Insufficient involvement of Public Health authorities on the issue of heavy metals' presence in the vicinity of industrially contaminated sites in Serbia - need for HBM capacity building

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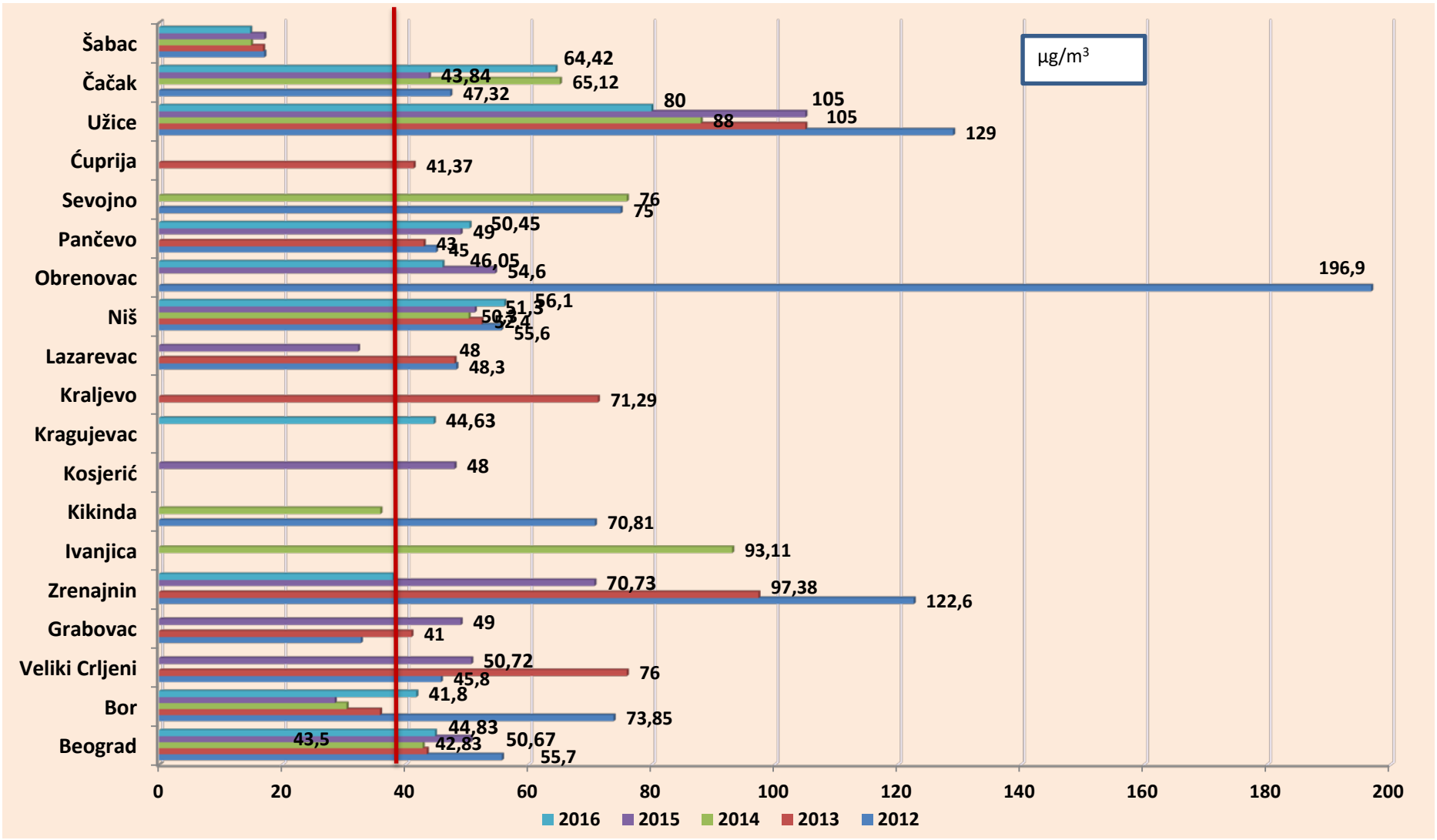
Mining-smelting hot spots located at western and eastern border-line;
West (River Drina, natural boarder with B&H):
-Zajača (Sb, Pb) tailing dam
-Krupanj, Stolice (Kostajnik) (Sb) closed, tailing dam – cracked
East (Romania/Bulgaria):
-**Bor**,Majdanpek,Cerovo
- Potential transboundary effect

