



Harnessing the benefits of the ISLANDR roadmap

Deliverable 6.2 Policy Paper -
Proposal of measures to promote
institutional adaptability

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Summary

This deliverable examines how the key output of the ISLANDR project, the ISLANDR roadmap, can serve sustainable risk-based management (SRBLM) of contaminated sites in different European settings. The document draws from qualitative data gathered in the ISLANDR test areas (ITAs). Analysis of this data is used to generate understanding of the institutional conditions shaping, and being shaped by, the use of the roadmap. The findings suggest that the roadmap can support SRBLM as a tool which helps structuring management processes and which provides guidance for knowledge production and policy operationalisation. However, the take-up and implementation of the roadmap may also face barriers that need to be addressed. The deliverable gives recommendations about the concrete measures which can help to harness the benefits of the roadmap in the fostering of soil health.

Keywords

Institutional conditions, ISLANDR roadmap, policy processes, regulation, SRBLM

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Glossary

Focus group	Orchestrated discussions of selected participants to obtain qualitative social scientific data (views, insights) about a specific topic
Institutions	Formal or informal rules, norms and organisational modes conditioning human action
Institutional adaptability	The capacity of new tools, regulations and practice to become reconciled with institutional conditions
Institutional ambiguity	A condition in which rules and the division of rights and responsibilities are unclear
Institutionalisation	Establishment of rules, norms and organisational structures to support governance and governing
ITA	ISLANDR test area
NGO	Non-governmental organisation
PFAS/AFFF	Per- and polyfluoroalkyl substances/ aqueous film forming foams
SRBLM	Sustainable risk-based land management
Site owner	Legal entity or person who owns or occupies the site, e.g. legal owner, operator, resident
Soil health	The physical, chemical and biological condition of soil, determining its capacity to function as a vital living system and to provide ecosystem services (Directive on Soil Monitoring and Resilience 2025/2360)

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Table of Contents

Harnessing the benefits of the ISLANDR roadmap.....	0
Document information	1
History	1
Summary.....	2
Keywords.....	2
Glossary.....	3
Table of Contents.....	4
1. Introduction	5
2. The practical value of the roadmap – findings from ISLANDR test areas (ITAs).....	7
2.1. Studying the institutional adaptability of the ISLANDR roadmap.....	7
2.2. Limited regulatory leeway as an institutional obstacle	8
2.3. Institutional ambiguities generating demand for the roadmap.....	9
2.3.1. The need for an integrative approach in Soesterberg, the Netherlands.....	9
2.3.2. Supporting institutionalisation of sustainable land management in Kosovo	11
2.4. In-between old and new management practices.....	13
3. Using the roadmap for policy support.....	15
4. Conclusions.....	18
5. Recommendations	19
Appendix I: Data and their analysis.....	21

1. Introduction

The key output of the ISLANDR project, the ISLANDR roadmap, is a decision-making tool designed to support users engaged in soil remediation and land redevelopment in improving soil health. The roadmap aims to support practitioners involved in remediation and redevelopment by leveraging ISLANDR outcomes to add value for site- or area-based management of contaminated land. It focuses on the nexus between soil health, spatial planning, low-input remediation and wider benefits to strengthen policy and investment cases for the sustainable, risk-based land management (SRBLM) of contaminated sites and diffuse contamination of soils. The roadmap describes the different steps of the risk reduction process and activities that should take place during each phase and provides building blocks that can support the conduction of those activities, such as prioritisation of sites, site investigation, risk assessment, risk management and investment decision-making and exploration of new and innovative remediation options. Depending on the management situation at hand, users can choose between different roadmap journeys. The journeys are designed to serve investigation in the conditions of a single site, diffuse contamination or portfolio of sites.

In this deliverable, we examine how the ISLANDR roadmap can serve SRBLM of contaminated sites in different European settings.¹ Furthermore, we ask how the use of the ISLANDR roadmap could be supported by evolving policies and regulations – and vice versa: how the roadmap can help European Union (EU) and national policies to achieve their aims.

The document draws from qualitative data gathered via focus groups, interviews and a workshop in the ISLANDR test areas (ITAs). Learning from institutional arrangements and practices allows us to identify supportive roles the roadmap can gain in different settings (*Section 2*). Although the ITAs necessarily act as mere examples of the diversity of European conditions, the data generated through engagement with regional and national practitioners such as authorities, site owners, consultants and NGO representatives, provide understanding of the types of practical challenges the actors face in their everyday work. These challenges may lower the likelihood of roadmap take-up, but it is also possible that the roadmap, if adopted, could help to tackle key management challenges.

