How Power Dynamics Infuence the Transition Towards a Circular Flexible Packaging Value Chain in Jakarta

Circular Economy and Sustainable Development

Sagita Putri, Nadhira; van Leeuwen, Judith; Fortuin, K.P.J.

https://doi.org/10.1007/978-3-031-66007-8_33

Chapter 33
How Power Dynamics Influence the Transition Towards a Circular Flexible Packaging Value Chain in Jakarta

Nadhira Sagita Putri, Judith van Leeuwen, and Karen P. J. Fortuin

Abstract While having many benefits, flexible packaging has become one of the most polluting materials in Jakarta's rivers. To counteract this pollution, a transition towards a circular flexible packaging value chain is required. This chapter explores how flexible packaging value chain actors in Jakarta enable or inhibit this transition. A power analysis was done, based on document reviews and interviews, to identify challenges and opportunities for a circular flexible packaging transition. Producers are found to be the most powerful actors in enabling and constraining the transition to circular flexible packaging in Jakarta. Although government plays a role in stimulating producers to adopt circular flexible plastic practices through extended producer responsibility (EPR), the EPR initiatives are still fragmented and bypass both local producers and the informal sector. The EPR initiatives only focus on improving collection and recycling waste and are not yet focused on creating systemic changes, particularly in the production process. In order for that to happen, governmental regulation needs to be enforced more, and the expected guidelines for the packaging design should be implemented. Moreover, through multi-stakeholder collaboration, retailers and consumers should be supported to maximise their power to change the use and disposal of flexible packaging beyond the emerging circular retailing and recycling initiatives.

N. S. Putri (✉)
Catch Management Department, The Ocean Cleanup, Rotterdam, The Netherlands

Environmental Systems Analysis Group, Wageningen University and Research, Wageningen, The Netherlands
e-mail: n.sagitaputri@theoceancleanup.com

J. van Leeuwen
Environmental Policy Group, Wageningen University and Research, Wageningen, The Netherlands
e-mail: judith.vanleeuwen@wur.nl

K. P. J. Fortuin
Environmental Systems Analysis Group, Wageningen University and Research, Wageningen, The Netherlands
e-mail: karen.fortuin@wur.nl

A. I. Stefanakis, I. E. Nikolaou (eds.), *Circular Economy and Sustainable Development*, Circular Economy and Sustainability,
https://doi.org/10.1007/978-3-031-66007-8_33

Keywords Flexible packaging · Circular transition · Dynamic concept of power · Value chain actors

Abbreviations

CE	Circular economy
CSR	Corporate social responsibility
EPR	Extended producer responsibility
FMCG	Fast-moving consumer goods
IPF	Indonesian Packaging Federation
IPRO	Indonesian Packaging Recycling Organisation
MoEF	Indonesian Ministry of Environmental and Forestry
MLP	Multi-layered packaging
MNCs	Multinational companies
NGOs	Non-governmental organisations
OECD	Organisation for Economic Co-operation and Development
PRAISE	Packaging and Recycling Association for Indonesia Sustainable Environment
RDF	Refuse-derived fuel
TPS	Waste Temporary Site
TPS-3R	Waste Temporary Site-3R (Waste Sorting Centre)
WPO	World Packaging Organisation

33.1 Introduction

Technological advancements in packaging has led to the development of flexible packaging, a type of light plastic packaging which utilises mono-material plastic or combines plastic, paper, and foil to create lightweight and efficient packaging for consumer products (Gone Adventurin & Amcor 2019). These advantages are particularly beneficial in low- and middle-income nations as it provides affordable packaging for lower-income consumers. However, flexible packaging is perceived as an environmental problem as it is considered a source of litter. One of the causes of plastic waste pollution in Jakarta is its plastic's linear economy. While plastics are versatile materials, their production and usage are wasteful due to their linear value chain with the logic of "take, make, and dispose" (Jørgensen and Pedersen 2018). Consequently, there is a common neglect of recycling and reusing waste (Sariatli 2017). The recycling sector is less interested in collecting flexible packaging, compared to rigid ones, due to its low value. A material flow analysis in Jakarta showed that only 3% of flexible packaging is recycled, while most of it is either landfilled (88%) or littered in the environment (9%) (Waste4Change 2022).

The circular economy (CE) paradigm advocates shifting from the logic of a linear economy to a more restorative and regenerative approach focusing on extending a product's life cycle to retain the maximum value (Upadhayay and Alqassimi 2018). This is a challenge for value chain actors, who directly (e.g. manufacturers, retailers) and indirectly (e.g. government, NGOs), are involved in the movement and processing of the material flow (Iacovidou et al. 2020). Thus, they play a prominent role in shifting the flexible packaging value chain from a linear economy to a circular one. Each actor possess a power-mobilised resources that control "entry" and "exit" of resources in the various processes. Power is intrinsic to human interaction, social organisation, and societal change, and, thus, understanding power dynamics is key to recognizing the drivers of linear production and consumption patterns and the barriers to make it circular (Fuchs et al. 2016). Which challenges and opportunities exist to transition to a more circular value chain of flexible packaging thus depends on existing power dynamics within the value chain (Gerassimidou et al. 2022).

This chapter aims to identify the challenges and opportunities for transitioning to a more circular value chain of flexible packaging in Indonesia, by investigating the power of the flexible packaging value chain actors in Jakarta. The chapter employs the framework of power dynamics developed by Avelino and Rotmans (2011). The main research question of this chapter is therefore: *How do the value chain actors' power dynamics enable and inhibit the transition towards a more circular value chain of flexible packaging in Jakarta?*. We will first introduce the framework and the methodology used in Sect. 33.2. Section 33.3 will present the results by providing an overview of how actors and CE initiatives translate into available power resources, exercises, and dynamics. Section 33.4 will discuss these results in light of existing challenges and opportunities for a circular transition for flexible packaging in Indonesia. The chapter will end with conclusions in Sect. 33.5.

33.2 Materials and Methods

The methodology for this research is an exploratory case study (Sect. 33.2.2) guided by a theoretical framework (Sect. 33.2.1). By exploring the actors' power dynamics throughout the flexible packaging value chain in the metropolitan city of Jakarta, this case study helps understand possible causal links and pathways towards CE transition.

33.2.1 Theoretical Framework

This research uses the framework to analyse power dynamics between actors developed by Avelino and Rotmans (2011). The dynamic concept of power is used to empirically analyse how transformative ambitions such as the transition towards a

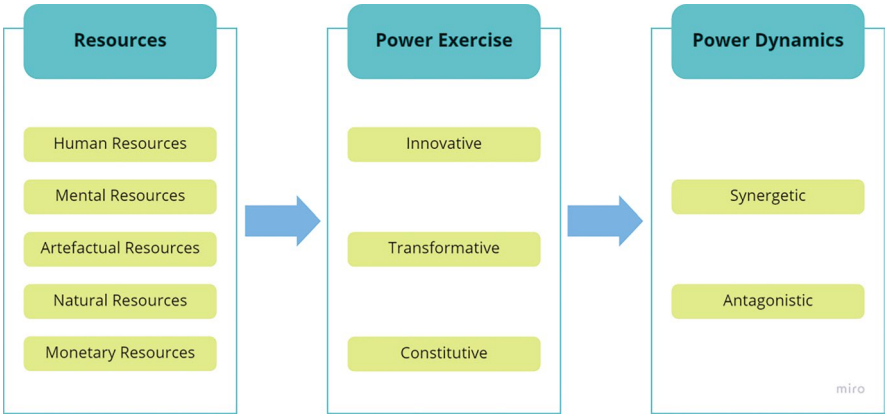

Fig. 33.1 The dynamic power framework, indicating flow of resources, power exercises, and power dynamics. (Adapted from Avelino and Rotmans, 2011)

circular society interact with the existing paradigms and institutions, how actors position themselves, and how these interactions affect their relations and their capacity to make a difference (Avelino and Rotmans 2011). In this research, identifying power dynamics is done through three steps: (1) resources, (2) power exercises, and (3) power dynamics, as depicted in Fig. 33.1.

