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Närings-, trafik- och miljöcentralen
Centre for Economic Development, Transport and the Environment



Ympäristöministeriö
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Ministry of the Environment



S Y K E



Finding ways to implement sustainable remediation through procurement

RemTech Europe
19.-21.9.2018, Ferrara, Italy

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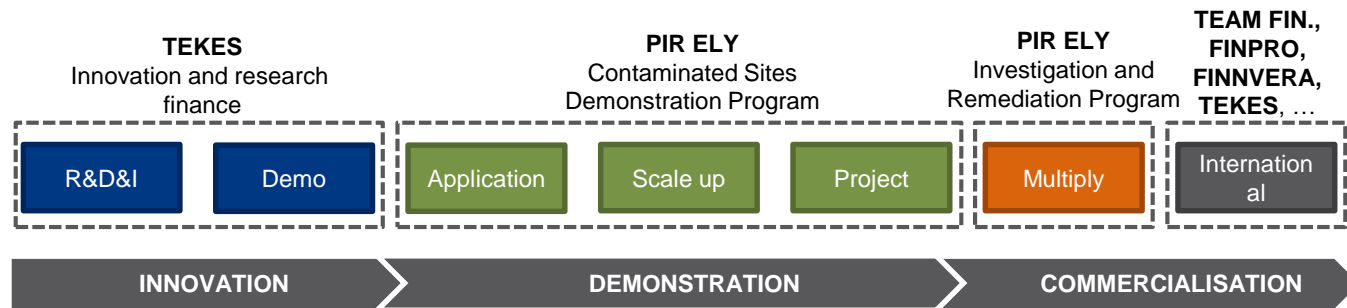
Contaminated Sites Demonstration Program

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Contaminated Sites Demonstration Program

- Contaminated Sites Demonstration Program forms a part of the National Risk Management Strategy for Contaminated Land and is implemented as part of the government strategic reform projects in “Circular Economy and Clean Solutions”.
- Objective of the Contaminated Sites Demonstration Program is to advocate sustainable contaminated land risk management and remediation practices and processes, advance cleantech entrepreneurship and international co-operation.
- The program is coordinated by the Ministry of the Environment and executed by the Centre for Economic Development, Transport and the Environment





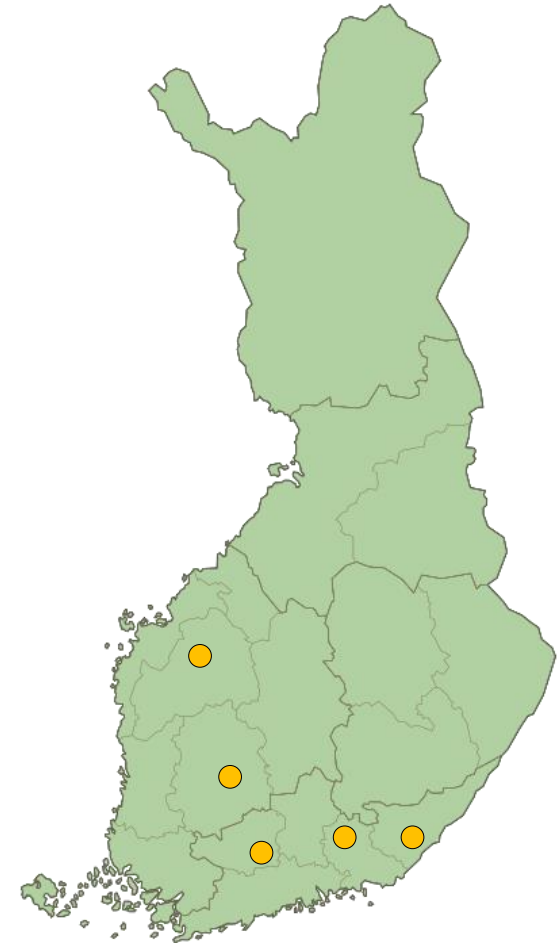
National Pilot Projects for sustainable CLRM

- National pilot projects are executed by the CSDP.
- Focus of the pilot projects is on increasing sustainable RM and remediation
- Pilot projects are implemented on “orphan” sites
- Need to remediate has been risk-based evaluated.
- The primary goal of the projects is to:
 - reduce environmental and health risks from cont. soil and GW
- The secondary goals of the projects are to:
 - Integrate sustainable remediation practices to state funded projects
 - showcase opportunities and benefits of state-of-the-art in situ remediation
 - develop and disperse know how on managing complex brownfield/ind. sites
 - enhance the national remediation market dynamics for futures benefit.