Coal Mining & Coal-burning power plants (lignite):
Central part of the country, close to Belgrade;
- **Obrenovac**: 2 power plants
- **Grabovac:** PP ash landfill
- **Kolubara**: mine & power plant
- **Kostolac:** mine & power plant

Oil refinery & Petrochemical complex: Pančevo, Novi Sad

PM_{10} concentrations above ALV of 40.00 µg/m³



Irregular monitoring of heavy metals in PM10 at ICSs

- Bor (RTB): Pb, Cd, As, Ni 

- Kosjerić (cement): Pb, Cd, As, Ni 

- Pančevo (petrochemical): Pb, Cd, As, N 

- Sevojno (Zn, Al milling,smelting): Pb, Cd, As, 

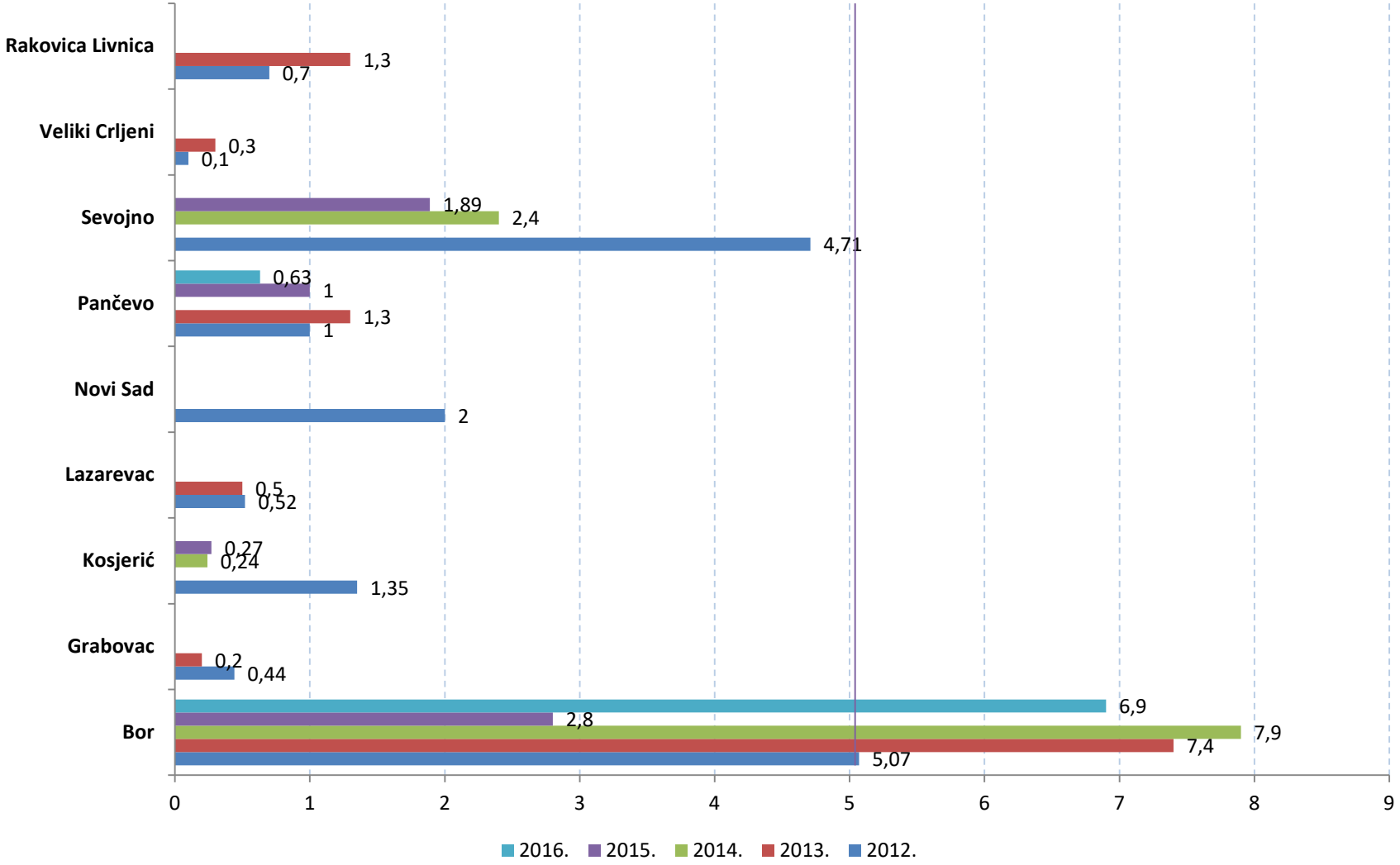
- Grabovac: Pb, Cd, As, Ni 

- Lazarevac: Pb, Cd, As, Ni 

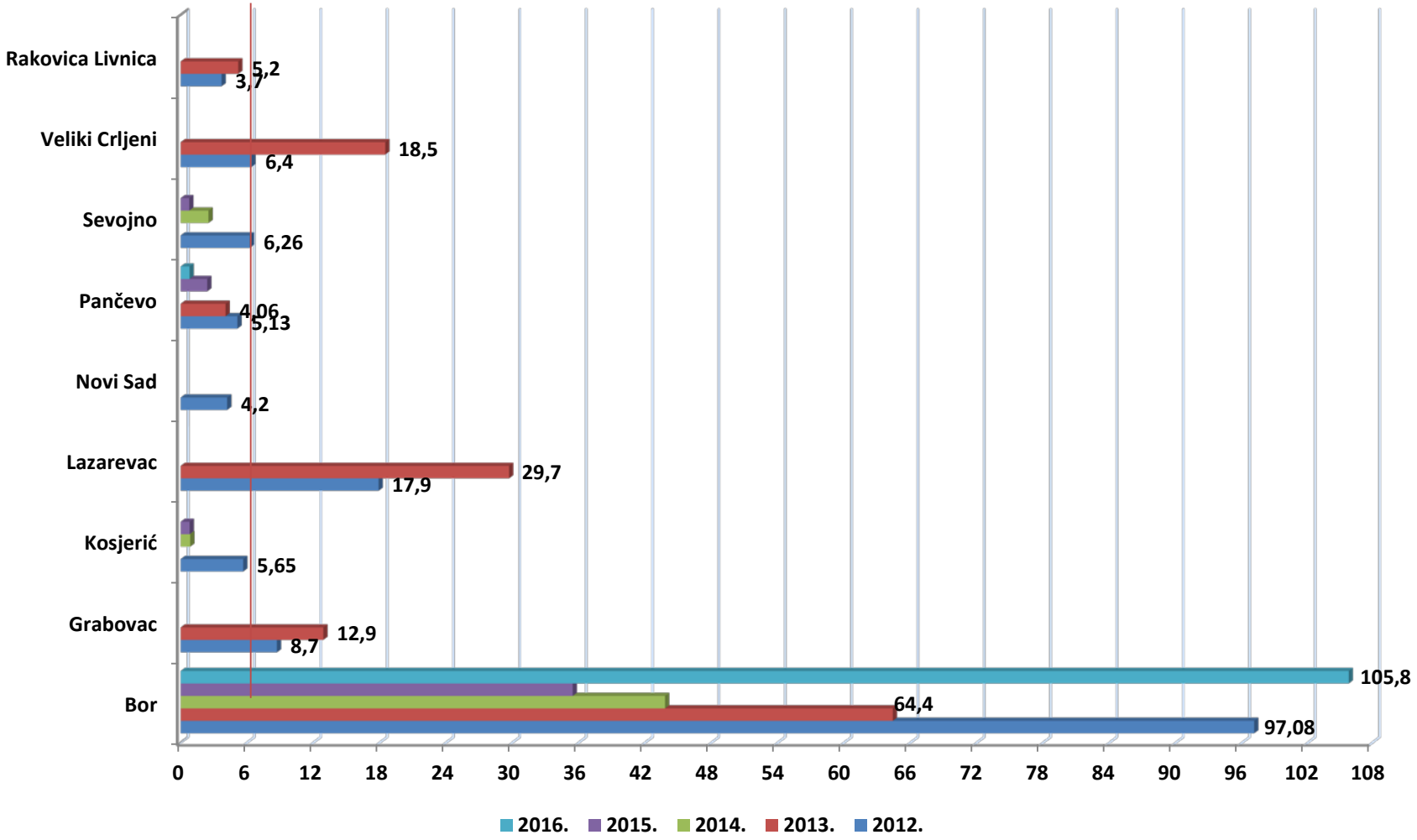
- Veliki Crljeni: Pb, Cd, As, Ni 

- Rakovica milling plant: Pb, Cd, 

Cd in PM_{10} (ng/m^3)