The ISLANDR roadmap can help site-owners and other practitioners to perform sustainable and risk-based land management, but the roadmap can also serve the EU and other legislative bodies as they seek to increase regulatory uptake and efficiency. In turn, policy and regulatory changes may pave the way for roadmap take-up and its effective

¹ See [ISLANDR D3.1](#) for further information about sustainable risk-based land management (SRBLM)

implementation. However, at the same time special attention needs to be given to regulatory developments potentially complicating roadmap use. *Section 3* provides a summary of the policies and regulations which can support or be supported by the ISLANDR roadmap. In *Section 4* we draw conclusions of the lessons learned and in *Section 5* give recommendations about the measures needed to help the ISLANDR roadmap serve management and policymaking in an effective way.

Box 1.1: The ISLANDR Project (Information-based Strategies for Land Remediation) has 14 partners from around Europe and is funded by Horizon Europe (Grant agreement 101112889) and national contributions from the UK and Switzerland to a total of €6.9 million. ISLANDR aims to promote the delivery of Green Deal objectives, in particular achieving Zero Pollution by reducing soil pollution and enhancing restoration, and the adoption of the Soil Monitoring Law. ISLANDR provides a series of tools and methods to support: (1) the delineation of soil pollution sources, (2) the assessment of risks, (3) the implementation of sustainable and risk-based land management (SRBLM), (4) the inclusion of wider valuation approach in financial and investment cases, (5) closer integration of land contamination and spatial planning decision-making and (6) key policy relevant findings related to the Soil Strategy, proposed soil monitoring law and other areas of policy where soil is a crucial consideration.

Box 1.2 [ISLANDR D5.1](#) provides overview of barriers for the reuse of land and strategies for maximizing the reuse of excavated soils, based on existing schemes for soil reuse. The report presents how governing of remediation and regeneration was organised between administrative units and scales in the countries represented in the ISLANDR consortium at the time the analysis was carried out. The legal contexts guiding regulatory decision-making in the different countries are also reviewed. Drawing from a survey that mapped experts' perceptions of key institutional barriers, the report concludes that issues pertaining to planning of land remediation and regeneration, 'such as the absence of clear and precisely defined project goals, emerged as the primary barrier' (p. 27). In addition, incoherent and weak institutional and legal frameworks and regulatory complexities were amongst the identified key barriers. This report builds on these findings and adds analytical insights gained through a bottom-up approach that invites practitioners of land remediation and regeneration to describe their action conditions in their own terms, and to do so in relation to the potential use of ISLANDR roadmap.

2. The practical value of the roadmap – findings from ISLANDR test areas (ITAs)

2.1. Studying the institutional adaptability of the ISLANDR roadmap

A draft version of the ISLANDR roadmap was subjected to discussion and evaluation in focus groups, interviews and a stakeholder workshop in four European regions (Figure 1). The encounters were designed to serve appraisal of the roadmap approach. The key aim was to spark discussion about the added value of the roadmap in the different institutional circumstances. We expected that the debates would not only allow further development of the roadmap but also provide information about the conditions in which the roadmap is supposed to be used.

This section summarises the findings from the regional encounters by highlighting how the regional – and sometimes also national – circumstances affect the benefits the roadmap can deliver. Our analysis of the collected qualitative data resulted in the differentiation of three modes in which institutional conditions can be consequential for the take-up and usefulness of the roadmap. The following sections (2.2–2.4) present these modes and the ways they became manifested in the studied regions. Information about the data collection and analysis can be found in Appendix 1.



Figure 1: The four ITAs studied in ISLANDR 6.2

2.2. Limited regulatory leeway as an institutional obstacle

The ISLANDR roadmap encourages thorough examination of different land management options. However, in some institutional circumstances there may be little room for discretion or evaluation of different alternatives. It may appear that land management is conditioned by non-negotiable necessities which are already known. The ISLANDR roadmap may then appear to be of limited added value. In the old mining town **Outokumpu**, located in Eastern **Finland**, this was argued to be the case.

The municipality of Outokumpu suffers from diffuse contamination caused by mining and metallurgical industry. Yet perhaps the most pressing problems are socio-economic as in the municipality both population and economy have been declining. However, Outokumpu is still a distinctive and vivid town, conveniently located near to Joensuu which is a regional centre and a university city. The landscape in the municipality is characterised by several lakes and scattered population.

The focus group participants in Outokumpu included representatives of the municipality, or state administration, private consultancy and a local NGO. The group argued that current environmental regulations leave limited space for the kind of explorations the ISLANDR roadmap supports. It is not that production of new knowledge would be impossible, but that it is not worth the effort since the regulatory framework leaves no leeway for discretion. This complicates particularly consideration of cost-efficient disposal or reuse alternatives for excavated soils.

