



MINISTERO DELL'AMBIENTE  
E DELLA TUTELA DEL TERRITORIO E DEL MARE



Republic of Serbia  
Ministry of Environmental Protection  
ENVIRONMENTAL PROTECTION AGENCY



ISPRA  
Istituto Superiore per la Protezione  
e la Ricerca Ambientale



## Assistance to the Republic of Serbia in the Implementation of MEAs and EU obligations through Improvement of Pollution Monitoring of Soil Quality at Industrial Sites

Global Symposium on Soil Pollution | 3 May 2018 | FAO - Rome, Italy

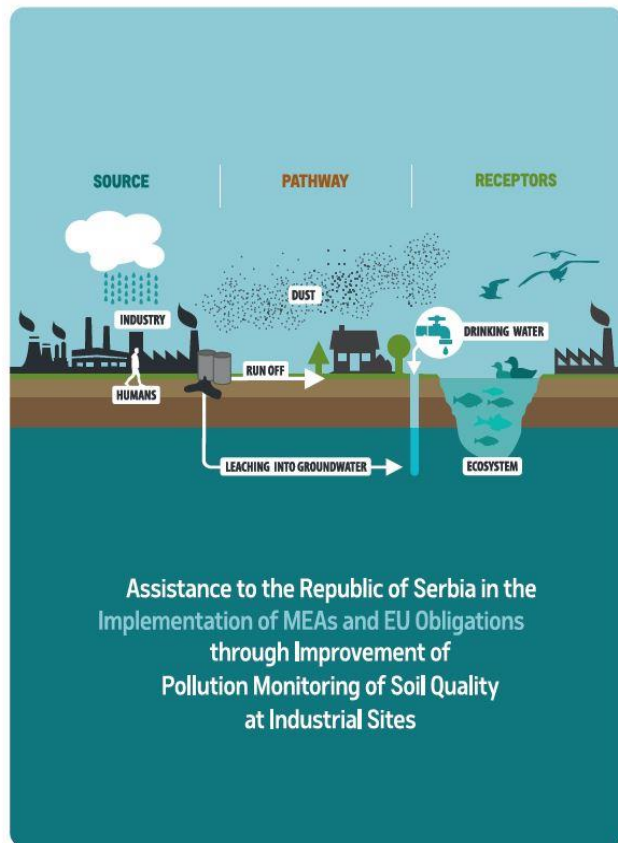
Filippo Montalbetti, Dragana Vidojevic, Marco Falconi

# UN Environment / GEF Umbrella Project

## *Enhanced Cross-sectoral Land Management through Land Use Pressure Reduction and Planning*

- Project Duration: October 2015 – October 2018 (36 months)
  - Project budget (GEF grant): 661,644 USD
  - Executed by UN Environment Vienna Programme Office in close cooperation with Ministry of Environmental Protection and Serbian Environmental Protection Agency
- The project aims at providing lacking methodologies, knowledge and coordination mechanisms for sustainable and integrated management of soil as a natural resource.

# Assistance to the Republic of Serbia in the Implementation of MEAs and EU Obligations



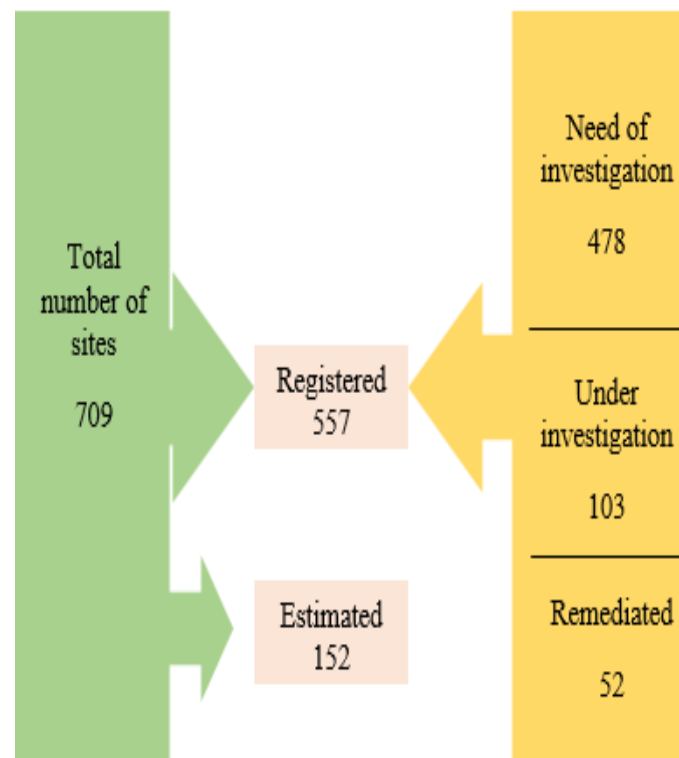
- Project co-financing of 570,000 EUR supported by the Italian Ministry of Environment, Land and Sea
- Capacity building component in cooperation with ISPRA, INAIL, ISS and ENEA
- Joint field visits to industrial contaminated sites in Serbia and Italy
- Technical assistance to SEPA in the development of Characterization plans
- Procurement activities (PPEs, laboratory equipment)

