

Collaborations for circular food packaging:

The set-up and partner selection process

Joana Kleine Jäger^{1,*}, Laura Piscicelli¹

¹Copernicus Institute of Sustainable Development,
Utrecht University, The Netherlands

* joana@kleinejaeger.de

Extended abstract

It is estimated that, after a short first-use cycle, 95% (\$80-120 billion) of plastic packaging material value is annually lost to the economy. Moreover, 32% of plastic packaging escapes collection systems and accumulates in the natural environment (EMF, 2017). A circular economy (CE) is often promoted as a solution to the current inefficient production, use, and disposal of plastic packaging. Circular packaging solutions, requiring new business models (BMs) to create value cycles instead of chains, include redesigning packaging formats and delivery models, introducing reusable packaging, and improving plastic recycling quality and economics (EMF, 2017). Although the concept of a circular plastics economy has lately been taken up by policy and industry initiatives in Europe (EC, 2018), its implementation remains limited due to the high degree of cross-chain collaboration required in circular BMs. Also, literature on collaboration in the CE is still scarce and provides little guidance on how to establish circular partnerships (Meherishi et al., 2019; Lahti et al., 2019; Brown et al., 2018). This research aims to fill this knowledge gap by answering the question: “How do focal firms set up and choose collaborations for circular food packaging?” Food packaging (FP) was selected since half of all plastics converted into packaging are used for preserving food, and food safe packaging presents specific obstacles to recycling and reusing (Rhim et al., 2013). The scope of the study was limited to

food companies operating in Europe and engaging in cross-chain collaborations for reusable or recyclable primary retail FP.

A preliminary theoretical framework on the collaboration set-up, task-related roles, and partner-related characteristics as selection criteria was first developed based on traditional (e.g. Bryson et al., 2015; Dietrich et al., 2010; Czajkowski, 2007; Geringer, 1991) and, if available, sustainable (Goodman et al., 2017) and circular (Brown et al., 2018) collaboration literature. 17 qualitative semi-structured interviews (with six sustainable packaging experts, three food-products MNCs, two food-products SMEs, four food retailers, and two reuse service providers) of an average length of 60 minutes were conducted in the last quarter of 2019 with the aim to test and refine the theoretical framework. Interviewees were chosen via a purposive three-step sampling strategy based on their: (1) past/current work on reusable/recyclable FP; (2) experience on focal food firms' processes; and (3) knowledge on circular food packaging (CFP) collaboration choice and set-up. The interviews were transcribed and analysed using thematic analysis.

Results provide empirical evidence for most elements of the preliminary framework, while at the same time going beyond existing collaboration and CE literature by revising and identifying novel steps, partner roles, and characteristics. The refined framework (Figure 1) consists of nine typical collaboration set-up steps divided into five phases, alongside fourteen partner roles, nine partner characteristics, and their main influencing factors.

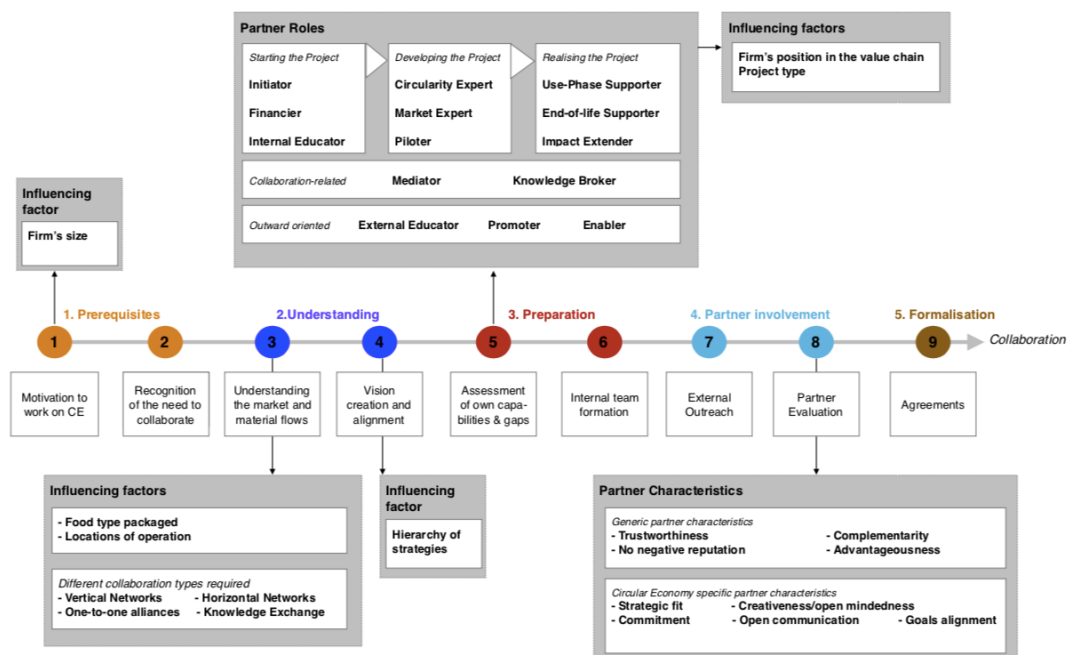


Figure 1: Revised framework: Collaboration choice and set-up for CFP.

