Universiteit Utrecht

Master's Thesis- Master Sustainable Business and Innovation

Mission-Oriented Innovation Systems (MIS)

The Dutch transition to a CE in the Flexible Plastic Packaging Industry

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ABSRACT

Plastic pollution has been in the spotlight for over a decade. Plastic packaging floods retail shelves due to its useful material properties. The negative environmental impact of such products has already been discussed widely, with significant actions being initiated to manage flexible plastic packaging and closing the resource loops. By building on the Mission-Oriented Innovation Systems (MIS) framework, this master's thesis aims to comprehend the main drivers and barriers to achieving a Circular Economy for the Dutch flexible plastic packaging industry.

MIS is defined as the net of agents and institutions that assist to the acceleration and dissemination of innovative solutions to determine, seek, and achieve a societal challenge (Hekkert, Janssen, Wesseling, & Negro, 2020)

The approach includes a problem-solution diagnosis, where the four pathways [mechanical and chemical recycling (MR, CR), bioplastics, and reusables] are identified by assessing the implementation of the NL Plastic Pact. A thorough structural analysis based on the literature review follows. The main actors in the flexible plastic packaging value chain are waste suppliers, producer responsibility organizations, recyclers, converters, and third parties. The functional analysis is executed through a historical event analysis approach, where events are gathered chronologically to capture the bigger picture of the transition's drivers and barriers.

Notably, the historical event analysis indicated that MR is driven by high experimentation, high problem directionality, and market creation. However, the path’s barriers are associated with limited reallocation of resources and medium coordination. For CR, what leads its development is mostly the high solution directionality, the creation of coalitions, and the high experimentation. What disrupts its further development is the low problem directionality and the almost nonexistent market creation. Additionally, bioplastics' development is associated with the high experimentation and the incorporation of such products in companies' portfolios. Nonetheless, low solution directionality and low legitimacy are considered the main barriers. Finally, reusable, flexible plastic packaging is driven by high problem directionality and extended legitimacy over reusability. However, knowledge development seems to be lacking, with low experimentation and almost inexistent market creation.

Several interconnections affect paths' development and the overall mission. First, MR and CR have a complementary relationship. However, the further development of CR may destabilize MR in the mission. Secondly, a mutually reinforcing relationship between bioplastics and MR also exists. On the one hand, the two paths have a symbiotic relationship. On the other hand, the two paths experience a competing relationship. Finally, MR occupies a significant share in the mission, resulting in the neglect of reusability.

1. INTRODUCTION

Plastic pollution has become a crucial issue for humanity as a result of its severe impact on marine ecosystems and wildlife (IBERDROLA, 2021; Ukaogo, Ewuzie, & Onwuka, 2020; Wilcox, Mallos, Leonard, Rodriguez, & Hardesty, 2016). Plastic pollution also negatively impacts on soil by influencing the organisms living within the soil and the interconnected ecosystem (Chae & An, 2018). Additionally, 12.7 million tons of plastic are disposed of in the sea each year by coastal countries (Critchell et al., 2019). However, plastic is a polymeric material; its large molecules, which develop strong chains, are non-degradable and extremely durable in many environmental conditions. For these reasons, it is considered one of the most multifunctional materials for a variety of uses (Andrady & Neal, 2009). Due to these properties and strong demand, many lightweight single-use products are being continuously manufactured, accounting for 50% of the total plastic production (Jambeck et al., 2015). In particular, flexible plastic (not rigid, able to be bent), is the most common material in many industries, especially in the packaging industry (Niaounakis, 2019). However, the established plastic waste management system cannot correctly process all types of flexible plastic packaging due to either general misconceptions about the product's recyclability or shortages in technological machinery and knowledge (Hopewell, Dvorak, & Kosior, 2009). Nonetheless, the poor coordination and collaboration among the participants within the flexible plastic packaging value chain make any transformation of the recycling system more difficult (Elzinga & Hekkert, 2020). Hence, the socio-technical nature of the problem constitutes it as a topic of great importance, while facilitating the orchestration and direction of multiple participants denotes an issue of great complexity.

In Europe, the environmental impact of plastic pollution and flexible plastic packaging has already been identified and attempts are being made to address the problem. The European Union (EU) has implemented the European Green Deal to transform the EU's economy into a more sustainable one (European Commission, 2019). As part of the Green Deal, the EU's Circular Economy (CE) Action Plan aims to create a cleaner and more competitive Europe. In terms of flexible plastic packaging, the EU has already announced that all plastic packaging must be either recyclable or reusable. To accelerate the transition to a CE, the European Plastic Pact has also been formed to bring all the parties in the whole value chain together, with the aim of initiating and supporting the transition towards the aforementioned objectives (European Commission, 2020). Within the Netherlands (NL), a considerable number of actors have signed the pact, while the country has committed to become totally circular by 2050 (NL Plastic Pact, 2019). Additionally, all plastic packaging in the Dutch market will become reusable wherever possible and, moreover, 100% recyclable. A 20% reduction (in kg) in plastic material and the use of at least 35% recycled content will also be required for companies using plastic (NL Plastic Pact, 2019).

In this regard, on the 8th of July 2020, the workshop "Circular Plastic Packaging" was held by Rijkswaterstaat and the Copernicus Institute of Sustainable Development of Utrecht University (Elzinga & Hekkert, 2020). The workshop aimed to map the sector's case for transitioning to a CE. In the workshop, the Mission-Oriented Innovation System (MIS) was applied, and the functionality of the system was investigated. The framework can be defined as "*the network of agents and set of institutions that contribute to the development and diffusion of innovative solutions with the aim to define, pursue, and complete a societal* *mission"* (Hekkert et al., 2020, p. 77). During the workshop, four pathways were investigated regarding progressing plastic packaging towards the conditions of a CE: 1) Maximizing plastic collection and recycling (in volumes), 2) Using recyclates as much as possible, 3) Minimizing plastic use, and 4) Reusing plastic packaging (Elzinga & Hekkert, 2020). The outcome of the workshop indicated that while the mission seems to have already begun accelerating, several obstacles have appeared along the way, which must be overcome for the NL to totally transition to a CE in the flexible plastic packaging sector.

Consequently, the aim of this master's thesis is to accelerate the transition of the Dutch flexible plastic packaging sector to a CE. The ways in which the workshop perceived the transition by using the MIS framework are taken as inspiration, and the drivers and barriers of the system are identified. This is accomplished by carrying out a historical event analysis of the Dutch flexible packaging sector from 2015-2021 to obtain in-depth insights into the drivers and barriers that stimulate or hamper the transition. By using the workshop's operationalization as a reference and applying the MIS framework, this master's thesis attempts to answer the following research question:

"*What are the main drivers and barriers to a Circular Economy for flexible plastic packaging in the NL?*"

By providing insights into the main drivers and barriers to a CE, more concrete recommendations and directions for accelerating the transition to a CE in the flexible plastic packaging sector can be formulated. Furthermore, this case is one of the few empirical cases in which the MIS framework is applied. The social relevance of the thesis is to achieve the acceleration of the CE transition so the reduction of plastic waste can proceed effectively.

2. THEORETICAL FRAMEWORK

In the following section, the theoretical background relevant to the case of the transition to a CE in the NL for the flexible plastic packaging sector is explained. The necessity of perceiving the system as a socio-technical one is highlighted, while the exploration of possible frameworks to support the analysis are further investigated. A brief comparison of the existing frameworks and their limitations in capturing the mission is also presented. Finally, the choice of the MIS framework as the most appropriate framework for the analysis of this particular case is discussed.

2.1 Sustainable Transitions in Socio-Technical Systems

Socio-technical systems are strongly characterized by complexity. The processes within those systems are dynamic and highly interconnected (Vespignani, 2012). Such systems include multiple components whose relationships, directly and indirectly, affect the systems' behavior (Norman & Stappers, 2015). The literature reveals several components that affect these socio-technical systems, both in a technological and a social manner (Carayon, 2006; Pasmore, 1988; Rizzo, Pasquini, Di Nucci, & Bagnara, 2000; Wilson, 2000). The main characteristics of socio-technical systems are complexity, diversity, uncertainty, and resilience (Saurin, Righi, & Henriqson, 2013). To manage such complex systems, non-linear approaches should be adopted. These approaches integrate the necessary management of individuals and technologies, both within the industry and society (Norman & Stappers, 2015). The transition from linear to non-linear approaches in socio-technical systems is a long process that requires time (Griffith, Sawyer, & Poole, 2019), and it is typically characterized by multi-dimensionality and co-evolution (Köhler et al., 2019). This kind of transition is also referred to as the sustainable transition of the socio-technical system (Loorbach, Frantzeskaki, & Avelino, 2017; Markard, Raven, & Truffer, 2012). The direction of the transition depends strongly on the timing and nature of the interaction (Geels & Schot, 2007), while innovation relies mostly on the components and their interrelations, which constantly reinforce each other and the system in general (Schwabe & Krcmar, 2000). The importance of integrating innovation into tackling socio-technical issues is essential for any transformative process within those systems (Schot & Steinmueller, 2018). Innovation should work as a response to any societal challenge, and such a response requires transformational change (Ghazinoory, Nasri, Ameri, Montazer, & Shayan, 2020; Schot & Steinmueller, 2018).

The dynamics in the systems that drive transitions do not take place at the system level but at the micro level, where the system's components interact (Weber & Rohracher, 2012). This notion allows an insightful understanding of the way in which transitions in the whole socio-technical systems emerge and the relevant barriers that might hinder that transition. Transformative policies recognize the difficulties in shifting the direction of innovation in such systems, which are characterized by path dependencies, and have already analyzed the transformational failures of those systems (Schot & Steinmueller, 2018; Weber & Rohracher, 2012). The main reasons a system may fail to transition are directionality failures, demand articulation failures, policy coordination failures, and reflexivity failures. Each of those failures is strongly associated with some failure in the fulfillment of the system's activity (Raven & Walrave, 2020). Therefore, it becomes clear that to achieve any transition at a system level, technological development by itself is insufficient. A fundamental transition requires social and political alterations as well (Pyka, 2017).

In this regard, the relationship between plastic packaging and society is co-evolving in such a way that any transformational process within that system should be considered socio-technical (Evans, Parsons, Jackson, Greenwood, & Ryan, 2020). To achieve transformation in such a system, shifting the perspective of heterogeneous elements (firms, consumers, technologies, policymaking) is essential and requires the constant investigation and identification of the networks to which the plastic packaging belongs (Evans et al., 2020). Several frameworks investigate the sustainable transition of socio-technical systems by focusing on the different boundaries of the systems. Multi-level perspective (MLP) and technological innovation systems (TIS) frameworks are two of the most frequently used frameworks and are briefly described in the following sections.

2.2 Multi-Level Perspective Framework

The MLP framework works on capturing the sustainability transition in existing systems by dividing it into three levels of analysis: the so-called socio-technical regimes, niches, and landscapes (Geels, 2010; Geels, 2011). MLP is a systematic approach that aims to capture the socio-technical dynamics that lead to change and explores the interconnections between radical innovation in the niches and incumbent regimes (Kemp, Schot, & Hoogma, 1998; Seyfang & Longhurst, 2016).

The first level of analysis, namely the socio-technical regime, is defined as "the 'deep structure' that accounts for the stability of an existing socio-technical system" (Geels, 2011, p. 5). This structure involves the principles and processes that influence the social groups' actions in recreating the multiple elements of the system (Geels, 2011). Path dependencies, which characterize regimes, lead them to inertia and the so-called lock-in, with incremental changes in specific, pre-existing trajectories mainly being the case (Geels, 2011). These trajectories do not explicitly refer to technological solutions only but also include behavioral, cultural, and political aspects (Geels, 2011).

The second level of analysis of the framework includes the socio-technical niches. Niches are spaces in which innovation emerges and is developed on safe grounds, with the suitable institutional context also transpiring (Fuenfschilling & Truffer, 2014; Geels & Schot, 2007; Raven, Schot, & Berkhout, 2012). The protective nature of the niches is associated with regulatory schemes or prevailing preferences in specific segments (Smith & Raven, 2012), such as NGOs and cooperatives, R&D teams, and special projects (Fuenfschilling & Truffer, 2014).

The third level of MLP is the socio-technical landscape. This level represents the external environment of the sector under study (Geels, 2011; Geels & Schot, 2007). Any incident occurring at the landscape level affects both the regime and niche levels by potentially transforming social structures. Hence, MLP suggests that a socio-technical transition is taking place when pressure is exerted on the regime by changes in the landscape level, which either reinforce or destabilize it (Geels & Schot, 2007). Additionally, the socio-technical niches allow for the development of an institutional environment that is stable enough to compete with the established regime (Fuenfschilling & Truffer, 2014). Depending on the timing, the adaptive capacity of the regime and the reinforcing or disruptive nature of the niche and landscape changes taking place may have a negative or positive impact on the system (Geels & Schot, 2007).

2.3 Technological Innovation Systems Framework

Innovation is more likely to successfully occur as a collaborative activity, reflecting the synergy among all the actors necessary to introduce a novelty into the market (Hekkert, Negro, Heimeriks, & Harmsen, 2011; Vasseur, Kamp, & Negro, 2013). Bergek, Jacobsson, Carlsson, Lindmark, and Rickne (2008) define TIS as socio-technical systems oriented in the development, diffusion, and use of a particular technology. They entail a network of agents (actors, institutions, organizations) that interact with each other under a specific institutional infrastructure and positively influence the generation, diffusion, and utilization of a particular technology (Hekkert, Suurs, Negro, Kuhlmann, & Smits, 2007). The TIS approach posits that those incentives for technological change do not only occur within the firm's boundaries but also within the innovation system to which the firm belongs. It is the innovation system that determines both the rate and direction of the socio-technical change in the form of the technological trajectory that would be the most easily diffused (Hekkert et al., 2007). The TIS framework aims to identify the dynamics among the system's structural components, which are defined as the actors, institutions, and the networks/interconnections that exist between them. Despite the fact that those actors are operating within their own business ecosystems, their decisions and actions strongly affect the totality of the TIS attempting to emerge and diffuse. The interlinkages between them uncover the dynamic nature of the system and require the progressive comprehension of those actors' relationships, rather than a static one (Bergek et al., 2015; Hekkert et al., 2007). These interlinkages are significantly reinforced by the innovation intermediaries, whose role is to connect, translate, and facilitate knowledge within the system (Howells, 2006; Moss, 2009; Van Lente, Hekkert, Smits, & Van Waveren, 2003). Thereby, the approach is oriented to assessing the relevant activities that contribute to the diffusion and implementation of innovation within the system, the so-called system functions. These functions are dependent on each other and can also weaken or reinforce the system. The most popular set of functions of TIS are Function 1) entrepreneurial activity, Function 2) knowledge development, Function 3) knowledge diffusion, Function 4) research guidance, Function 5) market formation, Function 6) resource mobilization, and Function 7) creation of legitimacy/counteract resistance to change (Hekkert et al., 2007; Negro, Hekkert, & Smits, 2007; Suurs, Hekkert, & MP, 2005). Hekkert et al. (2011) have argued that technological systems involve artifacts that are integrated into specific infrastructures. The structure of TIS include several technological trajectories, hence, a set of technologies developing in a particular direction. Those trajectories consist of the techno-economic features of costs, safety, and reliability, which are essential feedback mechanisms operating between technological and institutional change (Hekkert et al., 2011; Suurs, 2009). Depending on which phase of development to which each trajectory belongs, a different set of functions is essential for the technology to progress in the respective phase. These phases are categorized as the predevelopment phase (where no working prototype has emerged yet), the development phase (where commercial application occurs), take-off (where market growth takes place), and acceleration (where saturation occurs; Hekkert et al., 2011). The different sets of functions that determine each phase of development and the interconnections among them are presented in Figure 1.

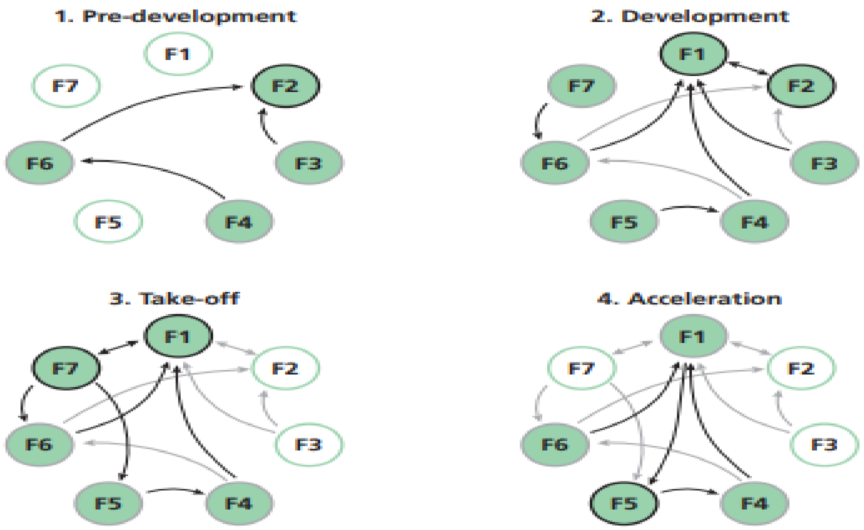

Figure 1: Functional Patterns per Development Phase
Source: Hekkert et al., 2011, p. 12

2.4 The Necessity of a New Framework

Transformational change involves socio-institutional change, which further entails alterations in regulations, standards, and behaviors (Geels, 2002). Hence, transformational or sustainability change is much more complex because it calls for the normalization of new structures and what the system perceives to be legitimate (Fuenfschilling & Truffer, 2014). Despite this, in CE transitions, where the main goal is to shift from a linear to a circular system, there are three types of transformation models (Table 1), and in the case of the plastic packaging domain in the NL, socio-institutional change rather than technological innovation is considered to be of the greatest significance. In such a case, the system does not build up to a radical innovation but rather entails the constant coordination and collaboration of the actors to pursue the desirable transition (Potting, Hekkert, Worrell, & Hanemaaijer, 2017). While the transition to a CE in the Dutch flexible plastic packaging sector includes various solutions, whose dominance is still unclear, the TIS framework can only be used to analyze each solution separately, thereby, missing the totality of this societal challenge (Elzinga, Negro, Janssen, Wesseling, & Hekkert, 2020; Suurs, 2009). In addition, the MLP framework can only capture missions associated with more generic societal functions, rather than those with numerous societal functions or those that focus on explicit challenges (Hekkert et al., 2020).

Table 1: The Three Circular Economy Transition Models (Potting et al., 2017)

CE Transition Models	DEFINITION
Based on a radical new technology	The new technology is central for the transition to be achieved and for a totally new product to be developed
Based mainly on socio-institutional change	Technological innovation plays a minor role. The focus is on incremental innovation in core technologies
Based on socio-institutional change combined with enabling technologies	The transition from owning the product to purchase its services mainly involves socio-institutional change but the presence of the technology is also crucial

Consequently, for the NL to become totally circular, a new circular strategy should be developed. A circularity strategy can be characterized as either low or high, depending on the urgency of the corresponding socio-institutional change or innovation in technology. Therefore, high circularity strategies (i.e., becoming fully circular) usually demand a socio-technical alteration in the product chain, while low circularity strategies are used for radical technological innovation (Potting et al., 2017). For all these reasons, Hekkert et al. (2020) have proposed the MIS framework. It is defined as "the network of agents and set of institutions that contribute to the development and diffusion of innovative solutions with the aim to define, pursue and complete a societal mission" (Hekkert et al., 2020, p. 77), and it differentiates itself from other models through the way it sets the system's boundaries and the way in which the interactions emerge (Hekkert et al., 2020).

2.5 Mission-Oriented Innovation Systems

The MIS framework is considered to be able to more appropriately capture the societal challenge of transitioning to a CE in the NL's flexible plastic packaging domain. The NL aims to become less dependent on raw materials by focusing on the transition to recycling technologies, product reuse, and corresponding business models (NL Plastic Pact, 2019). MIS is a problem-oriented framework, therefore, the actors involved, and possible solutions may not be revealed at first glance, rather it is the prioritization of the problems that formulate the direction of the mission. A mission requires both technical and behavioral innovations (Hekkert et al., 2020; Kattel & Mazzucato, 2018), which means a set of multiple solutions to one challenge is required rather than one ultimate solution. To properly analyze an MIS, the calibration of multiple factors plays a significant role. In this way, each mission should fulfill the following characteristics: 1) a mission should be precise, 2) a mission includes a variety of R&D and innovation projects, 3) a mission should include diverse actors and contribute to investments in multiple sectors, and 4) a mission involves collaborative policymaking (Anadon, 2012); (Mazzucato, 2017); (Mazzucato, 2018). The MIS framework integrates all the potential paths that influence a mission's accomplishment, since it involves technological and behavioral transitions for processes, products, and business models. The paths are likely to compete or complement each other, and it is important to comprehend the interlinkages between them. The paths can be categorized as competing – in capital and human resources– , complementing, or independent – having a neutral effect on each other– (Elzinga et al., 2020, p. 4). The coordination of and among the paths is essential to achieving the mission's goal. This coordination can be enhanced by governments, businesses, NGOs, and industry associations (Elzinga et al., 2020). MIS is a functional framework; therefore, its mission functions (MFs) are as follows: MF1) experimentation by entrepreneurs, MF2) knowledge development, MF3) knowledge dissemination, MF4) directionality, MF5) market creation, MF6) mobilizing resources, MF7) counteracting resistance, and MF8) coordination (Elzinga & Hekkert, 2020). These functions can be observed in Table 2.

Table 2: Description of MIS Framework (Wesseling & Meijerhof, n.d.)

System function	Description
MF1: Experimentation by entrepreneurs	Experiments with innovations to stimulate learning; launching innovative solutions; adopting business models for the dissemination of solutions
MF2: Knowledge development	Learning by searching and by 'doing', which results in the comprehension of new technical and social knowledge for problems
MF3: Knowledge diffusion	Any form of distributed technical and social knowledge for the mission's solutions and societal challenge (stakeholder actions, governance structures, public consultations, mission progress reports).
MF4: Providing directionality	
4A: Problem directionality	The direction given to stakeholders' conceptions of societal challenge and the level of priority they accord it.
4B: Solution directionality	The direction given to the search for technological and social solutions, and actions needed to determine, choose, and exploit collective sets of solutions for the mission.
MF5: Market creation	Developing niche market and upscaling assist for technical and social solutions; diminishing markets and technologies hindering the mission.
MF6: Reallocation of resources	Mobilization of human, financial, and material resources to empower all system functions.
MF7: Creation of legitimacy	Increasing legitimacy for the prioritization of the problem and the diffusion of its solutions.
MF8: Coordination	Coalitions and collaborations among stakeholders so that all solutions are equally promoted and initiated.

The fourth function covers both challenge/problem and solution directionality. This distinction allows the development of a common and united notion of the mission by prioritizing the problems (Kattel & Mazzucato, 2018). Under the umbrella of challenge directionality, two categories of actors are simultaneously initiated. These categories vary between the actors devoted to a joint mission, whose solution remains uncertain, and those who are investing and developing a promising technology unrelated to any mission. Due to the size of the mission and the potential scale-up, the coordination function ensures all paths are equally promoted, since several solutions address the same problem. The MIS framework includes the solution directionality to avoid the underdevelopment of specific paths as a result of limited or unequal resources and available capital (Elzinga & Hekkert, 2020; Kattel & Mazzucato, 2018). Within MIS, exerting pressure on the current “regime” is of additional importance. The dominant system entails a sequence of established customs and routines, norms and regulations, actors, and infrastructures that reinforce each other to maintain the system's existence. Once pressure is exerted onto the established system, innovations and new technologies are given space to flourish and develop (Elzinga et al., 2020). A mission-oriented policy is dependent on the level of contestation, and the complexity and uncertainty of the problem entailed in the specific social challenge to successfully frame and extract a legitimate mission from it. Hence, the success of an MIS relies on the actors’ perception of the problem (Wanzenböck, Wesseling, Frenken, Hekkert, & Weber, 2019).

The MIS framework was chosen as the framework to analyze the transition to “Circular Plastic Packaging” in a workshop led by Rijkswaterstaat and the Copernicus Institute of Sustainable Development of Utrecht University (Elzinga & Hekkert, 2020). The results of that workshop indicate that despite the mission already accelerating, several problems have appeared along the way that must be resolved for the NL to totally transition to a CE in the flexible plastic packaging sector (Elzinga & Hekkert, 2020). Using the MIS framework, this master’s thesis aims to identify the system’s barriers and drivers, expand knowledge among the system’s actors, and assist in the coordination and direction of the mission to a Dutch circular plastic packaging transition. The system's boundaries are the NL, while the system includes the corresponding actors (waste suppliers, producer responsibility organizations, recyclers, and converters), and their interrelationships in the flexible plastic packaging sector. Both the processes and materials associated with the transition are selected as the new paths for this analysis as depicted in Table 3.

Table 3: The Relevant Paths of the Investigation

PATHS	ACTIVITIES
P_1	Mechanical Recycling (MR)
P_2	Chemical Recycling (CR)
P_3	Bioplastics
P_4	Reusables (R)

3. METHODOLOGY

3.1. Research Design

This master's thesis aims to expand the body of knowledge on the flexible plastic packaging sector's transition to a CE in the NL by conducting a deductive, qualitative analysis. The choice to follow a deductive approach was based on the application of a new theoretical framework, the MIS, to a unique empirical context, that is, the NL becoming circular in the flexible plastic domain, while the qualitative analysis sought to discover nuances in this new framework and empirical context. The steps of the analysis are depicted in Table 4.

Table 4: Steps of the Qualitative Analysis (Wesseling & Meijerhof, n.d.)

