

# Infrastructuring Nature

at the  
Croatian —  
Bosnia Border

**Summary Report**

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

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# 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. As one of the earliest Western Balkan states to accede to the EU, yet excluded from the Schengen Area for several years, it played a special role for EU border enforcement.<sup>1</sup>

While 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.<sup>2</sup>

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. 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.

Applying the concept of "*Infrastructuring Nature*" as a border technique to the Croatian-Bosnian context, we argue that infrastructural developments, environmental interventions, and the deliberate weaponization of nature are not discrete phenomena but mutually constitutive components of a broader system of control.<sup>3</sup>

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<sup>1</sup> 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](#).

<sup>2</sup> More information on the research project available [here](#).

<sup>3</sup> Teunissen, P. (2025). Infrastructures, Riverscapes, and the Governance of Mobility: The Evros/Meriç River and the Infrastructuring of Nature. *Antipode*, 57(2), 691–713.

# The Croatia–Bosnian Border

The Croatian-Bosnian border was initially established by a 1999 agreement between the two countries.<sup>4</sup> 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. But 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.<sup>5</sup>

The agreed border stretches across ca. 931 km. This consists of ca. 494 km of land border and ca. 425 km of riverine.<sup>6</sup> 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. The efforts necessary to overcome such difficult terrain are illustrated in the multi-faceted organisation of Integrated Border Management (IBM).<sup>7</sup> 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. Accordingly, advanced technical equipment and integrated sensor networks are used to merge data and produce risk and vulnerability assessments.

## Border Enforcement

The development of Croatia's intricate border enforcement system in particular has been largely driven by EU and Schengen Accession processes. 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. IBM strategies were designed to gradually harmonize Croatian border management with EU requirements and advance EU and Schengen accession prospects. Croatia's Schengen accession was delayed until 2023, as the Commission found Croatia's border management capacities to be insufficient when it became an EU member in 2013. 120 million euros were granted to Croatia to expand the border surveillance arsenal and establish IT Infrastructure to integrate into crucial EU biometric databases for migration management (ie. SIS, EURODAC).<sup>8</sup>

After the 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 technical tools for biometric identification and tracking. 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.

<sup>4</sup> Treaty on the State Border Between the Republic of Croatia and Bosnia and Herzegovina 1999. Accessible via [un.org](https://un.org).

<sup>5</sup> 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](https://doi.org/10.32909/kg=21%20si%2010)

<sup>6</sup> Šmailbegović, 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

<sup>7</sup> Integrated Border Management Strategy 2024–2028 (Strategija integriranog upravljanja granicom Republike Hrvatske od 2024. do 2028 godine). Available [here](https://www.mvd.hr).

Croatia finally joined Schengen on January 1, 2023, becoming a new guardian of the EU external border. The passage into his new role is accompanied by significant financial support, under the Internal Security Fund (ISF) and the Border Management and Visa Instrument (BMVI), a total of 208,657,250 euros was made available to Croatia for the 2021-2027 period.<sup>9</sup>

EU funding has funded the maintenance, further construction and interconnection of border surveillance systems, particularly in less patrolled areas of the border such as river areas and the mountainous areas in the south west. As infrastructures are updated, interventions in the natural landscape become more prominent and the landscape becomes increasingly weaponized for the enforcement of the border.

## Violent Riverscapes

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.<sup>10</sup>

The use of rivers during pushback was confirmed by nearly all expert interviews conducted during field research, most prominently the Korana and the Glina. 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.

**“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.”<sup>11</sup>**

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, they are 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.

<sup>8</sup> EU-Lisa (2017) Croatia becomes part of the Schengen Information System (SIS). Available [here](#).

<sup>9</sup> Ibid.

<sup>10</sup> Hameršak & Pleše 2021

<sup>11</sup> Interview 4.

***“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.”*** <sup>12</sup>

80% of recorded deaths in the 4D database, documenting border deaths in the Western Balkans, occurred by drowning with most deaths documented at the Croatian-Bornian border occurring at the Sava (30%) and further deaths documented at the Una, Korana and Glina Rivers.<sup>13</sup> Our research documented large efforts to expand surveillance of Una and Sava border rivers that aim to cover as wide a range of the border as possible.

