, sometimes for years.[7]

Substantial work has scrutinized Croatia's border governance, especially in relation to police violence, deterrence practices, and cooperation with Frontex. This research seeks to extend existing analyses by foregrounding the environmental and material elements of border regimes. Drawing inspiration from recent work on landscapes and seasons in Croatian border practices, this report interrogates how the EU's escalating investment in border infrastructures interacts with the natural environment, to construct inhospitable landscapes that reinforce a violent border regime.[8]

This case study forms part of a broader research project, Infranature - Infrastructuring Nature as a Border Technique, funded by the Gerda Henkel Foundation, which investigates how nature is incorporated by regimes of control and how in turn, nature influences these regimes.[9] Through three different border regions as case studies, it aims to develop an understanding of forced migration that addresses the triangular relation between (supra)states, borders, and conditions of displacement, without reproducing the academic gaze on the 'migrant' or 'refugee.'

Applying the concept of "Infrastructuring Nature" as a border technique to the Croatian-Bosnian context, we argue that infrastructural developments,

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[5] El-Shaarawi, N. & Razsa, M. (2019) Movements upon movements: Refugee and activist struggles to open the Balkan route to Europe, History and Anthropology, 30:1, 91-112; mEUterei Authors' Collective (2020).Borders of Violence The EU's Undeclared War on Refugees. Association A: Hamburg/Berlin, Rosa Luxemburg Stiftung (2017) "Governing the Balkan Route", Available here.

[6] Border Violence Monitoring Network. "Introduction to Context: The Response to Migration in Europe: A Short History". Available here.

[7] Rivolti ai Balcani. (2020, June). The Balkan Route. asgi.it. Available here.

[8] See Hameršak, M., Pleše, I. (2021). Forest, Forest, Forest. Sometimes We Sleep. Walking, Sleep, Walking, Sleep. It's Dangerous on This Way. Weaponized Migration Landscapes at the Outskirts of the European Union. Translated by Juraj S□utej. Etnolos□ka tribina 44 (51), 204-221. See also: Benghalib et al 2023.

[9] More information on the research project available here.

environmental interventions, and the deliberate weaponization of nature are not discrete phenomena but mutually constitutive components of a broader system of control. [10] Through documentation, mapping, and spatial analysis we seek to understand: how is nature (re-)configured as border infrastructure? What actors are involved in the (de) (con)-struction of the border landscape? How do border authorities use nature (and their knowledge of its dangers) to their advantage? And what role do hostile border landscapes play in the deaths and disappearances of people on the move?

To do so, we start with a short section outlining our methodology (section II). We then move on to contextualize the border and its apparatus (section III), before

mapping out the transformation of the borderscape and how it is weaponized by border authorities to inflict violence and risk deaths (section IV). Our analysis (in Section IV) is divided by landscapes, first examining rivers, then forests and lastly mined (often mountainous) areas.

We conclude with a discussion of how accountability may be sought by locating local, state and suprastate responsibilities (section VI). We must note that while we examine both sides of the border area, we focus in particular on Croatian bordering practices associated with violent pushbacks, to center the violence that the transforming borderscape facilitates.

[10] Teunissen, P. (2025). Infrastructures, Riverscapes, and the Governance of Mobility: The Evros/Meriç River and the Infrastructuring of Nature. Antipode, 57(2), 691-713.

Section II. Methodology

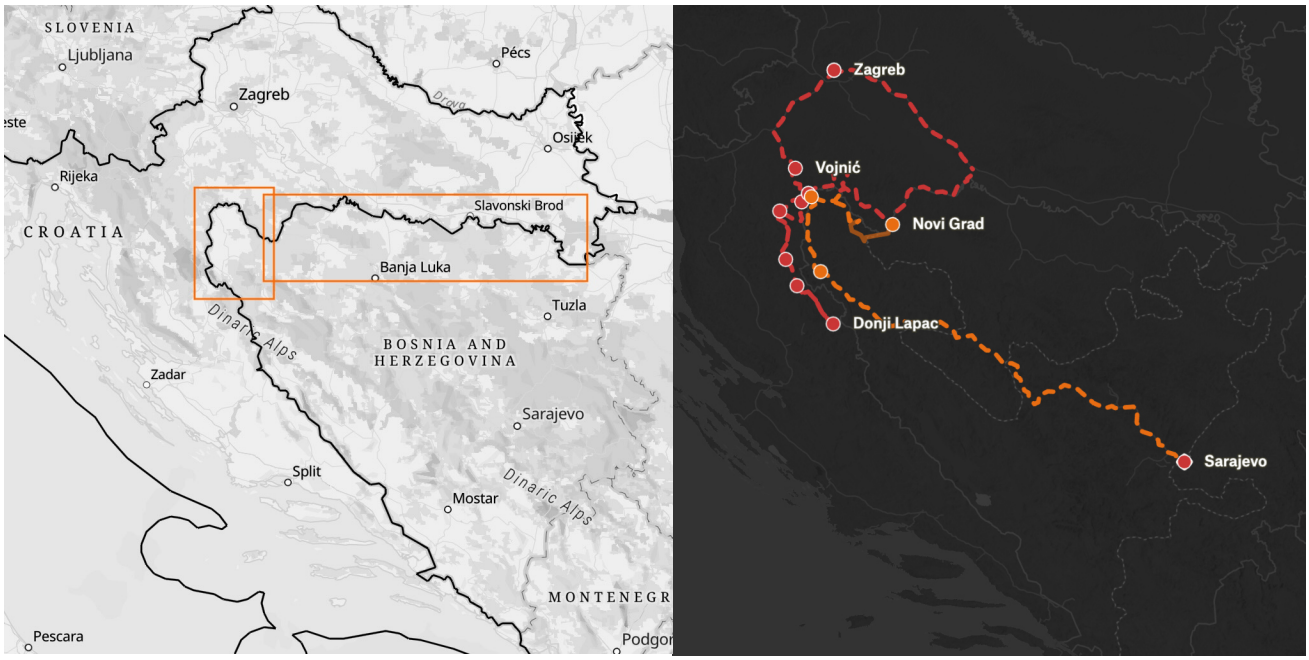

Figure 1. Border areas covered in this report & field visit route, May 2025. Source: Made with ArcGIS & Felt.

This research builds upon ongoing documentation and advocacy work on the role of nature during violent pushbacks at the Croatian–Bosnian border. The field component was developed in collaboration with members of the Border Violence Monitoring Network (BVMN), which has been active in Bosnia and Croatia since 2017. BVMN members based in Bosnia have engaged in continuous direct support, testimony collection, and monitoring activities, providing a crucial basis for longitudinal insights into the dynamics of border violence and its interaction with the natural environment. In addition to this long-term engagement, an anonymous member conducted field visits and monitoring throughout the research period to ensure updated, first-hand information on pushback and violent incidents, changes in border practices, as well as in infrastructure initiatives were available. Field-research was conducted in May and included interviews with local NGOs, mapping exercises, and direct observations along both sides of the Bosnia–Croatia border, particularly in the Karlovac region and the Una-Sana Canton.

Complementing the fieldwork, a series of remote research methods were employed. Testimonies collected through BVMN were analyzed and coded according to the direct or indirect implication of nature in the described events. Additionally, cases of deaths and disappearances documented in the open source 4D Database were coded to identify those where natural elements (such as rivers, forests, or terrain hazards) played a determining role.[11]

Given the limited official reporting of border authorities' involvement in deaths, this analysis relied on patterns of systematic violence evident in testimonies and consistent evidence of river pushbacks and river bank clearings for surveillance to correlate police involvement in these incidents. The locations and general contexts of pushbacks and border deaths were contextualized with information on surveillance infrastructures and police presence identified mainly through geospatial analysis using Google Earth. Estimated pushback locations and recorded deaths were layered to visualize spatial patterns. Historical imagery was used to identify infrastructural interventions in nature (such as fences, patrol roads, and clearings) that could be linked to border enforcement practices.

Lastly, document analysis complemented these efforts, drawing on reports from the International Border Monitoring (IBM) framework, the Internal Security Fund (ISF), and public procurement data retrieved from EU and Croatian tender databases. These sources helped contextualize field observations within the broader framework of EU-funded border management infrastructure.

BVMN Database Analysis

Testimonies from the BVMN Pushback database were coded to isolate the direct and indirect role of nature. Out of 1884 overall testimonies, 1047 cover the Bosnia - Croatian border affecting 11,657 people. It must also be noted that between 2023 and 2025, testimony collection significantly decreased due to the active criminalisation of BVMN member organizations, obstructing documentation efforts; only 61 testimonies were taken between 2023 and 2025. However, judging

[11] 4D Trail Database (2025). "Deceased, disappeared, detained – documenting migrant trail in the Balkans". Available here.

rom monthly reports and expert interviews, it is very evident that testimonies in the BVMN database from this time period only represent a fraction of the number or pushbacks actually taking place.

We analyzed the 61 testimonies and selected 47 testimonies of pushbacks that took place between 2023 and 2025 in which nature plays a role. The focus on the last two years emerged from the goal to address current trends at this particular border, rather than a comprehensive account of all the ways in which nature has been infrastructured, or of all recorded pushbacks since preparation for Schengen accession began. Out of the 47 testimonies analyzed, we coded at least 15 incidents of river pushbacks between 2023 and 2025. We further coded the testimonies along the following themes: river pushback, disorientation, forced undressing, forced freezing, threatened by fire, beaten with sticks and forest used as cover. We coded at least 15 incidents of river pushbacks between 2023 and 2025 but judging from monthly reports and expert interviews, testimonies in the BVMN database only represent a fraction of the number or pushbacks actually taking place.

4D Database Analysis

The 4D database is an open source database documenting reports of disappearance and deaths of people on the move along the Balkan Route between 1997 and 2025. The data is mostly based on media reports but also archival and field research conducted by members of the ERIM project, *The European Irregularized Migration Regime at the Periphery of the EU: From Ethnography to Keywords*, [12]a scientific research project conducted by the Institute of Ethnology and Folklore Research in Zagreb. Both ERIM and the 4D database stress that the "database represents an extremely limited fraction of border deaths realities" and that the figures produced "can only be lower limits of the real numbers."[13]

[12] The European Irregularized Migration Regime at the Periphery of the EU: from Ethnography to Keywords (ERIM). Project Website available at: https://erim.ief.hr/en/
[13] 4D Trail. Code of Practice: https://4dtrail.wordpress.com/code-of-practice/

The under-reporting of border deaths and difficulties of identifying bodies has been extensively reported by local actors and journalists.[14]

The 4D Database stores a total of 405 reports of deaths occurring in Croatia and Bosnia. They represent almost half of the overall reported deaths in the database, which also covers Serbia, Hungary, Bulgaria, Slovenia, Montenegro, North Macedonia and Albania. The data is pre-categorized into causes of death, where one category is "Nature". 53% of the deaths in Croatia and Bosnia were categorized as caused by nature.[15] Nearly 80% of those caused by nature are confirmed deaths by drowning. We further analyzed the data to understand exact locations of the deaths by direct role of nature, indirect role of nature, and the involvement of authorities in causing deaths. However, in most cases, media reports provided extremely limited information about the context of the deaths, preventing us from making quantitative assessments. We therefore resort to sharing illustrative incidents.

This analysis does not claim to capture all the ways in which nature is infrastructured at this border; it does not cover every type of topography, nor does it provide an exhaustive list of surveillance systems. Rather than providing a holistic picture of Croatian border enforcement and the rationale of their tactics, this analysis aims to provide partial insights into Croatian-Bosnian borderscapes. Centrally, it illustrates how the infrastructuring of nature for border surveillance and intervention simultaneously provides the infrastructures and conditions to injure PoM and perform pushbacks. Across rivers, forests, and mountains, Croatian authorities create hostile borderscapes.

Limitations

Several methodological constraints affected the scope of the research. Many of the mapped locations remain approximate, as survivors often experienced disorientation during pushbacks. Field access was also constrained by the risk of

[14] Collective aid (2025) Erased in Life and Death. Available here.
[15] 64% if we include cause unknown

encountering border police and by the presence of landmines in certain areas, limiting safe movement across the entire border zone. In Croatia, fewer local partnerships hindered deeper field engagement, underlining the need for stronger connections with local civil society structures.

Section III. Contextualization of the Border

This section introduces the financial resources and EU support underpinning the construction and consolidation of Croatia's border regime before and after its accession to the Schengen zone. It outlines the institutional organization and practices of border management, before concluding with an examination of how Croatian–Bosnian borders natural terrain shapes enforcement.

Integrated Border Management in Croatia

The way in which Croatia has managed its border must be understood through its relationship to the EU. The development of its intricate border enforcement system in particular has been largely driven by EU and Schengen Accession processes. Integrated Border Management (IBM) Strategies were designed to gradually harmonize Croatian border management with EU requirements and advance EU and Schengen accession prospects. Conversely, Croatia has served as an integral player within the EU's overall Integrated Border Management Strategy.

As early as 2002, the EU Commission proposed the main pillars for an Integrated Border Management concept, including surveillance of external borders and cooperation between authorities.[16] With the adoption of the Schengen Borders Code establishing rules for free internal movement and external border crossings came measures to prepare future Schengen members for EU external border control. [17]Following Croatia's Application for Membership in 2003, the Instrument of Pre-Accession (IPA) was a key financial tool to advance Croatia's border management capacities. As an initial step, the TETRA (Trans-European Trunked Radio) System, was installed across all of Croatia, allowing for direct exchange of information between patrol vehicles and vessels and border crossing points on land.[18] Further investments were made in 2013, preparing for EU accession, yet the

[16] Collantes-Celador, G. & Juncos, A. E. (2012). The EU and border management in the Western Balkans: preparing for European integration or safeguarding EU external borders?. Southeast European and Black Sea Studies, 12(2), pp. 201-220. doi: 10.1080/14683857.2012.686250. p.28
[17] EU Regulation No 562/2006
[18] EU Commission (2009) CROATIA 2009 PROGRESS REPORT Available here

Commission at the time found Croatia's border management capacities to be insufficient and Schengen Acquis was rejected. Croatia joined the EU but not the Schengen Area. Instead, a dedicated Schengen Facility Instrument was put in place to finance to address the EU's perceived shortcomings in Croatia's border surveillance. After several extensions, the funding period officially ended in 2017, with EUR 120 million granted to Croatia by the EU.[19]

60% of the Schengen Facility Fund was allocated to infrastructure and equipment, as well as the establishment of Croatia's IT Infrastructure to integrate into crucial EU biometric databases for migration management (ie. SIS, EURODAC).[20]

Yet concerns over Croatia's full control of what would become an EU external border remained, particularly with an increase in border crossings between 2015 and 2017. With Croatia now an EU Member State, Internal EU Security Funding (ISF) was made available to further advance infrastructure developments, particularly in remote land border areas. New infrastructures and technologies used at border crossing points (BCP), such as protective fences, containers, devices to measure material density, or heartbeat detectors, IT systems, acquiring TETRA radio communication devices and mobile phones were introduced.[21] Most importantly however, Croatian Infrastructure was to be aligned to support its integration with EUROSUR through regional coordination centers, training on risk analysis and the procurement of necessary equipment for the development of EUROSUR. Established in 2013, EUROSUR aimed to establish a pan-European surveillance system to enhance information exchange and cooperation between EU member states and Frontex.

After large investments into border surveillance technologies, EU funding to Croatia from 2022 largely focused on expanding Croatia's capacity to conduct counter-smuggling operations, with a focus on advanced investigative tools and

[19] Government of the Republic of Croatia (2017) Gov't satisfied with rate of absorption of Schengen Facility funds. Available here.
[20] EU-Lisa (2017) Croatia becomes part of the Schengen Information System (SIS). Available here.
[21] Integrated Border Management Strategy 2019 (Strategija integriranog upravljanja granicom za 2019). Available here. Annual Report on the Implementation of the Integrated Border Management Strategy 2020 (Izvješće o provedbi Strategije integriranog upravljanja granicom za 2020). Download here.

technical tools for biometric identification and tracking. Significant funding was made available to support Croatia's participation in a joint effort with "unified criminal investigations" alongside EUROPOL and Frontex to "fight migrant smuggling".[22] Operational activities in Croatia were to focus not only on identifying traffic routes but further to deploy operational teams in order to detect, intercept and subsequently break up organised criminal groups involved in migrant smuggling.[23] The fight against "migrant smuggling" was also accompanied by a large-scale expansion and adaptation of databases to EU standards, including the integration of FIELDS, (Frontex-Interpol Electronic Library Document System) and the development of a National Automated Biometric Identification System. Croatia finally joined Schengen on January 1, 2023, becoming a new guardian of the EU external border.

The passage into this new role was accompanied by significant financial support under the Internal Security Fund (ISF) and the Border Management and Visa Instrument (BMVI), with a total of 208,657,250 euros[24] made available to Croatia for the 2021-2027 period. This investment was closely tied to Croatia's IBM strategy, adopted on 26 September 2019 and valid for four years, which played a critical role in its maneuvering toward Schengen accession.[25] A significant share of this funding is directed toward border-surveillance equipment, such as dogs, police vehicles, drones, and other monitoring tools, that has been directly linked to human rights violations.[26] A new strategy for the period 2024-2028 was adopted on August 1, 2024.[27]

[22] 499,250 euros were made available to support Croatia's participation in a joint effort with "unified criminal investigations" alongside EUROPOL and Frontex to "fight migrant smuggling"(under EMPACT). Croatia National Program 2022-2027. Accessed via: https://eufondovi.mup.hr/financijski-instrumenti-eu-82/financijski-okvir-2021-2027/489
[23] Ministarstvo unutarnjih poslova. Financial framework 2021 – 2027.Available here.
[24] Ministarstvo unutarnjih poslova. Financial framework 2021 – 2027.
[25] Annual Report on the Implementation of the Integrated Border Management Strategy 2020 (Izvješće o provedbi Strategije integriranog upravljanja granicom za 2020). Download here..
[26] PICUM & ECRE. (2024) Beyond walls and fences: EU funding used for a complex and digitalised border surveillance system. Available here.
[27] Integrated Border Management Strategy 2024-2028 (Strategija integriranog upravljanja granicom Republike Hrvatske od 2024. do 2028 godine). Available via here.

The Institutional Organisation of Border Surveillance and Control

The implementation of Croatia's Integrated Border Management Strategies is largely orchestrated by the Ministry of the Interior (MoI) and further delegated to subunits of the Croatian (border) police. The MoI is the main body responsible for migration, with responsibilities covering policies concerning the residence and employment of non-citizens to the training of police officers and procurement of border surveillance technology.[28] It established the Border Directorate within the Police Directorate (which operates from within the structures of the MoI), to oversee and lead the operation of border activities.[29] The Border Directorate includes the Interdepartmental Working Group for Integrated Border Management, which was created in 2005 and produces annual reports to the Croatian government.[30]

While borders are frequently seen as sites of security, defense, and control and thereby appear extraordinary and isolated, yet the planning, construction, and operation of the Croatian border apparatus has never been isolated in a political and financial sense. The implementation of the multi-year action plan, based on the IBM, happens at the hands of the MoI representatives together with representatives from the Border Directorate and an array of ministries, such as that of Finance, Foreign and European Affairs, Agriculture, Forest, and Fisheries, and more. [31]Across the board, political processes concerning the development and execution of Croatian border management involve a multitude of non-security related branches and civilian sectors. For instance, the Ministry of Finance is responsible for the construction and maintenance of border crossings, whereas new technologies introduced at BCPs must meet the requirements set out by the Ministry of Foreign Affairs and the Border and Custom Administrations.[32]

[28] Annual Report on the Implementation of the Integrated Border Management Strategy 2020 (Izvješće o provedbi Strategije integriranog upravljanja granicom za 2020). Download via. Annual Report on the Implementation of the Integrated Border Management Strategy 2023 (Izvješće o provedbi Strategije integriranog upravljanja granicom za 2023). Available here.
[29] Integrated Border Management Strategy 2019 (Strategija integriranog upravljanja granicom za 2019). Available here.
[30] Annual Report on the Implementation of the Integrated Border Management Strategy 2022 (Izvješće o provedbi Strategije integriranog upravljanja granicom za 2022). Available here. .
[31] Integrated Border Management Strategy 2019 (Strategija integriranog upravljanja granicom za 2019). Available here.
[32] Implementation Programme for the Ministry of Finance 2025 - 2028. Accessible via mfin.gov.hr.

Further, the MoI Directorate for European Affairs manages and oversees EU projects, heavily funded through the BMVI 2021 - 2027 and AMIF 2021 - 2027.[33] Ultimately, "Integrated Border Management" spins a web true to the ring of its name: an interconnected network of massive political, fiscal, and operational responsibilities delegated by the MoI.

Border Surveillance on the Ground: The Border Police

While border management altogether assembles different branches of government sectors of civil society, the everyday surveillance and protection of borders falls into the hands of the border police. The border directorate coordinates border activities in eight organisational units through 10 police departments at the external border.

At the local level,external borders management is conducted from 59 police stations, which include 35 specialised border police stations, 12 mixed stations, and 15 additional stations from which "compensatory measures" are carried out.[34] "Compensatory measures" refer to activities outside of border areas. In IBM strategy documents, border management by the police is split into two categories: "border control" refers to control of persons, things, and vehicles at borders as well as across the country; "border protection" concerns surveillance and operational presence of land and sea borders as well as control of persons and vehicles. As such, border policing is not only carried out by the designated Border Directorate and border police departments but feeds in and out of regular police work and resources with assistance from the Intervention Police, Special Police, and Criminal Police.

The Intervention Police play a particularly important role in border enforcement.[35] This division is trained to counter terrorist acts, respond to hostage situations, as well as general crises and large-scale interventions.[36]

[33] Integrated Border Management Strategy 2024-2028 (Strategija integriranog upravljanja granicom Republike Hrvatske od 2024. do 2028 godine). Available here.
[34] ibid.
[35] Border Violence Monitoring Network (2022). German Funding to Croatian Border Enforcement. Available here.
[36] Border Violence Monitoring Network (2023). Annual Torture Report 2022. Available here.

Every Croatian police department has an intervention unit, managed by commanders that answer to the National Police Directorate. Officers from these units are assigned to border areas on a rotating basis. The strengthening of the operational skills as well as protective and special equipment for these units is a top priority in Croatia's border apparatus.[37] One particular subunit of the Intervention Police, the Ekipa za Posebne Zadace (EPZ), has been reported to have exaggerated presence in border areas and is disproportionately involved in apprehension and pushbacks reported by BVMN. [38]

Figure 2. Offroad driving training in Ilok, June 2025. Source: Vukovar-Srijem Police.

In IBM documents, teams that conduct border control activities are referred to as "mobile units".[39] Mobile units seem to strategically cover a transit corridor up to 60 kilometres away from the border area into the country, moving East of Korenica

[37] Ministry of the Interior Implementation Report 2024 - 2028, point 36-39 (p. 26-27) Accessible via mup.gov.hr.
[38] A.Schöll et al (2025) Surveillance Technologies at European Borders. Assessment of Croatia. Border Violence Monitoring Network. Available here.
[39] Integrated Border Management Strategy 2019 (Strategija integriranog upravljanja granicom za 2019). Available here., Annual Report on the Implementation of the Integrated Border Management Strategy 2020 (Izvješće o provedbi Strategije integriranog upravljanja granicom za 2020). Download here., Annual Report on the Implementation of the Integrated Border Management Strategy 2021 (Izvješće o provedbi Strategije integriranog upravljanja granicom za 2021)

and Maljevac. For the entire territory of Croatia, this requires a large effort and human resources.[40] As the terrain along the border is difficult to maneuver, authorities procure suitable vehicles and train officers in offroad driving.

With impending Schengen accession, Croatia intensified efforts to scale up border infrastructures and the capacity of its border police force. Between 2019 and 2021, the border police force grew by 90 to 200 new border police officers every year, while hundreds are trained for basic border control tasks and fundamental rights, offroad driving and the use of special equipment.[41] Similarly, hundreds of leaders of border protection units receive specialised training for land border protection. Generally, the continued technologisation of EU borders requires that significant annual sums are attributed to appropriate training of border guards. For instance, in March of 2025, the MoI announced EDUSCA 2, a project valuing EUR 720.000 to train the Special Crime Investigation Service in the use of sophisticated equipment in border management.[42]

Current Developments in Land Border Surveillance

With a fast growing border tech industry and EU interest in strengthening border control, what are framed as technological "solutions" are updated more and more frequently. For land border surveillance, stationary surveillance systems form an integral part of the border apparatus since 2016. The geographic placement of surveillance equipment is based on risk assessment, likely following the Frontex Common Integrated Risk Analysis Model (CIRAM).[43] In this model, border permeability - made up of the terrain and infrastructure - is an essential part of a location's "vulnerability" to the constructed threat of illegal migration.[44] Risk analyses conducted by Frontex have served as indication and justification for

[40] Annual Report on the Implementation of the Integrated Border Management Strategy 2021 (Izvješće o provedbi Strategije integriranog upravljanja granicom za 2021)
[41] Integrated Border Management Strategy 2019 (Strategija integriranog upravljanja granicom za 2019). Available here., Annual Report on the Implementation of the Integrated Border Management Strategy 2020 (Izvješće o provedbi Strategije integriranog upravljanja granicom za 2020). Download here., Annual Report on the Implementation of the Integrated Border Management Strategy 2021 (Izvješće o provedbi Strategije integriranog upravljanja granicom za 2021)
[42] Ministarstvo Unutrasnjih Poslova. (15 April 2025) "Provođenje Projekta „Jačanje Kapaciteta Službe Posebnih Kriminalističkih Poslova Kroz Specijalizirane Edukacije 2 (EDUSCA 2)" Available here.
[43] Article 29 of Regulation (EU) 2019/1896 (European Border and Coast Guard Agency Regulation). Available here.
[44] Frontex. CIRAM - Risk Analysis Components. See here.

infrastructure investment at specific locations.[45] Gradual installations and continuous upgrades prior to Schengen accession were financed through a number of EU funding instruments, namely the EU Schengen Facility, BMVI and ISF.[46] In a three-phase implementation process, contracts for the installation of a land-border surveillance system were signed in November 2016, September 2017, and October 2018 with Ericsson Nikola Tesla, Tehnomobil – Securitas, Securitas Hrvatska,[47] and Dat Con, fully funded by the EU.[48]

In this initial process, 20 locations along the external land borders were equipped with thermal imaging cameras, day & night vision cameras, ground sensors, PTZ cameras, poles, and containers, monitors and control room equipment, and communication infrastructures. Documents obtained by BVMN detail the exact technology installed. 14 of the 20 locations feature the FLIR Ranger R20SS, which is a radar system that can spot people and vehicles at 20 to 30 kilometres.[49] At a 90 degree field of view (with optional 360 degree PTZ), this radar refreshes ca. every 0.5 seconds.[50] Whereas this system provides the exact location of a possible "threat", it is intended to work as a primary cueing system. Additionally to radar surveillance, 17 of the 20 locations employ the FLIR HDC 800, which is a thermal imaging camera, and the FLIR LR-HDTV 750, which are day and night cameras.[51] Two other locations use the Silent Sentinel JAEGAR, which is a highly customisable long-range PTZ system that accommodates multiple sensors, AI assistance, can spot human-size figures to a distance of 9 kilometres, and is built to last against harsh weather conditions.[52] In August 2024, the last location only used a BOSCH MIC IP fusion 9000i, which is a perimeter-PTZ surveillance camera. Most of the perimeter-PTZ cameras, which are mounted with the long-range systems, are made by Hikvision, a Chinese surveillance company focused on AI-assisted solutions.[53]

[45] See Integrated Border Management Strategy 2019 (Strategija integriranog upravljanja granicom za 2019). Available here.
[46] See across Annual IBM Reports since 2018
[47] ehnomobil Securitas, a Croatian company, was taken over by the Swedish security enterprise Securitas in 2013. As of 2017, the two have merged into the same legal entity in Croatia titled "Securitas Hrvatska". See here.
[48] EU Tenders (2024) 225209-2025 - Result. Available here.
[49] EU Tenders (2024) 225209-2025 - Results. Available here. FLIR Ranger R20SS Product Website. See here.
[50] Engineers Canada - Radar FLIR Ranger R20SS - National Awards. Watch here.
[51] EU Tenders (2024) 225209-2025 - Result.
[52] Silent Sentinel JAEGAR Product Website. See here.
[53] EU Tenders (2024) 225209-2025 - Result.; Hikvision Company Website. See here.