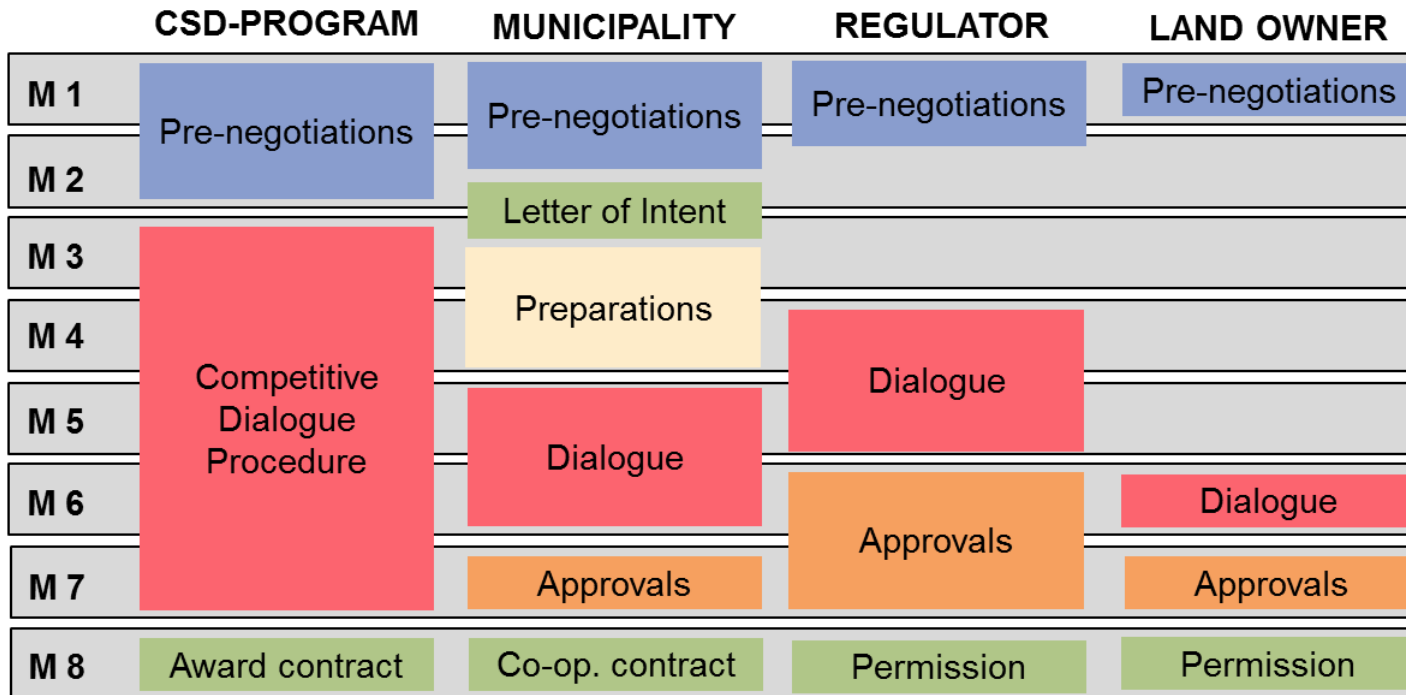
Background of the pilot sites

- Five industrial/brownfield sites, located at five different municipalities across Finland
- Contamination has, or is currently threatening to, cause closure of the municipal groundwater (GW) extraction for drinking water (DW) use.
- Many of the sites have been investigated for over a decade and some have prior remediation history.
- Overview of contamination at the sites
 - Main contaminants TCE and PCE (some VC)
 - Est. contaminant mass is 100 – 20 000 kg
 - Contamination mainly in saturated zone
 - Source concentration > mg/L,
 - GW/DW extraction POC > 10 ug/L (threshold)
 - Contamination lengths 0,5 – 2,0 km
 - Contamination depths 10 – 35 m bgl.
 - Heterogenic soils, bedrock depths 15 – 60 m bgl.



