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Theory of change

A practical approach for iterative planning, monitoring, evaluation and learning for change-oriented research.

What is a theory of change?

A theory of change (ToC) is a model of a change process. It provides a description and explanation of how and why an activity or a set of activities (such as a project or program) is expected to lead or contribute to a process of change. A ToC is not a single theory but a set of theories that describes and explains the multiple steps in a change process. The approach recognizes that socio-ecological systems are complex, and that causal processes are often non-linear with multiple interactions and feedback loops. A ToC details the main actors involved in the process, identifies their actions as a sequence of steps or stages in the process, and specifies the theoretical reasons for the changes. ToC can be used as a planning tool, as a framework for monitoring and evaluation, and as an analytical tool.

ToC principles are transferable to non-research contexts, such as higher education programming, development projects, or other change-oriented initiatives.

Why should it be applied?

Ideas on how transdisciplinary research may influence or enable problem solving can be framed as theories of change. Articulating the pathways and assumptions about how and why change is expected to happen in the form of a ToC encourages critical thinking, alignment, and transparency. The process can expose flaws in the logic of change and underlying assumptions, and can help identify different or additional activities needed for the intended impact.

As a planning tool, a ToC can make project design and implementation more realistic and relevant by facilitating critical reflection. As a monitoring tool, a ToC helps identify useful indicators to assess progress and it can facilitate adaptive management. As an evaluation tool, a well specified theory of change sets out testable hypotheses about each step in the change process. A ToC helps identify data requirements and potential data sources to assess actual achievements against expected outcomes at each stage to check whether the change happened as hypothesized.

When should it be applied?

ToC modelling can be useful at any stage of a project or program. When used ex ante, a ToC provides a framework and guide for project or program planning, design, and implementation. ToC can be used during project implementation to support monitoring. ToC can be used ex post for evaluation as a set of hypotheses about the change process that can be tested empirically. A ToC can be documented retrospectively, but it is more valuable and accurate when done prospectively as part of the planning process, which can be modified as the project or program progresses.
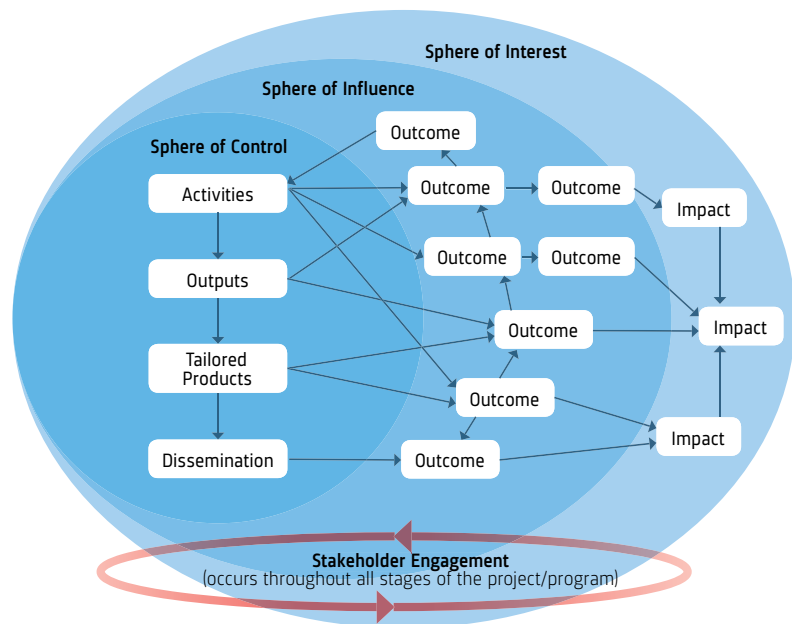

Illustration of interactions between elements of a theory of change (Belcher, Claus & Davel).
Note: This diagram builds on ideas from Outcome Mapping (Earl, Carden, & Smutylo, 2001), and conceptualizes the change process with: 1) relatively declining influence of an intervention over time and space, within spheres of control, influence, and interest; and 2) outcomes defined as behaviour change that is influenced by changes in knowledge, attitudes, skills, and relationships of key actors in the system.

How does it work?