STEPS	ACTIONS
1. Problem Solution Diagnosis	Assessment of the relevant activities required under the NL Plastics Pact and determination of suitable paths.
2. Structural Analysis	Identification of the main structural components categories of the system based on literature assessment
3. Functional Analysis	Historical event analysis by identifying events via Lexis Nexis and other internet archives
4. Identification of barriers and drivers	Assessment of the functionality of the mission, results and discussion

Secondary data were used to address the first two steps of the study. In particular, the NL Plastic Pact defined the main problems within the mission, while the paths were considered suitable solutions. Moreover, an in-depth literature review defined the categories of the main structural components. A historical event analysis (or sequence analysis) provided the primary data used for Steps 3 and 4 of the study. The process approach or sequence analysis is used to conceptualize change processes as sequences of certain events (Poole, Van de Ven, Dooley, & Holmes, 2000; Van de Ven & Poole, 2005). An *event* is defined as "a temporarily specific outcome of performed acts by human actors that the actor itself discerns and perceives as influential" (Elo, Halinen, & Törnroos, 2010, p. 4). Primary data for the historical event analysis were extracted from Lexis Nexis, including newspaper articles and policy and industry reports. *Lexis Nexis* is an academic research engine that aggregates scientific and relevant content, making the research more efficient. It includes features for better organizing the research, thereby establishing itself an easy-to-use academic research tool (Knapp, 2018). Data collected via desk research were used to better understand the underlying reasons for the existence of drivers and barriers to a CE transition within the system.

The scope of the analysis is flexible plastic packaging in the NL. The choice of scope is based on the NL's commitment to becoming circular by 2050. The focus on flexible plastic packaging results from the urgency of the sector tackling the recyclability issues of these products in the sector, which has led to considerable discourse and actions that provide data and insights for the thesis.

3.2. Data Collection

The primary data of the analysis include a historical event analysis on the activities that have taken place in the plastic packaging sector in the past five years, given that the CE concept is relatively contemporary. For this reason, the analysis of the sector is from 2015 to 2021. The collected data underline how change evolves over time and allows for essential insights into the transitional process (Poole et al., 2000). The primary data were sourced from Lexis Nexis and other internet archives and included business and governmental reports, scientific literature, professional journals, and newspaper articles referring to the four paths. Both primary and secondary data are considered qualitative and are aligned with the ethical instructions provided by Utrecht University (Appendix 10.1). The number of collected events was 641, with 228 sources assessed, while the whole data set is presented in Appendix 10.2.

3.3. Data Analysis and Operationalization

To identify the most relevant activities determining the system's functionality, a historical event analysis was conducted. The analysis comprised the following steps: 1) literature research, 2) database classification, 3) allocation to functions, 4) graphical representation, and 5) narrative. These steps are briefly described in Table 6.

Table 5: Steps of Historical Event Analysis (Negro, 2007)

STEPS	EXPLANATION
1. Literature Research	Research of European and Dutch journals, papers, reports and websites regarding the paths
2. Database classification	The database was organized according to the year of event, actors involved, and paths
3. Allocation to functions	Event were allocated to one of the System Functions would emerge
4. Graphical Representation	The events were illustrated in graphs per path, including separate graphs per year and per System Functions
5. Narrative	A story that elaborates on how the sequence of events took place, and more concrete conclusions were made

Significant events were identified and entered into a Microsoft Excel database. Once an article from Lexis Nexis was deemed relevant, entailing one of the keywords in Table 6, the included events were added to the database. The data collected from the sector were coded into the four previously identified paths. However, due to overlapping actors, institutions, and organizations, the same sources and data were used for all four paths (mechanical recycling, chemical recycling, bioplastics, reusables) to avoid conducting four different analyses. A further coding followed, based on the functionality of the system. Each event was allocated to an MF according to several selected indicators and diagnostic questions, as presented in Tables 7a, 7b. These indicators assess the functionality of the events in the mission and whether an event assists in building up the new system or breaking down the old one, the so-called "regime change." Wesseling and Meijerhof 's (n.d.) latest article aims to include this regime change perspective, but that has not been performed consistently for all eight functions. Therefore, the indicators aim to identify the functionality of events in the mission and their contribution to the mission itself. The events' positive or negative effect on the system's functionality is represented with a +1 or -1 symbol for the graphical representation to follow. A narrative determines "the bigger picture" regarding the causal factors that may influence each path and the mission in general.

Table 6: An overview of all search terms and results used for the document analysis.

Search Term	Time Scope	Results KIDV knowledge base	Results Lexis Nexis	Sources used in the analysis
Circular flexible plastic	2015-2021	583	21768	14
Bioplastic	2015-2021	546	16583	58
Mechanical recycling	2015-2021	591	19739	95
Chemical recycling	2015-2021	537	15822	41
Reusable plastic	2015-2021	511	11231	20

Table 7a: Indicators per function (Hekkert et al., 2020); (Wesseling & Meijerhof, n.d.)

	Building up a New System	Breaking down the Old System
MF1: Entrepreneurial Activities	• Experiments and pilots with existing and new circular solutions started/stopped. • Circular projects start/stop • Circular companies start/stop (new entrant or incumbent)	• Experiments and pilots with existing and new linear solutions started/stopped. • Linear projects stop/start • Linear companies stop/continue along same lines (new entrant or incumbent)
MF2: Knowledge Development	• (Scientific and professional) Publications on circular activities • Circular knowledge projects start/stop. • (New) Circular research groups start/stop. • (New) Circular research programs start/stop. • New patents on circular product or process (+)	• (Scientific and professional) Publications to unlearn linear activities/continue linear activities. • Linear knowledge projects stop/start. • (New) research groups to unlearn old system start/stop, e.g., market studies to unlearn current consumer preferences. • Research groups dedicated to old linear system stop/start or continue. • (New) research programmes to unlearn old system start/stop. • Research programmes dedicated to old linear system stop/start or continue. • New patents on linear product or processes (-)

MF3: Knowledge Diffusion	• Symposiums and conferences about circular activities (start/stop) • Knowledge networks about circular activities (start/stop) • More/fewer common publications about circular activities • Knowledge sharing activities, like collaborations, between different actors (companies, consumers, knowledge institutes, governments), e.g. symposia.	• Symposiums and conferences about linear activities (stop/start). • Knowledge networks about breakdown of old system start/about linear activities continue. • Common publications about breakdown of old system/about linear activities continue. • Knowledge sharing activities to phase out linear principles between different actors (companies, consumers, knowledge institutes, governments)
MF4A: Problem Directionality	• Congruence/Agreement on the mission problem, expressed in e.g., media, company strategies. • Agreeance on the (shared) goals of the mission • Agreeance over different governance structures and strategic documents – converging (uncontested, well-defined and informed). • Prioritization of mission problem on agenda of key actors • Expressed positive expectations by key actors.	• Disagreement on mission problem – incumbents discrediting or contesting the mission, trying to delay it. • Expressed concerns by opponents about uncertainty, safety, quality etc. of mission problem. • Discrediting the goal of the mission • Diverging problem perspectives (contested, complex and uncertain) • Irrelevance of/disregard towards mission problem by key actors
MF4B: Solution Directionality	• Express expectations for specific circular solution trajectories (found in road maps, policy visions and front runner strategies) • Positive societal discourse in media about specific circular solution trajectories (e.g. changes in customer behaviour)	• No coherent expectations expressed on solution trajectories. • Indifference towards which trajectory to follow. • Negative societal discourse in media about solutions trajectories.
MF5: Market Creation	• Policy interventions/Absence of policy interventions for market adoption of circular products • Activities/lack of activities (e.g. marketing) creating consumer demand for circular products. • Creation of standards/lack of standard setting for circular products	• Policy interventions/lack of policy interventions to destabilize the current market. • Decline of activities/increase of activities creating consumer demand for linear products. • Decline of new standards or abandoning of old standards/continued support for standards supporting linear products.

MF6: Reallocation of resources	• Increase/decrease allocation of financial resources to support system activities in the circular system. • Increase/decrease allocation of human resources to support system activities in the circular system. • Making infrastructure available/unavailable for the circular system (e.g. production facilities) • Sufficient/insufficient feedstock for circular strategies.	• Decrease/increase allocation of financial resources to support system activities in the linear system. • Decrease/increase allocation of human resources to support system activities in the linear system. • Making infrastructure unavailable/available for the linear system • Sufficient/insufficient feedstock for linear system
MF7: Creation of legitimacy	• Increase/decrease of stakeholders advocating or lobbying for support for the mission and its solutions.	• Decrease/increase of stakeholders advocating or lobbying for the current system.
MF8: Coordination	• Formation/dismissal of coalitions focussed on transition. • Creation and publication/abandoning of roadmaps to structure the transition. • Progress monitoring and evaluation of mission • Multi-stakeholder deliberation aimed to build up new system. • Reflection on efforts to meet mission. • Take measures to catch up with mission, redesign, or reorientation.	• Cancelation/forming of coalitions focussed on linear system. • Abandoning of former/creation and publication of new roadmaps outlining progress as in the linear system. • Progress monitoring and evaluation of breakdown • Multi-stakeholder deliberation aimed to break down old system.

Table 7b: Diagnostic questions per function (Wesseling & Meierhoff, n.d.)

Mission's Functions	Diagnostic questions
MF1: Experimentation by entrepreneurs	• Are experiments to develop existing and new solutions being conducted sufficiently quickly to accomplish the mission per path?
MF2: Knowledge development	• Is knowledge developed to comprehend the societal problem enough? • Is the knowledge to develop existing and new solutions created sufficiently quickly to accomplish the mission per path? • Are actors sufficiently rapidly unlearning practices harmful to the mission per path?

MF3: Knowledge diffusion	• Is knowledge of the societal problem sufficiently widespread to formulate a broad-based, clear and ambitious mission per path? • Is the knowledge to develop and use solutions disseminated sufficiently quickly among all stakeholders to accomplish the mission by path?
MF4: Providing directionality	• How do stakeholders prioritize the mission problem and framework relative to other societal problems? • Which stakeholders support and pursue path development and dissemination sufficiently and quickly to accomplish the mission? Which paths do they prioritize? • Do stakeholders sufficiently recognize and exploit the interconnections between different paths?
MF5: Market creation	• Do formal or informal policies support the dissemination of routes sufficiently quickly to accomplish the mission? • Are harmful technologies and practices being eliminated sufficiently quickly by formal or informal means to accomplish the mission? Are the pathways being adopted sufficiently quickly by stakeholders? • If harmful practices and technologies are abandoned sufficiently quickly by those involved?
MF6: Resource mobilization	• Is sufficient human, financial and material resources mobilized to fulfil the other system functions?
MF7: Creation of legitimacy	• Do all stakeholders endorse the mission's problem? • Do stakeholders advocate or lobby to prioritize the mission issue over other societal problems and desires? • Do stakeholders advocate or lobby for more solution support and phase out of harmful practices and technologies? • Which paths receive the strongest lobby support or opposition?
MF8: Coordination	• Are there any coalitions formed? • Is there a shared vision with respect to the mission?

4. BACKGROUND CHAPTER

In the following chapter, all the corresponding terminology for the transition to a CE will be defined (Table 8). The definitions were mainly extracted from both The Plastic Pact NL 2019-2025, and Ellen MacArthur Foundation (2016). For some technical terms, other resources were used as well.

Table 8: Table of definitions (BuildingGreen, 2021; Ellen MacArthur Foundation, 2016; Engage the Chain, 2021; NL Plastic Pact, 2019)

TERMS	DEFINITIONS
Bioplastics:	❖ *Bio-based*-A material that is totally or partly made from biomass. ❖ *Biodegradable*- A material that is able, with the assistance of micro-organisms, to decompose into natural components.
Chemical Recycling:	A process to depolymerize polymers into separate monomers that then can be used as the base for producing polymers from scratch.
Mechanical Recycling:	The recovery of after-use plastics through mechanical processes, without significantly altering the chemical properties of the plastic.
Polyethylene	Polymer resulting by the polymerization of monomer of ethylene. It has good mechanical, thermal, chemical, electrical and optical properties. It is commonly used for both flexible and hard plastic products.
Polypropylene	Polymer resulting by the polymerization of monomer of propylene. It has good mechanical, thermal, chemical, electrical and optical properties. It is commonly used for both flexible and hard plastic products.
Recyclate:	Waste material that is used for recycling in manufacturing; secondary material.
Recycled Content:	The proportion of materials used in a product that come from the solid waste stream. When these materials come from the manufacturing process, they are referred to as pre-consumer recycled content, while when they come after consumer use, they are referred to as post-consumer recycled content
Reusable products:	A packaging which has been conceived, designed, and commercialized to achieve multiple rotations within its lifecycle by being refilled or reused for the same purpose it was originally designed for.

In the NL, the municipalities are responsible for both waste collection and recycling, handling the matters through taxation. Dutch recyclable waste is recycled chiefly internally or in European countries close by. The non-recyclable waste is sent to incineration for energy production (Lapper, 2021). The remainder of the waste ends up in landfills. The method of recycling depends on the municipality; hence, different requirements may exist in different localities. There are two main methods that municipalities use for the household waste: some municipalities provide separate recycling bins that allow citizens to separate their waste at home, while enabling the disposal of recyclable products in communal, roadside containers (Lapper, 2021). For plastics, plastic waste can be disposed of in on-street containers (i.e., Amsterdam). Citizens should ensure that the disposed plastic is clean of food waste. However, some plastic products, such as cling film, sticky plastic tape, and bottles that contained chemicals, cannot be recycled.

After collection, the residential waste, including flexible plastic packaging, is transferred to sorting facilities. There, from the mixed stream, plastics are separated using three central separation systems: the so-called mechanical separation (post-separation), curbside, and drop-off systems. The first system is considered the most cost-efficient because it uses infrared and film-grabber techniques to separate the plastic packaging waste (Gradus, 2020). Notably, 11% of the Dutch municipalities use only post-separation systems; 30% separate the waste through curbside techniques, while 20% operate drop-off locations (Gradus, 2020). Plastics are sorted according to many properties depending on the recycling facility or the desired final product (KIDV, 2020a). When plastic waste consists of different materials, a sorting process is used to distinguish what fraction of materials can be recycled. Those filtered materials are characterized as mix-fractions when they consist of multiple plastic materials or mono-fractions when the materials are more homogeneous (KIDV, 2020a). Mono-fractions are the ones that can be used for upcycling, such as the production of film and valuable sorted products, while mix-fractions can be used for downcycling (KIDV, 2020a). Most Dutch flexible plastics (approx. 68%) are incinerated for energy, while the rest is collected for mechanical recycling (van Velzen, de Weert, & Molenveld, 2020). From the total amount of flexible plastic packaging collected for mechanical recycling, approximately 60% ends up in the sorted product mix, 25% in film, 10% in various sorting residues, and 5% in valuable sorted products (van Velzen et al., 2020). The packaging industry remunerates costs for collecting, separating, sorting, and recycling plastic packaging waste. Afvalfonds is responsible for this reimbursement (Gradus, 2020).

The current Dutch recycling system can only optimally process flexible plastic packaging consisting of one material (mono-material packaging), that is, polyethylene (PE; 90% in kg) of a specific size and color (KIDV, 2021a). The flexible plastic packaging should not contain PVC or PVdc, elastomers, or non-plastic agents (i.e., paper). When it does, the recycling process is hindered. Material other than PE, such as polypropylene (PP), or polyethylene terephthalate (PET), does not end up in the mono-fraction but rather in the mix-fraction. Flexible PE packaging larger than A4 size is recycled as a mono-fraction in the so-called DKR-310 fraction, resulting in a new flexible material (KIDV, 2021a). When the packaging is larger than 40x40 mm but still smaller than A4 size, it ends up in the mixed plastic recyclable fraction called DKR-350. Almost all other flexible plastics also end up in the DKR-350 flow, which can only be used for downcycling such as the development of benches and signposts (KIDV, 2021a). With regard to the color of the flexible plastic packaging, dark or very bright colors hinder the recycling process and the quality of the output. Moreover, according to KIDV's (2021a), Recycle Check Flexible Plastic Packaging, labels should be made from the same material as the packaging; otherwise, it is difficult to separate the label from the primary packaging, regardless of the label’s potentially washable character. If a label is made from a different material than the main component, it should cover no more than 30% of the surface to which it is being attached. This ensures that the near infrared sorting machine will identify the material of the main component correctly (KIDV, 2021a).

The same recycling infrastructure for virgin plastic products can be applied, causing no contamination of the recyclate, on bioplastics produced from biomass instead of fossil fuels but which also contain the same chemical structures as commonly used plastics such as plastics bio-PE and bio-PET (Molenveld, Koenhen, Thoden van Velzen, & Brouwer, 2014). In contrast, for biodegradable plastics that need specific conditions to decompose, an industrial composting facility is necessary. Despite the existence of some corresponding facilities, if biodegradable plastics are not adequately disposed of, they create problems in the recycling stream.

5. RESULTS

5.1. Problem-Solution Diagnosis

In 2019, in collaboration with France and Denmark, the Dutch government launched the European Plastic Pact to initiate the plastic packaging value chain transitioning to a CE. The pact includes agreements among plastic producers, large companies, governments, and recyclers and contains four main objectives desired by 2025: 1) make plastic packaging fully recyclable and suitable for reuse where possible; 2) reduce unnecessary plastic use and plastic made from petroleum by at least 20%; 3) improve the current collection, sorting, and recycling capacity by at least 25%; and 4) use at least 30% recycled plastic in new packaging and products. The EU Commission has welcomed the initiative and is involved as an observer. To date, 66 companies and organizations and 15 governments have signed the pact. Meanwhile, the Dutch government has also committed to achieving total circularity by 2050 (NL Plastic Pact, 2019). However, the Circularity Gap Report (Circle Economy, 2020) uncovered that only 8.6% of the global economy is operating circularly, while the NL is achieving 24.5% at present.

After assessing the NL Plastic Pact, this solution analysis distinguished five pathways as the primary solutions/pathways of the mission. These pathways refer to both process solutions and material solutions, and they are derived from both the core objectives and the various goals and targets suggested in the Plastic Pact. The main pathways for transitioning to a CE for flexible plastics therefore consist of the following: the two process solutions are mechanical recycling (MR) and chemical recycling (CR), while the material solutions are bioplastics, and reusable (R). The two recycling processes were distinguished, but the analysis did not include energy recovery or reprocessing into materials intended for use such as packaging filling material as CR (NL Plastic Pact, 2019). All four paths are individually identified in the NL Plastic Pact, and distinguished by separate objectives and actions, reinforcing the statement that they need to be assessed separately. Finally, all the identified pathways were considered to be incremental, pre-existing solutions to the mission, while innovation taking place within the pathways aims at their optimization rather than the development of new paths.

5.2. Structural Analysis

5.2.1. The Value Chain of Flexible Plastic Packaging

Households and industrial sources can both generate flexible plastic packaging waste. A percentage of that waste ends up in municipal solid waste and is incinerated or placed in landfills. The rest is collected separately and transferred to sorting facilities, where it is sorted into multiple plastic resins. These resins are then transferred to the recycling infrastructure and recycled into new flexible plastic packaging, which can then be launched on the market by retailers and product manufacturers. Figure x depicts the value chain of flexible plastic packaging. The system actors can be summarized as waste suppliers, producer responsibility organizations, recyclers, and converters (New inno Net, 2015).

The flexible plastic packaging value chain consists of two different systems operating simultaneously. The first system refers to the actual life cycle of the flexible plastic packaging, from manufacturing to end-of-life. In this system, flexible plastic packaging waste is generated. Plastic producers, retailers/brands, and consumers constitute the actor groups in this system. The second parallel system commences once the flexible plastic packaging is disposed of. Flexible plastic packaging is collected, separated, sorted, and then recycled. The recycling process involves the special treatment of plastics through sorting, cleaning, grinding, and melting. Plastic waste that cannot be treated is either sent to landfills or exported to foreign countries. The system of recycling flexible plastic packaging waste includes recyclers and converters. Both systems play an equal role in achieving circularity in the flexible plastic packaging domain since they reinforce and affect one another. The administrative bodies coordinate the two systems and try to initiate the value chain holistically transitioning to a CE through roadmaps and guidance, regulatory agreements, directives, and bans.

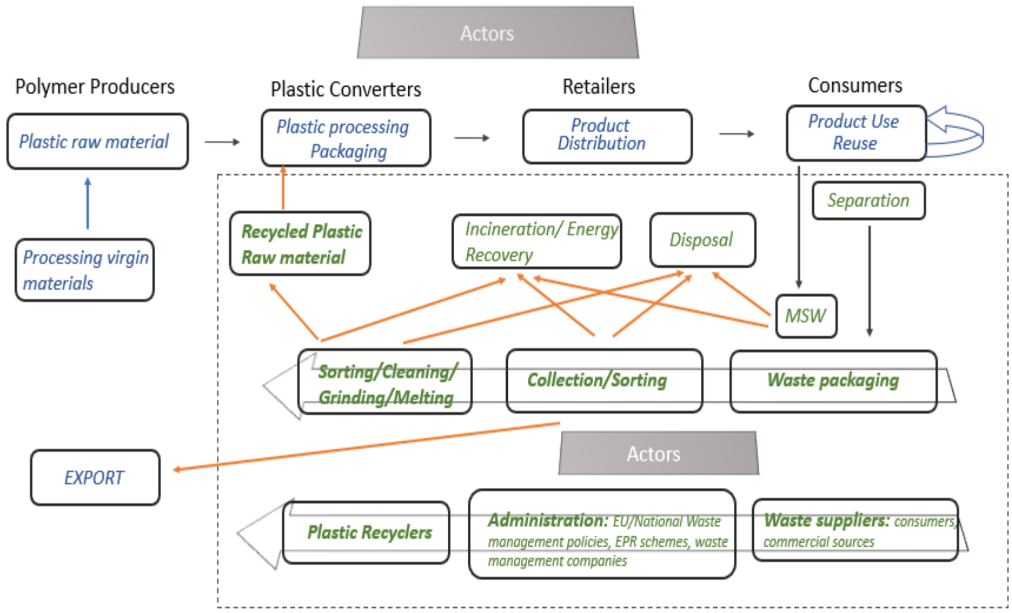

Figure 2: Flexible Plastic Packaging Value Chain.
Source: New inno Net, 2015

5.2.2. Actors

In the following section, the structural analysis of the system is presented. The four actor categories are assessed according to the literature, while their significance in the mission is also illustrated briefly.

5.2.2.1. Waste Suppliers

Waste suppliers include both plastic producers and retailers/brands. Plastic producers play a dual role in the system. First, they supply the system with flexible plastic packaging, which will eventually become waste. Secondly, in some cases, plastic producers buy the recyclate to develop new products. The commitments and actions of the most visible plastic producer actors are also summarized in Table 7. Plastic retailers/brands also participate strongly in the plastic waste supply. Retailers supply the system either with the secondary plastic waste produced during the distribution phase or with the primary flexible plastic packaging they put on the shelf. Table 8 summarizes the commitments and actions of essential retailers/brands regarding the transition to circular flexible plastic packaging. Consumers or households are also key actors in this category. Households have multiple possibilities for disposing of their flexible plastic packaging waste, which depends on the local collection system. Alternative waste suppliers include other sources of plastic waste, such as festivals and construction companies because they constitute closed systems. Actions taken by the waste supplier actors' category affect the *building of a new system* and the *breaking of the old system,* with commitments and R&D strategies taking place, and in some cases, actual products placed on the market. Waste suppliers include both incumbent companies that are well established in the market, new entrants, and start-ups.

5.2.2.2. Producer Responsibility Organizations

Producer Responsibility Organizations (PRO) include administrative bodies, knowledge institutions, and universities, which navigate and lead the CE transition through legislation, roadmaps, and reports. For flexible plastic packaging, the EU Commission and the Dutch government are leading the transition to a CE. Table 9 represents the most significant actions and commitments that the two parties have implemented for the transition to a CE with regard to plastic packaging. Administrative bodies play an essential role in coordinating the mission by financing and supporting certain coalitions and publishing roadmaps to structure the transition, such as the NL Plastic Pact.

The PRO category also includes knowledge institutions. These institutions contribute to the transition by providing significant practical knowledge and know-how concerning the topic. The prevailing knowledge institutions in the Dutch transition to a CE in the flexible plastic packaging industry are the Knowledge Institute for Sustainable Packaging (KIDV) and the Circular Economy for Flexible Packaging Organization (CEFLEX). KIDV advises flexible plastic packaging companies on developing sustainable products by providing factual knowledge, practical tools, and applied scientific research for the packaging chain. KIDV has already published several documents aimed at accelerating the transition (Table 9). CEFLEX collaborates with over 160 European companies, associations, and organizations that represent the entire value chain of flexible packaging. CEFLEX's guidelines have resulted from a significant collaboration with the entire value chain, and they are followed by most of the EU, including the NL. The Ellen MacArthur Foundation is also considered a key actor in this category because it constantly initiates and coordinates the mission by publishing relevant reports, such as the "New Circular Economy for Plastics," and organizing initiative events. Moreover, Dutch universities are actively participating in the acceleration of the transition. Eindhoven University, Wageningen University, the University of Maastricht, and Utrecht University have associated themselves with several projects and research to establish and diffuse knowledge in the sector.

Table 9: Plastic producers' commitments and actions (Amcor, 2020; Berry Global, n.d.; Futamura Group, n.d.; Graham Packaging Company, n.d.; Henkel AG & Co. KGaA, n.d.; Mondelez International, 2019; Mondi, 2019).