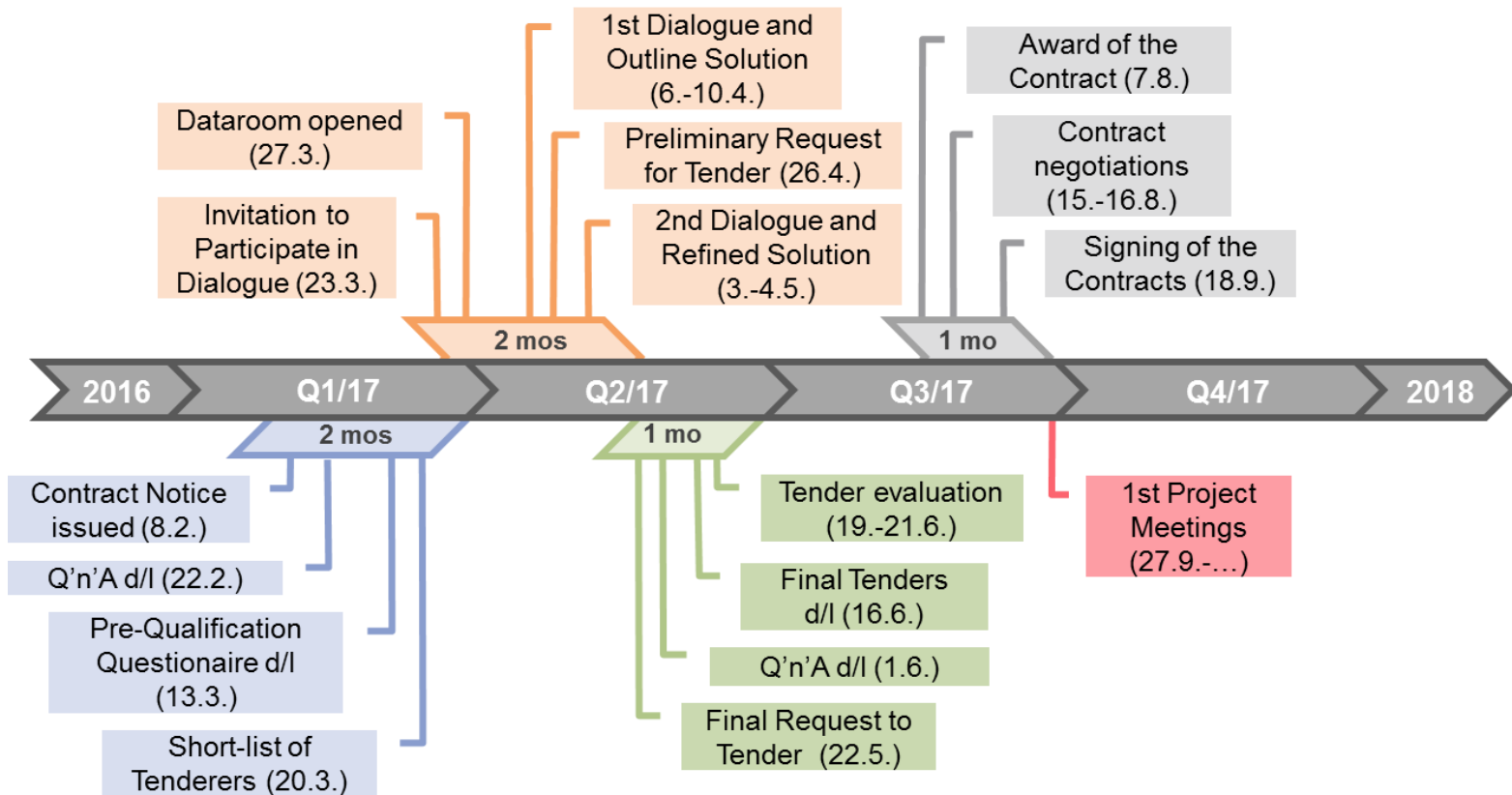


Overview of the project development process





Timeline of the competitive dialogue procurement





Pre-qualification criteria for tenderers

- Purpose of pre-qualification was to i) decrease the amount, and ii) select the most appropriate, tenderers for the procurement process.
- Pre-qualification was designed to give highest weighting to groups or networks of companies, having competencies in investigation, design and remediation.
- Criteria included:
 - 1) Financial capabilities (turnover, credit rating)
 - 2) Operational capabilities (personnel)
 - 3) Technical capabilities (references from last three (3) years with CHS, max. 3/cat.)
 - *Investigation and design*
 - *Biological remediation*
 - *Chemical remediation*
 - *Excavation and off-site*
 - *Other rem. methods*
- **Outcome:** short-list of three (3) best qualified tenderers invited to participate