According to Mann (1986), different types of power resources exist: human, mental, monetary, artefactual, and natural resources. Resources are power neutral, and they are only considered as power when actors mobilise them. Table 33.1 breaks down what each resource type refers to in practice.

Furthermore, based on Avelino and Rotmans (2011), mobilised resources, referred to as power exercises, are divided into three types: innovative, transformative, and constitutive power. Innovative power is the capacity of actors to create or discover new resources, such as innovative ideas. Transformative power is the capacity to transform how the resources are distributed, such as shared ownership. Constitutive power is the capacity of actors to constitute the resources' distribution by establishing, enforcing, and reproducing existing structures and institutions (e.g. laws, norms).

The power dynamics model is based on the proposition that any exercised power can disrupt or enable other types of power. If one type of power prevents and resists other types, it is called an antagonistic power dynamic. If it strengthens and enables other types of power, it is called a synergetic power dynamic. The lessons learned from sustainability studies is that antagonistic power dynamics are necessary for transitions, while in the long term, synergetic power dynamics allows existing regimes to acquire the innovative and transformative potential of emerging initiatives (Avelino and Rotmans 2011).

Table 33.1 Typology of resources (Mann 1986)

Resource type	What is mobilised?
Human	Personnel, members, voters
Mental	Information, concepts, ideas, beliefs
Artefactual	Apparatuses, products, construction, infrastructure, art
Natural	Raw materials, organic life, physical space, time
Monetary	Funds, cash, financial stock

33.2.2 Data Collection and Data Analysis

A structured qualitative data collection approach was used in this explorative case study of the flexible packaging value chain in Jakarta. Two data collection methods were used: document analysis and interviews. Consultancy reports, annual reports, policy documents, and publicly available databases (Google Scholar and Scopus) were amongst the documents reviewed in this study.

Semi-structured interviews (purposively selected and extended by using snowball sampling method) were conducted with flexible packaging value chain actors, such as packaging producers ($N = 2$), fast-moving consumer goods (FMCG) companies ($N = 2$), retailers ($N = 3$), and waste management actors ($N = 10$). Interviews were also conducted with government bodies with direct responsibility in driving the circularity of flexible packaging ($N = 4$). Additionally, interviews with CE, waste management, and packaging experts were done to understand their perspectives on the power dynamics of the value chain actors ($N = 3$). After the interviews were done, a list of significant statements from interview transcripts was developed. A coding scheme was used for a thematic analysis of these statements leading to a structural description of the context and power dynamics described by the interviewees. The analysis also focused on the ongoing circular initiatives to give clear examples.

33.3 Results

This chapter identifies the power dynamics between flexible packaging value chain's actors in Jakarta using the framework developed by Avelino and Rotmans (2011). Firstly, an overview of available resources of different value chain actor will be given. Secondly, the identified power exercises resulting from resources that are mobilised through different circular initiatives will be described. Finally, these power exercises will be categorised as being either synergetic or antagonistic (see Fig. 33.1) and circularity opportunities and challenges identified.

33.3.1 Resources

33.3.1.1 Human Resources

The choices made by groups of people can support or hamper the transition towards circularity. Consumers and the recycling sector are identified as pivotal human resources. Consumers are the primary consideration for companies to be more involved in the circular economy (Camacho-Otero et al. 2019). Therefore, Jakarta's citizens are considered as influential human resources.

The recycling sector also possesses manpower as a human resource. Informal waste pickers can significantly reduce the amount of waste that ends up in landfills or littered by recovering the value of the waste (Amin et al. 2022). Around 21,750 waste pickers and junkshops are collecting recyclables informally in Jakarta. This sector is estimated to recover 2000 tons/day of recyclables in Jakarta (waste management actor A, interview, May 19, 2021).

33.3.1.2 Mental Resources

Various actors have mental resources to lead the transition. The Indonesian Packaging Recycling Organization (IPRO), established to increase packaging waste recycling and collection, has extensive knowledge of the concept of extended producer responsibility (EPR), fund management, and packaging production and waste management.

Pro-environmental entrepreneurs with plastic pollution awareness and knowledge on improving the system have been implementing circularity concepts such as plastic credits, recycling plastic packaging, founding waste banks, and bulk stores. Furthermore, several pro-environmental consumers who are aware of plastic litter and are willing to send their waste voluntarily to recyclers (waste management actor B, interview, April 24, 2021). Lastly, the informal recycling sector has a comprehensive understanding of recycling value chain actors and the value of waste materials in existing recycling markets.

33.3.1.3 Artefactual Resources

The availability of infrastructure and equipment is essential to activate circularity. Some producers commence research in their laboratories and initiate prototypes to generate packaging innovations.

Retailers have the infrastructure for people to buy consumer goods. Some retailers have allocated a corner for selling packaging-free goods (governmental body A, interview, June 7, 2021). Additionally, retail start-ups provide refilling stations that provide goods usually packaged and sold in flexible packaging.

Fig. 33.2 Waste management infrastructure. (**a**) TPS and handcarts. (**b**) TPS-3R with sorters

In the waste streams, different actors have their respective artefactual resources. The Jakarta government owns 1447 handcarts and motor carts allocated for waste collection and 2365 waste trucks to landfills (Jakarta Statistics 2020). The Jakarta Government also operates 1006 Waste Temporary Sites (TPS) and at least nine TPS-3Rs, which function as waste sorting centres (Jakarta Statistics 2020). Furthermore, waste pickers, aggregators, and junkshops also operate using carts or sacks to collect waste and low-cost technology such as pressing machines and shredders (Fig. 33.2).

33.3.1.4 Natural Resources

Raw materials and time are considered natural resources. In CE, waste is considered as resources that can be recirculated back into the system to produce the same product or new components with the same or lower functionality (Hahladakis et al. 2020). From film producers to the waste stream, all actors produce waste that can be seen as resources. In addition, time allocated by informal recycling sector to pick out and sort plastic waste is also considered a natural resource.

33.3.2 Monetary Resources

Monetary resources are mainly owned by the producers and consumers. Major consumer goods companies have invested USD 100 million to The Ocean Fund to improve waste collection, management, and recycling infrastructure in India and Indonesia (Unilever 2022).

Consumers also have monetary resources as they are the ones who purchase products sold by retailers. If a massive consumer movement demands more sustainable packaging, FMCG companies and their supply chain will potentially adapt to these demands (FMCG Industry A, interview, April 20, 2021).

33.3.3 Power Exercises

As mentioned in the previous section, identified resources can be mobilised into three categories of power exercises: innovative (Sect. 33.3.2), transformative (Sect. 33.3.2), and constitutive power (Sect. 33.3.2).

33.3.3.1 Innovative Power

The identified innovative power exercise concentrates on two processes: packaging redesign and recycling. This innovative power mainly focuses on multi-layered packaging (MLP) because MLP is more challenging to be recycled by current mechanical recycling technologies due to the chemical incompatibility of its different layers (Walker et al. 2020). The summary of initiatives included in this power is depicted in Table 33.2.

