Project background

The German national economy imports raw materials from all over the world. These raw materials are the physical foundation for production, value added and consumption in Germany. Metallic raw materials are nearly completely imported, directly in the form of ores and concentrates as well as indirectly in the form of semi-finished and finished products. Security of supply is the primary object of the German raw materials policy. At the same time, the public consciousness for the conditions under which mineral raw material production takes place elsewhere is growing in Germany as well as in other early industrialized countries. Civil society´s awareness for the consumption of natural resources such as soil, water, air and ecosystems during mining and its effects on the biological diversity and the local population is increasing continuously. In this context, new approaches are being sought to reconcile security of supply with a globally understood sense of ecological and social responsibility.

In ÖkoRess III, a site-related evaluation method for the environmental hazard potential of mining sites is systematically applied to the three bulk metal raw materials bauxite (aluminium ore), copper and iron ore at a total of 100 sites. The method was developed and refined in the predecessor projects ÖkoRess I and II. The pilot screening of 100 mine sites additionally serves to identify potentials for optimizing the method. The site-related ÖkoRess evaluation allows to quickly get an idea of potential hazards for the environment at a location by assessing geological, technical and site surrounding indicators of the natural and social environment.

Bauxite (aluminium ore), copper and iron ore are mined worldwide and are very relevant for Germany as a production location. They are imported into Germany in large quantities for the production of goods with a high degree of vertical integration, which are then largely exported again. They are therefore of particular importance with regard to the debate on Germany's ecological responsibility in terms of the mining conditions in the countries of origin.

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ÖkoRess III
Pilot-Screening of Environmental Hazard Potentials of Mine Sites

German Environment Agency

Umwelt Bundesamt

Project objectives

In order to strengthen an ecological raw materials policy, the method for the assessment of environmental hazard potentials at mine sites that has been developed in the previous projects is applied systematically to a larger number of mine sites. This first screening is applied to a total of 100 mines and advanced mining projects of the three important industrial raw materials iron ore, copper ore and bauxite. A *fact sheet* will be prepared for each site. It will provide information on the site-related environmental hazard potential according to ÖkoRess, and also provide relevant and concise context information on governance and corporate social responsibility. The *fact sheets* will be made accessible to the public through an interactive map. The aim of the project is to expand the knowledge base, optimise the site-related evaluation system and contribute to the debate on responsible raw material supply.

Relevant results of previous research projects (UmSoRess, KlimRess, ÖkoRess I-II) will be considered in the project.

Procedure

Processing of the project includes the following four essential steps:

1. Determination of the locations to be evaluated

The 100 mine sites to be evaluated cover a major part of the worldwide raw material extraction of each of the three raw materials iron and copper ore, and bauxite. The main criteria for the selection include:

a) Production volume of a given raw material at a mine site in relation to the worldwide production and the

b) Reserve of the deposit of a location in relation to the worldwide raw material reserve.

This procedure ensures that the most important mine sites of each raw material are considered. Thus, a representative selection of the global extraction of these major metal raw materials is considered and at the same time the direct and indirect German import of raw materials is approximated.

2. Collection of the required information and data

The collection and careful examination of the site-related information is the basis for assessing the potential environmental hazards and thus for preparing informative data sheets for the individual locations. These form the basis of the *fact sheets*, which then will be made available online to the public.

The necessary information is obtained primarily through targeted database searches, in particular published data from national institutions on geology and mining, as well as internet and literature searches. Furthermore, spatial analysis by means of geographic information systems (GIS) plays an important role. The procedure and the underlying database were already developed in the previous projects and will be further refined during the project duration. If necessary, the procedure will be supplemented by discussions with mining sector experts.

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3. Assessment of the potentials for environmental hazard

Based on the acquired information and data, *fact sheets* will be developed, containing the complete background information on state governance and corporate social responsibility. The result will be examined by experts and made available in a further step to the respective mining company for comment.

4.Representation of the results on an interactive map

The *fact sheets* will be presented on a freely accessible interactive map in a clear and visually appealing form according to the geographic position of the respective mine sites. It will be possible to download the information and links to extended reference literature will be provided. Thereby, search and filter functions will make the navigation and application easier for the interested professional audience and the general public.