



Desk Assessment on Reducing Environment & Security Risks from Mining in South Eastern Europe (SEE)

Rapid Environmental Assessment of the Tisza River Basin (TRB)

(Explanatory summary)

Studies addressing mining-related environment and security risks

A number of recent studies have addressed Environment & Security Risks related to mining activities, mineral processing activities and the environmental legacies left by the extractive industries in South Eastern Europe and in the Tisza River Basin countries. Notable among these are the *Rapid Environmental Assessment of the Tisza River Basin* and the *Reducing Environment & Security Risks from Mining in South Eastern Europe*¹ desk-assessment both produced by UNEP in cooperation with other agencies; and the PECOMINES report: *Mining, Mining Waste and Related Environmental Issues: Problems and Solutions in Central and Eastern European Candidate Countries*² produced by the Joint Research Centre of the European Commission.

The rationale for the UNEP studies

The mining sector has constituted a very important contributor to local and national economies in South Eastern Europe (SEE) and the Tisza River Basin (TRB). However, in parts of this region, the sector has often been characterised by inappropriate planning, operational and post-operational practices. Inadequate pollution control during operations, unacceptable waste disposal and/or storage practices and a general absence of mine rehabilitation and closure activities are typical outcomes of note. In SEE and the TRB this has resulted in and continues to cause – significant adverse environmental and health and safety impacts and related liabilities. It has also led to a number of catastrophic events that have resulted in trans-boundary pollution and international tensions.

¹ Addressing: Albania, Bosnia & Herzegovina, Kosovo (Territory under UN interim administration), Macedonia, Serbia and Montenegro.

² Addressing: Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia.

It is anticipated that mining will continue to underpin the economies of many countries in SEE and the TRB in the future. Ongoing and new developments to process and mine the mineral resources of “mining nations” will be vital for many of them to pursue sustainable development but the current state of legacies that exist today throughout the SEE and the TRB are unacceptable. Further, hard data on their status is generally lacking making planning for improvement difficult. In recognition of these factors, desk assessment studies and environmental assessments were undertaken with objectives to:

- Identify trans-boundary risk issues in general associated with mining activities;
- Identify general capacity building needs in areas such as accident prevention, emergency preparedness and response measures, and accident emergency prevention and warning systems related to mining sites and activities;
- catalogue sites of mineral resource extraction and/or beneficiation in the region and to make an inventory and description of active mines, inactive mines and/or abandoned mines;
- provide detail of how and why sites of significant hazard pose risks of a site, local, sub-regional, regional and/or trans-boundary nature;
- identify/suggest a number of “hot-spot” sites for each subject country and provide qualitative descriptions of their associated risks.

The aforementioned studies address mineral resource extraction and beneficiation activities and seek to support ongoing national efforts to align legislative frameworks with European legislation, international legislation and best international practice.³

The desk assessment on SEE formed the basis of a presentation of the most pressing issues of risks of a regional and/or trans-boundary nature at the “Environment and Security Consultations in South Eastern Europe”, held in Skopje, the Former Yugoslav Republic of Macedonia, on 23-24 September 2004. The TRB assessment was launched and presented at the Danube Protection Convention Ministerial Conference in Vienna in December 2004.

Summary of general findings

From the *assessments* it became clear that there are a large number of mineral resources related sites with a high hazard. Many have significant risks associated with them that threaten the environment, public health and safety, and/or regional socio-political stability in the countries addressed. A number have significant risk parameters associated with all three of the aforementioned categories of threat and consequence and as such have been identified as candidate “hotspots”. Despite a large amount of information (qualitative data) found and included within the studies (in particular the desk-assessment), the level of delineation regarding the majority of these sites remains relatively low. While the risks associated with these sites appear unacceptable, insufficient quantitative data exists to determine if this premise is correct – and if so, to which degree. As such, an urgent need for National activities to quantify potential risks is a key finding of both assessments. Other findings and priorities are summarised later in this short document.

³ Such as the UNECE Convention on Environmental Impact Assessment in a Transboundary Context, (Espoo Convention); the Council Directive 96/82/EC of 9 December 1996 on the control of major-accident hazards involving dangerous substances (Seveso II Directive); the UNECE Convention on the Transboundary Effects of Industrial Accidents, Helsinki (Industrial Accidents Convention, 1992); the Danube River Protection Convention (Sofia, 1994); the UNECE Convention on the Protection and Use of Trans-boundary Water Courses and International Lakes, Helsinki, 1992; Convention on Biological Diversity, Rio de Janeiro, 1992; the UNECE Convention on Access to Information, Public Participation in Decision-making, and Access to Justice in Environmental Matters (Aarhus, 1998); the Framework Convention on the Protection and Sustainable Development of the Carpathians (Kiev, 2003), and more.

Findings: Transboundary risks

The pathways in which the surrounding environment and communities can be exposed to the harmful effects of pollutants associated with mining and minerals processing activities that were identified include:

- airborne transport of pollutants such as dust, smelter emissions, gases, vapours;
- mass movement of “solid” wastes (generally tailings containing heavy metals and toxic compounds);
- mass movement of liquid, or semi-liquid wastes (again, generally tailings containing heavy metals and toxic compounds);
- waterborne transport of wastes as suspended solids and as dissolved materials.

From the Assessments and the sites and operations examined, it is clear that the dominant pathway of exposure – at all levels of interest – is via waterways (fluvial transport). The overriding importance of fluvial transport mechanisms for tailings wastes in transboundary pollution risks bears several implications with it. To name but a few – very large volumes of materials can be involved with catastrophic damage to downstream land, property and ecosystems associated with the physical impacts of such accidents; biochemical, and ecotoxicological effects of these pollutants can be catastrophic and can extend far beyond the zone physically affected by such materials; the physical and biochemical, and ecotoxicological effects can be very long term.

