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Conceptualizing circular integration of production, use and end-of-life flows and networks: the case of Extended Producer Responsibility for single-use plastics in Indonesia

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Circular Economy is an ambiguous concept. Both conceptually and empirically, circular economy is often seen as an ideal type engineered system or business model through which materials and products retain their value. The majority of empirical research focuses on developed economies and primarily address specific technological and material aspects or depart from a business point of view. However, the social context of a circular transition is often neglected, including understanding the way in which existing value chain actor's operations are affected by or have to change to become more circular. Based on the sociology of networks and flows, this article presents an analytical framework that helps to analyse how material flows are shaped by social, immaterial (i.e., information and financial) flows. The framework allows an analysis of how circular economy interventions interact with existing (partly) linear production, use and end-of-life (End-of-life) networks in any geographical context. The central notion of the framework is that circular material flows can only be achieved when production, use and End-of-life networks become more integrated and that immaterial flows enable or inhibit this integration. In this article, the framework is illustrated with a case study of the implementation of Extended Producer Responsibility (EPR) for single-use plastic (SUP) in Indonesia, which is the second largest plastic polluter in the world. The analysis shows how the current system of production, use and end-of-life for SUP in Indonesia is still very linear. And while EPR initiatives generate enabling financial and information flows, they fail to contribute to more circularity because of a lack of scale, the material characteristics of SUP and an inadequate consideration of financial and information flows that direct the whole value chain from production to End-of-life.

Keywords: Producer Responsibility, Single-Use Plastic, Indonesia, Environmental Flows and Networks