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Why This Conference Matters

Because the problem is real, interconnected — and still poorly understood

The environmental consequences of war are often invisible, delayed and difficult to separate from other processes already affecting a territory.

They may involve:

- contaminated soils;
- polluted rivers and groundwater;
- damaged industrial facilities;
- fuel and chemical releases;
- sediments;
- destroyed wastewater systems;
- mines and unexploded ordnance;
- abandoned agricultural land;
- damaged ecosystems;
- disrupted monitoring networks;
- displaced populations;
- altered settlement patterns;
- food and water security;
- and long-term human exposure.

These effects do not occur independently.

They form connected systems.

A contamination event on land may later become a groundwater problem.

A damaged industrial facility may affect soil, surface water, sediments and downstream communities.

A mined agricultural area may remain unusable even after explosive hazards are removed because its environmental condition is unknown.

A destroyed monitoring network may leave a region without the evidence required to understand what has changed.

And an apparently simple reconstruction decision may depend on information that nobody has yet collected.

This is why the environmental consequences of war cannot be understood — or addressed — through isolated studies alone.

The problem is larger than contamination

War-related environmental damage is often divided into separate categories:

soil pollution

water pollution

ecosystem damage

public-health risk

mine action

industrial damage

agricultural recovery

reconstruction

Each category is important.

But the territory itself does not respect these boundaries.

The same problem may involve several environmental media, different time scales, different institutions and different forms of evidence.

This creates a practical difficulty:

who sees the whole system?

Usually, nobody.

Different organisations see different parts of it.

That is one of the central reasons this conference matters.

No single institution has the complete answer

A soil specialist may understand contaminant behaviour but know little about the historical military events that produced it.

A satellite company may identify a major change without knowing its environmental significance.

A GIS specialist may integrate datasets whose quality differs radically.

A mine-action organisation may know which parts of a territory can be entered safely.

A laboratory may identify contaminants that were never included in previous monitoring.

An engineer may discover that a proposed investigation does not provide enough information for intervention.

A remediation company may understand which site characteristics determine whether a technology will work.

A local organisation may understand land use, institutions, communities, access and logistics in ways that no international dataset can reproduce.

An investor or development institution may see why a technically attractive idea cannot yet become an implementable project.

None of these perspectives is sufficient alone.

The problem requires them to interact.

Local knowledge is not a secondary input

Environmental problems occur in specific territories.

The people and organisations connected with those territories are therefore not simply sources of local information for projects designed elsewhere.

They should participate in defining:

- what the problem actually is;
- which evidence is credible;
- which evidence is missing;
- what can realistically be investigated;
- what cannot be accessed;
- which institutions matter;
- which local capacities already exist;
- what kind of intervention is possible;
- and who will remain responsible after an international project ends.

This is especially important in conflict and post-conflict environments.

A methodology that works well in one country may fail in another because:

- the historical baseline is different;
- institutions work differently;
- records are missing;
- laboratories have different capacities;
- land ownership is unclear;
- infrastructure has collapsed;
- field access is restricted;
- or the proposed system cannot realistically be operated locally.

The conference therefore treats regional and local knowledge as part of the investigation architecture itself.

Why now?

Many conflict-affected territories are facing decisions that cannot wait for perfect knowledge.

Questions already exist:

What remains in the soil after military activity?

How should land be assessed after humanitarian demining?

Can agricultural production safely resume?

What happened to water quality after infrastructure destruction?

How should historical contamination be distinguished from recent wartime contamination?

Which polluted sediments require intervention?

Which areas should be investigated first?

What can satellites, drones or geophysics tell us before field access becomes possible?

What must be measured directly?

Which laboratory analyses are actually necessary?

When is remediation justified?

What evidence is sufficient for reconstruction or return to civilian use?

Often the answer is not available.

The responsible response is not to conceal that uncertainty.

It is to determine **what should be done next to reduce it**.

Uncertainty is a practical problem

In war-related environmental investigation, uncertainty may concern:

- the source of contamination;
- the timing of an event;
- historical background concentrations;
- missing monitoring data;
- incomplete military records;
- population movement;
- changing hydrology;
- inaccessible territory;
- mixed contaminants;
- exposure history;
- or contradictory observations.

These are not merely theoretical problems.

They directly affect decisions.

If we do not know where contamination is located, we need a better detection and sampling strategy.

If access is unsafe, we need remote methods or mine-action support.

If the historical baseline is missing, we need reconstruction from alternative evidence.

If laboratories cannot compare results, we need harmonised methods.

If different organisations hold disconnected data, we need a better information architecture.

If nobody knows whether remediation will work, we need a pilot.

The purpose is to convert uncertainty into the next answerable question.

New technologies change what can be investigated

The ability to study conflict-affected environments is changing.

Satellite Earth Observation, SAR, drones, LiDAR, GIS, autonomous systems, portable analytical instruments, environmental sensors, modern laboratories and new data architectures can make previously inaccessible processes observable.

But technology does not automatically create understanding.

A satellite anomaly still requires interpretation.

A sensor still requires validation.

An AI detection still requires evidence.

A laboratory result still needs geographical and historical context.

A large dataset can still produce a misleading conclusion if its structure is poor.

This is why technology providers are relevant to the conference not as exhibitors outside the research process, but as participants in it.

The important question is not:

What product do you sell?