1st round of procurement dialogue

- 1st dialogue round was organised as 1-to-1 meetings, to:
 - 1) Evaluate tenderers outline solution and technical feasibility
 - *Conceptual site model and the proposed outline solution (remediation strategy)*
 - *Principles of the remediation methods and related processes*
 - *Verification of the remediation results*
 - 2) Tenderers reduction targets for risks and contamination
 - 3) Work breakdown structure and estimated timeline
 - 4) Preliminary, non-binding cost estimate
 - 5) Additional data requirements for preparing the tender
- **Outcome:** technical feasibility and commercial availability of solutions



2nd round of procurement dialogue

- 2nd dialogue round was arranged as a workshop and as 1-to-1 meetings, to:
 - 1) Discuss and define environmental criteria for the works
 - *Remediation targets*
 - *Monitoring and reporting*
 - *QHSE control and preparedness planning*
 - 2) Discuss and define operational and technical criteria for the works
 - *Refined solution and technical design*
 - *Refined WBS and timeline*
 - *Site dependent social criteria*
 - 3) Discuss and define final request for tenders and contracts
 - *Outline for Final RfT*
 - *Partnership and pricing model*
 - *Contract award criteria and life-cycle costing*
- **Outcome:** environmental and social feasibility, final RfT and contract terms



Sustainability appraisal during the dialogues

- Step-wise, semi-quantitative approach was used for sustainability evaluation.
 - 1) Pairwise (matrix) comparison of technical and economic feasibility (ie.):
 - *Remediation strategy provides sufficient risk management*
 - *Remediation technology is suitable for CHS and for the site environment*
 - *Remediation strategy and technology are adaptable, if need be*
 - *There are sufficient references for the technology*
 - *Direct and indirect costs of implementation (CAPEX)*
 - *Life-cycle cost of operation and monitoring (OPEX, 5 years)*
 - 2) Comparing BATNEEC for social and environmental sustainability in a stakeholder dialogue (ie.):
 - *Remediation strategy and technology are safe for the environment and use*
 - *Distraction for neighborhood and habitants is minimal*
 - *Contamination is managed preferably in situ or on-site (minimal transport)*
 - *There are no additional risks for GW*
 - *Energy, waste and material consumption are minimal*
- **Outcome:** Selection of sustainable remediation strategy and technologies



Final request for tenders

- Final tenders were evaluated on the basis of:
 - A. Operations management and organisational quality **(10 %)**
 - *Governance and key personnel*
 - *Sub-contracting and partnerships*
 - *QHSE control*
 - *Reporting and communication*
 - B. Project plan and design quality **(40 %)**
 - *Investigation and design*
 - *Remediation*
 - *Monitoring and reporting*
 - *QHSE risk management*
 - C. Life-cycle costs **(50 %)**
 - *Investigation and design*
 - *Remediation and risk management*
 - *Monitoring and reporting*
 - *Extra works estimates*
- **Outcome:** economically most advantageous solution based on price/quality



Regulatory side of things: notifications and approvals

- Parallel to the procurement, an informal collaborative regulatory group was formed to facilitate the notification process for the pilot projects.
- Purpose of the regulatory group was to share information and views on:
 - Regulators role in an iterative “design-build” remediation process
 - Consistent notification and approval process (independent regional authorities).
 - Risk based remediation targets
 - Remediation strategies and technologies
 - Monitoring and verification of results
 - Health and environment impacts, and GW protection preparedness
- Notifications for contaminated land remediation were prepared based on the dialogue in the regulatory group.
- **Outcome:** Time and resource efficiency, quality of notifications and approvals



Lessons learned...

- **Competitive Dialogue Process** was shown effective in engaging with the market actors to investigate and develop innovative and sustainable solutions to problems where the client was only able to define the required outcome but not the solution space.
- **Integrating multiple stakeholders** within the procurement process was beneficial for defining technical, economic, environmental and social expectations for the remediation project. This also allowed to construct a shared baseline understanding and commitment between stakeholders with various backgrounds.
- **The planned timeline** was too short for carrying out the procurement. People change opinions as they assimilate new information, which led to the need to back-trace and redefine the process or the related documents. The critical pathway in the process left room for no errors, which then often led to hurry.
- **Appraising sustainability** continuously by a step wise, semi-quantitative process allowed for selecting and refining the proposed remediation methods to better suit the demands of the stakeholders and fulfill the requirements of the regulators. It also functioned as a simple communications tool during the procurement.



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