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HOCHSCHULE DARMSTADT
UNIVERSITY OF APPLIED SCIENCES

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SYSTEM INNOVATION FOR
SUSTAINABLE DEVELOPMENT

ToC experience

gathered in the transfer based research project

„More sustainable chemistry along the global leather supply chains“

Bundesministerium
für Bildung
und Forschung

Gemeinsame
Wissenschaftskonferenz
GWK

Innovative
Hochschule

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1 For what purposes are ToCs useful?

- Achieving the objectives of the stages of TDR (see next slide)
- Generating a complex understanding and gaining a systems perspective of the project at hand
- Ideation/conceptualisation of concrete implementation projects (interventions) within a broader TD programme (i.e. measures as building blocks for higher level impacts)
- Selection of projects related to the impact
- Understanding the societal problem at hand
- Understanding the role of the projects and their outputs in the context of the impact
- Reduction of complexity
- Communication towards internal and external actors
- Constant and iterative evaluation of project steps and outputs

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2 At what stages of TDR can ToCs be developed with which functions?

- Stage A: ToC can support the joint problem framing process (context analysis, vision building and backcasting) and thus concretises the common goals and interventions via a boundary object, broken down to the desired effects. This fosters system thinking of everyone involved in the project.
- Stage B: Creates the basis for cooperation in the research phase of solution development and can be used here as a planning instrument and for an accompanying monitoring (iterative adjustment): Enables a system-oriented indicator system (individual measurement points vs. reference to each other / rebound effects / interactions)
- Stage C: Basis for evaluation of roll-out success and potential starting point for follow-up projects

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3 What is the experience with combining ToC with other methodological elements (e.g. actor analysis, scenario technique, indicator development, etc.)?

- Mapping of all relevant actors
- Methodological building blocks of scenario technique (cross-impact analysis, consistency analysis) facilitate problem framing and visioning (see Schenten/Rehn 2021)
- Analysis of actor's behaviour and incentives / impediments with respect to behavioural change (actor analysis, Bizer/Führ 2015) underpin ToC development
- Strategy workshop deriving from the perspective of the vision transfer questions and related trajectories (as functional equivalent to backcasting)
- Design Thinking Workshops and other co-creative approaches that aim at ideating appropriate concepts and solutions

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4 What challenges did participants face in developing ToCs and how did they cope with them?

Challenges

- Appropriately communicating the complexity and meaning of a ToC
- Precise separation and causal order of outputs and outcomes
- Reduce complexity without losing too much information (model of reality?)
- Define system boundaries
- Visibility of time effort (costs) vis-á-vis visibility of benefits

Cope

- Meth. Building blocks of scenario technique create orientation for ToC
- Switching between TD to ID to TD makes the process more efficient (but how effective/successful?)
- [Streamlined] ToC as a communication tool within the TD project team

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5 How can the ToC approach be further developed for: a) facilitating its practical application; b) outlining and explaining the mechanisms and conditions for creating social change processes/transformation processes, and; c) understanding the role of TDR projects in transformation processes better?

a Establish a systematisation (being aware of context and purpose) and common "visual vocabulary" of ToC taking into account potentials of new technologies and innovative visualisation strategies

b+c Create systematisation for ToC benefits in different TDR stages (problem framing, solution development, roll-out)

If ToCs in TDR projects with congruent themes/objectives (e.g. specific sustainability challenge, specific region) are carried out according to a set of standards, then the roles of individual projects in the transformation process can be better understood and classified with reference to the (cumulative) impact.

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