In Outokumpu, renovation of streets and other types of infrastructure in the town goes together with excavation of soils.² However, soil excavation and removal are primarily done because the soil is geotechnically of poor quality and frost-susceptible (this relates to the load-carrying capacity of the soil) and not due to risks to the environment or human health. The contaminant levels (metals) in the soil, in most cases, would not necessitate soil removal based on Finnish law. According to prevailing regulatory interpretation, the excavated soils are nevertheless considered as waste and must consequently be disposed of in authorised disposal facilities. These facilities are located far outside the boundaries of the Outokumpu municipality. The very high costs of soil disposal make the situation unbearable for the municipality. So far, management of the excavated soils in Outokumpu has received funding from the state aid scheme, whose budget is also very limited. The state funding is likely to end in the near future, and the town needs to find other, more cost-efficient solutions for soil management. Here, the ISLANDR roadmap could serve as a tool to advance envisioning and innovation in the optimisation of the most sustainable

² Solismaa, S., Loukola-Ruskeeniemi, K., Nuottimäki, K., Tolvanen, H., Järvinen, K., Müller, I. 2025. Historical mining towns: The establishment of 'Soil Planning Areas' for the risk management of contaminated soil. *Journal of Hazardous Materials*, 486: 36962. <https://doi.org/10.1016/j.jhazmat.2024.136962>.

soil management design as well as to facilitate necessary dialogue among the interest groups in Outokumpu.

Although the current situation regarding excavated soils in Outokumpu appears to be in a deadlock, a more flexible interpretation of the environmental and waste legislation in the light of their general objectives (e.g., considering environmental impacts of activities as a whole) could allow for a more sustainable and cost-efficient way to manage those soils. For example, locating the excavated soils in the old waste areas — where millions of tonnes of similar-quality material already exist resulting in an elevated background concentration level — would be unlikely to increase the overall environmental burden and the discharges of harmful substances. At the same time, it would significantly reduce soil transportation and its associated emissions. Locating the soils on the existing legacy waste sites would also generate considerable cost savings, even if additional risk management measures were required in those areas, given that they currently lack proper bottom and surface layers. Moreover, the available capacity of the current off-site treatment facilities would be preserved for a longer time and for other waste materials. In addition to disposal in the old waste areas, the excavated soils could also potentially be utilised in engineering structures or landscaping, either as such or after treatment (e.g., stabilisation with industrial by-products). This approach would nonetheless require thorough planning and implementation of appropriate measures as well as an authorisation by the competent authorities based on an approved environmental permit. Therefore, it should be confirmed that the regulatory framework and the legal interpretation would, de facto, enable such an approach.

2.3. Institutional ambiguities generating demand for the roadmap

2.3.1. The need for an integrative approach in Soesterberg, the Netherlands

Lessons from the focus group discussion on the ISLANDR roadmap at the ITA **Soesterberg, the Netherlands**, indicate that the roadmap can serve as a 'meta' tool to structure planning and decision-making in situations where responsibilities are changing or ambiguous. In Soesterberg, the supportive potentials of the roadmap were evaluated by a multi-actor team including representatives of the national government, provincial authorities, and local stakeholders.

The Soesterberg ITA is a former air base located in the middle of the Netherlands. The area not only accommodates natural values but is also an important part of the Ecological Network in the Netherlands. In 2009, a redevelopment plan was drawn up combining different functions of the area: housing, military area, nature reserve, recreation and airbase for gliders. The ambition of the municipalities involved and of the Province of Utrecht was to strive for sustainable redevelopment. Soil analyses showed the presence

of landfills and contamination with hydrocarbons (due to leakage of fuel storage), unexploded ordnance and PFAS (AFFF, due to firefighting training). The contaminants pose a potential risk for the groundwater quality in the underlying aquifer, which is used for drinking water extraction, and restrict soil functions. The complexity of PFAS remediation adds to the deadlock in the ITA.

The institutional setting in Soesterberg is shaped by several governance layers which do not necessarily operate in concert and build up a nested hierarchy. Altogether, it is possible to identify four separate layers:

- Layer 1: The national perspective: currently, PFAS/PFOS are targeted centrally, e.g. through site-specific pilots. Soesterberg is one of the regional pilots set up by the state.
- Layer 2: Hart of the Heuvelrug – the larger programme that was started in 2004 to combat the fragmentation of nature on the Utrechtse Heuvelrug – this is coordinated at the province level.
- Layer 3: Area development for housing purposes. Activities at this layer focus on the former air base part of the Soesterberg ITA. The revenues generated by real property development are, in part, allocated to cover nature restoration and soil remediation costs. Coordination occurs at the provincial level. Given the large housing shortage in the Netherlands, property development is very important for the two municipalities in the Soesterberg ITA.
- Layer 4: Soil remediation at former Soesterberg Air Base. This layer consists of a separate project which is connected to the national knowledge programme (Layer 1).