MLP's Alternatives

Multinational flexible packaging converters mobilise their mental resources on material redesign knowledge, artefactual, and monetary resources on laboratories and funds to commence research on multi-layer alternatives. Besides their global commitment to reduce plastic litter, there is also growing demand from their clients (multinational FMCG companies), to provide more sustainable packaging.

Plastic film producers are developing mono-material packaging solutions that are recyclable and can substitute MLP (Berg et al. 2020). One of the innovative solutions is by adding a protection without additional layers, such as a net-like material or extra coating, which can be recycled with the plastic film (Expert A, interview, May 8, 2021). Although innovations on material substitution are developed abroad, these are not yet found in products sold in Jakarta.

MLP's Post-consumer Recycling

Innovative power concerning post-consumer MLP recycling exists amongst waste stream players and is often powered by producers' resources. Almost no conventional recycler would buy post-consumer MLP, especially if it consists of different materials such as plastic film with aluminium foil layer. Considering that 33% of Jakarta's total flexible packaging waste is this type (Waste4Change 2022), innovative power exercises at the end-stream for MLP is crucial to activate its recycling. Three innovations are found, i.e. handicrafts from MLP, MLP recycling to construction materials, and waste-to-energy technology.

The first innovation is the conversion of flexible packaging into handicrafts by waste banks and civil society. The resources mobilised are manpower by waste

Table 33.2 Initiatives and mobilised resources in innovative power exercise

No	Initiatives	Mobilised resources	Example
MLP's alternatives			
1	MLP's alternatives	Mental: Multinational flexible packaging converters' knowledge on redesign; global commitments to reduce plastic litter	As MLPs alternatives, a recyclable net-like material or extra coating can be added. This innovation is under development
		Artefactual: Laboratories for material research	
		Monetary: Funds for research by converters; demand for packaging alternatives by multinational FMCG companies	
MLP's post-consumer recycling			
1	Handicrafts from MLP	Human: Manpower by waste pickers Artefactual: Equipment to make handicrafts by waste banks Natural: Post-consumer waste from consumers Monetary: CSR funds by FMCG companies to teach the communities	Koperasi Trashion collected 20–100 kg of flexible packaging and created bags, wallets from the waste (waste management actor C, interview, may 22, 2021)
2	MLP recycling to construction materials	Mental: Technical knowledge and willingness to contribute in reducing plastic pollution Artefactual: Recycling machines Natural: Waste from communities and companies	Rebricks converts flexible packaging, and other plastics rejected in the current recycling market into paving blocks and concrete bricks
3	Energy recovery through RDF	Mental: Technical knowledge Artefactual: RDF-fuelled cement kilns Natural: Waste from companies Monetary: Fee to process the waste in cement companies	A private waste collector, Waste4Change, has been collecting residual waste (including MLP) from its clients in Jakarta. Waste4Change then transports the waste to cement companies to be converted to RDF

pickers (human), equipment to make handicrafts by the civil society or waste banks (artefactual), post-consumer waste as materials from consumers and informal sector (natural), and funds by FMCG companies for teaching how to create handicrafts (monetary). Converting flexible packaging into handicrafts has been a common practice in civil society organisations. However, most activities were stopped due to

the decreasing market demand (waste management actor C, interview, April 30, 2021).

The second innovation power is the existence of entrepreneurs who recycle flexible packaging into construction materials; an example is Rebricks. The resources mobilised are Rebrick's technical knowledge and willingness to contribute to reducing plastic litter (mental resources), recycling machines (artefactual resources), Instagram's followers' awareness and willingness to voluntarily send their waste (mental and natural resources), and waste from collaboration with private sector (natural resources). They receive up to 50 kg of rejected plastics per day and can sell the paving blocks made from the plastics at a competitive price in the market (waste management actor B, interview, April 24, 2021).

The last innovation is the conversion of MLP into refuse-derived fuel (RDF). RDF is used in the cement industry as a partial substitution fuel for cement kilns (Anasstasia et al. 2020). Several cement companies near Jakarta have a plant to convert municipal solid waste into RDF (artefactual). A private waste collector, Waste4Change, has been collecting residual waste (including MLP) from its clients in Jakarta including those who join plastic credit programmes and transports the waste to the cement plants (waste management actor D, interview, May 1, 2021).

33.3.3.2 Transformative Power

Transformative power emerges through the development of new institutions and structures that distribute resources. Initiatives that create transformative power are retail initiatives, EPR fund's distribution schemes, and packaging waste collection programmes. All initiatives are compiled in Table 33.3.

Retail Initiatives

New retail systems of consumer goods are emerging that focus on reducing the use of flexible packaging: bulk stores and refill system. The first initiative is the bulk store concept. The resources mobilised for this initiative are the bulk stores' customers and followers on social media (human resources), the bulk store's initiators beliefs to reduce plastic pollution and knowledge on innovative retailing (mental resources), and physical stores and refill stations (artefactual resources). There are at least ten operating bulk stores in Jakarta where people can bring their containers to buy flour, oil, seasoning, etc. Another initiative is the refill system, which exists explicitly to address pollution issues from MLP. Resources mobilised similar to bulk stores; however, this initiative does not have physical stores as they sell the products with motorbikes or putting the products in waste banks or other voluntary selling points (Fig. 33.3).

Table 33.3 Initiatives and mobilised resources in transformative power exercise

No	Initiatives	Mobilised resources	Example
Circular retail initiatives			
1	Bulk stores: Zero packaging retail	Human: Customers Mental: Initiators' beliefs to reduce plastic pollution and knowledge on innovative retailing Artefactual: Physical stores and refill stations	Saruga package-free shopping store sells goods in bulks and educate consumers to stop single-use plastics
2	Refill system	Human: Customers Mental: Initiators' beliefs to reduce plastic pollution and knowledge on innovative retailing	Koinpack is a tech-enabled reusable packaging system for consumer goods based on a deposit and reward model to replace disposable sachets and provide affordable consumer goods for low-income customers in Indonesia (Retailer A, interview, 22 May 2021). Until May 2021, Koinpack has 18 sales points and has sold more than 2300 bottles. Koinpack's products are sold in waste banks and other voluntary sales points
EPR fund's distribution schemes			
1	Plastic credit	Human: Manpower from informal sector Mental: Producers' sustainability commitment, waste stream entrepreneurs' awareness, recycling networks knowledge Artefactual: Recycling sector' waste collection vehicles and machinery Monetary: Producers' EPR funds to subsidise collection and recycling activities	rePurpose facilitates producers in the USA to offset their plastic production by paying for waste collection and recycling in Indonesia with an equivalent amount of their clients' plastic production (waste management actor D, interview, may 1, 2021). This programme focuses on managing low value plastic waste, such as MLP. rePurpose hired Waste4Change to collect MLP as Waste4Change has networks who can supply the flexible packaging waste needed
2	Collective scheme through IPRO		IPRO manages and allocate funds from producers and retailers to improve TPS-3R in Indonesia
Packaging waste collection programmes			
1	Waste bank	Mental: Civil societies' willingness to manage waste Artefactual: Waste bank equipment and infrastructure Monetary: Funds from producers	Unilever Indonesia has actively taught almost 4000 waste banks in Indonesia and has managed to collect 12,500 tons of waste per year (Rakyat Merdeka, 2020). Unilever Indonesia provides the waste bank with customer's deposit books and ledger (waste management actor E, interview, April 30, 2021)