Plastic Producers	COMMITMENTS
Amcor	• *Currently through research and development we have made progress toward designing our products for recyclability, offering recyclable solutions to previously problematic or unnecessary plastic packaging.* • *Accelerating our project to replace nylon barriers, working with key customers to improve medium and high barrier packaging, advocating for increased recycling infrastructure and streams, and developing and commercializing other alternative solutions to problematic and unnecessary packaging.*
Berry Global	• *Efforts to lightweight products, thereby reducing unnecessary plastic. we believe we have avoided the use of nearly 700 million pounds of plastic over the last decade from our continual efforts to improve product efficiency.* *We are also continuing our efforts to design for recycling. This includes converting PS packaging to PP as well as eliminating problematic design features, such as carbon black.*
Futamura Group	• *We do plan to eliminate PVdC coated Cellophane films. However, we do employ a small amount of PVdC in 1 NatureFlex film family only for barrier purposes. This does not compromise ecotoxicity or compostability so we plan to maintain until a suitable alternative is developed.* • *Similarly, we do employ metalisation in certain grades. Again, the level used does not negatively impact ecotoxicity or compostability.*
Graham Packaging Company	• *Collaborate with our customers to provide alternative to carbon black technology.* • *Collaborate with Association of Plastic Recyclers (APR) to qualify nylon barrier testing methodology to improve barrier components towards recyclability.*
Henkel AG & Co. KGaA	• *Henkel plans to eliminate or substitute any non-recyclable packaging currently in use. Multi component packaging or multi material packaging are currently being evaluated and unneeded design elements will be removed where possible.* • *Other materials in scope as PETG are evaluated with each new relaunch.* • *One example: Beginning of 2020, Henkel has already started to convert the black bottle of Perwoll's "Renew & Repair" variant to a new packaging material which uses an alternative carbon-free color, through which bottles become recyclable and thus can be integrated back into the value chain.*
Mondelez International	• *100% of our packaging using non-detectable carbon black by 2021. Black plastics are used primarily in our gifting portfolio.* • *Over 90% of our packaging using PS by 2022. We are in the process of eliminating PS from our portfolio of thermoformed trays for Oreo®, Chips Ahoy!®, and other biscuit brands in the US, Canada, and Mexico.* • *100% of our packaging using PVC, PVdC, and PS by 2025. PVC is used in our blister packs for gum products as well as in shrink sleeve labels for our gum bottles. We are exploring solutions for both.* • *Our use of PVdC is minimal and focused on a few flexible packaging applications. We are exploring alternative solutions.*
Mondi	• *Our major focus in the future will remain on replacing non-sustainable products with more sustainable solutions.* • *Eliminating problematic or unnecessary plastic materials and to use paper where possible and plastic when useful. Our research focuses on enhancing the functionalities of paper to make it more broadly applicable in different end uses.* • *Through our coating expertise, we will be able to provide paper with barrier properties while remaining recyclable in established recycling streams* • *The result of our developments will reduce the use of unnecessary plastic products, metal laminated and mixed material flexible films, increasing the opportunity for our products in general to have increased value as waste once consumed.*

Table 10: Retailers/brands commitments and actions (Ahold Delhaize; n.d.; Danone S.A, 2019; Ferrero Corporate, n.d.; Mars Inc, n.d.; Nestle, n.d.; PepsiCo, n.d.; Starbucks, 2020; Uniliver, 2021)

Retailers/ Brands	COMMITMENTS
Ahold Delhaize	• Not-for-Resale sourcing team to reduce the size and thickness of the bags used at its bakery sections that will lead to a reduction of 195 tonnes of plastic/ year. • Replace the plastic cutlery in the ready-meal / take-away area with sustainable alternatives (bamboo or birch) • Single use plastic items and zero single use plastic bags in stores
Danone S.A	• Phase out all PVC packaging by 2021, since it interferes with the recycling process for PET. • Phase out PS packaging worldwide by 2025 with Europe by 2024. • 4 million spoons out of 30 will be moved to wooden spoons in 2020 • 300 million straws will be removed in 2020, and starting 2021, plastic straws will be replaced by paper in the EU and the US.
Ferrero	• Recyclable packaging development: ongoing plan to remove unnecessary plastics and to replace non-recyclable plastics with more sustainable options by 2025. • Partner with research consortiums to be active on innovative projects that tackle hard-to-recycle plastics, for example by means of chemical recycling. • Reusable systems: we are exploring new business models through our iconic brands, assessing all aspects of product hygiene, safety and environmental sustainability. • Small parts: we are working in collaboration with recyclers to make sure that our “small parts” are effectively collected, sorted, and reprocessed.
FrieslandCampina Nederland B.V.	• 2019, 2020 and 2021: elimination of plastic straws, among others in Europe, Indonesia, Vietnam, Hongkong and Malaysia. • 2020: PVC is banned by our quality standard FoQus and is almost eliminated from our packaging portfolio. In 2020 we will remove the last PVC from our packaging in Romania. • 2020, 2021: Redesigning of the functional - for recycling challenging - carbon black sleeves on bottles so the bottles can be recycled. In that transition, we take along light barrier HDPE bottles replacing them to transparent PET bottles.
Mars, Incorporated	• Full mapping exercise of our entire portfolio to identify opportunities to eliminate problematic or unnecessary packaging. • Eliminate PVC and PVCd and plastic straws from our portfolio by the end of 2020. • Redesign several pouch formats for recyclability, moving pouches in our Mars Wrigley and Mars Food business to mono material pouches. In Mars Petcare, a pouch that eliminates the aluminium layer. In the Fall of 2020, a mono material M&M’s packaging in France, new pouch formats for our Food and Petcare pouches will follow.
Nestle	• Removal of all plastic straws by end of 2020 by developing paper-based alternatives and ‘straw-less’ design. • Changing to mono-material laminates, more specifically by developing new material structure to fit product needs and investing in form fill and seal packaging lines by 2024. • Moving to paper for low-barrier applications • Machine adaptation to enable thermoforming solutions i.e. moving from PS to PET or PP. • Change rigid dark-coloured plastic into light and transparent solutions by 2021.
PepsiCo	• Move from PVC shrink sleeves to recycle compatible shrink sleeve materials. • Transition colored PET to transparent green for Mt Dew. • Exploring the conversion of PETG labels to recycle compatible labels. • Transition metallized labels to metallic inks. Additionally, SodaStream will switch all its flavors from plastic to metal bottles by 2025, which should avoid nearly 200 million single-use plastic bottles over the next five years.
Starbucks Coffee Company	• Starbucks has a plastic reduction project underway to lightweight its cold cup and a second phase of the project to incorporate recycled content into the new cold cup • Starbucks is continuing R&D efforts to find alternative materials for difficult-to-recover plastics in items such as our plastic stoppers and the plastic liner of our hot coffee cup. • In January 2020, Starbucks announced they will prioritize the shift from single use to reusable packaging.
Unilever	• Our ambition is to change the way we do business, shifting from single to multiple-use packs by investing in new business models. • We are also investing in material innovations such biodegradable or alternative materials. • Finally, we aim to make materials recyclable by working in collaboration with the industry (e.g. CEFLEX) and creating valuable end-market opportunities for recycling by 2025, including working with governments to develop infrastructure for collection and processing. For instance, we aim to make pumps/trigger sprays recyclable structures by 2025.

Table 11: Producer Responsibility Organizations Commitments and Actions
Source: Based on literature review

PROs	COMMITMENTS/ ACTIONS
EU Commission	• Commission adopts EU plastics strategy. • Commission publishes EU Green Deal • Commission proposal for a Directive on single-use plastics • Directive on single-use plastics enters into force. • New CE action plan, including revised legislative proposals on waste. • Implementation of the European recycling targets
Dutch Government	• National raw materials agreement • NL Plastic Pact • A CE in the Netherlands by 2050 • Ban on microplastics used in everyday household products. • Future ban on several single-use plastic products • Dutch municipalities introduced unit-based pricing (UBP) of unsorted compostable waste
KIDV	• Fact sheet: Biodegradable plastic packaging • Report on Chemical recycling of plastic packaging: analysis and possibilities upscaling • Fact sheet: Chemical recycling of plastic (packaging) in European legislation • Research into recyclable alternatives to laminates • The State of Sustainable Packaging • Recyclecheck Packaging • Roadmap 'Multilayer flexible packaging in a circular economy
CEFLEX	• Guidelines: A CE for flexible plastic packaging
Eindhoven University	• Spin-off technology for chemical recycling, in industrial scale testing phase
Wageningen University	• Project: Standardization quality of recycled plastics to enhance circular applicatior • Center for Research in Sustainable Packaging (CRISP)
Utrecht University	• Workshop "Circular Plastic Packaging" • Center for Research in Sustainable Packaging (CRISP)

5.2.2.3. Recyclers and Converters

Flexible plastic packaging waste that is intended for recycling is delivered to either a material recovery facility once it is collected to sort into single resin streams or to constitute unit transport and handling loads (often a complete, single container) and increase product value. The sorted plastic is most often baled and transferred to reprocessors. The plastics are chopped into flakes, extraneous components such as labels, metals, and dust are removed, and the flakes are washed (New inno Net, 2015). These flakes can be further extruded into granules by the reprocessor or they can be sold to develop new articles depending on their requirements. In CR, operators chemically degrade the plastic waste into its monomers. The output can be used for polymerization and the development of new plastics.

Plastic convertors develop semi-finished and finished plastic products. The input converters need both virgin plastics from plastic producers and recycled plastics from recyclers. Converters supply their raw materials either in granular or powder form and utilize techniques that involve high heat and pressure to manufacture their final products (New inno Net, 2015).

5.2.2.4. Third Parties

Third parties also participate in the mission to achieve a CE in the flexible plastic packaging domain. Such parties include technology providers, certification schemes, and banks. These parties play a significant role in accelerating the transition in multiple ways. On a first level, technology providers optimize the existing techniques and accelerate the supply of these recycled products. On a second level, certification schemes enhance the creation of legitimacy in the mission by ensuring the circular properties of related materials and products, while banks contribute to the (re)allocation of financial resources within the mission. One of the most relevant certification schemes is cyclos-HTP, which certifies products and processes, while banks associated with the mission are ING, ABN-AMRO, and Rabobank. In terms of technology providers, an essential player at present appears to be TOMRA, which develops sensor-based solutions for efficient resource productivity and has supplied multiple Dutch recycling facilities.

5.3. Historical Event Analysis of the Paths Between 2015-2021

In the following section, the historical event analysis and functional analysis per path (MR, CR, Bioplastics, and Reusables) between 2015–2021 are presented.

5.3.1. Mechanical Recycling

Historical Event Analysis (2015–2021)

Since the 1st of January 2015, the Dutch municipalities have been held accountable for the collecting, treating, and marketing recycled plastic. Moreover, the PMD system was introduced, which combined the collection of plastic packaging, metal packaging, and drink cartons within the Dutch recycling system (Dutch Waste Management Association, 2019). The Amsterdam Economic Board initiated a CE program in partnership with the Amsterdam Metropolitan Area governments, businesses, knowledge institutes, and civilians. One of the core objectives was to achieve the high-value recycling of at least 40 priority resource streams while aiming for an average recycling rate of 90% (Amsterdam Economic Board, n.d.). In response, entrepreneurs began experimenting with technologies to optimize the recycling process, while close attention was paid to the collection systems as a critical point for the acceleration. For instance, collection systems globally aimed at reprocessing used plastics and use them as raw materials, bringing change in the situation (Cooper, 2017). These actions stimulated numerous research programs that aimed to develop knowledge of the topic. In particular, the Learning Center Plastic Packaging Waste (LCKVA) had researched the influence of various collection systems on the composition of the collected plastic/PMD packaging waste (KIDV, 2018a).

In 2017, the second phase of the project took place, which aimed to find the most important variables explaining the differences in the composition of collected plastic/PDM packaging waste between municipalities in the Netherlands (KIDV, 2018a). Several new initiatives that entailed the present or future enforcement of relevant regulations were established, which guided the organization of shared goals within the mission. In particular, the European Parliament voted for legislation for a recycling rate target of 70% by 2030, while for packaging materials, it suggested an 80% target for 2030. MEPs also supported waste package plans for the EU to limit landfilling to 5% (Industrial Goods Monitor Worldwide, 2017). The same year, the report "A Circular Economy in the Netherlands by 2050" was published, signaling a shared vision for the whole value chain and the recyclability of plastic packaging. However, actors in the sector maintained that there was still considerable work to achieve all the set goals. As reported by Jan Bauer, commercial director of RIGK GmbH and the EPRO, *"...the significant potential for recycling such plastics often remains untapped"* (Cooper, 2017). Several actors began forming a coalition to support the acceleration of the path, including waste suppliers. At the same time, PROs took significant measures to catch up with MR Examples included Rijkswaterstaat helping festivals reduce plastic waste *(*Rijkswaterstaat, 2016*),* while several municipalities introduced unit-based pricing of unsorted waste to encourage both the separate collection of recyclable plastics and a decline in the total amount of waste (Dijkgraaf & Gradus, 2017). As a result, more actions commenced that allowed the demand for a CE to be further accelerated. As stated in relevant newspapers, The Netherlands was progressing to ban microplastics used in everyday household products by the end of 2016 (Lane, 2016), while the significance of particular actors and the way they should perform to enable the market's saturation was highlighted. According to Michal van Straalen of MKB-Nederland*,* small innovative companies can play an essential role through innovations in diminishing existing habits and processes (States News Service, 2017). Further, it is stated that increasing the efficiency of these systems includes forceful cooperation between all actors with the involvement of governmental and non-governmental organizations as well (Cooper, 2017).

That year, the establishment of CEFLEX enabled further coordination of the sector. Nonetheless, waste suppliers began testing the recyclable properties of their products to place them on the market; for instance, EPBP Approved Synvina's PEF Plastic Packaging Material as Recyclable in the existing infrastructures (Plus Company Updates, 2017). The increasing use of recycled content by many plastic producers and retailers, in alliance with PROs such as favorable initiatives by governments, enhanced the stabilization of the path in the market and created opportunities for further expansion and market growth (3BL Blogs, 2017). Although relevant studies had revealed negative results in the MR process, a significant share of recycling waste was downcycled (Dijkgraaf & Gradus, 2017), while only 50% of plastic packaging waste got recycled; the remainder was incinerated (Dijkgraaf & Gradus, 2017). Despite the initiation of the shared vision, retailers/brands continued to lag with the goals/targets set, while recycled content remained low. As Louisa Casson, oceans campaigner at Greenpeace, stated: "companies use an average of just 6.6% recycled plastic in their packaging" (Cooper, 2017).

In 2018, more vigorous participation by plastic producers was witnessed, with many incumbent companies experimenting with optimizing the recycling techniques. For instance, Ioniqa developed a technology to convert PET waste into transparent virgin grade material (Industrial Goods Monitor Worldwide, 2018a). Moreover, Mondi developed fully recyclable plastic laminate for pre-made pouches (MarketLine Newswire, 2018), while DSM developed a polyethylene (PE)/polyamide six barrier film for use in food packaging that could be recycled (McGeough, 2018). Other projects targeted the expansion of MR to include other valuable materials such as PP. For example, the LIFE PEPPCYCLE project established two lines for sorting and recycling high-density PE and PP from mixed waste streams (Thai News Service, 2018). Additionally, research was conducted to gather more information about the further implementation of recycled content into plastic packaging, especially by universities such as the Wageningen University and its project: Standardization quality of recycled plastics to enhance circular applications (Alvarado Chacon, Brouwer, Thoden van Velzen, & Smeding, 2020). Furthermore, studies determined important results for the development of the transition. In particular, the report from the Commission on the impact of the use of oxo-degradable plastic revealed the negative effects of oxo-degradable plastic on the environment (Impact News Service, 2018). On the one hand, previous research had begun producing results. The LCKVA and Wageningen University revealed that the PMD system has little effect on the purity of the collected material (KIDV, 2018a). On the other, the outcomes also revealed inconsistencies in the way plastic packaging was recycled among municipalities (KIDV, 2018a).

The European Commission published its first Europe-wide strategy for plastics, which called for all plastic packaging to be recyclable by 2030 while providing further guidance for making the transition to achieve the shared goals (ICIS Chemical News, 2018a). Several actors, especially incumbent waste suppliers and retailers, began participating in the shared vision by committing themselves to the mission in alliance with the EU strategy. For instance, LyondellBasell supported the vision of the EU plastics strategy to achieve 100% reuse, recycling, or recovery of all plastics packaging in the EU by 2030 (ICIS Chemical News, 2018b), while Nestlé announced its motive to switch to 100% reusable, recyclable, or compostable packaging by 2025 (Marcus Gover, 2018). The industry also supported the system's orientation by actively providing feedback about the goals/targets of the mission so that further congruence could occur. Examples included the EUROPEN and other European and national associations that declared collective recommendations on the Commission's proposal for the Directive on reducing the environmental impact of certain plastic products (EU Reporter Correspondent, 2018a).

Differing expectations for MR were rising with recycling targets to be achieved, actors performing well, and the level of positive discourse increasing. Specifically, in 2016 all the EU countries exceeded the EU minimum targets of 22.5% recycling (Industrial Goods Monitor Worldwide, 2018b), while the Council of Ministers agreed that by 2025, at least 55% of municipal waste should be recycled, with a rise to 60% by 2030 and 65% by 2035 (EU Reporter Correspondent, 2018b). Simultaneously, actors in the value chain were financing the transition in several ways. For example, by 2015, banks were more interested in a circular solution and a CE and began increasing the allocation of financial resources in the system (Global Recycling, 2018). Significant coordination within this path was noticed once the EU Packaging and Packaging Waste Directive emerged, which enforced individual targets per country (Industrial Goods Monitor Worldwide, 2018b). However, there were also cases where new plants were underperforming. For instance, DSM warned potential buyers that there is continuing and significant underperformance at the Dutch plant (McGeough, 2018). Negative discourse that involved the totality of the value chain revealed that considerable work had to be done for the path to be properly accelerated. A study by the Ellen MacArthur Foundation revealed that the recycling targets were very optimistic, and only some country members would successfully achieve those targets (Impact News Service, 2018). Other articles indicated that only 14% of plastic packaging was recycled (Lauzon, 2018), while the EA had passed accusations that firms were using the Netherlands to effectively launder plastic waste before illegally ship it to other countries in the East (Martijn Reintjes, 2018).

By 2019, MR appeared to be already well established, with the existing plants performing efficiently (Simon, 2019) and companies investing in new plants and recycling facilities, such as the AO Group, a domestic appliance and consumer electronics supplier (Financial Wire, 2019). The knowledge that had been gained allowed the actors to understand what the mission was missing. The European Union started encouraging the recyclers to develop improved quality standards for recycled products, the obligatory requirement to recycle all the packaging plastics, and a reduced VAT on recycled products (PR Newswire Europe, 2019a). Other actors such as PROs began paying closer attention to developing specific rules for sustainable manufacturing that would be enforced in later years. At the same time, several new stakeholders were included in a meeting held in Brussels to support the development of such requirements (Keating, 2019). Further guidance was provided to the mission by the publication of the EU Green Deal and the NL Plastic Pact. In addition, the sector communicated a stronger commitment to recycling by banning oxo-degradable plastic packaging by 2021 (European Commission, 2019). The industry is also committed to eliminating the leakage of plastic pollution into the environment (Ravenscroft, Thomas, & Westervelt, 2019).

To provide directionality and guidance for recyclable plastic packaging, collaborations among actors had also been affected to enhance the expression of shared goals and visions upon the topic. For instance, 22 sector organizations have drawn up a Sustainable Packaging Sector Plan 2019-2022 in collaboration with the KIDV, which contained concrete objectives and measures, aiming to reduce the amount of packaging material and make packaging fully recyclable and reusable (KIDV, 2019d). Furthermore, other key actors in the transition and the system's transformation, such as Shell, began advocating a shared vision for plastic packaging (PR Newswire Europe, 2019b). Issues regarding the use of recycled content and food contact that had existed in the past began to be addressed, which allowed for more profitable operations regarding achieving the goals related to using the material. As supported by KIDV, if producers could demonstrate that the characteristics of the recyclate and their process meet the requirements for food safety, it is possible to deviate from the target percentage (KIDV, 2019a).

More attention was paid to the engagement of consumers in the mission by many PROs. The European Commission launched a pledging campaign over awareness for the recycling of plastics, actions towards the separation and collection of plastics for effective recycling, and initiatives and rules over labelling (PR Newswire Europe, 2019b), which proved exceptionally fruitful, since several research showed increasing support among consumers for separate collection (KIDV, 2018a). Moreover, future expectations concerning citizens and their behaviors began rising, with new requirements arranged for recycling in order for governments to meet the 2025 targets (Keating, 2019). At the same time, plastic producers, such as LyondellBasell, began advocating further for the acceleration of MR by focusing on the engagement of the total value chain (MediaNet Press Release Wire, 2020). However, by 2019, the necessity of further upgrading recycling methods and techniques had become more apparent (PR Newswire Europe, 2019b), which stimulated comprehensive research on the topic by numerous PROs to gain more insight into specific sorting and recycling options for plastic packaging (KIDV, 2020a). Nonetheless, the negative reputation concerning the unrecyclable nature of flexible plastic packaging and the structure of the recycling system raised considerations about the path's performance (KIDV, 2019a). It also appeared that the Dutch collection, sorting. Recycling structure had not yet been set up for several solutions and directions from the CEFLEX design guidelines, while only PE is sorted and recycled as a mono-material (approximately 55% of all flexible materials) (KIDV, 2019a).

There were still issues that created problems in the acceleration of the demand, which primarily involved recyclers, such as the high cost associated with plastic recycling processes (PR Newswire Europe, 2019b). These technical and economic bottlenecks, in combination with the non-transparent market for recycled plastic, in particular, hindered the use of the material (KIDV, 2019a). In addition, the low prices of petroleum decreased the accelerating demand for recycled content, which was expected to be balanced by the middle of 2020 (PR Newswire, 2018). Moreover, consumers did not appear to be fully engaged with the path due to alterations in the final product's appearance and aesthetics (KIDV, 2019a). Plastic producers also experienced issues in engaging with recycled content due to difficulties in comprehending the regulatory framework, as confirmed in Tilburg University's discussions with manufacturers and importers of packaged products (KIDV, 2019a).

In 2020 and 2021, waste suppliers have begun paying closer attention to details concerning recyclability by either experimenting more strongly with achieving the recyclability of particular materials that hinder the transition, such as PP or by redesigning all the components of the packaging to be fully recyclable, rather than only the main component. In particular, Friesland Campina's R&D department has also developed a new "zipper" that enables (the label) the separation from the bottle (Basic Materials & Resources Monitor Worldwide, 2021), while Nestlé launched recyclable solutions for its Purina wet pouches in collaboration with Amcor (Nestlé, 2020). Finalized summaries and informative platforms have been developed as a result of the knowledge diffused in the mission, such as the KIDV's Recycle Checks to help companies make their packaging recyclable (KIDV, 2021a) and the Pack forward website, which provides an overview of essential themes that influence the sustainability of packaging. Nonetheless, PROs, such as CEFLEX and KIDV, have introduced multiple guidelines and roadmaps that enhance the prioritization of MR issues within the agenda and the guidance of recyclability matters while reinforcing the achievement of the agreed targets (CEFLEX, 2020), (KIDV, 2020a). Moreover, further clarifications over when those goals/targets would be enforced were also announced. In particular, the Dutch recycling targets and the European recycling targets would be enshrined in law and implemented with effect from 2021 (Thai News Service, 2020).

The participation of third parties, such as certification schemes, enhanced the conception of the legitimacy of the products placed on the market. For instance, cyclos- HTP, an independent testing laboratory, certified Amcor’s Eco-Tite R (Newstex Blogs, 2020). Several platforms were developed to coordinate the value chain and keep pace with the transition, and progress reports were also being conducted. For example, the Platform of Sustainable Packaging Innovators is a platform focused on innovation in packaging (KIDV, 2021b). Other initiatives were also affected as a response to keeping pace with the mission, such as the " New Plastics Economy Global Commitment", an initiative that units more than 500 signatories in the value chain around various 2025 targets in line with a shared vision of achieving a CE for plastics, launched by Ellen MacArthur Foundation and the United Nations Environment Program (VEOLIA, 2020). However, the COVID-19 pandemic impaired the performance of the path by increasing the amount of plastic consumed and hindering the separation and recycling process (States News Service, 2020). Furthermore, there is no sufficient demand or a well-performing stream for r PP (Plastic Recyclers Europe, 2020), while exports of plastic waste continued, which are negatively influencing the mission (States News Service, 2020); (CE Noticias Financieras English, 2020a).

Functional Analysis of Mechanical Recycling

The historical event analysis indicated that the drivers of this path are associated with the high experimentation undertaken by the value chain regarding recyclability, either in product design or the optimization of recycling technologies (MF1). High directionality and guidance on recyclability also exist. Actors have prioritized this path in the circular agenda, agreed on the shared goals and targets, and published strategies, plans, and roadmaps to navigate the further acceleration of the path (MF4A). Furthermore, sufficient market creation exists, with numerous waste suppliers placing recyclable products on the market, increasing customer demand for such circular solutions (MF5). The value chain promotes the acceleration of the path by advocating or lobbying for it through their actions and commitments (MF7). The path drivers and their patterns indicate that MR is experiencing the early stages of the acceleration phase, with demand currently being established.

However, the analysis also identified several barriers related to the mission's functions. On occasions, particularly in the use of recycled materials in food contact, the legislation was highlighted as confusing by plastic producers (-MF4B), who become discouraged with supplying recycled materials resulting in problems created in demand despite the quality recyclate. Nonetheless, differentiation in the mechanical characteristics of recycled plastics, such as transparency or color, also negatively affects the demand for such materials both in a B2B and B2C level (-MF5). Moreover, the strong orientation that the mission has for certain plastic materials over others (PE over PP) creates a market gap in the supply-demand of plastics. This barrier reinforces the lack of infrastructure for flexible plastics other than PE and hinders the further acceleration of the system (-MF8). While the Dutch recycling systems for flexible plastic packaging can optimally recycle only PE, the waste supply is formatted correspondingly, and attention to developing infrastructures for other flexible plastics, such as PP, decreases significantly (-MF6). Finally, exporting flexible plastic packaging waste reinforces the old, linear system and destabilizes the allocation of the resources to the path (-MF6).

Figures 3–11 depict a graphical representation of the path per year and per function. For each of the MFs, the number of gathered events with a positive or negative effect on the path per year is presented.

