

# TEMPLATE

## Output factsheet: Innovative BMTs tools

Version 1

Project index number and acronym	CE32 - AMIIGA
Lead partner	Central Mining Institute (Główny Instytut Górnictwa)
Output number and title	O.T1.2 - Innovative tools CSIA and BMTs development for GW pollution assessment and remediation
Responsible partner (PP name and number)	PP5 - Technical University of Liberec (TUL)
Project website	<a href="http://www.interreg-central.eu/Content.Node/AMIIGA.html">http://www.interreg-central.eu/Content.Node/AMIIGA.html</a>
Delivery date	09.2018

### Summary description of the key features of the tool (developed and/or implemented)

Biological molecular tools (BMT) can serve for evaluation of the capability of indigenous microbial consortia to degrade certain contaminants in situ. Moreover, BMT provide evidence about the progress of supported biological degradation or can describe impact of particular remediation methods on indigenous microorganisms over different remediation phases. Real-time PCR analyses are routinely used to detect specific bacteria or functional genes from soil and water samples. In order to characterize composition of the whole microbial consortia present at polluted sites, next generation sequencing is used. These two approaches were used for comprehensive characterization of the biodegradation potential and progress.

### NUTS region(s) where the tool has been developed and/or implemented (relevant NUTS level)

The BMT analysis were conducted in NUTS 3 - region CZ051 - city Liberec.  
 PL: City of Jaworzno, PL22  
 DE: Stuttgart DE11  
 IT: Parma Municipality ITH5  
 SI: Geological Survey of Slovenia SI02

### Expected impact and benefits of the tool for the concerned territories and target groups

Main goal of the BMT analysis implementation was to understand the biological degradation processes and remediation effort in FUA. Particular objectives were as follows: i) to find out the microbial capability at the polluted locality to degrade certain contaminants, ii) to determine the progress of biological degradation after substrate addition or impact of the selected remediation methods on indigenous microflora and iii) to determine the composition of the indigenous microflora on contaminated site and how is the composition changing after treatment. These objectives were tested on all AMIGA localities: Novy Bydzov, Jaworzno, Stuttgart, Parma and Ljubljana based on the type of contamination and planned remediation treatment.

### Sustainability of the tool and its transferability to other territories and stakeholders

BMT is a very useful and progressive approach for evaluation of ongoing biodegradation processes at differently contaminated sites. BMT could be applied at almost all territories/localities with groundwater or soil pollution suitable for bioremediation.

All BMT analyses were presented and discussed with respective project partners during several Project Partners Meetings. Moreover, a BMTs Technical Protocol (D.T1.3.4) and a BMTs Analysis Report (D.T1.3.2) were reported and shared with all participants (<https://drive.google.com/drive/folders/0B1ady7gFIJszV0oyajZtei1Ba28>).

### Lessons learned from the development/implementation process of the tool and added value of transnational cooperation

First of all, the BMT techniques available at TUL were explained and discussed during Project Partners Meetings and Activity A.T1.5 (Training and Internship). This part included whole BMT procedure from specific water or soil sampling for DNA isolation, followed by qPCR and/or sequencing, to the final data evaluation in order to be understandable and applicable for the project partners. Moreover, different BMT approaches were compared across all project localities reflecting specific needs of the stakeholders and advantages and disadvantages were also presented. All of these activities were summarized and reported in deliverables concerning WP T1 and WP T2.

### References to relevant deliverables and web-links If applicable, pictures or images to be provided as annex

D.T1.3.2 Report on BMTs analysis from feasibility studies and remediation pilot actions  
D.T1.3.4 Final version of the protocol: finalization, revision and update of the previous draft  
D.T1.4.2 Guideline for tools selection for GW pollution assessment and remediation (draft)  
D.T1.5.2 1 training & 1 internship among all PPs for innovative BMTs tools & guideline development & implement  
<https://www.interreg-central.eu/Content.Node/D.T1.4.3-final-version-guidelines---ENG-1.pdf>