Arsenic in PM_{10} (ng/m^3)



Individual cases of HBM in Serbia

- Jovanovic D., Jakovljevic B., et al. **Arsenic** Occurrence in drinking water supply systems in ten municipalities in Vojvodina Region, Serbia; Environmental Research, 111 (2011): 315-318
- Jovanovic D., Paunovic K., et al. Association of **arsenic** in drinking water and the occurrence of Type 2 diabetes and acute coronary syndrome, data from Zrenjanin municipality, Serbia (Conference paper, 2016)
- Matic B., Jovanovic D.; Role of HBM in Managing Contaminated Sites: Exposure to **Lead** close to Antimony and Lead Mining and Metal-processing Complex in Serbia (conference paper, 2018)
- Matic B., Dejanovic S., Djonovic N.; **Blood lead levels** in children living close to the antimony and lead mining-milling-smelting complex in Serbia DOU: 105937/TEHNIKA 1803436M
- Matic B., Gojkovic M., Separovic N.; Influence of **lead in suspended particles** on blood lead levels in children living in the vicinity of a secondary lead smelter (conference paper, 2007)
- Tasić V, Kovačević R, Apostolovski Trujić T, Matić B, Cocić M, Steharnik M; The **content of As and heavy metals in TSP and PM10** near copper smelter in Bor, Serbia. Water Air Soil Pollut (2017) 228:230 DOI 10.1007/s11270-017-3393-6

Activities in 2018 approved by the MoH

- National Portfolio of Actions in Environmental Health (Ostrava Declaration, WHO commitments)
- Roadmap for sound management of contaminated sites (OD)
- Project: *Strengthening Serbian national capacities and inter-sectorial synergies for safe management of contaminated sites and related hazardous substances to prevent negative impact on human health and the environment (supported by UNEP/WHO/SAICM)*

Strengthening Serbian national capacities and inter-sectorial synergies for **safe management** of **contaminated sites** and related hazardous substances to prevent negative impact on human **health** and the **environment**

Project No.: QSPTF/13/13/GOV/19

ROADMAP

Strengthening Serbian national capacities and inter-sectorial synergies for safe management of contaminated sites and related hazardous substances to prevent negative impact on human health and the environment

Project No.: QSPTF/13/13/GOV/19

Strategic Approach to International Chemicals Management

Final December 2018

GAP ANALYSIS REPORT

Strengthening Serbian national capacities and inter-sectorial synergies for safe management of contaminated sites and related hazardous substances to prevent negative impact on human health and the environment

Project No.: QSPTF/13/13/GOV/19

Strategic Approach to International Chemicals Management

Background

Industrially contaminated sites (ICSs) are of high concern from a public health perspective, due to the presence of hazardous contaminants and their potential health effects on local populations. About 5.7 CSs per 10,000 citizens has been estimated in Europe. Around CSs similar pattern of contaminants are measured in soil, sludge, sediment, and ground and surface water.

The health dimension

The health impact (HI) of some ICSs has been ascertained and can be substantial, especially in vulnerable subgroups like children. However, the overall HI of ICSs in Europe is still unknown. Characterizing the HI of ICSs is very challenging:

- Multiple sources and heterogeneous hazards (soil, air, water and food chain)
- Complex exposure scenarios
- Multiple aetiology of most diseases
- Complexity of the socioeconomic context, including issues of environmental justice and inequalities

"Contaminated sites" are one of the complex factors defined by the Declaration of 6th Ministerial Conference on Environment and Health led by WHO (World Health Organization). Work in the project is also aligned with the Sustainable Development Goals of the United Nations.