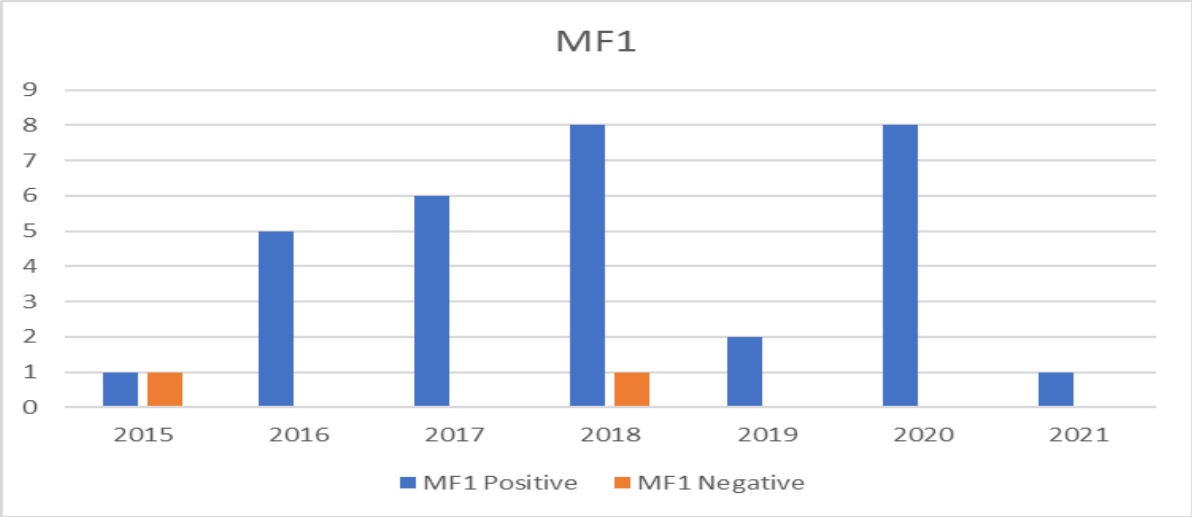

Figure 3: Overview of the fulfilment of MF1 per year
Source: Own Creation

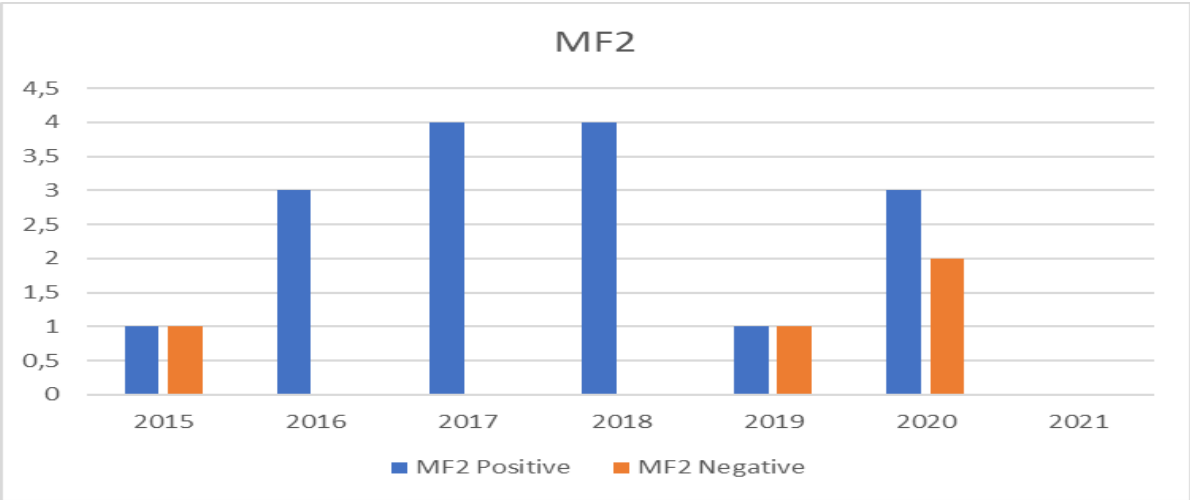

Figure 4: Overview of the fulfilment of MF2 per year
Source: Own Creation

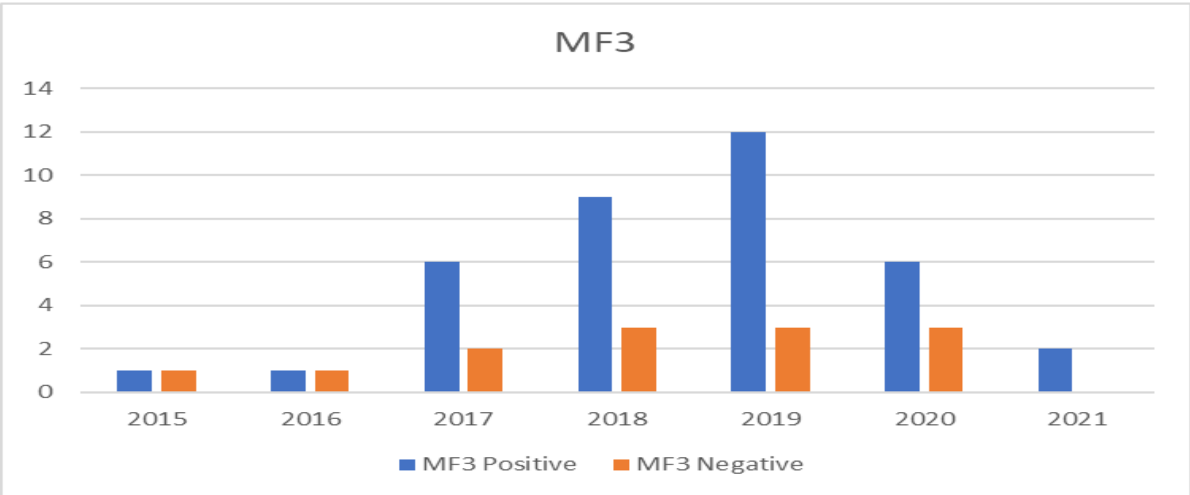

Figure 5: Overview of the fulfilment of MF3 per year
Source: Own Creation

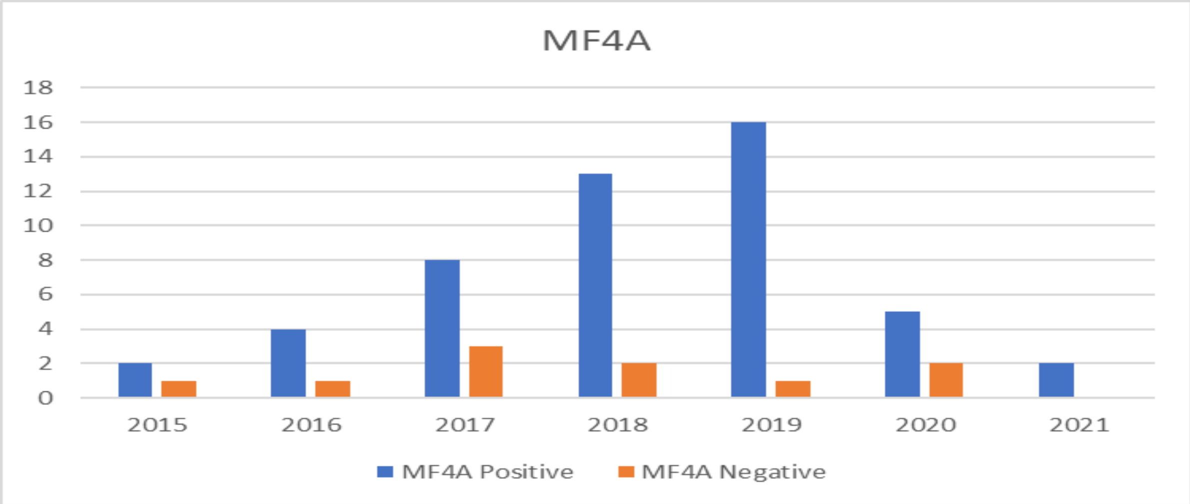

Figure 6: Overview of the fulfilment of MF4A per year
Source: Own Creation

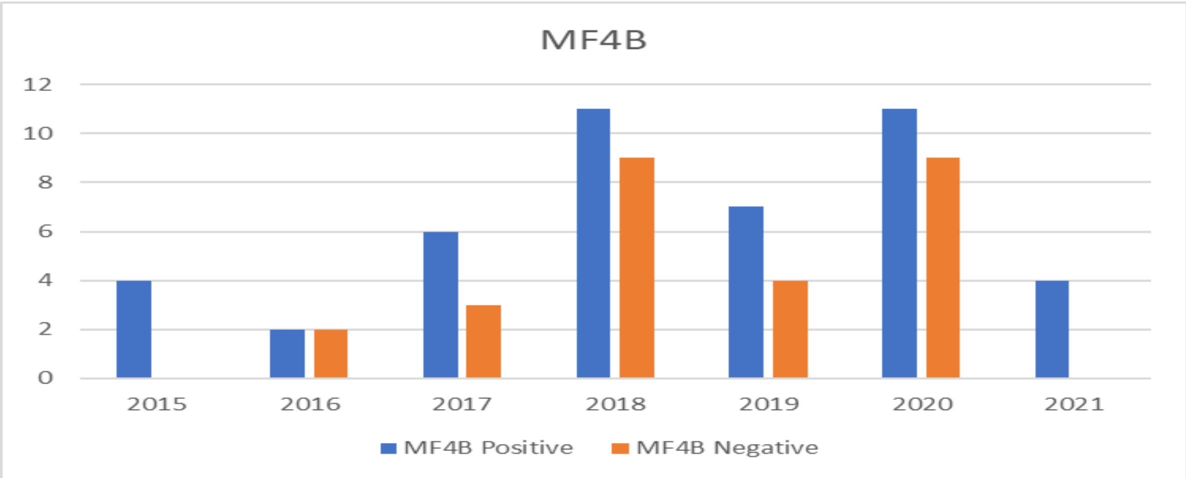

Figure 7: Overview of the fulfilment of MF4B per year
Source: Own Creation

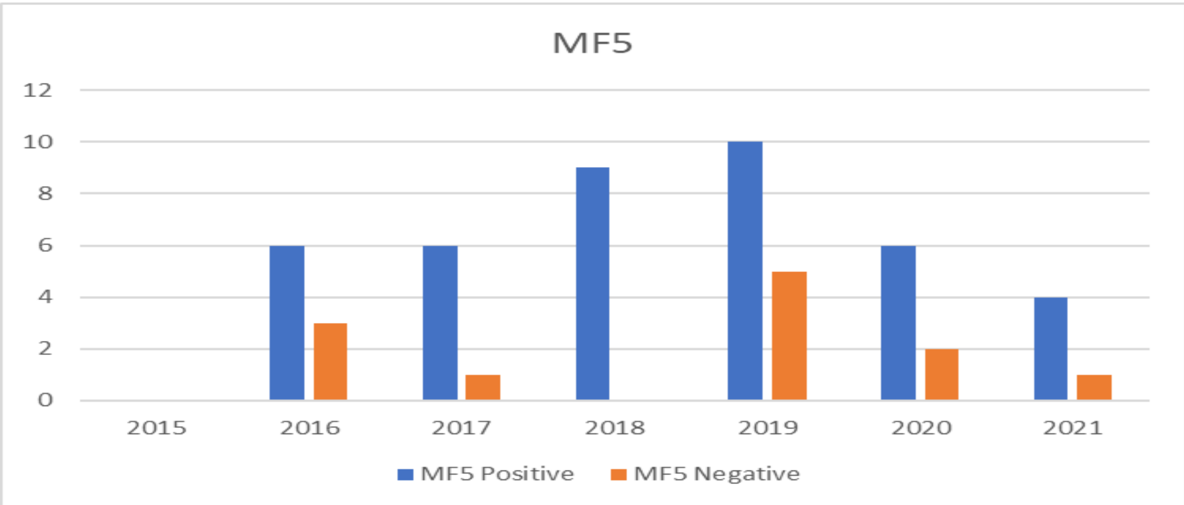

Figure 8: Overview of the fulfilment of MF5 per year
Source: Own Creation

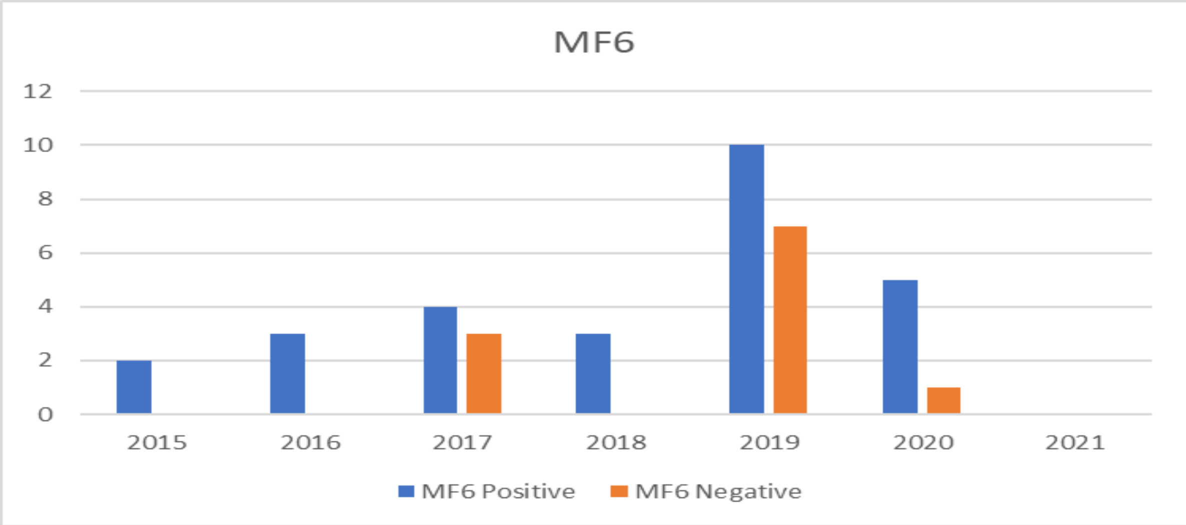

Figure 9: Overview of the fulfilment of MF6 per year
Source: Own Creation

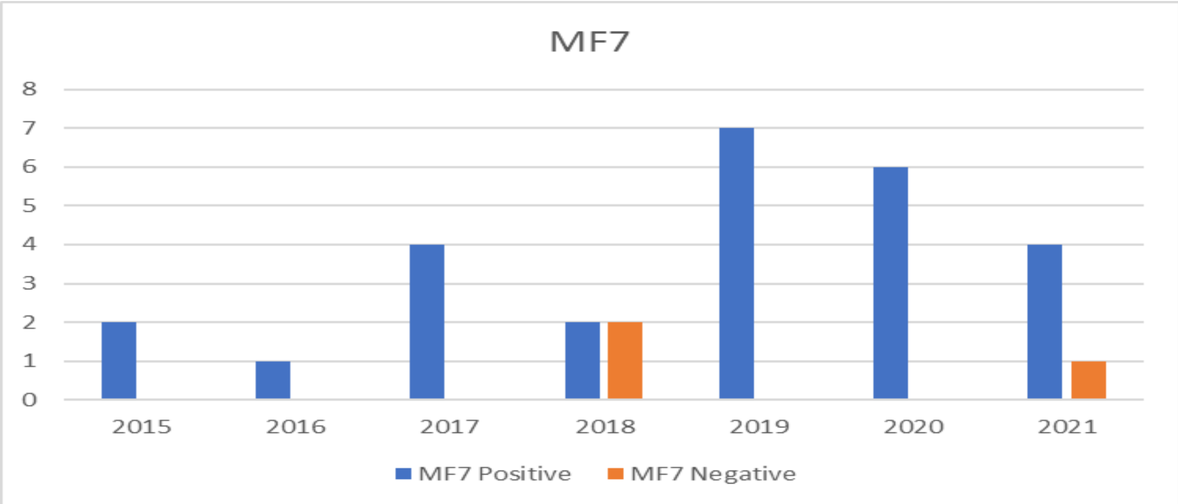

Figure 10: Overview of the fulfilment of MF7 per year
Source: Own Creation

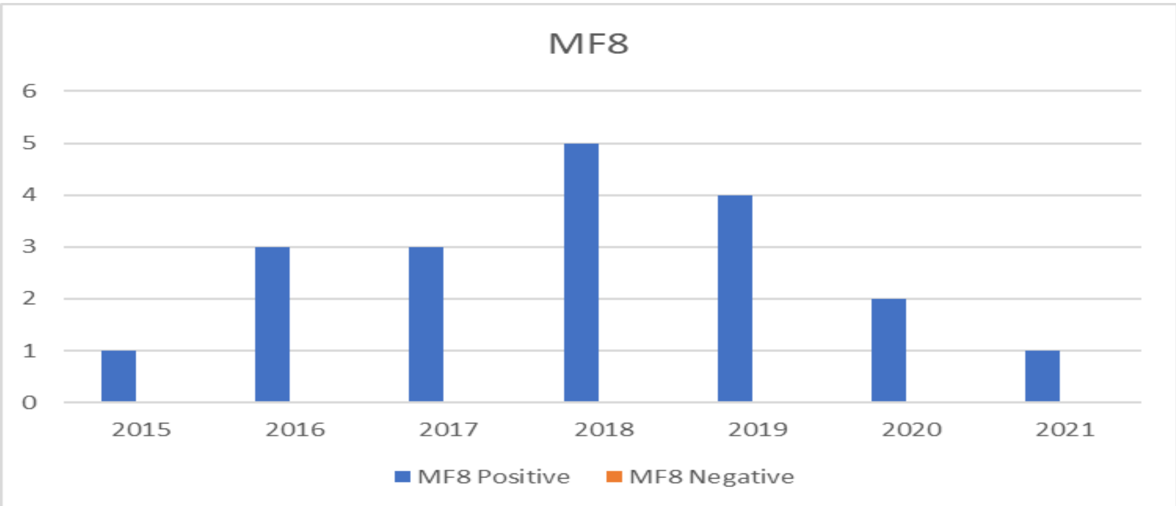

Figure 11: Overview of the fulfilment of MF8 per year
Source: Own Creation

5.3.2. Chemical Recycling

Historical Event Analysis (2015–2021)

Agreement on the goals and targets of CR occurred in the later stages of the transition. It mostly involved the industry itself, with many incumbent plastic producers promoting initiatives to focus attention on CR and include it as a priority in the circular agenda and engage more actors in the shared goals. Many plastic producers, particularly incumbent and niche companies, experimented with chemically recycling flexible plastic packaging, with many promising pilot projects occurring in the NL (North Sea Foundation, 2017). In 2017, actual plants were established that attempted to recycle plastic packaging and develop new products. Examples included Fitzroy Amsterdam, which took a new approach to chemically reusing beach plastics for packaging by establishing a new plant in the NL (Basic Materials & Resources Monitor Worldwide, 2017). Other plastic producers conducted agreements and collaborations with several institutions, such as LyondellBasell, which signed an agreement with the Karlsruhe Institute of Technology to develop a new catalyst and process technology to break down post-consumer plastic packaging, into monomers for reuse in polymerization processes (ICIS Chemical News, 2018b). Actors began increasing their financial support toward the path by funding multiple events and projects and making new infrastructure available as part of a EUR 6.3 million budget from the EU (Ahlstrom, 2017). In the following year, other actors became involved, such as the government, with initiatives that promoted the development and upscaling of the path and the engagement of the value chain towards the resource conservation and climate gains regarding CR (KIDV, 2018b). However, the further engagement of other actors in the chain, such as plastic producers, was considered important for the path to gain the corresponding legitimacy (KIDV, 2018b). However, more attention and the reallocation of the resources of other actors, especially the EU, were essential for the further acceleration of the path (ICIS Chemical News, 2018c).

By 2018, it was clear that CR involved challenges, and the exchange and diffusion of knowledge were placed in the spotlight for several challenges to be addressed (KIDV, 2018b). The publication of finalized studies and factsheets began providing more specific insights about the path. In fact, some of the results were highly profitable and reinforced the positive perception of CR in the Dutch market, with several plastic waste streams getting potentially recycled in the future (KIDV, 2018b). Despite the favorable potential of the path to achieving circularity, it was stated that chemical recycling was unlikely to become sufficiently extensive in a short enough time that is proposed (ICIS Chemical News, 2019). However, it was expected that higher levels of participation by actors in the path would increase the directionality and enhance its development (ICIS Chemical News, 2019).

No stimulation of the market occurred until 2019, when more activities for upscaling the market were introduced, and actors, especially recyclers and plastic producers, began collaborating to support further prosperity regarding the path (ICIS Chemical News, 2019). Examples of such collaborations included the one between RPC and Netherlands-based paints and coatings firm AkzoNobel (ICIS Chemical News, 2019). From 2019 onwards, both waste suppliers and PROs began announcing more ambitious pledges to accelerate the development of the path by expressing positive commitments and setting relevant targets. Shell, for example, announced its ambitious plan to use one million tons of plastic waste per year in its chemicals' plants by 2025 (PR Newswire, 2019), while the Netherlands wants 10% of domestic plastic production to be replaced by recyclate from chemical recycling by 2030 (KIDV, 2020b).

Moreover, other plastic producers partnered with chemical producers to enhance the acceleration of the path in the market. In particular, Berry Global Group announced its collaboration with global chemical industry leader SABIC for producing and using polyolefin resins made from chemical recycling (Berry Global Group, 2019). More financial transactions took place in the years that followed, involving investments, funding, and sponsorship. Examples included the virgin polymer producer Indorama investing in companies in the USA and the Netherlands (Industrial Goods Monitor Worldwide, 2019), or the EU-funded project aiming to depolymerize MMA and chemically recycle (ICIS Chemical News, 2019). Moreover, several actors organized coalitions focused on the acceleration of the path. The European Coalition for Chemical Recycling brought together associations along the plastics value chains with an interest in the development and use of chemical recycling (European Coalition for Chemical Recycling, 2021), while the Alliance to End Plastic Waste is a non-profit organization uniting the value chain and working with finance, governments and civil society (Alliance to End Plastic Waste, 2021). In addition, essential waste suppliers, such as Shell, were also identified and participated in some of those coalitions to accelerate the path (PR Newswire, 2019). Plastic producers began announcing the launching of materials in the market derived from chemical digestion as part of their portfolio and primarily by conducting deals between industries. For instance, SABIC and Plastic Energy will develop the TRUCIRCLE portfolio, made from upcycling mixed and used plastic with chemical digestion (Chemical Industry Digest, 2021).

Functional Analysis of Chemical Recycling

In this case, the function driving the acceleration of the path is mostly the high expectations of the value chain regarding CR's ability to achieve a CE within the domain (MF4B). These expectations are also reflected in the high experimentation conducted by waste suppliers (MF1) and the effort to coordinate the value chain by organizing relevant coalitions (MF8). Thus, the path drivers and their patterns indicate that CR is experiencing its development phase, in which the high levels of experimentation will eventually result in the commercial application of the produced materials.

However, issues in developing a united definition for the path and what it entails obstruct its development (-MF4A). In particular, while using the output products as fuel is currently not classified as recycling in Europe (KIDV, 2019b), many actors perceive otherwise. Nonetheless, no established market currently exists, and the path is expected to be commercialized over the next five years (-MF5).

Figures 12–20 depict the graphical representation of the path per year and per function. For each of the MFs, the number of gathered events with a positive or negative effect on the path per year are presented.