Importantly, products from these manufacturers all feature automated tracking, and thus strongly suggest the daily use of AI in border surveillance. Data from these different sensors, then, is integrated in a main surveillance system. Communication between different sources and access points for border guards is made possible by installing applications on thermal imaging cameras, radars, operator consoles, and related equipment. Live footage from the long-range system is monitored from a close-by Local Coordination Center, via the FLIR Sensors Manager.[54]

Recently, separate calls for tender on the EU Tender Platform (TED), one from 2024 (worth 5.5million EUR) and two from 2025 (worth 16million EUR and 960.000 EUR), detailed projects for upgrades and maintenance to the stationary surveillance system detailed above. Mirroring the previously established systems, the update includes further installation of thermal and night-vision cameras, video surveillance, radars, and communication systems that allow for live data and footage exchange between border crossing points and coordination centres and feed into EUROSUR's "situational picture".[55] The 2024 tender notice was awarded to the same consortium of Croatian companies, with the addition of KING ICT.[56] The specific models and manufacturers that upgrade the earlier systems are unknown at this point, but the technological requirements detailed in tender documents suggest upgrades of the same technology with newer models.

Whereas these systems are often mounted on smaller platforms or grids, new long-range surveillance systems are placed on newly fenced and constructed 40-45 meter tall poles, featuring surveillance technology, and a cabin to store equipment. A thermal imaging camera and a day and night camera are installed at the very top of the pillar. Just as before, long-range systems stream video footage in real-time to an LCC while recordings are locally stored. These systems always include a network video recorder (to store footage locally), network routers and switches (to organise data traffic), a UPS 19" rack (battery backup) and

[54] Manual for using the Flir Systems Manager Software. See here.
[55] A.Schöll et al. (2025); EU Tenders (2025) 665222-2025 - Competition. Available here.
[56] See EU Tenders (2024) – 428714-2024 Competition. https://ted.europa.eu/en/notice/-/detail/428714-2024.

WEB relay (allowing remote switching on and off).[57] To enable data exchange, radio links are installed at existing cell and surveillance towers, as well as in LCCs, to enable data exchange and become relay points for new constructions. Normally, all relevant equipment is stored in a container directly at the location. A PTZ camera (pan, tilt, zoom, provided by Hikvision in earlier years) is installed ca. 5 meters above the ground, to protect the immediate location, and therefore does not contribute to the operational picture. At least 28 locations seem to be equipped with such long-range surveillance systems.[58]

Furthermore, Croatia is constructing its own fibre optic network, further aiming at interoperability of surveillance equipment with SIS, ETIAS, EES and EURODAC. This procurement, which was set to begin in the third quarter of 2025 and take until the end of 2026, was signed by Deputy Prime Minister Božinović on July 3rd 2025 for a cost of EUR 35.375.000 including VAT (BMVI 47/23).[59] Bids are currently being evaluated.

While generally used as communications systems, fibre optic networks in border surveillance usually function as more than that. Through distributed acoustic sensing (DAS) or fibre detection and ranging (FiDAR), vibrations such as footsteps can be detected.[60] Commonly then, only an alarm (e.g. someone walked) is sent to a control centre and integrated with data from other sensors. The advantage of such a system is enormous: they are cost-efficient in the long-term, invisible above ground and as such immune to tampering or adverse weather conditions.

They transmit data at high speeds, and can be taught to detect, classify, and sort data and alarms according to the user's needs. This allows authorities to pinpoint and intervene where people cross in real time.[61] Installing the cables is fairly easy and quick (up to 10km a day), though the hilly configurations and changing terrain will force delay and strategic decisions about the concrete paths. Documents obtained by BVMN suggest that the MoI seeks to lay cables connecting data

[57] EU Tenders (2024) 428714-2024 - Result. Available here.
[58] Changes to the Procurement Plan of Integrated Border Management 2026. See here.
[59] EU Tenders (2026) 243281-2026 - Notice. Available here. Project Signature Božinović. Download here
[60] Border Security Report Webinar, Speaker David Hill (CEO of Sintela) at 15:20.Available here.
[61] Ibid.

centres with virtually all border police stations and remote locations along the green border.

Overall, this is part of a larger effort to make border surveillance interoperable - real-time integration of different data sources and quick access in the field. To this, artificial intelligence has been used in automated tracking and to process footage overall.[62] On the ground, the MoI is updating and procuring more vehicles for the border police. In December 2025, the ministry held a press conference announcing the procurement of 467 new vehicles for a value of ca. EUR 22.3m.[63] 75% of this expense was funded through the Integrated Border Management Fund (BMVI).

Cooperation between Border Authorities

Croatian border authorities cooperate with neighbouring countries in data exchange and conduct mixed patrols to raise the operational level of border control. These activities are central to the IBM strategies and are outlined in detail in annual reports to the Croatian government. For data exchange on border crossings, vehicles, and identification of persons, joint contact service points have been established. Annual IBM reports show that Croatian authorities consistently request information in amounts that far exceed their non-EU counterparts: the Joint Contact Centre Nova Sela-Bijača (Zajednički kontaktni Centar Nova Sela – Bijača) processed 1903 requests in total: 1691 of those came at the hands of Croatian police, and a mere 212 by their Bosnian colleagues.[64] In 2023, these ratios stayed consistent: 1826 checks were requested by Croatian police against 374 by Bosnian authorities.[65] In general, information exchange between shift leaders, assistant chiefs, and border police officers is common practice.[66]

[62] Integrated Border Management Strategy 2024-2028 (Strategija integriranog upravljanja granicom Republike Hrvatske od 2024. do 2028 godine). Available here.
[63] Ministarstvo Unutrasnjih Poslova. (December 9, 2025) "Ministar Božinović: Nabava opreme za graničnu policiju ne trpi diskontinuitet" Available here.
[64] Annual Report on the Implementation of the Integrated Border Management Strategy 2021 (Izvješće o provedbi Strategije integriranog upravljanja granicom za 2021)
[65] Annual Report on the Implementation of the Integrated Border Management Strategy 2023 (Izvješće o provedbi Strategije integriranog upravljanja granicom za 2023). Available here.
[66] Integrated Border Management Strategy 2019 (Strategija integriranog upravljanja granicom za 2019). Available here.

Neighbouring border authorities reinforce cooperation through "mixed patrols," conducted jointly on each side according to an agreement between the Croatian Ministry of the Interior, the Bosnian Ministry of Security, the Police Directorate, and the border police.[67] After COVID-19 temporarily halted these operations in 2020, Croatian and Bosnian forces resumed them in August 2021 and have since increased their activity, reaching 1,149 mixed patrols in 2023, 57% of which took place on Bosnian territory.[68] Overall, mixed patrols with Bosnia consistently remain the highest among all of Croatia's neighbouring states.

Cooperation between national border police forces is expanding in the region generally. In October 2025, a Frontex-coordinated project against motor vehicle crime led to the the capture of 2,851 people on the move in just 11 days.[69] nother EUR 73 000 pilot project for trilateral patrols between Italy, Slovenia, and Croatia was signed in October 2024.[70] On June 16th, 2025, the three-month pilot phase of joint patrols in the Cetingrad area was kicked off to assist Croatia with the "short" corridor between Northern Bosnia and Southern Slovenia.[71] 24 hour shifts with officers from each country take place in Croatian vehicles or on foot in areas that are difficult to access otherwise.[72]

History of Pushback Practices

The Croatian Border Police Units have been heavily implicated in the illegal and violent practice of pushbacks. Pushbacks describe the informal cross-border expulsions of individuals or groups to another country without due process. Where groups of people are removed from the territory of a state and denied access to asylum, this amounts to a violation of the prohibition of collective expulsions.[73]

[67] Ibid., Annual Report on the Implementation of the Integrated Border Management Strategy 2020 (Izvješće o provedbi Strategije integriranog upravljanja granicom za 2020). Download here.
[68] Annual Report on the Implementation of the Integrated Border Management Strategy 2023 (Izvješće o provedbi Strategije integriranog upravljanja granicom za 2023). Accessible here.
[69] Ministarstvo Unutrasnjih Poslova, Ravnateljstvo policije (November 24, 2025). U akcijama usmjerenima protiv kriminala povezanog s motornim vozilima pod koordinacijom Frontexa zaplijenjena 694 vozila. Available here.
[70] Ministarstvo Unutrasnjih Poslova (January 2, 2025). Pilot-projekt: Trilateralne ophodnje na vanjskoj granici EU.Available here.
[71] Redazione (2025). Italy, Slovenia and Croatia launch joint patrols on Croatian-Bosnian border. La Milano - Cronaca e Notizie. Available here.
[72] All three countries jointly pushed openly for the signing of the Frontex-Bosnia working agreement. See here.
[73] European Court of Human Rights. (2024). Collective expulsions of aliens. Available here.

Since 2017, BVMN has collected 1018 pushback testimonies from Croatia impacting 11567 people.[74] This amounts to more than half of the total number of testimonies collected by BVMN across all regions. More than 90% of documented pushbacks from Croatia are violent, often following a similar modus operandi. Between 2019 and 2021, several media reports surfaced, reporting mock executions, gun shots and sexual violence during pushbacks.[75] In the summer of 2021, an investigation by Lighthouse Reports published video evidence of 11 pushbacks at five different locations along the Croatian-Bosnian border.[76] The videos also confirmed allegations that Croatian Riot Police masked with balaclavas and sunglasses were mobilized to conduct pushbacks. A few months later, the European Commmitee for the Prevention of Torture (CPT) published its report from its adhoc visit to Croatia in 2020. The report confirmed the media reports: people on the move are routinely subjected to severe ill-treatment including physical abuse and attacks by police dogs and are denied access to asylum. The CPT called for vigorous steps to stamp out ill-treatment of people on the move, robust accountability and oversight mechanisms for all police operations, as well as a prohibition of balaclavas. [77] The Croatian government dismissed all allegations of border violence.[78]

Croatia's denial of evidence and simultaneous obstruction of monitoring affirms its determination to sustain pushbacks and violent intimidation as a core part of its border management. The 2018, 2020 and 2021 report on the work of the National Preventive Mechanism mention multiple occasions upon which the Ombudsperson was denied access to information specifically regarding the treatment of migrants and case data during unannounced visits to certain police

[74] Data retrieved from. BVMN Pushback Database. https://borderviolence.eu/testimonies
[75] Tondo, L. (2020, October 23). Croatia denies migrant border attacks after new reports of brutal pushbacks. The Guardian. Available here.
[76] Voegele, N., & Serafini, S. (2021, October 6). Pushbacks an EU-Grenze - Video-Beweis: Kroatische Polizisten prügeln Migranten aus der EU. Schweizer Radio Und Fernsehen (SRF). Available here.
[77] Council of Europe (2020).Report to the Croatian Government on the visit to Croatia carried out by the European Committee for the Prevention of Torture and Inhuman or Degrading Treatment or Punishment (CPT) from 10 to 14 August 2020. CPT/Inf (2021) 29. https://rm.coe.int/1680a4c199
[78] See for example: The Guardian, (2020, October 23).Croatia denies migrant border attacks after new reports of brutal pushbacks. Available at: https://www.theguardian.com/global-development/2020/oct/23/croatia-denies-migrant-border-attacks-after-new-reports-of-brutal-pushbacks See also: InfoMigrants. (2024, October 11). Croatia rejects report on migrant pushbacks and "burn sites." Retrieved April 10, 2026, from Infomigrants.net website: https://www.infomigrants.net/en/post/60497/croatia-rejects-report-on-migrant-pushbacks-and-burn-sites

stations, preventing the Ombudsperson from effectively fulfilling their mandate. This is in line with the CPT experience during its 2020 which criticized manifest difficulties of cooperation with Croatian authorities. The 2022 BVMN Torture report is a record of the continued violence, with 90% of pushback cases that year including either gun violence, forced undressing, mock executions, sexual violence and harassment, heavy physical violence, or the use of electroshock weapons. BVMN has also recorded and published testimonies that describe the punitive forced undressing of children as young as 13.[79] While a significantly lower number of both pushbacks and border crossings were officially reported in 2024 and 2025, recorded pushbacks remain equally violent.[80]

Over the past three decades, the Croatian police apparatus has developed through radically different geopolitical contexts and undergone enormous changes. It has had to evolve from a militia implicated in human rights abuses in the context of Yugoslav wars into a civilian police force.[81] In the early 2000s, the Croatian government brought about drastic changes aimed at democratic policing, including new education programs, new uniforms, transparency measures, and a focus on proactive policing.[82] In the first decade in particular, unprofessional behaviour, corruption, and public scandals continued to accompany the public image of the Croatian police.[83] As Croatia underwent EU accession processes, a border police structure was developed that weaves in and out of regular police units. Today, systematic human rights violations against People on the Move (PoM) at the hands of Croatian police have been extensively documented.[84] Fittingly, the national Anti-Corruption Agenda 2021-2030 addresses the border police specifically and lists the "rotating deployment" strategy as a

[79] Border Violence Monitoring Network (2023). Annual Torture Report 2022. Available here.
[80] Figures are drawn from Frontex aggregated data on detections. They are indicative as. Frontex statistics count detected attempts, not people. See Mixed Migration Centre (2024) Download here.
[81] Kutnjak Ivković, S. (2015). "Police Integrity in Croatia". In (Eds) Sanja Kutnjak Ivković, M.R. Haberfeld, Measuring Police Integrity Across the World: Studies from Established Democracies and Countries in Transition, 97-104. New York: Springer, p. 98, 105. See also Kutnjak Ivković & Haberfeld 2000, pp. 205-8. http://dx.doi.org/10.1108/13639510010333831
[82] Kutnjak Ivković, S. (2015).
[83] Kutnjak Ivković & Haberfeld 2000, pp. 195-200. See also: Kutnjak Ivković 2015, p. 98.
[84] Amnesty International. (2021, December 3). Croatia: Damning new report slams systematic police abuses at country's borders – European Institutions Office. Available here. ; Bochenek, M. G. (2023). "Like We Were Just Animals." Human Rights Watch. Available here.

measure to prevent corruption.[85] While Ivković's 2015 research on the code of silence and corruption within Croatian police[86] suggests that this has continuously improved since the 1990s, a 2017 whistleblower testimonies indicates that a similar social pressure has mounted in the daily operations of units that engage in human rights violations at external borders of the EU:

> Dear Ms [...]
>
> I work at the police station *censored* and I have been engaged in the protection of the state border for a longer while. A few of us have no more will nor power to look at what is being done to these humans. Every day we return them to Bosnia [...] There is no asylum [...] Orders of the chief *censored*, the executive, and the administration is to return everyone without papers, to leave no traces, to take money, break mobile phones throw into *censored*, or take for ourselves, and forcefully return refugees to Bosnia. This is the truth about how we treat them, the police that come as extra resource units from the other police stations are especially cruel, because they are angry for being here. Moreover, they stay here shortly so they do what they want to without control. They remind me of the Janissaries, beating and stealing. This is sad, but true, and it is done with the blessings of the executives from the police station and administration. We few policemen are especially saddened by the fact that we are encouraged and ordered to do this by the executives who should stick to the law and fight back against unlawful practices, not allowing them in the police [...] All sorts of stuff
>
> happen here, some police draw weapons, this is shameful for this police, and not what I imagined when I went to school. I personally returned around 1000 people during the night, I try to be as humane as possible, but I have *censored*, if I refuse to do this I will lose my job, and how will I then feed my family.
>
> The group of us who share these views are asking you to stop this behavior and practices in the police. All that is coming from you, as well as media writings, all is correct, and very mild compared to what happens in this police station. Also it is very sad that the police station executives, and especially the police administration mention your name in a very rude and inappropriate way, because you do not deserve this. It is not appropriate for highly educated people to call you by such names and insults. You are only doing your job in a honorable and decent way, according to legal rules and regulations, and this is how police should work too, but unfortunately, we are far from that [...].
>
> (Anonymous Testimony to the Croatian Ombudswoman, 2017. Translated by Centre for Peace Studies Zagreb)[87]

[85] Croatia Anti Anti-Corruption Strategy for the period 2021 - 2030. Available here.
[86] Kutnjak Ivković 2015, p. 121
[87] "Complaint by Croatian police officers who are being urged to act unlawfully", originally presented by Croatian Ombudswoman. Available via Border Violence monitoring Network here.

The varied terrain of the Croatian–Bosnian border–rivers, forests, and mountainous areas–demands flexible surveillance strategies and localised operational knowledge (see Natural Composition). While large sections of the border are made up of rivers and as such appear more easily surveilled, authorities are further confronted with large forested areas, hills, mountains, valleys, and streams. Moving in these areas requires technical and operational knowledge of the space, frequently updated surveillance equipment, smaller technical solutions rather than holistic ones, and vehicles and patrols to quickly intervene on movement. To do so, Croatia's Integrated Border Management brings together a wide range of actors outside of purely security-oriented institutions, resulting in diffuse accountability (see Integrated Border Management in Croatia). The funding of an external EU border concurrently draws in large sums of EU funding to establish the physical infrastructures to make surveillance possible (see The Institutional Organisation of Border Control). While the expansion of Croatia's border surveillance infrastructures reflects adaptation to EU border management and Schengen accession, it also follows earlier transformations shaped by war, corruption scandals, and shifting mandates. The persistence of police violence across these contexts raises questions about institutional continuity rather than isolated change. The following analysis examines how Croatian authorities integrate natural environments into border control. Across changing topographic configurations, Croatian border management is confronted with terrain that is difficult to access, move through, and monitor. In this process, nature itself becomes part of the EU's violent borderscape.

Section IV. Analysis

Employing the concept of "*Infrastructuring Nature*" as a border technique developed by Peter Teunissen, the following three chapters tackle some of the ways in which nature at the Croatian-Bosnian border is "infrastructured". Using the Evros River, a border river between Greece and Turkey, as an example, Teunissen employs the term *Infrastructuring Nature* to describe how infrastructures interact with geophysical environments and mobility regimes. Nature is actively shaped by infrastructures and weaponized for border control, while the environment itself is shaped and reshaped by the function it fulfills and the people moving through it. This concept of Infrastructuring Nature treats the natural borderscapes as a layered assemblage of human, technological and biophysical actors that together form a hostile border. In our analysis we apply the concept to the Croatian-Bosnian border and ask how terrain and types of topography are modified and used strategically to make border surveillance, the capture of illegalised border crossings, and pushback operations possible. To this end, this section first provides an initial overview of nature along the Croatian-Bosnian border, field impressions, and a description of the consulted databases.

The ensuing analysis is divided by "type of landscape". The first chapter "Wet Borders: Rivers along Croatia and Bosnia and Herzegovina" draws attention to "wet borders", referring to the various rivers that demarcate over 400 kilometres of Croatian-Bosnian border. Here, we address some of the ways in which surrounding nature is infrastructured and how surveillance systems are placed. Lastly, this highlights rivers as sites of pushback violence, death, and disappearance, in particular the Glina and the Korana rivers. Moving on, the second chapter "The (Dry) Green Border: Infrastructuring Forests" discusses forests (the "green border").[88] Most of the Croatian-Bosnian border, whether running through valleys, on mountain ridges, through populated areas, or along rivers, is forested. Further, forests stretch deep into Croatia, and have accordingly become prominent sites

[88] When authorities speak of "green borders", they commonly mean terrain between official border crossing points. Therefore, "wet borders" may be included when we speak of "green borders", which pays dividends to the reality and interwovenness of these terrains.

of transit, surveillance, and violence over the last 10 years. We focus on the infrastructuring of natural terrain, namely deforestation and the creation of roads near the border for surveillance, intervention, and pushback. This includes the reconstruction of infrastructures surrounding an established location where individuals are pushed back in groups. Further, this section addresses surveillance systems, and how these particular interventions make possible certain types of pushback violences in forests. In the third chapter "Mines and DeMining", we focus on the weaponisation of mine-suspected areas.

Whereas this remains a danger to civil society and PoM across the two countries, regardless of topography, we focus on mine-suspected areas near and around Lička Plješevica. Here, we show how the construction of roads near dangerous areas allows border police to strategically intervene along the remote, dangerous spaces that PoM are pushed into. It further shows how authorities push PoM into these areas. This last chapter tentatively provides insight into border surveillance and pushbacks in mountains, which this report does not cover as a dedicated focus.

Natural Composition of the Border

The border between Croatia and Bosnia and Herzegovina stretches across 931 km. This consists of 494 km of land border and 425 km of riverine.[89] Despite this land border being one of the oldest in Europe - going back as far as 350 years to the Habsburg and the Ottoman Empires - its geomorphological complexity, length, and local, regional, and national frictions have posed huge challenges to border security. In terms of natural configuration, authorities are confronted with high-alpines and low-land riverines, sudden elevation changes, huge amounts of vegetation cover, and a lack of roads. Today, almost two thirds of the border area are scarcely populated. This assessment is annually confirmed in Croatian IBM reports: the extremely long land border, river flows, natural environments, and high-volume border crossings with Bosnia and Herzegovina constitute a number

[89] Smailbegović, A., Korajlić, N., Ahić, J. i Toth, I. (2020). Case for Geospatial Border Surveillance on the Bosnia-Herzegovina and Croatia Border in Response to the Migrant Crisis and Hybrid Warfare. Annals of Disaster Risk Sciences, 3 (2), 1-11. https://doi.org/10.51381/adrs.v3i2.52 → p. 2

of problems to border authorities.[90] The rivers are comparatively easy to surveil for the Croatian apparatus, while the protection of the dry green border can be especially difficult in mountainous areas.[91] Beyond the narrow hinterlands of Dubrovnik, the biggest challenge to Croatian border authorities is the central part of this particular border due to the short distance from Karlovac to Slovenia. Lastly, this is rendered even more difficult by the persistence of mines.

The efforts necessary to overcome such difficult terrain are illustrated in the multi-faceted organisation of the IBM as illustrated above.[92] Beyond the surveillance of the green border, Croatia's concept of border security further relates to disaster management concerning geological events (e.g. landslides, earthquakes, volcanic eruptions), hydrological events (floods or lake eruptions), meteorological events (blizzards, storms, hail, heat waves, droughts, etc.), or fires.

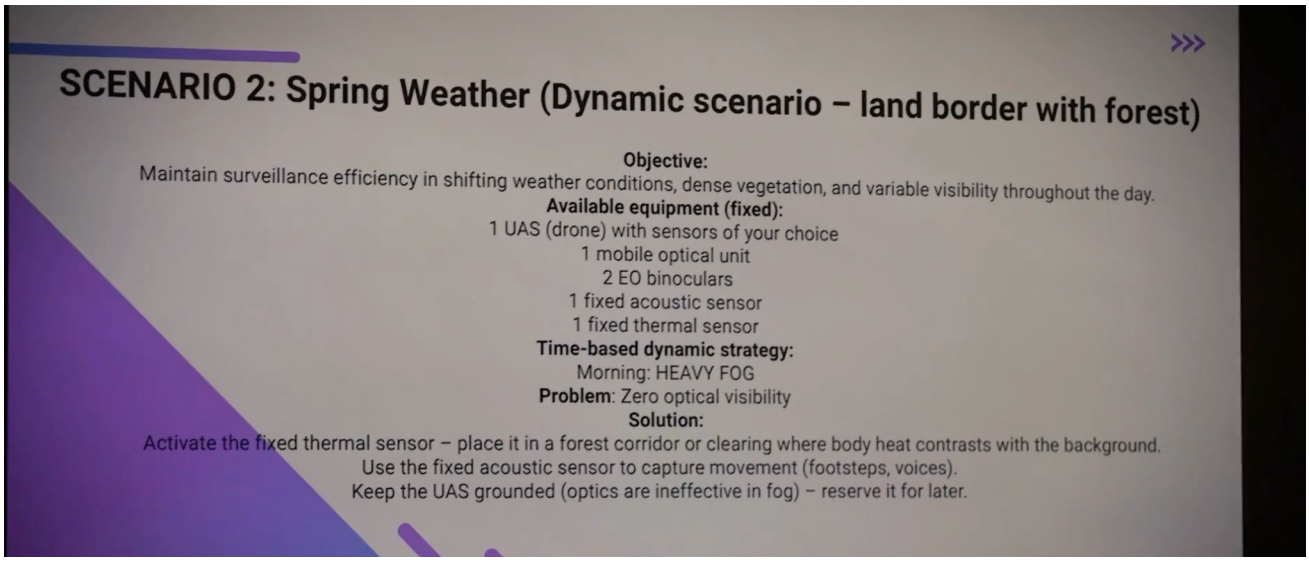

Figure 3. A presentation during the Digital-Twin contest held by Frontex. Source: Frontex.

Accordingly, advanced technical equipment and integrated sensor networks are used to merge data and produce risk and vulnerability assessments. Beyond national agencies, this draws on insights from Europol, the European Satellite Centre, and other international bodies. Cooperation with Frontex and integration with EUROSUR helped Croatia pull improved satellite imagery, georeferenced data,

[90] Integrated Border Management Strategy 2024-2028 (Strategija integriranog upravljanja granicom Republike Hrvatske od 2024. do 2028 godine). Available here.
[91] Ministrastvo Unutarnji Poslova (2019). Granica s BiH najsuvremenijom je tehnikom pod stalnim nadzorom. Available here.
[92] Integrated Border Management Strategy 2024-2028 (Strategija integriranog upravljanja granicom Republike Hrvatske od 2024. do 2028 godine). Available here.

and permeable maps of its external border in 2019 before Schengen accession.[93] Increasingly, Frontex is targeting environmental conditions and topographic configurations in land border surveillance of the EU. In 2025, a contest was held to develop a Copernicus-based solution for a digital twin, modelling different topographies, weather conditions, and surveillance technologies at an external EU border.[94] The case study took place in Romania.

Rendering the border "legible", thus knowing its terrain and making that knowledge operational, is a larger endeavor at the Croatian-Bosnian border and at external EU borders generally. In the Croatian case, this is made more difficult because it is not clear where the borderline runs in the first place.

The Croatian-Bosnian border was initially established by a 1999 agreement between the two countries.[95] This agreement marked the border line produced by disintegration and mutual recognition in 1991 and 1992 and the settlement frontiers of the 1991 census through 1:25 000 topographic mapping. This bilateral agreement lacked ratification in both respective parliaments and in 2001, Croatian state borders were set in more detail through the Joint Interstate Diplomatic Commission for the Identification and Determination of the Borderline and Reparation of the 1999 agreement.

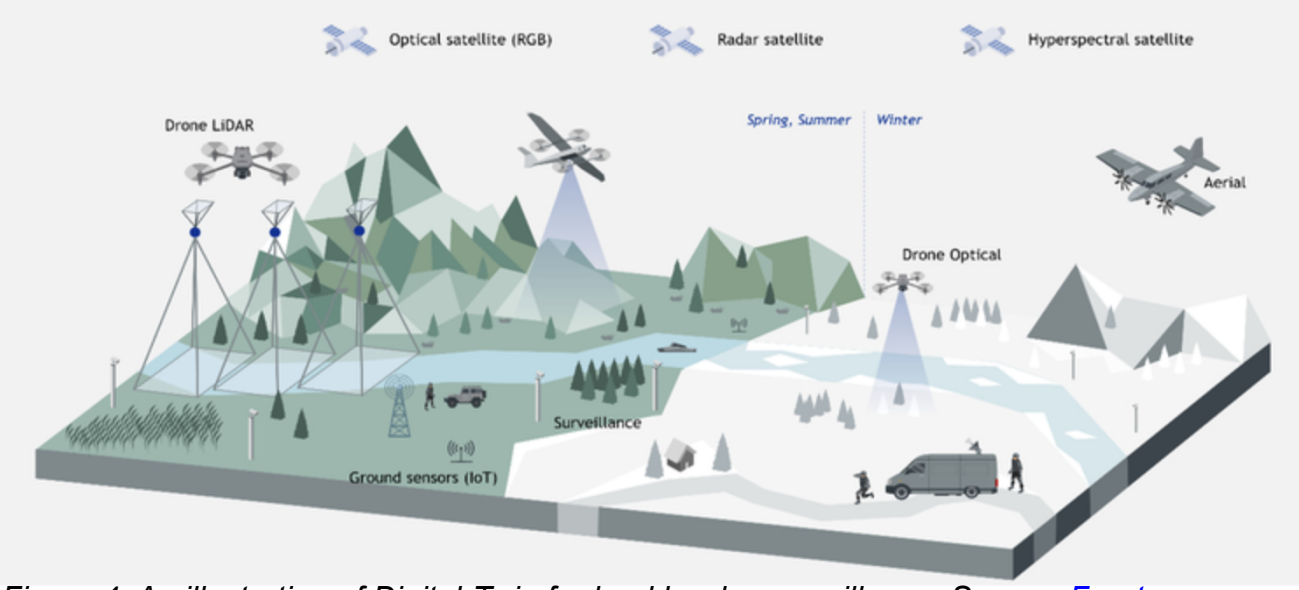

Figure 4. An illustration of Digital-Twin for land border surveillance. Source: Frontex.