SEPA Inventory of ICSs

Project justification:

In the frame of the project the national framework for sound management of contaminated sites to eliminate/minimize and prevent risks for human health and environment will be developed, based on multi-sectoral and multi-stakeholders approach, in order to improve the health of the population in the Republic of Serbia by prevention of negative impacts of contaminated sites and related hazardous substances on health with the pilot project in Bor.

The main project objectives are:

- Ensuring multi-stakeholders and multi-ministerial cooperation and information dissemination and exchange;
- Identifying gaps in management of contaminated sites and policy to prevent new contaminated sites formation;
- Strengthening the legal basis for contaminated sites management;
- Awareness raising of contaminated sites risks and develop education program to reduce risks for exposed population;
- Developing national policy and technical framework for contaminated sites management (including institutional, methodological and human capacities, interagencies and inter-institutional cooperation and information exchange);
- Identifying priority actions in addressing contaminated sites at national and pilot regions scale for inclusion into national programme framework;
- Ensuring effectiveness of developed methodologies and national framework in a pilot study (field work);
- A project review and evaluation.

The main project outcome will be:

- Enhanced cooperation between authorized agencies and other stakeholders for contaminated sites management;
- Strengthened inter-agency information exchange;
- Empowered and actively involved local communities and general public in contaminated sites management;
- Minimized risks of hazardous chemicals for both population and environment at contaminated sites;
- Strengthened health sector involvement into chemicals management;
- Strengthened industry involvement into chemicals management;
- Strengthened national capacities and overall policy and technical support for contaminated sites management;
- Prevented new contaminated sites formation;
- Sharing of best experience and lessons learned with other countries;
- Developed methodology for assessment of the health risk of a population in zones close to contaminated sites.

The Project is funded by:

- UNEP, United Nation Environmental Programme and supported by:
- WHO, Regional Office for Europe
- COST Action IS 1408, Industrially Contaminated Sites and Health Networks

Key partners in the project

Inter-sectorial cooperation in the project is articulated in participation of the following institutions:

- Ministry of Health, Institute of Public Health of Serbia "Dr Milan Jovanović Batut"
- Ministry of Environment Protection
- Serbian Environment Protection Agency, SEPA
- Institute of Mining and Metallurgy Bor
- NGO Environmental Ambassadors for Sustainable Development

Work plan of the Project

The Project is articulated in interconnected groups of activities, characterized by a multidisciplinary and multinational participation.

- Systematization of existing environmental and health data for the town of Bor and surrounding municipalities
- Defining gaps in communication between the sectors in managing environment and health issues at ICSs, so far;
- Organizing stakeholders communication, enabling lively discussion of both national and local stakeholders, in order to bridge the existing gaps in interinstitutional cooperation in sound management of ICSs;

What can we do?

Procedures for the transfer of scientific findings into the policy making process will be proposed by the Project, that will ultimately provide the Government and local Authorities with guidance on how to contribute to effective communication with the local populations, media and other stakeholders.

Сврха и оправданост пројекта:

У оквиру пројекта биће развијен национални оквир за вальано управљање контаминираним локалитетима (КЛ), у циљу елиминације/минимизирања и спречавања ризика по здравље људи и животну средину, утемељено на мултисекторском приступу, а са укључивање битних заинтересованих страна, ради побољшања здравља становништва Републике Србије, спречавањем штетних утицаја загађених локалитета и средних опасних материја на здравље. Пилот пројекат биће спроведену Бору.

Кључни циљеви пројекта су:

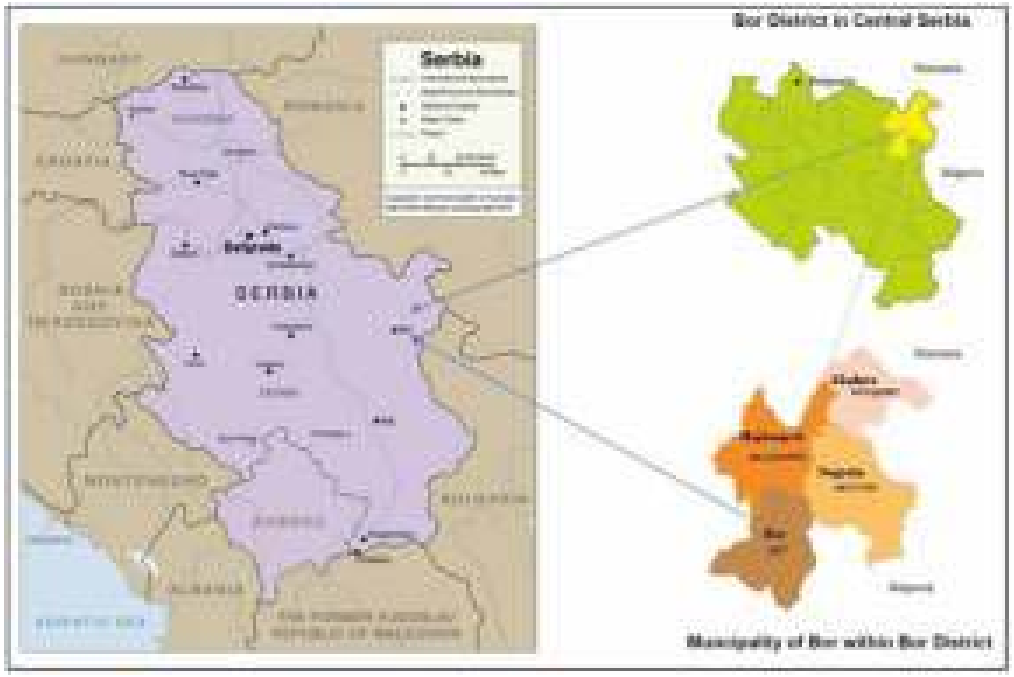
- обезбеђивање континуиране сарадње између министарстава и свих заинтересованих страна, као и дисеминацију података од значаја за тематику;
- идентификовање недостатака у управљању КЛ и политике за спречавање стварања нових КЛ;
- јачање легислативе чија имплементација омогућава и унапређује управљање КЛ;
- подизање свесности о ризицима од КЛ и развој едукативних програма са циљем смањења ризика за изложене популационе групе;
- дефинисање националне политике и техничког оквира за управљање КЛ (институционални, методолошки и кадровски капацитети/ресурси; сарадња између различитих агенција и институција у размену информација);
- идентификовање приоритетних активности за решавање проблема КЛ на националном нивоу и нивоу самог локалитета на којем се спроводе пилот активности, уз омогућавање инклузије постнупља у пилот-области у програмске оквире на националном нивоу;
- обезбедити ефективност примене дефинисане методологије и прихваћеног националног оквира у извођачу пилот-истраживања;

Strengthening Serbian national capacities and inter-sectorial synergies for **safe management** of **contaminated sites** and related hazardous substances to prevent negative impact on human **health** and the **environment**

Project No.: QSPTF/13/13/GOV/19

Strategic Approach to International Chemicals Management

Choice of a pilot contaminated site Bor – why?

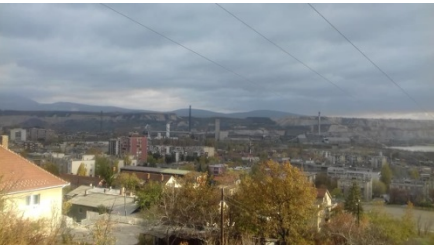


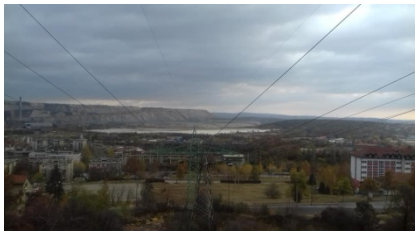
- Copper mining-smelting complex works in full capacity since 1903
- It is located in the town center!
- Availability of data much better than for the other CSs
- Outcome – The Bor study (epidemiological study: SENTIERI approach)

Future of the HBM in Serbia – fro AP to activities

What needs to be done: Act according to 2 mentioned documents (Roadmap & NPA):

- **Consensus** of stakeholders and decision-makers on the need, scope and type of HBM to be made
- **A set of legal acts** enabling the procedures of sampling human tissues for the purpose of HBM and defining a systemic approach to HBM
- **Capacity building**, primarily in the Network of IPHs and relevant stakeholders – it complies to the SAICM Nairobi strategy (2012) of involving health sector in sound management of chemicals in the means of exposure of vulnerable population groups to hazardous chemicals





THANKS FOR YOUR ATTENTION!