

Abstract

The research explored how a Systemic Design approach can support a Policy Design process on Circular Economy towards a Circular City model in post-industrial precincts. The thesis argues about how Circular Economy (CE) policy-making has wicked scenarios, that are often reinforced by a linear model of governance. Allowing “wicked problems” to be locked into “silos”, narrowing the understanding of the complex nature of such systemic problems. Therefore, to achieve a transition of CE in cities, it is needed a radical shift towards a more adaptive and collaborative policy framework. On that perspective, city governments approach CE policy instruments that enhance local value which is cohesive with long-term environmental goals of a Circular City. In particular, this doctoral research is focused on three research questions: What Circular City model can be envisioned post-industrial precincts, and what are the challenges and opportunities for their transition?, In what ways a systemic designer can co-design policies for a post-industrial precinct that encourage their transition towards Circular City? and, What value can Systemic Design approaches bring to the field of Public Policy on CE in cities beyond the scope of post-industrial areas?

The first Chapter delivers an overview of the background of this research applied to cities with post-industrial precincts, their CE challenges and the role of the designer in crafting effective policy-making process. On the one hand, the interest in post-industrial precincts was documented. Through their evolution from deprived areas towards ‘hubs’ for radical innovation and thriving resilient precincts, underlining their wicked problems in the governance and linear economy to be able to reactivate these precincts resides. This panorama was followed by a CE introduction and how such an approach is critical to unlocking the wickedness in post-industrial precincts. For that aim, it presents the need to propose effective policy strategies to transition towards a CE creating new socio-technical systems. Therefore, the discussion is narrowed towards the need of the conceptual framework of

a Circular City which delivers an overview from which to comprehend the ways CE could policies demonstrate in an urban environment. Such a model requires an innovative model of governance and decision-making, combining top-down and bottom-up processes. In order to activate new mechanisms of decision making, such as design thinking, participatory, and systemic approach towards co-design policies for a Circular City model. On that view, the Systemic Design has introduced as crucial expertise which provides practical tools to approach complex scenarios, in this case, addressing a CE policy design process in post-industrial precincts.

The second Chapter presented a state of the art reviewing the literature on System Transitions, Design for Sustainability, Systemic Design, Co-design practices, CE Policy Design and identified a knowledge gap. Such examination contributed to setting the scope of this research around CE policy design and outlining the problem to be investigated, the need to investigate in which ways a Systemic Design approach to CE policy cycles can establish a more inclusive and cohesive policy design process for a circular model relationship with the context to develop local value. As an outcome, a Systemic Design lens on Policy Design for CE decision-making was drawn as a conceptual approach to inform the following phases of this examination.

The third Chapter introduces the research methodology of this investigation; it describes the exploratory purpose, pragmatist paradigm and the mixed-method type of this research. Moreover, it explains the intended research strategy through the choice of case studies. This section describes in detail the research design, including data collection methods from Literature Review to the Systemic Design methodology determined to address the research aim and objectives drawn in section. Also, is delivered a further discussion on the selection of data collection and analysis methods applied in this research process.

The fourth Chapter presented the scoping study which was framed by a specific literature review targeting the evolution of the Circular City model carried to reach a theoretical proposition on Systemic Design approaches for a Circular City Framework, as set out in the rest of this Chapter. For that aim, the literature review from the urban sustainability background to the current models around the Circular City. Ultimately, the researcher carried a method of design synthesis of the outcomes into a theoretical proposition to inspire a Circular City Framework on the lens of Systemic Design for post-industrial precincts. This research outcome complements the Systemic Design methodology as it adds the scope of Circular City model elements narrowing towards a CE perspective for post-industrial precincts. Moreover, the framework delivered a co-design approach to tailor CE strategies that can coexist to deliver social and economic welfare and activate new mechanisms for value creation in post-industrial areas.

The further examination of the proposed Systemic Design Framework for Circular Cities was through the cases study of Mirafiori South Precinct in Turin (Italy) (Chapter five), and Atlantis precinct in Cape Town (South Africa) (Chapter six), which allowed bridging from the theoretical proposition of Systemic Design Framework for Circular Cities to tangible practices co-designing situated circular strategies for decision-making. Both considering post-industrial legacy as a pillar for to generate a Circular City model yet, the nature of both scenarios (Europe/Africa) is radically different which brought to the outcomes a broader and different understanding on how to activate decision-making process to transition into a Circular City model. In both examinations, a Holistic Diagnosis was conducted that deliver a holistic system panorama of all Mirafiori's precinct assets to identify the current local assets from opportunities to challenges as leverages for value creation and co-design the current system based on the conceptualisation of a Systemic approach on Circular City framework in this context. The result of the framework delivered the Mirafiori South Circular City model and the Atlantis. That identified the potential, planned or executed strategies around the main Circular Actions (Regenerate, Adapt, Loop). Also established system dynamics through concrete implementations for each strategy potential or already executed and assess the proposed Circular

Actions through the lens of the CE barriers and impact indicators. The results of this study aim to facilitate a better understanding of the potential CE strategies for a resilient Circular City model on a Global North and South perspective.

On Chapter seven a research synthesis was conducted to assess the case study application aimed to oversee the strengths and challenges of the proposed framework implementation through examining four levels of innovation: technical, social, economic and cultural. Including the issue of 'value creation' on CE policy-making process by proposing that Circular City model system through anticipatory scenarios, could bring more future-oriented and sustainable-oriented policy actions to enhance local value creation. Also, the assessment of the examination findings on Systemic Design capability to navigate this wicked scenarios aiming to maximise the value of government tackling and be supportive in CE policy foresight practices and strategic decision making in cities.

The last Chapter presents how the research aim and objectives were reached, and a conclusive overview of the doctoral research. Moreover, it displays the primary contributions of this research to the systemic design discipline. Ultimately, it addresses the limitations regarding the research and proposes recommendations for further research.

