ISLANDR
for soil health

March, 2025

Newsletter

Dear readers,

Welcome to the March 2025 edition of the ISLANDR newsletter. We haven't been able to send an update for a while and this first newsletter for 2025 is quite long as it is an attempt to provide a progress update from last year. Future newsletters will be published on a biannual basis.

LGI Sustainable Innovation joined the team as communications partner in the 3rd quarter of 2024 and since then, have been working hard to create a new website and new social media channels on LinkedIn and X.

Please take the time to visit and subscribe to your preferred channel to join the discussion.

If you have any feedback about this newsletter or the other channels, we would love to hear it. Please get in touch via one of our platforms.

Kirsti Loukola-Ruskeeniemi Scientific Coordinator of the ISLANDR project

We have transitioned to new platforms to better serve our audience.

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New public deliverables & publications

Deliverables

- DEL3.1 Interim Sustainable and Risk Based Land Management (SRBLM) guidance
- DEL5.1 Barriers & solutions for reuse of contaminated land and soils
- DEL7.1 Multi-actor Communication Framework

Publications

The most recent peer reviewed journal paper was published in the Journal of Hazardous Materials. In this open access article we compare soil contamination in historical mining towns and cities in Europe with Daye in China and Tocopilla in Chile and propose a 'Soil Planning Area' regulation as a first step for the risk management of contaminated soil.

READ THIS ARTICLE

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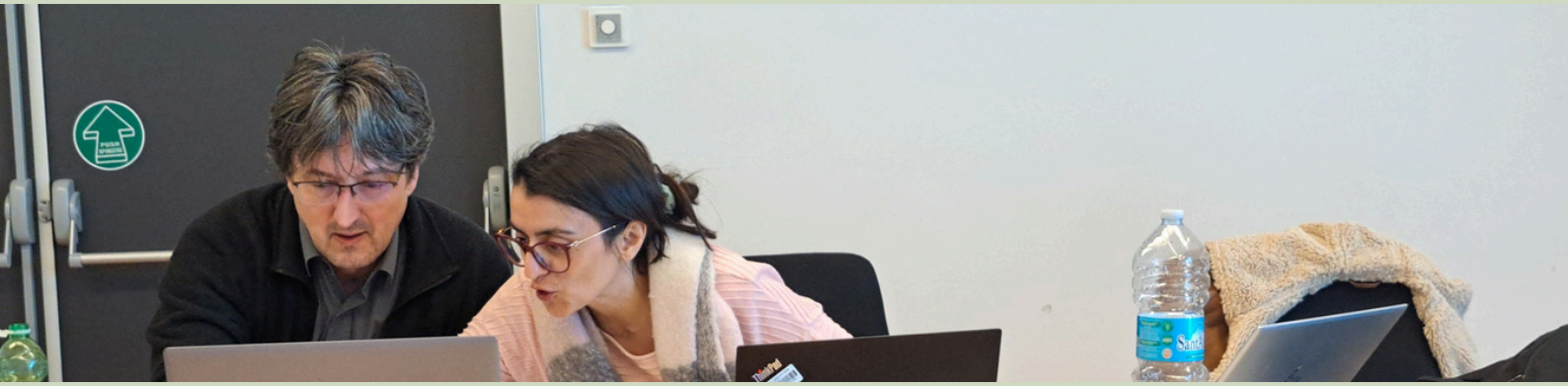
Project highlights

ISLANDR visited EU Soil Observatory (EUSO) and Joint Research Centre (JRC) in January 2025

ISLANDR experts visited EU Soil Observatory (EUSO) at the JRC premises in Ispra, Italy, during 23 – 24 January 2025.

Stephane Belbeze and Dominique Guyonnet from BRGM, France, in co-operation with Diana Vieira from EUSO used the LUCAS soil monitoring data on topsoil metal concentrations for testing the algorithm developed in ISLANDR.

Henna Jylhä from the Finnish Environment Institute, Emilia Kosonen, Kristiina Nuottimäki, Timo Tarvainen from the Geological Survey of Finland and Giulia Minolfi from GreenDecision, Venice, presented the preliminary results of the ISLANDR questionnaire on data sources for local and diffuse soil contamination in EU.



The algorithm is designed for interpolation of sparse, imprecise and clustered data and for detecting soil contamination anomalies. It represents an alternative to more classical interpolations methods that may have a smoothing effect on anomalies (e.g. kriging with variograms).