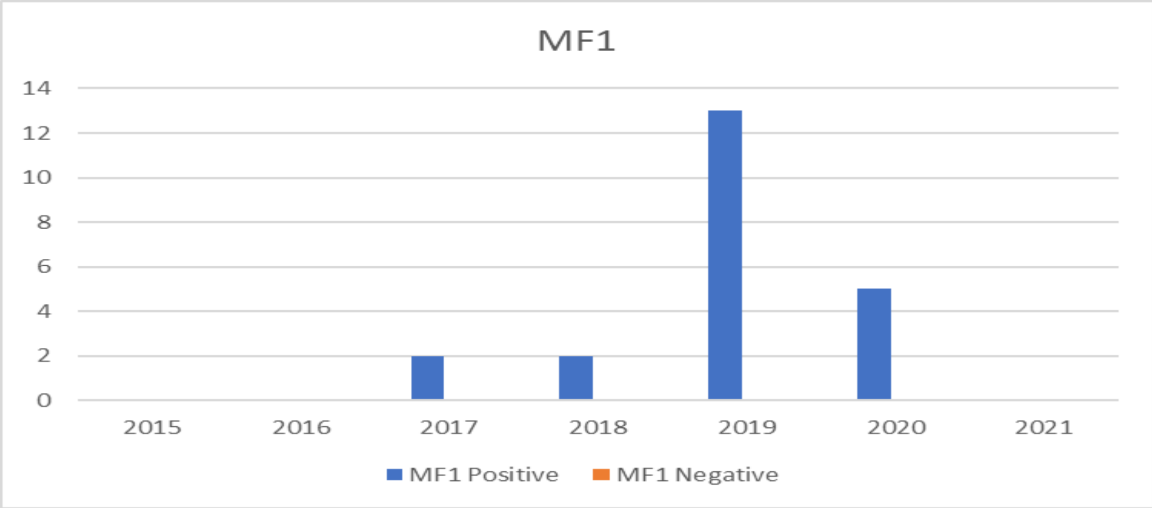

Figure 12: Overview of the fulfilment of MF1 per year
Source: Own Creation

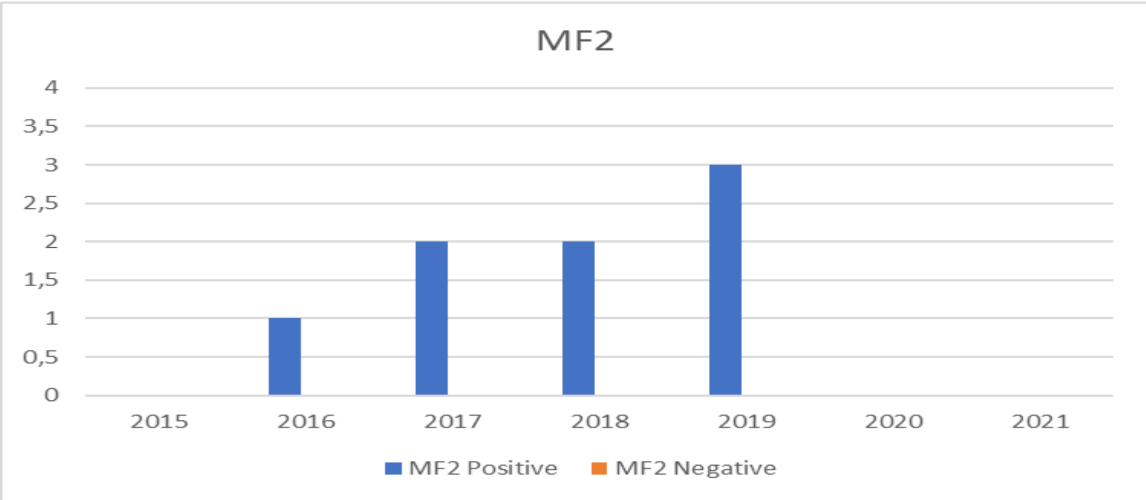

Figure 13: Overview of the fulfilment of MF2 per year
Source: Own Creation

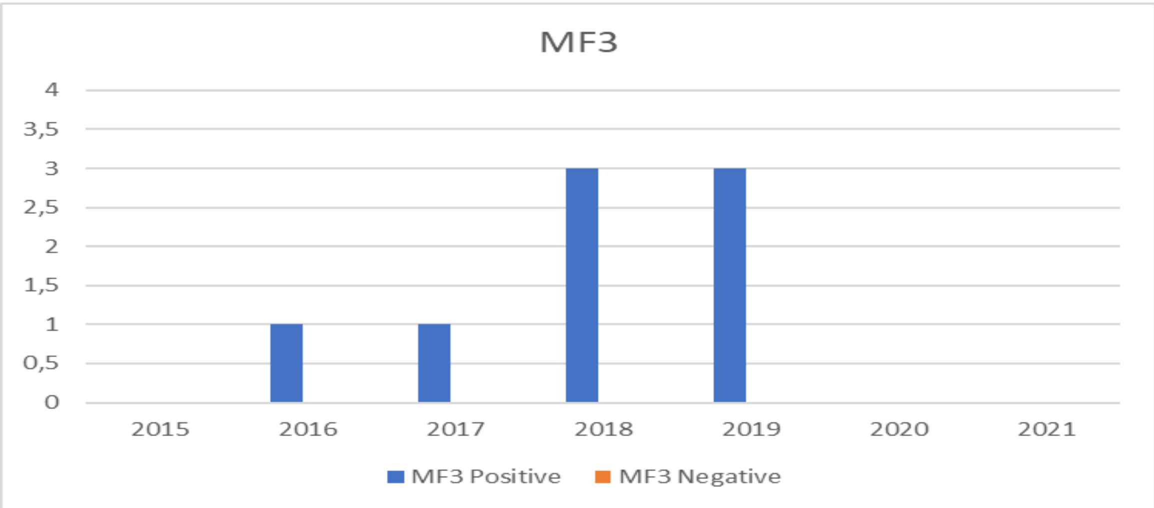

Figure 14: Overview of the fulfilment of MF3 per year
Source: Own Creation

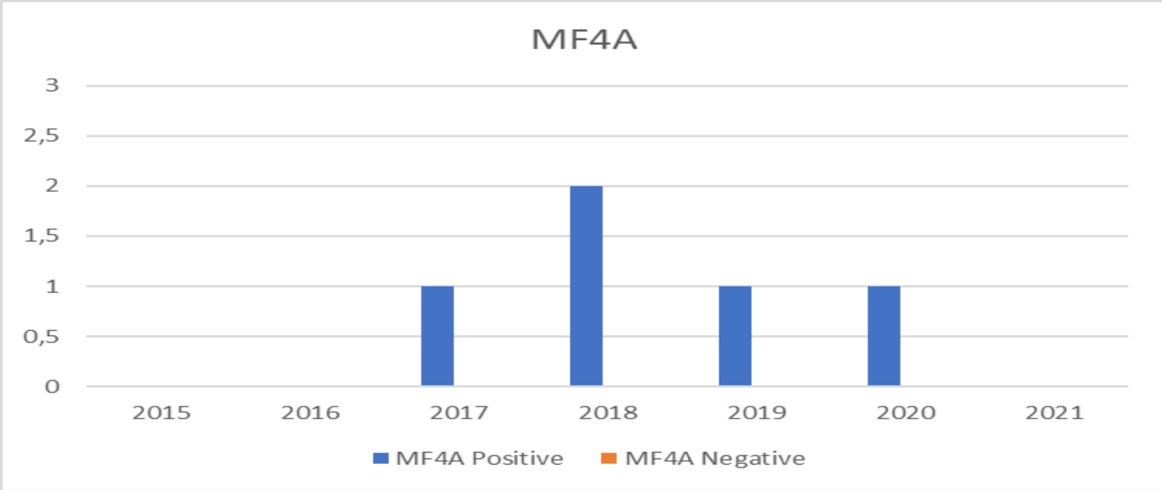

Figure 15: Overview of the fulfilment of MF4A per year
Source: Own Creation

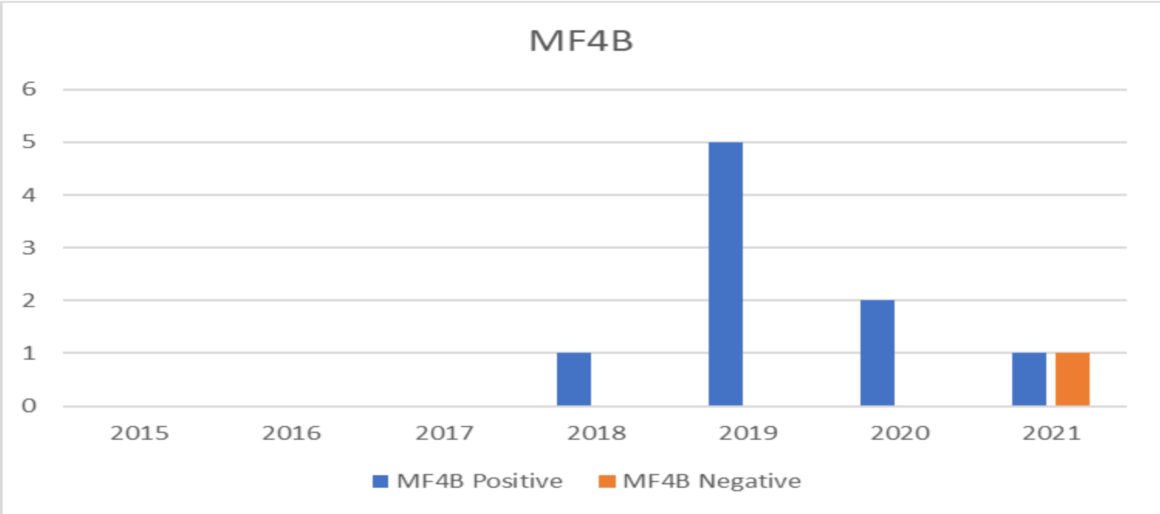

Figure 16: Overview of the fulfilment of MF4B per year
Source: Own Creation

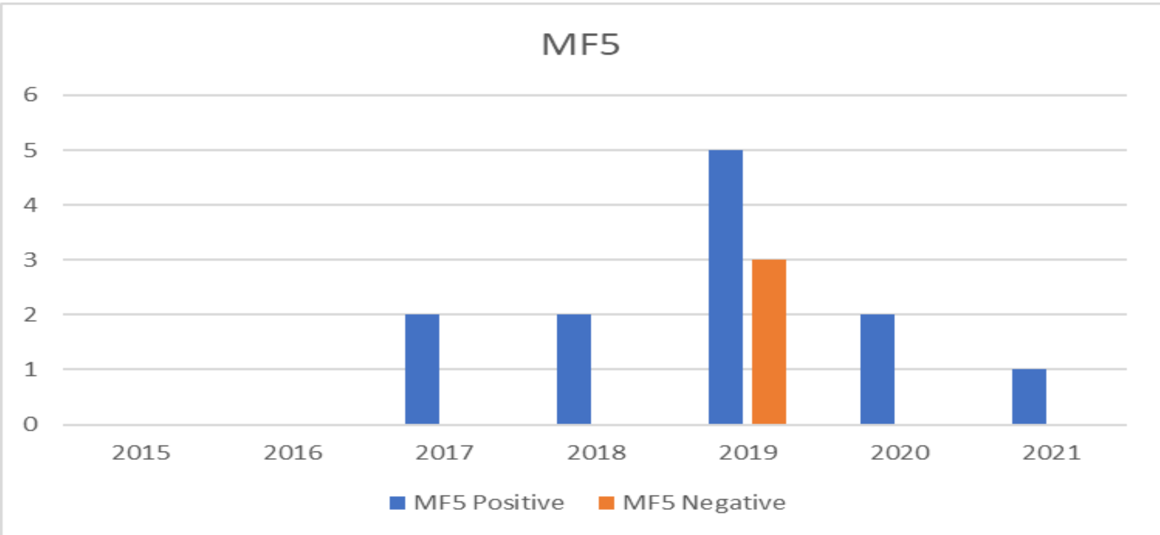

Figure 17: Overview of the fulfilment of MF5 per year
Source: Own Creation

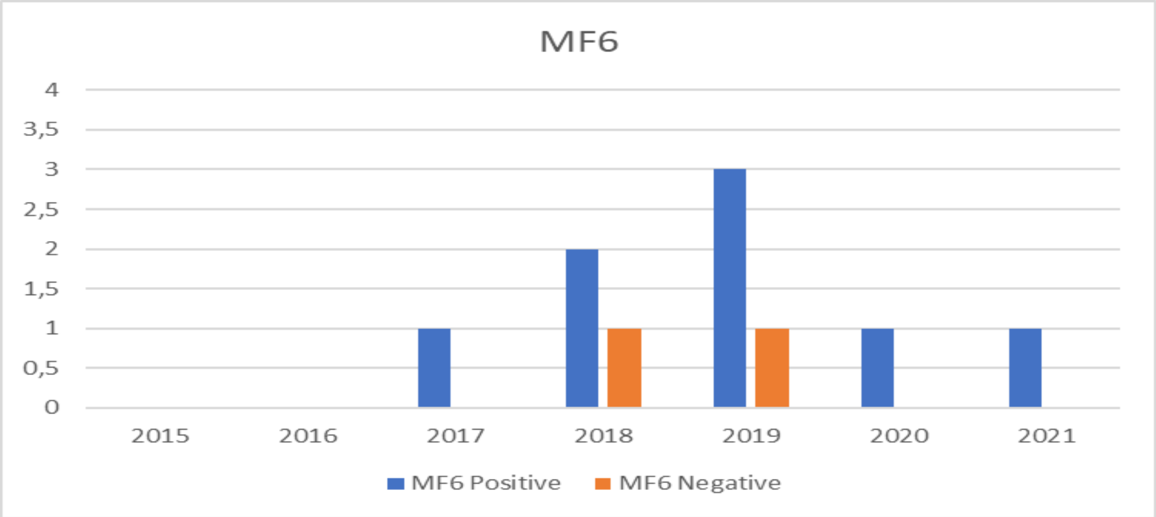

Figure 18: Overview of the fulfilment of MF6 per year
Source: Own Creation

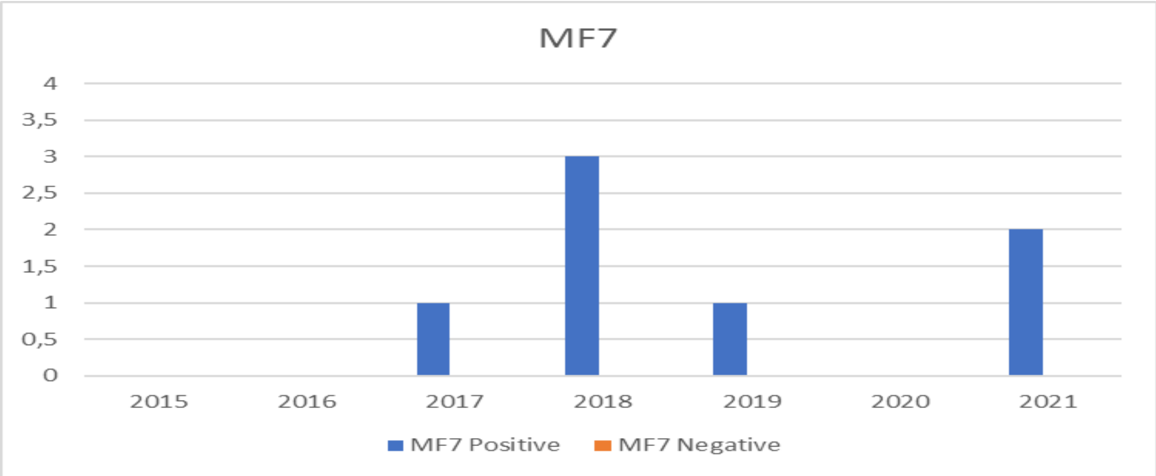

Figure 19: Overview of the fulfilment of MF7 per year
Source: Own Creation

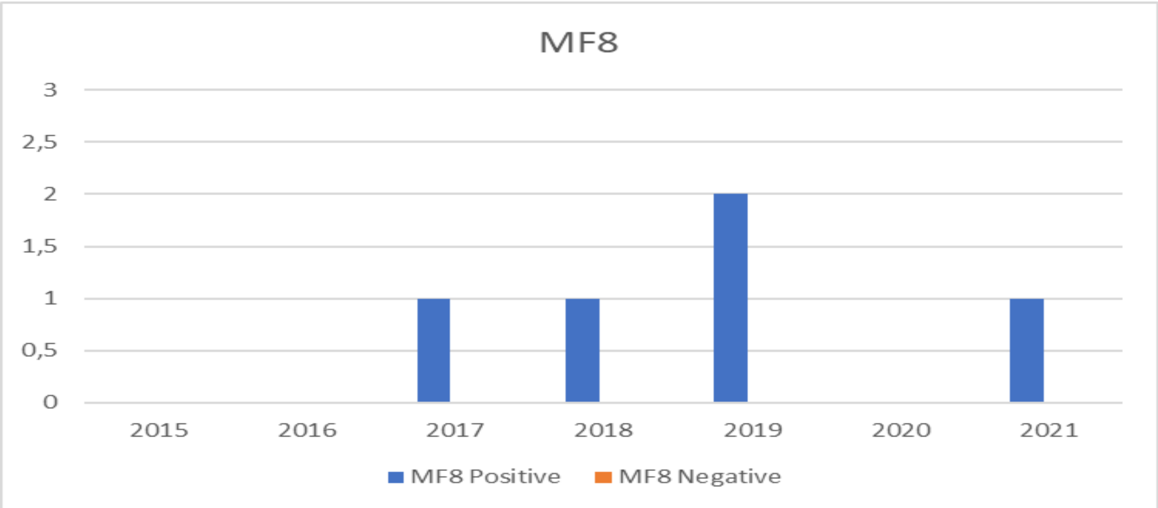

Figure 20: Overview of the fulfilment of MF8 per year
Source: Own Creation

5.3.3. Bioplastics

Historical Event Analysis (2015–2021)

Since 2015, plastic producers have experimented with bioplastics and announced future launches in the market. For instance, Teknor Apex had announced a new series of masterbatches for polylactic acid (PLA) bioplastic (Product News Network, 2015). Moreover, from the early stages of the transition, companies within different sectors have experimented with processes of water treatment that result in bioplastics as by-products (PR Newswire Europe, 2015). Other projects, introduced as collaborative actions between plastic producers and organizations, aimed at developing biodegradable flexible products as valuable substitutes for conventional plastic. Examples included TNO and Dutch bioplastic producer Rodenburg collaborate to manufacture biodegradable sanitary napkin (Bioplastics Magazine, 2015). Actors actively developed new knowledge regarding flexible plastic packaging by conducting collaborative research projects with knowledge institutions, such as universities. Paper Foam worked with Aachen University to formulate bio-based packaging while avoiding the dreaded moisture effects from Veuve Cliquot use (Industrial Goods Monitor Worldwide, 2015). Several projects that began as experiments became fruitful in the years that followed, which resulted in an extension of the – potentially collaborative – research to obtain more insights about product design. For instance, the collaboration between Bio-on and AkzoNobel aimed to further explore the use of biodegradable and bio-based polymers in coatings to prevent the unwanted accumulation of marine organisms (Thomson Reuters Practical Law, 2015).

Simultaneously, courses and workshops for identifying and overcoming limitations in using bio-based materials in flexible plastic packaging were also taking place. Further efforts were made to clarify the role of bioplastics within the CE, involving knowledge institutions and the government. In particular, the report by research agency CE Delft and the Ministry of Infrastructure and the Environment gave significant insights regarding under which conditions bio-based plastics contribute to a circular economy (KIDV, 2017). Knowledge diffusion played an essential role for many actors in the value chain, which aimed to conduct deals between industries and sectors to transfer knowledge and assist in the upscaling of the path. For example, Holland Bioplastics was established to share as much knowledge as possible about bioplastics and to connect relevant parties. The aim was to provide clear, consistent information about the opportunities offered by bioplastics (Renewable Carbon News, 2015). Moreover, events and consortiums enhanced information concerning the mission among the actors. In 2017, the results of ongoing research allowed for a deeper comprehension of the path's role in the transition to a CE. CE Delft concluded that bio-based plastics could contribute to reducing CO2 emissions and to reducing the demand for fossil raw materials (KIDV, 2017), while factsheets that illustrated the diffused knowledge of the topic began to be published (KIDV, 2017). However, even though valuable information was obtained concerning the better treatment of bioplastic, other studies revealed that this knowledge was not being well transmitted within the entire value chain, with several actors ignorant of the information. In a survey of 1,700 citizens published at the 11th European Bioplastics Conference in Berlin, almost half (43%) had heard of the term 'bioplastics,' but 84% of those had no idea what it meant (Eagle, 2018).

By 2018, companies had successfully established plants to produce bioplastics by using biotechnologies. Bio-on completed the first test phase for the unique bioplastic production facility (Hugin, 2017), while in the Netherlands, Sappi has built a pilot-scale plant to produce cellulose nanofibrils (CNF) (PrintWeek MEA, 2020), which continued in the following years. Major actors in the value chain, mainly waste suppliers, began supporting the use of those materials by incorporating them into their commitments or even portfolios (KIDV, 2019c). However, the same attitude was not shared by all the actors in the value chain. In particular, the Dutch government failed to properly guide the acceleration of bioplastics, given that there are misunderstandings of the regulatory framework and the shared goals of the pathway (KIDV, 2019c). Accordingly, negative discourse arose regarding the existing confusion surrounding the shared vision of bioplastics, which also entailed the indirect effects of bioplastics in achieving a CE (KIDV, 2019c) ;(Simon, 2019).

The publication of the Action Plan for bio-based plastics by KIDV was aimed at escalating the demand for bioplastics and the saturation of the market (KIDV, 2020c). The Dutch market has demanded bioplastic packaging as a circular solution. At the same time, it is expected to attain higher growth post-2020, with the NL being an essential player (CE Noticias Financieras English, 2020b). The path has achieved significant acceleration due to the reallocation of financial resources by multiple actors in the value chain, such as increasing funds and grants by government bodies and universities to develop novel biomaterials (GlobeNewswire, 2021). However, the reallocation of resources towards bioplastics might also be linked to an indirect decrease in the allocation of resources to other sectors designed to achieve a CE. As stated in several articles, the term 'bio' is not synonymous with lower environmental impact, as alternative feedstocks to fossil fuels can be linked to high GHG emissions, compete with land for food purposes, or drive land use change (States News Service, 2020). Further engagement of the value chain has begun, with plastic producers developing advocation partnerships to accelerate the path in other packaging aspects. In particular, the Interreg Northwest Europe project CurCol included partners from research labs in Ireland, Germany, Belgium, and the Netherlands and developed biodegradable yellow pigments (Coons, 2020). Finally, waste suppliers have organized coalitions to keep pace with the transition, while multiple events to coordinate redesign or reorientations in the path involving the entire value chain have taken place. For instance, in Europe, a multi-country collaboration was investigating to replace synthetic dyes in bioplastics with non-toxic alternatives made from turmeric (Coons, 2020).

Functional Analysis of Bioplastics

The historical event analysis indicated that the factors driving the path are mostly connected to the industry. Waste suppliers have experimented with the materials directly or indirectly (bioplastics as by-products of other processes; MF1). Moreover, plastic producers and retailers/brands have placed such products on the market, allowing for the further establishment of the path in the mission (MF5). Thus, bioplastics are experiencing their take-off phase in the mission, in which the market for such materials is growing.

However, the analysis also identified several barriers related to the MFs. First, the legislation itself appears to be one of the essential obstacles. The regulatory framework is perceived as complex and unclear regarding the product design requirements and recovery of bioplastics (-MF4). Nonetheless, despite the existence of multiple products made of bioplastics in the market, consumers have difficulty comprehending the differences between bio-based and biodegradable plastics and how they should dispose of them (-MF7). Finally, despite clarifying the contribution of bioplastics to the path to a CE, they are still not strongly supported by the essential actors in the value chain, such as KIDV, which prefer recyclable and reusable packaging bioplastics (-MF7). The indirect effects of bioplastics on other aspects of climate change, such as land use, create second thoughts about the eligibility of the path (-MF4B).

Figures 21–29 depict the graphical representation of the path per year and per function. For each of the MFs, the number of events with a positive or negative effect on the path per year are presented.