Findings: Priority issues and institutions to be involved

The *assessments* highlighted a number of interlinked issues where action of varying urgency is required.

Issue 1 – risk reduction at abandoned or orphaned sites. The most pressing issue for action is the reduction of the very significant risks associated with non-operational, abandoned and/or orphaned sites where large quantities of physically and chemically unstable, and/or poorly contained mine wastes are stored. Less serious, but still of major concern is the ongoing generation of acidic, metals bearing effluents from such sites affecting both surface waters and groundwater. Directly related to this is the remaining degree of uncertainty regarding such sites. The lack of high resolution quantitative data describing the morphology of sites; their general degree of risk; actors who are accountable, or can be made accountable for such sites, and the form and sequence of activities to manage the risks associated with such sites is of critical importance.

Issue 2 – risk reduction at operational sites. The second priority issue or area of major concern is related to essentially the same hazards, but at sites of mining or minerals processing that are still operational. While uncertainty may be somewhat lower at such sites, it remains high.

Issue 3 – development of new resources and re-mining aligned with sustainable development. The third priority issue area is related to the development of new sites of mining or mineral processing in a fashion that is aligned with sustainable development (similarly where old sites are to be redeveloped or reprocessed in some way). Despite the opportunities that best practice approaches imported from countries with traditions of stricter environmental control can offer for environmentally benign minerals extraction activities (and increasingly the expectations of stakeholders that best practice will be applied), it appears that this is an opportunity that can be missed. Development of institutional capacity, a culture of risk control, and markedly improved operational procedures is clearly required throughout the region.

Issue 4 – fostering of institutional frameworks for mining legacy management and sustainable mining and minerals processing. There is a lack of clarity in the institutional structures enfolding mining and minerals processing – and significant gaps in such structures despite ongoing development of such items in a most jurisdictions. Challenges include: a lack of specific legislative frameworks addressing mining and minerals processing legacies; unclear accountability for the environmental aspects of mining and minerals processing activities (including overlapping and confused jurisdiction); a lack of clarity in institutions supporting transboundary risk management and/or disaster response, and so forth.

Issue 5 – fostering of institutional frameworks and capacity building for better accident prevention, early warning systems, improved emergency preparedness and response measures. There are significant areas of weakness in these categories. Further, in a mining context, these are closely related to flood protection, flood mitigation, and flood control.

The specific actor groups to be involved in addressing the issues outlined above have not been clearly identified within the studies. However, it is clear that future work needs to involve institutions (potentially including a range of national agencies and mines inspectorates, municipal and regional organs, governmental and quasi-governmental bodies), industrial actors and more general social actors. In particular, it appears that work is required to build regional institutional and industrial capacity to a level that can initiate, manage and support mining and minerals activities that are compatible with regional sustainable development imperatives. The nature of the issues identified in this work points towards a focus upon institutional and industrial actors. However, as a range of Non Governmental Organisations (NGOs) are active in the region, it is clear that a dialogue process with such actors will need to be initiated and maintained.

Findings: Dealing with risk – priority areas for action

Action in a range of priority areas is needed:

Hazard and risk uncertainty reduction via focused information collection.

Management of risks associated with the legacies of mining and minerals processing activities.

Capacity building within institutional actors such as governmental regulatory agencies, mines inspectorates and so forth in order to support legacy management and as preparation for future mining and minerals processing activities. **Capacity building within industrial actors** such as miners, mineral processors and their associated industry bodies to support legacy management and as preparation for future mining and minerals processing activities..

Dialogue with key stakeholders such as national and international NGOs, affected citizens, and so forth, in order to support the conduct of the works described above.

The activities listed above have to be developed in coordination with inter-governmental agencies, and be conducted by groups drawn from national environmental agencies, mines inspectorates disaster response administrations and other national experts. Such work could also involve other international bodies and experts in liaison with inter-governmental agencies, international experts and academic institutions.

Findings: Scoping activities to reduce transboundary risk

Activities to reduce transboundary risk will assist in reducing threats to biodiversity, human livelihoods, land quality and international waters and can contribute to increased regional security. Activities to improve the current situation will need to fall into two main categories, that is control measures aimed at the **prevention of major accidents** and control measures aimed at the **limitation of consequences of major accidents**. A key focus area must be the prevention and control of accidental water pollution from operational and non-operational mining sites; bilateral or multilateral cooperation will be required to achieve this. A first step identified in both assessments for future action is the collection of data on hotspot sites and the assessment of risk levels (including local, national and transboundary) for such sites. In addition, the following activities are important:

- establishment of officially sanctioned bodies or working groups for the assessment and management of transboundary risk management – such bodies will need to include representatives from generating territories and receiving territories, and as required include international experts and international bodies involved in transboundary environmental and regional security issues;
- establishment of transboundary notification and disaster response systems linked to the parties mentioned above;
- establishment of monitoring programmes, and/or early warning systems for the assessment of ongoing chronic pollution, and for the detection of pollution events;
- establishment of monitoring programmes, and/or early warning and response systems for the detection and management of catastrophic pollution events;
- multi-lateral participation in the establishment of officially sanctioned bodies or working groups with the responsibility of scoping programmes for hotspot site remediation and seeking international funding for execution of priority works;
- capacity building for governmental and regulatory actors involved, or to be involved in activities such as those listed above.
- capacity building for governmental and regulatory actors involved in policy development enfolding the extractive industries.