# FASTIPS

***Quick, practical guidance***

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To enhance effective decision-making and policy development, IA needs to apply systems thinking to embrace multiple interlocking systems and acknowledge complexity.

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# Systems Thinking in IA

Everything is connected: in the human body, in ecosystems, in society, people, and activities. Impact assessment (IA) professionals may first think of ecological and biophysical systems, but also of technological, infrastructural, social, economic, financial, and political systems, as well as data, learning, and ethical systems. Yet we must thoughtfully select what is relevant, since we cannot analye everything. Analytical limits, boundaries, must be established. But the challenge lies not in naming systems as separate disciplines, but in understanding the relevant elements in each system, how these connect within and across systems, and what this means for IA analysis and evaluation. Boundaries are then set to enable coherent analysis that aligns with objectives and timing.

## What is a system?

Any system is a set of two or more interrelated, interacting, interdependent elements functioning together as a whole (see figure). Systems exist; we must recognize and understand them. They can be described by cause-effect pathways and feedback loops that shape their behavior and evolution over time and space. Pathways trace actions towards a result. Feedback loops maintain stability or drive change, classified as reinforcing (amplifying) or balancing (counteracting) change. Together, they form the dynamics of complex systems, shaping growth and decline, resilience, and evolution. Any modification (e.g., by development initiatives) in any given part of a system can influence or change the whole system's outcomes, which are often difficult to comprehend. A systems approach thus provides awareness and insights into these non-linear responses to multiple interlinked processes.

## How can systems be understood and managed in IA?

For each development initiative—project, program, plan, or policy—relevant systems, their boundaries, and interacting tangible (e.g., physical environment) and intangible elements (e.g., spiritual values), must be identified, and resulting non-linear system behavior must be understood in order to identify leverage points for effective intervention—all fundamental to meaningful, legitimate, and forward-looking IA.

A holistic, systemic approach has always been relevant in IA. But currently, changes are happening at an unprecedented scale, confronting us with world challenges. Multiple climatic, economic, social, and political crisis, and democracies under threat, demand that practitioners understand the growing complexity that is shaping outcomes across scales. Systems thinking (ST) means thinking in systems rather than in silos or individual disciplines. It integrates a suite of skills and modelling tools, such as network, causal loop, or stock and flow diagrams. These identify connections and feedback loops, cumulative effects, systems' behavior and patterns, enabling more effective strategic interventions. Therefore, applying ST and analysis requires well-trained and transdisciplinary teams.

## What is missing?

Projects are still seen as discrete interventions with bounded effects. Impacts are often assessed in isolation. Many IAs remain siloed by discipline, failing to embrace complexity and systems interactions. Inter- and transdisciplinary approaches that engage practitioners skilled in methodologies that acknowledge non-linearity are urgently needed. Applying ST within IA thus requires a transition toward non-linear, iterative, reflective, and inclusive processes.

## FIVE IMPORTANT THINGS TO KNOW

1. **ST promotes appreciation of complexity.** ST goes beyond scale, interrogating how causes and effects express impacts and propagate in systems, encompassing identification of cumulative impacts, leverage points, and indicators for monitoring.
2. **ST fosters shared understanding of interlocking problems.** By visualizing and communicating causal relationships within and across affected systems, ST focuses stakeholders with diverse perspectives on drivers, risks, and opportunities at both strategic and project levels.
3. **ST enhances insights into roles and interdependencies.** Mapping interactions among systems (e.g., ecological, social, political, health) facilitates shared understanding among stakeholders on how actions influence broader outcomes, therefore reducing risks of overlooking delayed, indirect, or cumulative effects, promoting cross-sector learning, adaptive management, accountability, and coordination.
4. **ST prompts reflection on boundaries and assumptions.** ST facilitates practitioners in challenging boundaries and assumptions: a broader systems perspective allows for different angles of analysis, revealing hidden factors and leverage points.
5. **ST promotes strategic and adaptive management.** ST does not address isolated symptoms; rather, it informs the design of interventions that target the root causes of problems and amplify long-term benefits.

## Further reading


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## FIVE IMPORTANT THINGS TO DO

1. **Engage stakeholders early and iteratively.** Involve affected stakeholders and proponents to co-define problems, system boundaries, elements, and relationships, so the system representation captures essential dynamics.
2. **Address the problem, focus on relevance.** Focus on a specific problem, avoid describing all details. Structure the elements driving or sustaining the problem and select what is most meaningful for understanding it.
3. **Manage complexity by structuring subsystems.** Break the system into subsystems. Starting from the physical environment provides an anchor, but do not ignore other relevant sub-systems, such as social, technological, sectoral, political or territorial systems.
4. **Identify key elements and feedback loops.** Map causal links, polarities, and loops forming behaviour over time. Validate, refine and aggregate iteratively with multiple perspectives.
5. **Combine expertise to inform decisions.** Identifying leverage points and indirect, synergistic, cumulative, cross-sectoral or long-term effects, requires integrated expertise, including ST, to support more adaptive and effective decisionmaking.

**EXAMPLE**

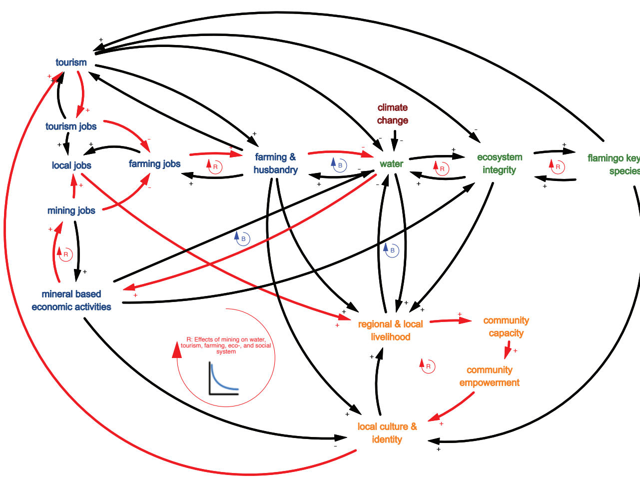


Figure 1. Causal Loop Diagram of the water problem in the Atacama Desert (semi real case with interconnections among 15 elements causing over 100 interacting feedback loops. Some exemplary feedback loops are marked with R (reinforcing) or B (balancing). One example for a larger reinforcing feedback loop showing the non-linear effects (exponential decline) of water usage by mining activities rippling through the economic (blue), ecological (green) and social sub-systems is highlighted in red.

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