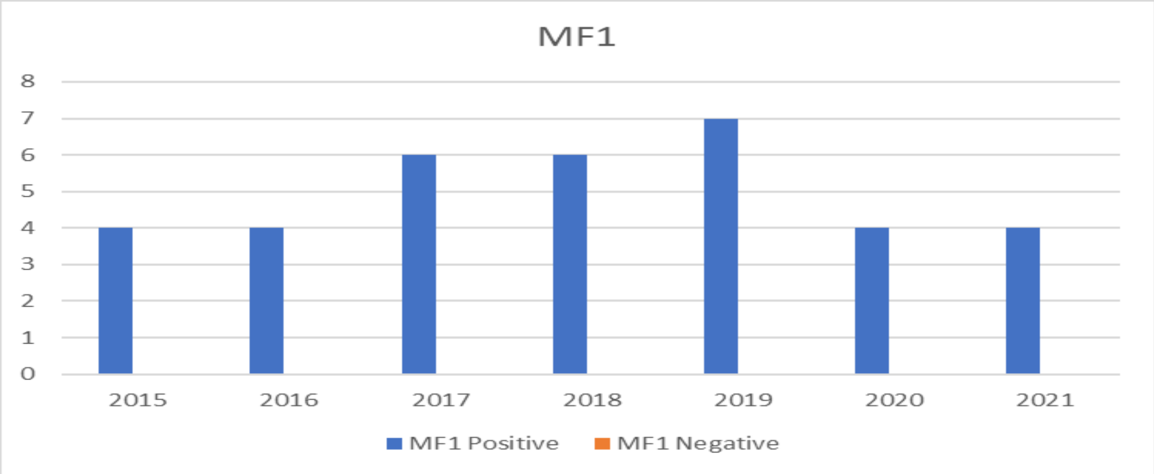

Figure 21: Overview of the fulfilment of MF1 per year
Source: Own Creation

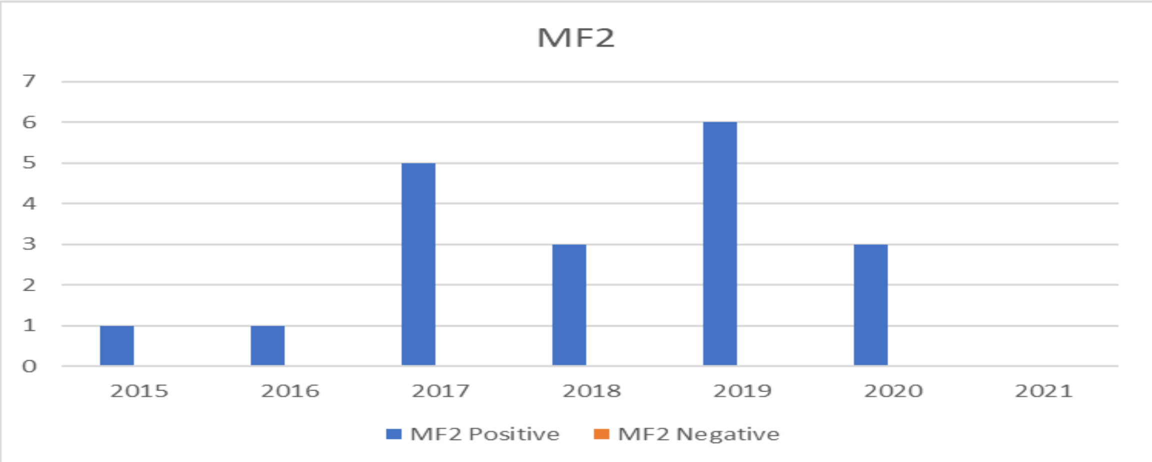

Figure 22: Overview of the fulfilment of MF2 per year
Source: Own Creation

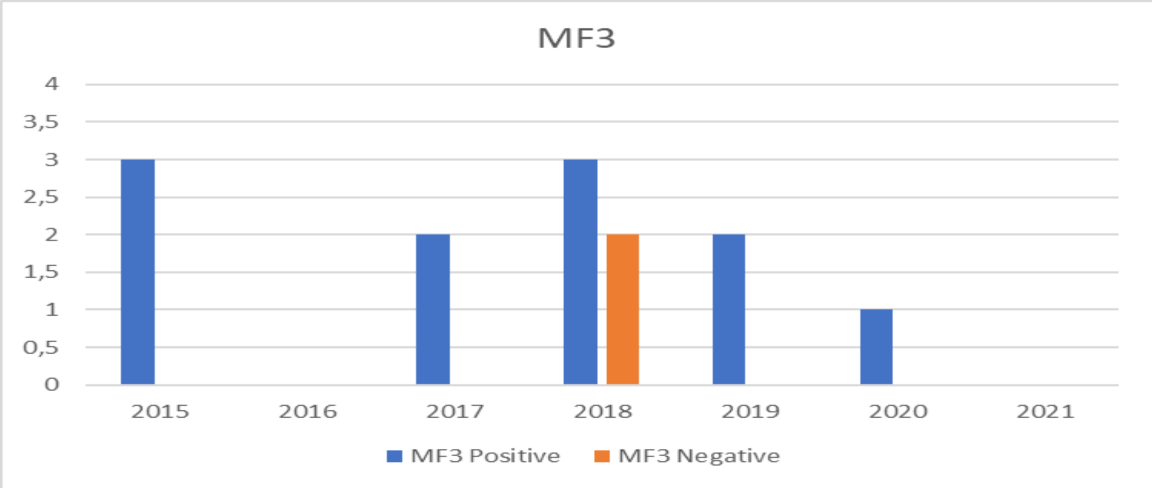

Figure 23: Overview of the fulfilment of MF3 per year
Source: Own Creation

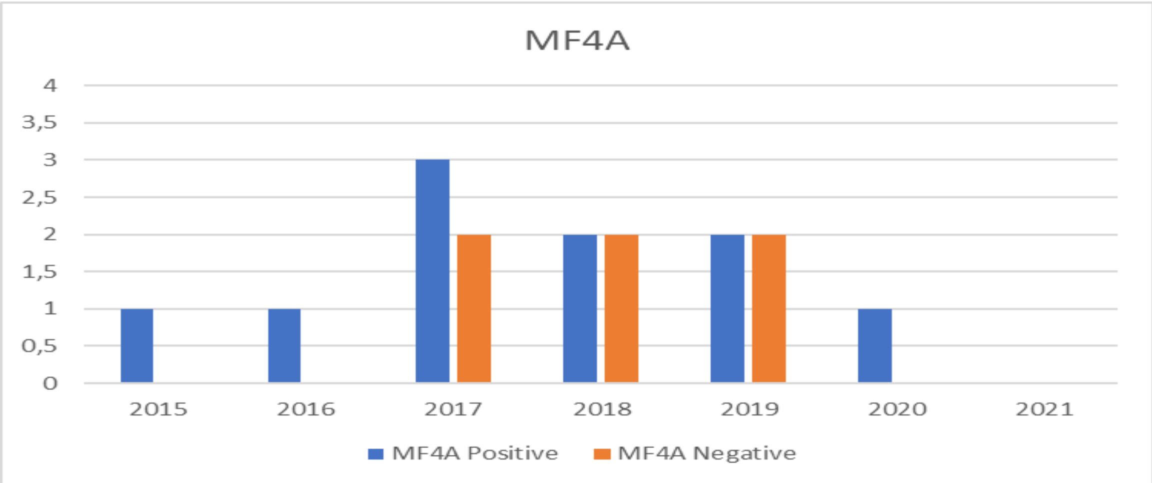

Figure 24: Overview of the fulfilment of MF4A per year
Source: Own Creation

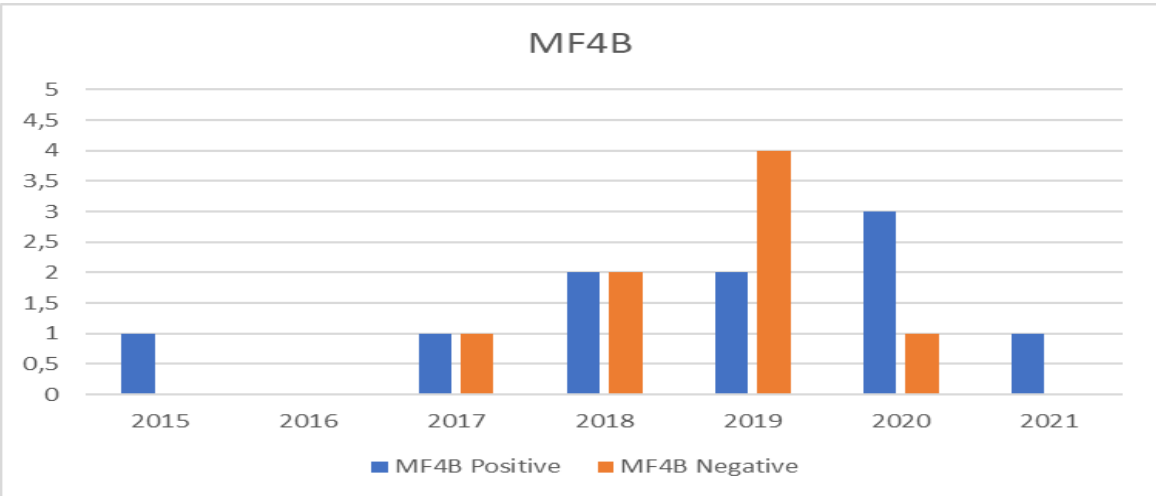

Figure 25: Overview of the fulfilment of MF4B per year
Source: Own Creation

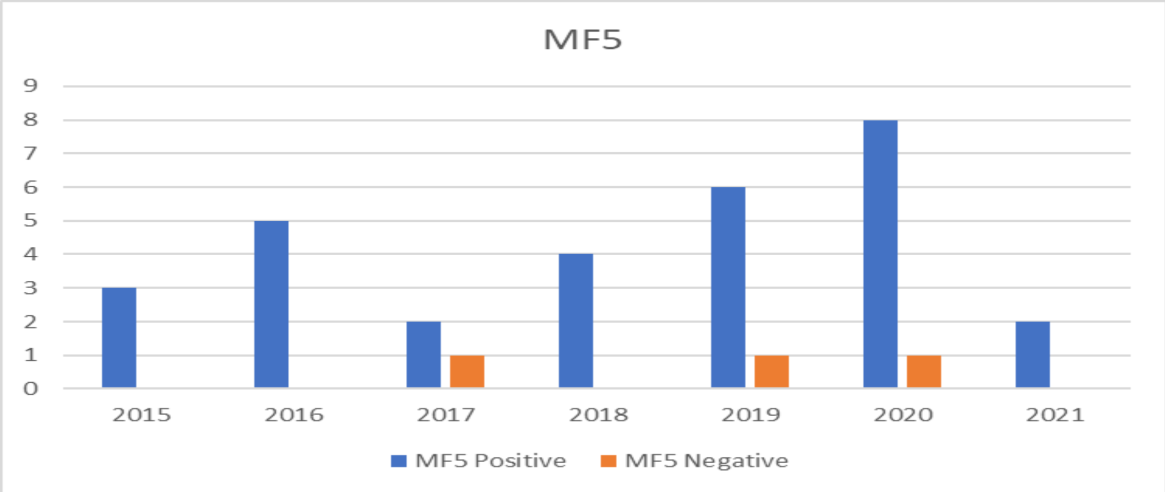

Figure 26: Overview of the fulfilment of MF5 per year
Source: Own Creation

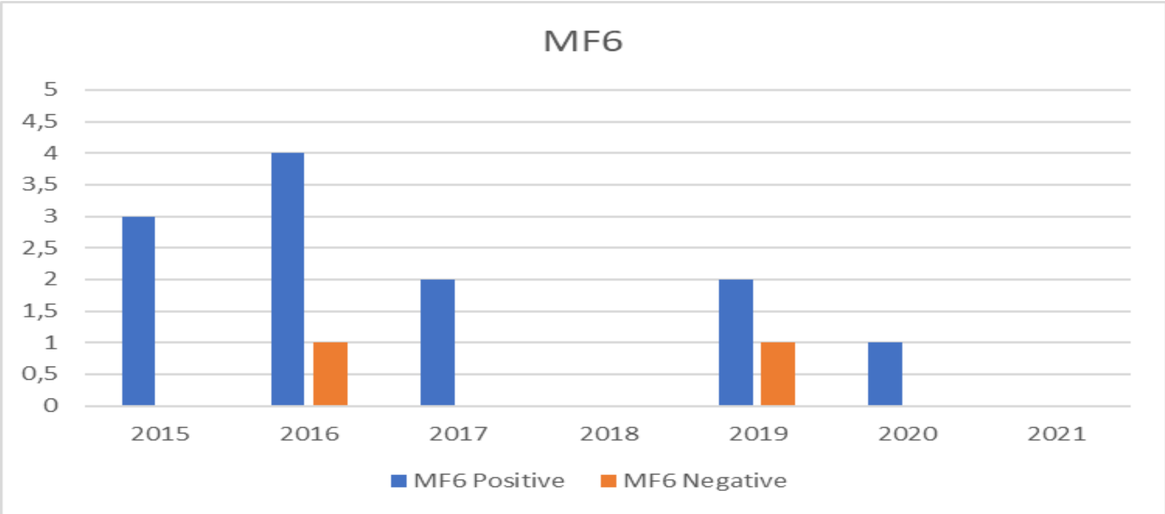

Figure 27: Overview of the fulfilment of MF6 per year
Source: Own Creation

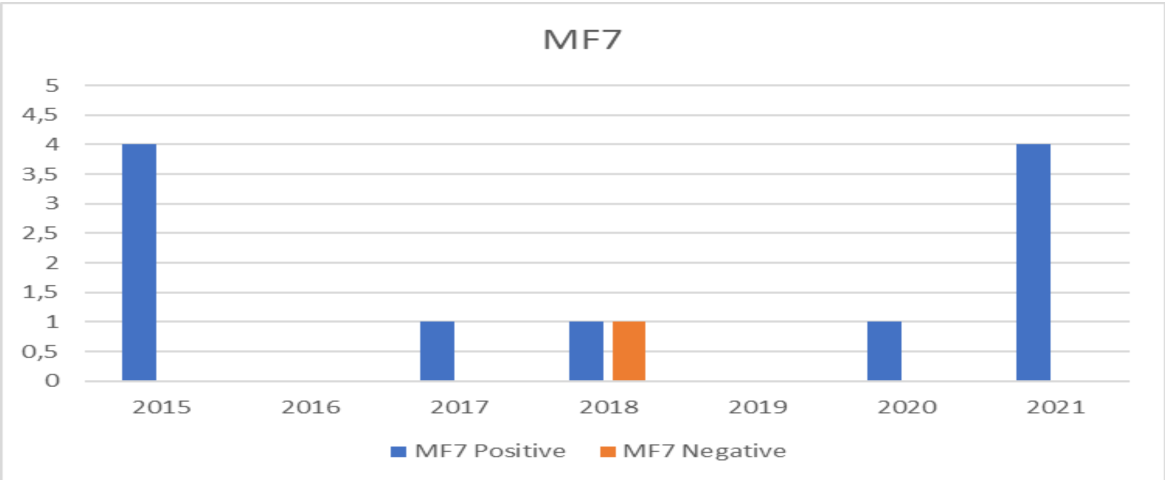

Figure 28: Overview of the fulfilment of MF7 per year
Source: Own Creation

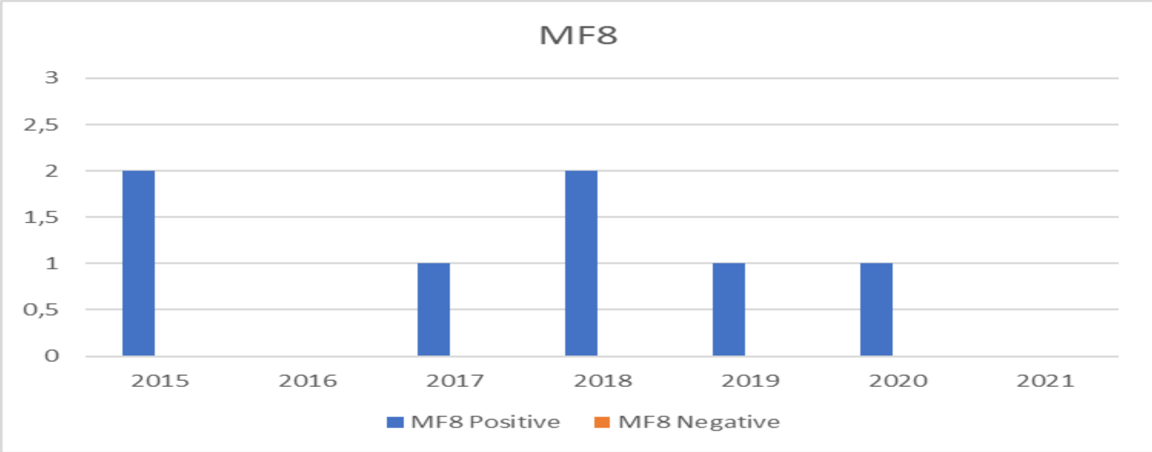

Figure 29: Overview of the fulfilment of MF8 per year
Source: Own Creation

5.3.4. Reusables

Historical Event Analysis (2015–2021)

From the early stages of the transition, the value chain had already begun committing to the reusability of plastic materials. The Raw Material Agreement suggested having the Dutch economy operating based on reusable raw materials (Government of the Netherlands, 2017). The industry also agreed with prioritizing the path in the agenda (States News Service, 2017). However, in 2017, waste suppliers were held to account for not appropriately keeping pace with the goals. In particular, Greenpeace specifically criticized the lack of "commitments, targets or timetables to reduce the amount of single-use plastic bottles used" (Cooper, 2017). The lack of development and information about the reusability of plastic packaging was apparent from the early stages of the transition. From 2017, actors in the value chain, specifically PROs, began expressing their concerns about the absence of know-how on the reusability of plastic packaging. Greenpeace's report exposed the lack of progress in reusing bottles and suggested that this needs to be given greater prominence in sustainability strategies if further damaging criticism was to be avoided (Cooper, 2017). However, the value chain had established more serious engagement with this path by 2018. At that time, several waste suppliers announced the removal of multiple single-use products, while PROs expressed higher expectations of the upcoming requirements in product design endorsing reusability (ICIS Chemical News, 2018c). Simultaneously, the EU Commission proposed a ban on single-use packaging to further accelerate the direction of the path, with multiple waste suppliers responding with the removal of certain products. For instance, Lipton has discontinued the use of plastic straws and lids in all cocktails and plastic mashers in the hospitality industry (Targeted News Service, 2019). In 2020, a Directive came into force, which implemented the ban of single-use plastic packaging by July 2021 while setting higher percentages in the desired goals for reusable plastic packaging (States News Service, 2020). In particular, 74% of all packaging materials in the Netherlands must be recycled and reused by 2025 (Thai News Service, 2020). Moreover, this year, significant actions have been undertaken by Dutch retailers to achieve the desired goals. Examples included Albert Heijn wanting the plastic bags to disappear from all Dutch stores by the end of this year at the latest (Retail Detail, 2021).

Functional Analysis of Reusables

In this case, the historical event analysis indicated that PROs have strongly supported the contribution of this path to the CE within the domain. The increase of reusable, flexible plastic packaging has been highlighted among the value chain and the shared mission (MF4A). Significant actors in the value chain, such as KIDV, advocate packaging reusability (MF7). Moreover, the single-use plastic directive that bans disposable packaging by July 2021 is a substantial measure for keeping pace with the path by reorienting the value chain (MF8). The path is experiencing its predevelopment phase, in which the direction of the path is established, and potential prototypes may occur.

However, the analysis also identified multiple barriers that relate to the MFs. The industry is not active in experimentation regarding the path (-MF1), while reusable plastic packaging is almost nonexistent in the market (-MF5). In addition, the value chain seems to be missing know-how aimed at implementing reusability in the sector (-MF2). Nonetheless, all those barriers are also reflected in the significantly low reallocation of resources towards this path (-MF6).

Figures 30–38 depict the graphical representation of the path per year and per function. For each of the MFs, the number of events with a positive or negative effect on the path per year are presented.