Notably, two separate calls were issued for stationary long-range systems to be placed along the riverbanks, amounting to ca. €21.7m.<sup>14</sup> Night-vision, thermal imaging cameras, and fast data transmission on 40 meter poles add to the operational picture and should alert authorities behind screens to react to incidents of distress.<sup>15</sup> Authorities including Frontex, have cited the importance of surveillance technology for search and rescue purposes.<sup>16</sup> Yet frequent reports of river pushbacks, and non-assistance suggests an imbalance in the dual purpose the technology should play for Croatian authorities.<sup>17</sup>

Forced freezing by authorities is another great source of injury and death. Instrumental to this is the practice of forced undressing, and stripping of belongings, that has continuously been documented by BVMN field-based member organisation. 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.<sup>18</sup> Inevitably water temperatures of the Una, Sava and Glina rivers will also reach dangerous lows.

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 sustained heavy injuries in his feet.<sup>19</sup> In a similar case, Croatia officers forced the group to sit on the wet ground on their knees for one hour and a half.<sup>20</sup>

<sup>12</sup> 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](#).  
<sup>13</sup> 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 Drina River (Serbian-Bosnian Border).

<sup>14</sup> See EU Tenders (2024) – 428714-2024 Competition. Available [here](#).

<sup>15</sup> EU Tenders (2025) 665222-2025 – Competition. Available [here](#).

<sup>16</sup> Frontex. (2025). Coast Guard Evolution: AI and Unmanned Systems Enhancing SAR Operations. Available [here](#).

<sup>17</sup> See for example: ECHR CASE OF M.H. AND OTHERS v. CROATIA. Available [here](#).

<sup>18</sup> 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.

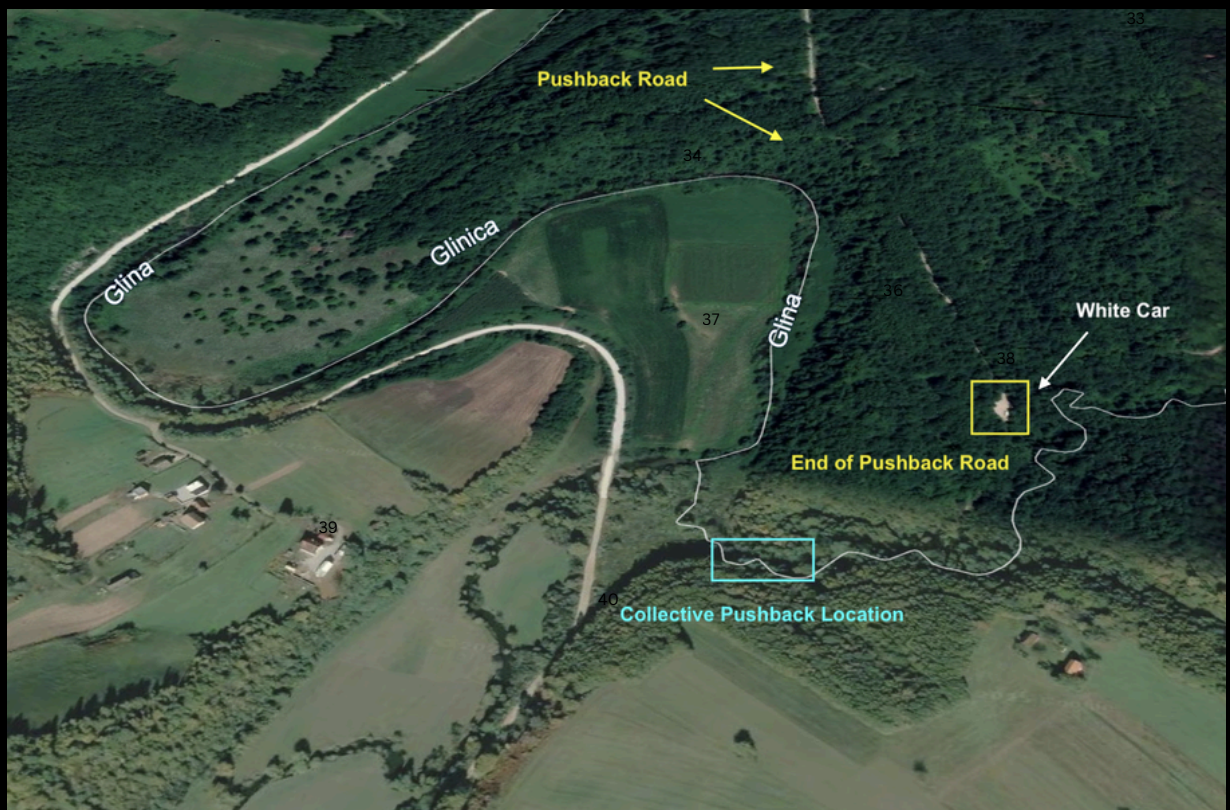
<sup>19</sup> Interview 1.