[93] Integrated Border Management Strategy 2019 (Strategija integriranog upravljanja granicom za 2019). Available here.
[94] Frontex (October 12, 2025). Winners of the Prize Contest AWARDED - Congratulations!. Available here.
[95] Treaty on the State Border Between the Republic of Croatia and Bosnia and Herzegovina 1999. Accessible via un.org.

This, however, does not resolve the practical problems for border enforcement on the ground. Many of the existing railway routes were built when this was still a border of the Republic and therefore intersected with the nation-state border line.[96] Since then, these have been gradually improved through bilateral exchanges of cadastral records and multi-state protocols on border points. To this day, territorial disagreements regularly surge in local contexts and lead to border disputes. Altogether, only 355 km of the 2361 km of Croatian land borders are bilaterally agreed with neighbouring countries.[97]

Field Impressions

With this context in mind, observations during the field visits gradually confirmed not only the particularities of the Croatian-Bosnian border landscape but also its role in border enforcement. At first sight, the Croatian-Bosnian borderscape is not obviously hostile.[98] Especially on the Western side, the Croatian side of the Korana and on the way to Korenica entails the Plitvicka national park's stunning turquoise lakes and quiet forests. There are no high fences, barbed wires, or long stretches of border wall reminiscent of the all too known accounts of the EUs violent border regime. Merely the former airbase at Željava reminds of the direct hostilities this area has known. Further away from the national park between Korenica and the borderline, a stretch of open flatlands and small rivers separates the Pljesivica mountain range, marking the border and the next big town.

At a closer look, it is impossible to miss the designs that render the border increasingly dangerous. Forgotten objects, beverages, and clothing in bushes suggest that the few bushes and river denches serve a purpose, in otherwise deliberately open land.

[96] Smailbegović, A., Korajlić, N., Ahić, J. i Toth, I. (2020). Case for Geospatial Border Surveillance on the Bosnia-Herzegovina and Croatia Border in Response to the Migrant Crisis and Hybrid Warfare. Annals of Disaster Risk Sciences, 3 (2), 1-11. https://doi.org/10.51381/adrs.v3i2.52

[97] Triplat Horvat, M., Grgić, I., Kušić, D. (2022). Development of the State Border Geoinformation System of the Republic of Croatia (SGBiS). KiG Special Issue 21, 148-177. https://doi.org/10.32909/kg=21 si 10, p. 152

[98] Pezzani, Lorenzo (2019) 'Hostile Environment'(s). In: "'Hostile Environment'(s)", ar/ge Kunst, Bolzano, Italy. Available here.

Figure 5. Belongings of people on the move, found in bushes on the border near Karlovac. Source: BVMN May 2025.

Between the town Korenica and the Plesjevica mountain range, the land is flat: most of it is agricultural land, yet seemingly unused in the month of May except for livestock feeding. In the event of a successful crossing of the mountain range and descending to the bottom, evading surveillance and detection, hundreds of meters of grass follow before the town of Korenica (see Figure 2), which is heavily patrolled by border police at night.

Figure 6. Bottom range of Plješevica Mountain Range next to Korenica. Source: BVMN May 2025

Further up on the Western side of the border, north of Bihać, on the Croatian side of Velika Kladuša, the border feels more obviously present. In contrast to other parts of the border, an asphalted road runs directly along the border. Surveillance towers and cameras are more obviously visible, and so is the police presence. Apart from those who live along the road, the road seems to serve the border police, in strikingly visible intervention operations. On the Bosnian side of the border, realities are less swallowed up by forests and mountains. The border is more visible and naturally accessible and the border towns of Bihać and Velika Kladuša serve as visible transit points. Velika Kladuša was long shaped by Agrokomerc, a major agro-industrial complex founded in the 1960s during socialist Yugoslavia.[99] Its infrastructural investment in warehouses, production halls, and logistical facilities visible mark the landscape and transformed local livelihoods.[100] Further to the east however, closer to Republika Srpska, begins what some call a "nomansland". Bojna, a mostly Serb village depopulated after the 1990s war, has remained sparsely inhabited. Over time, vacant houses were informally rented to people on the move. In 2021, the Service for Foreigners' Affairs reached an agreement with remaining residents to clear the village, resulting in the eviction of all who had been staying there.[101]

Along the Una and Sava Rivers, which mark the horizontal border line to the East, much of the civilian population along the Sava River (outside of towns) consists of only one row of houses close to the riverbank. Moving further into Croatia again requires to move through a few hundred meters of flatland, most of it for agricultural use, before ostensible cover can be sought with the next forest. Particularly at the Una and Sava Rivers, the space between the borderline and the next civilian infrastructures or forests appears crucial on the Croatian side. What is overall striking is a stark difference in forest and mountainous areas along the borderline. Where on the Croatian side, forest stretches along the Sava river, flat fields and small settlements are found on the Bosnian side. It renders the forest a

[99] K.W. (1987). Yugoslavia All the Party Chief's Men. [online] TIME. Available here.
[100] Christia, F. (2008). Following the Money: Muslim versus Muslim in Bosnia's Civil War. Comparative Politics, 40(4), 461–480. Available here.
[101] Interview 3

crucial instrument for border enforcement.

Further south, along the Western part of the border, the state border line runs over the Dinara mountain range. Just as the mountains a little higher up, these are difficult areas to cross with wide mountain ranges and flat valleys. At the same time, the narrow strip between mountains and ocean, as well as the long distance to Slovenia, makes these areas that are relatively easy to surveil and intervene in.

Chapter I: Wet Borders - Rivers

Of the 931 kilometres of border between Croatia and BiH, 425 kilometres are “wet” borders. These “natural” infrastructures have acted as “natural” barriers for decades. In their most recent form, they take the shape of post-Dayton borders of BiH to Croatia, which have further become external EU borders as of 2023.

Starting east and at the Serbian border, the Sava separates Croatia and BiH. Right by the river, the area is populated with towns and cities on both sides, while the surrounding land occasionally provides slight elevation. Moving west, a famous tributary of the Sava, the Una River, becomes the state border around Donja Gradina (Kozarska Dubica) until Gornji Rakani (Novi Grad). It runs through shallow valleys, and is either populated on both sides or hugged by forested hill formations. This marks the “horizontal” stretch of Croatia’s southern EU border.

On the Northern-Eastern stretch of Bosnia’s land border to Croatia, the Glina River, a tributary of the Kupa, runs between the city of Velika Kladuša and Glinica (Velika Kladuša) and represents the state border line. Here, both sides of the border are either densely populated, or include smaller villages in hilly, forested areas as well as flatland. A few kilometres South, starting BiH’s Western border stretch to Croatia, the Korana River sits on the border starting between Hadžin Poktok and Bugar (Bihać). After a mountainous border stretch (discussed in chapter “Mines and DeMining”), the Una picks up the border line again just below Lohovo. Running through valleys and with brief interruptions, the Una River is detached from its

state border designation again around Veliki Cvjetnić (Bihać), where its tributary Krkna continues for a few kilometres.

Particularly the Una but also the Sava River, are historically known for annual overflowing, and further for the danger they carry.[102] Throughout the years, local people as well as PoM frequently drown during leisurely activity and border crossing attempts.[103] The Una was also notably a prominent site of battles and war crimes during the 1990s.[104] At the same time, admiration of these naturally beautiful terrains have long made them sites of regional and local significance, including local and regional identity politics.[105]

According to the MoI, surveillance and enforcement at rivers is much simpler than the intricacies of the "dry" border, where constantly changing terrains and dense foliage make access difficult.[106] The Sisak-Moslavina county (HR), where the Una becomes the state border near Donji Dobretin (HR) and runs into the Sava by Jasenovac (HR), has been thoroughly surveilled since 2019.[107]

In the following chapter, we focus on surveillance and pushbacks at the Una, Sava, Korana, and Glina. First, we address some of the ways in which nature is tentatively infrastructured, and terrain around rivers used strategically by border authorities. Second, we highlight how surveillance is achieved along wet borders by focusing on long-range systems, and the interwovenness and concealing of border control infrastructures. The third section of this chapter focuses on rivers as sites of pushbacks and death. This clarifies how border control pushes PoM into more remote spaces, and how these spaces are used strategically to injure human bodies.

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[102] Gnjato, Slobodan & Leščešen, Igor & Basarin, Biljana & Popov, Tatjana. (2024). What is happening with frequency and occurrence of the maximum river discharges in Bosnia and Herzegovina?. Acta geographica Slovenica. 64. https://doi.org/10.3986/AGS.13461

[103] Kurt, S. 2011. Record Number of Weekend Drownings in Bosnia. BalkanInsight. Available here; Šušak, I.T. 2021. Five-year old boy from migrant family drowns in Una river. Hina. Available here

[104] Nazor, A. (May 2010). "Izvješća o napadima srpskih postrojbi na području Banovine i Pounja u srpnju 1991. (VII. dio)" [Reports on Attacks of Serb Units in the Region of Banovina and Una River in July 1991 (Part 7)]. Hrvatski vojnik (in Croatian) (292). Ministry of Defence (Croatia). ISSN 1333-9036. Archived from the original on 2015-02-06.; Marinić, B. 2020. The Forgotten Massacre in the Village of Baćin. Domovisnkirat. Available here.

[105] Šehić 2011. "Quiet Flows the Una"; Azra Hromadžić 2020. Notes from the Field. In Movements Vol. 5 (1). Available here

[106] Ministrastvo Unutarnji Poslova (2019). Granica s BiH najsuvremenijom je tehnikom pod stalnim nadzorom. Available here.

[107] Ibid.

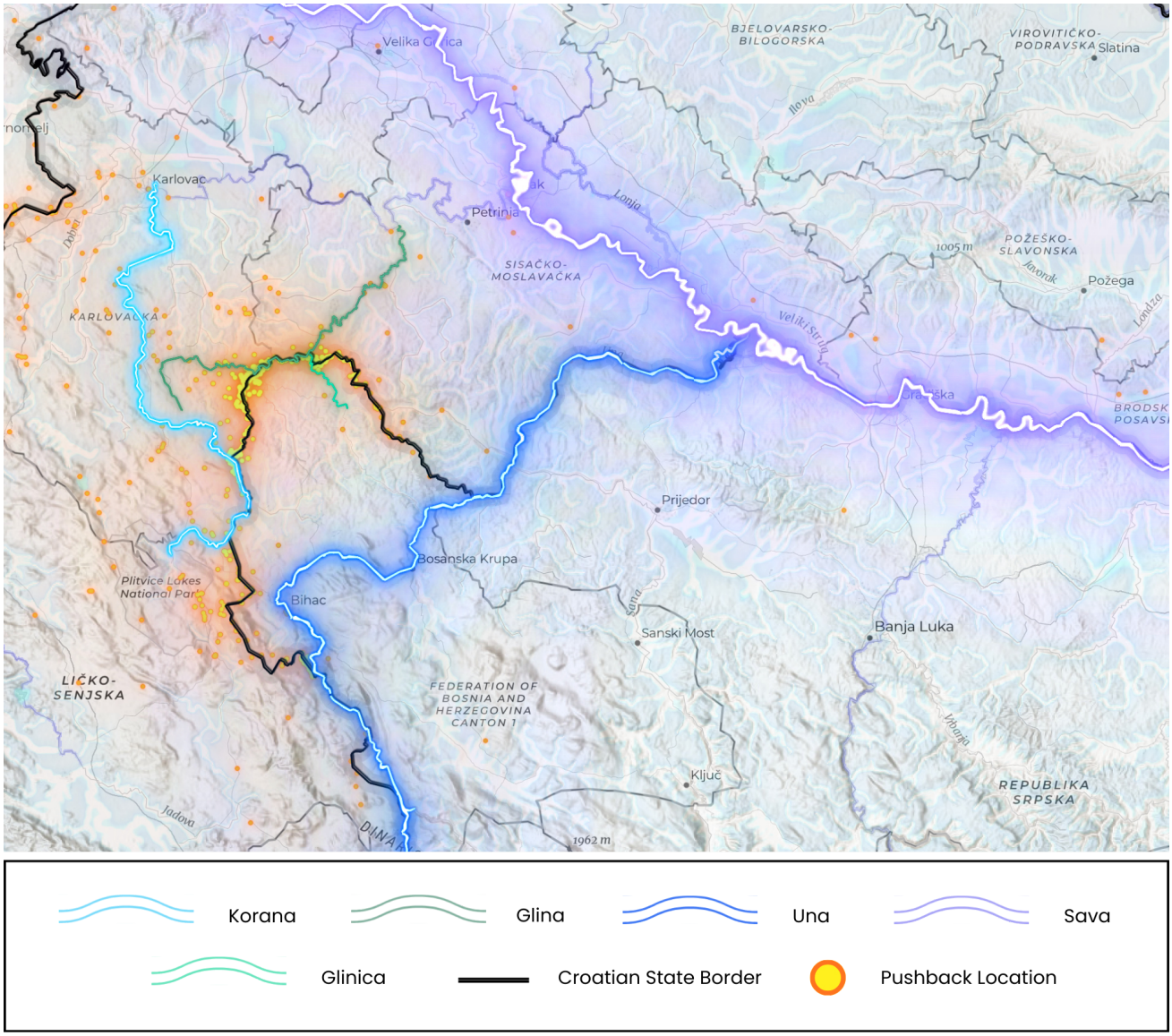


Figure 7. Pushbacks along Croatian and Bosnian Rivers and Waterbodies. The Una and Sava Rivers mark the state border for extended stretches. Created with QGIS and ArcGIS. Sources: BVMN / Humanitarian Data / European Environment Agency (EEA).

This is not an extensive overview of rivers at the Croatian-Bosnian border and their role for mobility and border control. There is a manifold of tributaries running through both Croatia and BiH, which frequently appear in the BVMN database or in local reporting of death and injury. In this research, we focus on the stretches of river that demarcate the state border line. Other times, river-related investigations appear in subsequent chapters of the analysis: the Glina is extensively discussed in the chapter "The (Dry) Green Border: Infrastructuring Forests", while the Korana appears in the chapter "Mines and DeMining". Moreover, this is not a comprehensive overview of surveillance systems. Instead, we focus on new

developments starting in 2024 and 2025 - the border police is set to receive 20 new stationary long-range surveillance systems.[108]

Infrastructuring Natural Environments

Along the Una, Sava, and Korana, the natural environment plays into the strategic placement of surveillance systems and border control. Note the following example: authorities are planning the construction of a 45meter high pole with a long-range surveillance system near Gornji Dobretin.[109] At this location (50 meters away from the border line), the MoI already has a container placed for the border police as of late 2019.

At this spot, the border police will be able to surveil the valley for several kilometres looking east, while the border line runs through forest up north. In this case, the valley through which the Una runs makes comprehensive surveillance of the border line relatively simple: here, the Una is easily integrated as a natural barrier. Relatedly, by the Sava River, the surrounding civilian and agricultural infrastructures make surveillance comparatively easy. Outside of towns, the space in between or on isolated buildings provides the room for long stationary systems, while the terrain and movement through it can easily be captured from technology mounted on a 45m high pole. Similarly, many areas of the Una (where equipment is placed) are rather flat and populated with smaller towns – or as in the case near Gornji Dobretin, the border rivers run through a valley. At these locations, paved roads either run parallel right by the rivers that mark the borderline, or they leave spaces for flat agricultural space in between. This facilitates patrol and surveillance: the optical visibility stretches far through thermal imaging as well as day and night cameras at a height of over 40 meters; there are few places to hide once the river is crossed; and only one road on which

[108] EU Tenders (2025) 665222-2025
[109] Ibid.

authorities can patrol. Such stationary systems already exist and are increasingly being placed along this stretch of the border.

Figure 8. Planned long-range surveillance system near Gornji Dobretin. Source: Google Earth Pro.

Along other locations, namely the section of the border river Korana and near Bihać, it is not so much the river itself that lends itself to border control but rather the surrounding terrain. Here, the terrain is flat for kilometers on end, with only slight elevation on hills and official border crossing points. The Korana, however, runs through valleys which slightly drop off, meaning that long-range surveillance systems are placed on surrounding hills, and patrols at strategic points. Figure 9 shows a patrol waiting at a section of the Korana River. The model of the vehicle, which can be seen in other spots along the border, appears to be a third generation Fiat Ducato 2.3L. In this area, parts are furthermore mine-suspected - the weaponisation of these areas is discussed in the chapter “Mines and DeMining”.

Figure 9. An unmarked transport van used by border police (April 2025), also visible in satellite imagery (October 22, 2024). The Korana demarcates the state border line in this area. Source: Google Street View.

In other spots, surveilling rivers has quickly prompted clearings of riverbanks, as outlined in IBM documents since 2018. Between 2016 and 2018, over 160 kilometres of drainage canals were cleaned alongside rivers and streams in the police administration Vukovar-Srijem.[110] Residents have observed similar practices in Hrvatske Kostajnica in 2018 already. As the clearing of riverbanks is a standard procedure for border enforcement, we dedicate more attention to this topic in Croatian forests in chapter two of the analysis. At rivers, deforestation is clearly visible between Croatia and BiH, and can easily be traced through historical satellite imagery. Here, it is not always possible to reconstruct whether clearings are necessarily surveillance-related, or have been undertaken for water management reasons.

Further south, below the Lohovo border crossing, the border line runs along a wide section of the Una River and then follows up into Dinara Mountain range. MoI plans foresee surveillance locations connecting both mobile and stationary surveillance

[110] Hameršak, M., Pleše, I. (2021), p. 210.

in this area to one facility.[111] The installation of new towers (especially in mountainous areas, and generally at elevation), often involves the clearing of vegetation and the flattening and sealing of surfaces. When this happens, border enforcement very much intervenes in nature and works against ecological concerns, and the interests of local, regional, national, and EU-wide sustainability organisations. [112]

Figure 10. Clearings of the Korana riverbanks on both sides of the border. The river marks the state border line between Kordunski Ljeskovac (HR) and Tržak (BiH). Source: Google Earth Pro (July 5, 2020 & September 5, 2020).

Nevertheless, ecological and topographic configurations at these locations are very much taken into consideration in the planning and procurement processes. The physical design of these poles depends on terrain, turbulence, and orography, meaning that construction takes into account things such as the wind load at the top of the pillar.[113] To this end, terrains are assigned different categories. As locations for new systems change across Croatia, the standards for their

[111] EU Tenders (2025) 665222-2025
[112] Interview 1
[113] EU Tenders (2025) 665222-2025 - Competition. Available here.

dimension do as well. In any case, poles need vertical cable support as well as rest and work platforms covered in Gitterrost (steel threads).

As demanded by the MoI, long-range systems added in 2024 and 2025 are powered through hybrid energy mixes. These systems include solar panels and a wind generator with fossil-fuel back-up, as well as protection for the panels from wind and storm. In some instances, the facilities and locations where new systems are planned are not connected to the energy grid – in other cases they are. Generally, the construction of the poles, technology, as well as the little cabins constructed to house the equipment, must take into consideration wind, flooding, moisture, lightning, and other natural forces. The location of facilities are assigned wind zones, as well as terrain categories. [114]

Generally, these new towers will have to be built with a concrete foundation like usual but must be 1 meter above the ground due to the proximity to the Sava River.[115] At the Sava and Una Rivers, this is a requirement we find consistently across the procurement documents due to regular overflowing. Similarly, the cabins housing the equipment must fulfill several requirements pertaining to the build-up of moisture and protection of technical equipment. In these instances, the Una and Sava Rivers heavily dictate the shape that system design for stationary surveillance infrastructures take.

In a very practical sense, border surveillance is not just constricted by nature. Instead, natural border environments provide opportunities to make surveillance cheaper, sustainable, and more reliable. Border surveillance is going to, and already has, taken a "green turn". Importantly, border authorities can achieve disguised surveillance systems with rather little effort: for example, the IBM allows the MoI to draw on non-security actors to carry out preparatory tasks (such as riverbank clearings).

[114] EU Tenders (2025) 665222-2025 - Competition.
[115] Ibid.

Border Surveillance Infrastructures

Long-range surveillance systems procured in 2024 and 2024 are usually mounted on 40-meter high poles, supported by a concrete foundation, fenced off, and include a cabin to house surveillance and communication technology.[116] Contrary to projects on mountain tops or in forested areas, the construction of new surveillance towers at rivers does not demand the clearing of natural spaces such as vegetation or rock. More importantly, in other cases, no new construction is necessary at all. Along the Sava River, Hrvatske vode makes available properties, which have presumably been used to house the employee responsible for a particular section of the riverbank in recent decades.

Hrvatske vode, the Croatian water management company, was established by the Water Act (Official Gazette, No. 107/1995), giving it sui generis legal status - Hrvatske vode is not technically a company nor is it an institution nor administration.[117] This resulted from the establishment of water as a public good, the management of which falls to the public authority of Hrvatske vode. This leads to a "clear" division of responsibilities–for instance, the construction of water resources is different from their maintenance. In the county Vukovar-Srijem, the water company Vodopriveda is responsible for the former. Therefore, both join forces in maintaining, reconstructing, or clearing the riverbanks of the Glina and Una Rivers according to IBM strategy documents.[118] As of 2008, water management sits within the Ministry of Regional Development, Forestry and Water Management.[119] We once again observe a clear blurring of responsibilities and incorporation of non-security actors in the construction of Croatian border surveillance.

In Slavonski Šamac and Dubočac, properties for the installation of new long-range systems are managed by Hrvatske vode.[120] Live-streamed footage from this location, surveilling large parts of the Sava River borderline, is stored on a network

[116] Ibid.
[117] Hrvatske vode. "Povijest". Available here.
[118] Report on the Implementation of the Integrated Border Management Strategy 2018 (o provedbi Strategije integriranog upravljanja granicom Republike Hrvatske za 2018). ; Hameršak & Pleše (2021), 210
[119] Hrvatske vode. "Povijest".
[120] EU Tenders (2024) 428714-2024 - Result. Available here. p. 9

DVR in the location, while lower-quality footage is transmitted to the LCC at the police station in Slavonski Brod in real time.

Importantly, radiolinks must be installed to make data exchange possible–to this end, these are upgraded on a pillar in Košarevac–owned by OiV, a Croatian telecommunications company. A similar setup of new long-range systems on properties operated and owned by Hrvatske vode is planned for locations in Mackovac and near Orubica, while A1-owned cell towers will become the relay point to transmit footage to the Stara Gradiška police station.[121] At the Una, the MoI is already using an existing OiV-owned facility for border surveillance: a 40meter pole and communication container surrounded by a wire fence further includes a functional TETRA base station and network equipment.[122] To transmit footage from this location, the MoI plans to use an A1-owned pillar in Dvor by equipping it with 50 Mbit/s radio links.

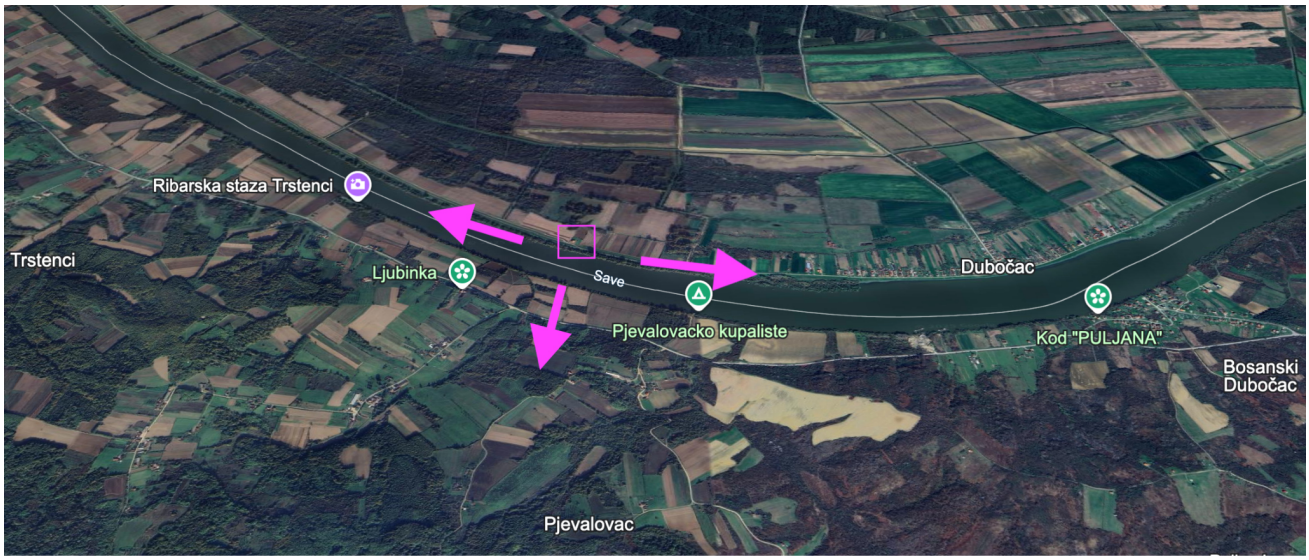


Figure 11. Location of a new long-range system on Hrvatske vode property (Dubočac). Source: Google Earth Pro (July 12, 2025).

Importantly, most of these poles are built and coloured red and white in accordance with the Regulations on Construction and Installation of Aviation Obstacles (Official Gazette 100/2019) – as such, they look exactly the same as every other celltower in the country.[123] The red and white appearance applies only to new constructions, so in the case of using existing surveillance and telecommunication

[121] EU Tenders (2025) 665222-2025
[122] ibid. pp. 44
[123] EU Tenders (2025) 665222-2025 - Competition. Available here.

infrastructures, the physical makeup of towers used for surveillance can differ drastically. Through such strategies, surveillance infrastructures are integrated into civil society infrastructures and blend in seamlessly.

We observe that at several planned locations along the Una and Sava rivers, long-range stationary surveillance systems are implemented and integrated with already existing infrastructures not dedicated to border enforcement. This multi-actor involvement and integration of border surveillance infrastructures into civil society is not to be taken lightly. Across tender notices issued by the MoI, many properties and facilities used for the installation of new long-range systems seem to be owned and operated by Croatian telecommunication and television companies (namely Hrvatski Telecom, OiV, and A1). OiV specifically is 100% owned by the Republic of Croatia.[124] In the case of a new long-range surveillance system in Cerovljani, a cell tower owned and operated by A1 from before 2007 (Zagreb-based telecommunications company) now includes a new long-range system.[125] This appears to be a novel method, as compared to practices at other locations of the EU external border (i.e., Greek-Turkish border). [126] The practice of repurposing seems to be more efficient, and thus a preferred method.

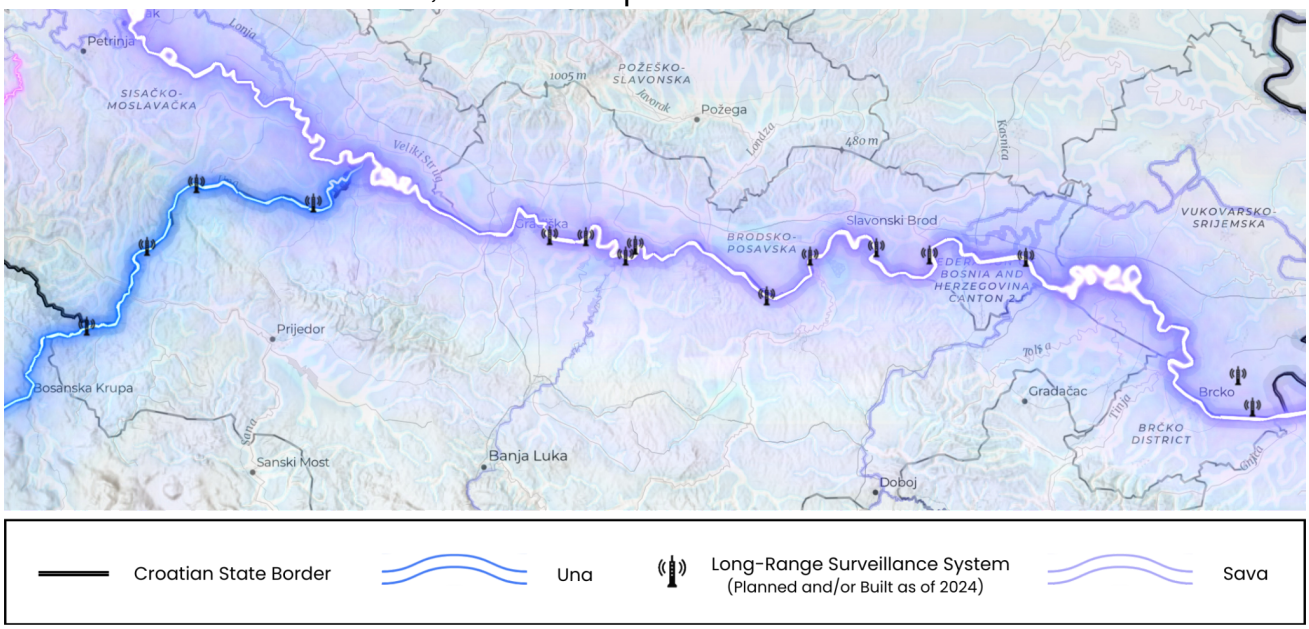


Figure 12. The Una and Sava as the State Border: New Surveillance Systems along the Rivers as of 2024. Created with QGIS and ArcGIS. Sources: EU Tenders 428714-2024 & 665222-2025 / Humanitarian Data / European Environment Agency (EEA).