(continued)

Table 33.3 (continued)

No	Initiatives	Mobilised resources	Example
2	Packaging drop box	Mental: Sustainability commitment of producers and retailers Artefactual: Drop boxes and established collection system Monetary: EPR funds to subsidise bin provision and operations	Drop boxes are provided by FMCG companies and retailers in public spaces that consumers can easily access, such as malls, stores, etc. In 2018, PRAISE and Waste4Change established 100 drop boxes in Jakarta, and the partnered waste banks had collected 10 tons of packaging during its 19 months of operation (waste management actor F, interview, August 13, 2021)

(a) (b)

Fig. 33.3 Bulk store initiative (left) and refill initiative (right). (**a**) Siklus refill motorbikes. (Source: P4G 2022). (**b**) Saruga packaging-free shopping store. (Source: Widiati 2020)

EPR Fund's Distribution Schemes

Transformative power is found through a change in how waste management is funded. EPR is a policy concept through which producers are given a significant financial or physical responsibility for the treatment or disposal of post-consumer products (OECD 2001). Various funding mechanisms are available to pool individual EPR funds and to achieve larger impacts compared to individual schemes. Plastic credit, as an example, is a transferable unit representing a specific quantity of plastic that has been collected and recycled (Phipps 2021). Global organisations, particularly producers, purchase this credit to fund plastic waste management action beyond their supply chain, and they can use the credit to reduce or offset their plastic footprint.

It is also possible to pool EPR funds into one independent organization such as IPRO. IPRO is a nonprofit organisation that was formed by Indonesian FMCG companies to increase collection and recycling of used packaging by verifying financial flows and adhering to social and environmental standards (IPRO 2022). Figure 33.4

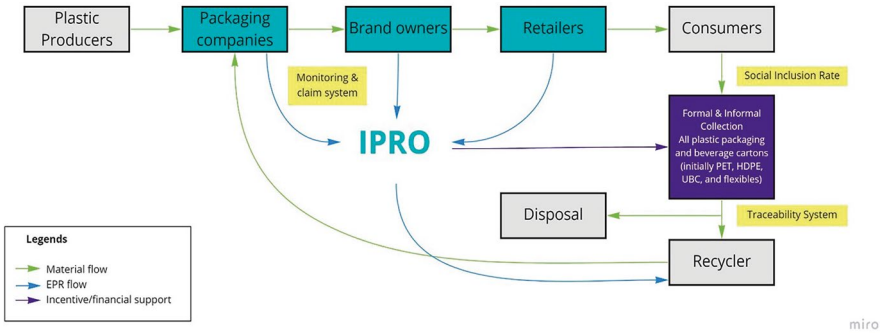

Fig. 33.4 IPRO material and financing flow. (Adapted from IPRO, 2022)

depicts the material flow (green line), EPR fund flow (blue line), and financial support flow (purple line).

Packaging Waste Collection Programmes

The high contamination rate is inhibiting post-consumer flexible packaging waste recycling. The contamination is the result of the mixed waste collection. Due to its flimsy nature, it is challenging to separate flexible packaging from other waste because food and liquid make packaging sticky. Even after being separated, packaging would be contaminated, wet, and dirty. It is estimated that transporting contaminated post-consumer waste cost twice as much as transporting cleaner pre-consumer waste, making it financially less attractive (waste management actor D, interview, May 1, 2021). Therefore, some argue that to improve post-consumer flexible packaging waste quality, the way waste is collected needs to be transformed by shifting to separation at source (the household). Two transformative ways to encourage households to sort their waste are waste banks and packaging drop-off boxes.

Waste bank is a banking system that allows saving and borrowing money equivalent to the value of waste deposited (Dhewanto et al. 2018). Most waste banks are located in neighbourhood and are voluntarily managed by the neighbourhood. Resources mobilised are the willingness of civil societies (mental), waste bank equipment and infrastructure (artefactual), and funds from producers to assist the waste bank managers and procure the tools needed (monetary).

Another transformative waste collection programme is packaging drop box. Drop box is a segregated waste bin for packaging equipped with attractive colours and infographics to raise awareness. Resources mobilised are sustainability commitment from producers and retailers (mental), the boxes and all tools related to waste collection activities (artefactual), and EPR funds to subsidise bin provision and the operations of waste collection (monetary).

33.3.3.3 Constitutive Power

Constitutive power refers to power stemming from formalised social rules and agreements such as laws, norms, and traditions (Avelino and Rotmans 2011). Three exercises of constitutive power were found in this study: waste reduction roadmap for producers, redesign and recycling guidelines, and awareness-raising campaigns.

Waste Reduction Roadmap for Producers

In 2019, the Indonesian Ministry of Environment and Forestry (MoEF) legalised regulation No. P75/2019, which provides a waste reduction roadmap for producers. This regulation mobilises the mental resources of MoEF around the concepts of circularity and EPR to achieve reduction of plastic waste pollution. Additionally, producers' and retailers' resources are also mobilised: their willingness to support government towards the circularity (mental resources), packaging to be modified (artefactual resources), and funds to conduct waste reduction, either by themselves or through IPRO (monetary resources).

This regulation provides the technical guidance for producers to reduce unrecyclable or the non-compostable products or packaging waste. The regulation includes the sachet ban usage with a volume less than 50 mL or 50 grams. Producers are expected to submit their roadmap towards the implementation of the ban, which will be gradually implemented and be fully effective by January 1, 2030. However, until June 2021, there were only 23 companies who submitted their roadmaps (Setyorini 2021). In case producers fail to fulfil the regulation, the government will issue a statement that they are not complying, hoping that this will affect their brand image. To raise public awareness regarding the issue's importance, the government has also started a campaign to change consumers' consumption patterns for choosing products or packaging from responsible producers (governmental body A, interview, June 14, 2021).

Redesign and Recycling Guidelines

World Packaging Organisation (WPO), with its Indonesian representative Indonesian Packaging Federation (IPF) and PRAISE, is developing redesign and recycling guidelines for producers in Indonesia (Expert A, interview, May 8, 2021). This power mobilises WPO and IPF's mental resources in the form of packaging material knowledge and circularity concept, as well as their monetary resources to design and eventually implement the guidelines.

Awareness-Raising Campaigns

NGOs and producers have been educating consumers and advocating the government regarding the magnitude and sources of plastic pollution in Indonesia. NGOs, government, and producers mobilise the willingness and knowledge to reduce plastic pollution (mental resources) and CSR funds by the producers (monetary resources).

An increasing number of NGOs in Indonesia have engaged in combating plastic pollution by promoting education about the negative impacts of unmanaged waste to the communities and raising awareness through public campaigns (Garcia et al. 2019). Government and private companies have been supporting these campaigns by sponsoring the activities. In addition to promoting the norm of the need to reduce plastic pollution within society, NGOs have been actively involved in advocating the government on this issue as well (Expert B, interview, April 21, 2021), for instance, by advocating the government to ban the free handing out of single-use plastic bags to consumers. Although NGOs specialised in flexible packaging have not been found during this study's observation, social entrepreneurs such as Koinpack, Rebricks, and Waste4Change have been actively raising awareness about the negative impacts of flexible packaging litter in their social media.

Producers also play an essential role in reducing plastic pollution and changing consumers' behaviour (Garcia et al. 2019). Companies have been involved in channelling their corporate social responsibility (CSR) funds to raise awareness on plastic pollution and waste and the need to improve waste management. By engaging communities and spreading awareness, companies can gain a positive reputation as a sustainable company (Atmadi 2019) (Table 33.4).