<sup>20</sup> Border Violence Monitoring Network. (2024b). “We asked for asylum but they brought us to the mountains just to beat us. Border Violence”. Available [here](#).

<sup>20</sup> Border Violence Monitoring Network. (2023c). *They made us sit like dogs*. Available [here](#).

# Infrastructuring Forests for Pushbacks

Large parts of the Croatian state territory are made up of forests. Approximately 2.8m hectares, equating to almost 50% of the country's landborder, are forested. Roughly 2m<sup>21</sup> hectares of those 2.8m are state-owned. The redesignation of forests as special-purpose grants border authorities direct power over the makeup of forests, whereas areas designated for commercial and protective use can still be used by border enforcement. 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.<sup>22</sup> Deforestation, clearing of trees and other vegetation, takes place along the state border line to improve the visibility for surveillance technology. Increasingly, Croatian forests are equipped with hunting posts used for surveillance, camouflaged cameras mounted onto trees, ground-level sensors, long-range surveillance systems at strategic elevation points, and mobile mid-range surveillance systems, adding to drones that patrol from above.



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)

<sup>21</sup> Hrvatske šume. "Šume u Hrvatskoj". Available [here](#).

<sup>22</sup> Pleše & Hameršak (2022). "Cutting Down Forests". e-ERIM. Available [here](#).

To link large-scale surveillance with quick interventions, roads have been constructed in Croatian forests since 2018. Roads are constructed for fire protection but also play a crucial role in facilitating illegal pushbacks. Notable indicators for researching border-related roads through satellite imagery include the proximity to the border, as well as their orientation. At several locations near the border, our research documents roads used for pushbacks, as well as surrounding networks of roads.

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 frequently the forest itself is abused for violent instruments.<sup>23</sup>

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.<sup>24</sup> A 2024 report by No Name Kitchen, documented that large burnpiles now line the Croatian forests near the Izačić border crossing, just north of Zeljava airbase.<sup>25</sup>

Fires are reported to be used not only for the burning of belongings, but also 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.”***<sup>26</sup>

The deeply forested terrain along the north-western Croatian border line 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. 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. This also increasingly leads to the disappearance of people on the move.

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<sup>23</sup> Border Violence Monitoring Network. (2022b).