[124] OiV. "About us". Accessible here
[125] Ibid., pp. 14-20
[126] See for example; Karamanidou L. (2024) Surveillance Technologies at European Borders. BVMN Available here.

The multipurpose of these locations and the securitisation of civilian infrastructure renders state surveillance increasingly overt while averting scrutiny by the public eye. This importantly highlights how Croatia appears to seek an operational surveillance picture–not just in the border area but across the entire country. This strategy is similarly reflected in the way the border police patrols and operates: every police department has an intervention unit and participates in "border control", which refers to patrols outside of border areas.

Violent Riverscapes

As we have seen above, the 425 km wet border is of strategic importance for border enforcement, not least as the crossing is dangerous and in some areas deadly. Clearing of riverbanks ensures visibility for the surveillance infrastructure, and renders river crossings highly visible to authorities. [127]"Visibility and enforcement of the 'wet borders' is simpler, compared to the intricacies of the dry border", reads a press release by the Ministry of Interior from July 2019.[128] Enforcement however, carries a heavy weight, as Croatian border Rivers frequently become sites of violent pushbacks.

Testimonies from the BVMN pushback database more rarely cite rivers as a point of transit and more often as a point of pushback. While this is inevitably linked to the fact that people are specifically asked to give a testimony of their pushback experience, details about the border crossings that led to the pushback are usually also mentioned in the testimony.[129] Augustova and Hamersak have observed that rivers as natural elements at the border lines become "natural tools of assistance" for the officers.[130] Yet we might go even farther to say that rivers are not merely "in the way" but are deliberately (ab)used for violent deterrence. Using the Greek-Turkish border river Evros as an example, Levidis argues that shifting riverbanks,

[127] Hameršak & Pleše 2021
[128] Ministarstvo Unutarnjih Poslova (2019, July 23). Granica s BiH najsuvremenijom je tehnikom pod stalnim nadzorom. Available here.
[129] The BVMN Pushback questionnaire specifically includes questions about the context of the testimony, and locations of crossing and apprehension.
[130] Augustova, Karolina, Anaïs Thévenot, Jack Sapoch and Alba Diez Arrea. [2018]. "Border Violence on the Balkan Route. People Trying to Reach Asylum in the EU Violently Pushed from Croatia and Slovenia to Serbia and Bosnia-Herzegovina, May 2017 – December 2018." No Name Kitchen, SOS Velika Kladuša, Balkan Info Van. http://www.nonamekitchen.org/reportes-de-violencia/. referenced in. Hameršak & Pleše 2021.

flooding, evaporating, and ongoing hydro-diplomatic impasse can be intentionally mobilised to make a river a strategic and durable obstacle.[131] The use of rivers during pushback was confirmed by nearly all expert interviews conducted during field research. Corroborated with evidence from social media and media reports, as well as analyses of the BVMN pushback database and the 4D deaths and disappearances database, suggests that river pushbacks have by now, become systematic practice.

Rivers as Final Pushback Locations and Sites of Violence

> *"People are pushed back, sometimes through rivers with up to chest-deep water and are forced to walk through the deeper parts of the river."*[132]

The Glina and Sava Rivers are mentioned most often in testimonies (50%). This may be traced back to their accessibility via asphalt roads, as people usually recount being driven to the river bed in police vans during pushbacks. However, it must be noted that those providing testimony are often unsure of the exact location where their pushback takes place, citing disorientation after hours or walking, driving and often verbal and physical harassment.

The below is an excerpt of a testimony describing a pushback incident that likely took place at Glina river, based on verification of coordinates provided.

> *"The respondent is a (...) woman, aged 29, who was traveling together with her blind 49 year-old husband and their two children, a 4 year-old boy and a 2 year-old girl. The family crossed from Bosnia-Herzegovina to Croatia on the afternoon of the 28th October 2023, together with two men from Afghanistan aged around 30. Soon after reaching the territory of Croatia, the group was caught by two individuals that wore a uniform composed by light blue t-shirts and blue pants, resembling the uniforms of Croatian border police officers. They repeatedly said they wanted asylum but the individuals in the uniform answered "No asylum, no asylum!". The officers beat all of the adults also with batons on their arms and legs, especially the two men. They then proceeded to push them all - including the respondent's blind husband and two children - in the river and shouted to them "Go back to Bosnia! No asylum here!". The woman said that she and her family managed to get out of the water thanks to the two men that were with them, otherwise they could have easily drowned."*[133]

[131] Levidis, S., 2021. Border Natures: The Environment as Weapon at the Edges of Greece. Doctoral thesis, Goldsmiths, University of London.
[132] Interview 4.
[133] Border Violence Monitoring Network (2023). ""My husband is blind and I have two babies and the Croatian police pushed us in the river". Available here.

Testimonies mentioning rivers as part of a pushback operation, follow a very similar pattern: people are apprehended in a remote, often forested area, sometimes already deep inside Croatian territory, then subjected to intimidation, often through physical violence, either on the spot or in an improvised detention site like containers, before being forced inside a van, taken to riverbed and forced to cross the river to Bosnia.

> *(…) He recalled being beaten all over his body, claiming 'the police did not even know where they were beating'. He sustained injuries to his leg as a result, and his friend's eye was also injured. During the interaction, the police also stole both of the men's phones, their power banks and a total of 300 euros. After being beaten, the two men were driven back to the border with Bosnia-Herzegovina - the drive took around 2.5 hours. The respondent described the drop-off point to be two sides of forest with a river in the middle. On arrival, the police forcefully pushed the men into the river, despite them expressing that they did not want to enter the water. They requested instead to be taken across the border by car, but the police refused. The respondent said that the water was deep, around 1.5metres, that it was 'very cold', but that the current was 'normal'. It took both men around three minutes to swim across to the other side. When asked if the respondent knew his location, he said he was unsure. He did not know where he had crossed into Croatia, or where the police had found them."*[134]

As the testimonies above illustrate, weaponization of rivers is just one element of intimidation and violence people on the move are subjected to during pushbacks. The testimonies we coded as river pushbacks, were also coded with other forms of violence including beatings, most commonly forced undressing and deliberate freezing.

As in the testimony above, many respondents express fears of drowning, especially those unable to swim or physically impaired but are ignored by authorities.[135] Families with young children, elderly or disabled people are forced to swim across dangerous streams, often after being severely beaten by authorities who knowingly accept their risk of drowning.

[134] BVMN Testimony from June 2025, not yet online
[135] Border Violence Monitoring Network (2024) "The men described as policemen left the air conditioningon and forced the respondent and the rest of the transit group to stay in the van for about 1 hour in the cold." Available here

Pushback testimonies also account of rivers used for humiliation and degradation, where people are forcibly undressed, stripped of their belongings and then forced to put on the clothes, soaked in the river, by the authorities.[136]

> *"They started hitting them with an iron stick, about two or more times per person, then the officers ordered them to get on their knees and started slapping them. They told them: 'Never come back to Croatia'. The respondent reported that authorities took off all their clothes except their underwear, they burnt all their clothes, their mobile phones, their money and everything else they had. Then the police threw them into the river, beating and kicking them."*[137]

Regardless of temperatures people are forced to wade through sometimes snowy landscapes, undressed, risking death not only by drowning but also freezing and hypothermia.[138]

Deaths by Drowning

Expert interviews identify river deaths as the leading cause of fatalities among people on the move[139], a finding supported by data from the 4D Database. 80% of recorded deaths in the database occurred by drowning with the most documented deaths at the Croatian-Bornian border occurring at the Sava (30%), with further deaths documented at the Una, Korana and Glina Rivers.[140] In February 2026, two border guards came across people screaming for help in the Una River, near Hrvatska Kostajnica.[141] Against heavy fog and strong currents, a concerted effort by the Croatian mountain rescue service (HGSS) and the Volunteer Fire Department Horvati (DVD) made possible the rescue of several people. Reports on the number of the original group, of rescued people, and of uncovered bodies are conflicting. [142] According to media reports, a Bosnian citizen that was pulled out of the water is being investigated for facilitating the crossing attempt. Monthly reports from local actors in Bihać indicate that river-related deaths began

[136] Border Violence Monitoring Network (2024). "Three men with ski masks beat us with their sticks and soaked my shoes in the river." Available here
[137] Border Violence Monitoring Network. (2023). They started hitting us with an iron stick […]" Available here
[138] Interview 3
[139] Interviews 3 and 4
[140] Also included in the total number of deaths by drowning are those occurring on the Croatian side of the Kolpa RIver (Croatian-Slovenian border) and the Drine River (Serbian-Bosnian Border).
[141] 4sata (February 27, 2026). "Heroji Hrvatske Kostajnice". Available via TikTok.
[142] See BVMN Monthly Report - February 2026. Available here.

increasing in late 2022 and early 2023, suggesting the route, particularly across the Sava River, was more frequently used.[143] During certain periods of 2023 and 2024, BVMN received weekly reports of people going missing or dying in border rivers. [144]

Figure 13. Clothing inside the Glina River, found at pushback location. Source: BVMN 2025.

Whether individuals died while crossing or as a result of a river pushback can not always be determined. However, the locations of river pushbacks and locations of deaths/appearance of bodies at least indicate significant overlaps. Moreover, while media reports in the 4D database provide information on the context of deaths, the few detailed examples support our hypothesis. A striking incident was reported in September 2019, where a person was found dead in the Korana River. The body was found on the riverbanks of the Korana, was not wearing any clothes and showed visible marks of beatings.[145] The incident was not further investigated and the identity of the person was never identified.

[143] Border Violence Monitoring Network (2023). Balkan Regional Report - January 2023. Available here
[144] Radio Mrežnica. (2024, June 22). U Korani pronađeno tijelo nepoznate osobe, drugo ovog tjedna. Available here.
[145] Maja Nukić (2019). Obdukcija pokazala: Migrant čije je tijelo pronađeno kod Cazina se utopio. Klix.ba. Available here.

Despite limited information in media reports, what the database does incite is a reflection about a failure to rescue by authorities. While there are some reports of rescues, they seem to have often come too late. Many reports mention that bodies were found in rivers or on river beds that had been decomposing for months.[146] This may be traced back to both the inability or unwillingness of people in distress to alert rescue services, as well as a failure of rescue services and authorities to act quickly enough. Given the experiences of violence traced above it is not surprising that people are reluctant to call their own violators for help.

One might wonder if increased surveillance of the border rivers that aims to cover as wide a range of the border as possible, would not alert authorities behind screens to react to incidents of distress. Authorities including Frontex have cited the importance of surveillance technology for search and rescue purposes,[147] yet frequent reports of river pushbacks and non-assistance suggests an imbalance in the dual purpose the technology should play for Croatian authorities.[148]

> *"The water just took him"...We said to the police that one man drowned. But they did not care."*[149]

While we have very limited information of deaths and disappearances during transit, and rely on incomplete open-source databases like 4D and accounts of local structures supporting search for the missing and identification of bodies, testimonies of people crossing remind us that what we know can only be the tip of the iceberg.

> *"After eight days they reached a Croatian river, in which they had found the dead body of another person on the move in a previous transit attempt a few weeks before. The respondent described the experience of having to cross that river as very troubling and retraumatizing to him and his friends. He related that the last time they crossed this river a close friend of his started bleeding from his nose and mouth from the shock of seeing the dead body in the water."*[150]

[146] U Kupi pronađeno mrtvo tijelo nepoznatog muškarca. (2024, March 5). Net.hr. Available here.
[147] Frontex. (2025). Coast Guard Evolution: AI and Unmanned Systems Enhancing SAR Operations. Available here.
[148] See for example: ECHR CASE OF M.H. AND OTHERS v. CROATIA. Available here. This was a case of an 8 year old girl, Madina, who died after being pushed back across train tracks by Croatian authorities. The family had been detected by a thermal camera. However, when seeking evidence of the pushback footage was not available, as the camera allegedly was not working at that time
[149] K. Benghellab, T. Davies, A. Isakjee (2025). Four seasons of border violence: The co-option of the seasons into the management of migration. Geoforum. Available here.
[150] Border Violence Monitoring Network. (2022b). "The doctor said to the Slovenian police: don´t deport this man, he will die. But they did not care. They sent me back." Available here.

Due to limited rescue efforts, bodies are not always found or buried.[151] Those who attempt to cross several times in particular carry not only the fear of being violently pushed back but also the knowledge of the lives the deadly bordered terrain has already taken.

Weaponization of Seasons

The interplay between the specific terrain of the border and its instrumentalization for surveillance is further affected by seasons and extreme weather conditions. While seasons and environmental conditions do not govern the borders, Benghellab et al. (2025) have shown that seasons are incorporated into bordering practices at the Bosnian-Croatian border and negatively impact racialised people in securitised borders.[152]

Forced Freezing

One way in which seasons are weaponized is through a practice which we will call "forced freezing". In the mountains between Bosnia and Croatia the temperature can drop between -3◦C to up to -15◦C in the winter, sometimes bringing harsh snow storms.[153] Inevitably water temperatures of the Una, Sava and Glina rivers also reach dangerous lows. By weaponizing difficult terrain, bodies of water and extreme weather conditions, border authorities can outsource the infliction of pain and intimidation to harsh environments.[154] Instrumental to this is the practice of forced undressing and stripping of belongings that has been continuously documented by a BVMN field-based member organisation. In several instances, people were forced to undress and put on clothes that were previously soaked.[155] Not only a degrading and humiliating practice, forced undressing in harsh weather has caused lasting injuries and health impacts.[156]

[151] "No one looks for the bodies". Interview 1.
[152] K. Benghellab, T. Davies, A. Isakjee (2025).
[153] Interview 1.
[154] K. Benghellab et al (2025). See also: Border Violence Monitoring Network. (2023a). "They beat us until we lost our breath and threw us on the Bosnian border." Available here.
[155] Border Violence Monitoring Network. (2023a). "The officers hit him so hard that they broke his nose, and he was bleeding for about 15/20 minutes." Available here.
[156] In 2022, 13% of pushbacks involved forced undressing. 39% involving minors. See: BVMN Annual Torture Report 2022.. Available here.

In a testimony from January 2021, describing a pushback around Korenica, a group member sustained heavy injuries on his feet and was forced to stand barefoot in the snow for about 45 minutes and as a result worsened the injuries to his feet.[157] In a similar case, Croatia officers forced the group to sit on the wet ground on their knees for one hour and a half.[158]

Several aid workers we interviewed mentioned recent instances of people on the move having to get feet or toes amputated after being forced to walk through snow or rivers for extended periods of time to reach safety.[159]

BVMN reports have mentioned that pushbacks into remote areas particularly during winter time make it difficult for people to access support or reception centers, as they are forced to walk hours in harsh conditions.[160] In a testimony from March 2023, a woman describes struggling to walk through the snow while being chased by border authorities, before being left in the middle of a snow covered forest, and forced to sleep in the snow for the night, risking hypothermia.[161] The 4D database holds evidence of six deaths at the Bosnian-Croatian border that can be traced back to hypothermia and freezing. Additionally, many incidents have likely been categorized as deaths by drowning, where hypothermia likely also played a role. Less deaths are documented in the 4D database in mountainous areas, although interviews mentioned several times that people who crossed the mountains in the spring tell them that bodies turn up after the snow has melted.[162]

Flooding

With autumn and winter also come heavy rains, snow and flooding, creating dangers for those crossings, rivers and steep terrain.[163] Reports of people falling down hills, cliffs or bridges increase in those months, as do people killed by

[157] Border Violence Monitoring Network. (2024b). "We asked for asylum but they brought us to the mountains just to beat us. Border Violence".
[158] Border Violence Monitoring Network. (2023c). They made us sit like dogs. Available here.
[159] Interview 2, Interview 4
[160] BVMN January 2023, 6
[161] Border Violence Monitoring Network. (2023b). It was difficult for her to walk because of the snow. The officers were screaming: "Hajde!" and shooting their guns. Available here.
[162] Interview 2, Interview 4 (Collective Aid)
[163] Border Violence Monitoring Network (2023). Monthly Report October 2023.

drowning and landslides.[164] In December 2022, twenty people died in the Sava river during a period of severe flooding. As the riverbanks and surrounding area of the Sava River, particularly on the Bosnian side, are characterized by lowland, flooding is far more likely in this area. Authorities warned in the public media of the dangers of crossing the “natural state border”: "We warn again and point out the dangers of illegal crossings of the state border. These crossings are very risky, especially because the Sava River has swelled and largely flooded the surrounding lowland area, so it represents a real danger to people's lives."[165]

Figure 14. Images of people on the move walking through flooded forest. Source: TikTok 2024.

The risk of flooding is not only an issue of terrain and weather; infrastructure built surrounding the rivers also impacts the severity of the natural threat. Authorities have installed flood prevention barriers on the Croatian side of the Una and Sava River following heavy rainfall and flooding in the summer of 2023.[166]

[164] In 2020, during a pushback operation on Mount Plješevica, a group of twelve people on the move fell into a cave while fleeing from border authorities, later being rescued by the Mountain Rescue Service. Source. See also an example of a person dead in a landslide in 2018 here.
[165] A.R. Knezevic (2022, December 23). Telegram. Available here.
[166] Davies, R. (2023, May 16). Croatia – Flooding in Multiple Counties After Record Rain, Authorities on Alert as Rivers Rise – FloodList. .Available here.

This climate disaster infrastructure was funded through the European Structural and Investment Funds and built by the German company IBS in cooperation with Hrvatske vode.[167]

Figure 15. Flood prevention walls in Hrvatska Kostajnica. Source: Border Violence Monitoring Network May 2025.

While this presents an additional physical barrier to illegalised border crossings, it is also important to mention that flood prevention barriers of this sort have not yet been installed on the Bosnian side. This means that when water levels in the Una rise to an abnormal level, the barriers installed on the Croatian side could lead to more severe flooding and damage to Bosnian land. During our field visit in May 2025, the riverbanks on the Bosnian side were visibly wrecked.

Conclusion

Croatian-Bosnian border rivers are prominent sites of surveillance, deterrence, pushback violence, disappearances, and deaths. While the infrastructuring of nature– deforesting riverbanks, or clearing areas to install surveillance systems–

[167] Signposts at several locations along the Una where flood barriers had been built, made reference to the Next Generation Recovery Fund.

appear as low-scale, preparatory measures, the "power" that these terrains carry is clearly understood and planned for in border enforcement strategies.[168] As such, they can work as natural deterrents and may appear as seemingly independent agents of violence and death. This analysis shows how surveillance systems and surrounding terrain are strategically combined to make intervention possible. It also begs questions about official search and rescue. If holistic, operational surveillance pictures can be achieved through these solutions, then the first effect of this must be the reduction of tragic accidents for both PoM and locals. Instead, this chapter reveals that rivers become first and foremost sites of violence, disappearances, and death–both through neglect and active injury by border police.

Moreover, this analysis points to the incorporation of non-security actors such as Hrvatske vode or telecommunication companies in the preparation of border environments and hosting of surveillance infrastructures. Importantly, this does not only pertain to cooperation between the MoI, border police, and other players, as it clarifies the practical operation of "Integrated Border Management". It also relates to how visible surveillance is in public life, and to which degree the presence of border-related constructions are understood.

Chapter II: The (Dry) Green Border - Infrastructuring Forests

Large parts of the Croatian state territory are made up of forests. Approximately 2.8m hectares are forested, equating to almost 50% of the country's landborder.[169] Roughly 2m hectares of those 2.8m are state-owned. According to the Forestry Act, forests are categorized into commercial, protective, and special-purpose environments. Forests near the state border line, which make up large parts of Croatia's border to BiH, fall into this last category, which includes the defense of the Republic as rationale. From 1996 until 2016, the areas designated to special-purpose grew from 23.909 hectares to 392.164 hectares.[170] As such, forests are

[168] Teunissen, P. (2025). Infrastructures, Riverscapes, and the Governance of Mobility: The Evros/Meriç River and the Infrastructuring of Nature. Antipode, 57(2), 691-713.
[169] Hrvatske šume. "Sume u hrvatskoj". Available here.
[170] Hrvatske šume. Annual Report 2022, p. 9, 25. Download here.

strategic environments for border enforcement.

For border authorities, forests are sites of intervention and cooperation. IBM strategy documents detail the construction of roads, clearings of forests and rivers, or the rehabilitation of county and local roads to improve visibility of border areas for surveillance as well as operational capacity.[171] Importantly, this draws in non-security actors, namely the forestry company and hunting clubs. At the Croatian-Bosnian border, forests are "multi-purpose" and "multi-actor" spaces.

With the exception of 70 000 hectares, Croatian forests are managed by Hrvatske šume. Hrvatske šume is the state-owned forestry management company, initially established under a different legal status in 1991. The President as well as the Board are appointed by the sitting Croatian government. Today, the administration is split into 17 branches made up of 169 forestry offices, employing around 8000 people.[172] Further, Hrvatske šume manages 26 state-owned hunting grounds which house numerous equipment facilities and hunting lodges.[173]

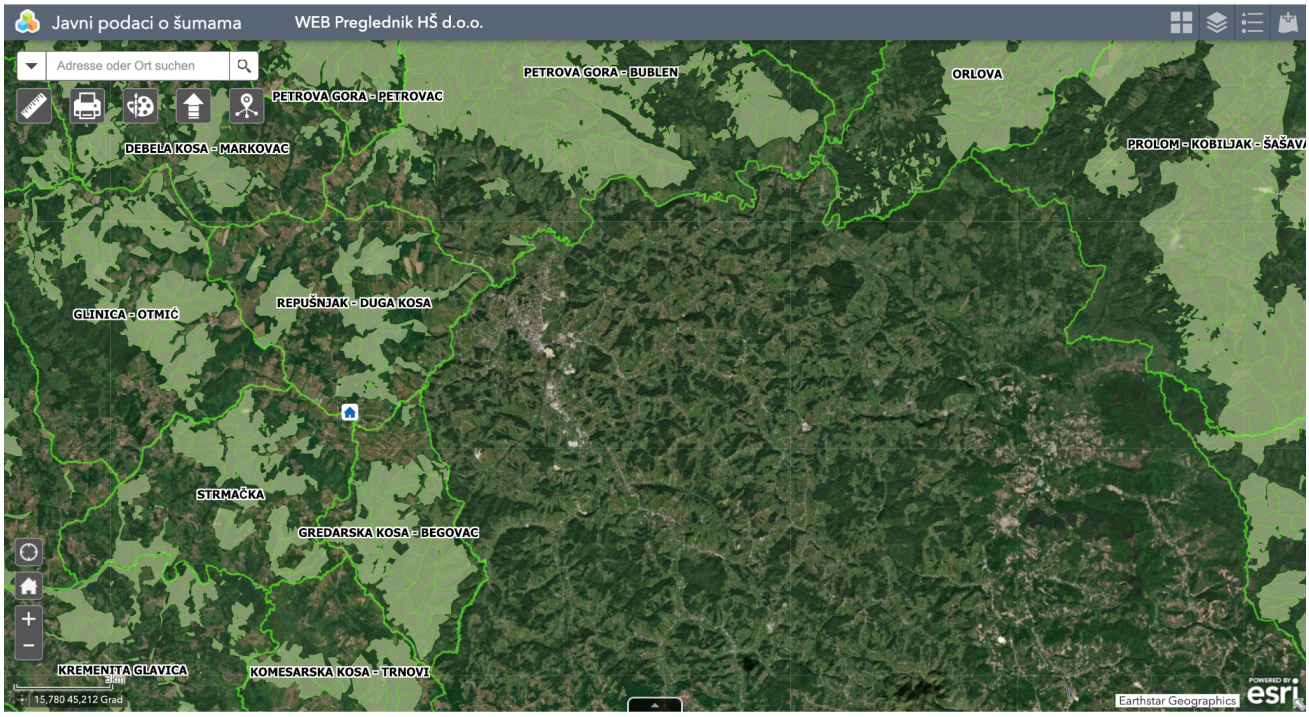


Figure 16. Light-green colouring marks Croatian state-owned forests near Bosnia's northern border with the EU. Unmarked areas are both private and special-purpose forests. Source: Hrvatske šume via webgis.hrsume.hr.

[171] Annual Report on the Implementation of the Integrated Border Management Strategy 2020 and 2021 (Izvješće o provedbi Strategije integriranog upravljanja granicom za 2020/2021)
[172] Hrvatske šume. "O namaj". Available here.
[173] Ibid.

Hrvatske šume provides a GIS portal with open access to an interactive map of private and state-owned forests, including limited administrative and organisational data as well as documents on management plans.[174] It is noteworthy that only state-owned, privately-owned, as well as commercial and protective purpose areas are made visible in the portal. Special-purpose forests are not listed, and certain forest areas receive no territory designationor identification numbers. Hrvatske šume is licensed to operate in all three area types under different regulations.[175] According to the forest management plan (subsuming separate plans for different types and uses of forests), the purpose of forests is designated for 10 year periods following the primary, not exclusive purposes of an area.[176] In practice, this means that forests can be designated as commercial or protective areas but still be used for the protection of the state border and vice-versa. Some of the forestry management plans do include special-purpose planning in the table of contents but the documents miss the relevant pages.

This chapter discusses how Croatian authorities operate in forests to enforce the border to BiH. Crucially, this first section addresses the strategic and structural transformation of forests. We lay down how Croatian authorities use deforestation and create roads to achieve visibility and operational access for border enforcement ("Deforestation and New Roads along the Border"). To this end, this chapter provides an open-sourced reconstruction of interventions around an established pushback spot ("Pushbacks, Clearings, and Hunting Posts: Playing Both Sides of the Border"), followed by an overview of mobile surveillance systems placed in forests ("Mobile Surveillance Systems and Cameras"). Further, we highlight some prevalent pushback techniques that occur in forests, made possible by the strategic modification and use of these terrains. This clarifies how forests at Croatian borders are strategically used to operate as hostile landscapes - how they are infrastructured - and allow for specific rights violations.

[174] The GIS application can be explored here.
[175] Hrvatske šume. "Javni uvidi". Available here.
[176] Official Gazette No. 68/18, 36/24 (Forest Act), Article 28. Available here.

Deforestation and Pushback Roads

Forests make for messy border geographies: There is dense foliage, visibility inside a forest changes with each season, and the Croatian-Bosnian border line cuts just in front of them, between them, or right through them. The Western and North-Western sections of Bosnia's border to Croatia are characteristically known for the role forests play. Especially around the Bosnian cities Bihać and Velika Kladuša, forests are rather tense and made up of tall trees, while the terrain changes from high altitudes to lowlands.[177]

Just across the borderline, the redesignation of Croatian forests as special-purpose grants border authorities direct power over their makeup, whereas they can still be used for these operations under commercial or protective designation. According to the Art. 39 and 40 of the Forest Act of 2018, state-owned forests can be excluded from forest management for border security at the request of the MoI.[178] Article 47 specifically outlines the regulation of building forest infrastructures - roads, under a special act between forest management bodies and the central administration for the purpose of border surveillance and protection.[179]

In this context, deforestation along the state border line refers to the clearing of trees and other vegetation for the purpose of surveillance. IBM documents make reference to such practices throughout the years, while the visible cutting of the forests near Željava famously led to disputes in local media and politics.[180] Deforestation for surveillance further extends to the felling of willow trees and other vegetation along the Una, Sava, Korana, and Glina Rivers to improve the visibility for surveillance technology. Between 2016 and 2018, over 160 kilometres of drainage canals were cleaned alongside rivers and streams in the police administration Vukovar-Srijem.[181] Residents have observed similar practices in Hrvatske Kostajnica in 2018 already. Arguably, this continues the very same practice of the Italian administration during the Second World War, while "zasjeka"

[177] Hrvatske šume. Annual Report, o. 9, 25. Download here.
[178] Pleše & Hameršak (2022). "Cutting Down Forests". e-ERIM. Available here.
[179] Croatian Parliament. Decision on the Promulgation of the Forest Law (1392). Narodne Novine. Available here.
[180] Pleše & Hameršak (2022).
[181] Hameršak, M., Pleše, I. (2021), p. 210.

generally dates back to the felling of trees to create obstacles during the reign of the Ottoman Empire.[182]

Generally speaking, deforestation is part of a decade-long process of making forests accessible and opening them to the public as well as governmental bodies. In the 1990s, increasing road density in forests was made possible by Hrvatske šume as well as by contractors.[183] Bulldozers were used to clear the ground and vegetation, while alternating heavy machinery was necessary to make possible the construction of roads in lowlands, in hilly forests, and in rocky mountains. Today, the paving of new roads especially refers to demining and forest fire protection measures, carried out and often led by Hrvatske šume.[184] For the latter, fire protection medians with forest road elements (PPsEŠC) stretch across a four meter width, six meters including forest elements on the side of the road. Through these long-term efforts, Croatian forests are becoming more accessible and safer for the general public, as webs of roads grow by the year.

