Remediation of soil contaminated with toxic metals, metalloids and organic pollutants

The objective of this project is to demonstrate the feasibility and sustainability of novel process for simultaneous removal of toxic metalloids As and Sb and toxic metals from contaminated soil. It is jet another objective to investigate the possibility to remove hazardous organic pollutants from contaminated soil adjacent with toxic metalloids and metals.

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The following hypothesis are pertained to this project:
H1. Novel soil washing process for simultaneous removal of toxic metalloids and metals from contaminated soil is scalable.
H2. The addition of materials with high cation-exchange capacity into the soil slurry phase prevents accumulation of excess Na in the process solutions from decomposition of Na-dithionite and from addition of Na-EDTA.
H3. The soil remediated by novel washing process is functional, supports plant growth and has low secondary emissions of residual toxic metalloids and metals.
H4. The novel soil washing process is socially acceptable.
H5. Novel soil washing process, alongside the recycle of EDTA known from ReSoil, enables recovery of Ca-oxalate, metalloids and metals, to reduce the amount of soil waste in circular economy.
H6. In novel soil washing process the Ca surplus in CaO treated waste washing solution enable aggregation of micelles and removal of anionic and sorbitan-based non-ionic surfactants enriched with lipophilic organic pollutants from said solution.

These hypotheses will be tested against results obtained from experiments described in Work packages (**WP**). In **WP1** the scalability of novel process (**H1**) and the innovative method to prevent the accumulation of excess Na in process solutions (**H2**) will be addressed. In **WP2** the novel soil washing process will be efficiency-tested, functionality and safety of remediated soil (**H3**), and process social acceptance (**H4**) will be addressed. The potential to reclaim valuable materials (**H5**) from solid wastes of the novel process will be examined in **WP3.** The possibility of simultaneous removal of organic pollutants and toxic elements from contaminated soil (**H6**) will also be addressed in **WP3**.