



# Mining and environment in the Western Balkans





This study was initiated by the Environment and Security Initiative (ENVSEC), a partnership between UNDP, UNEP, OSCE, NATO, UNECE and REC.

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“Mining and Environment in the Western Balkans” is also available as interactive map and information film for further insight in this subject. Both are available at [www.envsec.org](http://www.envsec.org)

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# Preface

Over the last few years UNEP and its ENVSEC partners have been working to identify and reduce transboundary environmental risks from hazardous mining operations in South Eastern Europe, with the focus on Albania, Bosnia and Herzegovina, the Former Yugoslav Republic of Macedonia, Kosovo (Territory under Interim UN Administration), Montenegro and Serbia.

This has been achieved by collecting, analysing and distributing valuable environmental data, facilitating knowledge exchange, and creating partnerships within the region and beyond. Our team

has prepared and supported pilot remediation projects in the region which reduce environmental risks at mining sites. In addition, these practical measures help build local capacity in technical, managerial and administrative approaches to tackle other mining sites of environmental concern.

This document seeks to provide an overview of the results and experience created over this period to facilitate related work in the future and ensure broad dissemination of the lessons learned to guarantee that the efforts made so far can be sustained.



# Executive summary

## Mining and Environment

Practically all human societies depend on the availability and use of mined products. But the expansion of mining operations into environmentally sensitive and fragile areas has increased the level of environmental destruction and the impact on basic ecosystem services and biodiversity.

The mining industry has been involved in some of the most widely publicized environmental disasters. Well-known examples of mining-related environmental accidents and long-term deterioration include Rio Tinto, a river in southern Spain, the colliery spoil heap failure at Aberfan, Wales, or the Baia Mare cyanide spill in Romania.

Mining and mineral processing has played a vital part in the history and economy of the Western Balkans. Richly endowed with mineral resources such as copper, chromite, lead and zinc, it boasts some of the largest deposits in Europe. Capitalizing on such mineral assets will be a priority for South Eastern Europe in order to boost local economies and attract foreign investment. To secure the environmental, economic and social sustainability of such new or restarted operations, the region will need to define and enforce a legal framework for sustainable mining practices.

Good practice, research and experience in policy making, enforcement and technical approaches are all available. Information exchange between South East

European countries and international partners transferring relevant knowledge to assist local Governments in adopting suitable mechanisms and approaches has been shown to be highly valuable.

## Policy requirements – the Mining for Closure principles

All around the world there are examples of mines that were not properly “closed”. Some ran out of money before completing a cleanup and rehabilitating land, others had to struggle with ownership issues and consequently liability and so forth. Regardless of whether mine legacies were left by private or state-run operations, it is usually governments which must pay for responsible mine closure and rehabilitation where no clear regulations for such sites exist.

New practices have shown that these problems and the associated financial and human costs can be avoided by a process of intelligent planning prior to mining – or at least well in advance of cessation of mining activities. We call the avoidance of future mining legacies via good planning “mining for closure”. Others call it “best environmental practice for mining”, “integrated mine planning” or “sustainable mining practice”.

Mining for closure involves addressing the following issues:

- defining a vision of the end result for mining land with concrete objectives for implementation;

- ensuring that the mine closure plan is an integral part of the project life cycle;
- preparing a mine-closure plan early in the process of mine development and in consultation with the regulatory authority and local communities;
- explicitly including environmental, social and economic issues when planning mining operations;
- allowing for review and change extending from the pre-mine planning phase, through construction, mining, and mine closure to post-mine stewardship.

## Environmental problems at mine sites

- Waste,
- Air pollution,
- Adverse impact on land use and biodiversity,
- Water pollution and availability,
- Hazardous materials,
- Noise and vibration,
- Energy use,
- Visual impacts.

## Transboundary impacts

It has been demonstrated that waterways

importance. A third important vector appears to be toxic-particulate pollutant transport as dust, which has a largely local or sub-regional effect.

## Tailings management facilities

Tailings are the fine-grained waste material remaining after the metals and minerals have been recovered (extracted) from mineral ores via various technical processes. Tailings management facilities (TMF), also often referred to more simply as tailings dams, tailings ponds or tailings impoundments, are waste storage sites for milling and extraction residues and some of the most common sites of concern in relation to mining activity at a site. TMFs are associated with two main areas of risk for the environment. The first is the potential for losing large volumes of water and/or tailings in a large-scale failure. The second relates to the eco-toxicity of the tailings themselves.

Common technical problems at tailings management facilities comprise:

- Water-diversion structure failures,
- Overtopping failures,
- Chronic leakage of pollution.

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