Especially along the border line, border authorities are major drivers of deforestation practices. In this context, transportation infrastructures within forests assume a central role. Police require infrastructures that enable real-time intervention - simply said, border police need to be able to move and reach strategic locations quickly. IBM documents detail the construction of roads through Ugrljara (1300 meters), near Apševaci (540 meters), through forested areas in Somovac, Jasenovo, and Debrnja (ca. 9000 meters), as well as the continuation of the state road ZC 4232 toward "Jarac forest" (1010 meters) in 2018.[185] In other areas in the same period, roads were primarily repaired and vegetation cleared along them. After clearing vegetation, the roads are created by filling 30 centimeters of gravel.

[182] Pleše & Hameršak (2022).
[183] FA Stanislav Sever and Slavko Šunji (n.D). Forest Opening Issues in Croatia. FAO. Available here
[184] Fearless Velebit. "Razminiranje i očuvanje šumskih ekosustava u zaštićenim i Natura 2000 područjima u Ličko-senjskoj i Zadarskoj županiji". Available here
[185] Report on the Implementation of the Integrated Border Management Strategy 2018 (o provedbi Strategije integriranog upravljanja granicom Republike Hrvatske za 2018), pp. 73

In satellite imagery, roads near and along the state border line range from three to six meters of width in hilly areas, while other roads in mountains appear at least ten meters wide (see Figure 20). Here, it is difficult to distinguish between PPsEŠCs and border-related roads, and even more difficult to determine whether roads are used for legal border control operations or also for illegal pushbacks. In the Croatian context, clearings of vegetation have been conducted since 2016, while concrete references to the paving of roads in forests have been present in IBM documents since 2018.

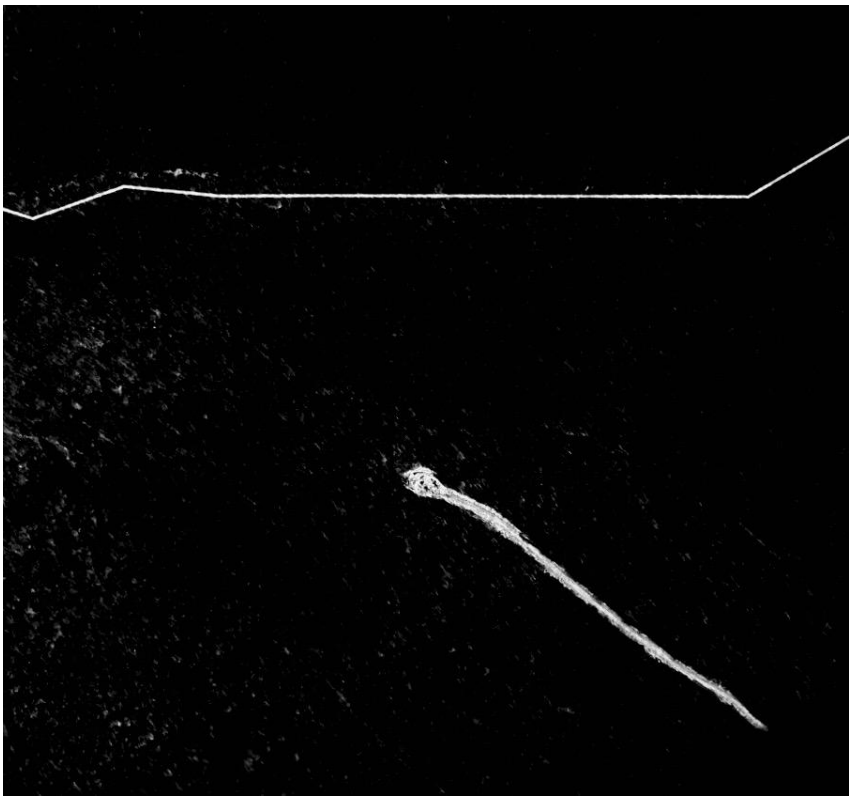


Figure 17. A road used for pushbacks at the Croatian-Bosnian state border line (44°43'12.95"N 15°49'07.15"E). Source: Google Earth Pro.

Notable indicators for researching border-related roads through satellite imagery include the proximity to the border, as well as their orientation. At the Croatian-Bosnian border, border control and pushback roads characteristically run parallel to or toward the border line. Another important indicator is a turning bay at the very end of the paved road. Topographic factors such as elevation, slope, and the strategic vantage for border enforcement are important to consider.

Further, tracing the start point of a road, as well as connections to other (paved) roads, can provide insight into patrols of a given area. Occasionally, historical satellite imagery and street view shows Croatian border patrol along main roads. On paved roads in forests, street view is not available but satellite images sometimes show individuals or pairs of white vehicles at these spots. Croatian border authorities characteristically make use of white transport vans (not limited to this colour, including both marked and unmarked police vehicles). Lastly, time of construction as well as knowledge of the area as a pushback/border control zone matter.

Through the above-mentioned indicators and by cross-referencing BVMN testimonies, locations in the BVMN database, and interviews, we are able to confirm some of the roads covered in this report as not just border control infrastructures but as pushback roads.

Pushbacks, Clearings, and Hunting Posts: Playing Both Sides of the Border

With Velika Kladuša begins a part of the border that runs through the Glina river. On the Bosnian side of the Glina, villages are sparsely populated with some entirely abandoned. On the Croatian side, dense forests with slight elevation changes border this stretch of the river. The deforested areas we describe in the following are often unmarked in the GIS portal of Hrvatske šume. Here, we can assume that unmarked areas near the border line fall under border protection plans. Importantly, the interventions discussed in the following sections have taken place across state-owned, private, and unmarked areas. The Orlova district (434) we discuss in the following shows a dynamic web of state-owned, private, and unmarked areas. Forest sections along the mountain ridge on Plješevica, Trovrh-Kik (646) and Velika Plješevica – Drenovača (654), are largely state-owned (discussed in chapter “Mines and DeMining”).[186]

The forest sections we focus on in the following are part of “Orlova”, district 434. These were re-designated for the period 01.01.2021 - 31.12.2030 by Hrvatske šume,

[186] Management of Economic Units 646 & 654. Available via Hrvatske šume GIS Portal.

specifically the Karlovac branch, after assessments in 2020. Figure 18, as well as the following, show an area containing departments the plots 45A (purple) and 45B (light blue), which are privately-owned, as well as state-owned (green) and unmarked forest areas.[187] It appears that modifications in the forests were undertaken before the primary designation changed to commercial and protective with the beginning of 2021.

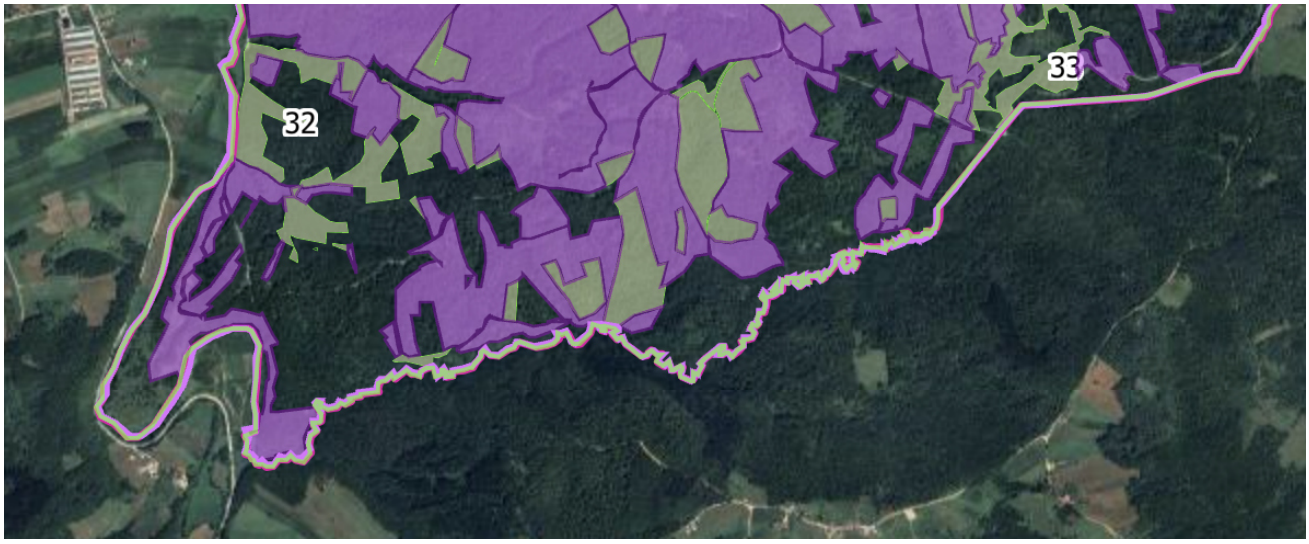


Figure 18. Excerpt of Orlova district (434), within which state-owned (green) and private zones (purple) forest areas are marked. Unmarked areas may reference special-purpose zones. Source: Hrvatske šume via webgis.hrsume.hr.

Here, Croatian border guards have established a collective expulsion point near the town Glinica, where PoM are pushed back in groups and stripped of their belongings. During the field assessment, we found recent piles of forcibly discarded belongings at the collective pushback location, including identity cards, smashed smartphones, clothes, suitcases, as well as plastic bottles a few meters away along the Glina. The sign placed inside the forest demarcating the state border line is marked by bullet holes (see Figure 19).

[187] Management of Economic Unit 434. Available via Hrvatske šume GIS Portal.

Figure 19. At the collective expulsion point, a sign demarcates the state border line Bullet holes as well as fading writings are visible.

Reportedly, Croatian border guards enter Bosnian territory at this particular location, a practice tolerated by Bosnian authorities.[188] In this context, Croatian border guards structurally trash forests around the border line.[189] Our visit and interviews confirm that this location is still frequently used by border police.

The frequent use of this location for pushbacks begs the question how this particular environment has been infrastructured to make possible illegal collective expulsions of this scale. During our field visit, we immediately noticed small strips cleared off trees at hill tops along the way. The types and exact location of surveillance technologies stationed in this area was not verified in the context of this research. Through satellite imagery, we were able to confirm that this area was infrastructured for surveillance and pushbacks as early as 2018, and has been consistently modified and used in the following years.

[188] Interview 2
[189] Solf (2026). "Backpacks Ablaze, Backpacks Afloat: 'Trash' and Pushbacks at the Croatian-Bosnian Border." In [Ed.] Jošt Žagar The Balkan Corridor: 10 Years After, ČKZ 295.

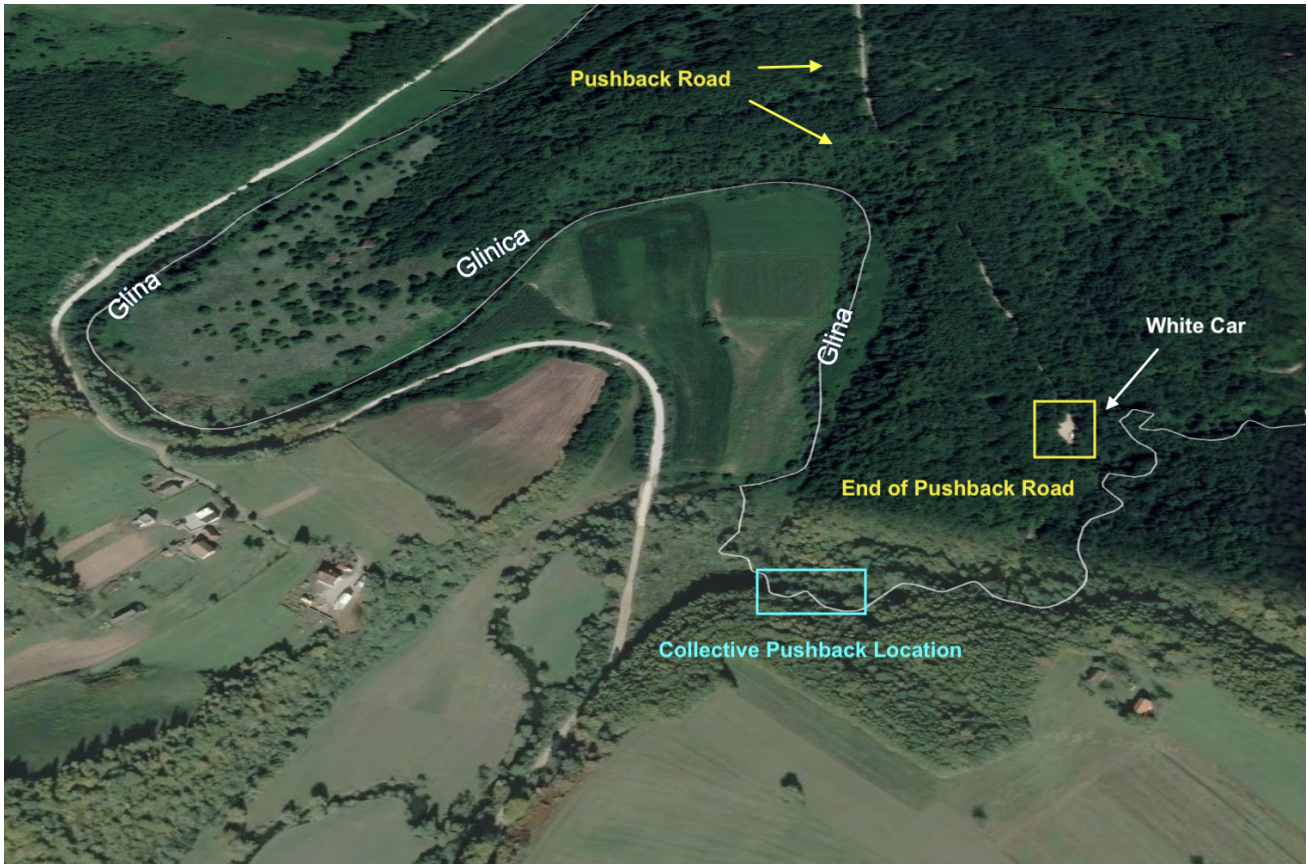


Figure 20. Road in a forest at the Croatian-Bosnian border, near a collective pushback point. The Glina River marks the state border line. Google Earth Pro (October 20, 2020).

What appears to be the main road used for pushbacks precedes this practice: In years prior, a small path ran across the border toward the house at the bottom right of Figure 20, likely used by heavy machinery. As of 2018, it appears that the path has been paved with gravel/sand and widened. In the spring of the same year, a turning bay was created at the end of the road, while more vegetation was removed along the road in the spring of 2019. Crucially, these modifications only take place on the Croatian side - the continuation from the border towards the house in BiH appears untouched since 2013. Since December 2018, Google Earth satellite images show white cars driving along the road toward the border at various points. On April 19th, 2022, two cars can be seen parked behind each other in the turning bay, while the satellite image from June 5th, 2019, shows a reflection that makes the presence of solar panels or radars on a mobile surveillance system likely. In April 2022, what appears to be a container has been placed on the side of the road - at later points, growing vegetation renders consecutive verification of this structure impossible.

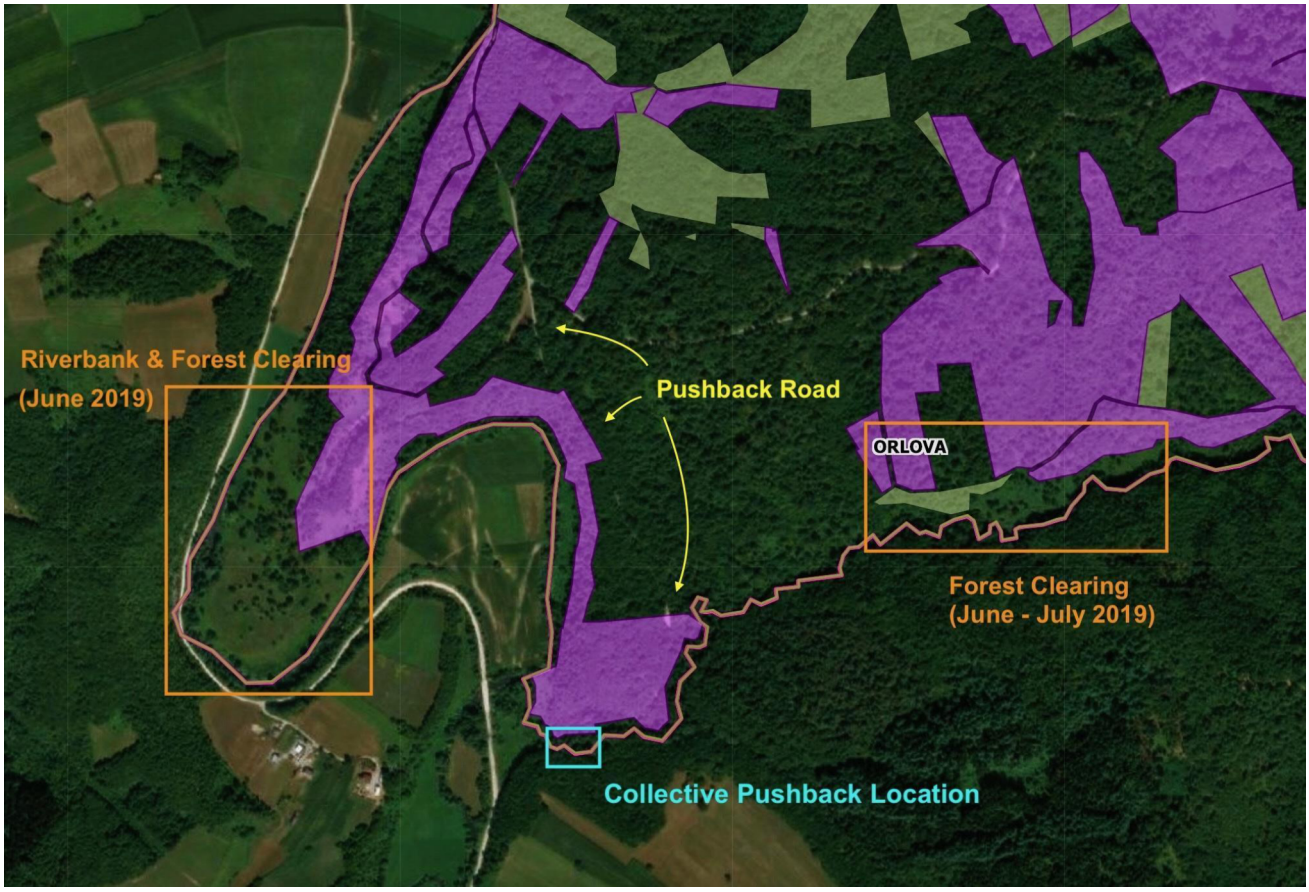


Figure 21. Clearing of riverbanks and forest near a pushback location at the border. Shows plot 45B & plot 45A (both purple), and state-owned area (green). Source: Hrvatske šume via webgis.hrsume.hr

The state border line forms a bottleneck of sorts where the Glina makes a sharp turn. A house has existed at this exact location for over a decade. Huge amounts of vegetation on the property, right at the river, was cleared in June of 2019. While not every single tree was cut, this clearly makes possible a 180 degree visibility of this bottleneck, and the Glina river which marks the border line. In Hrvatkse šume's GIS application, this property is neither marked nor demarcated. Assuming that the surrounding area was cleared for visibility purposes, we may suspect that the house is occasionally used to host surveillance technology or stationed border patrol. Ca. 800 meters further East, more deforestation took place in June 2019.[190] Importantly, these two deforested areas fall neatly outside the privately-owned cadastral plots 45A and 45B (see Figure 21), just as other strips along the border line that are still covered by vegetation. This suggests that clearings in 2019 either a) took place in areas that have traditionally been special-purpose,

[190] A clear 'before' and 'after' of these clearings is included in Annex B.

or b) were followed by special-purpose designation. The fact that these areas are now visibly deforested may play into the classification procedures.

Overall, this is consistent with clearings of the Glina River beds for border surveillance near Gejkovac in 2018; similar strategies of rendering surveillable the little bottlenecks created by the Glina and Korana Rivers as well as the Grabarska, Medarac, or Šajnovac streams have led to several kilometers of riverbed clearings in that same year.[191]

Figure 22: Observation posts on the hills of Buhača and Lisanovac. Source: Google Earth Pro (September 4, 2021 & September 5, 2020).

In the surrounding area, observation posts have been set up which are designed to resemble hunting posts. In IBM documents, the Border Directorate explicitly mentions and thanks Hrvatske šume and local hunters for the supply of materials and personnel, as well as their help with construction and maintenance.[192] According to these documents, some of these observation posts appear to have been donated to the Border Directorate or local border police stations. By confirming the location of a hunting post through satellite imagery - constructed between April and June 2018 and donated to the border police station Cetingrad

[191] Report on the Implementation of the Integrated Border Management Strategy 2018 (o provedbi Strategije integriranog upravljanja granicom Republike Hrvatske za 2018), pp. 72

[192] Report on the Implementation of the Integrated Border Management Strategy 2018 (o provedbi Strategije integriranog upravljanja granicom Republike Hrvatske za 2018), pp. 72-3

as outlined in the IBM Implementation Report 2018 - we were able to identify a number of hunting posts along and in border forests. In these, posts appear as white rectangles, throwing a “trapezoid + box” shadow, depending on the light and rendering of specific satellite images (see Figure 22).[193]

Usually, the roof is white and reflects in satellite imagery but some locations show a dark green roof (see Figure 22). An observation post we encountered during field research (see Figure 25) allows us to conclude that posts used for border surveillance are both white and dark green. This particular one (Figure 23 & 24) seems to have been replaced by a green model in 2020, first appearing in white in 2019 after the path and spot were created three years prior. It is likely that the observation post in Figures 23 & 24 was upgraded with a similar model to the one visible in Figure 25.

[193] The hunting post on a hill in Lisanovac, specified in IBM documents and confirmed in satellite imagery, is placed at the coordinates: 45°12'21"N; 15°47'53"E.

Figure 23 & 24: An observation post on a hill looking toward the Una River, marking the Croatian-Bosnian border. A car is visible. Source: Google Earth Pro (December 31, 2020 & August 31, 2023).

During the field assessment of the collective pushback location by the Glina River, we encountered the observation post on a hill ca. 400 meters away from the border line (see Figure 25). This is in close proximity to the collective expulsion point, built between August 2023 and May 2025 according to satellite imagery. Beyond the surveillance camera at the entry and solar panels for energy supply, we were unable to verify the technology pointed into the forested border area. Importantly, this hunting post was constructed within Bosnian territory. Moreover, a path was widened and gravelled from this location toward the border and the collective pushback location between April 2022 and August 2023. The paving of the road on the Bosnian side took place before this hunting post was installed.

Figure 25. An observation point resembling a hunting post on Bosnian territory, ca. 400 meters away from the border line. Source: BVMN May 2025.

A little further East, an old hunting post sits in Bosnian territory on an elevated hill with a view of the state border line. From there, an old path (ca. 700 meters) runs directly across the border into Croatia. In this area in 2021, Croatian authorities

appear to have cleared forest and paved a small network of roads parallel to and by the border line. This seems to have involved using existing paths, as well as creating entirely new roads. Here too, white cars can be seen driving along these roads at several different points in historical satellite imagery. At the exact location where the aforementioned path meets the border ("Old Hunting Post" in Figure 26), the road makes a 90 degree turn where the road has been significantly widened. Zooming out of this satellite image exposes further forest clearings and paving of roads in this area, as well as newly installed infrastructures (possible surveillance systems and surveillance houses) and various hunting posts just at the border on the Bosnian side. Here, roads do not necessarily run parallel to the border or mark it but also occasionally cross the border line into Bosnia.

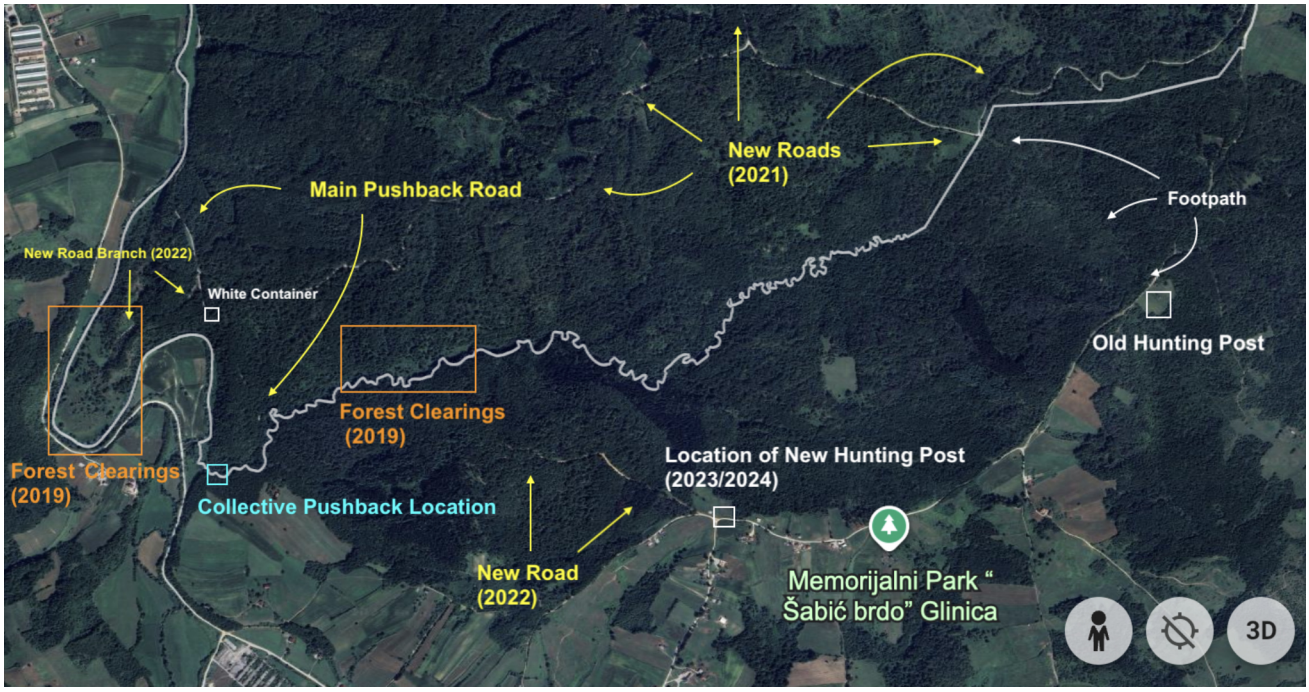


Figure 26. A zoomed-in view of newly paved roads and surveillance infrastructures Near a collective pushback location. The 'before' and 'after' via satellite imagery can be seen in Annex B. Source: Google Earth Pro (August 26, 2023).

At this particular location, Croatian authorities have gradually infrastructured a network of newly paved roads, which lead to different bottlenecks and turning bays near the border. This entire area from Ponikve to Gradina has been consistently reported as a pushback zone by BVMN member organisations for years.[194] Croatian police repeatedly enter Bosnian territory during pushback

[194] BVMN Testimony Database. Available here.

operations, a practice tolerated by local Bosnian authorities and reported in the BVMN database.[195] This indicates that, although no formal or officially sanctioned deployment of Croatian forces is underway, individual officers appear to operate diffusely within Bosnian border areas. Such activities, while unattended at an institutional level, seem to be largely tolerated. Our research suggests that surveillance infrastructure and roads are also created on the Bosnian side of the border line. While the construction of roads on the Croatian side explicitly for surveillance and pushback operations is documented, there is evidence of road or trail construction on the Bosnian side, particularly in Glinica and Velika Kladuša.

The exact role of observation posts in the surveillance of the border is unknown; It is unknown which surveillance systems are used from these posts, whether they are used to house more green border surveillance equipment, or whether border guards are stationed there as well. As visible in Figure 23, these are positioned at strategic vantage points looking down to known crossing points.

While the consistent use of hunting posts for surveillance in this area cannot be verified, the frequent mentions of hunting posts as newly installed infrastructures in IBM documents before 2020, as well as the newly installed hunting (observation) post after August 2023 underscore the relevance of this infrastructure for this area. In this light, the existence of several hunting posts on Bosnian territory right at the border - often with paths leading to the border line - remains an important point of future investigation.

