TRANSCEND Policy Brief

TRANSCEND

BEHAVIOURAL AND EXPERIMENTAL APPROACHES FOR THE ADOPTION OF TRANSFORMATIONAL ADAPTATION POLICIES AND RESILIENT WATER MANAGEMENT

Survey-based evidence on behavioural change from Living Labs interventions within TRANSCEND project

UK Research and Innovation
Funded by the European Union

INTRODUCTION

TRANSCEND project aims at developing Transformational Adaptation Policies (TAPs) in seven river basins worldwide, including innovative allocation systems and economic instruments, which are robust and adaptable to uncertainty and change and achieve equitable and sustainable economic growth and welfare under growing water scarcity. To encourage the adoption of TAPs, the project has adopted an approach of stakeholder engagement and experimental methods, especially serious games, to communicate policy performance and uncertainty assessments towards the adoption of more robust and participatory water management practices by stimulating awareness, dialogue, learning, and behavioural change among stakeholders.

Research question: Can stakeholder engagement and experimental methods change the attitudes and behaviour of stakeholders towards the adoption of TAPs?

METHODS

TRANSCEND collaborative process engaged stakeholders and scientists in Living Labs where they jointly identified key barriers and challenges in the river basin and co-designed scenarios and beneficial TAPs.
This process was supported by an integrated modelling suite combining climatic, hydrological, agricultural, microeconomic and macroeconomic systems to assess TAP performance under uncertainty and plausible future conditions, informing the co-design of robust, evidence-based strategies.
The results were subsequently communicated through serious games and facilitated workshops, supporting engagement and social learning. The key research question addressed in this policy brief is whether the intervention led to changes in participants' attitudes and beliefs toward TAP adoption.

To explore this question, the project used behavioural surveys comparing two groups: 1) Treatment group: stakeholders directly involved in the Living Labs who participated in the workshops and serious games; and 2) Control group: members of the general population in each country, recruited through the Prolific platform, who completed the same surveys without receiving the intervention.
Both groups completed the same battery of questions before and after the intervention period.

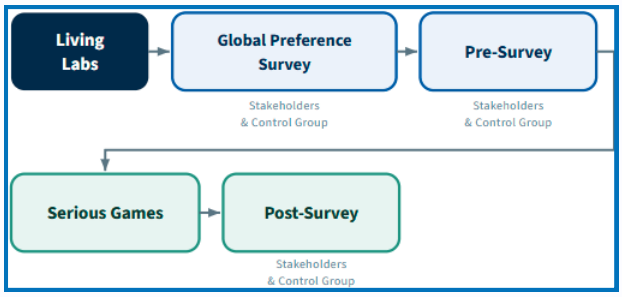


Figure 2: TRANSCEND collaborative process scheme

The pre-survey included the Global Preference Survey – GPS, measuring individual social preferences such as risk tolerance, patience, altruism, and reciprocity – as well as 16 questions on personal beliefs regarding water management and consumption. The identical 16 questions were repeated in a post-survey to detect changes in attitudes. Comparing the magnitude and direction of changes across groups allowed the research to attribute any observed shifts in responses to the intervention itself.

Key message: The absence of statistically detectable behavioural change is a theoretically expected result, not a signal of failure. It reflects the inherent difficulty of measuring early-stage effects of a process that requires repeated reinforcement, contextual enablement, and time to unfold.

KEY FINDINGS

Awareness: a measurable first step

Despite the absence of measurable behavioural change, deepened in the following paragraph, the qualitative findings point to a meaningful increase in awareness among participants in the treatment group.

Stakeholders showed greater awareness of water scarcity severity, management trade-offs, and the role of transformational adaptation.

Their responses increasingly reflected systemic and long-term perspectives, framing water scarcity as a governance challenge rather than a purely technical issue. Increased references to uncertainty and robustness also suggest that modelling and scenario analysis improved understanding of the limitations of conventional planning under climate variability.

Treatment-group participants more frequently identified specific TAP instruments, including water trading, tiered tariffs, reallocation mechanisms, and water reuse and recycling, indicating a more concrete understanding of available policy options. This shift in awareness provides a precondition for attitude formation, which in turn precedes intention and eventually action.