33.3.4 Power Dynamics

This section describes the results of the power dynamics analysis. Any type of power (innovative, transformative, and constitutive) can strengthen or disrupt other types of power, resulting in respectively synergetic power dynamics (Sect. 33.3.3.1) and antagonistic power dynamics (Sect. 33.3.3.2). As part of the power dynamics analysis, challenges and opportunities are identified as well (see Table 33.5).

33.3.4.1 Synergetic Power Dynamic

Synergetic power dynamics between power exercises found are the search for MLP's alternatives, funds allocated by producers for post-consumer initiatives, and consumers' support towards retail and waste stream initiatives.

Table 33.4 Initiatives and mobilised resources in constitutive power exercise

No	Initiatives	Mobilised resources	Example
1	Waste reduction roadmap for producers	Mental: Producers' willingness to support government's policy Artefactual: Packaging to be modified Monetary: Producers' funds	MoEF's regulation no. P75/2019 provides a waste reduction roadmap for producers. This includes the ban of sachet usage with a volume less than 50 ml or 50 grams
2	Redesign and recycling guidelines	Mental: WPO and IPF's knowledge of packaging material, circularity concept Monetary: WPO, IPF, PRAISE's funds to design guidelines	WPO, IPF, and PRAISE are developing redesign and recycling guidelines for producers in Indonesia
3	Awareness-raising campaigns	Mental: Knowledge and willingness to reduce plastic pollution Monetary: Producers' funds	Danone-AQUA collaborated with the Ministry of Education and Culture, Coordinating Ministry of Maritime and Investment, University of Indonesia, and Lentera Anak Foundation have launched education materials for elementary schools to build the children's behaviour on waste management (AQUA 2020)

The Search for MLP's Alternatives

As an opportunity, packaging converters are aware that their multinational FMCG clients pay extra attention to their packaging's recyclability (in addition to its functionality). Therefore, the converters are looking for more recyclable materials. This is in line with the initiatives to create a guideline for packaging and with the waste reduction roadmap regulation. When these alternative materials are found, the challenge will lie in closing the gap between increased cost and the expectation from brand owners not wanting to pay premium to use these renewable materials (Pierce 2020).

Funds Allocated by Producers for Post-consumer Initiatives

Several post-consumer opportunities exist, such as waste banks, innovative recycling, energy recovery, plastic credits, and the creation of the IPRO. All of the initiatives are connected to the FMCG companies' funds and their willingness to advance circularity of plastic packaging in Indonesia, which is mandated by their global headquarters and Indonesian EPR legislation. Therefore, a synergy exists between EPR funds from FMCG companies (seen as the producers) and the innovations brought by civil societies and entrepreneurs. A challenge is, however, that the EPR fund allocation is being fragmented as a result of companies funding the initiatives

Table 33.5 Circularity challenges and opportunities emerging from the power dynamics analysis

Power dynamics	Themes	Power exercises	Circularity challenges	Circularity opportunities
Synergetic power dynamics	The search for MLP's alternatives	MLP redesign	MLP materials alternatives are more expensive Brand owners' do not want to pay a premium to use renewable materials	Efforts from upstream producers to develop alternatives for MLP (mono-material) Ongoing guidelines formulation for packaging manufacturers EPR regulation may stimulate material innovation
		Waste reduction roadmap for producers		
		Redesign and recycling guidelines		
	Funds allocation from the producers towards post-consumer initiatives	EPR funds allocation	Fragmented initiatives are often not sustained due to the limited fund, programme's duration, or abrupt termination of programmes	The availability of funds from FMCG companies for post-consumer initiatives IPRO is formed to pool funds from various producers and channel them to a more systemic approach
		MLP's recycling innovations		
		Waste reduction roadmap for producers		
	Consumers' support towards retail and waste stream initiatives	Awareness-raising movements	To alter behaviour, consumers want it to be hassle-free or to receive extra benefits beyond just protecting the environment	Pro-environmental consumers are supporting retail and waste stream initiatives Waste banks and drop boxes facilitate consumers to sort at source Online and offline platforms for education and campaign Regulation may effectively change consumers' consumption patterns
		Retail initiatives		
		Transformative packaging waste collection		
		Waste reduction roadmap for producers		

(continued)

Table 33.5 (continued)

Power dynamics	Themes	Power exercises	Circularity challenges	Circularity opportunities
Antagonistic power dynamics	EPR regulations vs potential profit loss	Waste reduction roadmap for producers and the producers' response to it	Sachet ban resistance from the companies due to the fear of profit loss No one wants to be the first to ban sachets as it will benefit the competitor Collective EPR efforts and EPR regulation may affect production costs and place local producers at a disadvantage	MoEF's EPR regulation encourages companies to stop using sachets with the size below 50 mL or 50 gram Consumers prefer to buy a bigger size of home products, so they do not have to buy small sachets frequently
	Waste infrastructure and EPR scheme	Waste reduction roadmap for producers The concept of IPRO	Regulations have not explicitly encouraged collective actions and demand producers to act individually A recycling plant investor may expect low-priced feedstock, which is difficult to achieve as flexible packaging collection in Indonesia is not yet established	IPRO as a potential vessel for collective actions from the producers to create the economies of scale, particularly to activate integrated waste collection Several investors are interested in tapping into the flexible packaging recycling market in Indonesia
	Inconsistent EPR assistance and the marginalised informal sector	Transformative packaging waste collection Managing EPR funds	Inconsistencies of EPR efforts on subsidising flexible packaging waste collection results in deadstock and loss of trust from the waste collectors EPR programmes do not take into account social protection for people who depend for their livelihood on informal jobs	The existence of EPR assistance from producers (subsidising collection, drop box, plastic credit)

individually instead of through a collective scheme. In addition, these initiatives are often not sustained due to the limited funds and programme's duration. A new opportunity arising is the IPRO exercising transformative power by pooling EPR funds from various producers and channelling them to a systemic and long-term approach to increase the collection rate of packaging.

Consumers' Support Towards Retail and Waste Stream Initiatives

Consumers play an essential role in supporting emerging retail and recycling initiatives. Studies by Huang (2016) and Liao et al. (2015) suggest that media exposure to environmental issues positively affects audiences' pro-environmental behaviour. The work of NGOs, which are often funded by FMCG companies, to increase consumer awareness is therefore crucial. As a result of these awareness-raising campaigns, there are consumers who support circular retailing and waste management initiatives, such as purchasing goods in bulk stores or joining waste banks. Although the number of pro-environmental consumers is relatively low, there is an opportunity to educate consumers through online and offline platforms. In addition, regulations can also effectively change consumers' consumption patterns towards plastic by banning packaging with low recyclability or stimulating circular retailing and waste management practices.

33.3.4.2 Antagonistic Power Dynamic

Antagonistic power dynamics between power exercises found are waste reduction roadmap vs. potential profit loss, waste infrastructure and EPR scheme, and inconsistent EPR assistance and marginalised informal sector.

