



Evaluating the impact of serious games for ecological and social transitions

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Evaluating the impact of serious games for ecological and social transitions : a methodological guide

Intended audience

This guide is a resource for anyone using serious games (SGs) to support sustainability transitions and who wishes to understand their impact. It proposes a comprehensive evaluation approach, enabling the analysis of change both in *itinere* (during implementation) and *ex post*.



Why evaluate the impact of serious games?

Nowadays, serious games are widely used by territorial actors. A significant number of games focus on learning outcomes (awareness-raising, skills development, etc.), but SGs are increasingly mobilised as tools to facilitate real-world change. Beyond learning, these games can contribute to practical effects by influencing behaviours, practices and organisations, and may ultimately support innovation and change at system level. Despite the widespread perception that SGs are powerful tools, their use does not automatically guarantee effectiveness or tangible impact. Evaluating real-world change is therefore essential, especially for interventions supporting territorial transitions, as they seek to influence complex systems (e.g., governance). By fostering reflexivity, analysing context and implementation conditions, and assessing the effects produced, evaluation helps draw meaningful lessons from experience.

Evaluating serious games for socio-ecological transitions?

A substantial share of SGs for transitions is designed to facilitate dialogue and collective intelligence for the design and planning of strategies. This implies initiating real-world change dynamics and interacting with stakeholders at multiple scales. Since these kinds of SGs are often combined with other activities within a broader support process, their evaluation should go beyond the game session itself and consider the entire intervention designed to drive change in the field.

Why build an impact evaluation system using both *itinere* and *ex-post* approaches?

The evaluation of a game can take place at different points in time. On the one hand, it is possible to assess direct effects in *itinere* (during implementation) to allow continuous adaptation of the process. On the other hand, evaluating *ex post* impacts (that is, indirect and longer-term effects) is essential to understand what worked and what remains of the dynamics initiated by SGs. This stance supports collective, operational learning and helps maintain dialogue with stakeholders.



This guide proposes a method to build an evaluation system adaptable to any intervention using serious games:

- A model to formulate impact narratives (**Step 1**)
- A theory of change model to formalise the “SG to impact” process (**Step 2**)
- Guidelines for designing an evaluation matrix (**Step 3**)
- Guidelines to set up an operational data collection protocol (**Step 4**)
- Guidelines for analysing and using evaluation data for learning and adaptation (**Step 5**)

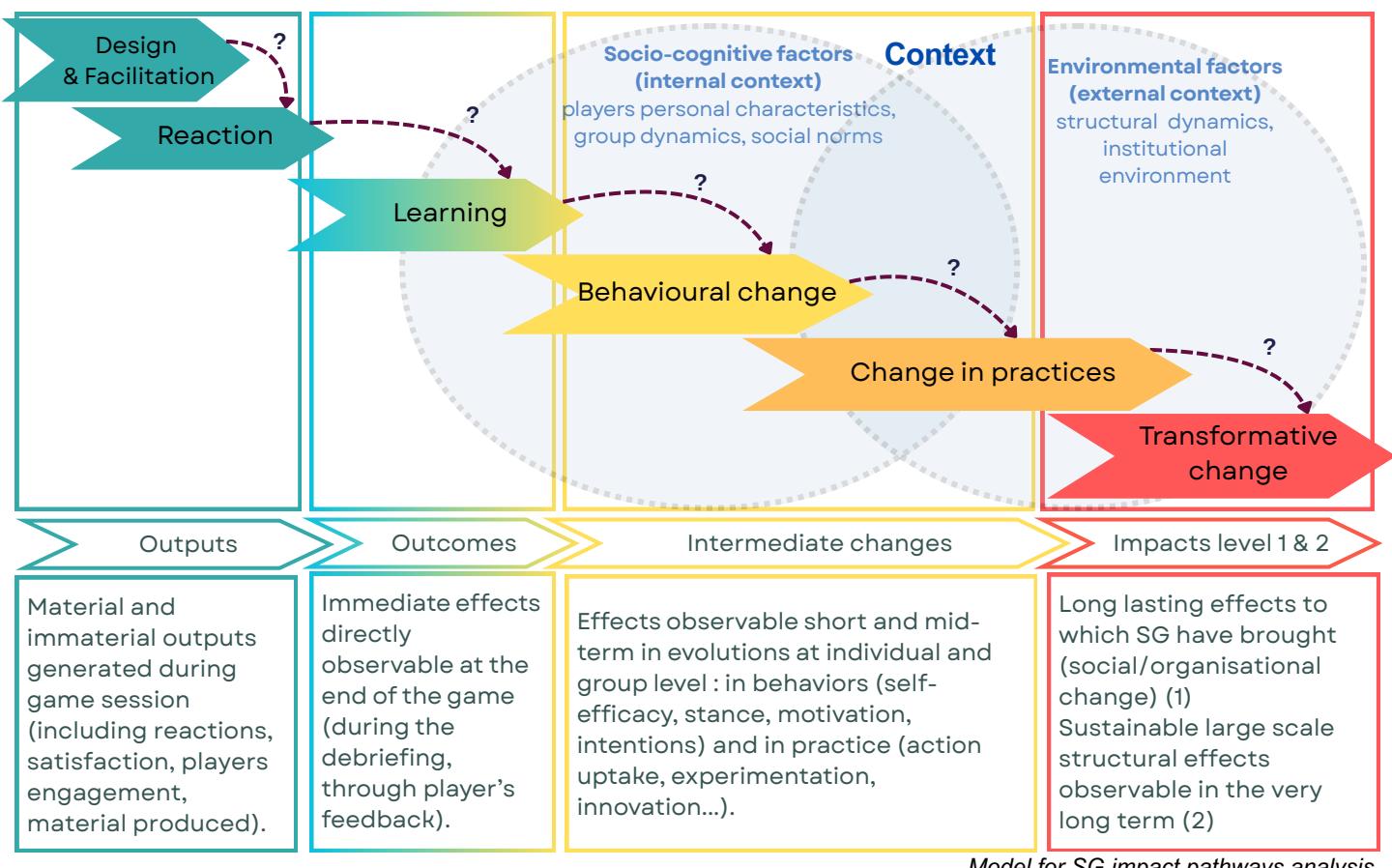
First and foremost : Why choose a theory-based evaluation (TBE) approach?