In Soesterberg, the presentation of the ISLANDR roadmap triggered reflection on the land management process thus far. The focus group participants identified lessons which might be relevant for other PFAS-polluted locations. Presentation of the roadmap steps also encouraged the stakeholders to share ideas and experiences from other projects. The presentation reminded the participants of how important it is to be aware of the multiple governance scales relevant for the management of contaminated land. The considerations suggest that the roadmap may help practitioners to generate a vision that goes beyond distinct governance layers. In Soesterberg, the roadmap also created insight into the importance of questions related, for example, to the examination of risk acceptance and fallback scenarios.

The Netherlands has to deal with high land-use pressure due to the dense population (536 inhabitants per square kilometre). However, in the country, there are numerous sites where soils are PFAS-contaminated to an extent that complicates land-use planning or even puts it on hold. Therefore, creating a strategy for dealing with PFAS – without any clear standards currently available – is high on the policy agenda. However, the material stakes involved – and potential precedents for other sites – such as the other airbases in

the Netherlands – are also apt to raise institutional dilemmas. The largest of these is how to address the so-called 'zorgplicht' or *duty care*, which is a legal principle established in Dutch law. The duty of care principle requires project partners to proactively identify and prevent foreseeable risks to people and the environment, while ensuring regulatory compliance. It ensures accountability by applying reasonable due diligence throughout all project activities. One of the key benefits of the ISLANDR roadmap is that it can support operationalisation of the duty of care principle. The roadmap allows for innovative thinking outside of the box, which may help lifting the deadlock in the ITA.

2.3.2. Supporting institutionalisation of sustainable land management in Kosovo

Compared to the Netherlands, the institutional setting in **Kosovo** is very different. Kosovo, as a relatively young country, has spent the past two decades building its institutional architecture from the ground up while steadily advancing efforts to align with the EU policy and legal frameworks. This work spans key sectors such as environmental protection, spatial planning, and the development of critical infrastructure, most notably energy, where major policy shifts in recent years have directed the country away from coal expansion and toward decarbonisation and renewable energy deployment.

These rapid transformations, combined with evolving legislation and still-maturing institutions, shape the way legacy environmental challenges can be addressed. Limited historical data, overlapping mandates, and shifting policy priorities often complicate decision-making, yet the continued push toward EU alignment is gradually strengthening governance structures, improving regulatory clarity, and creating the conditions needed for more systematic, transparent, and sustainable management of long-standing environmental problems.

As part of its ongoing cooperation with the European Environment Agency (EEA), Kosovo is developing its first national cadastre of potentially contaminated sites. This initiative represents a major milestone toward establishing a structured and evidence-based system for the management of contaminated land. The activity is being implemented by the Kosovo Environmental Protection Agency (KEPA), with active participation from municipal authorities responsible for identifying and reporting contaminated sites within their territories.

Although Kosovo currently lacks a dedicated law on contaminated soils, the obligation for data collection and reporting arises from secondary legislation (Administrative Instructions – AIs) and cross-cutting environmental laws, most notably the Law on Waste. The initiative aims to contribute to the creation of a coherent national framework for soil data management and reporting, aligned with the emerging requirements of the recently adopted EU Soil Monitoring Law. The establishment of the cadastre of contaminated sites,

integrated within the Environmental Information System (EIS), marks an essential first step toward improved governance of soil contamination. However, the current legal framework does not yet provide a clear pathway for remediation or redevelopment of contaminated sites. While the polluter pays principle; the government's responsibility for remediating orphaned sites; and municipalities' mandate for contaminated sites management are all formally recognised, these provisions remain fragmented and lack operational integration. As a result, achieving healthy soils and the systematic prioritisation of brownfield redevelopment in Kosovo will require the establishment of a comprehensive and coherent legislative, institutional, and financial framework for contaminated land management.

The Kosovo ISLANDR Test Area (ITA) spans approximately 30 km² and lies within the administrative boundaries of two municipalities. The entire area is owned by the Kosovo Energy Corporation (KEK), a state-owned enterprise overseen by the Ministry of Economy. The site hosts a complex mix of ongoing activities, including an active open-cast coal mine, two operational coal-fired power plants, a hydraulically transported ash disposal area, the region's largest municipal landfill (operated by KLMC), and multiple legacy mining and industrial zones such as overburden dumps, remnants of the former coal gasification and fertiliser plant, and historic fly-ash deposits from earlier power generation activities.

In recent years, Kosovo has moved away from plans to build a new coal-fired power plant and expand coal mining operations towards energy-sector decarbonisation, launching concrete initiatives to repurpose KEK's extensive brownfield land for at least two utility-scale solar parks. This transition has brought renewed attention to long-standing coordination challenges among national institutions, KEK, and the affected municipalities. Recent assessments carried out by the World Bank suggest that portions of the ITA could be redeveloped for renewable energy generation or light industrial activities. However, uncertainties persist regarding the alignment of local development priorities, soil health in areas currently used for agriculture, and systemic constraints such as overloaded regional municipal waste landfill, limited waste-management options for storing hazardous waste, and gaps in legislation and spatial-planning procedures.

