Decision Support Tool

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Service

The **Decision Support Tool (DST)** can be used to determine whether a treatment technology (in total **24 technologies** including the **four EiCLaR technologies** (ENB, MBR, BER, EPR)) is a potential method of choice to remediate a given contaminated site.

It is a **simple online resource** to identify likely fitness for purpose for their site characteristics, particularly for new users and smaller organisations.

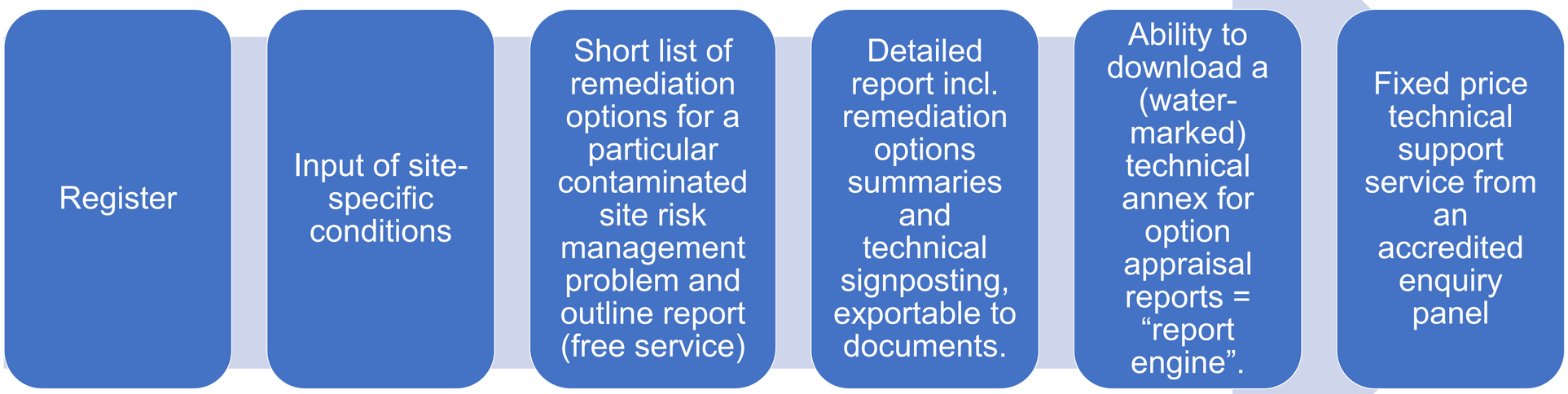
The tool aims at users and organisations with a limited remediation know-how (for example smaller organisations or those for whom contaminated land management is a problem and not a business).

It is set up in a **comprehensible and user-friendly** way to provide low-barrier access to understanding operational performance in real-world applications.

It supports this service with **unique remediation option appraisal engine and support for document drafting.**

Work Flow

- Fill in values of several **input parameters** (e.g. physical, hydrogeological and hydrochemical) summarising conditions at the site of investigation.
- Parameter values are **compared with "Operating Window"** data which list optimal conditions for technology deployment.
- Determine a **suitability score** using Fuzzy Logic
- Provide an **indication** about whether the application of a technology is promising for the given site.
- **Rank the technologies** by their estimated degree of suitability.



Fuzzy Logic System

- **Rule Table**
  - Suitability statement for each technology and parameter
- **Membership Functions**
  - Trapezoidal functions
  - Function value defines rule weight at given parameter value
- **Score Definitions**
  - Five suitability statements are available for rules
  - Each statement is translated to a numeric score

Statement	Meaning: „Under this parameter state, the technology…	Numeric Score
not suitable	…does not work at all."	−∞
poor	…works in principle, but not very well."	0
potentially suitable	…might work (suboptimally)."	50
suitable	…works perfectly."	100
unknown	…performance is not known."	NaN

Figure 2: score definition

		water temperature						pH				
		very cold	cold	mild	warm	very warm	hot	very acidic	acidic	slightly acidic	neutral	slightly
3	Electro-Nano-Bioremediation	suitable	suitable	suitable	suitable	suitable	suitable	not suitable	poor	potentially suitable	suitable	suita
4	Bioaugmentation	poor	poor	potentially suitable	suitable	suitable	potentially suitable	not suitable	potentially suitable	suitable	suitable	suita
5	Bioelectrochemical Remediation	poor	poor	potentially suitable	suitable	suitable	suitable	not suitable	potentially suitable	suitable	suitable	suita
6	Enhanced Phytoremediation	suitable	suitable	suitable	suitable	suitable	suitable	poor	potentially suitable	suitable	suitable	suita

Figure 1: DST rule table

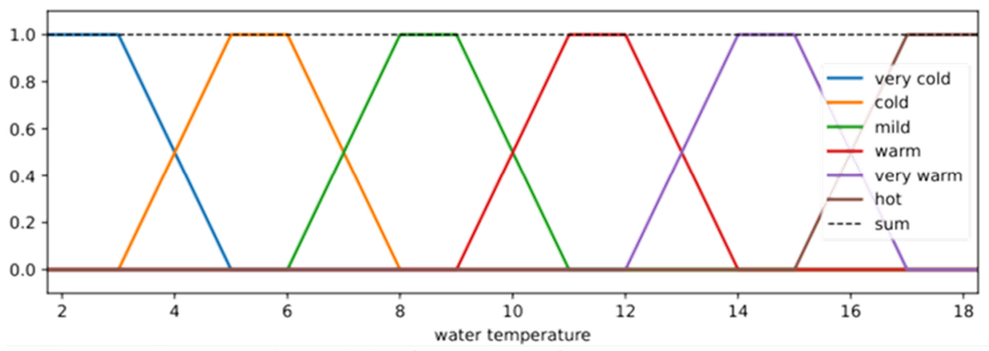


Figure 3: membership function for temperature

Set Up

- **Web interface**
  - free to use after registration
  - users will be able to save, return and modify their technical input
  - Custom downloadable PDFs (commercial)
- **Extensible**
  - Extensible for both technologies and parameters

Try it

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