**PhD Project:** Improving the transformative capacity of urban sustainability assessment methodologies - complexity, experimentation, learning (working title)

**Pekka Halla** (pekka.halla@epfl.ch)

**Motivation:** When considering sustainability assessment tools, it is important to acknowledge their normative power. Instead of being merely neutral devices for observing the sustainability of a project or a system, these tools shape decision-making by promoting certain goals over others, by considering certain variables as more important than others, and by highlighting certain actors and action paths as more central than others. The upshot of such unavoidable normative character of sustainability assessment tools is that the tools themselves are subject to evaluation. Specifically, a central question is: *What is the capacity of sustainability assessment methodologies for advancing sustainability transformations?*

In an increasingly urbanized world, the role of urban areas in driving sustainable development has received increasing recognition. As a result, sustainability assessment methods designed particularly for urban systems and contexts have proliferated. While the multitude of methods is welcome in terms of addressing different aspects of sustainability, the number of methods in itself is no guarantee for their effectiveness in encouraging sustainability transformations with the required urgency. Therefore, a critical review of existing urban sustainability assessment methods is in place.

**Goal:** With the above background in mind, this PhD project aims at improving the transformative potential of urban sustainability assessment methodologies. This entails enhancing understanding of the way the complexity of real-world socio-ecological-technological systems is simplified into models and indicators, how change occurs in such systems, how the tension between experts and laymen participants can be reconciled, and how conflicting normative ideals (concerning both the goals and transition paths ahead) can be dealt with.

**Approach:** The PhD project consists of a mixture of theoretical and empirical work, supported by computer simulations. Theoretically and conceptually, the project draws inspiration particularly from two areas of existing scholarship, both dealing with complex systems. First, insights from assemblage-based thinking in social sciences are used to inform the socio-political aspects of urban system. Second, these insights are combined with a more formal understanding of urban systems and their evolution as found in complexity science. Empirical data collection and analysis will be used to elaborate qualitatively on the idea of experimentation as a way for stimulating local sustainability transformations. Finally, with the help of modeling and agent-based simulations, the above work is tied together with sustainability assessment to create a picture of the evolutionary, experimental and politically contested transformation of urban systems towards sustainability.

**Intended outcomes:** The envisioned output of the research will contribute to the improvement of the three central aspects of urban sustainability assessment methodologies: the systemic aspect will be taken into account with a critical consideration of the underlying conceptualization of urban systems; the processual aspect will benefit from an enhanced understanding of the idea of experimentation and its connection to assessment and learning processes; and the normative aspect will be addressed through the appreciation of pluralistic viewpoints. Altogether, then, the outcomes of the research are intended to contribute to the further development of the transformative capacity of urban sustainability assessment methodologies in a way that ties reflexive and inclusive assessment processes together with the experimental creation of novel and contextually appropriate sustainability solutions.