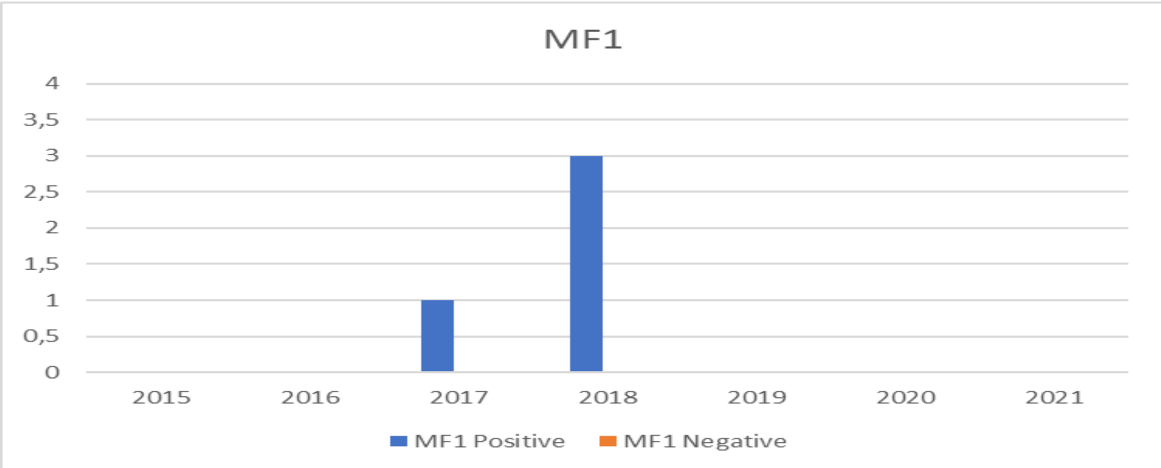

Figure 30: Overview of the fulfilment of MF1 per year
Source: Own Creation

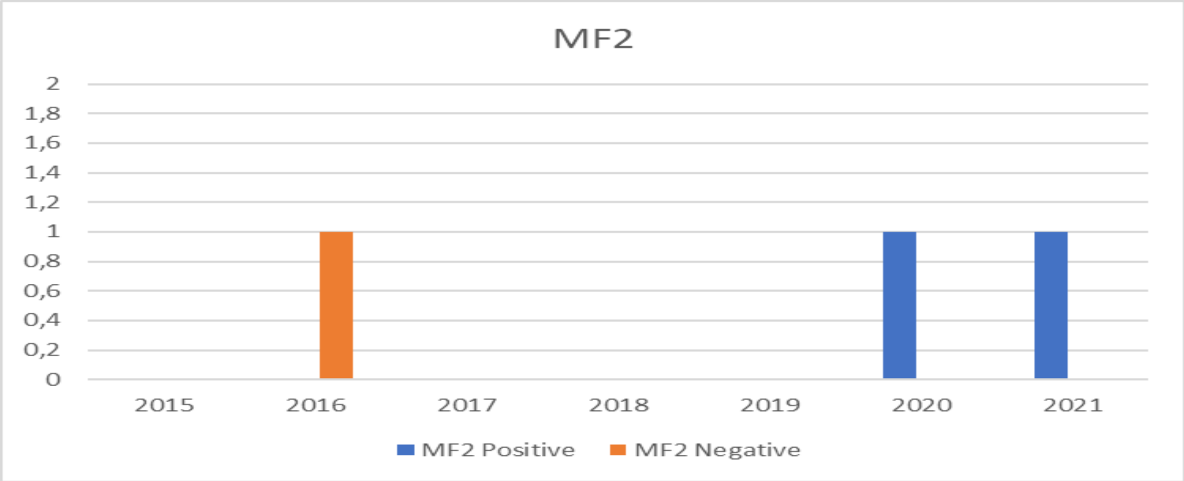

Figure 31: Overview of the fulfilment of MF2 per year
Source: Own Creation

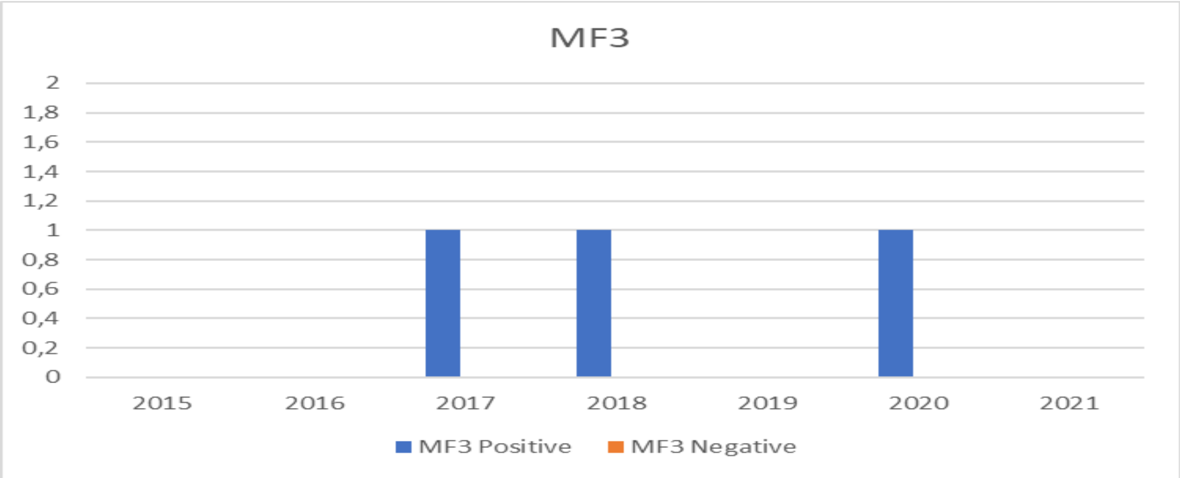

Figure 32: Overview of the fulfilment of MF3 per year
Source: Own Creation

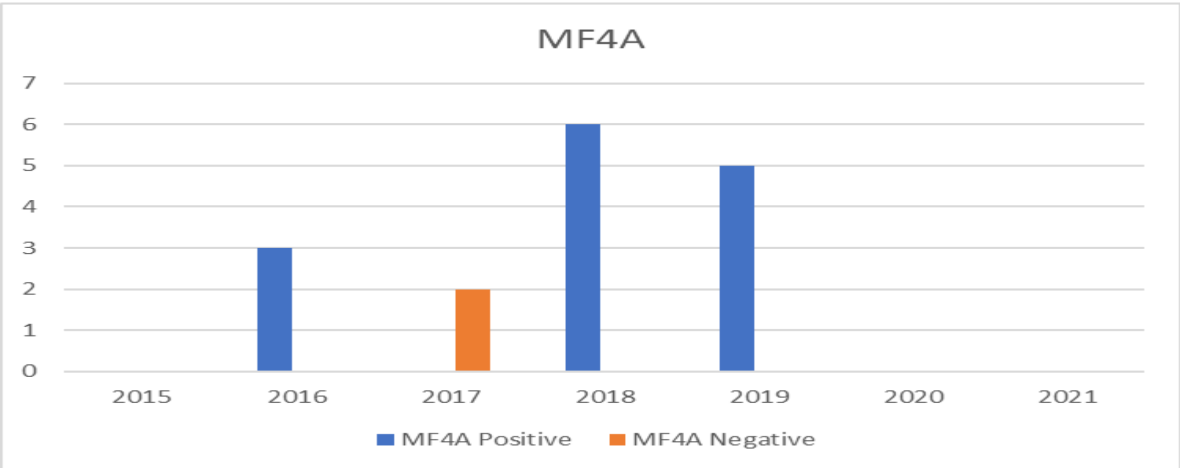

Figure 33: Overview of the fulfilment of MF4A per year
Source: Own Creation

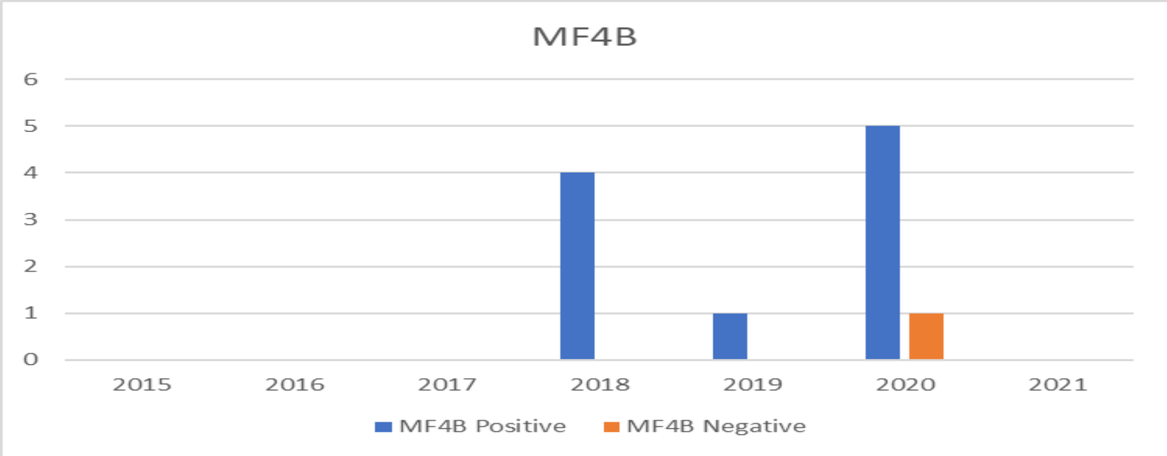

Figure 34: Overview of the fulfilment of MF4B per year
Source: Own Creation

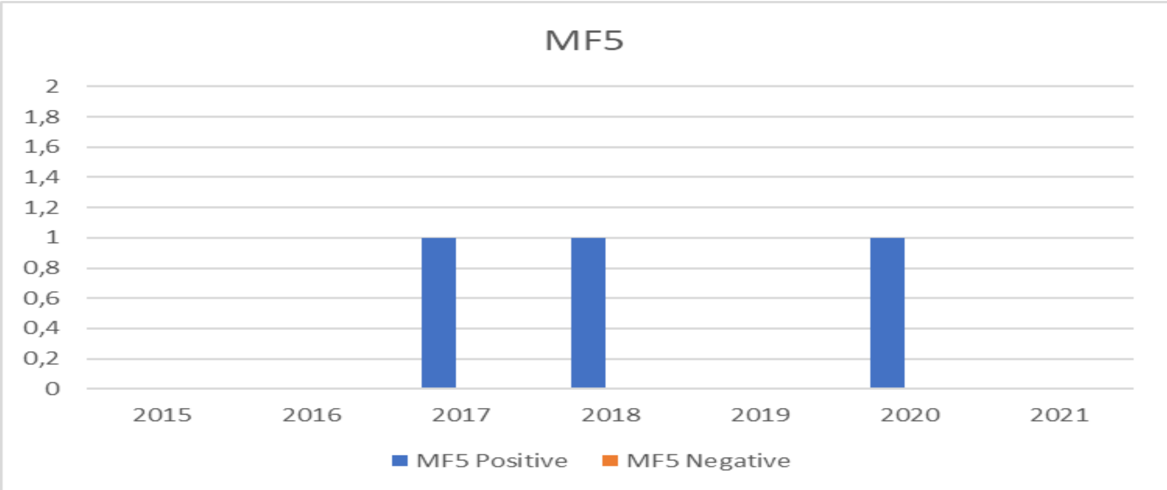

Figure 35: Overview of the fulfilment of MF5 per year
Source: Own Creation

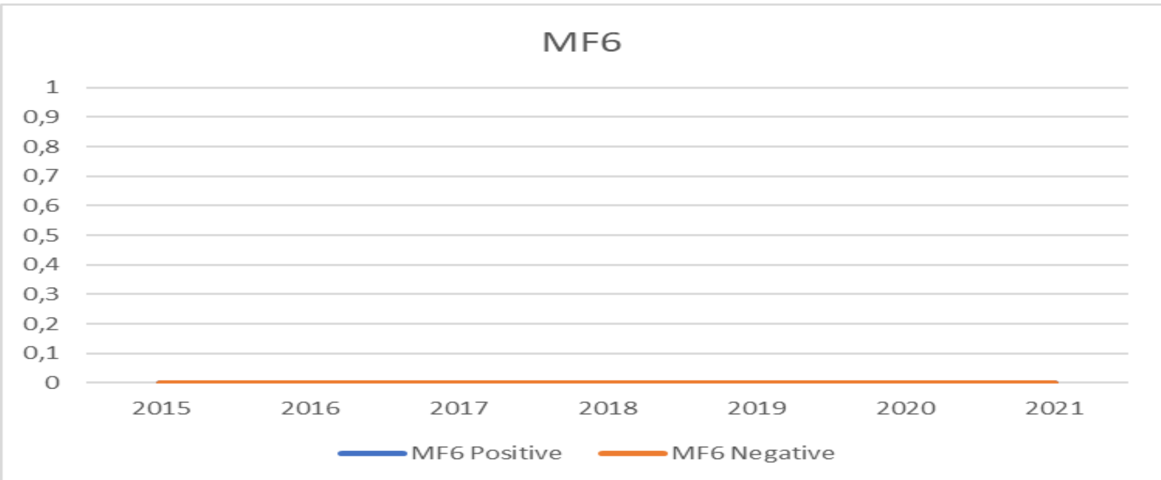

Figure 36: Overview of the fulfilment of MF6 per year
Source: Own Creation

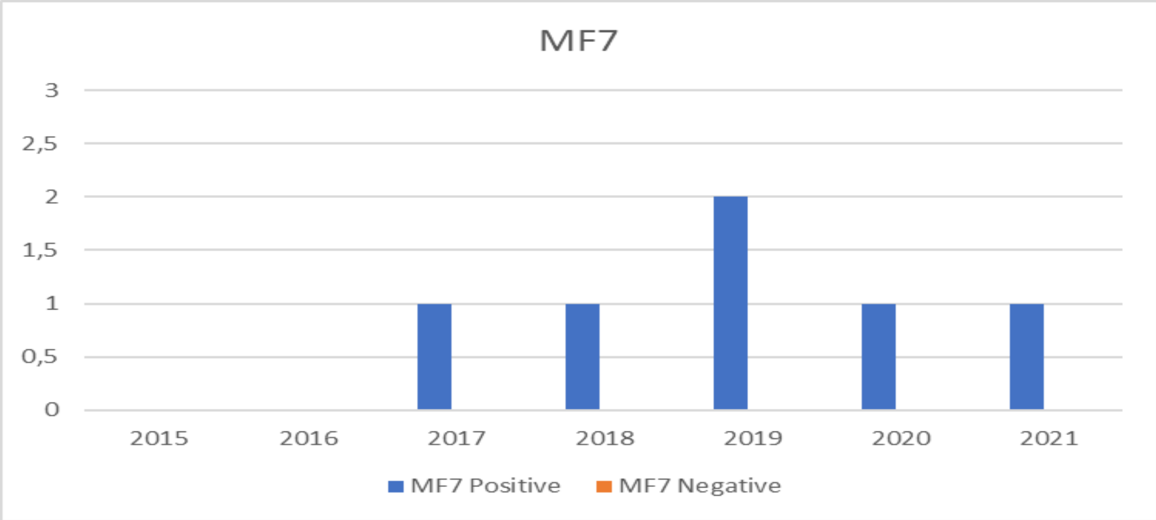

Figure 37: Overview of the fulfilment of MF7 per year
Source: Own Creation

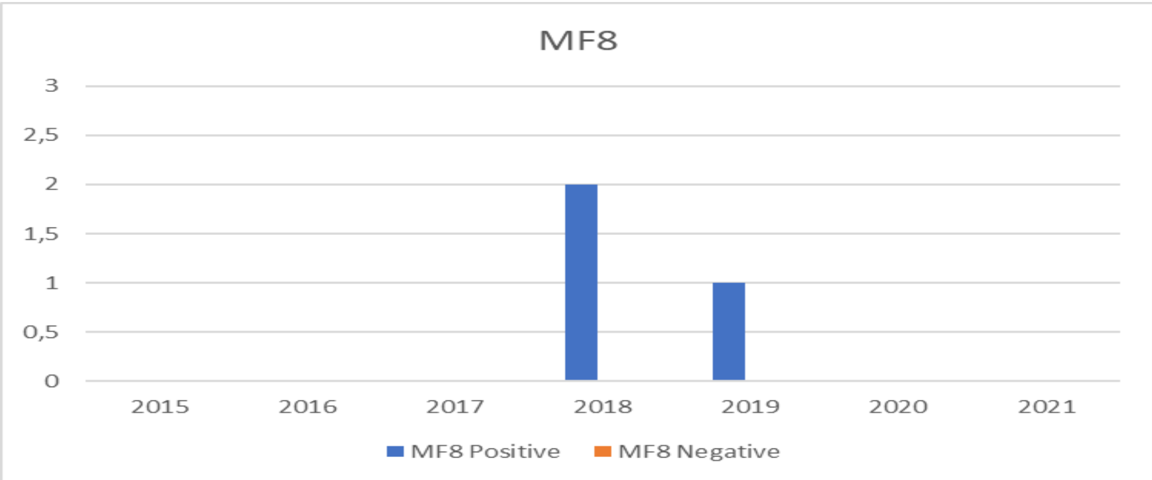

Figure 38: Overview of the fulfilment of MF8 per year
Source: Own Creation

6. ANALYSIS

6.1. Interaction Between Paths

Several relationships among the paths were identified through the historical event analyses. The significant attention paid from the early stages of the transition to MR has assisted in exploring alternative methods of recycling and the gradual establishment of CR in the circular map (complementary). At present, the two paths are experiencing an independent course, with the value chain primarily focusing on MR. However, the future development and optimization of CR may entail the destabilization of MR in the mission. The value chain might perceive CR as the ultimate solution and stop considering recyclability when designing and manufacturing or disposing of plastic products, resulting in pollution from different combinations of plastics or additives that will disturb any recyclability process. Nonetheless, despite the acceleration of CR in the mission and its support, several actors suggest it should not be perceived as the "holy grail" and advocate more substantial support towards design for recyclability.

Moreover, bioplastics appear to have a dual relationship with MR. On the one hand, the two paths have a symbiotic relationship because if bioplastic is not disposed of properly, it may hinder the recycling process and decrease the value of the recyclate. On the other hand, the two paths also have a competing relationship regarding business operations. For plastic producers, it is easier to claim circularity in their portfolios by manufacturing bio-based or biodegradable products than totally recyclable ones due to the properties of the functional barriers those materials possess. Moreover, despite several actors (i.e., consumers) appearing quite ignorant regarding bioplastics' fundamental properties, plastic producers tend to place more bio-based or biodegradable products on the market than recyclable ones. Nonetheless, bioplastics have been identified as contributing to some aspects of the CE that might create a rebound effect in demand for such packaging, with consumers preferring such products over others and considering them a legitimate, sustainable alternative. However, higher demand for bioplastics is simultaneously associated with competitive indirect effects on other aspects of sustainability, such as land use, land change, and biodiversity.

The high prioritizing of MR in the mission might also produce a competitive relationship with the other paths, especially reusables. The great attention paid to achieving the recycling goals and the design requirements has "occupied" the mission, which has resulted in the neglect of the reusability of plastic packaging within the domain. Reusability for flexible plastic packaging is almost nonexistent, despite the high directionality. However, to achieve circularity, a reduction in the volumes of flexible plastic packaging entering the system should also occur. The reduction of plastic packaging through reusability, in addition, would complement the performance of MR since less plastic packaging would need to be recycled.

6.2. Policy Developments

6.2.1. Mechanical Recycling

In the case of MR, there is a coherent and precise direction through roadmaps, factsheets, and checklists concerning how plastic producers and retailers should operate in terms of recyclability for flexible plastic packaging. However, the regulatory framework is perceived as confusion regarding the use of recycled materials. In particular, difficulties in distinguishing the eligibility of recycled plastics for food contact may discourage the demand for such materials. Nonetheless, significant and fluctuating price differences between virgin and recycled plastics decrease the demand for such materials. Therefore, the policies should orient towards balancing the regulatory framework, so it is understandable by the entire value chain and promote both recyclability in design and the implementation of recycled plastics. In this manner, the market gap between supply and demand could be stabilized, and further development of the path could occur.

Furthermore, a simplification of the regulatory framework in terms of applications of recycled plastics in food contact would reinforce the use of such materials by plastic producers and boost demand, which is necessary for recyclers and converters. Nonetheless, policies should focus on creating a breeding ground for recycled plastics over virgin ones, which could be achieved by levying a tax on virgin plastic packaging. In fact, as of January 1st, 2021, EU member states must pay €0.80/kilo of non-recycled waste (European Commission, 2021). Many countries in the EU have already begun implementing such measures. For instance, Italy taxes single-use plastic, except for compostable plastic or plastic made from recycled materials. Lithuania, in addition, taxes multilayer laminates, while the UK has implemented taxation on the packaging that is not made of at least 30% recycled materials (KIVO Group, n.d.). The adaption of stricter Extended Producer Responsibility (EPR) schemes could also enhance the breeding ground for recycled plastics. The NL has had EPR schemes in place since 2012, and progress has been made, but there is still considerable work to be done. At present, the mission and EPR schemes are focused on quantity over quality (The Polymer Research Platform, 2020). Consequently, there are recycling infrastructures in place, but they only operate with PE while PP is still neglected. EPR schemes should focus on coordinating the value chain towards developing the proper and necessary innovative solutions to stimulate the supply and demand of recycled plastics.

6.2.2. Chemical Recycling

In the case of CR, the value chain anticipates the acceleration of the path, while numerous plastic producers are already experimenting with the path. PROs have published several documents to navigate the acceleration of CR, and the existence of coalitions supports the coordination of the path. However, problems occur, as not all the actors define CR similarly, which fails to fulfil directionality. Nonetheless, the actors have stated that the path will be properly scaled up in approximately five years. Therefore, policies should precisely define what CR means to the CE and correspondingly engage all the actors. To achieve a faster scale-up, policies should take advantage of the high levels of experimentation and assist the value chain in incrementally placing products on the market, rather than expecting the "ultimate plan." Moreover, once the CR is scalable, policies should pay close attention to promoting the path. While CR is broadly perceived as the "holy grail," once it is commercialized, it could create severe rebound effects on the supply of flexible plastic packaging since the value chain might think that all the problems have been solved. However, policies should keep a low maximum percentage of chemically recycled flexible plastic packaging, mostly consisting of the amount of plastic that cannot be recycled in other ways. Therefore, CR policies should be oriented toward accelerating the path, but it should be considered a supplementary solution to the plastic problem, not the ultimate one.

6.2.3. Bioplastics

In the case of bioplastics, the industry itself is accelerating the path. Waste suppliers have been working with bioplastics. Indeed, once the contribution of bioplastics to the CE was identified, multiple products were placed on the market. However, the regulatory framework confuses the actors regarding how they should process those materials and consumers, as identified, who are not adequately engaged with the path by neglecting specific properties and requirements. Moreover, bioplastics are associated with indirect effects on other aspects of sustainability, such as land-use.

Therefore, policies should focus on a triad to accurately accelerate the path:

a. Policies should simplify the regulatory framework and clarify any misconceptions by developing a closer relationship with waste suppliers and recyclers to find common ground regarding what is placed on the market and how it should be recovered.
b. Policies should consider the indirect effects that the use of bioplastics has on the environment. To do so, policies could set a maximum ceiling on how many products made of such materials could be placed on the market by plastic producers. EPR schemes could also assist by ensuring that companies do not excessively use bioplastics while guaranteeing that any relevant product fulfils all the recyclability requirements.
c. Attention should be paid to the proper engagement of end-consumers regarding the path by educating them regarding the properties and disposal of such products to not disturb the recycling process.

6.2.4. Reusables

Reuse has the lowest rate of development because, as far as could be ascertained, reusable, flexible plastic packaging is not represented in the (Dutch) market. However, reuse is an increasingly important topic as it is in line with the policy goals of achieving a CE in 2050 and can be considered extremely valuable in terms of circularity. Reusable packaging reduces material use and tackles the plastic soup problem as it prevents environmental leakage. Furthermore, it can be combined with different paths, such as bioplastic. Nonetheless, as highlighted, the reuse of plastic packaging is challenging due to limited cleaning capabilities.

A lack of knowledge on the topic is apparent among the value chain. Therefore, policies should primarily focus on developing the desirable know-how for implementing the path in the sector. Implementation could be achieved by promoting and funding experimentation so that solutions could be developed. Moreover, policies should highlight the advantages of reusability to plastic procurers and reward innovative solutions for utilizing any plastic producers' losses in the transition. Finally, educating consumers will play a significant role in the acceleration of the path. Policies should orient themselves toward precisely informing consumers about the advantages of reusability so that the concept maintains its original value and products are not frequently disposed of.

7. DISCUSSION

Using the MIS framework and identifying the barriers and drivers of the four paths, this master's thesis attempted to provide more insights into the transition to a CE for flexible plastic packaging and better comprehend the paths and their interconnections. Furthermore, assessing societal challenges using such a framework aligns with the spirit of the Dutch Ministry of Economic Affairs and Climate by supporting the development of mission-driven innovation policies for tackling such socio-technical matters.

As a result, while the mission of circular flexible plastic packaging has gained ground in the circular agenda, insufficient actions are occurring to break down the old system and divert actors from their bad habits. Therefore, the mission is mostly driven by ambitious commitments rather than tangible actions. MR seems to be the most popular solution, driven by high experimentation, strong prioritization in the mission's agenda, and established support and advocacy, while a low reallocation of resources, the existence of negative discourse, and a lack of infrastructure for certain plastics are hampering further acceleration of the path. Bioplastics follow, led by high experimentation and development and the commercialization of such products. However, a negative reputation and low advocacy inhibit the further development of the path. The experimentation among waste suppliers, the high expectations of the value chain, and coalitions have stimulated the acceleration of CR. Nevertheless, the path is not estimated to be fully scalable for the next five years, while there is still a misconception regarding the exact definition of the path. Reusables are generally underperforming. Even though the value chain has identified the value of reusables and numerous actors support their extensive implementation, the desirable know-how is missing at the moment to transform those commitments into actions.

The paths' interrelationships also reinforce the identified drivers and barriers. CR appears to complement MR at present since the acceleration of the latter stimulates the development of the former. However, the two paths may also develop a competing relationship concerning resources and attention in the future, with critical consequences for the mission. Bioplastics also have a dual relationship with MR. First, the two paths complement each other because a high-quality recyclate requires the proper disposal of bio-based and biodegradable plastic packaging. Yet, they also have a competing relationship. Many plastic producers claim circularity by incorporating bioplastics into their portfolios instead of fully recyclable products due to the advantages of the materials' functional properties or cost and time efficiency. Finally, MR also has a competing relationship with reusables. Recyclability has captured most of the attention and resources in the mission, with the total value chain associating itself with the path in one way or another and neglecting reusability, despite its equal significance.

7.1. Limitations and Further Research

This research systematically assesses the flexible plastic packaging domain based on a thorough literature review from 2015–2021. To better understand the drivers and barriers of the paths, future research should focus on interviewing the relevant actors within the value chain. Interviews with waste suppliers, PROs, recyclers, and converters could assist in obtaining deeper explanations of each path and gain insights from different perspectives in the value chain. Furthermore, including end-consumers in future research would be of great consequence. Insights into consumers' behaviors and their operations regarding the topic could be gathered with questionnaires distributed to several customer clusters. In this way, more efficient and concrete policy development could take place and further accelerate the transition to a CE in the flexible plastic packaging domain.

In missions, social problems and innovative solutions interact; this increases the complexity of a structural-functional analysis compared to a conventional one TIS. Therefore, in order to maintain the overview and feasibility, some aspects may lose their level of detail (Wesseling & Meijerhof, n.d.). Furthermore, the MIS framework is relatively new, and the indicators used in this research need to be further improved and specified for this framework in particular. In addition, more empirical cases are necessary to better solidify an appropriate set of indicators specifically for MIS. In the analysis, the blind coding was conducted by one individual. However, to ensure the objectivity and validity of the result, the database was reviewed three times. Moreover, the analysis does not include any literature written in Dutch, despite the specificity of the scope (the NL).

8. CONCLUSION

This master's thesis aimed to investigate the transition to a CE in the Dutch flexible plastic packaging sector by identifying the main drivers and barriers to that transition. The MIS framework was applied, a relatively new framework that seeks to comprehend and intervene in the dynamics associated with solving a mission (Hekkert et al., 2020). Secondary data were used for the problem-solution diagnosis and the structural analysis. The NL Plastic Pact document identified the four paths (MR, CR, bioplastics, reusables) as the most appropriate solutions, while a literature review revealed four actor categories: waste suppliers, producers responsibility organizations, recyclers and converters, and third parties. A historical event analysis was conducted to assess the functionality of the paths and identify the drivers and barriers within the mission.

The majority of events indicated that most actions and commitments aim to build up a new system rather than break down the old one. While the CE transition is underway, several barriers regarding the paths are hampering that transition. In particular, for MR, the lack of infrastructure for certain plastic materials, the low numbers of actually recyclable products in the market, and some confusing aspects in the regulatory framework regarding the use of RC are disrupting further development of the path. For CR, misconceptions about the exact definition of the path and what it entails, and the expectation that it will be commercialized after five years, constitute the principal barriers within the analysis. The development of bioplastics within the mission is negatively affected by the complex and unclear regulatory framework in terms of product design requirements and the recovery of bioplastics, which results in misunderstandings and confusion for several actors regarding the disposal of such products. Finally, the reusable path's main barriers are low experimentation and a lack of know-how in developing reusable plastic packaging. As a result, there is weak market creation for these products, while insufficient actors are reallocating their resources to develop this path. Simultaneously, those barriers are also being reinforced by the competing interconnections among the paths, such as MR with bioplastics and reusables, and the potential for a competing relationship with CR in the future. Such insights can contribute to the extension of knowledge regarding the development of the paths, their interconnections, and the transition in general, while constituting a solid basis for further research and the improvement of policy development to achieve a CE in the flexible plastic packaging industry.

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10. APPENDICES

10.1. Protocol for research involving human subjects.

Faculty of Geosciences Department of Sustainable Development and Department of Human Geography and Spatial Planning

July 1, 2020

General Framework

This protocol is based on the UU protocol 'Principles regarding experimental research with human test subjects'. It applies to research categories A (1.5 metres distance guaranteed), B (1.5 metres distance not guaranteed, no human contact) and C (physical contact unavoidable). Several measures are described in the UU protocol. The details are presented below.

Details

Logistics

This protocol serves as a guideline for starting research involving human subjects that takes place off campus/on location during national Corona measures. By *on-site research involving human subjects*, we mean surveys and interviews for which limited direct contact with respondents is necessary as well as group interviews and small-sized workshops (of up to 30 people). This protocol deals with a number of practical aspects relating to safety and hygiene that need to be taken into account when starting on-site research involving human subjects.

Principles / Basic ideas

1. On-site research involving human subjects can be initiated as long as the protocol is then followed.
2. The measures stipulated by the government as well as the RIVM guidelines have been taken as the starting point.
3. On-site work is carried out only on a voluntary basis, and this applies to both the researcher and the participant.
4. On-site research involving human subjects may not be carried out if one of the people involved has cold symptoms, lives with people with Corona-related complaints or belongs to one of the high-risk groups or has been notified by GGD that they have been in contact with a person with a Corona infection.
5. If, while carrying out the on-site research, a researcher develops complaints such as mentioned in section 2 or receives a notification about contact with an infected person, the researcher needs to go home immediately and must report this as soon as possible to the relevant supervisor as well as to the respondents or participants.
6. If, during the on-site research, a respondent or participant develops complaints or receives notification of contact with an infected person, the researcher needs to go home immediately and must report this as soon as possible to the relevant supervisor.

7. The researcher must keep a 1.5 metre distance from the respondents or participants at all times. The participants must also keep a 1.5 metre distance from each other, unless they live in the same household and/or are children under the age of 12.
8. If several respondents or participants are present on the site, it must be warranted that they can maintain the Corona safety and distance measures appropriate to their age group. The meeting room should also be easy to ventilate.
9. If respondents are the responsibility of a company, government agency or social organisation, then the guidelines of the organisation in question are leading, and the researcher must comply with these guidelines.
10. Researchers must keep a 1.5 metre distance from each other, unless proximity/contact is necessary for the research involved. In such cases, personal protective equipment such as face masks and gloves should be used. The faculty will provide all personal protective equipment necessary to enable the on-site research involving human subjects. The measures necessary for each research category (A, B and C) are described in greater detail in the general protocol for research involving human subjects.
11. These guidelines apply to research in the Netherlands and abroad, taking into account national and international agreements regarding travel and residence. Research abroad is possible, provided the Ministry of Foreign Affairs has not given negative travel advice (code orange or red) and the country concerned has itself not announced any travel restrictions.
12. For research involving human subjects that takes place in the Netherlands, the explicit consent of the supervisor is not required. If such research takes place abroad, the explicit consent (oral or written) of the direct supervisor is necessary, also with a view to safety and insurance.

Contact with respondents and participants of workshops.

The measures in the UU protocol for category C research apply when in contact with respondents. More specifically:

- Do not shake hands.
- Sneeze and cough in the crook of your elbow.
- Researchers must wash their hands properly for at least 20 seconds before and after each contact with a respondent. Suitable hand washing equipment is required on-site (i.e. disinfectants must be available).
- If respondents or participants need to work with test material or questionnaires, they must wash their hands properly for at least 20 seconds before the start of the test or interview and also after the study has ended. This should also be done after the material is handed in to the researcher by the participants.

Transport

Preferably, the researcher uses his own transport to travel to the research location. If possible, public transport should not be used. However, if it is unavoidable and public transport is used, the researcher must comply with the applicable national regulations regarding travel on public transport in times of Corona.

Correspondence with respondents/participants

Prior to on-site research, respondents and/or participants will be contacted by telephone or email to explain the Corona-related precautionary measures during the research, as well as to discuss any arrangements and requests from the institution where the respondents or participants work. If desired, the 'Protocol on on-site research involving human subjects' will be sent.

Stay home rules for researcher, respondent and participant.
If the researcher, respondent or participant has one or more of the following (respiratory) complaints, the on-site survey cannot be carried out.

- Rhinitis, or the common cold.
- Coughing.
- Difficulty breathing/shortness of breath.
- A fever higher than 38 °C.
- If a researcher, respondent or participant has tested positive for Corona, they should stay home for at least 14 days. They may then only be involved in the research again if they are free of complaints after these 14 days.
- If someone in the household of the researcher, respondent or participant has a fever of more than 38 °C and/or shortness of breath, this researcher, respondent or participant should also stay at home.

It needs to be checked whether the respondents/participants have complied with these requirements, both when arranging the research and at the start of it.