This evaluation approach shifts the focus from observed effects ex post to an analysis of causality leading to change. It examines how and why SGs contribute to intended outcomes, accounting for interactions between implementation processes and contextual factors—essential drivers for SGs targeting environmental and social transitions. A key advantage of this context-sensitive approach is that it allows assessing SGs both as a single intervention and as part of a broader process (e.g., the articulation of multiple serious games or within a project). Using TBE supports iterative reflexivity on the intervention and informs adaptation to foreseeable contextual challenges during and after implementation. In practice, TBE consists of:

1. **Articulating the process** by which the intervention is expected to bring impact (change hypothesis).
2. **Identifying contextual factors** that facilitate or hinder change dynamics.
3. **Engaging stakeholders and partners in a critical reflection** by facilitating dialogue and learning at relevant stages of implementation.

STEP 1: Clarifying the game objectives and intended impacts: a model for multi-dimensional change analysis

Before setting up an evaluation, it is essential to define its **scope**, that is, what we aim to transform. The objectives of an intervention using serious games for transitions target different **types of change**, across multiple **scales** and **timeframes**. Below, we propose a model for analyzing the **SG to impact continuum**, linking these changes to the timeframes in which they potentially emerge: immediate effects (outputs and results), short- and medium-term effects (intermediate changes), and long-term effects (impacts).