Mobile Surveillance Systems and Cameras

On the Croatian side, forests have been a crucial site of surveillance for border enforcement.[196] ISF as well as IBM documents refer to border authorities installing mobile cameras and surveillance devices across forests.[197] Border police are further stationed in mobile units at strategic points according to risk analysis.

[195] Interview 2
[196] Hameršak, M., Pleše, I. (2021). European Union. Translated by Juraj Šutej. Etnološka tribina 44 (51), 204-221. DOI: 10.15378/1848-9540.2021.44.11, p. 205
[197] Report on the Implementation of the Integrated Border Management Strategy 2018 (o provedbi Strategije integriranog upravljanja granicom Republike Hrvatske za 2018). See also; Hameršak, M., Pleše, I. (2021), pp. 207-8

Here, Croatian authorities aim for 24/7 surveillance through the use of day and night cameras, mobile thermal imaging cameras on trailers, or handheld thermal imaging cameras.[198] The officers stationed in the field have access to the information this surveillance apparatus produces, and patrol with readiness to intervene on the movement of people. While the exact locations of surveillance technology was not verified in the context of this research, we were able to compile an inexhaustive overview of small and mobile surveillance solutions placed in Croatian border forests.

Alongside mobile surveillance systems, portable equipment such as night vision devices, hand-held thermovision cameras, monoculars, and portable cameras have contributed to the technologisation of Croatian land borders.[199] In 2020, an initial 100 short-range cameras for motion detection were procured.[200] In August, police officers were trained at the Academy in Zagreb and cameras were delivered to police departments along the border line. Only a few months later, an additional 400 day and night motion sensor cameras were procured through the ISF, and officers were trained in October. Moreover, ten handheld thermal imaging cameras were donated by Germany.[201] In 2021, 1000 sensor cameras were purchased through the ISF, though costs had to be covered by the state budget as the agreement had expired.[202]

While some of these systems are also used by mobile patrols, they are generally mounted within forests - alongside mobile systems discussed above. Often, wild-life cameras are placed along strategic points, strategically small in size and camouflaged using the forest as disguise, remaining invisible to people on the move, many of whom do not recall seeing cameras or other surveillance technology during transit. [203] The newer long-range thermal trail cameras include motion sensors, and software to track movements. A recorded event is sent

[198] Annual Report on the Implementation of the Integrated Border Management Strategy 2020 (Izvješće oprovedbi Strategije integriranog upravljanja granicom za 2020). Download here.
[199] A.Schöll et al (2025)
[200] Annual Report on the Implementation of the Integrated Border Management Strategy 2020 (Izvješće o provedbi Strategije integriranog upravljanja granicom za 2020).
[201] ibid
[202] Annual Report on the Implementation of the Integrated Border Management Strategy 2021
[203] Based on interviews conducted by BVMN with people on the move pushed back from Croatia between 2020 and 2024.

directly via MMS to a registered phone, enabling immediate reaction by authorities. [204]

Figure 27. Cameras found in Croatian Forest. Source: BVMN 2024.[205]

Radars and cameras are placed for the purpose of border enforcement; further, the monitoring of bear activities and general wildlife, as well as the surveillance of forestry company facilities to prevent wood theft contribute to a technologisation of forests that allows to detect movement in the area. Hrvatske šume is also increasing video surveillance in forests for wild-fire monitoring - such as in Split-Dalmatia, Istria, Gorski-Kotar, and Lika-Senj in 2023.[206] Once again, this indicates the interwovenness of surveillance, this time in Croatian forests. Here, civil society organisations, as well as non-security government branches (e.g. Hrvatske šume) are crucial.

Forestry and hunting clubs have been explicitly thanked by the Border Directorate for their help in installing cameras throughout forests.[207] During the field assessment, we encountered such PTZ cameras deep into Croatian territory in and

[204] See for example technical specifications of recent night vision camera tender: Euro teNDERS (2025) - 326428 - Competition: Available here.
[205] The model shown here strongly resembles NUM'AXES PIE 1023 camera which sends a text/MMS message when it registers movement. It could not be verified in procurement contracts, if this exact model was purchased by Croatian authorities
[206] Hrvatske šume (2023). Annual Report 2022., p. 24. Download here.
[207] Report on the Implementation of the Integrated Border Management Strategy 2018 (o provedbi Strategije integriranog upravljanja granicom Republike Hrvatske za 2018)

near forests, which seemed to operate with automatic object detection. The photograph below illustrates one found just on the side of a road near the entry of a hunting club in Krnjak, dozens of kilometres away from the border line.

Figure 28. A PTZ surveillance camera mounted on a pole in the hills of Krnjak, near the entry of a hunting club. Source: BVMN May 2025.

Additionally, eight mobile surveillance systems, linked with towing offroad vehicles, were purchased in 2021 (ca. EUR 3.2m).[208] 17 of these had already been acquired, while another two sets were added in 2023.[209] These systems include cameras that can be drawn out to a height of ten meters and can operate at an additional height of three meters when mounted on a tripod (for a period of 12 hours).[210] Their base is wheeled and can be towed to new locations with an offroad vehicle included in the system. With the help of solar panels, these systems avoid the need for active connection to the energy infrastructure.

[208] Ibid.
[209] In 2022, 84 devices were purchased for nighttime surveillance, though it remains unclear whether this refers to stationary or mobile cameras, sensors, or even unmanned aerial vehicles Annual Report IBM 2022). See also: Ministry of the Interior. Press Release (August 30, 2024). Available here.
[210] Ministry of the Interior. Press Release (November 26, 2019). Available here.

In 2024, ten such cameras, to be mounted on and alongside containers, were purchased alongside offroad vehicles for EUR 75.970.160.[211]These are Teledyne FLIR systems, integrated into a mobile system built by Croatian companies. Importantly, for the first time these containers include a satellite communication system which fills signal gaps left along the border line. By satellite connection, traditional GSM signal, and radio links, these can communicate with local centers as well as the main center in Zagreb.[212]

Figure 29. Mobile surveillance systems (camera system FLIR). Showcased in press releases on July 6, 2021, and August 30, 2024. Accessible here and here.

The benefit of these systems is that they are relatively autonomous; they can operate by themselves but also provide trailers for officers to be physically present. Moreover, as a spokesperson of Ericsson Nikola Tesla (one of the successful bidders for the contract) stressed, these allow surveillance of difficult-to-access terrain and are protected against adverse weather conditions.[213] In the

[211] Ministry of the Interior. Press Release (August 30, 2024). Available here.
[212] The design of these systems can be inspected through pictures and video accompanying the press releases, notably on July 6, 2021 (here) as well as November 26, 2019 (here).
[213] Ministry of the Interior. Press Release (November 26, 2019). Available here.

dense foliage of Croatian forests along the state border line, these cameras are adaptable to the changing heights of surrounding trees and to the strategic monitoring choices of authorities. In a press release from 30th of August 2024, we further see a picture of the system, which shows a screen with a satellite image showing Buhača hill and a red mark at the location of a stationary long-range system.[214] Here, it is evident that these mobile systems provide interoperable user surfaces, integrated with satellite and surveillance footage from other systems.

Placed on trees and among vegetation, camouflaged cameras, sensors, and other systems are integrated into the specific topographic configurations and vegetational characteristics of this area. IBM documents detail the clearing of vegetation for visibility and surveillance technology throughout the years. This equipment is strategically placed so that authorities can intervene in real-time, intervene on people's movements, and illegally push them back across the border. To that end, forests must be infrastructured: roads must be constructed, paths widened, strategic points are ideally connected, and even sections of forest must be cleared to open up the view. This is necessary such that the equipment can "see"; it makes it possible to house equipment in containers, it facilitates driving and limits offroad driving, and allows authorities to use a variety of different locations to conduct pushbacks in nature.

EU-Borderscapes: Violent Trees and Forests

Different topographies, vegetation, and their infrastructuring to the needs of border police creates forests that allow and disallow for specific pushback techniques. In the BVMN database, 90% of testimonies from Croatia to Bosnia mention direct infliction of violence. Where most often border authorities use dedicated batons, reports by local stakeholders and people on the move suggest that the forest itself is frequently abused for violent instruments.[215] This section addresses how authorities strategically use forests, both as direct tools and as indirect conditions.

[214] Ministry of the Interior. Press Release (August 30, 2024). Available here.
[215] Border Violence Monitoring Network. (2022b).

Forest as Cover - Beaten with Sticks

People on the move mention being hit by sticks and tree branches, belts and other improvised weapons as if spontaneously picked up by officers from the ground.[216] In several locations during the field visits, seat belts were found on the ground, alongside clothes and belongings. The use of seat belts with hard latch plates during beatings was confirmed during interviews.[217] Although exact locations cannot be determined from pushback testimonies as people on the move are often extremely disorientated, most people mention either being apprehended in a forest or driven in a police van to a forested area, before being beaten and violated. The forest emerges as a key site and cover of abuse, where people are isolated and officers act with impunity away from the public eye.

> *"We were driven in the car for about an hour and they took us into the forest. The car stopped and they got off just 10 minutes later. At first, we were told we needed to get out one by one. They took me first, I got out of the car and they started beating me, each one of them took a stick and began to hit me on the head, on the back, on my feet and hands, until I passed out. When I woke up, my two friends were beside me screaming and begging them to stop."*[218]

The spontaneity of "picking up whatever is lying around in nature" is utterly inconsistent with how long, forcefully and systematically beatings take place. Interviews with stakeholders and testimonies confirm that in several cases people sustained lasting injuries, from being beaten repeatedly on the same parts of their bodies, causing lasting injuries - some even reported losing their eyesight as a result.

In a testimony taken in 2022, a group of people reported sustaining injuries from being heavily beaten with wooden sticks and branches. They were reportedly detected by a drone and apprehended on the top of a mountain near Hodzin Potok border crossing:

[216] Border Violence Monitoring Network. (2023a).
[217] Interview 3
[218] Border Violence Monitoring Network. (2024). "I'll do to you what Hitler did to us Jews!" Available here.

"The police officers started beating them with the wooden branches they found around the forest. (…) The respondent reports that they were kicked and hit with these wooden sticks for more than 2 hours. (…) including on their heads, on their chests, and all over their bodies. The respondent's hand was broken, another member of the group was bleeding from his mouth and coughing blood, the third member had his head injured because of being hit with branches, and the rest of the group was complaining of having pain in their chests and heads."[219]

Forest Fires and Burnpiles

Beyond direct beatings, branches, sticks and trees also serve as substance for fires. Accompanying the degrading and violent practice of forced undressing and theft, authorities often burn the belongings of people before pushing them back, not shying away from mobile phones, children's backpacks, or important identity documents.[220] A 2024 report by No Name Kitchen, documented that large burnpiles now line the Croatian forests near the Izačić border crossing, just north of Željava airbase..[221] One of the locations, where five massive burnpiles "with hundreds of burned phones, and ash piles 1-2 feet deep" were found, is located on Jasen Hill (known as "Circle Hill"), where a brand new stationary surveillance tower is planned.[222]

Figure 30. "Circle Forest" with burnpile locations. Source: No Name Kitchen 2024.

[219] Border Violence Monitoring Network. (2022a). "Kicked and hit with wooden sticks for more than 2 hours." Available here.
[220] Solf. (2025). Clothes in the river, backpacks on fire: The (in)visibility of pushbacks at the Croatian-Bosnian border. Border Violence Monitoring Network. Available here.
[221] No Name Kitchen (2024)
[222] Ibid and 2025 Document.

Fires are reported to be used not only for the burning of belongings but also for intimidation and violence. A written testimony from September 2024 details extreme violence experienced by the group, who were first apprehended at a bus station and then taken to a forest near Izačić:

> *"In the beginning, they took our clothes, shoes, and everything important we had with us and burned them. When our other friend recovered, they put him on the fire that they had lit, and he was screaming in extreme pain, asking to be taken off the fire. They answered that animals must be burned in a fire."*[223]

In a different case, the forest fire was weaponized to stop the group from running away from the police and their looming violence:

> *"To escape from them the transit group started to run, but the military men set a fire in the forest and that is how they managed to apprehend them, they couldn't run anymore because of the smoke."*[224]

In this case the group was apprehended in a forest in Ogulin, very far from the border, violated in the forest and trapped by the smoke of the forest fire before taken by van to Glina river and pushed back to Bosnia.

Forests on both sides of the Bosnian-Croatian border encompass varied terrains—ranging from dense to sparse areas with tall trees, rivers and groves.[225] Where they may serve as refuge for short periods, they quickly become sites of violence, where objects of the natural environment are directly (ab)used for humiliation, degradation and border enforcement. The pushback locations

themselves are more often strategically located near streams or slopes, making the forest a designated site of violence.[226] [227]

[223] Border Violence Monitoring Network. (2024).
[224] order Violence Monitoring Network. (2024b). "When they forced us into the river at night I thought I would die. The friend who was with me had lost his mind, he kept asking for water even though we were inside the river." Available here.
[225] Hameršak & Pleše 2021
[226] Czerny, S., Hameršak, M., Pleše, I., & Bojanić, S. (2023). Can the Forests be Xenophobic?: Migrant Pathways through Croatia and the Forest as Cover. In A. Coțofană & H. Kuran (Eds.), Sentient Ecologies: Xenophobic Imaginaries of Landscape (Vol. 31, pp. 211–228). Berghahn Books. https://doi.org/10.2307/j.ctv36cj81n.13
[227] Solf (2026). "Backpacks Ablaze, Backpacks Afloat: 'Trash' and Pushbacks at the Croatian-Bosnian Border." In [Ed.] Jošt Žagar The Balkan Corridor: 10 Years After, ČKZ 295.

Disorientation

The deeply forested terrain along the north-western Bosnian border to Croatia, and the remoteness of the Bosnian villages, particularly south of the Sava river and in Republika Srpska's abandoned villages, lend themselves to be weaponized for disorientation. A vast majority of testimonies of pushbacks from Croatia detail being taken to a forest and ordered to walk across the border line, or forced to cross a river to reach remote locations on the Bosnian side. This became strikingly apparent for us when people giving testimony or arriving back to transit camps in Bihać became increasingly unable to point to any location on a map where they may have been apprehended or pushed back to, particularly in 2024. One interviewee noted that "people are pushed into remote locations after violent pushbacks because they cannot really have people with visible and heavy injuries handed over to Bosnian authorities".[228] In a systematic analysis of pushback testimonies and field interviews, disorientation emerges as a deliberate strategy employed by state authorities to fragment people's sense of place, time, and agency during and after pushbacks.

The systematic confiscation and destruction of mobile phones and personal belongings further exacerbates disorientation. In 92% of testimonies people reported the destruction or theft of personal property, including mobile phones.[229] Mobile phones serve as vital lifelines—tools for navigation, communication, and accessing protection information. Their removal intentionally cuts people off from communication networks, impeding their ability to seek legal aid, contact family members, or record their experiences.[230]

Moreover, in several documented cases, individuals reported being driven around for hours in vans before being pushed back, often inducing nausea, trouble breathing and severe confusion and spatial disorientation. The consistent use of this tactic throughout the years coincides with the clearing of vegetation and the

[228] Interview 4
[229] BVMN Pushback Database
[230] BVMN (2023) Submission to the committee on Enforced Disappearance on Short Term Enforced Disappearance. Not yet available online.

creation of webs of roads near the border line to BiH as illustrated above.

> *"After an amount of time (...), a vehicle arrived in the spot where they were, which the respondent describes as a "prison car" (a big black van with bars on the windows). The family was then loaded into the van, with five more Afghan minors, as the respondent can recount. In the vehicle, the people were feeling sick, they were vomiting and felt very tired. The respondent states that many of them were injured as well. Reportedly, the van stopped after what the respondent felt as being three hours of driving: the respondent reports that they were dropped off in Bosnian territory, in a forest, but he could not recognise the location."*[231]

Disappearance

Detention further contributes to disorientation during pushbacks, which can lead to the disappearance of individuals. In 2023, BVMN submitted evidence from Greece and Croatia on the use of incommunicado and informal detention sites during pushbacks to the Committee of Enforced Disappearance. Incommunicado detention, or secret detention sites, are those not officially registered as detention centers, which makes locating detained individuals difficult, if not impossible.[232] BVMN documented the widespread use of abandoned or derelict buildings, farms, horse stables, freezer trucks, and containers.[233] Often in remote locations and away from public scrutiny, these frequently serve as sites for serious human rights violations, including torture and inhuman treatment:

> *"Describing their experience being detained, the respondent recalled how all three men were taken to a 'sort of container' close to the bus station. Whilst the respondent was unable to provide further details, it is possible that this 'container' was a shipping container used as an informal detention space used to hold people on the move outside any recognised or regulated detention space. On the floor of the container there was 30 cm of cold water, meaning that for the three hours they were detained they had to stand cold water coming above their ankles and couldn't sit on the floor. The respondents explain that after they were taken out of the container and driven for about an hour near to the Croatian border town of Maljevac where they were pushed back to Bosnia"*[234]

A 2022 investigation by Lighthouse Reports confirmed that people were detained in vans in remote locations for hours, sometimes in burning heat.[235] During field and

[231] Border Violence Monitoring Network. (2023a). They made us sit like dogs. Available at: here.
[232] Pepin T. "Short-term enforced disappearance: what mechanisms to curb this phenomenon?" Available here; See also HRC, 2010, A/HRC/13/42.
[233] M. Bulman (2022, December 8). "Europe's Black Sites". Lighthouse Reports. Available here.
[234] order Violence Monitoring Network. (2022). "After the search and the physical violence, the policemen forced the three men to enter a container. On the ground of it were 30 cm of cold water." Available at: here.
[235] M. Bulman (2022

remote mapping exercises, a number of remote buildings and containers were identified in locations of likely pushback, where we were unable to determine the use (see section IV).[236]

While no-single location could be confirmed, it is not unlikely that some of those unmarked buildings and containers have served as a place of short-term detention. In 2020, the EU Committee for the Prevention of Torture (CPT) found evidence of the use of secret detention sites during pushbacks for example a garage near Korenica Police Station.[237] As a result of overwhelming evidence, the Committee of Enforced Disappearances and the Special Rapporteur on the Human Rights of Migrants recognized that through the use of secret detention, pushbacks can amount to enforced disappearance.[238] By detaining individuals incommunicado and destroying personal identification or communication tools, state authorities effectively ensure that the whereabouts of those detained remain unknown to families, lawyers, and monitoring bodies.[239] The Committee on Enforced Disappearance also recognized that use of secret detention sites even for short amounts of time can amount to short-term enforced disappearance.[240]

Conclusion

At Croatia's southern border to BiH, specifically in the areas bordering northern Bosnia, terrain is largely made up of forests. As such, they are strategic environments for border enforcement. This includes legal operations pertaining to the surveillance of an external EU border as well as those surrounding illegal pushbacks and drastic human rights violations. In practice, the legal and the illegal aspects of border police work are not neatly separated but occur in the same While parts of this chapter focus on one particular location, deforestation and the creation of roads for border enforcement can be observed along the entire border line to BiH via satellite imagery. Chapter III discusses this practice in other spots

[236] Containers or "cages" are frequently mentioned in BVMN testimonies. See for example: here.
[237] Council of Europe (2020)
[238] G. Madi (2025). Report of the Special Rapporteur on the human rights of migrants: Phenomenon of migrants going missing or subjected to enforced disappearance – human rights analysis. A/HRC/59/49, §6. Available here.
[239] Border Violence Monitoring Network (2022). Annual Torture Report 2022
[240] ED/C/11. Committee on Enforced Disappearances (2024). Joint statement on so-called "short-term enforced disappearances" OHCHR. Available here

along the border in relation to mine-suspected areas. Importantly, this report does not provide a comprehensive account of deforested and newly created border control and pushback roads.

Chapter III: Mines and DeMining

One of the important specificities of the Croatian-Bosnian borderscape are landmines. At the end of the Bosnian War 1995, Bosnia was suspected to be the most landmine contaminated country of Europe, with nearly 8.2 % covered by mines.[241] An estimated 2.2% of BiH's territory is still affected by landmines.[242] The Bosnia and Herzegovina Mine Action Centre (BHMAC) acts as the expert and technical body to the Demining Commission.[243] Efforts of demining areas in both Bosnia and Croatia have been ongoing since 1995, and were recently ramped up with additional EU funding to speed up the process.[244] Large parts of the mined area still remain to be cleared as detecting mines remains a difficult task. Recently the EU invested 10 million euros in a Mine Action Project for the clearance of the remaining mine-contaminated areas in BiH.[245] The 2025-2028 Mine Action Strategy by BHMAC revealed that the focus still remains on demining areas close to residential communities, rather than remote forested border areas.[246]

While it is impossible to determine the exact location of remaining landmines, there have been several iterations of maps created to warn people of possibly mine-risk areas, including by former military personnel.[247] BHMAC has created an app, showing areas where mines have been detected. These maps reveal that landmines are naturally located around places of former combat like Sarajevo, and unsurprisingly along border lines.

On the Croatian side, roughly 11,666 hectares were still covered in mines in 2023. As

[241] BHMAC (2025). Bosnia Mine Action Strategy 2025. Available: here See also ha, U. C. (2014). Armed Conflict and Environmental Damage. Vij Books India Pvt Ltd
[242] Bosnia Mine Action Strategy 2025-2028
[243] Mine Action Review (2022). Bosnia and Herzegovina. Available here.
[244] European Commission (2018). IPA III (2024-2020). Bosnia Herzegovina. Eu Support to Mine Action. Available here.
[245] EEAS (2025). The European Union donates 15 off-road vehicles to BiH Mine Action Centre to strengthen mine clearance efforts. Available here.
[246] Bosnian Mine Action Strategy 2025-2028
[247] Interview 1

of 2019, the Civil Protection Directorate (CPD) assembles the Government Office for Mine Action, as well as the Croatian Mine Action Centre under the control of the MoI.[248] Demining takes place in joint efforts with local and national companies, as well as across institutions. For instance, the demining of military areas and properties takes place in cooperation with the Ministry of Defence.[249] Given the nature of the territory, demining often involves Hrvatske šume.

According to Hrvatske šume, areas in Sisak-Moslavina, Lika-Senj, and Sibenik-Knin were demined in 2022 with priority given to enable the surveillance of the state border with BiH.[250] As clearing of vegetation is often an essential aspect of the demining process,[251] Hrvatske šume is frequently involved in demining, not least because it "unlocks access to inaccessible forest areas"[252] The declaration of mine-free zones, however, should be taken with caution.[253] Geo-climatic events such as floods, landslides, or wildlife means that mines move up and down mountains. As such, demining projects tend to miss around 30% of the mines expected to be found.[254] Nonetheless, Croatia has recently completed its demining projects, declaring the country as completely mine-free in March of 2026.[255]

Figure 31. A controlled explosion in the promotion video for the demining initiative "CROSS II". Source: Ministarstvo Ministarstvo unutarnjih Poslova, YouTube.

[248] MoI. Convention on Cluster Munition. Accessible here
[249] Permanent Mission to the UN. Mine Action Revised Work Plan 2022-2026. Available here
[250] Hrvatske šume d.o.o (2023). Godsnje iszvesce. Available here, p. 27
[251] ottrell, L. (2020, October 12). Landmines and the environment – can we do better? Conflict and Environment Observatory. Available here.
[252] ibid.
[253] Ministry of the Interior. Press Release (April 11, 2025). Available here.; See also. Jutarnji (2022) Available here.
[254] Interview 1
[255] Ministry of the Interior. Press Release (March 24, 2026). Available here.

The figures below show an overview of the mine affected areas in Una-Sana Canton, in which an estimated 82km2 is still contaminated land, as well as the map of BVMN recorded pushback locations.[256] This initial view confirms that high population density on both sides of the border coincides with intensified demining efforts, specifically between Tržačka Raštela and Velika Kladuša. The remaining sections of the Croatian-Bosnian border are predominantly forested, where mine-suspected areas will continue to persist as suggested in BHMAC's strategy.[257]

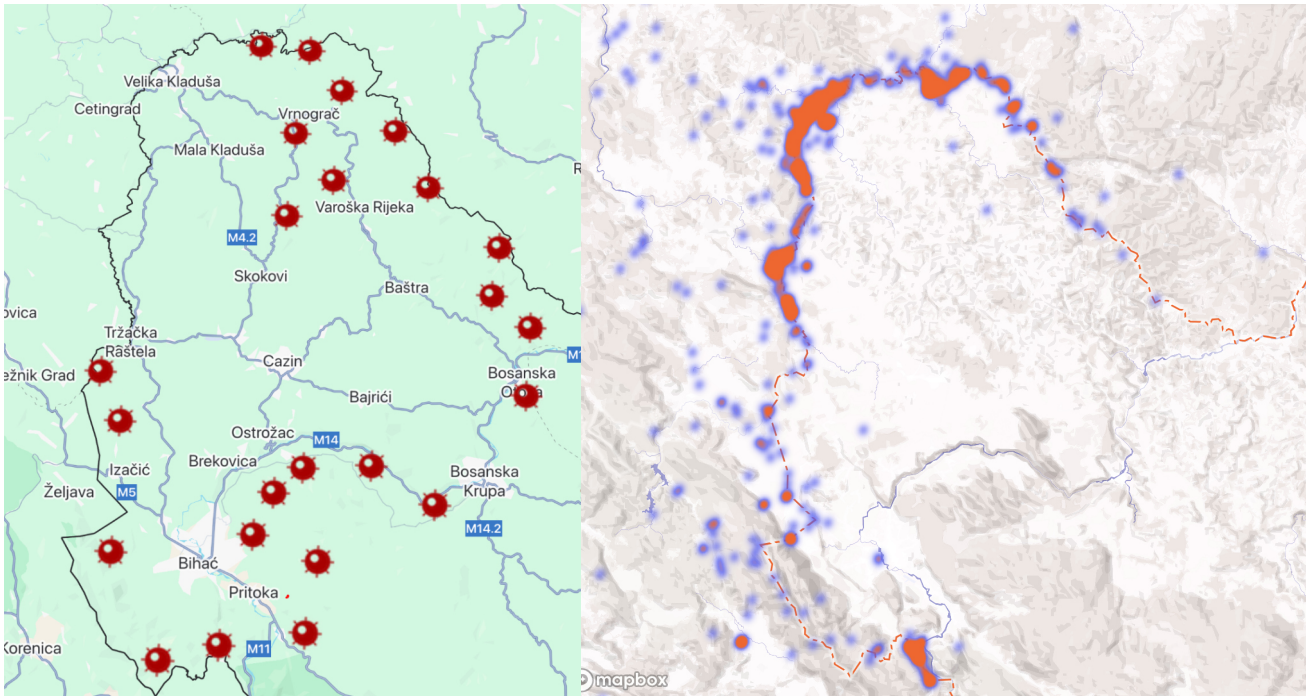


Figure 32. Map of mine-suspected areas & pushback locations. Sources: BHMAC Mine App & BVMN Testimony Database.

The overall presence of mines along post-Dayton border lines seems to suggest that pushbacks at this external EU border inevitably expose PoM to mine-suspected areas. However, this discards the illegality of pushback operations: pushbacks to mined areas are not inevitable but a result of accountable choices by state authorities. Here, the continued presence of mines as well as demining programs should be read against the control achieved by border police - both of which claim the safety of civilians and PoM as central concerns.

[256] ibid.
[257] Bosnian Mine Action Strategy 2025-2028

The next section explores how the infrastructuring of natural environments for border control plays with mine-suspected areas on the Bosnian side. We focus on areas that are more difficult to cross - hilly and mountainous terrain south of Izačić (Figure 33). The next section presents four locations where large sections were deforested for surveillance purposes (Location #1) and capture & pushback infrastructures, specifically by paving roads and installing containers on the Croatian side (Location #2, #3, #4). All of these are near mine-suspected areas on the Bosnian side.