In the multi-stakeholder workshop held in Prishtina, Kosovo in October 2025, the ISLANDR roadmap was discussed with representatives from the site owner (Kosovo Energy Corporation), municipalities, different government departments and agencies, private companies, NGOs and international organisations such as the World Bank. The workshop participants emphasised the urgency of updating or abolishing the now outdated Special Spatial Plan as it conflicts with the recently (2025) adopted Municipal Development Plans for Obiliq and Fushë Kosovë; and improving cooperation among central government bodies and the two municipalities responsible for spatial planning and zoning in the Kosovo ITA.

If adopted as a guidance mechanism, the ISLANDR roadmap can help practitioners in Kosovo to shift from 'problem mapping' to 'solution-based planning'. The roadmap serves:

- Ranking and prioritisation of contaminated sites registered in the inventory, at country level, individual municipalities level, and classification based on remediation funding responsibility (budget planning, law enforcement, or PPP opportunities).
- Stakeholder engagement while defining remediation objectives, future land use and spatial planning strategies, business case development, including integration of wider benefits and sources of funding.
- Integration of site remediation business case in the spatial planning documents allowing for streamlined project planning, preparation and permitting.
- Integration of remediation projects in country and/or municipality mid-term budget framework and annual budget.
- Exploration of site portfolio-level synergies, PPP opportunities, and implementation of remediation projects utilising provisions of Law on Sustainable Investments.
- Innovation and knowledge transfer by incorporating ISLANDR tools and methods (building blocks) in the decision-making process.

2.4. In-between old and new management practices

In Sweden, a draft version of the ISLANDR roadmap was discussed in a focus group which brought together experts working with soil contamination, two specifically specialised in contaminated forest nurseries, of which one has been involved with the **Kolleberga** former forest nursery. There are around 750 former forest nurseries spread over Sweden, and despite their spread over the country, the geological conditions and other settings are similar, with sandy, highly permeable soils, a flat topography and a size of around 10 – 30 hectares. They are mainly situated in more rural areas. The most common contaminant is DDT, and even if it has been banned in Sweden for >50 years, DDT remains in the upper part of the soil due to the low rate of degradation and strong adsorption to soil particles. The current land uses of these former forest nurseries vary, but agricultural uses dominate, e.g. pasture and fodder production, animal keeping (grazing for cattle, sheep, horses), livestock operations, and horse-related activities. The land is often privately owned, or, as in the Kolleberga case, still owned by the company that caused the contamination. At the Kolleberga site, the land is currently not in use, only maintained so as not to become overgrown.

In Sweden, there is a rather clear division of responsibilities for handling contaminated sites, which facilitates a clear structure for remediation. The Geological Survey of Sweden (SGU) is one of the public bodies with clear responsibilities and organises work on contaminated areas thematically to make investigations and remediation more efficient.

This is done by grouping sites based on type of contamination (same pollutants at different sites), geographical area (e.g., watershed or district) or remediation needs (similar actions required for nearby sites). The goal is to set common objectives, reduce costs, strengthen supervision, and share knowledge. Former DDT-contaminated forest nurseries is one such theme.³

Regarding the ISLANDR roadmap, the focus group participants expressed favourable views, recognising its capacity to impart greater structure and clarity to the management of complex processes. It was deemed beneficial for both thematic approaches—such as those organised by contamination type—and geographically focused strategies, facilitating a more systematic method of addressing contaminated land issues. Moreover, the roadmap was considered particularly valuable for authorities and practitioners with limited experience in the field, as it could serve as a foundational framework to support informed decision-making and enhance coordination across stakeholders.

However, there were several concerns raised concerning the practical implementation of the roadmap. Notably, the coordination of multiple actors was identified as a significant challenge, particularly in contexts where responsibilities are distributed or fragmented among various stakeholders. Participants emphasised the necessity for the roadmap to be consistently maintained and readily accessible over time to ensure its continued relevance and utility. Additionally, it was suggested that the roadmap should incorporate broader value considerations—including cultural and ecological dimensions—and integrate long-term strategic visions into the planning process, thereby promoting more comprehensive and sustainable outcomes.

All in all, the focus group discussion was deemed beneficial by the participants, providing novel insights and underscoring the importance of integrated and sustainable methodologies. The roadmap was recognised as a valuable resource, contingent upon its continued adaptability, practicality, and accessibility for a diverse user base.

³ Current thematic groups at SGU are: 1) glass waste from glassworks – focusing on glass industry sites and their impact on surrounding areas, 2) DDT from forest nurseries – similar risk assessments and remediation strategies and 3) chlorinated aliphatic hydrocarbons (CAH) – from dry cleaners and degreasing industries, requiring complex investigations and new technical solutions. The thematic work includes deepening the knowledge on risk assessment connected to the different land uses, representative soil sampling and developing and testing remediation methods. Due to the high number of hectares that are contaminated with DDT, the limited depth of contamination at those sites, and that there are rarely high risks to humans present, gentle remediation options (GRO) or nature-based solutions (NBS) are of specific interest.