Serious games were particularly effective in making abstract policy scenarios tangible across stakeholder groups.

Key message: Serious games and workshops raised awareness and fostered a more systemic and long-term understanding of water challenges, creating the foundations for attitudes and intentions that may support the future adoption of TAP.

Behavioural change

The quantitative analysis revealed no statistically significant difference in behavioural outcomes between the treatment and control groups following the intervention. This result, while not conclusive evidence of impact, is

theoretically expected and scientifically interpretable on several grounds:

- Behavioural change is a gradual, multi-stage process: a medium-to-large shift in intentions produces only a small-to-medium change in actual behaviour. A single intervention – however well-designed – operates at the intention-formation stage and cannot alone bridge the gap to enacted change.
- Habits and biases represent a structural barrier. They persist independently of deliberate reasoning and are among the most resistant determinants to modify, requiring sustained and repeated exposure to produce measurable effects.
- Intervention effects are inherently heterogeneous across individuals. Depending on political ideology, financial dispositions, and pre-existing behavioural patterns, the same message may trigger change in some groups, have little effect on others, or cause reactance, masking significant effects at the aggregate level.
- Finally, behavioural effects may take time to emerge and may not be fully captured within the observation window, highlighting the need for longer-term follow-up.

Key Barriers to behavioural change across Living Labs

The absence of a statistically significant behavioural effect at the aggregate level is partly attributable to substantial variability across Living Labs, both in participant profiles and in intervention outcomes. When heterogeneous contexts are aggregated in a single analysis, divergent effects could obscure change that may have occurred within specific subgroups or sites. Four structural sources of heterogeneity emerged as key moderators of the intervention's effectiveness:

- **Stakeholder heterogeneity**: participants differed considerably in professional background, institutional role, and prior familiarity with water governance. They brought distinct beliefs, risk perceptions, and cognitive flexibility to change. This diversity enriched deliberation but also complicated convergence around shared policy preferences, reducing the likelihood of a uniform treatment effect.
- **Composition of stakeholder groups across Labs**: stakeholder composition varied across river basins, with some Labs dominated by agricultural users and others by institutional or technical actors. These differences may have shaped how openly participants discussed or questioned existing practices, which may not be reflected in the overall results.
- **Variation in serious game design**: although all Living Labs used serious games as their core communication tool, the specific games deployed differed in structure and complexity.
  This variation, introduced to tailor content to local water challenges, reduced the cross-site comparability of outcomes and may have contributed to differential learning effects that are invisible at the

aggregate level.

- **Country-level and cultural context**: Institutional capacity, public trust, governance approaches, and collective-action norms varied across countries, shaping baseline attitudes and receptivity to transformational alternatives in ways a uniform intervention could not fully overcome.

POLICY RECOMMENDATIONS

The following recommendations are addressed to those responsible for stakeholder engagement programmes, with the aim of strengthening their capacity to foster the behavioural change needed for the adoption of more resilient and sustainable water management policies.

Adopt multi-stage evaluation frameworks to capture pathways to behavioural change.

Measurable shifts in behaviour are difficult to detect from a single, time-limited intervention. Evaluation frameworks should adopt a multi-stage approach that tracks intermediate outcomes – awareness, knowledge, and attitude change – alongside longer-term behavioural metrics. Repeating the same pre- and post-surveys across intervention cycles would enable cumulative changes to be tracked and strengthen the evidence base across Living Labs.

Invest in co-creation process as a strategic entry point for behavioural change.

The significant awareness gains documented across the Living Labs confirm that participatory methods, including co-creation and serious games, can increase understanding of water scarcity and transformational adaptation. Sustained investment in these approaches can provide a measurable first step towards behavioural change.

Structure interventions across multiple sessions.

Compressing the full intervention into a single day limits participants' capacity for reflection, consolidation, and gradual attitude formation. Spacing workshops across multiple days is more likely to produce durable effects and to support the transition from awareness to intention to action.

Pursue targeted and balanced stakeholder recruitment.