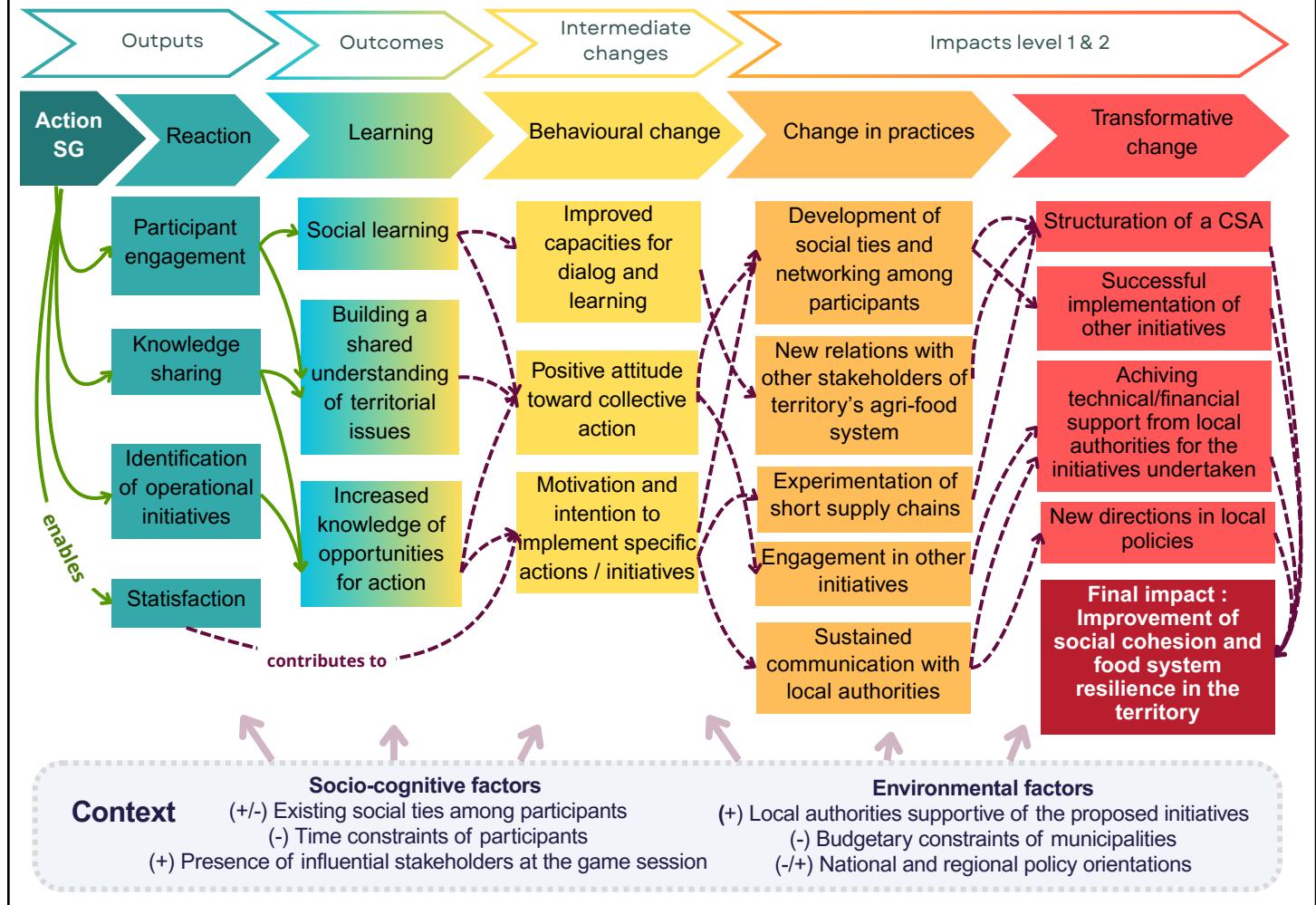


Drawing on this model, the next step is to develop an **impact narrative** explaining how the intervention is expected to generate the **intended results and impacts**. This narrative links the implementation of the serious game(s) to **direct effects** (attributable to the game) and **indirect effects** (to which the game may have contributed). These **impact hypotheses** will serve as a reference point for the evaluation.

STEP 2 : Developing a theory of change for an intervention based on serious games

Building a **theory of change** involves formalising an explicit (and evaluable) vision of the **causal pathways** and dynamics connecting SG to **final impacts**. It describes, step by step, the expected effects/outcomes, causality and contributions to impact, following this logic: “If SG **enables** [change 1] then it **contributes to generating** [change 2], with **enabling and constraining contextual factors** influencing this dynamic”.

Example of a theory of change based on an action serious game targeting territorial transition for sustainable foodsystem with objectives:
1) Engaging in dialog and build a shared understanding of territory's challenges 2) Co-design operational initiatives to implement in territory.



ETAPE 3 : Structuring a matrix with evaluation questions and criteria

The **evaluation matrix** is a useful tool to **operationalise** a theory of change as developed above. It aims to clarify the **perimeter**, the **evaluands**, and the **data collection methods** (sources, collection tools). The matrix can be developed in three steps :

- **Formulation of evaluation questions:** they are designed to test the impact hypotheses articulated in the theory of change. Questions can also be framed using evaluation criteria (see box) and by examining context-related factors.
 - **For each evaluation question, design indicators** relevant to convert questions into an operational data collection. Indicators should be specific, measurable and realistic.
 - **Identifying data collection tools** to inform each indicator.

Example of an evaluation matrix developed by an NGO to assess an intervention combining serious games aimed at engaging citizens in local transitions. [Available via this link](#)

Example of evaluation criteria

Evaluating the game:

- usability
 - acceptability
 - utility
 - relevance

Evaluating its effects:

- efficacy
 - effectiveness
 - durabilité

ETAPE 4 : Designing and using an operational data collection protocol

Designing a data collection protocol helps structure the evaluation activities to assess whether the impact hypotheses are verified. By documenting the indicators, it enables evaluators to answer the evaluation questions in a systematic and robust way. Building a relevant evaluation protocol involves several steps:

1. **Selecting relevant and realistic data collection tools** adapted to the context and resources available (see toolbox). Each data collection tool may inform multiple indicators.
2. **Clarifying the timing of data collection** (ex ante, during game sessions, on the spot, over the short-medium or long-term). This can be represented as a timeline highlighting key moments for observation and data gathering.
3. **Designing the evaluation tools** (e.g. interview guides, structured observation grids, questionnaires) and collecting data in the field through the selected methods.
4. **Triangulating data sources** (self reported, observed, etc) to inform indicators.

Exemples of data collection tools:

- Game session observation grid
- Pre-post questionnaires
- Information interviews
- Semi-structured / structured interviews
- Focus groups
- Stakeholder workshop
- Field visit
- Desk review



Analysing and using evaluation data: reflexivity throughout the process and over the long term to support transition dynamics.

Analysing collected data iteratively facilitates immediate insight into SG implementation as well as into what is happening between sessions. This way, gathering feedback is key for decisionmaking : evaluation can be used for monitoring purposes to reflect and adjust the approach "in progress".

Above all, ex post impact evaluation provides a comprehensive perspective across the whole set of SG mobilised during the intervention. It allows to characterise (un)expected impacts by informing important questions: what types of change/impacts emerge? for whom? how did they occur? are these sustainable? Understanding these changes contributing to a dynamic of transition and the influence of (internal and external) contextual factors is valuable. Indeed, identifying drivers and barriers of change, leverage points for action is essential to improve future interventions and their impact.

Finally, these results should be disseminated and used to support collective learning: regular feedback sessions, a final workshop, and evaluation reports help to consolidate and share the experience among stakeholders.

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