



NICOLE and Research

The Network for Industrially Coordinated Sustainable Land Management in Europe (NICOLE) has been driving the application of research and innovation to the sustainable management of contaminated land for over 25 years.

NICOLE is a leading forum on industrially co-ordinated sustainable land management in Europe, promoting co-operation between industry, academia, and service providers on the development and application of sustainable technologies.

Through its objective to proactively enable European industry to identify, assess, and manage industrially contaminated land efficiently, cost-effectively, and within a framework of sustainability, NICOLE supports Research and Innovation.

One of the key areas of activity for NICOLE is to stimulate coordinated, interdisciplinary projects on collaborative, problem-oriented research and knowledge transfer to address identified needs. The Research Agenda was devised by the Innovation Working Group to collate the research interests and priorities of the NICOLE members to identify these needs.

Research Agenda

Research and development are often seen as the transformation of money into knowledge, with the subsequent innovation step being the transformation of knowledge into money. Research can help address uncertainties that may exist about emerging problems, such as new contaminants, it may also help deliver new technologies which can accelerate remediation time or resolve environmental legacy issues in a more sustainable manner.

The Research Agenda has been developed by NICOLE to formulate an approach to supporting innovation in industrially co-ordinated sustainable land management in Europe, this short document sets out the key principles and areas of interest. The Research Agenda was not designed as a mechanism to directly fund research through NICOLE, but to facilitate the exchange of ideas and promote projects between NICOLE members.

In 2019 a project led by a team of Paul Nathanail, Jean Pierre Davit and Niklas Törneman, undertook an Innovation needs survey for the NICOLE Innovation Working Group.

This comprised of an online survey open to all members and an additional interactive poll held at the Warsaw meeting in the autumn of 2019. Results were analysed to provide focus for Innovation WG.

Guiding Principles

1. The Research Agenda demonstrates the main research and innovation interests of NICOLE members, which includes industry, academia, and service providers.
2. The intention is that the Research Agenda promotes co-operation and provides a bridge between problem holders and solution providers.
3. NICOLE does not fund research and innovation projects but will support bringing partners together to facilitate projects.
4. The Research Agenda is a live document, and will over time evolve, as problems as resolved new challenges emerge. At periodic times this will be assessed and if you have suggestions for new areas to be considered please contact secretariat@nicole.org.

Research Agenda: Findings of the Survey

The results of the surveys were analysed to provide focus for the Research Agenda. These were split into 6 focus areas.

These were: A) Thematic focus, B) Key Issues, C) Focus on maturity stage of innovation, D) Technologies, E) The activities of the IWG, and F) The preferred partnerships approaches to be adopted.

A. Thematic Focus

The 3 important thematic areas:

1. New Remediation Technologies;
2. Site characterization technologies and approaches; and
3. Contaminated Site Management.

B. The key contaminated site issues which should be the focus were:

1. Emerging Contaminants; and
2. Complex Site Conditions.

C. The technology maturity stage, which should be the focus of activities:

1. Pilot stage and feasibility testing; and
2. Technology development and upscaling.

D. The remedial technology areas that will be prioritized are:

1. Natural recovery technologies (e.g. MNA);
2. In situ Bioremediation; and
3. On site soil treatment technologies.

E. The Innovation WG will:

1. Screen technologies and/or innovative methods;
2. Present them to the NICOLE network for prioritization; and
3. Will act on the choices of the NICOLE network.

F. The preferred ways to promote partnership are:

1. Promoting partnerships between problem owners and innovators; and
2. Promote development from innovation to full scale, ways of funding.

Research Agenda: From Outputs to Actions

The outcomes of the survey were used to form the basis for the IWA Research Agenda. The Survey highlighted that NICOLE Members wanted the Innovation Working Group to screen innovative technologies and methodologies and then present them to the network for prioritization, and then act on the choices of the network. Members also wanted the IWG to promote the development of new innovations to full scale, helping identify funding mechanisms and promoting partnerships between problem owners and innovators.

The other data collated from the Survey have been used to create a meaningful Research Agenda. A good Research Agenda should identify a research challenge that a researcher could devise an experimental programme to try and address.

So, a researcher could rephrase the challenge into an aim, with a series of objectives and formulate a methodology that could then be executed leading to results that can be interpreted and hence resolve the challenge.

It was decided that the clearest method to achieve this was to develop some high-level areas of interest as defined by the survey. Due to the immense changes which have occurred since 2019, including the Covid Pandemic, the emerging climate crisis, the need to transition to low carbon energy and the rise of Artificial Intelligence. It was decided to review the research challenges and include any new emerging areas which were not considered in the original survey or have since emerged.

Russell Thomas of the IWG and Darren Beriro of the AWG, developed these research areas into high level Research Personas, which demonstrate the challenge areas represented by the Research Agenda.

These Research Personas, provide a Problem Statement, identify key stakeholders, provide an example knowledge base, challenges, member priorities, preferred working partnerships and the priority stages of development.