A ToC model is typically developed in a workshop setting. The following sequence is recommended based on experience; however, the iterative nature of the process allows for flexible ordering:

1) Define the overall purpose: the overarching goal to which the research aims to contribute (but is not accountable for), for example, the elimination of poverty;
2) Identify main activities, the actors to be involved, and the engagement processes planned;
3) Identify the outputs (e.g., knowledge, technology, relationships) intended to result from the research project or program;
4) Identify outcomes (effects on actors, e.g., changes in knowledge, attitudes, skills, relationships, or behaviour) that will result from the planned activities, engagement, and outputs produced (consider outcomes at different stages of the process, i.e., intermediate/short-term outcomes, end-of-project outcomes, high-level/long-term outcomes)
5) Identify impacts (e.g., tangible social, economic, and/or environmental benefits) that will be influenced by the outcomes;
6) Document and analyse the underlying theories and assumptions about the main causal relationships (how and why should any given result be realized?); and
7) Revise and refine the model, ensuring that the main activities, actors, and project/program logic are sound and adequate to contribute effectively to the main outcomes.

Ongoing validation and vetting of the ToC model with project or program stakeholders is important to help make the model more accurate, effective, and transparent. Participation in the process generates ownership of the model to support accountability and increases the likelihood of achieving effective research.

To support the systematic collection of information needed to assess and explain the achievement of outcomes, it is valuable to:
1) Identify indicators and/or measures of success for key steps (outcomes) in the ToC;
2) Define the evidence needed to demonstrate or refute the realization of outcomes;
3) Identify the data and data sources required; and
4) Collect evidence of outcome achievement at planned intervals of the project or program.

How are thought styles bridged?

ToC development provides a forum and framework for bridging thought styles, disciplines, and epistemologies. The ToC process surfaces participants' ideas, perspectives, and approaches, and stimulates them to contrast assumptions and expectations on desired change. Participants build on each other's ideas as they identify a collective purpose and set of outcomes. Moreover, participants can identify and map convergences between different activities involving multiple actor groups, as well as those which feed into one or several impact pathways. Research progression tends to become more results-oriented and representative of the diverse perspectives and expertise within the team and the workshop participants.

What's the output / outcome?	The output of ToC modelling can be presented as a narrative, table, and/or diagram. A ToC is often presented as a flow diagram, with boxes linked by arrows in a web of results. The boxes in the diagram (representing activities, outputs, and outcomes) are typically organized by theme or by sets of actors in impact pathways. An accompanying ToC narrative describes and explains the arrows which represent the causal assumptions, theoretical explanations, and mechanisms by which each step is realized. An evidence table supplements the ToC by outlining sources of evidence to empirically test the hypotheses outlined in the model.
	With respect to outcome, the process of articulating a ToC helps develop a comprehensive shared understanding of and ownership over a research project or program. The model provides a reference point to monitor and evaluate progress by more clearly defining what activities and actors are needed, as well as their respective roles in the intended change processes as the project or program progresses.
Who participates in what role?	The participants in a ToC workshop should include the research project or program management, collaborators, and ideally any key stakeholders who will be engaged (i.e., consulted, informed, or involved) in the research. A facilitator moderates the discussion. Monitoring and evaluation of a ToC can be undertaken by the project team or an external evaluator. Which key informants need to be engaged to collect evidence for the ToC is largely dependent on the operating context of the research project or program.
What do I need to prepare?	1) An understanding of key concepts and how they apply in your research project/ program context
	2) A set of facilitating questions for each stage of the process
	3) Materials to document the theory of change (templates)
	Key concepts, facilitating questions and templates can be downloaded from the website listed below.
Where can I learn more?	Check the website www.researcheffectiveness.ca for additional resources.
	For a detailed explanation of the outcome evaluation method that applies theory of change for assessing the societal impact of research projects: Belcher, B M, Davel R, Claus R (2020). A refined method for theory-based evaluation of the societal impacts of research. Methods X. 7, 100778. doi.org/10.1016/j.mex.2020.100788
	Check the online profile on www.transdisciplinarity.ch/toolbox for updated resources (e.g. most recent publications, experience reports, videos, links).

SDGs: The International Sustainable Development Goals of the UN

In this publication, the Swiss Academies of Arts and Sciences make most notably a contribution to SDGs 4, 16, 17:

> sustainabledevelopment.un.org
> eda.admin.ch/agenda2030/en/home/agenda-2030/die-17-ziele-fuer-eine-nachhaltige-entwicklung.html