# Land Resources in Legislative Context

- The Law on Environmental Protection;
- The Law on Soil Protection (2015);
- National Program of Environmental Protection;
- The National Strategy of Sustainable Development of the Republic of Serbia;
- The Regulation on the Program for Systematic Monitoring of the Soil quality, Indicators for evaluation of soil degradation and Methodology for preparation of remediation program;
- The Regulation which establishes criteria for the assessment of the status of highly threatened environment, the status of threatened environment and establishes criteria for the identification of restoration and remediation priorities;
- Draft by-law for reporting - *Rulebook on the content and manner of keeping a Cadaster of Contaminated Sites, as well as type, content and forms, manner and deadlines for delivering the data.*

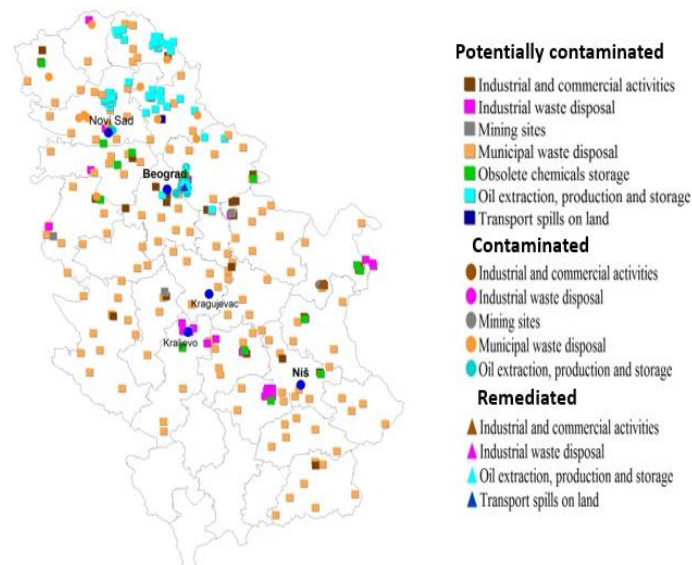
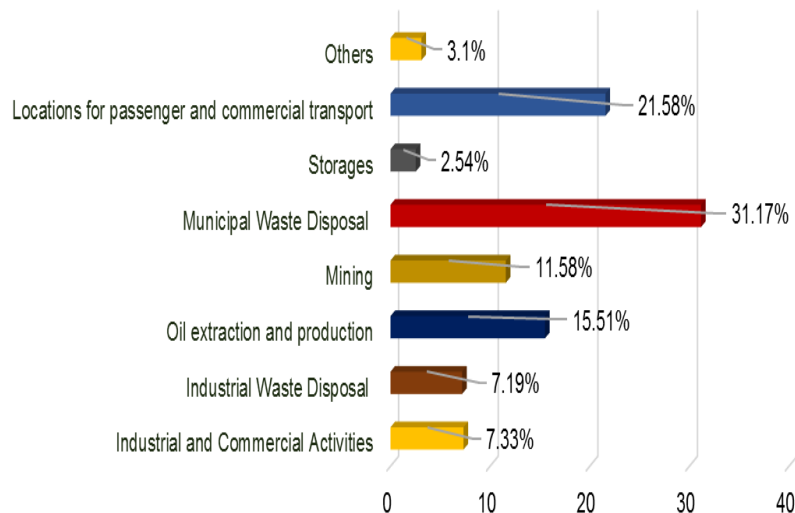
# Cadaster of contaminated sites

- In the territory of the Republic of Serbia, **709** potentially contaminated and contaminated sites were identified and recorded in the Cadaster, of which **557** sites are registered and **152** are estimated.
- Out of 709 sites, **478** are in need of investigation or still to be investigated and **103** are currently under investigation.
- **41** sites are in the process of rehabilitation, rehabilitation and remediation (re-cultivation) are completed on **52** sites where after-care measures are currently being applied.
- Sites such as former military sites, petrol and filling stations, dry cleaners, waste water treatment installations and pipelines for the transport of dangerous substances are not included in Cadaster.



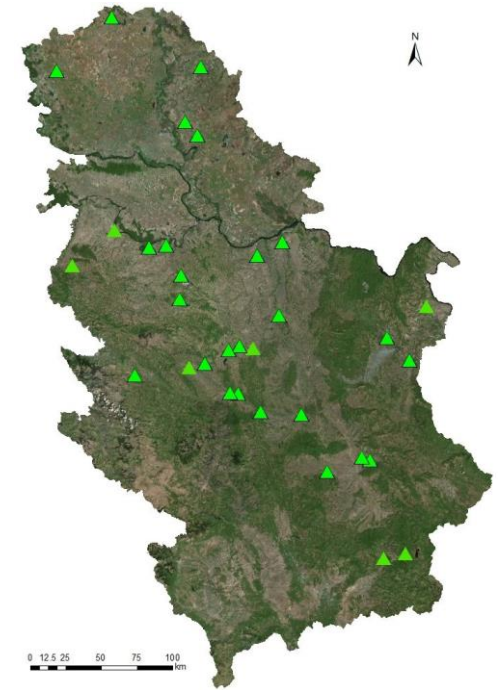
# Cadaster of contaminated sites

→ The largest share in the total number of sites have municipal waste landfills with 31.17%. (2016)