3. Using the roadmap for policy support

The engagements with experts and practitioners operating in various European settings indicate that the ISLANDR roadmap can support consideration of soil health and operationalisation of SRBLM in two main ways. *First*, the roadmap helps to *structure management of land remediation and regeneration*. It has value in all conditions in which analyses, consultations and decision-making are to be orchestrated. The benefits of the roadmap can materialise as clearer processes and more informed management choices, and ultimately as more sustainable land remediation and regeneration. Although the roadmap does not tell how risk assessment and management processes are to be organised, it suggests what kinds of questions the processes are to address. By so doing, as lessons from Kosovo and the Netherlands indicate, the roadmap can help to sort out institutional ambiguity.

Second, or additionally, the roadmap can usefully operate as *an awareness building tool*. It can inform policymaking by providing a check list of questions that need to be addressed. It also provides links to resources that support execution of necessary analyses and assessments. These benefits were highlighted in the Swedish focus group discussion and they could well materialise also in Outokumpu along with regulatory reinterpretations.

Due to its dual benefits, the ISLANDR roadmap can be used to support operationalisation of policies and policy instruments. It can provide valuable guidance for the design of the living labs which play a central role in the EU Mission for soils.⁴ In the EU, the roadmap can also serve harmonisation and strengthening of regulatory practices. Table 1 lists key areas of roadmap application in Europe and identifies the functions the roadmap can have in relation to the named policy instruments.

Table 1: Key EU or European-wide policy instruments benefitting from the ISLANDR roadmap

Policy instrument	Regulatory basis	The roadmap benefits
Soil management plans	Directive on Soil Monitoring and Resilience 2025/2360	<ul style="list-style-type: none"> Guidance for process design Identification of knowledge needs Risk assessment methodologies Planning of site investigations Identification of regulations that need to be considered along the management process Determination of the wider value of site remediation Redevelopment of contaminated sites (spatial planning strategies) to minimise net land intake

⁴ <https://mission-soil-platform.ec.europa.eu/living-labs>, Accessed November 2025

		Prioritising of CECs in soil
Environmental permits	Industrial Emissions Directive 2010/75/EU	Identification of knowledge needs Risk assessment methodologies
Waste management plans Permits to allow operation	Extractive Waste Directive 2006/21/EC	Identification of knowledge needs Risk assessment methodologies
National restoration plans	Nature Restoration Regulation 2024/1991	Identifying of the areas that should be restored and sustainable means of restoration
Soil passporting	Waste Framework Directive 2008/98/EC; Directive on Soil Monitoring and Resilience 2025/2360	Planning of the management of excavated soils and implementation of circular economy objectives
Procurement criteria	Directive on Public Procurement 2014/24/EU	Practices that support sustainable procurement by providing examples and recommendations
Strategic project mechanism	Critical Raw Materials Act 2024/1252	Assessing (CBA tools) the economic benefits of remediation if CRMs are recovered
Conditions of sustainable investments	Taxonomy regulation 2020/852	Assessing the compliance with the conditions (tools)
River basin management plans	Water Framework Directive 2000/60/EC	Identification of the threats of contamination to water quality (e.g. S-P-R models)
Renewables acceleration areas	Renewable Energy Directive 2009/28/EC	Assessing the benefits of reuse of contaminated land
Sofia Declaration in the green agenda for the Western Balkans		Quality control to support effective funding allocation Guidance for process design Identification of knowledge needs Risk assessment methodologies Depollution: Integrate soil protection in other policy areas and establish a regional soil partnership to improve knowledge exchange and identify examples of best practice for soil protection from pollution and degradation

Across Europe, the ISLANDR roadmap can support decision making on site- or area-based management of contaminated land and provide guidance for local planning authorities. In addition, in the countries represented by the ISLANDR consortium, the roadmap can

assist practical implementation of national policies and regulations. Table 2 provides examples of policy and planning processes to which the roadmap can give valuable guidance and information.

Table 2: Examples of national level policy and planning processes to be supported by the ISLANDR roadmap.