In the initial 'prerequisites phase', a motivation to work towards a CE (being more pronounced for MNCs and sustainability-oriented SMEs) was identified as important before recognising the need to collaborate.

In the 'understanding phase', earlier in the process than previously assumed, firms typically aim to understand the market and material flows (e.g. recycling capacities or packaging usage scenarios). Depending on the development stage of the local reuse/recycling system, four possible collaboration types may be required: a) vertical networks to develop the packaging reusable/recycling system, b) horizontal networks to develop new materials for or utilise existing systems, and c) one-to-one alliances to improve packaging/technologies. Irrespective of the system's development stage, food companies also employ d) informal collaborations for knowledge exchange. Subsequently, most companies were found to develop a CFP vision and strategy, for which top-management support and alignment across the company, as well as flexibility and transparent communication are required.

In the 'preparation phase', this study introduces 14 roles that food companies or their partners may fulfil to realise CFP, of which three ('internal-educator', 'market-expert', 'end-of-life supporter') were added and three ('impact extender', 'enabler', 'promoter') slightly amended compared to previous literature. The three roles associated to the project's realisation stage are found particularly important to deliver, create, and capture value within circular BMs. Further, while food brands can fulfil all roles except the 'end-of-life supporter', retailers never take up seven of the fourteen possible roles. Besides the position in the value chain, the type of partners sought after appears to differ based on the project type. For recyclable FP facing technical, legal/safety, or economic challenges, these are the 'financier', 'circularity expert', and 'end-of-life supporter'; while for reusable FP requiring new service-oriented BMs the 'impact extender', 'promoter', and 'use-phase supporter' tend to be roles of particular relevance. In addition, the findings highlight the importance of three CE-enabling ('mediator', 'knowledge broker', 'enabler') and two CE-educating ('internal educator', 'external educator') roles since the CE requires a novel economic system affecting production, distribution, and consumption processes (Kirchherr et al., 2017). Lastly, three roles ('initiator', 'piloter', 'market expert') were found to be generally important, rather than CE-specific. As a sixth step, companies were found to typically form a team internally. In contrast to existing collaboration literature, food companies do not appear to require internal

alliance skill building, but their employees need collaborative skills, CFP expertise, and the ability to deal with uncertainties and complexities.

In the 'partner involvement phase', interviewees frequently mentioned the external outreach step, which is rarely addressed in collaboration literature. Although firms tend to prefer prolonging existing relationships (*cf.* Dyer & Singh, 1998), for CFP, some new partners are needed. Assisting firms in evaluating potential partners, this study identified nine characteristics of importance in a CE. Three characteristics are paramount in a CE: 'strategic fit' (e.g. CFP vision, company culture, geographical proximity for material exchange), the newly identified 'creativity/open mindedness' (due to multiplayer-networks, complexities, and uncertainties in a CE), and 'open communication' for collaborative learning (*cf.* Clark et al., 2019; Rohrbeck et al., 2013). Furthermore, two CE-baseline characteristics are identified: 'goals alignment', and 'commitment' (due to mutual dependence and reciprocity in a CE). Finally, the study found four generic partner characteristics: 'complementarity', financial 'advantageousness', 'no negative reputation', and 'trustworthiness'.

In the final 'formalisation phase', the study confirms literature calling for informal and formal agreements. It was found that in CE multiplayer collaborations reaching full consensus may neither always be possible nor needed, while their management and contract design calls for further exploration.

The findings of this research present valuable insights on the collaboration set-up and partner selection in the CE context. Compared to traditional collaborations, in a CE, firms need to employ new BMs and participate in multi-stakeholder collaborations spanning institutional and sectorial boundaries, potentially causing uncertainties and complexities. Hence, understanding the particularities of CE collaboration presents an important contribution to realise a change towards a circular, resilient economic system. To drive the practical uptake, the framework could be used to develop guiding tools. Future research could also validate the framework for other geographical contexts, CE fields, strategies other than recycling and reuse, and further examine the relation between partner roles as well in relation to characteristics.

Keywords

circular business models, cross-chain collaborations, partner selection, reusable food packaging, recyclable food packaging

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