# SEPA - Recent activities in upgrading of Cadaster and management of contaminated sites

- Field missions and soil sampling in 37 industrial priority sites in 2016-2017 with the purpose to: confirm status of the sites, identify receptors of pollution and potential exposure routes, and prepare and elaborate sampling programs.
- Application of Preliminary Risk Assessment Model for the identification and assessment of problem areas for Soil contamination in Europe - PRA.MS
- SEPA National Laboratory increase capacity for Soil Sampling and Soil analysis.
- Development of Characterisation Plans for abandoned chemical industries in Šabac and Loznica.
- Development of the Contaminated Sites module – an upgrade to SEPA's Environmental Information System.



Industrial contaminated priority sites

# Šabac – Main sources

- Landfill of jarosite waste (estimated 330,000 t);
- Zinc sulfate ( $\text{ZnSO}_4$ ), 4 t stored in factory facilities;
- Pyralene waste, large amount stored in factory facilities;
- Pb/Ag precipitate





# Šabac (33.000 m<sup>2</sup>)

## Characterization Plan in a nutshell

- Geophysical survey
- 18 borings
- 6 groundwater monitoring wells
- Technical specification for drilling and sampling
- 54 soil samples and 6 GW
- Waste sampling
- QA/QC procedure



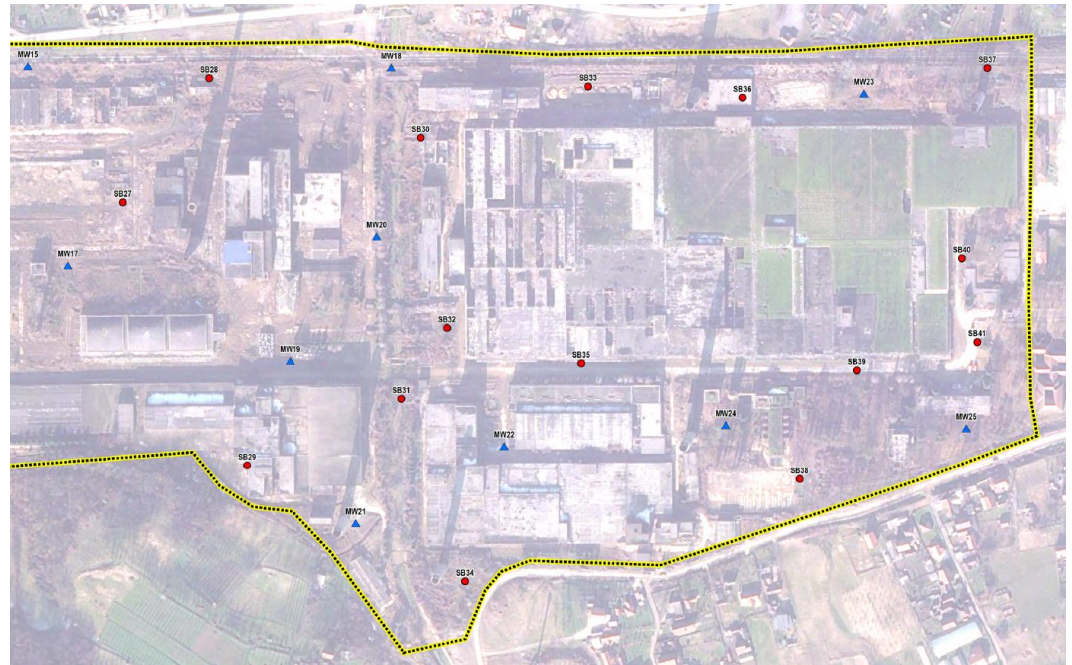
# Loznica – Main sources

- Carbon disulfide (60 tons)
- Black liquor (600 m<sup>3</sup>)
- Furfural C<sub>5</sub>H<sub>4</sub>O<sub>2</sub> (200 tons)
- Waste fuel oil, 20 tons
- Asbestos



# Loznica (660.000 m<sup>2</sup>) Characterization Plan in a nutshell

- Geophysical survey
- **66** borings
- **25** groundwater monitoring wells
- Technical specification for drilling and sampling
- 198 soil samples and 25 GW
- Waste sampling
- QA/QC procedure



Legend

Proposed sampling

- Soil boring
- ▲ Soil boring - Piezometer
- Zorka - Obojena Metalurgija site



<http://www.rainews.it/dl/rainews/media/ContentItem-2825e291-c75c-48af-90fa-2865ae99a5c9.html>

# Conclusions

- The final version of two characterization plans will be delivered in **mid 2018**
- Capacity building component is of vital importance in the frame of this project
- UN Environment, with the support of IMELS and GEF, is supporting several countries in the Western Balkans through **concrete projects** in the field of environmental protection and capacity building
- For ISPRA, this capacity building exercise is extremely relevant: **supporting neighbor countries** to face problems that Italy has been dealing with since 20 years



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Thank you  
Хвала  
Grazie

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