Country	Policy or planning processes
Cyprus	<ul style="list-style-type: none"> - Regulatory implementation (monitoring the Management of waste from extractive industries Law; control of water and soil pollution regulated under Law 106 (I)/2002) - Preparation of the 5-year Cyprus Recovery and Resilience Plan
Finland	<ul style="list-style-type: none"> - Preparation of the national statute on reuse of excavated soil - Updating of national waste and circular economy plans - Monitoring of the progress of the national risk management strategy for contaminated land
France	<ul style="list-style-type: none"> - Annual campaign of French environmental ministry for update of inventory of site that need contaminated land management measures (ex-BASOL) (France)
Kosovo	<ul style="list-style-type: none"> - Regulatory implementation (Environmental protection Act; Law on strategic environmental assessment, Spatial planning Act) - Allocation of and applying for multilateral funding
Netherlands	<ul style="list-style-type: none"> - Preparation of national strategies and knowledge programmes e.g. for dealing with PFAS or other CECs
Poland	<ul style="list-style-type: none"> - Preparation of the national reconstruction plan - Implementation of the Protection of the Earth's Surface programme - Preparation of programmes for Cohesion Fund allocations
Sweden	<ul style="list-style-type: none"> - National prioritisation of funds to remediation projects
United Kingdom	<ul style="list-style-type: none"> - Streamlining of infrastructure planning and provision of new guidance on planning of Nationally Significant Infrastructure Projects (NSIPs) - Preparation and implementation of policy reforms focusing on brownfields and re-use of brownfield land

4. Conclusions

Our findings from the regional focus groups, meetings, and interviews suggest that the ISLANDR roadmap can support SRBLM as a tool which helps organisation of management processes and provides guidance for knowledge production. Table 3 summarises the ways in which the roadmap can provide added value. Furthermore, the mapping of EU and national policies shows that the roadmap can support practical implementation of numerous policies and regulations, and thereby also enhance the effectiveness of the interventions.

Table 3: The added value of the ISLANDR roadmap for sustainable risk-based land management. The table is compiled with the help of Chalmers University AI Copilot Pro and verified with the content analysis of the qualitative data (see Appendix 1).

Barrier to SRBLM implementation	How ISLANDR roadmap can help
Fragmented responsibilities	Provides a structured process and clarity
Preference for conventional methods	Shares alternative approaches and examples
Lack of holistic planning	Integrates spatial, financial, and risk data
Unclear long-term land stewardship, in particular for long term brownfield	Emphasises planning also for the maintenance phase, e.g. by a combined / integrated approach to remediation and re-use over the longer term
Resource constraints in small projects	Offers templates and guidance for all scales

The take-up of the ISLANDR roadmap is likely to be successful but may also face barriers. As the Outokumpu case showed, institutional conditions may not automatically favour adoption of the roadmap. In such cases, *regulatory shifts and new planning mandates, for example, may open up new horizons for the investigation of land remediation and regeneration options.* For example, in Finland the upcoming decree on re-use of excavated soils and updated regulations on contaminated land are likely to increase the beneficial use of excavated materials, even if their properties currently favour disposal, and advance sustainable risk-based decision making further by promoting realistic risk assessment instead of generic guideline values and calling for sustainability evaluation in the remedial design. In the new regulatory situation, the ISLANDR roadmap may prove to be highly useful for fostering necessary dialogue between the interest groups and facilitating a multidimensional options appraisal.

The implementation of the roadmap may also become problematic as site owners and other practitioners favour established working modes and methods. These barriers can be overcome by capacity building and circulation of best practices. In addition, regulators

or public funding agencies can set requirements for the use of the roadmap and the quality of the investigative process. Yet often implementation of these requirements may need to be supported by funding that is targeted to cover at least some of the planning costs.

The institutional barriers potentially complicating the multidimensional and multi-option approach advocated by the roadmap are not, however, only outcomes of historical trajectories. It is just as likely that barriers are being constantly generated and done so by *policies and regulations which fail to address soil health, and land remediation and regeneration needs, in appropriate and coherent ways*. For example, regulation of land-use planning, waste management and public funding taxonomies should not complicate, but rather push towards, roadmap use. In the EU *Circular Economy Act* currently in preparation, soil and land need to be viewed as resources preserved and managed as circular economy assets. Likewise, across Europe, *environmental objectives and quality standards may operate against a pure risk-based view on remediation and circularity objective, by prioritising a 'toxic-free' environment*. The compatibility of any new regulations with a sustainable and risk-based management approach needs to be guaranteed and existing incompatibilities reviewed and challenged.

5. Recommendations

The ISLANDR project recommends the following measures to support the take-up of the ISLANDR roadmap and realisation of its benefits in the fostering of soil health:

- 1) **Mobilisation of the ISLANDR roadmap to serve effective practical implementation of the Soil Monitoring Law.** The potentials of roadmap of to support risk-based and stepwise management of contaminated sites according to the Soil Monitoring Law should be fully harnessed.
- 2) **Integration of the ISLANDR roadmap with policy processes across Europe.** The roadmap can support execution of several EU regulations either as a process design tool or an awareness-creating instrument, or both. Across Europe, it can generate benefits if used to inform and support organisation of inventories, planning processes and strategy-making, among others. The roadmap can also be used to serve effective allocation of public and private funding.
- 3) **Assurance of policy coherence.** Regulatory reforms both at EU and national levels may complicate the use of the roadmap if they operate against the risk-based view on remediation. It is essential that potential sources of policy incoherence are identified and targeted effectively.