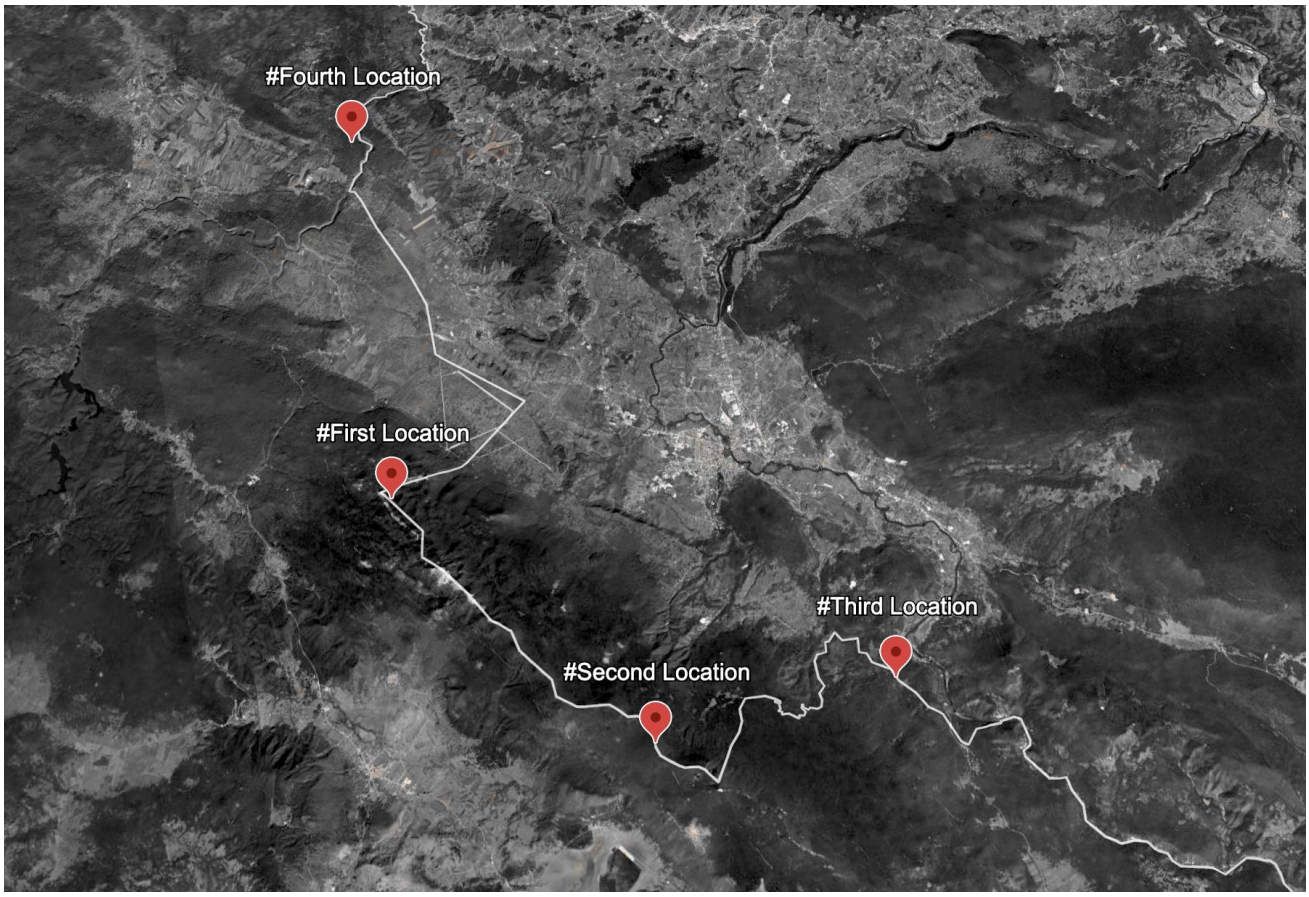


Figure 33. Four locations infrastructured for intervention and pushback near mine-suspected areas. The state border line is marked white. Source: Google Earth Pro (October 22, 2024)

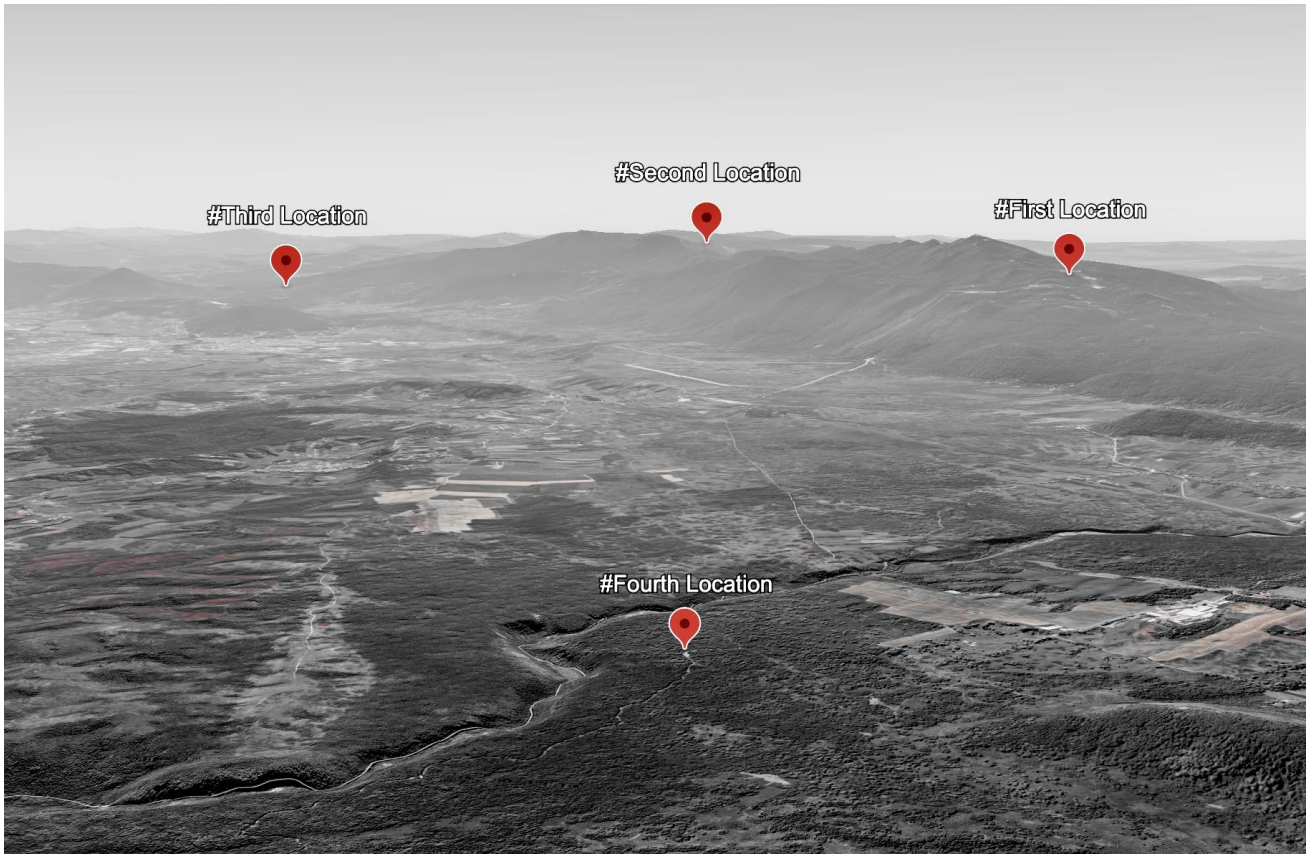


Figure 34. Infrastructured locations. Lička Plješevica is visible in the centre-frame. Source: Google Earth Pro (October 22, 2024).

Weaponisation: Clearing Forests and Suspecting Mines

#First Location

Questioning the infrastructuring of nature for surveillance and pushback purposes requires a multi-dimensional perspective. The interplay of difficult terrain, the issue of vegetation and surveillance, and the danger of mines is nowhere more tangible than on Plješevica mountain, across which the border line between Croatia and BiH runs. The peak reaches around 1600 meters, while slopes along the entire mountain range from 15 to 30 degrees on the Croatian side.[258] The entire area is forested and rocky and no water runs here, making construction difficult. At the bottom of the mountain, the cutting of vegetation around the Željava airbase in 2020, when Croatian forestry companies cut down Bosnian forests for border surveillance, is a famous example of upset that continues to be mobilised in local

[258] Economic Unit 646 Management 2016-2025. GIS Portal.

politics today.[259] This intervention is visible from the city of Bihać but was mostly reported on at the time because the Croatian company entered Bosnian territory in the process.[260] Hundreds of meters of forest were cleared for visibility of long/ range thermal cameras attached to the tower at the top, as well as at different locations in the forests.[261] The Ministry is further aiming to construct a 45m pole with a long-range surveillance system at the bottom of Plješevica, right at the border line.[262]

This area is further mine-suspected. Just recently, a new demining project of Željava, during which 150 mines were found, ran from early 2023 until November 2024.[263] Notably, this came at the initiative of the local Bosnian aeroclub, while the IOM attended meetings alongside the BHMAC and the Ministry of Security. Reportedly, the IOM financed this project as an "obligation to Bihać due to the migrant crisis".[264]

Beyond the questionable framing, this example points to a pertinent dynamic. Demining in border areas does not necessarily take priority, even in a location with the tourism potential of the former Željava airbase. Here, a civil-society takes initiative. But large areas of the mountain range remain mined on the Bosnian side. Particularly the mountain ridge, where Croatian cell and surveillance towers are stationed, as well as areas deep into the forest, remain mine-suspected. While the BHMAC datasets are not 100% accurate, they do show how particular zones are created at the border - together with the clearing of vegetation and the installation of surveillance systems. Until 2023, BVMN member organisations reported consistent use of this mountain range for pushback operations. While human rights organisations signal that this crossing is no longer used very actively, the police presence we observed at night in Korenica, at the bottom on the Croatian side of the mountain, give reason to assume the contrary.[265]

[259] Interview 1; A 'before' and 'after' of these clearings can be accessed in Annex B.
[260] Hameršak, M., Pleše, I. (2021), p. 209
[261] Andreja Thomas (May 21, 2020). Zbog migranata sjeku šumu i stavljaju termovizijske kamere. Available via 24SATA here.
[262] EU Tenders (2025) 665222-2025 - Competition. Available here p. 20
[263] FENA (November 14, 2024). Deminiran bosanski dio aerodroma Željava - 30 godina nakon rata. Accessible here.; See also. Zlatan Čekić (November 17, 2024). Nezavisne. Available here.
[264] KLIX (July 27, 2022). Dok bh. dio aerodroma Željava još čeka registraciju, sav turizam je u hrvatskom dijelu. Available here.
[265] Interview 2

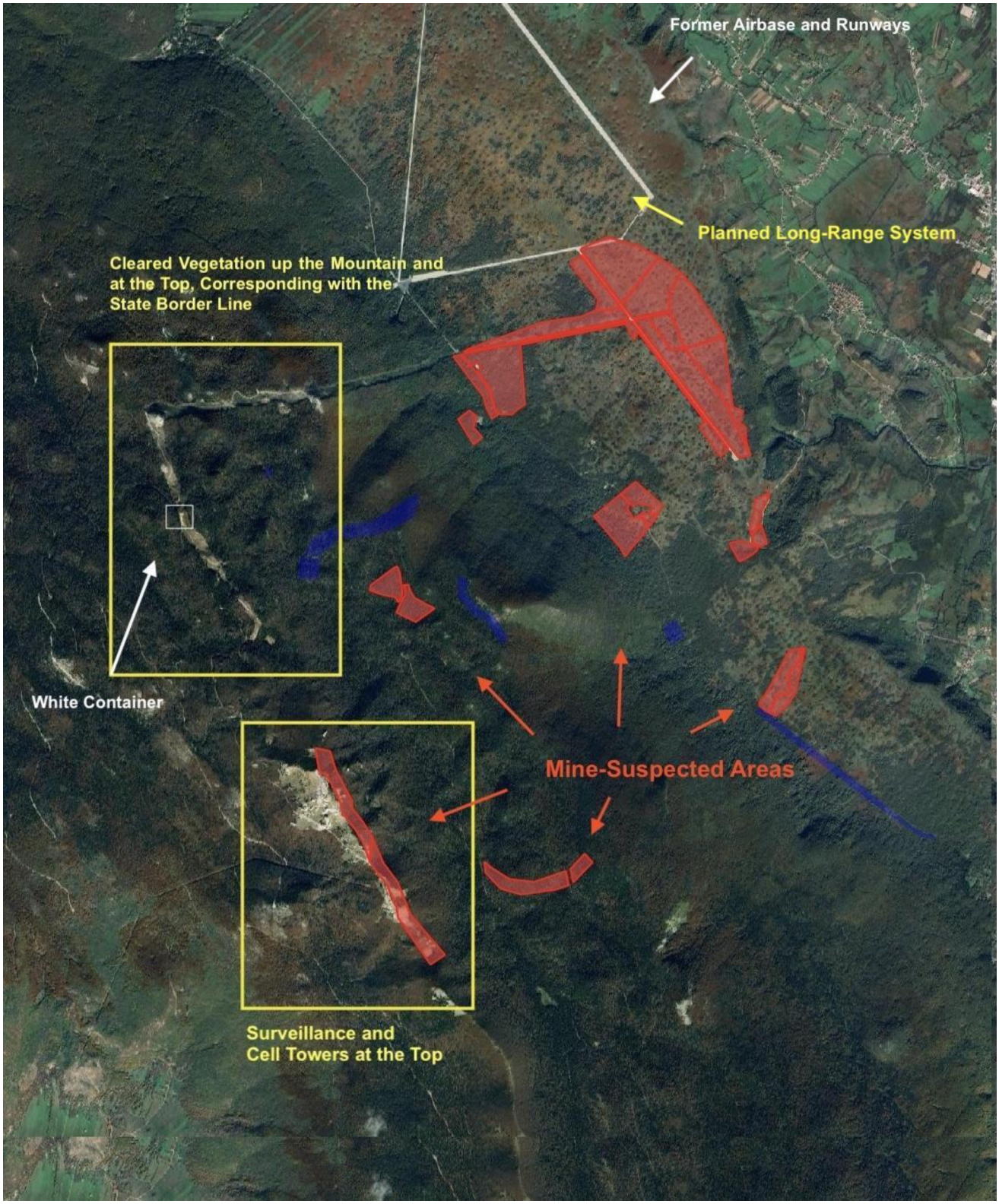


Figure 34. Mine-suspected areas, cleared vegetation for surveillance, and equipment around Plješevica. Mined areas are rendered red and blue. Source: BHMAC Mine App.

#Second Location

Figure 35. Roads created at the top of the mountain range. Source: Google Earth Pro (left: June 27, 2020) (right: June 29, 2021)

Further south, along the Plješevica mountain ridge, the weaponisation of difficult terrain and mined areas in the face of newly constructed pushback roads is rather evident. Figure 35 shows the deforestation of an area in July and September 2020 - the next available image in July 2021 shows that the roads have been filled with gravel, while a large area was cleared and gravelled at the top of the mountain ridge, right at the border line. The surrounding strip of Bosnian forest is mine-suspected (see Figure 35).

Ca. two kilometres further South, a first road (Figure 36, bottom rectangle, left) is visible in satellite imagery dated August 1, 2024, while the second one (Figure 36, bottom rectangle, right) appears in imagery dated October 22, 2024. We can assume deforestation and paving to have taken place in July until latest mid-October 2024. At most, the turning bays of these roads appear 300 meters away from the border line. A closer look further invites the suspicion that a surveillance system is stationed in the turning bay on the left road. This would explain the width of the road (appears to be ten meters and wider) given the space necessary to transport a mobile surveillance system up the mountain in terrain that is already difficult to clear of vegetation. Figure 36 further shows that the surrounding areas of this location are mine-suspected on the Bosnian side.

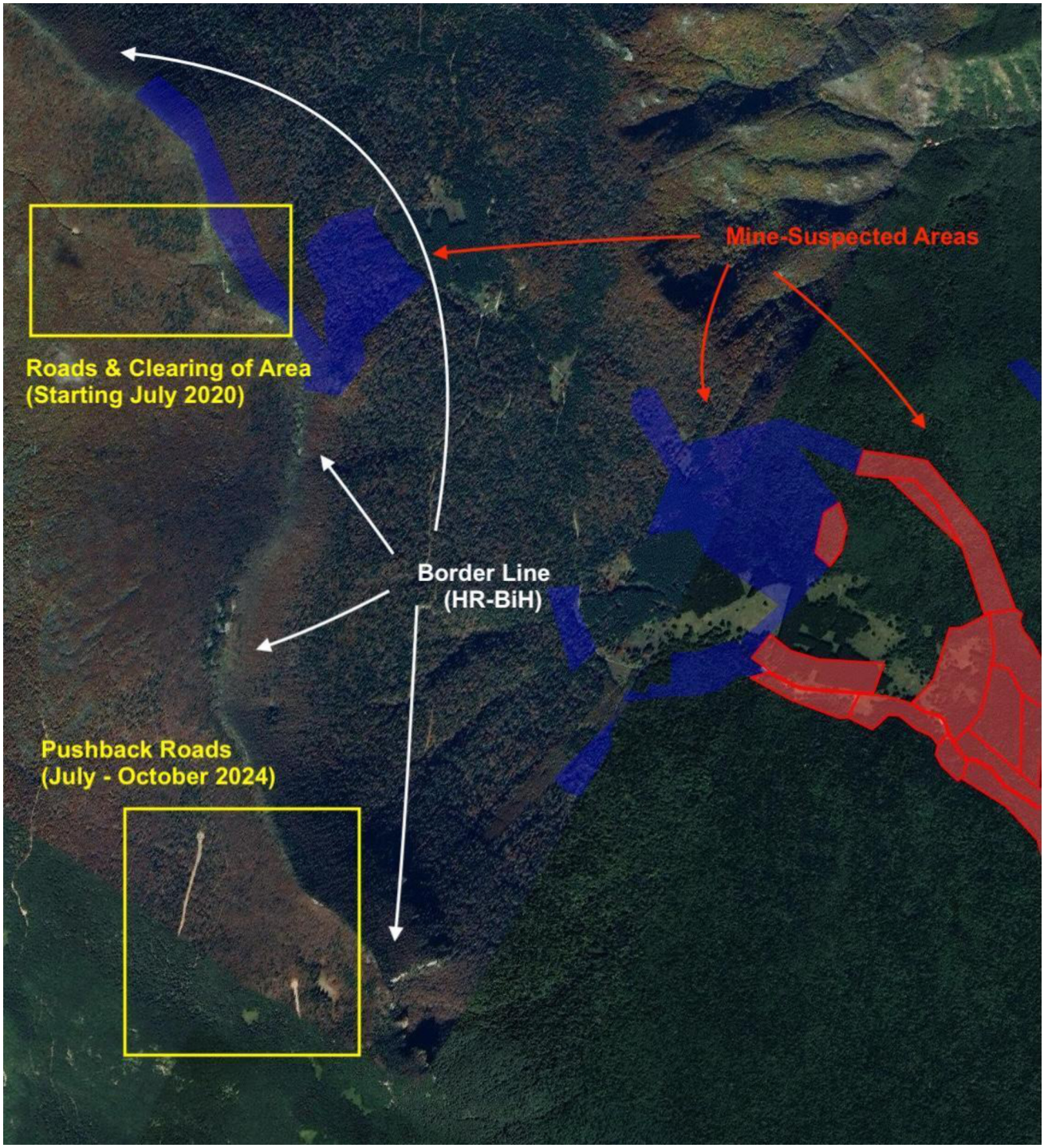


Figure 36. Pushback roads and mine-suspected areas. A 'before' and 'after' can be seen in Annex B. Source: BHMAC App.

#Third Location

A few kilometres further south, a road runs into the forested mountain parallel to the border line on the Croatian side, starting from a road off the crossing point Užljebić. This crossing point is located less than a kilometre away from the Una River, which subsequently (looking south-east) marks the state border line. This is important: as the Una continues, no longer acting as the state border and staying on the Bosnian side, the BCP Užljebić is strategically placed as the border line moves into hills and forest. Here, we can clearly see how the natural qualities of the river are used and supplemented for border control. From the BCP, a road runs up into the hills.

At the end of this road, a small section near the border line was widened in the spring/early summer of 2019, after which a white container was placed between October 2019 and May 2020. Before, during, and after this period, white vehicles can be seen at the spot. From this spot, several footpaths are visible and extend toward the border line between 100-200 meters away. Testimonies in the BVMN database confirm this exact spot as a pushback location since 2019. Just over on the Bosnian side sits a celltower; our research did not confirm this as a surveillance infrastructure. Further, to the other side of the BCP, a road emerged in 2018 that bears all characteristics of a pushback road. The BHMAC app shows that the immediate surrounding area is mine-suspected.

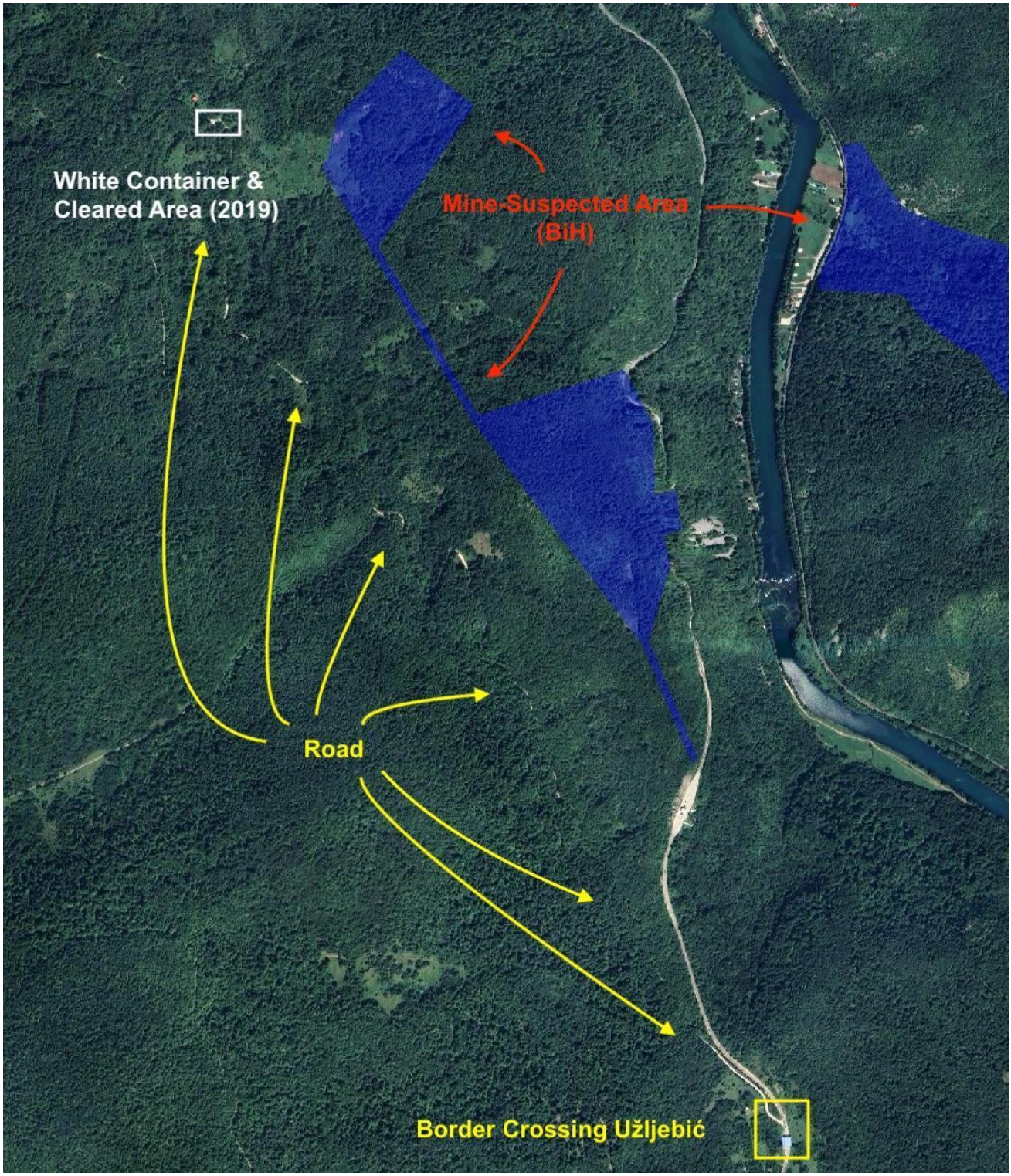


Figure 37. A confirmed pushback location, showing the placement of a white container after October 2019. The surrounding area (blue) is mine-suspected. Source: BHMAC Mine App.

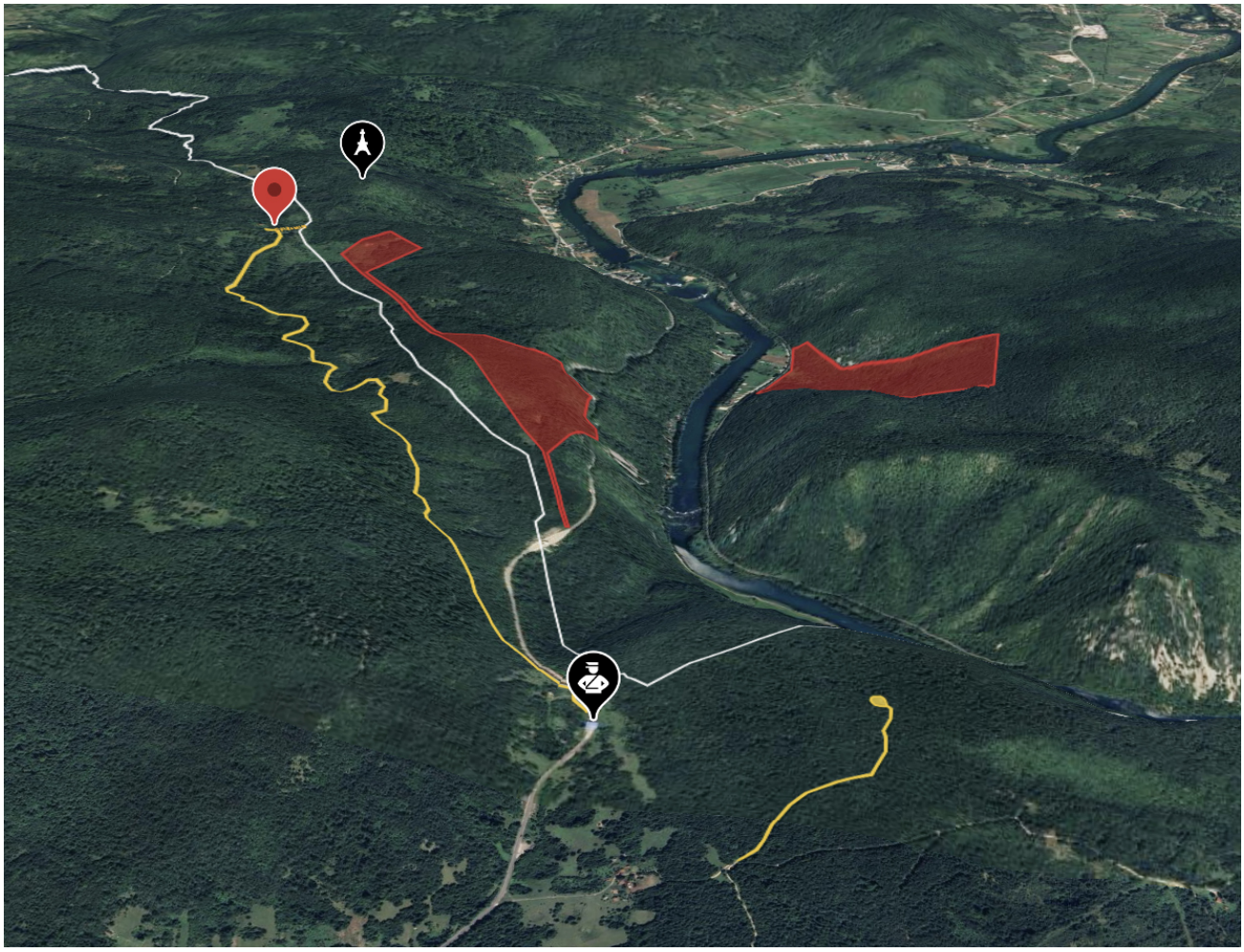


Figure 38. Roads (yellow) near the BCP Užljebić in a documented pushback area. Right by the Una River and the state border (white): a container (red marker), a tower, and mined-suspected territory in BiH (red). Source: Google Earth Pro.

#Fourth Location

A similar infrastructuring of the border area is visible further up, north of the Plješevica mountain ridge (small-scale deforestation, the creation of roads, and placing of containers near mined areas along the border). Here, the Korana River marks the border line between Croatia and BiH. This part of the Korana River has been a pushback location reported on by BVMN for years. Burn piles of burned belongings are also close by.[267] Satellite imagery reveals the gradual extension of a pushback road parallel to the Korana throughout the years. In late 2023/2024, a white container was placed at a widened carving of the road. Furthermore, from the location of the container, several paths lead through the forest down to the border line – the Korana.

[267] No Name Kitchen (2024).

Figure 39. A white container (white rectangle) at the end of a pushback road right at the border. A few meters of paved road were added in late 2023/2024 for connection with an existing road (yellow rectangle). Source: Google Earth Pro (October 22, 2024).

