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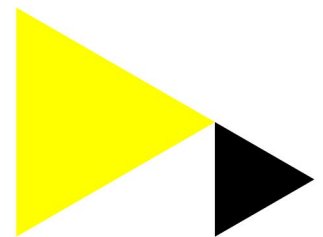
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Collaborative Value Creation in Innovation projects for a Circular City

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Over the last decade, the concept of a circular economy, an industrial economy that is restorative or regenerative by intention and design, has gained increased attention of policy makers, industry and academics (Geissdoerfer, Sayaget, Bocken and Hultink, 2017). Recently the number of innovation projects that are set up to experiment with new sustainable technologies to advance the transition towards a circular city has increased substantially, the initiators being local governments, communities, NGOs and business (Prendeville, Cherim and Bocken, 2017). Although the literature on circular economy and circular cities stresses the importance of bottom-up initiatives, a gap seems on how different stakeholders in bottom-up initiatives collaboratively create value and develop sustainable business models for these innovations for a circular city. The aim of this research is to explore how in the emerging field of circular city innovation projects, bottom-up initiated by for example NGOs and businesses, different stakeholders are involved in the collaborative value creation process and how they collaboratively create value and develop a viable business model for the project, whilst maintaining value for each partner involved. We do so by building on

literature on circular economy, sustainable and collaborative business modelling and value networks.

Different scholars show that the CE literature can be divided in research on three levels: macro-level (cities, regions or nations), meso-level (eco-industrial parks) and micro-level (single firms or products) (e.g. Ghisellini, Cialani and Ulgiati, 2016; Su, Heshmati, Geng and Yu, 2013). At all levels, the literature stresses the importance of new business models and collaboration with a variety of stakeholders. New business models are widely recognized as conditions for implementing sustainability-oriented innovations (Boons and Lüdeke-Freund, 2013; Schaltegger, Lüdeke-Freund and Hansen, 2012) and are considered important in the transition towards a CE (e.g. Geissdoerfer et al., 2017). For this purpose, many scholars have developed definitions and frameworks that extend the generic business model concept towards sustainable, social and circular business models (e.g. Yunus, Moingeon and Lehmann-Ortega, 2010) and circular business models. These business model definitions and frameworks have three perspectives in common related to the creation of value:

- a multiple value perspective, extending economic value provided by the value proposition with environmental and social value (e.g. Bocken, Short, Rana and Evans, 2014; Yunus et al., 2010);
- a multi-stakeholder perspective on value creation, considering a wide range of stakeholder interests (e.g. Lüdeke-Freund, Bocken, Brent, Massa, and Musango, 2016);
- a value network perspective, constituting the whole constellation of actors involved in the value creation process (e.g. Antikainen and Valkokari, 2016; Doganova & Eyquem-Renault, 2009; Chesbrough & Rosenbloom, 2002).

Although the majority of the business model literature takes a single firm perspective, recently a number of scholars presented and discussed new tools and methods for collaborative business model innovation, e.g. Jonker (2016); Lindgren, Taran and Boer, (2009); Rohrbeck, Konnertz and Knab (2013). Common in these methods is that individual business models and value captures need to be in accord with the common business model. Breuer and Lüdeke-Freund (2017) add the notion of values, arguing that 'purposeful innovation requires considering the shared values of those engaging in innovation processes'. A gap seems to exist though in how the values of stakeholders shape their roles in the value creation

process and how tangible and intangible value is created and shared with these models, whilst in the meantime capturing stakeholder-specific values.

For this study we take a qualitative research approach, using a multiple case study design to improve the external validity (Yin, 2003). Four collaborative innovation projects, bottom-up initiatives that are set up to experiment with new sustainable technologies to advance the transition towards a city that recycles and upcycles waste, are selected using a theoretical replication logic (Yin, 2003). All four projects are examples of bottom-up initiatives with explicit goals to create shared value and are characterized by collaboration of a wide variety of stakeholders. Two of them can be considered an urban living lab, initiated and coordinated by an NGO and supported by external funding and support for example by municipalities. Two of them initiated and coordinated by business and are executed without any additional funding. The data consists of 10 in-depth retrospective interviews with key project partners and 56 additional data sources. The cases are analysed by an inductive research approach consisting of within-case analysis and cross case analyses using pattern matching techniques.

The preliminary results show that participation in projects for a circular economy is mainly environmentally and socially driven with an aim to innovate, demonstrate sustainable solutions and inspire others to contribute to the transition towards a circular economy. The data reveals that, regardless the starting point and coordination, the partnerships remain open to new collaborations. Salient for the value network is that three roles vary throughout the project and change their contribution to the value creation process, e.g. public organisations and private companies that originally take part as facilitator, in a later stage may also become involved as knowledge provider and/or customer of the value that is created. The collective value that is developed, is largely non-financial and encompasses clear ecological benefits (e.g. material reuse, reduction CO2 emissions) and social benefits (e.g. education, creating awareness, community building) for a wide variety of stakeholders, ranging from the city as a whole to specific beneficiaries. The value capture shows how this collective value fits together with the individual value each partner captures from the project, that includes financial as well as intangible benefits.

The paper contributes to the business modelling and circular economy literature by showing possible motivations for different stakeholder types to engage in innovation for a circular city and by indicating the multiple types of

individual and collective business model value that may be pursued. The paper further shows how different stakeholder types conciliate creating common value with individual interests.

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