Developing Indicators in System Mapping Process Through Science-Based Visual Tools

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Abstract : The system mapping process can be defined as a knowledge service where a team of facilitators, experts and practitioners facilitate a guided conversation, enable the exchange of information and support an iterative curation process. System mapping processes rely on science-based tools to introduce and simplify a variety of components and concepts of socio-technical systems through metaphors while facilitating an interactive dialogue process to enable the design of co-created maps. System maps work then as "artifacts" to provide information and focus the conversation into specific areas around the defined challenge and related decision-making process. Knowledge management facilitates the curation of that data gathered during the system mapping sessions through practices of documentation and subsequent knowledge co-production for which common practices from data science are applied to identify new patterns, hidden insights, recurrent loops and unexpected elements. This study presents empirical evidence on the application of these techniques to explore mechanisms by which visual tools provide guiding principles to portray system components, key variables and types of data through the lens of climate change. In addition, data science facilitates the structuring of elements that allow the analysis of layers of information through affinity and clustering analysis and, therefore, develop simple indicators for supporting the decision-making process. This paper addresses methodological and empirical elements on the horizontal learning process that integrate system mapping through visual tools, interpretation, cognitive transformation and analysis. The process is designed to introduce practitioners to simple iterative and inclusive processes that create actionable knowledge and enable a shared understanding of the system in which they are embedded.

Keywords : indicators, knowledge management, system mapping, visual tools