This again illustrates that it is not a matter of where the border line runs exactly but how it is enforced. Patrol units, including those operating from official containers, are deployed on the Bosnian side to provide a deterrent presence along key transit areas.[268] When individuals are spotted attempting to cross, they are often turned back before even reaching the point of entry. For example, containers positioned at the end of Bojna serve as monitoring and control points. At this particular location, the Bosnian side of the Korana river is largely suspected to be mined. This location is also visible to the newly constructed surveillance tower on Lipovac Hill.

Altogether, these cases illustrate how authorities clear small forested areas in hills and mountains to construct roads and place containers for surveillance purposes. Consistent reporting of these as pushback locations invites the assumption that these exact containers and roads are not merely used for surveillance and patrol but to push people back at the green border.

[268] Interview 2

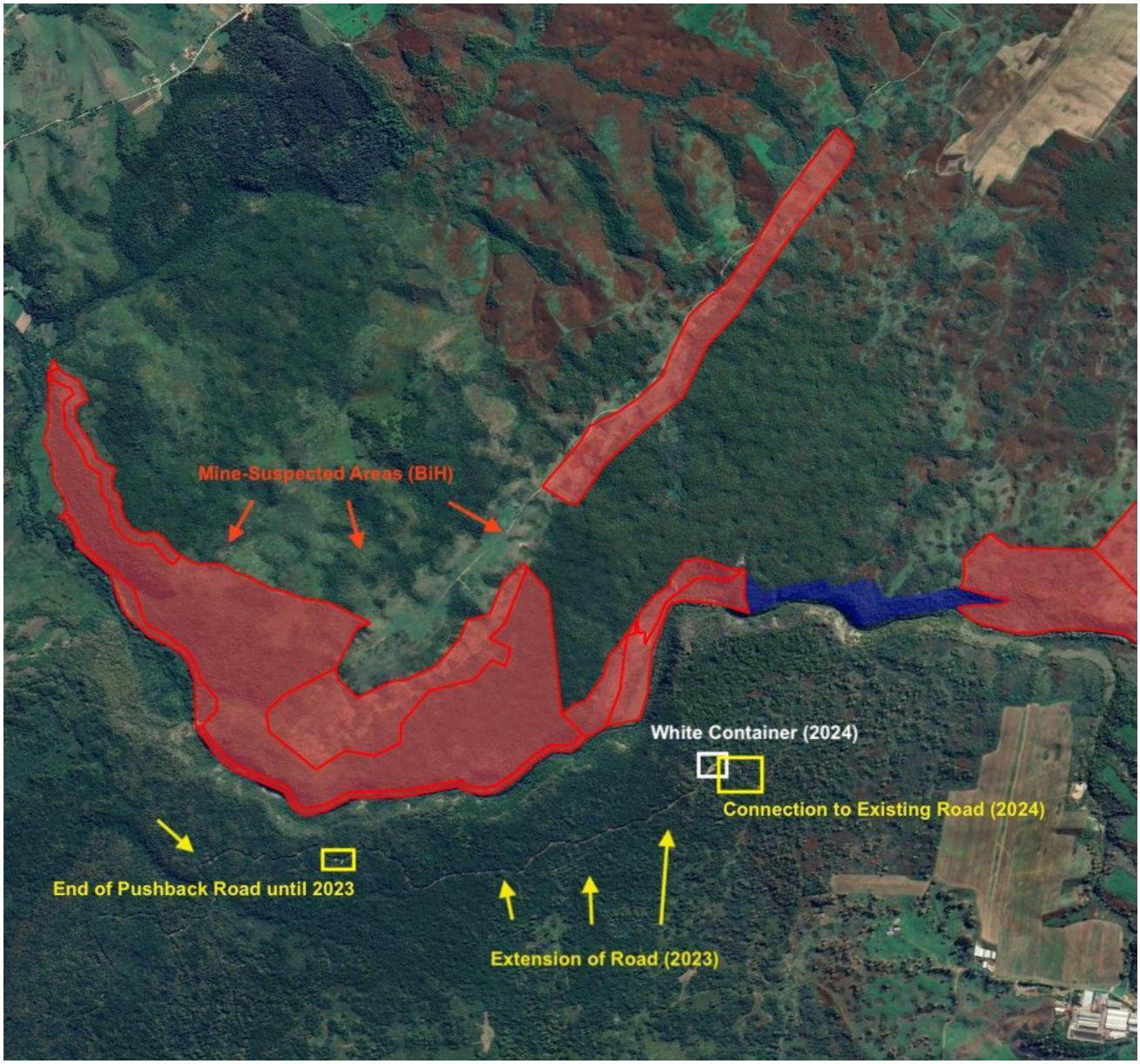


Figure 40. Old and newly paved pushback roads, including a container in close proximity to the Korana River, and mine-suspected areas in BiH. A 'before' and 'after' can be seen in Annex B. Source: BHMAC Mine App.

Considering the large mine-suspected areas on the Bosnain side only hundreds of meters away invites the argument that border authorities strategically push people into dangerous spaces. At the very least, it invites the argument that authorities make strategic use of such areas in the surveillance of the state border line.

This illustrates how the clearing of forest for border surveillance, surveillance technology, mines, and difficult terrain operate together. The difficulty of removing mines, as well as the strategic space that opens up between two national

demining authorities (CPD and BHMAC) at the border should be taken seriously. In 2024, the CPD Director reported that 18.9 kilometres square were under military control - which we can assume to be areas with completely restricted access, training facilities, as well as border areas.[269] Knowledge of mined areas allows border authorities to surveil and bundle resources at strategic points rather than along the entirety of the land border. This is the case for several locations along the border, where pushback roads and surveillance infrastructures have been created near mined areas. As Peragine suggests, mines are part of the border apparatus, as they funnel and push people into certain areas. [270]

Sketching Effects: Maneuvering Mines and Hostile Environments

The presence and danger of mines is hugely influential for illegalised border crossings - PoM's knowledge on mined areas, as well as their understanding of their purpose varies heavily. In addition to the mobile app by BHMAC, signs of dangers are placed throughout the forest, and maps of mine-suspected areas are reportedly found inside transit camps.

Figure 42. Map inside the Vučjak Camp.[271] *Original photo taken by Thom Davie*[272]

[269] Croatia Mine Ban Treaty Article 7 Report (for calendar year 2023), Form C, p. 9; See also: Response to Monitor questionnaire by Ph.D. Damir Trut, Director, CPD, 11 June 2024.
[270] ichard Lee Peragine (2024). "Explosive Remnants of War". e-ERIM. Accessible here
[271] Vujak Camp closed in 2019, following widespread criticism of the conditions in the camp.
[272] Council of Europe (2019, December 6). "Bosnia and Herzegovina must immediately close the Vučjak camp and take concrete measures to improve the treatment of migrants in the country." Available here

Crucially, PoM have been pushed to geographical margins, which exposes them to mined areas more often. This is exacerbated by proximity of the official transit camps in Bihać (Lipa and Borići) and other informal camps to mine-suspected areas.[273] Education sessions were also held at certain points in time in transit camps but according to the Mountain Rescue Service, the last training session dates back to 2021.[274] While one might assume general awareness of the mines, given the availability of mobile apps and signs, interviews confirmed that awareness is still limited. Considering how often people on the move show signs of severe disorientation, particularly after being pushed back and stripped of their belongings and mobile phones, it is not unlikely that people arriving in Bosnian-Croatian border region for the first time are unaware of the landmine risk.

Despite few recorded deaths, the risks of mines are not to be underestimated. A check in the manual on mine risk in the BHMAC Mine-App warns: "Mines are amongst the most serious threats to human life and material assets" and "Mines are hidden killers. Most mines are of shape and color which make them barely visible."[275] According to MAG, there were 1771 landmine casualties in BiH between 1996 and 2023, with at least 615 lives lost.[276] The data however, does not indicate in what contexts people died. The only officially reported death from a mine explosion during border crossing in the 4D database was reported in the spring of 2021.[277] It is likely that many more die or suffer injuries while crossing.[278] Interviews with local aid organisations suggested that, likely many more people die from mines but their death is never reported: "the issue persists that no one goes looking, unless emergency rescue or authorities are alerted."[279] Search and rescue operations are typically initiated only when individuals are able to establish contact, signaling distress or providing coordinates. The extreme hazards inherent

[273] Bosnia Mine Action Strategy 2025-2028
[274] Interview 1.
[275] MAC Mine-Suspected Area App. "Manual on mine-risk education (MRE)."
[276] Mines Advisory Group (MAG). History. Available here. The numbers are not exactly clear, the Bosnian Council of Ministers counted 1871 casualties in the same time period.
[277] Pušić, M. (2021, March 5). Migranta ubila mina kod Saborskog. Policija potom satima izvlačila 10 osoba iz minskog polja. Available here. ; Ahmetašević, N., & Connelly, A. (2025, August 13). Mines, Memory, and Migration on Bosnia's Perilous Border. Inkstick Media. Available here.
[278] Hajdi Karakaš Jakubin. (2022, November 25). Mina teško ozlijedila čovjeka: 'Od rasprsnutih krhotina je zadobio ozljede donjih ekstremiteta i torza'. Jutarnji.hr; Jutarnji list. Available here.
[279] Interview 1

in these regions mean that rescue teams rarely enter proactively, interventions are largely reactive, responding to calls for assistance as they arise.

Despite resources such as BHMAC's app and demining efforts, it is crucial to again underline that determining the exact location of landmines is difficult. Animals, storms, rain, snow, landslides displace mines in all directions.[280] Mines can not only move down but also up a slope, and can only be detected with specialized detection equipment.[281] Flooding and heavy rain is frequent in Bosnia and intensifies only with climate change. Both in 2014 and 2024, severe flooding caused heavy landslides, likely shifting hundreds of landmines. [282]

Conclusion

Mines can be instrumentalized as moving targets. Some speculations were expressed whether people avoid or on the contrary deliberately enter mine-suspected areas to avoid police presence. This only expresses the sheer fear of possibly suffering violence from Croatian authorities. Even if the mine locations were generally known, at the very latest when people are apprehended in remote forested areas and stripped off their phones, orientation and access to the mine–suspected area maps would be lost, leaving people exposed to the risk of explosives. Furthermore, the mobile and stationary surveillance woven into the forested landscape force people to cross swiftly without the necessary care to avoid mines.[283] Particularly drones, with an ability to autonomously track targets, force people to run and hide, in areas more likely mine-infested.[284]

This chapter has highlighted how authorities strategically create roads and surveillance infrastructure near mine-suspected areas, while demining efforts largely omit spaces around the border. Authorities strategically infrastructure surrounding spaces to surveil, intervene, and further push people into these areas.

[280] Ibid.
[281] Deploying Drones for Spatial Modeling of Displaced Landmines in Bosnia Herzegovina. (2016). In Drones in Humanitarian Action. Swiss Foundation for Mine Action (FSD).
[282] Ibid.
[283] Deploying Drones for Spatial Modeling of Displaced Landmines in Bosnia Herzegovina. (2016).
[284] The use of aerial surveillance in Croatian bordering practices was not highlighted for space reasons, however drones are an essential part of Croatian border technologies arsenal and are consistently mentioned by BVMN testimonies as tools for detection. The newest models acquired by Croatia include automated target tracking.

Crucially, this clarifies how border enforcement weaponises hostile terrain. Therefore, accidents and injuries that occur as a result are not devoid of accountability of state bodies. The presence of these dangers is well-known, and improving safety pools a significant amount of effort. Yet, this safety is not directed at the routes and journeys PoM take. Instead, we observe the contrary: Terrain, infrastructure and debrispheres - landscapes marked by war - form an interplay, amplifying natural threat, and allowing for the landscape to be weaponized as border enforcement.[285] This is particularly striking in Croatia's declaration as a mine-free country, accelerated by EU funding, while BiH's long-term efforts are ongoing.

[285] Anca Benera & Arnold Estefan(2025). Debrisphere – Landscape as Extension of the Military Imagination.

Section V. Conclusion - Accountabilities in a complex borderscape

The Croatian-Bosnian border and its enforcement cannot be separated from the environment it exists in. Natural landscapes along the border dictate how the border is enforced, and in turn is weaponized for border enforcement.

The North-Western part of Bosnia's border, around Velika Kladuša, is most densely populated and geographically closest to Slovenia. This has historically been the prime site of transit for people on the move crossing from Bosnia to Croatia, and a site of very frequent pushback. Much before Croatia's Schengen Accession this part of the border became heavily patrolled by police and fortified through surveillance technologies, along small riverines, hills and flatlands. As this part of the border becomes increasingly impermeable, focus shifts to other parts of the border with more difficult terrain. While the hostile mountain range in the southernmost part of the Bosnia-Croatian border forms a nearly impermeable borderscape itself, the more eastern parts of the Croatian-Bosnian border marked by the wider Una and Sava Rivers are increasingly used for crossing. This is violently apparent through increasing reports of river pushbacks and deaths by drowning. As we have seen, these shifts in movement dynamics drive and are driven by adaptations of border enforcement through infrastructural developments and strategic placement of surveillance technologies.

On the Croatian side, surveillance technologies are adapted to the border landscape and play a central role in infrastructuring nature to make border enforcement operational. In forests, we can see the modification of natural environments rather clearly with strategic placement of small-scale and mobile surveillance infrastructures. The clearing of vegetation along rivers and in forests, the paving of roads, and the installation of observation points designed to look like hunting posts, are few but notable examples. Croatian border authorities draw on a variety of resources to clear vegetation for official as well as hidden surveillance and pushback infrastructures: From long-range surveillance systems on new

towers that are made to look like cell towers, to existing cell towers, to the clearing of vegetation in forests and along rivers, to the installation of containers and hunting posts for surveillance and pushback. As such, infrastructuring nature draws in actors and factors that are not commonly understood nor designed to suit the everyday operations of border police, yet become crucial in making the border police operational.

This outsourcing of border enforcement to both nature and technology, both framed as neutral, can be utilized to evade responsibilities for border violence and water down possibilities for accountability. This mechanism is deeply rooted in racialized and colonial continuities whereby the categorisation of racialized people (people on the move more generally) as threats, datafied and exposed to harsh environment is normalized.[286] Expulsions, injuries and deaths can conveniently be blamed on nature. [287] Beyond the violence we documented, these processes have further and long-lasting impacts on mobile and local populations.

First, our findings present a counter-narrative to a pervasive victimisation of people on the move at the hand of so-called “smugglers”. The findings illustrate how EU border governance plays a central role in producing the conditions that lead to dangerous crossing and a necessity for organized movement to prevent border-related deaths. violent practices by border authorities, the strategic weaponization of natural terrain, and systematic non-assistance compel people on the move to pursue increasingly perilous routes, exacerbating risks of death and disappearance.

Secondly, the endangering of crossings has led to immobilities and standstill with people stuck in limbo in Bosnia for prolonged periods of time. Particularly minors and vulnerable individuals in need of medical support are left stranded, unable to find a place of safety and start their own lives. Deteriorating conditions in camps and financial investments in surveillance technologies, rather than social support

[286] See for example. van Schie, G. A. (2022). The Datafication of Race-Ethnicity: An Investigation into Technologically Mediated Racialization in Dutch Governmental Data Systems and Infrastructures. [Doctoral thesis 1 (Research UU / Graduation UU), Universiteit Utrecht]. Utrecht University. https://doi.org/10.33540/1459

[287] K.Benghellab, T. Davies, A. Isakjee. (2025). Four seasons of border violence: The co-option of the seasons into the management of migration,Geoforum,Volume 160,2025. Available here.

and medical structures, have prevented people from accessing support, healing and starting a new life.[288]

Third, prolonged barriers to safe passage and immobilities have created "zones of exception" in which non-state actors can inflict further violence and operate with impunity. In Bosnia, the most famous actor in this capacity is the BWK group. [289] Violent non-state actors can exploit remote terrain, abandoned structures, and the confusion generated by violent pushbacks, subjecting people on the move to extortion, abuse, and captivity. Abandoned buildings and isolated structures in these regions are frequently repurposed to detain people and subject them to extortion, with families often pressured to pay thousands of euros for their release.

Fourth, this report also addresses the normalisation of different forms of violence, and how this pertains to perceptions of border spaces and crossings.[290] When a border police officer directly inflicts physical violence during a pushback, it is quite clear who the accountable party is. When a PoM disappears or dies without immediate contact with border authorities, accountability is quickly blurred. In such cases, especially when natural conditions such as temperature, terrain, or snow play a role, nature can be presented as an abstract, insurmountable factor. But nature is not dangerous on its own. This report highlights how natural border spaces are manufactured; they are infrastructured to the needs of border enforcement. Border spaces become inhospitable and dangerous landscapes to PoM as a result of the concrete actions of securitised border management strategies.

Lastly, prolonged hostile border governance has led to a flattening of solidarity and the marginalisation of local communities. While for years, local and activist solidarity structures aimed to fill the gaps of state actors and provided care and assistance to people on transit, increasing surveillance and violent policing have rendered the border space hostile also to those working in solidarity. This is also true for local administrations. For example, Stojić Mitrović and others have

[288] Interview 4.
[289] See Dragoljo and Siviero's (2025) research for BalkanInsight.
[290] Augustova (2023).

highlighted that state actors reproduce colonial narratives that frame local populations as incapable of self-governance by bypassing local authorities and partnering almost exclusively with organisations such as IOM.[291] Moreover, Carolin Leutloff-Grandits has highlighted how everyday life in affected border regions has been transformed by heavy policing, surveillance, and a parallel security order disconnected from local needs.[292] EU-funded border infrastructure and rotating police deployments in border places like Donji-Lapac in Croatia have deepened the sense that the locality is becoming a "non-place," overshadowed by the priorities of the EU border regime and stripped of its social identity and future prospects.[293]

Avenues for accountability

Actors

The aim of this research was to present a broader perspective on the intricate functioning of the border regime, away from the idea that border police and masked riot police are an isolated actor responsible for violence, pushbacks and death at the EU external border in Croatia. Instead, we sought to show that the terrain of the border plays a significant role in how the border is enforced and ultimately in inflicting violence and endangering the lives of people on the move. Our analysis also aimed to illuminate the dense network of actors, both directly and indirectly engaged in the operation of the border regime. While we do not attempt to assign direct responsibility to specific actors, we nonetheless emphasize the multiple interlocking layers and processes through which the border is rendered hostile.

The European Union emerges as the first and most obvious actor with a responsibility in the re-shaping of the border. Not only has the EU gradually externalized its border management to the Western Balkans, and pressured

[291] Mitrović, M., Ahmetašević, N., Beznec, B., & Kurnik, A. (2020). Research Paper Series of Rosa Luxemburg Stiftung Southeast Europe The dark sides of europeanisation. Serbia, Bosnia and Herzegovina and the European border regime. Available here. See also: The Transnational Institute (2023) "Repackaging Imperialism - The EU-IOM border regime in the Balkans". Available here.
[292] Leutloff-Grandits, Carolin (2023), p. 265-282.
[293] Ibid.

Croatia into fortifying its border. It has also increasingly promoted an expansive security agenda embodied in projects like BorderForce, which integrate meteorological, environmental, and even military considerations into border-surveillance systems. Such initiatives frame border management as a comprehensive response to intertwined threats, yet they also reinforce a security-driven logic that produces increasingly inhospitable and exclusionary border landscapes. In merging discourses of deterrence of movement, climate adaptation, and defence, the EU legitimises a model of security that is not only restrictive of movement but also environmentally destructive, reshaping border regions into hostile and violent spaces.

On a national level we have found a general interwovenness of border surveillance and non-security oriented actors. Not only the Ministry of the Interior and dedicated border police units are involved in border enforcement. Rather, Croatia relies on a wide network of non-security state and quasi-state actors whose contributions are essential to maintaining surveillance and control through the Integrated Border Management Strategy. For example, the State Geodetic Administration emerges as an important actor contributing to Croatia's situational picture, by the survey, demarcation, and updating of border line points and info boards as well as producing and sharing satellite data across neighbouring countries to fill in gaps. Public companies like the Hrvatski Telecom, A1, the state-owned OiV, and Hrvatske vode have been crucial in making land, properties and existing infrastructure available for border surveillance. The national forestry company Hrvatske šume, alongside local hunting clubs, have facilitated vegetation clearing and deforestation to improve visibility along border areas and supported in installing cameras throughout forested regions. This surveillance is one part of the border apparatus that struggles in nature, adding to the legibility of these spaces produced through topographic mapping and geospatial technologies. This highlights an important link between operational knowledge of terrain and physical enforcement of the border in the daily border surveillance and pushback operations.

Private companies have heavily profited from the expansion of infrastructures. A specific consortium of companies has repeatedly been awarded contracts related to border surveillance; King ICT, Ericsson Nikola Tesla, Securitas Hrvatska.[294] Nearly all are Croatian companies specializing in information and communication technology, confirming that the border industry is not dominated by supranational security actors alone but that there is an important national market in Croatia. King ICT as the most relevant actor, has participated in contracts summing up to a total of 26,528,000.00 EUR in 2024 and 2025, along with many more contracts awarded in previous years.[295]

Tracing the linkages between EU policy frameworks, national agencies, public and private companies and local actors it becomes apparent that border violence is not the product of a single institution. It further highlights how the same collection of companies profits from massive surveillance system contracts, which incur running profits: not only are large contracts won, but systems have to be upgraded, maintained, and serviced almost annually. This dispersed architecture of responsibility, embeds border violence in a wider political, economic and ecological configuration and obscures accountability for border violence and broader impacts of this hostile border regime.

Recommendations

The findings of this analysis lead to one overarching conclusion; border justice, environmental justice and digital rights struggles cannot be separated. Intricate practices of surveillance, border management and security have important implications for environmental and human wellbeing. Thus accountability strategies should understand and expose these linkages, attacking the broader system of exclusion under the guise of security. Outlined below are reflections on possible strategies to advance accountability.

[294] Additionally Alfatec and dat-con have been consistently supplying drones to the government, but were not highlighted in this report. Further information can be found here:
[295] A. Schöll et al.(2025)

Budget Scrutiny

EU, Croatian and soon Bosnian state budgets, allocate billions of euros to infrastructure and technologies, for "migration management". By tracing how these funds are used and presenting them to the EU (and domestic) parliaments, we can expose how money is used for landscape interventions and infrastructures rather than improving the lives of locals and mobile populations. This may also lead to questions regarding the legitimacy of EU influence in the Western Balkans.

Evidence-Based Accountability

Years of documentation efforts by local solidarity groups, activists, journalists as well as EU and UN human rights bodies have exposed torture and inhuman treatment as well as enforced disappearence at the Croatian and Bosnian Border. While the effectiveness of human rights frameworks for accountability may be questioned, they are nevertheless an essential element of legal accountability. The findings above, along with existing evidence, demonstrate violations of the right to privacy, freedom from torture and inhuman treatment and the right to life. The collection of evidence of specific incidents remains crucial and should include targeted actions such as leveraging digital rights frameworks to request access to surveillance footage from border operations.

Localizing Accountability

Most importantly accountability strategies, at least on national and local levels, should be rooted in local realities and led by local actors and communities. With infrastructure projects and landscape interventions, the border has become an ever-deepening dividing line between Bosnian and Croatian communities. With deforestation, floodgates, burning of belongings, and river pollution, Bosnian ecosystems are damaged, and border villages on both sides face abandonment and erosion of community. Locally led accountability efforts can demand to resist EU pressure and shift decision making back to local institutions.

Further Research

This report has only superficially exemplified Bosnia and Herzegovina's role in border enforcement, as Croatia, as now a guardian of an EU External Border, maintains far more established and technologically advanced border capacities. Although we touched upon cooperation between Croatian and Bosnian authorities, Bosnia's role will be crucial to explore particularly in light of a deepening EU-BiH relationship. As the last country in the Western Balkans to sign a cooperation agreement with Frontex in June 2025, Bosnia is one of the most recent sites of EU border externalization efforts.[296] The launch of a "fully-fledged operation" on 31st of October 2025, represents a shift toward sustained operational presence, raising questions about Frontex's powers on Bosnian territory, joint operations, and the expansion of surveillance infrastructures.[297]

Further it would be relevant to dive deeper into the environmental impacts of border enforcement. While we have outlined interventions in landscapes, further research would be needed to understand the real impact on landscapes and ecosystems. We can observe how in the name of "climate security" or "climate adaptation", sustainability funding is indirectly allocated to border fortification, often producing environmental harm rather than protection, revealing a significant tension within current EU policy frameworks.

Last but not least, we acknowledge an important gap in highlighting local experiences of the border and its transformations. This is particularly relevant given contentious recent histories that still inform dynamics between local populations particularly along border lines. Local groups and researchers will be much better placed to produce such research.

[296] European Commission (2025, June11). The EU strengthens cooperation on migration and border management with Bosnia and Herzegovina. Available here.
[297] Frontex (2025, October 31). Frontex rolls out a fully-fledged operation in Bosnia and Herzegovina. Available here.

ANNEX B

Addition to Figure 21

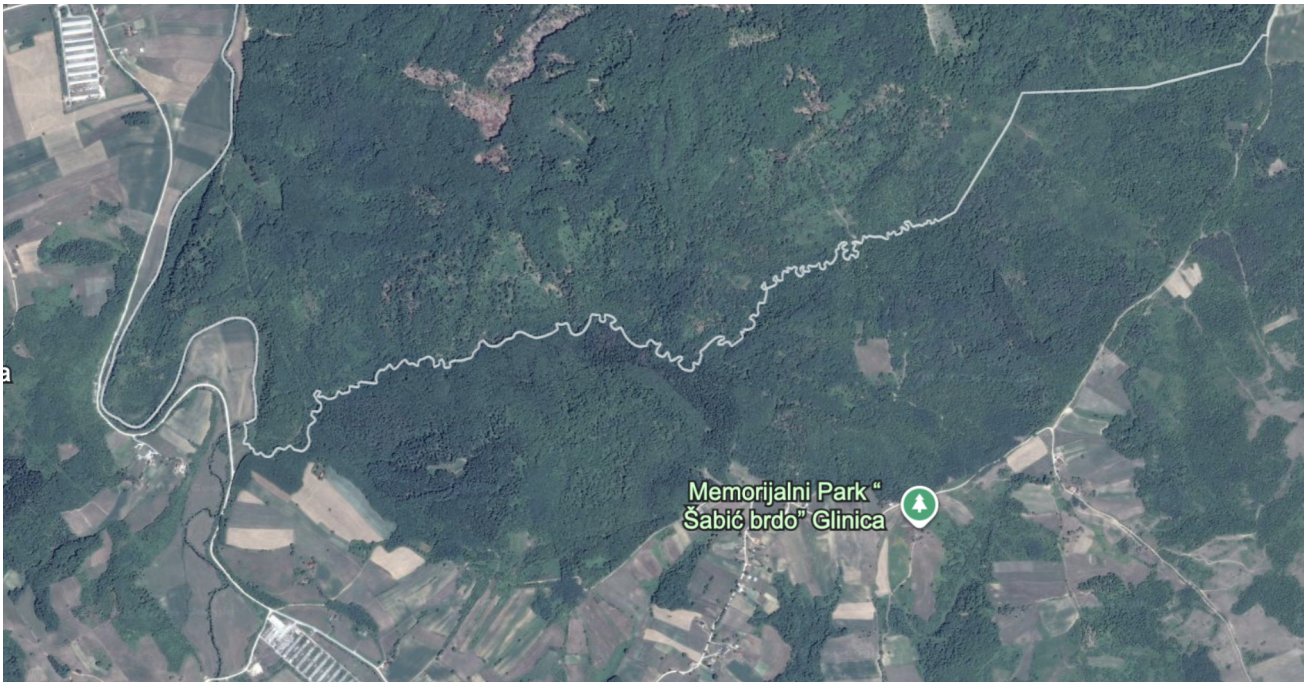
Vegetation clearing around a collective expulsion point.

Source: Google Earth Pro (April 19, 2019)

Source: Google Earth Pro (July 20, 2019)

Addition to Figure 26

Vegetation clearing, widened and gravelled paths, and newly paved roads in the forested area along the border line and the common expulsion point.



Source: Google Earth Pro (July 17, 2017)

Source: Google Earth Pro (August 13, 2023)

Addition to Figure 34
View of Lička Plješevica before and after vegetation clearings along the border line.

Source: Google Earth Pro (June 30, 2019)

Source: Google Earth Pro (February 13, 2022).

Addition to Figure 36

Deforestation and paved roads at the mountain ridge and border line on Plješevica.

Source: Google Earth Pro (August 26, 2023)

Source: Google Earth Pro (October 22, 2024)

Addition to Figure 40

Extended road along the border line by the Korana, where a container has been placed.

Source: Google Earth Pro (July 23, 2022)

Source: Google Earth Pro (October 22, 2024)

Border Violence
Monitoring Network