- 4) **Policy uplift and harmonisation.** It is important to seek a European consensus on optimising risk management from a sustainable risk reduction context. Efforts are needed to collate an evidence base to better support pathway management – in the context of the source-pathway-receptor model – as a viable remediation alternative in countries or regions with a focus on source mass removal.
- 5) **Generation of regulatory push for the consideration of soil health and examination of land remediation and regeneration needs** – and consequently for the take-up of the ISLANDR roadmap. Tackling land and soil contamination and minimising of net land intake should be promoted by circular economy policies, for example.
- 6) **Adoption of ownership of the ISLANDR roadmap.** The roadmap needs an organisational home base (such as Nicole, Common Forum, EUSO, the Soil mission community through the Mission Soil Platform) where its use can be advocated, and where it can be developed further.
- 7) **Capacity building** to provide learning in depth, know-how and skills to implement the suggestions of the road map. This requires both investment in support actions at the science-policy interface, and the development of capacity building initiatives to support practitioners (for example training, easily used guidance resources to extend the offer that the road map currently has).

Appendix I: Data and their analysis

To gather data for this deliverable we carried out interviews focus groups and a multi-stakeholder meeting in four ITAs. The four ITAs allowed the approach adapted in the ISLANDR roadmap to be evaluated in relation to diverse institutional conditions. In Outokumpu, Kalleberga and Soesterberg, the ISLANDR roadmap was subjected to discussion in focus groups in Spring 2025 and November 2025, while in Kosovo the reflections were collected in stakeholder workshop arranged in Autumn 2025. Within the Soesterberg case – as a preparation for the focus groups additional interviews were held. The main goal of these interviews was to get more insight into how the different phases of the roadmap were addressed in the Soesterberg ITA. Because of the complexity of the pollution in the area, the interviews also gained insight in how stakeholders are dealing with SRBLM in the area.

To support organisation of the focus groups, a script was generated in collaboration of Task 6.2. participants. This script is attached below. The three focus group discussion were recorded and transcribed in verbatim to serve the analysis. In the case of the Kosovo meetings, data consisted of notes produced by ISLANDR team members. The qualitative data was subjected to content analysis in which the insights provided by the discussion participants were categorised in relation to different themes (e.g. descriptions of management practices; roadmap benefits).

Data from the Swedish focus group was also analysed with Copilot Pro. The AI response was checked and compared to the findings from the content analyses. After some editing, the AI-generated summary was found to be accurate. The prompt used in the analysis was as follows: 'Summarise ideas in relation to the discussion on sustainable risk-based land management (SRBLM), and the barriers to implement SRBLM. Also summarise the ideas discussed whether the ISLANDR roadmap can help to overcome these barriers. And the general impression by the participants on the ISLANDR roadmap.'

Box: Conduction of the focus groups

The focus groups consisting of **4–5 participants**, lasting **2 hours** (with coffee) are to be carried out in national languages following the script below. The script should be **adapted flexibly** to allow the participants to reflect topics deemed relevant for their experiences. However, all facilitators need to ensure that there is time to discuss all the defined themes.

Please note:

- The given durations (in parentheses) are **only indicative**. Ensure, however, that the time reserved for the focus group will not be extended.
- Themes may overlap. This is not a problem. **Skip questions that have already been addressed.**

Welcome: Present the ISLANDR project (one slide), rules of the meeting (see appendix 1 for a short list that can be on a slide), ask for informed consents (=is it ok for the participants that the meeting will be recorded and used as research data. Names of individuals and organisations will not be reported, but full anonymity cannot be guaranteed since experts might guess who the participants were), timetable, who are present (roundtable) (5–10 min)

- **Theme one: sustainable, risk-based land management**
 - Introduction of the approach (10 min).
 - Comments to the presentation: What appears as novel or interesting? (What does the ISLANDR approach add? Do you have reservations regarding the approach? Roundtable + open discussion
 - What components or features of the management approach are already in use within the ITA? What limits the feasibility of the approach? What would be of added value? Open discussion
- **Theme two: Existing soil management practices and arrangements** (20 min)
 - How well do the current administrative arrangements and practices support sustainable soil/land management in [add ITA name]? What is working well and what aspects could be further developed? Do the prevailing take into consideration low-input remediation technologies and soil health?
 - Who should take responsibility over potential development? A roundtable + open discussion
 - What changes in practices and administrative arrangements would be needed to serve transition towards sustainable, risk-based soil management?
 - Can you give examples of good practices or smooth processes?
 - Can you give examples of recurring problems or systemic hinders?
- **Theme three: The ISLANDR Roadmap**
 - Introduction to the roadmap (10-15 min)
 - Estimated usefulness of the roadmap idea (15 min)
 - How useful does the roadmap appear to you? Can you describe a situation that you would use the roadmap, and in what way? A roundtable