

Systems Thinking and Design for Social Change and in Policymaking (Part of PhD Program in Science and Policy)

Lecturers: Melanie Paschke, ETHZ, Tobias Luthe, ETHZ, Laura Ferrarello, EPFL, Anaïs Sägesser, scaling4good & innosuisse, Swen Bos, Empa

Location: ETH Zurich

Dates: January 20-22, 2025

Credit Points: 1 ECTS

Course Description

Get to know the transformative potential of systems thinking and relevant tools and methods in policymaking. Society, scientists, and policymakers have to deal with wicked problems and complex societal needs that can be assessed and solved only if seen in a systems context. Systems thinking can inform, model and impact policymaking. This workshop will offer theoretical and practical insights into a toolbox of techniques used in system mapping and system design while being guided by different experts. Participants are asked to bring their own problems and cases to be worked on.

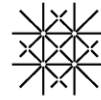
Core Sections of the Program:

- Introduction of System Thinking and its Relevance for Policy Making, Tobias Luthe, ETH Zurich (Jan 20, morning session)
- From system mapping to system design, Laura Ferrarello, EPFL (Jan 20, afternoon session)
- Simulation Games as Tools in System design and Policymaking, Swen Bos, Empa (Jan 21, morning session)
- Sustainability Policies, Leverage Points and Intervention Design, Melanie Paschke, ETH Zurich (Jan 22, morning session)
- Changing Social Practices and Policymaking, Anaïs Sägesser, scaling4good & innosuisse (Jan 22, afternoon session)

Prior Knowledge: We recommend participating in the ETHZ MOOCs “Designing Resilient Regenerative Systems” (<https://systemicdesignlabs.ethz.ch/mooc-page/>) and the MOOC 2 Beyond Systems Thinking (<https://www.edx.org/learn/social-science/eth-zurich-beyond-systems-thinking-2>).

Number of Participants: 20

Target Audience: This course is open to PhD students, Post Docs, researchers or staff members of ETH Zurich, University of Zurich, or University of Basel. Priority is given to PhD students enrolled in the PhD Program Science and Policy.



Individual Performance and Assessment: To earn credit points, full attendance and active engagement throughout the workshop are compulsory requirements. A short presentation of the case study work must be given at the end of the course.

Detailed description of the Workshop Modules

Introduction of System Thinking and its Relevance for Policy Making

Tobias Luthe, ETH Zurich

In this first module, we will get to know some of the key ideas of system thinking in policymaking. We will apply processes for framing problem statements starting from an iceberg model and use gigamapping as a visualization tool and technique for system-oriented design (<https://systemsorienteddesign.net/how-to-gigamap/>).

Learning Objectives:

- Introduction to key terminologies and concepts.
- From iceberg model to problem statement.
- Use Gigamapping as a visualization tool for system mapping.

From System Mapping to System Design

Laura Ferrarello, Collaborateur Scientifique Senior, EPFL

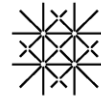
Adopting holistic and systemic methods is key to understanding the complexity of policymaking and identifying strategies that are effective in achieving targets and objectives. With this workshop, you are introduced to the concept of system mapping. You will learn tools and methods that support the development of new policies across different contexts. Under the guidance of a design-driven approach to wicked problem mapping, you will engage in a case study to gain insight into the framing of a problem. By analysing the positive and negative feedback of a system that contributes to feeding or stopping a problem, you will gain a more comprehensive understanding of its causes and effects. Using these relationships, you will generate principles and guidelines aimed at guiding new policy development.

Learning Objectives:

- Formulate problem statements using system thinking.
- Generate policy strategies from system analysis.
- Create wicked problem maps guided by a design-led approach.
- Formulate principles of policies that harness stakeholders' relations.
- Develop policies' guidelines by using a design-led approach.

Literature:

Meadows., D., (1999). Sustainable Systems, University of Michigan Ross School of Business.
[Accessed in October 2023] <https://youtu.be/vJ1STks8MUU?si=MAcEx7widAZgDOFY>.



Alford, J., & Head, B. W. (2017). Wicked and less wicked problems: a typology and a contingency framework. *Policy and society*, 36(3), 397-413.

Van der Bijl-Brouwer, M., & Malcolm, B. (2020). Systemic design principles in social innovation: A study of expert practices and design rationales. *She Ji: The Journal of Design, Economics, and Innovation*, 6(3), 386-407.

Sustainability Policies, Leverage Points, and Intervention Design

Melanie Paschke, Zurich-Basel Plant Science Center, ETH Zurich, Universitäten Zurich und Basel

System design and exploring leverage points needs a close understanding of the interrelations of system actors and the negative and positive feedback loops that might arise from these interrelations. We will start the day with embodied system games that will make us understand the role of interrelations in people and in policy systems reaching out for sufficient consumption and lifestyle changes. We will explore the possible leverage points in system thinking and understand Meadow's ideas of low and high-order leverage points.