It is:

What can this capability allow us to observe or do — and where does it fail?

Investigation must connect with implementation

Another reason the conference matters is that environmental research often stops too early.

A study may identify contamination.

But somebody still has to decide:

- whether more investigation is necessary;
- whether access should remain restricted;
- whether remediation is required;
- which remediation method is feasible;
- how contaminated material should be handled;
- how water systems should be restored;
- whether agriculture can resume;
- what should be monitored afterwards;
- who will operate the monitoring system;
- who will finance the work;
- and which local organisation will remain responsible for it.

For this reason, P&D connects investigation with:

engineering

mine action

remediation

water and infrastructure recovery

agriculture

local implementation

project development

and, where appropriate,

finance and investment.

The purpose is not to make research less rigorous.

It is to prevent rigorous investigation from becoming disconnected from the decisions it is supposed to support.

Real territories require real cooperation

Current P&D work includes contexts connected with **Ukraine, Vietnam, Sudan and other conflict-affected regions**.

These cases differ radically.

Contemporary battlefield contamination in Ukraine cannot simply be treated as identical to the long-term wartime contamination legacy of Vietnam.

Sudan presents another set of problems involving severe data scarcity, limited access and disrupted institutions.

Other regions will create other methodological difficulties.

This diversity is valuable.

It allows methods and assumptions to be tested against reality rather than only discussed conceptually.

The Specification as a working instrument

An important part of the P&D programme is the **Specification for the Investigation of War-Related Environmental Contamination**.

Its purpose is practical.

It provides a structure in which a real project can organise:

- the territory;
- known evidence;
- missing evidence;
- possible contaminant sources;
- environmental media;
- methods;
- spatial information;
- field constraints;
- uncertainty;
- operational requirements;
- and next steps.

The Specification is not intended as a final doctrine.

It is intended to be used.

And because it is intended to be used, it must also be open to criticism.

A methodology that cannot survive contact with real territories, technologies and implementation constraints is not useful merely because it is internally elegant.

The conference therefore provides an opportunity to test and improve the Specification through practical cases.

Better organisation of knowledge is part of the solution

The problem is not only that information is missing.

Sometimes enormous amounts of information already exist — but remain fragmented across:

- scientific publications;
- government reports;
- satellite archives;
- laboratory datasets;
- GIS systems;
- field records;
- historical documents;
- local knowledge;
- health observations;
- and separate institutions.

The relationships between these forms of evidence may be difficult to see.

P&D is therefore also working on information systems designed to connect:

places → events → contaminants → observations → environmental media → populations → hypotheses → evidence → uncertainty.

The objective is not simply to accumulate more data.

It is to improve the structure through which evidence can be questioned, compared and used.

Why companies and applied organisations matter

Many of the capabilities required to investigate and restore conflict-affected territories do not reside in universities.

They exist in:

- engineering companies;
- GIS organisations;
- satellite operators;
- environmental laboratories;
- mine-action organisations;
- water companies;
- equipment developers;

- remediation firms;
- infrastructure operators;
- investment organisations;
- and local businesses.

Their practical experience may expose weaknesses in research designs that would otherwise remain invisible.

At the same time, technologies and commercial approaches must also be open to criticism.

The conference therefore does not create a hierarchy in which one institutional group provides knowledge and another simply implements it.

Different participants hold different parts of the capability required to solve the problem.

Why public and media attention matters

Many environmental consequences of war receive attention only when they become dramatic.

But some of the most important changes are slow:

- groundwater contamination;
- sediment accumulation;
- soil degradation;
- chronic exposure;
- agricultural decline;
- ecosystem change;
- or loss of reliable environmental monitoring.

Responsible journalism and public communication can make these processes visible before they become impossible to ignore.

For media and science communicators, the conference provides access not only to conclusions, but also to:

- unresolved questions;
- competing explanations;
- real regional cases;
- new investigation methods;
- technologies;
- and practical recovery challenges.

Communicating uncertainty responsibly is part of the task.

From discussion to work

The purpose of P&D is not simply to exchange information.

The conference is designed to help move through a sequence:

understand the problem → identify missing evidence → design the investigation → test methods → connect partners → develop a pilot → build a project.

This is reflected in:

- Critical Reviews;
- Regional Cases;
- Applied Systems & Technologies;
- Case Labs;
- Investigation Design Workshops;
- and Project Studios.

Some discussions may result in projects.

Others may demonstrate that a proposed project is premature.

Others may reveal that the original question was badly formulated.

All three can be useful outcomes.

Our purpose

The purpose of the War, Soil, and Freshwater Systems Conference 2026 is to create a working international environment for problems that cannot be solved within a single discipline, profession, institution or country.

The conference matters because war-related environmental consequences are often:

invisible

delayed

interconnected

poorly documented

and

difficult to attribute.

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It matters because recovery decisions are already being made despite these uncertainties.

It matters because local organisations, technologies, engineering, environmental investigation and project development need to be connected much earlier than they usually are.

And it matters because recognising the limits of current knowledge is not a reason to stop.

It is the starting point for deciding what should be done next.

P&D is not a meeting of people who already know the answers.

It is a working meeting of people who possess different parts of the capability required to find them.

Real territories. Real evidence. Real uncertainty. Real cooperation.

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War, Soil, and Freshwater Systems
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