The heterogeneity of participant profiles across Living Labs underscores the need for deliberate recruitment strategies that ensure representative coverage of key actor groups. Pre-engagement activities can help reduce asymmetries in baseline knowledge and improve the quality of deliberation.

Calibrate intervention design to institutional and cultural contexts.

Differences in governance, public trust, and collective-action norms shape the effectiveness of behavioural interventions. Cross-basin analysis can identify contextual enablers and barriers, supporting more locally tailored approaches.

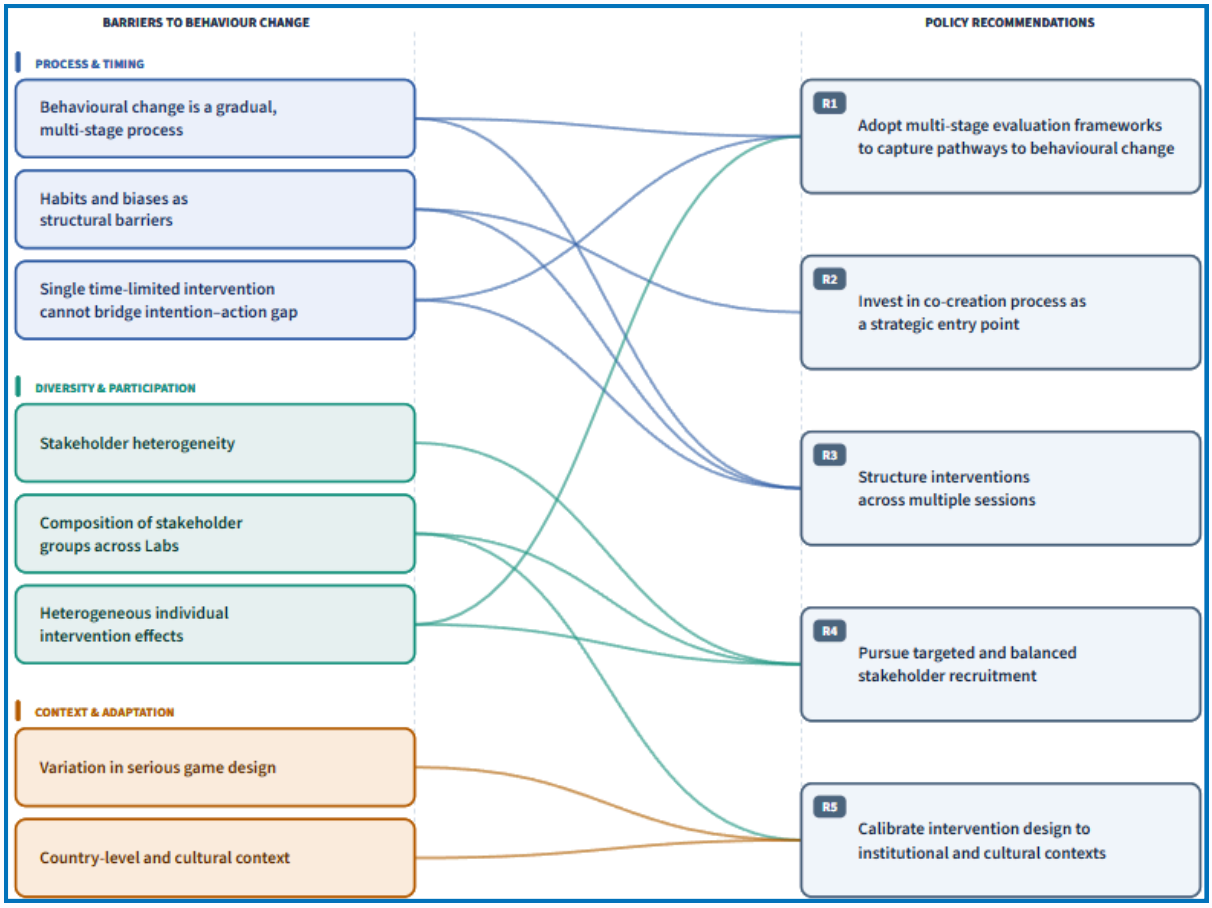


Figure 2: barriers to behavioural change and connected policy reccomendations