Waste Reduction Roadmap Versus Potential Profit Loss

The waste reduction roadmap by MoEF includes the sachet ban which evokes challenging responses from producers. A challenge exists as FMCG companies display resistance towards the ban, because according to these companies, middle- and low-income consumers are not prepared to accept the increased cost of alternative packaging size (government body A, interview, June 7, 2021). The vulnerability of lower-income households to price increases has been capitalised by large corporations that manufacture a variety of sachet brands at a significantly low price (Daily FT 2021). In essence, the resistance towards the sachets ban comes from the potential decrease of sale and profits. FMCG companies are also hesitant to be the first to stop using small sachets as it will open up opportunity for their competitors (FMCG Industry A, interview, April 20, 2021).

Another challenge is the gap in available resources and adaptability to governmental regulation and circular development between multinational FMCG

companies (MNCs) and local ones. While MNCs try to lead the circularity shift, due to global pressure and exposure, local FMCG companies are less proactive as circularity is not yet a priority (governmental body A, interview, June 7, 2021). They will also be disproportionally affected by increasing costs for circular packaging solutions. EPR policies (e.g. sachet ban, usage of recycled content) may differently affect large and small scale producers' competitive position (OECD 2014).

Waste Infrastructure and EPR Scheme

Current waste collection infrastructure is unable to establish a clean and consistent feedstock for recycling infrastructure. Meanwhile, the waste reduction roadmap regulation obliges producers to increase their products' recycling rate and report their individual efforts to do so. The lack of waste collection infrastructure is a challenge preventing investors to establish a recycling plant for flexible packaging. If a company wants to invest in building the recycling plant, they also need to create an ecosystem of waste collection to supply the plant. Thus, creating a positive business case from flexible packaging recycling plant is found to be challenging. The collective effort through the IPRO tries to mitigate such packaging waste collection issues; however, this collective scheme also faces a challenge as the current regulation of EPR demands each brand to develop their respective roadmaps and report waste reduction per brand. The legislation does not yet encourage all FMCG companies to join the collaborative platform. Therefore, there are antagonistic dynamics between the waste reduction roadmap for producers (constitutive power) and the concept of IPRO (transformative power).

Inconsistent EPR Assistance and the Marginalised Informal Sector

There are contradictions between transforming packaging waste collection (transformative power) and managing EPR funds (transformative power), especially regarding the consistency and inclusivity of the informal sector. EPR efforts often include subsidizing flexible packaging waste collection as producers request waste collectors to collect these. However, this has not been consistent over time (Expert C, interview, May 7, 2021). This inconsistency results in the loss of trust from the collectors, because when an initiative stops abruptly, the collected waste becomes a deadstock in their storage, and they have to spend money to throw it away or dump it illegally instead. This in turn makes it even harder to build up a continuous recycling chain (Expert C, interview May 7, 2021). Moreover, most EPR initiatives that assist flexible packaging waste collection, such as drop boxes and plastic credit, do not allow informal sector to be collection partners due to their unsafe working practices (waste management actor D, interview, May 1, 2021). Although the informal sector has the resources and relations to recycle plastics (Amin et al. 2022), they are rarely considered as direct beneficiaries of EPR funders.

33.4 Discussion

The results show how mobilised resources and power dynamics emerge through different initiatives across the value chain. In the discussion, we will compare how value chain initiatives differ in the challenges and opportunities they face, particularly between the end of life, use, and disposal and in production of flexible packaging in Jakarta. We will discuss how these challenges and opportunities are a result of available resources and exercise of power by particular actors and the power dynamics between producers, consumers, and the government.

33.4.1 Theme 1: End-of-Life Collection and Recycling Initiatives Through EPR

The results show that by far most initiatives—and therefore also the identified challenges and opportunities (see Table 33.5)—relate to fostering the collection and recycling of flexible packaging. Through EPR schemes, producers play an important role, as they take their responsibility mainly by contributing their funds to improve collection, sorting, and recycling (Ellen MacArthur Foundation 2021). This is also stimulated by the Indonesian government who has been requiring EPR. However, EPR in Indonesia is conducted primarily through individual producer schemes, thus inhibit a systemic change. While a collective effort is emerging through the IPRO, this has not led to any systemic efforts towards circularity, especially for flexible packaging.

Furthermore, knowledge, priority, and funding availability gaps exist between multinational and local producers. To create a just effort amongst producers, MNCs opt for a collective scheme via IPRO, which is considered cost-efficient because of economies of scale and possibilities to exchange data. However, PROs also face challenges, such as free-riding and decreasing individual companies' investments incentives (OECD 2014). Local producers may be reluctant to join a PRO as this may disproportionately affect their production costs and put them at a competitive disadvantage (OECD 2014). Moreover, EPR practices marginalise the informal recycling system. Exclusive arrangements between PRO and formal recyclers through vertical schemes may hinder recycling competition on the market in which also informal waste pickers operate (Amin et al. 2022; OECD 2014). The informal sector is often not included in EPR as they are considered to practice inappropriate techniques leading to environmental issues and unsafe working environment.

EPR also mainly focuses on waste management as most MNCs have made commitments that focus on recyclability, recycling targets, and downstream change instead of upstream solutions. However, recycling alone is not enough to realise circularity. According to the PEW Charitable Trusts and SYSTEMIQ (2020), there is a huge gap because actors only focus on waste management. Instead, industries should also concentrate on upstream initiatives such as redesigning business models, products, and materials to scale up their efforts to reduce plastic production.

33.4.2 Theme 2: Consumer Use and Disposal

Consumers can drive the transition towards circularity by reducing flexible packaging consumption and ensuring that flexible packaging waste is sorted and recycled. Consumers' choices are dependent on three factors: the information they have access to, the range and prices of existing products, and the regulatory framework (Kuelpmann 2019).

The information that consumers attain can influence their attitude towards plastic pollution and waste issues. Most consumers in Indonesia lack motivation and knowledge how to separate and recycle waste, which ultimately prevents waste reduction efforts (Dhokhihah et al. 2015). A survey in Southeast Asia, including Indonesia, showed that 88% of consumers consider social media as the channel to gain information on plastic waste issues (Sea Circular 2020). Thus, Indonesian NGOs have developed social media awareness campaigns about the danger of unmanaged waste (Hermawan et al. 2021). As a result, plastic pollution campaigns may not reach those with a lack of access to the Internet or those who do not use social media platforms to attain information. Moreover, environmental awareness is not developed in isolation (e.g. only through media) but is also influenced by factors such as environmental education and socioeconomic status, enabling a person to access media and information (Edsand and Broich 2019). Communities in Jakarta do not prioritise environmental protection as their top priority is to achieve economic prosperity (Octavia et al. 2018). Therefore, MNCs are also educating their consumers as they transition to CE models. Without consumer buy-in, companies will be unable to close material loops or generate value through other CE business models (ING 2020).

Price and access to alternatives to flexible plastic packaging hinder consumers from conducting circular behaviour. 43% of consumers want behavioural change to reduce plastic usage to be hassle-free and to provide benefits beyond just protecting the environment (FMCG Gurus 2019). However in practice, consumers need to spend more money or time to engage in circular behaviour, e.g. when buying in bulk or separating waste. Even when refilling systems and packaged goods are equally priced, people need access to refilling stations. At the moment, convenience is sacrificed when consumers need to travel further and bring bottles or containers to refill stations rather than simply buying a small sachet in a nearby store.

Although governmental regulations have imposed a future sachet ban to drive consumers to change their behaviour, the implementation is problematic as it faces resistance from the producers who face extra costs and fear reduced sales when they substitute small sachet to larger (and reusable) packaging. In practice, in Indonesia, consumers' buying behavior is dependent on packaging design decisions from producers.

