

Supplement S1–S11

Supplement S1. Active exploitation field “Kruševo” resources and reserves.

	Balance	Off-balance
Bauxite reserves (Mt)		
Proved	0.662128	1.139207
Probable	–	–
Carbonate mineral raw materials for industrial processing reserves (Mt)		
Proved	75.048143	34.353363
Probable	–	–
Crushed stone aggregates reserves (Mm ³)		
Proved	13.994370	6.837967
Probable	–	–

Supplement S2. Active exploitation field “Kruševo” bridging evidence for each of the UNFC Categories.

E-axis evidence	F-axis evidence	G-axis evidence
Mine is in production, therefore development and operation are confirmed to be environmentally-socially-economically viable.	Mine is in production therefore technical feasibility of a development project has been confirmed.	The archival material has been collected. Apart from several shorter periods caused by wartime events, the wider area of the exploitation field “Kruševo” has been systematically explored for about 90 years. The broader area of the existing exploitation field has been geologically mapped at scales of 1:100,000, 1:50,000, 1:25,000, 1:16,000, 1:10,000, and 1:1,000. The geological boundaries of bauxite in relation to other lithological units have been surveyed using geodetic methods. Surface and underground mining operations have been employed in the exploration. Particular bauxite occurrences have been further investigated through drilling. More than 100 chemical analyses have been conducted. Mineralogical and chemical examinations of characteristic bauxite species have been performed, which were later separated and analyzed individually.

Supplement S3. Active exploitation field with invalid concession “Podevčevo” resources and reserves (status as of May 2025).

	Balance (Mm ³)	Off-balance (Mm ³)
Crushed stone aggregates reserves		
Proved	0.695397	0.273333
Probable	–	–

Supplement S4. Active exploitation field with invalid concession “Podevčevo” bridging evidence for each of the UNFC Categories.

E axis evidence	F axis evidence	G axis evidence
Mine is temporarily not in production, but technically capable of resuming operations.	A Main Mining Project exists, however, an additional project will be required due to changes in technical conditions.	Archival documentation exists, reflecting the period when the exploitation field was in active operation and all required technical, geological, and regulatory materials were prepared accordingly. Geological mapping has been carried out at multiple scales (1:100,000; 1:50,000; 1:25,000; 1:16,000; 1:10,000; and 1:1,000). The geological boundaries of the dolomite in relation to surrounding lithologies were surveyed using geodetic methods. Hundreds of analyses have been performed.

Supplement S5. “Mamutovac la” bauxite reserves.

	Balance (t)	Off-balance (t)
Reserves:		
Proved	33,642	995
Probable	2,243	1,581

Supplement S6. "Mamutovac II" bauxite reserves.

	Balance (t)	Off-balance (t)
Reserves:		
Proved	–	–
Probable	13,252	5,742

Supplement S7. "Mamutovac III" bauxite reserves.

	Balance (t)	Off-balance (t)
Reserves:		
Proved	4,977	9,569
Probable	–	7,948

Supplement S8. The bauxite exploitation field "Mamutovac" bridging evidence for each of the UNFC Categories.

E axis evidence	F axis evidence	G axis evidence
Mine is no longer in production. The balance reserves are now 3 (or 3.3), as are the off-balance reserves.	Mine is no longer in production. The balance reserves are now 2 (or 2.3), while the off-balance reserves are 4 (Remaining products not developed from identified projects).	At the time of the creation of the last elaboration on reserves, the deposits were explored according to the current requirements and reserves were confirmed. Even though this was 50 years ago, the methods have not changed. A and B category of balance reserves would have been 1 on the G axis, while C ₁ would have been 2. Due to elapsed time, they are lowered to 2 and 3. A and B categories of off-balance reserves would also have been 1 on the G axis, while C ₁ would have been 2. Due to the elapsed time, they are lowered to 2 and 3.

Supplement S9. "Krste Radas" bauxite reserves.

	Balance (t)	Off-balance (t)
Reserves:		
Proved	249,500	469,500
Probable	6,450	264,500

Supplement S10. The bauxite exploitation field "Krste Radas" bridging evidence for each of the UNFC categories.

E axis evidence	F axis evidence	G axis evidence
Mine is no longer in production. The balance reserves are now 3 (or 3.3), as are the off-balance reserves.	Mine is no longer in production. The balance reserves are now 2 (or 2.3), while the off-balance reserves are 4 (Remaining products not developed from identified projects).	At the time of the creation of the last elaboration on reserves, the deposits were explored according to the current requirements and reserves were confirmed. Even though this was 50 years ago, the methods have not changed. A and B categories of balance reserves would have been 1 on the G axis, while C ₁ would have been 2. Due to the elapsed time, they are lowered to 2 and 3. A and B categories of off-balance reserves would also have been 1 on the G axis, while C ₁ would have been 2. Due to the elapsed time, they are lowered to 2 and 3.

Supplement S11. Key methodological features of a dual prospective approach.

Country	Starting Point	Methodological approach	Key Results / Status	Main Lessons for Croatia
Slovenia	ABC ₁ classification (A, B, C ₁ , C ₂)	Bridging document developed by GeoZS; mapping ABC ₁ to UNFC axes; training and translation of UNFC, dual classification system.	Mining Registry Book integrated with UNFC codes; transparent online database.	Early preparation of bridging rules and stakeholder training ensures smooth transition.
Serbia	ABC ₁ classification, later PERC/CRIRSCO.	Gradual shift via PERC/JORC standards; pilot projects tested against UNFC.	Dual system: national classification + CRIRSCO reports mapped to UNFC.	Two-step transition (CRIRSCO → UNFC) provides technical credibility and comparability.
Bosnia and Herzegovina	Fragmented entity-based system, no unified classification.	No bridging documents or methodological guidelines. Focus on concessions and production data.	No results aligned with UNFC; lack of central geological authority.	Institutional fragmentation hinders progress; need for unified inventory and central coordination.
Austria	CRIRSCO-aligned PERC standard (no ABC ₁ legacy).	Direct integration of UNFC into Geosphere Austria workflows; alignment with EU projects.	Pilot projects (industrial minerals, geothermal) coded in UNFC; contribution to European guidelines.	Proactive strategy based on CRIRSCO aligned PERC standards and centralized governance ensures rapid integration.