In addition, we discussed the ISLANDR Metadata Catalogue and its connection to the SoilWise project, urban soil sampling using the EuroGeoSurveys URGE protocol, and soil geochemical baseline calculation using the Finnish TAPIR web server as an example.

Finally, EUSO gave us feedback for developing our last work package 1 deliverable on “Roadmap to EUSO compatible data”.

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Metadata Catalogue of diffuse and local contamination

ISLANDR aims to build a comprehensive Metadata Catalogue of diffuse and local contamination data sources in Europe.

The Metadata Catalogue is already available for testing for partners and counts 60 entries from across all of Europe.

Contaminants of Emerging Concern (CEC)

ISLANDR has compiled a list of 900 CEC, relevant to soil environment. The 900 CECs were grouped into clusters according to their similar fate and transport properties.

ISLANDR has developed two methodologies for large scale risk assessment in parallel, one that can be used by experts and non-experts and the other one to value soil data. The project has also considered soil health risk concept in the risk assessment.

Wider gains & losses of soil decontamination and reuse of land

One of ISLANDR goals has been the mapping of the wider gains and losses of decontamination and reuse of land, linked to the economic valuation and uncertainty quantification of these wider gains.

Data from 75 studies are included in a basic database which summarises the information on costs and benefits related to site remediation and brownfield redevelopment. A draft template for developing financial models for brownfield development has been set up and the development of a practical method for value transfer to specific sites is underway.

ISLANDR has also mapped the wider values of brownfield remediation and redevelopment. This includes:

- Compiling methods for economic valuation of costs and benefits, to both the landowner and society,
- Developing a method for benefit transfer that may be used in a cost-benefit analysis.

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Solutions and tools to decontaminate and regenerate sites

ISLANDR has investigated environmental, technical, financial, social, legislative, and institutional barriers to propose solutions and tools that aim to decontaminate and regenerate sites, as well as reusing them. A consultation on maximising the reuse of excavated soils is now underway.

ISLANDR is linking the concept of soil health/functionality as an additional "receptor" to enable its better consideration in routine contaminated site risk assessment practice. More on this in our next issue!

Policy contributions

EU Soil Observatory (EUSO) standards:

ISLANDR has gathered an overview of the local and diffuse soil contamination data sources across Europe and developed a metadata catalogue for soil contamination data sources. In collaboration with Soil Mission project SoilWise and EUSO, the objective is to advance towards a shared vision of the metadata catalogue and its compliance with foreseen EUSO standards.

Strategies to deal with degraded soils in legislation and regulation:

Local communities are invited to participate in stakeholder events organized in the ISLANDR Test Areas (ITA) and to join interactive sessions where discussions between authorities, scientists and different stakeholders are generated.

ISLANDR Roadmap

A key outcome from ISLANDR is to provide an easy pathway for integrating its advancements in understanding soil health, expanded concepts of value and investability, circular economy linkages and low input remediation into the current state of practice .

The ISLANDR team are making a "road map" to help practitioners bring this knowledge into their regular practice in brownfields and contaminated sites management, linked to a series of detailed information "building blocks". The Roadmap will guide different kinds of user about how they can use this new knowledge (e.g. wider value & investment) over the phases of managing potentially contaminated land. We have variations of the Roadmap for several different 'journeys': for single sites (see figure below) or for diffuse contamination and for managing portfolios of sites. The Roadmap will be rigorously tested by users in the ISLANDR Test Areas (ITA).

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ITA highlights

A first version of the source-pathway-receptor framework for each combination of land use and contaminants in the ISLANDR Test Areas (ITAs), has been developed and is currently available in an Excel-based tool. This tool is functional for initial testing and risk assessment providing an adapted risk screening process that will guide ITAs in site evaluations.

Video demonstration

Outokumpu, Finland

An excursion and successful stakeholder event were organized in 2024, in the Outokumpu mining town in Finland in June. A Serious Game 'Let's renovate Outokumpu mining town' was developed.

In January 2025, a paper was published in the Journal of Hazardous Materials dealing with the risk management of contaminated soils at Outokumpu.

ISLANDR's consortium members in the Lake Sysmäjärvi in Outokumpu ITA area in Finland. The lake has been heavily affected by mine drainage but is also noted as a very valuable lake for birds.

Kolleberga, Sweden

A stakeholder workshop was organised at the Kolleberga former tree nursery in Ljungbyhed, South Sweden (ISLANDR ITA 2) in September 2024.

The participants discussed different future land use options at the site and the associated societal values of these land uses.

Toulouse, France

All available data will be applied to test an innovative regional risk assessment model.