33.4.3 Theme 3: Packaging Production and Circular Business Models

CE implementation requires an innovative rethinking of production and consumption systems (Vorobiova 2021). Several initiatives were found that focus on the production and retail stage of the value chain, such as innovations in producing mono-material packaging and retail initiatives to encourage consumers to avoid single-use flexible plastics. Other important developments are the waste reduction roadmap regulations and guidelines for redesign and recycling. These initiatives focus on producers and retailers to play an essential role in developing packaging innovations, circular business models, and reducing flexible packaging use. However, most of these initiatives are still in their infancy and have yet to materialise. Most attention goes to transforming the MLP production and reducing its use by FMCG companies. The potential power of producers to transform packaging design and use has yet to be fully exercised because government regulation has a tapered timeline to 2030 that allows producers to delay change. This also goes for retailers, who are more relaxed about exercising their transformative power to create opportunities for circular packaging transition in Indonesia.

33.5 Conclusions

Applying the framework of power dynamics revealed flexible packaging value chain actors' resources and how these actors mobilise these resources towards actions; it helped to identify the motivation and patterns behind actors' actions and their capacity and efforts to "make a difference". These insights were crucial to understand the challenges and opportunities for a transition towards circularity for flexible packaging in Jakarta and Indonesia in general. Challenges found are expensive alternative material production cost, fragmentation in EPR initiatives, lack of drivers for consumer behavioural change, the inclusion of local producers in EPR, lack of separated household waste collection hindering the recycling process, loose regulations, and informal sector marginalisation in EPR initiatives. At the same time, opportunities exist as well, in particular, the formulation of circular packaging guidelines, EPR funds becoming available to fund post-consumer initiatives, the creation of the IPRO to pool funds, the existence of pro-environmental consumers and social entrepreneurs, awareness-raising campaigns, the emergence of circular retailing, the innovative waste collection to encourage waste separation at source, and the existence of EPR regulations.

Based on the power dynamics analysis, we conclude that the challenges are deeply systemic, while initiatives that create opportunities are in their infancy: they are either start-ups (e.g. refill stores), only at pilot scale (e.g. Rebricks), or only a plan (e.g. IPRO, guidelines). The analysis revealed the pivotal role of producers. Producers are well-connected to every opportunity and have more power to drive

the transition than any other value chain actor. The results show that all multi-stakeholder collaborations in Jakarta mainly revolve around producers, especially MNCs, as they are the agenda setters and fund providers. Producers, especially MNCs, have the resources needed and can mobilise them into actions, such as generating EPR funds for innovations, establishing the IPRO, and being involved in awareness-raising campaigns. However, producers (MNCs and local) also have the power to hinder or delay the transition by lobbying the packaging design regulation, not joining collective EPR efforts, or marginalising informal sectors in their initiatives.

MNCs are driven to lead a circularity transition due to their global headquarters' mandate, international pressure to reduce plastic consumption and waste, and Indonesian EPR regulations. However, they are simultaneously the value chain actor that determines the design, material composition, and application of flexible packaging. So far, EPR initiatives implemented mainly focus on alleviating plastic pollution by improving collection and recycling. Meanwhile, initiatives to solve the challenges of the costly alternative materials or reducing the use of flexible packaging in the production process were still lacking. Retailer initiatives to develop circular packaging innovations are minimal, and there needs to be more governmental and civil society attention to the role of retailers in transitioning to circular plastics. Consumers are also asked to sacrifice their convenience to contribute to circular schemes (e.g. finding refill stations, joining waste banks), as systemic changes such as separated waste collection or affordable products with alternative packaging are not yet available. These have reduced their power to accelerate the circular transition.

Based on this study, two recommendations are given to activate the transition towards circularity. Firstly, the government and producers should aim for an inclusive EPR scheme and stakeholders' collaboration to activate a systemic change. This includes packaging redesign, in addition to end-of-life aspects which consist of separation at source, incentives for consumers and the informal sector to recover packaging in the waste stream, and innovative recycling technology to keep the packaging back into the loop. Such systemic change in the upstream part of the value chain requires governments to set policy goals for packaging redesign by reducing plastic use and facilitate innovation towards circular packaging systems by involving all actors in the value chain, including retailers.

Secondly, producers, retailers, and governments need to raise consumers' awareness through various channels and school curriculum and create access to alternatives such as refill systems and bulk stores for low- to middle-income consumers. The government should facilitate and guide companies to achieve the EPR regulation and targets by recycling and changing the flexible plastic packaging design and moving towards circular (reusable) packaging systems. By giving consumers more choices, they can play a role in the transition to a circular plastic packaging value chain in Jakarta, moreover in Indonesia.

Acknowledgements This chapter is based on a Master thesis research project, which was supported by PT Wasteforchange Alam Indonesia and funded by Indonesia Endowment Fund for Education (LPDP).

References

Anasstasia TT, Lestianingrum E, Cahyono RB, Azis MM (2020) Life cycle assessment of refuse derived fuel (RDF) for municipal solid waste (MSW) management: case study area around cement industry Cirebon Indonesia. Abstr IOP Conf Ser Mat Sci Eng 778(1):012146. https://doi.org/10.1088/1757-899X/778/1/012146

Amin S, Strik D, van Leeuwen J (2022) A multi-method approach to circular strategy design: assessing extended producer responsibility scenarios through material flow analysis of PET plastic in Jakarta, Indonesia. J Clean Prod 367:132884

AQUA (2020, December 11) Bangun Perilaku "Sampahku Tanggung Jawabku" ke Penerus Bangsa, Danone-AQUA Gandeng Guru SD. [Build "My Waste is My Responsibility" Behavior to the Next Generation, Danone-AQUA Collaborates with Elementary School Teachers]. AQUA Bijak Berplastik. https://bijakberplastik.aqua.co.id/publikasi/edukasi/bangun-perilaku-sampahku-tanggung-jawabku-ke-penerus-bangsa-danone-aqua-gandeng-guru-sd/

Atmadi G (2019) How company manage stakeholder engagement for reducing plastic waste in Indonesia? Proceeding of the 5th conference on communication, culture, and media studies, p 161–167

Avelino F, Rotmans J (2011) A dynamic conceptualisation of power for sustainability research. J Clean Prod 19(8):796–804. https://doi.org/10.1016/j.jclepro.2010.11.012

Berg P, Feber D, Granskog A, Nordigården D, Ponkshe S (2020, January 31) The drive toward sustainability in packaging—beyond the quick wins. McKinsey & Company. https://www.mckinsey.com/industries/paper-forest-products-and-packaging/our-insights/the-drive-toward-sustainability-in-packaging-beyond-the-quick-wins

Camacho-Otero J, Tunn V, Chamberlin L, Boks C (2019) Consumers in the circular economy. https://www.researchgate.net/publication/337085214_Consumers_in_the_circular_economy

Daily FT (2021, March 19) Sri Lanka's sachet addiction | Daily FT. Www.Ft.Lk. https://www.ft.lk/columns/Sri-Lanka-s-sachet-addiction/4-714972

Dhewanto W, Lestari YD, Herliana S, Lawiyah N (2018) Analysis of the business model of waste bank in Indonesia: a preliminary study. Int J Bus 23(1):74–88

Dhokhikah Y, Trihadiningrum Y, Sunaryo S (2015) Community participation in household solid waste reduction in Surabaya, Indonesia. Resour Conserv Recycl 102:153–162. https://doi.org/10.1016/j.resconrec.2015.06.013

