



Project no.
PL 517574

Project acronym
PREWARC

Project title
**Strategic Plan for the Prevention of Regional Water Resources contamination
from Mining and Metallurgical Industries in Western Balkan Countries**

Instrument: **SSA**

Thematic Priority: **Integrated and Strengthening the European Research Area,
Specific Support Actions for Western Balkan Countries**

Final Activity Report

Period covered: **from 01/01/2006 to 31/12/2007**

Date of preparation: **14/02/2008**

Start date of project: **01/01/2006**

Duration: **2 years**

Project coordinator: **Panias Dimitrios**

Project coordinator organisation name: **National Technical University of Athens**

Revision [draft, 1,2..]

1. Project Execution

1.1. Summary description of PREWARC objectives

The Western Balkan Peninsula is rich in natural mineral resources. Among the most important of them are considered the chromite, bauxite, polymetallic complex sulphide, laterite and coal ore deposits, which are used for the production of steel, ferroalloys, aluminium, nickel, base and precious metals. Although a very small fraction of these ore deposits is exploited in the region, the mining and metallurgical activities have generated a large amount of pollution that mainly affects the surface-, groundwater reservoirs.

This project addresses environmental pollution problems associated with mining and metallurgical activities in two Western Balkan countries, in order to develop an Integrated Strategic Plan including proposals for feasible technological improvements in mining and metallurgical industrial activities in the involved area and viable technologies for the management of the industrial wastes ensuring the protection of the natural water resources. In order to achieve this goal, the project deals with (i) collection and management of information concerning the major mining and metallurgical industries in the involved Western Balkan countries, as well as the extent of the regional water resources contamination and the risks associated with it, (ii) identification of Best Available Technologies that have to be adopted by the regional mining and metallurgical industries in their production stages, as well as in the related wastes management aiming at waste minimization, prevention of surface-, groundwater contamination and safeguarding the ecosystem of the affected areas (iii) dissemination of the gained knowledge and promotion of the project results.

The objectives of the PREWARC project are summarised to the following:

- Collection and management of information regarding regional natural water resources contamination from mining and metallurgical industries in the two Western Balkan countries under study.
- Proposal of feasible preventive and remedial technologies that are already installed and run in other European countries facing the same or similar environmental problems. The term “feasible” implies technologies that are economic in installation and operation and at the same time give high yields of pollution prevention or remediation.
- Dissemination of existing and new knowledge in order for the scientific community of the Western Balkan countries to be familiarized with the respective technologies.
- Assistance to the scientific community and the national authorities of the involved Western Balkan countries towards economic growth through sustainable development and management of natural resources.

1.2. Contractors involved

The following contractors are involved in the PREWARC Project:

1. National Technical University of Athens (Greece)
2. Technical University of Crete (Greece)
3. Faculty of Technology and Metallurgy, University of Belgrade (Serbia and Montenegro)

4. Faculty of Technology and Metallurgy, University "Sts Cyril & Methodius" of Skopje (F.Y.R.O.M.)

Co-ordinator contact details

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1.3. Work performed and end results

In order to achieve the goals of the project, all the available information for the major mining and metallurgical industrial activities in Serbia and FYROM were collected and the corresponding sites were mapped. The data collected included the general coordinates of each identified industry, production capacity, production technology, type, composition and quantity of generated waste and current waste management technologies.

All the available information concerning the natural water resources, surface as well as ground, and soil contamination in the identified area was also collected. Collection of data was performed with assistance of local authorities, regional science community, especially with scientists involved in previous research, and educational institutes in order to have a complete view of the regional environmental status. A number of relevant institutions and companies were contacted and enough data were gathered, based on which it was easy to determine the main industries and companies that are potential polluters of the human environment. Moreover, classification of the selected polluters into groups according to the technologies and the type of manufacturing, the position and the type of pollution which they cause was carried out followed by the creation of a data base for the selected polluters and their adequate tabular presentation.

Best Available technologies (BAT's) proposed by the EU concerning the production and waste management technologies of mining and metallurgical activities were also collected. Tabular forms of the information provided were created in order to facilitate the straightforward comparison of the technologies for both mining and metallurgical activities. This work has been completed for the mining activities active in the two Western Balkan countries under study. These technologies were compared with the technologies currently used by the local mining and metallurgical activities in order to assess the potential for technological improvements in both activities in the two western Balkan countries.

At the end of the second year of the project, two workshops were organised each in Serbia and FYROM. An announcement for these workshops was made through the project website, leaflets and personal contacts with local authorities, industries, scientists. The round table discussion followed the two workshops contributed to the development of the Integrated Strategic Plan that is proposed to the local industries in order to solve the environmental problems they have caused. This plan also includes proposals for the guidelines of the European commission's future strategic plan and

policy related to research and technological development in the fields of mining and metallurgy in the western Balkan region.

The project's website (www.labmet.ntua.gr/prewarc/index.htm) was constructed providing free access for a number of issues, such as description and objectives of the Project, Partner profiles, short project reports, publications in journals and conferences, links with important websites, etc. Through this website promotion of the dissemination of the gained knowledge was carried out by continuous updates.

