

## **Practical use of social and economic indicators for the selection of sustainable site remediation options**

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In recent years, the integration of the principles sustainability in the selection of site remediation alternatives has become an important issue. Most attention was initially paid to so-called 'green indicators' for the measurement of the wider environmental impact of soil remediation alternatives, as social and economic indicators are less commonly or only partly addressed. In the present study, 8 social and economic indicators, drawn up by the Sustainable Remediation Forum (SuRF), were evaluated against the soil remediation policies and practices in the US, the UK, the Netherlands and Flanders (Belgium). Besides investigating the extent of integration of social and economic aspects in the evaluation and selection of soil remediation alternatives, available decision support tools (DST) were also critically screened and evaluated with respect to the inclusion of social and economic aspects represented by the SuRF indicators.

Most of these DST emphasize the environmental and health impact of the site remediation processes (i.e. primary and secondary impacts), whereas the evaluation of less tangible social and economic aspects are not or only briefly addressed. With respect to the 'economic indicators', many tools limit themselves to direct economic costs, while a few tools also consider indirect economic costs (e.g. financing debt) and benefits (e.g. increase in nearby property value). Moreover, non-monetary benefits (e.g. restoration of land for public use) are often neglected, whereas some investigations show that they are essential for a more balanced decision making. Particular attention went to the analysis of the methods that can be used to include the benefits of soil remediation projects in the decision process, both in a qualitative and quantitative way.

In daily practice, primary and secondary impacts of soil remediation projects are accounted for because legal notices force the project managers to take measures protect human and environmental health during site remediation. In the 4 investigated countries, an environmental impact assessment and, safety protocols are included in a standard soil remediation procedure. The cost of the soil remediation project is also a determining parameter in the planning phase of the remediation. The inclusion of indirect costs is often very limited, mainly restricted to the cost of potential damage or the interruption of business activities. Moreover, in none of the four investigated countries/regions, non-monetary benefits are (fully) taken into account when site remediation options are evaluated, whereas these non-monetary benefits could substantially influences choices made with respect to site remediation and redevelopment.