Edsand HE, Broich T (2019) The impact of environmental education on environmental and renewable energy technology awareness: empirical evidence from Colombia. Int J Sci Math Educ 18(4):611–634. https://doi.org/10.1007/s10763-019-09988-x

Ellen MacArthur Foundation (2021) Extended producer responsibility: a necessary part of the solution to packaging waste and pollution. https://emf.thirdlight.com/link/cp8djae8ittk-xo55up/@/download/1

FMCG Gurus (2019) Sustainability in Indonesia. Food Ingredients Asia. https://www.figlobal.com/asia-indonesia/en/visit/news-and-updates/sustainability-in-indonesia.html

Fuchs D, Di Giulio A, Glaab K, Lorek S, Maniates M, Princen T, Røpke I (2016) Power: the missing element in sustainable consumption and absolute reductions research and action. J Clean Prod 132:298–307. https://doi.org/10.1016/j.jclepro.2015.02.006

Garcia B, Fang MM, Lin J (2019) Marine plastic pollution in Asia: all hands on deck! Chin J Environ Law 3(1):11–46. https://doi.org/10.1163/24686042-12340034

Gerassimidou S, Lovat E, Ebner N, You W, Giakoumis T, Martin OV, Iacovidou E (2022) Unpacking the complexity of the UK plastic packaging value chain: a stakeholder perspective. Sustain Prod Consump 30:657–673. https://doi.org/10.1016/j.spc.2021.11.005

Gone Adventurin & Amcor (2019) Toward circularity of post-consumer flexible packaging in Asia. Gone Adventurin. https://assets.ctfassets.net/f7tuyt85vtoa/Zt4soYnJWUKoWCi8uu8iW/a48a9e1b94a28e2c0e52c6f89fa32363/2017-11-20-Flexibles-Report.pdf

Hahladakis JN, Iacovidou E, Gerassimidou S (2020) Plastic waste in a circular economy. In: Plastic waste and recycling. Academic, pp 481–512. https://doi.org/10.1016/b978-0-12-817880-5.00019-0

Hermawan M, Heriyati P, Andrew N (2021) Exploring program on ocean plastic pollution management: case of NGO in Jakarta. IOP Conf Ser Earth Environ Sci 729(1):012122. https://doi.org/10.1088/1755-1315/729/1/012122

Huang H (2016) Media use, environmental beliefs, self-efficacy, and pro-environmental behavior. J Bus Res 69(6):2206–2212. https://doi.org/10.1016/j.jbusres.2015.12.031

Iacovidou E, Hahladakis JN, Purnell P (2020) A systems thinking approach to understanding the challenges of achieving the circular economy. Environ Sci Pollut Res 28(19):24785–24806. https://doi.org/10.1007/s11356-020-11725-9

Indonesia Packaging Recovery Organization (2022, July 18) About us. IPRO. https://indonesiapro.org/about-us/

ING (2020) Learning from consumers: how shifting demands are shaping companies' circular economy transition. https://www.ingwb.com/media/3076131/ing-circular-economy-survey-2020-learning-from-consumers.pdf

Jakarta Statistics (2020) Tempat Pembuangan Sampah Sementara/Fasilitas Pengumpul Sampah Sementara. [Waste Temporary Site/Temporary Waste Collection Site]. Unit Pengelola Statistik. https://statistik.jakarta.go.id/tempat-pembuangan-sampah-sementara-fasilitas-pengumpul-sampah-sementara-di-wilayah-dki-jakarta-tahun-2018-2020/

Jørgensen S, Pedersen LJT (2018) The circular rather than the linear economy. In: Palgrave studies in sustainable business in association with future earth, p 103–120. https://doi.org/10.1007/978-3-319-91971-3_8

Kuelpmann R (2019, April 2) Does the circular economy understand what makes consumers tick? Join the CSCP's Consumer Insight Action Panel! CSCP GGmbH. https://www.scp-centre.org/consumger-insight-action-panel/

Liao Y, Ho SS, Yang X (2015) Motivators of pro-environmental behavior. Sci Commun 38(1):51–73. https://doi.org/10.1177/1075547015616256

Mann M (1986) The sources of social power. In: Haugaard M (ed) Power: a reader, vol 1. Manchester University Press, Manchester

Octavia N, Caninsti R, Arlinkasari F (2018) The role of willingness to sacrifice towards pro-environmental behavior in Jakarta citizens. In: Proceedings of the 3rd international conference of computer, environment, agriculture, social science, health science, engineering and technology. Published. https://doi.org/10.5220/0010041902880293

OECD (2001) Extended producer responsibility: a guidance manual for governments. OECD Publishing. https://doi.org/10.1787/9789264189867-en

OECD (2014) The state of play on extended producer responsibility (EPR): opportunities and challenges. OECD Publishing. https://www.oecd.org/environment/waste/Global%20Forum%20Tokyo%20Issues%20Paper%2030-5-2014.pdf

P4G (2022, November 29) Siklus. P4G. https://p4gpartnerships.org/pioneering-green-partnerships/all-p4g-partnerships/siklus

Pierce L (2020, July 8) How flexible packaging trends are shifting and why. Packagingdigest.Com. https://www.packagingdigest.com/flexible-packaging/how-flexible-packaging-trends-are-shifting-and-why

Sariatli F (2017) Linear economy versus circular economy: a comparative and analyzer study for optimization of economy for sustainability. Visegr J Bioecon Sustain Dev 6(1):31–34. https://doi.org/10.1515/vjbsd-2017-0005

SEA Circular (2020) Perceptions on plastic waste. https://www.sea-circular.org/wp-content/uploads/2020/06/PERCEPTIONS-ON-PLASTIC-WASTE_FINAL.pdf

Setyorini VP (2021, June 26) 23 produsen serahkan peta jalan pengurangan sampah 2020–2029 ke KLHK. [23 Producers submit waste reduction roadmaps for 2020–2029 to Ministry of Environment and Forestry]. Antara News. https://www.antaranews.com/berita/2233986/23-produsen-serahkan-peta-jalan-pengurangan-sampah-2020-2029-ke-klhk

The PEW Charitable Trusts & SYSTEMIQ (2020) Breaking the plastic wave. The PEW Charitable Trusts. https://www.pewtrusts.org/-/media/assets/2020/07/breakingtheplasticwave_summary.pdf

Unilever PLC (2022, November 11) Using our voice to build a circular plastic economy. Unilever. https://www.unilever.com/planet-and-society/waste-free-world/using-our-voice/

Upadhayay S, Alqassimi O (2018) Transition from linear to circular economy. Westcliff Int J Appl Res 2(2):62–74. https://doi.org/10.47670/wuwijar201822oasu

Vorobiova K (2021, April 14) Circular economy and innovation. EIT RawMaterials. https://eitrawmaterials.eu/circular-economy-and-innovation/

Walker TW, Frelka N, Shen Z, Chew AK, Banick J, Grey S, Kim MS, Dumesic JA, van Lehn RC, Huber GW (2020) Recycling of multilayer plastic packaging materials by solvent-targeted recovery and precipitation. Sci Adv 6(47):eaba7599. https://doi.org/10.1126/sciadv.aba7599

Waste4Change (2022) Flexible packaging material flow in DKI Jakarta. https://waste4change.com/research/material-flow-of-flexible-plastics-waste-in-dki-jakarta

Widiati S (2020, June 29) Jakarta's eco-friendly bulk stores. NOW JAKARTA. https://nowjakarta.co.id/city-guide/explore-jakarta/jakarta-s-eco-friendly-bulk-stores