How could we target sufficiency policies to high leverage points? In the new IPCC report sufficiency policy are defined "*as set of measures and daily practices that that avoid demand for energy, materials, land and water while delivering human wellbeing for all within planetary boundaries.*"

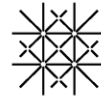
We will use the Theory of Change to describe change pathways to system-relevant sufficiency policies' outcomes. As part of the change pathways, we will think interventions that could support the outcomes.

Learning Objectives:

- Explore embodied system games to understand how emergent group behaviour arises from participants following simple rules.
- Individuals following the actions of others in a way that creates a feedback loop that generates complex actions seemingly from nowhere.
- Understand Meadows' ideas of low and high-order leverage points.
- Introduction to the idea using of interventions for emergent behavior.
- Get to know real-world interventions from sufficiency policies.
- Use Theory of Change for describing change pathways to target system-relevant high-leverage outcomes.
- Create interventions to reach out for the outcomes.

Literature:

der Carteret, R. (2019). Systemic complexity games. In: Paschke, M. and A. Pfisterer. Collective inquiry. With contributions of: Backhaus, J., de Carteret, R., Damerius, L., Huang, Y.-Y., Huppenbauer, M., Pöll, C., Rahn, E., Reynolds, M., Wallimann-Helmer, I. In: Paschke, M. and Dahinden, M. (eds.). Engaging in the science-policy dialogue, Workbook 8. Zurich: Zurich-Basel Plant Science Center: 10.3929/ethz-b-000315545



Meadows D. Leverage Points: Places to Intervene in a System. In: The Sustainability Institute, 1999: https://1a0c26.p3cdn2.secureserver.net/wp-content/userfiles/Leverage_Points.pdf

United Nations Environment Programme (2022). Enabling Sustainable Lifestyles in a Climate Emergency [Policy Brief]: <https://www.unep.org/resources/policy-and-strategy/enabling-sustainable-lifestyles-climate-emergency>

Changing Social Practices and Policymaking

Anais Sägesser, scaling4good & innosuisse

Social practices, the collective behaviors, habits, and customs within a society, play a fundamental role in shaping the fabric of communities. These practices are deeply interwoven with policy formulation, highlighting the reciprocal relationship between policies and societal behaviors. This session involves self-reflection and ontological positioning to explore the multifaceted aspects of changing social practices and to understand the central role of policy interventions. It delves into the complex connections between diverse social practices and the diverse levels at which policies influence them. The session underscores participatory approaches, utilizing methods that encourage deep listening and dialogue, essential tools for effectively transforming social practices.

Learning Objectives

- Introduction to the idea of social practices & social practice change
- Understand different approaches to social practice change.
- Gain insights to navigate policy- social practice dynamics.
- Foster participatory approaches

Literature:

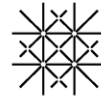
Vihalemm, T., Keller, M. (2016): Social Practices as Sites of Social Change in: Vihalemm, T., Keller, M. Kiisel, M. (2016). From Intervention to Social Change, A Guide to Reshaping Everyday Practices.

Klitkou, A., Bolwig, S., Huber, A., Ingeborgrud, L., Pluciński, P., Rohrer, H., Schartinger, D., Thiene, M., & Žuk, P. (2022). The interconnected dynamics of social practices and their implications for transformative change: A review. *Sustainable Production and Consumption*, 31, 603–614. <https://doi.org/10.1016/j.spc.2022.03.027>

Simulation Games as Tools in System Design and Policymaking

Swen Bos, Empa

Games are not only entertaining, but can also be used for other purposes, such as knowledge transfer, scenario exploration, conflict resolution, or policy planning. In this module, we will explore together how systems can be simulated within games and what roles simulation games can play in policymaking processes. Therefore, we will first play and debrief the classic simulation game "Planet C". Based on this shared experience, we will then discuss the potential of games in terms of representing and experiencing systems, as well as their possible roles in policymaking processes. The



module is rounded off with an input where we share from our experience as game developers and facilitators.

Learning Objectives:

The participants get to know:

- The principal ideas of simulation games.
- The simulation game "Planet C».
- Some important roles that games can play in policymaking processes.
- The potential of games to represent and simulate systems.

Literature:

Duke, R. and Geurts, J. Policy Games for Strategic Management - Pathways into the Unknown. 2004. Dutch University Press, Amsterdam, The Netherlands.

Mayer, I. S. 2008. Gaming for policy analysis. Learning about complex multi-actor systems. Why Do Games Work; In Search of the Active Substance; de Caluwé, L., Hofstede, GJ, Peters, V., Eds, 31-40.

Garcia, C.A., Savilaakso, S., Verburg, R.W. et al. 2022. Strategy games to improve environmental policymaking. Nat Sustain 5, 464–471. <https://doi.org/10.1038/s41893-022-00881-0>

Étienne, M. (Ed.), 2014. Companion Modelling: A Participatory Approach to Support Sustainable Development. Springer Netherlands, Dordrecht. <https://doi.org/10.1007/978-94-017-8557-0>