The main achievements of the PREWARC project include the successful completion of all workpackages, the preparation and submission of all Deliverables and the achievement of all milestones (see Tables 1 and 2, respectively). Very important for the successful completion of the PREWARC meetings were considered the good relations established between the partners and the industries in the countries under study. Finally, the promotion of the project in the local communities already done through press publications, the website and both workshops are considered essential for the successful completion of the PREWARC project.

Table 1. List of Deliverables

Deliverable No	Deliverable title	Delivery date	Nature	Dissemination level
D1	Regional map including the location of the major mining and metallurgical activities as well as the waste disposal sites.	6	R	PU
D2	Detailed database which will provide information on all the aspects concerning the major mining and metallurgical activities of each Western Balkan country participating in the project.	12	R	PU
D3	Inventory including detailed information on the regional natural water resources and soil contamination of the Western Balkan countries participating in the project.	18	R	PU
D4	A report providing all necessary information required for the designation of a frame for potential and feasible technological improvements in both target Western Balkan countries.	21	R	PU
D5	Integrated Strategic Plan for the prevention of the regional natural water resources contamination from mining and metallurgical activities in the Western Balkan countries.	24	R	PU
D6	The final version of the project Internet Website.	24	D	PU
D7	Consortium Agreement	1	R	CO

Table 2. List of Milestones

Milestone No	Description	Expected results and achievements
M1	Adequate description and mapping of the sites where the major mining and metallurgical activities take place as well as the sites where the industrial wastes are disposed	Creation of a database in each target Balkan country that will comprise a very useful tool for the understanding and solution of the problem of surface-ground water pollution caused by mining and metallurgical activities.
M2	The collection of the available information concerning the extent of the regional surface-, groundwater resources and soil contamination related to the mining and metallurgical activities	Creation of a detailed inventory concerning the extent of the water resources and soil contamination related to the mining and metallurgical activities in order to have a complete view of the regional environmental status
M3	Clear definition of the potential and feasible technological improvements that have to be taken into consideration in each involved western Balkan country	The development of a field for technology transfer in the regional mining and metallurgical industries which results to the preservation of the natural water resources in both countries, as well in the neighbouring countries
M4	Clear, simple and viable strategy putting the base for the transformation of the local mining and metallurgical industry to a sustainable one	The development of a strategy that has to be followed by the mining and metallurgical industrial sectors in the western Balkan countries in order to effectively face the challenges of the new era and establish a stable framework for sustainable development

1.4. Project logo

The following is the logo of the PREWARC Project.



2. Dissemination and use

As already mentioned, the Project website was installed onto the web server at NTUA (www.labmet.ntua.gr/prewarc/index.htm). The website was initially set up as to raise awareness in the local communities and decision-makers of the water contamination generated by the local mining and metallurgical activities. Moreover, it is expected to raise the interest of the mining and metallurgical industries in the Western Balkan countries for the technologies that are proposed by the European Commission and regarded as the Best Available Technologies in the field of the management of wastes generated by their activities. The project's website was continuously updated with results from the performed studies.

At the end of the second year of the project, two workshops were organised each in Serbia and FYROM, on the 10th and 12th of December 2007, respectively. An announcement for these workshops was made through the project website (www.labmet.ntua.gr/prewarc/index.htm), leaflets and personal contacts with local authorities, industries, scientists.

A workshop entitled "Prevention of contamination from mining and metallurgical industries in Serbia" was organized in Belgrade on the 10th of December 2007. A second workshop was organised in Skopje on 12/12/2007 with title "Prevention of contamination from mining and metallurgical industries in FYROM". Invited participants were from academic institutions, industry as well as local and national authorities facing the waste management problems from mining and metallurgical industries. The leaflet as well as the Agenda's of both workshops can be found in the project website.

During workshops the project partners presented work done on collection of data and creation of inventory regarding extend of regional water resources and soil contamination from mining and metallurgical activities in Western Balkan countries involved in this project.

More than 30 participants (representatives from the industry, educational institutions, and ministries) had the opportunity to find out more about the environmental problems in Western Balkans and be familiarized with the Europeans experience in solving similar problems regarding the environmental issue.

During the workshops, the project's main objectives and BATs for metallurgical and mining industries, the mapped sites, a detailed database of mining and metallurgical activities in both countries, assessment of utilized technologies and comparison with Best Available Technologies, as well as a draft Strategic Plan were presented. These presentations have enabled all participants to have an overview on all the activities of the project partners. In the workshops one presentation from an industrial representative as well as one from an expert in IPPC directive were also presented. All presentations can be found in the projects website.

Establishment of contacts and relations for long-term professional and institutional cooperation with representatives from the selected industries, Ministries of environment, researchers and universities was achieved. Moreover, their suggestions and knowledge presented during the round-table discussion that followed the presentations were vital for the development of the Integrated Strategic Plan.

Table 3. Overview of the dissemination activities table

Actual Dates	Type	Type of audience	Countries addressed	Size of audience	Partner responsible /involved
15/02/2006	Project web-site	General public	all	na	NTUA
10/12/2007	Workshop	Industries, local authorities, researchers	Serbia	22	TMF-Serbia
12/12/2007	Workshop	Industries, local authorities, researchers	FYROM	30	TMF-Skopje