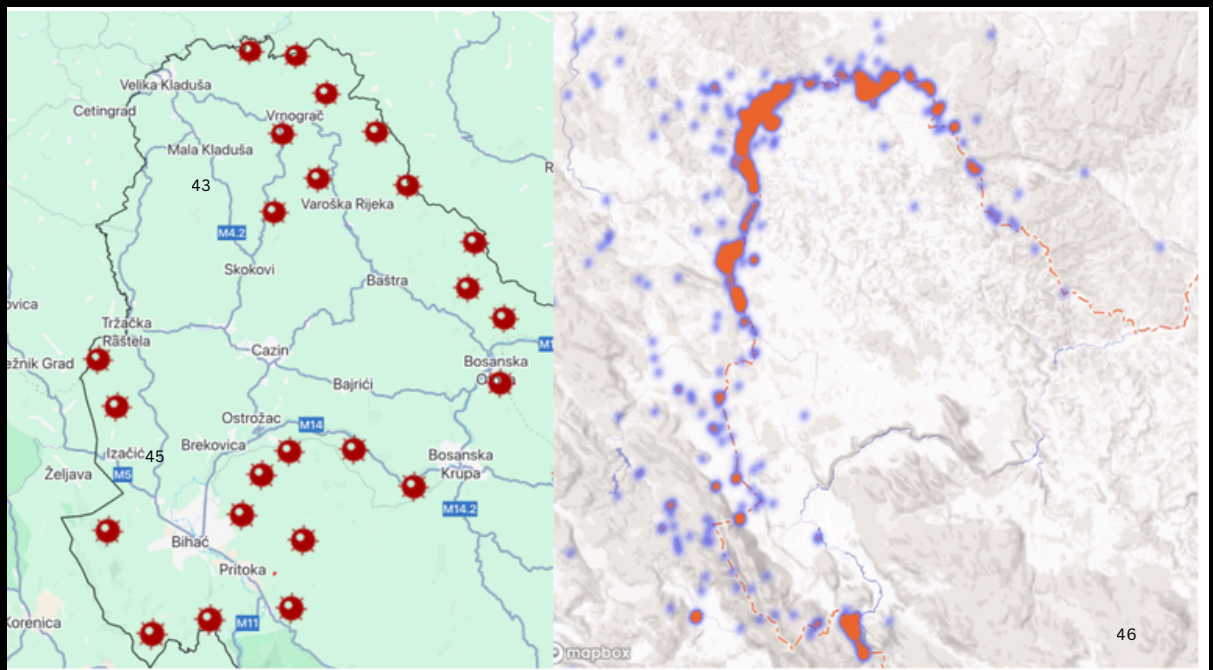
<sup>24</sup> Solf. (2025). Clothes in the river, backpacks on fire: The (in)visibility of pushbacks at the Croatian-Bosnian border. Border Violence Monitoring Network. Available [here](#).

<sup>25</sup> No Name Kitchen (2024).

<sup>26</sup> Border Violence Monitoring Network. (2024).

# Weaponization of 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. An<sup>27</sup>estimated 2.2% of BiH's territory is still affected by landmines. Mines<sup>28</sup> 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. Particularly drones with an ability to autonomously track targets, force people to run and hide, in areas more likely mine-infested.<sup>30</sup>



Map of suspected land-mines from the BHMIC app in comparison with the distribution of pushbacks according to the BVMN Pushback Testimony Database. Source: BHMIC and borderviolence.eu

<sup>27</sup> BHMIC (2025). Bosnia Mine Action Strategy 2025. Available: [here](#) See also ha, U. C. (2014). *Armed Conflict and Environmental Damage*. Vij Books India Pvt Ltd

<sup>28</sup> Bosnia Mine Action Strategy 2025-2028

<sup>30</sup> 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.

# Conclusion

At the Bosnian - Croatian border impunity persists despite widely documented reports of deaths, disappearances, and severe abuses and other forms of border violence. With the emergence of the EU-funded electronic frontier and the weaponization of nature, responsibility can be displaced onto seemingly neutral technologies and the natural landscape. We have shown that border violence emerges not from a single actor but from a complex, interconnected system of institutions, infrastructures and modified terrains that actively shape conditions of harm. In Croatia, a wide network of state and quasi-state actors expands surveillance and border infrastructures that make movement more legible, enable detection, and restrict mobility, ultimately facilitating both direct physical violence and indirect harm through a hostile borderscape. At the same time, private and public companies profit from these systems, reinforce and sustain the vs through which border violence is produced. Ultimately, responsibility becomes diffused, making accountability difficult to establish.



Landscape Interventions at the Croatian-Bosnian Border near Zeljava Airbase to facilitate surveillance.  
Source: Google Earth

# Recommendations for Accountability:

## **Justice Beyond Border Justice**

Border justice must be understood in its interconnection with environmental justice, digital rights and local dynamics. Accountability strategies should thus understand and expose these linkages, attacking the broader system of exclusion which operates under the guise of security.

## **Budget Scrutiny**

EU, Croatian state budgets allocate millions of euros to infrastructure and technologies, for “migration management”. Parliaments must scrutinise how tax payer money is used to create violent landscapes rather than improving the lives of locals and mobile populations.

## **Localising Accountability**

Accountability strategies should be rooted in local realities and led by local communities. They can demand to resist EU pressure and shift decision making back to local institutions.

## **Evidence-Based Accountability**

The collection of evidence of specific incidents remains crucial for legal accountability. This includes demanding evidence from authorities such as surveillance footage from border operations, which must be made available as evidence in court.



**Border Violence  
Monitoring Network**