Surface Soil Maps and Anomaly Maps have been produced for metal(oid)s and organic pollutants. The accuracy of these maps is currently being assessed on the basis of known and discovered contaminated areas.

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Larnaca, Cyprus

Work at the site of the former oil refinery is now in full progress. A detailed georadar-based survey has been carried out on the 15 hectare site, where dedicated software is used to map the plumes and hotspots of hydrocarbon pollution in 3D.

Profiles measured across the 15 hectare site. Some areas inaccessible due to ponds or building rubble.

Quad used to pull the georadar equipment across the oil refinery site.

The data from the survey will be used to select sites for groundwater monitoring boreholes, as well as for planning remediation activities. Soil analysis data will be superimposed on the georadar pollution anomalies to help quantify types and volumes of pollution.

Prishtina, Kosovo

In October, a delegation from the ISLANDR project visited Kosovo to hold a series of high-level meetings and conduct site visits in pursuit of advancing land remediation efforts.

The ISLANDR delegation in Kosovo ITA area hosted by Kosovo Energy Corporation (Korporata Energjetike e Kosovës – KEK) in October 2024. On the background is a coal mine operated by KEK.

The visit focused on introducing the ISLANDR project to key stakeholders:

- World Bank representative in Kosovo
- Ministry of Environment, Spatial Planning and Infrastructure (MESPI)
- Kosovo Energy Corporation (KEK)

Across all meetings, discussions revolved around four main topics:

- Introduction to ISLANDR Project
- Land Remediation Roadmap
- Future Stakeholder Engagement
- Status of Soil Health in Kosovo

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ITA highlights

Soesterberg, Netherlands

In January 2024 the interest of the Soesterberg stakeholders for the results of the ISLANDR project was further discussed.

Control tower Soesterberg - Source: USINE

Financed by the Dutch government the project management of the Soesterberg site have initiated a knowledge programme focussed on the remediation of the PFAS contamination on site. This knowledge programme will be cooperating with the ISLANDR partners on different topics.

The first activity was the testing of the ISLANDR Roadmap. In consultation with the Soesterberg management team, a programme was setup between September and November 2024 and a stakeholder group was selected.

This lead to a selection of stakeholders to be interviewed for testing of the ISLANDR Roadmap. The stakeholder group will be interviewed in February 2025. The first session for the testing of the ISLANDR roadmap is planned for March 2025.

Mazowieckie and Lubelskie, Poland

Fruit plantations are regularly treated with pesticides, including intensive use of glyphosate, and there are also soils with historical contamination with currently banned pesticides (e.g., DDT, Endosulfan). Hop fields are contaminated also with creosote.

This test area will be used to assess risks related to soil contamination, prioritise methods for improving soil health and contamination decomposition, assess barriers and financing models for improved soil management and decontamination, evaluate risk assessment and site prioritisation methods that can be used to improve soil health.

Events

Participations in upcoming events

ISLANDR will participate in several conferences in 2025, such as:

- GeoDays 2025, Oulu, Finland, 11−13 March, 2025
- OECD Conference of Mining Regions and Cities 2025, Rovaniemi, Finland 16 – 18 June 2025

In addition, ISLANDR will organize an interactive session in the AquaConSoil conference in Liège, Belgium (16-20th June 2025).

The title of the session is 'Contaminated soil data and predictive modelling of soil health and risks'.

The following EU projects in addition to ISLANDR will participate: ARAGORN, EDAPHOS, PHISHES, SOILPROM, and SOILWISE.

Participation in events in 2024

Collaboration with other Mission Soil projects, EUSO and COMMON FORUM has been active and the Consortium was present at various events:

- Data & Knowledge Management Cluster meeting in the Mission Soil initiative on 15 February 2024
- Thematic event on soil decontamination of the NATI00NS project online on 15 February 2024
- LOESS35 (Literacy boost through an Operational Educational Ecosystem of Societal actors on Soil health) “Projects2Projects” online workshop on 29 May 2024
- 7th International Symposium on Biosorption and Biodegradation/Bioremediation (BioBio 2024) on 16-20 June 2024
- Workshop on Soil Pollution and Remediation: Data and Knowledge Structuring, Harmonising and Sharing organised by Joint Research Centre on 24-25 July 2024 in Ispra, Italy
- Annual consortium meeting of the sister project EDAPHOS on 16-17 October 2024 in Thessaloniki, Greece
- European Raw Materials Clustering event on 16-17 October 2024, in Seville, Spain.