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10.2. Database

General details											MIS functions											
Year	Month	Date	Event description (text, summary, website, etc.)	Event Type	Source	Actors	Type of organization (New entrant, incumbent, government or knowledge institute)	Pathways	Build up new system	Break down old system	F1: Entrepreneurial Activities	F2: Knowledge Development	F3: Knowledge Diffusion	F4: Problem directonality	F4: Solution directonality	F5: Market Formation	F6: Resources financial	F6: Resources (human)	F6: Resources (material)	F7: Creation of legitimacy	F8: Coordination	OTHER (uncertain)
2015	Jan	1	The Dutch Environmental Act (*Omgevingswet*) was adopted by parliament on 1 July 2015 and is expected to enter into force in 2018.	Circular initiative	https://uk.practicallaw.thomsonreuters.com/1-619-6750?transitionType=Default&contextData=(sc.Default)&firstPage=true	Producer Responsibility Organizations	EU parliament, Dutch Government	General	1						(+)1							
			In 2015, the Netherlands was one of the 193 members of the UN to adopt the 2030 agenda for sustainable development, operationalised in terms of the 17 SDGs.	Participation	https://www.sdgnederland.nl/wp-content/uploads/2019/06/SDG-Dutch-context-2019_web.pdf	Producer Responsibility Organizations	Dutch Government	General	1											(+)1		
2015	Jan	1	The Amsterdam Economic Board has initiated a circular economy programme in January 2015	Circular initiative	https://amsterdameconomicboard.com/en/initiative/transition-towards-a-circular-economy	Producer Responsibility Organizations	Amsterdam Economic Board	General	1						(+)1							
			The programme is in close cooperation with the Amsterdam Metropolitan Area governments, business, knowledge institutes and citizens	Participation	https://amsterdameconomicboard.com/en/initiative/transition-towards-a-circular-economy	Producer Responsibility Organizations	Amsterdam Metropolitan Area governments, business, knowledge institutes and citizens	General	1												(+)1	
2015	Jan	1	The introduction of PMD, the combined collection of plastic packaging, metal packaging and drink cartons in the Dutch recyling system.	New circular programme	https://www.wastematters.eu/news/plastic-recycling-leap-in-quality-needed	Recyclers		MR		1									(+)1			
2015	Jan	14	Netherlands-based plastics recycling firm QCP has selected technology providers for the first phase of its 100,000-metric ton capacity plant to be built at the Chemelot campus in the Netherlands	New plant	https://www.recyclingtoday.com/article/qcp-netherlands-plastic-recycling/	Recyclers	New entrants	MR	1										(+)1			
2015	Feb	11	Supermarket chain PLUS is introducing fruit containers that are no longer provided with a lid, but with foil	New initiative	https://kidv.nl/zacht-fruit-van-plus-in-nieuwe-verpakking	Waste supplier	Retailer	R	1						(+)1							
			Together with fruit and vegetable supplier The Greenery, PLUS investigated how less plastic can be used for thermoformed plastic trays	Partnership	https://kidv.nl/zacht-fruit-van-plus-in-nieuwe-verpakking	Waste supplier	Retailer	R	1							(+)1						
			As a result, PLUS introduces for the soft fruit containers with a resealable foil, which replaces the plastic lid	New initiative	https://kidv.nl/zacht-fruit-van-plus-in-nieuwe-verpakking	Waste supplier	Retailer	R	1										(+)1			
2015	Mar	19	A new series of masterbatches for polylactic acid (PLA) bioplastic was announced today by Teknor Apex Company.	New project	(March 19, 2015 Thursday). In Alliance with Takemoto, Teknor Apex Develops Masterbatches That Boost HDT and Impact and Cut Cycles for PLA Biopolymers. *Product News Network*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5FJB-6PS1-DYT8-T0CB-00000-00&context=1516831.	Waste supplier	Plastic Producer,Incumbent	Bioplastic	1		(+)1											
			The project is in alliance with Takemoto and NatureWorks	New project	(March 19, 2015 Thursday). In Alliance with Takemoto, Teknor Apex Develops Masterbatches That Boost HDT and Impact and Cut Cycles for PLA Biopolymers. *Product News Network*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5FJB-6PS1-DYT8-T0CB-00000-00&context=1516831.	Waste supplier	Plastic Producer,Incumbent	Bioplastic	1											(+)1		
2015	Mar	29	Cellulac, the biochemical company has signed a five-year partnership deal with Pharmafilter.	Deals between industries	(March 29, 2015). Cellulac signs partnership deal worth EUR 35 million. *Sunday Business Post*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5FMM-CBB1-F0BB-S0TM-00000-00&context=1516831.	Waste supplier	Plastic producer, New entrant	Bioplastic	1				(+)1									
			Cellulac will supply Pharmafilter with biodegradable plastics made from dairy and agricultural feedstocks which it can use in turn to make disposable products to be used in hospitals	Deals between industries	(March 29, 2015). Cellulac signs partnership deal worth EUR 35 million. *Sunday Business Post*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5FMM-CBB1-F0BB-S0TM-00000-00&context=1516831.	Waste supplier	Plastic producer, New entrant	Bioplastic	1										(+)1			

			Pharmafilter, which is backed by the Dutch state, is working with five hospitals in the Netherlands and Denmark. It supplies each hospital with 600 tonnes of bioplastics per annum which it will now source from Cellulac	Deals between industries	(March 29, 2015). Cellulac signs partnership deal worth EUR 35 million. *Sunday Business Post.* https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5FMM-CBB1-F0BB-S0TM-00000-00&context=1516831.	Third party	Technology and equipement supplier, New entrant	Bioplastic		1							(+)1				
2015	April	5	Calysta is using biotechnology to enable development of sustainable consumer products from methane, the principal component of natural gas	New project	Jim Lane. (April 5, 2015 Sunday). Calysta: Biofuels Digest's 2015 5-Minute Guide. *Biofuels Digest.* https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5FP4-2W41-F03R-N4F2-00000-00&context=1516831.	Third party	Technology and equipement supplier, New entrant	Bioplastic	1		(+)1										
2015	May	7	In the Netherlands, bioplastics are already being used by Albert Heijn, The Greenery, M+N, KLM, Rabobank, Desch, Heineken and Grolsch	Participation	https://news.bio-based.eu/holland-bioplastics-aims-to-put-bioplastics-on-the-map-in-the-netherlands/	Waste supplier	Retailer	Bioplastic	1									(+)1			
			Holland Bioplastics was founded to share as much knowledge as possible about bioplastics, and to connect relevant parties. The aim is to provide clear, unified information about the possibilities of bioplastics.	Guidance	https://news.bio-based.eu/holland-bioplastics-aims-to-put-bioplastics-on-the-map-in-the-netherlands/	Producer Responsibility Organizations	Holland Bioplastics	Bioplastic	1				(+)1								
			The four founding partners are Corbion, NatureWorks, Bio4Pack and Braskem	Participation	https://news.bio-based.eu/holland-bioplastics-aims-to-put-bioplastics-on-the-map-in-the-netherlands/	Producer Responsibility Organizations	New entrants, incumbent	Bioplastic	1									(+)1			
			Those partners are founding the project as well	Financing	https://news.bio-based.eu/holland-bioplastics-aims-to-put-bioplastics-on-the-map-in-the-netherlands/	Producer Responsibility Organizations	Corbion, NatureWorks, Bio4Pack and Braskem	Bioplastic	1												
			Participation is open to all those who are involved directly or indirectly in the production, manufacture, research and / or marketing of bioplastics.	Participation	https://news.bio-based.eu/holland-bioplastics-aims-to-put-bioplastics-on-the-map-in-the-netherlands/	Producer Responsibility Organizations	New entrants, incumbent	Bioplastic	1							(+)1					
2015	May	11	Aquanos International is part of a Netherlands based financial group that facilitates large-scale infrastructure transactions in the areas of Water Treatment, Energy Production and Transport. The process the company uses creates valuable by-products such as bioplastics	Leading Organization	(May 11, 2015 Monday). Wastewater Wonders at the White House. *PR Newswire Europe.* https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5FYS-FYW1-JB72-10CB-00000-00&context=1516831.	Waste supplier	Water Treatment, Incumbent	Bioplastic	1		(+)1										
			The company announces meet-up with President Obama at prestigious Global Entrepreneurs' event	Leading Organization	(May 11, 2015 Monday). Wastewater Wonders at the White House. *PR Newswire Europe.* https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5FYS-FYW1-JB72-10CB-00000-00&context=1516831.	Producer Responsibility Organizations	American Government	Bioplastic	1						(+)1						
2015	Jun	11	New TPE Compounds Add Value to Consumer Products and Meet a Wide Range of Processing and End Use Requirements by Teknor Apex Company	New project	(June 11, 2015 Thursday). New TPE Compounds Add Value to Consumer Products and Meet a Wide Range of Processing and End Use Requirements. *Product News Network.* https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5G67-RNR1-JCB7-32T5-00000-00&context=1516831.	Waste supplier	Plastic Producer ,Incumbent	RC		1						(+)1					
			The company is headquartered in Pawtucket, RI, U.S.A. and operates thirteen facilities worldwide including the NL	Operations	(June 11, 2015 Thursday). New TPE Compounds Add Value to Consumer Products and Meet a Wide Range of Processing and End Use Requirements. *Product News Network.* https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5G67-RNR1-JCB7-32T5-00000-00&context=1516831.	Waste supplier	Plastic Producer ,Incumbent	RC	1									(+)1			
2015	Jul	8	FIRST2RUN project aims at demonstrating an integrated biorefinery for dry crops sustainable exploitation towards biobased materials production	New project	(July 8, 2015 Wednesday). FIRST2RUN: Flagship demonstration of an integrated biorefinery for dry crops sustainable exploitation towards biobased materials production. *TendersInfo - Project Notices.* https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5GD4-YYP1-F11P-X409-00000-00&context=1516831.	Producer Responsibility Organizations	Association,Biobased Industries joint undertake	Bioplastic	1				(+)1								
			Standardization, certification and dissemination activities will support the project in relation to increased marketability as well as social acceptability of developed biobased products in view of their penetration in the market	New initiative	(July 8, 2015 Wednesday). FIRST2RUN: Flagship demonstration of an integrated biorefinery for dry crops sustainable exploitation towards biobased materials production. *TendersInfo - Project Notices.* https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5GD4-YYP1-F11P-X409-00000-00&context=1516831.	Producer Responsibility Organizations	Association,Biobased Industries joint undertake	Bioplastic	1							(+)1					
2015	Jul	15	As of 1 January 2015, Dutch municipalities will be responsible for the collection, processing and marketing of recycled plastic	Guidance	https://resource.wur.nl/en/show/Recycling-plastic.htm	Producer Responsibility Organizations	Dutch Municipalities	MR, RC		1							(+)1				
2015	Jul	21	As part of a concept called PlasticRoad, VolkerWessels aims to build roads entirely from recycled plastic that has been salvaged from oceans and incineration plants.	New project	https://www.businessinsider.com/a-dutch-city-is-planning-to-build-roads-from-recycled-plastic-2015-7?international=true&r=US&IR=T	Waste supplier	Contructing Company ,Incumbent	RC	1		(+)1										

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2015	Sep	1	Action plan for Responsible and Sustainable Procurement by governments 2015-2020.	Guidance	https://www.pianoo.nl/en/sustainable-public-procurement/developments/action-plan-responsible-and-sustainable-procurement	Producer Responsibility Organizations	Dutch Goverment	MR, RC	1							(+)1							
2015	Sep	3	Veolia aquires Dutch Recycled Plastic Manufacturer AKG Kunststof Groep, a European market leader in the field of recycling and compounding of polypropylene.	Deals between industries	(September 3, 2015 Thursday). Veolia Acquires Recycled Plastic Manufacturer AKG Kunststof Groep and Further Enhances Its Position as a Reference Producer of Recycled Raw Materials. Business Wire. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5GV9-T1K1-JBG1-80SF-00000-00&context=1516831.	Waste supplier, Recyclers	Plastic Producer, Incumbent	RC	1									(+)1					
2015	Sep	4	The ADMIT BioSuccInnovate Consortium will investigate the use of agricultural wastes and residues, such as wheat and maize straw - as well as low-maintenance energy crops Elephant grass and willow - as the raw materials to produce biosuccinic acid, a chemical building block used in producing bioplastics.	Event	States News Service. (September 4, 2015 Friday). RESEARCHERS TO INVESTIGATE CREATING NEW PLASTICS FROM OLD STRAW. *States News Service*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5GVD-3B51-JCBF-S0X9-00000-00&context=1516831.	Producer Responsibility Organizations	EU parliament	Bioplastic	1					(+)1									
			The Consortium is an initiative of the Climate-KIC,	New initiative	States News Service. (September 4, 2015 Friday). RESEARCHERS TO INVESTIGATE CREATING NEW PLASTICS FROM OLD STRAW. *States News Service*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5GVD-3B51-JCBF-S0X9-00000-00&context=1516831.	Producer Responsibility Organizations	European Institute of Innovation and Technology,Climate KICK	Bioplastic	1												(+)1		
			Climate-KIC, Europe's largest public-private partnership which focuses on innovative ways to mitigate climate change	Partnership	States News Service. (September 4, 2015 Friday). RESEARCHERS TO INVESTIGATE CREATING NEW PLASTICS FROM OLD STRAW. *States News Service*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5GVD-3B51-JCBF-S0X9-00000-00&context=1516831.	Producer Responsibility Organizations	European Institute of Innovation and Technology,Climate KICK	Bioplastic	1													(+)1	
			The consortium is Funded by the European Institute of Innovation and Technology (EIIT)	Financing	States News Service. (September 4, 2015 Friday). RESEARCHERS TO INVESTIGATE CREATING NEW PLASTICS FROM OLD STRAW. *States News Service*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5GVD-3B51-JCBF-S0X9-00000-00&context=1516831.	Producer Responsibility Organizations	European Institute of Innovation and Technology,Climate KICK	Bioplastic	1									(+)1					
			The consortium partners include the Institute of Biological, Environmental and Rural Sciences (IBERS) at Aberystwyth University, French biorefining company CIMV and Reverdia, based in the Netherlands, which will contribute its Biosuccinium sustainable biosuccinic acid technology to the project	Participation	States News Service. (September 4, 2015 Friday). RESEARCHERS TO INVESTIGATE CREATING NEW PLASTICS FROM OLD STRAW. *States News Service*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5GVD-3B51-JCBF-S0X9-00000-00&context=1516831.	Producer Responsibility Organizations	European Institute of Innovation and Technology,Climate KICK	Bioplastic	1													(+)1	
2015	Sep	10	An exciting bioplastic packaging collaboration between Veuve Cliquot and biopacking developer Netherlands-based PaperFoam has been created	Deals between industries	(September 10, 2015 Thursday). Veuve Cliquot Shows Luxury Route to Market for Bio-based Packaging. Industrial Goods Monitor Worldwide. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5GWN-SJ11-F11P-X0SC-00000-00&context=1516831.	Waste supplier	Plastic producer, Incumbent, new entrant	Bioplastic	1					(+)1									
			PaperFoam worked with Aachen University on a formulation that keeps the packaging bio-based, while avoiding the moisture impact that feared from the Veuve Cliquot application	Deals between industries	(September 10, 2015 Thursday). Veuve Cliquot Shows Luxury Route to Market for Bio-based Packaging. Industrial Goods Monitor Worldwide. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5GWN-SJ11-F11P-X0SC-00000-00&context=1516831.	Producer Responsibility Organizations	Aachen University	Bioplastic	1				(+)1										
2015	Nov	25	The Western European bioplastics packaging market is in its growing stage. Though the products have been in the market for decades, they are currently being produced at a larger scale than before	Professional Publication	(November 25, 2015 Wednesday). Trends in Western European Bioplastics in Packaging Market. PR Newswire. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5HG1-HGG1-JB72-119P-00000-00&context=1516831.	Waste supplier	Plastic Producer	Bioplastic	1								(+)1						
			Countries with the highest utilization of bioplastics are the Netherlands, Germany, Italy, and England	Professional Publication	(November 25, 2015 Wednesday). Trends in Western European Bioplastics in Packaging Market. PR Newswire. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5HG1-HGG1-JB72-119P-00000-00&context=1516831.	Waste supplier	Plastic Producer	Bioplastic	1						(+)1								
2015	Dec	14	TNO, the Netherlands' Organisation for Applied Scientific Research has joined forces with the Dutch biopolymers producer Rodenburg. on the development of sanitary napkins made from biodegradable plastics	Deals between industries	https://www.bioplasticsmagazine.com/en/news/meldungen/2015-12-14-TNO-Rodenburg-cooperate-Bangledesh-project.php	Producer Responsibility Organizations	Organisation for Applied Scientific Research, Incumbent	Bioplastic	1					(+)1									
			The aim is to develop sanitary napkins made from biodegradable plastics	New project	https://www.bioplasticsmagazine.com/en/news/meldungen/2015-12-14-TNO-Rodenburg-cooperate-Bangledesh-project.php	Producer Responsibility Organizations	Organisation for Applied Scientific Research, Incumbent	Bioplastic	1			(+)1											
2016	Jan	1	Ellen MacArthur Foundation Report: The new plastic economy	Guidance	https://www.ellenmacarthurfoundation.org/publications/the-new-plastics-economy-rethinking-the-future-of-plastics	Producer Responsibility Organizations	EllenMAcArthur Foundation	General	1					(+)1									
2016	Jan	1	From Waste to Resource programme started by the Cabinet	New initiative	150727-en-annex-1-progress-of-the-actions-per-perational-objective-2015-en-ongecorr	Producer Responsibility Organizations	Dutch Government	MR, RC	1				(+)1										
			Through intensive collaboration with civil-society parties, actions were tightened, firmed up, and extended, with the aim of increasing support from society.	Participation	150727-en-annex-1-progress-of-the-actions-per-perational-objective-2015-en-ongecorr	Producer Responsibility Organizations	Dutch Government	MR, RC	1												(+)1		
			The goal of the Cabinet is that by 2020, the use of and impact on natural capital is fully factored into decisions by companies and government bodies.	New initiative	150727-en-annex-1-progress-of-the-actions-per-perational-objective-2015-en-ongecorr	Producer Responsibility Organizations	Cabinet	MR, RC	1						(+)1								
2016	Jan	1	Disposable **plastic** bags have been banned in Europe since **2016**, NL as well	Legislation	https://www.dufor.nl/uploads/files/TopDutch_The_New_Plastics_Economy.pdf	Producer Responsibility Organizations	Dutch Government	General		1							(+)1						
2016	Feb	12	The Dutch Cabinet outlined its plans for the restructuring of the economy to achieve a circular economy that makes optimum use of natural resources	New initiative	https://www.cbs.nl/-/media/_pdf/2018/29/circular-economy-what-we-want-to-know-and-can-measure-2018-netherlands.pdf	Producer Responsibility Organizations	Cabinet	General	1						(+)1								

2016	Mar	7	10,004 bottle caps were collected from the Dutch North Sea coastline during the 2016 Boskalis Beach Cleanup Tour	Successful Project	https://www.bottlebill.org/images/PDF/Dutch%20study%20on%20caps_Doppenrapport_EN_2017_DEF_small.pdf	Producer Responsibility Organizations	Organization, Boskalis Beach Cleanup Tour	MR, RC		1	(+)1											
			The Metropole region of Amsterdam has initiated an ambitious programme, called 'The Metropole region of Amsterdam as Circular Resources Hub'	New initiative	https://www.bottlebill.org/images/PDF/Dutch%20study%20on%20caps_Doppenrapport_EN_2017_DEF_small.pdf	Producer Responsibility Organizations	Metropole region of Amsterdam	MR, RC	1			(+)1										
			Two major sub-programmes: Circular procurement and Closing the loop of resource streams.	New initiative	https://www.bottlebill.org/images/PDF/Dutch%20study%20on%20caps_Doppenrapport_EN_2017_DEF_small.pdf	Producer Responsibility Organizations	Metropole region of Amsterdam	MR, RC	1			(+)1										
			The Board asked the Port of Amsterdam (as landowner) to approach a niche company identified by the Board as an expert in innovative plastic sorting techniques	Deals between industries	https://www.bottlebill.org/images/PDF/Dutch%20study%20on%20caps_Doppenrapport_EN_2017_DEF_small.pdf	Producer Responsibility Organizations	Dutch Economic Board	MR	1												(+)1	
			Chemical or feedstock recycling: This technology is currently being developed by innovative niche companies together with large established companies at national scale.	New project	https://www.bottlebill.org/images/PDF/Dutch%20study%20on%20caps_Doppenrapport_EN_2017_DEF_small.pdf	Waste supplier	Plastic producers	CR	1		(+)1											
			QCP (Quality Circular Polymers) says its mission is to provide brand owners and plastics converters with recycled-content polymers of high and consistent quality.	Goals/Targets	https://www.bottlebill.org/images/PDF/Dutch%20study%20on%20caps_Doppenrapport_EN_2017_DEF_small.pdf	Converter	New entrant	RC	1						(+)1							
			B+B Anlagenbau of Germany will provide equipment for the process of incoming bales of post-consumer plastic being converted to sorted clean flakes. KraussMaffei Berstorff of Germany will supply the extruders that transform the flakes into polypropylene and polyethylene compounds. AZO of Belgium will connect the material flows by providing material handling and transport systems	Deals between industries	https://www.bottlebill.org/images/PDF/Dutch%20study%20on%20caps_Doppenrapport_EN_2017_DEF_small.pdf	Recycler	Incumbent	RC	1							(+)1						
			QCP says it is starting its pre-marketing activities and is developing sustainable products for the packaging, automotive, building and electronics industries, together with brand owners and polyolefins converters.	New project	https://www.bottlebill.org/images/PDF/Dutch%20study%20on%20caps_Doppenrapport_EN_2017_DEF_small.pdf	Converter	New entrant	RC	1							(+)1						
			The Netherlands city has now offered VolkerWessels a pilot location to test PlasticRoad	Tasting phase of the project	https://www.bottlebill.org/images/PDF/Dutch%20study%20on%20caps_Doppenrapport_EN_2017_DEF_small.pdf	Waste supplier & PRO	Construction company, Incumbent	RC	1		(+)1											
			For the Netherlands until now, no attention has been given to the effectiveness of curbside collection of recyclables. This was due to a lack of data	Negative reputation	https://www.bottlebill.org/images/PDF/Dutch%20study%20on%20caps_Doppenrapport_EN_2017_DEF_small.pdf	Producer Responsibility Organizations	Dutch Government	MR		1						-1						
			Disadvantages of the bag-based system for the Netherlands are that Dutch legislation limits the number of bags carried per waste-collection employee and that there is an incentive for households to put as much waste as possible in each bag, which might makes them difficult to handle	Negative reputation	https://www.bottlebill.org/images/PDF/Dutch%20study%20on%20caps_Doppenrapport_EN_2017_DEF_small.pdf	Producer Responsibility Organizations	Dutch Government	MR, RC		1						-1						
2016	Apr	29	Dutch designer has already unveiled a concept he had developed whose aim was to help democratize and boost plastic recycling as his graduation project in Eindhoven University.	Leading Organizations	https://knowledge.ulprospector.com/4362/pe-diy-recycling-machines-dutch-designer-wants-recycle-precious-plastic/	Producer Responsibility Organizations	Eindhoven University	MR	1		(+)1											
2016	May	25	Conference about Bioplastic products and chemicals in Amsterdam	Event	https://bioplasticsnews.com/2016/05/25/bio-based-products-and-chemicals-amsterdam-may-24-252016/	Value chain	Value chain	Bioplastic	1			(+)1										
2016	Jun	2	According to Allers and Hoeben illegal dumping is not a serious problem in the Netherlands, as one would expect that many municipalities would have abolished user fees if this were the case and this has not happened (substantially).	Positive reputation	https://link-springer-com.proxy.library.uu.nl/article/10.1007/s10640-016-0027-1#ref-CR4	Producer Responsibility Organizations	Municipalities	MR		1					(+)1							
			Although the Netherlands has already invested heavily in recycling policies, this is still a big challenge as nowadays this rate is approximately 50 % on average and very few no municipalities have a rate above 65 %.	Negative reputation	https://link-springer-com.proxy.library.uu.nl/article/10.1007/s10640-016-0027-1#ref-CR5	Producer Responsibility Organizations	Municipalities	MR		1				-1								
			Several Dutch municipalities introduced unit-based pricing (UBP) of unsorted and compostable waste as a measure to stimulate both the separate collection of recyclables and a reduction in the total amount of waste	Legislation	https://link-springer-com.proxy.library.uu.nl/article/10.1007/s10640-016-0027-1#ref-CR6	Producer Responsibility Organizations	Municipalities	MR		1											(+)1	
			Recycling Netwerk, a coalition of environmental organisations, has been lobbying a parliamentary committee which was set to discuss the 'circular economy' and recycling targets	Lobbying	https://link-springer-com.proxy.library.uu.nl/article/10.1007/s10640-016-0027-1#ref-CR5	Producer Responsibility Organizations	Environmental organizations, Recycling Networl	MR	1												(+)1	
			Large share of recycling C&D waste is down-cycling	Negative reputation	https://link-springer-com.proxy.library.uu.nl/article/10.1007/s10640-016-0027-1#ref-CR6	Producer Responsibility Organizations	Environmental organizations, Recycling Network	MR, RC		1			-1									
			Only 50% of plastic packaging waste is recycled; the remainder is incinerated (recovered)	Negative reputation	https://link-springer-com.proxy.library.uu.nl/article/10.1007/s10640-016-0027-1#ref-CR7	Producer Responsibility Organizations	Environmental organizations, Recycling Network	MR		1			-1									
			For the Netherlands, empirical evidence suggest that one fifth to a quarter of the UBP-reduction in unsorted waste is due to better recycling of paper, glass and textile, which are collected free of charge	Legislation	https://link-springer-com.proxy.library.uu.nl/article/10.1007/s10640-016-0027-1#citeas	Producer Responsibility Organizations	Environmental organizations, Recycling Network	MR		1						(+)1						

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2016	Jul	1	The bioplastics & biopolymers market is projected to witness a CAGR of 12.0% from 2016 to reach a market size of USD 5.08 billion by 2021	Professional publication	(July 1, 2016 Friday). Research and Markets - Global Bioplastics & Biopolymers Market Trends & Forecasts 2016-2021 - BASF, Braskem & Corbion Dominates the $5.08 Billion Industry. *PR Newswire*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5K4R-0281-DXP3-R18F-00000-00&context=1516831.	Waste supplier	Plastic Producer	Bioplastic	1								(+)1						
			The growth of the market is attributed to the stringent environmental regulations across the globe, compelling the manufacturers to reduce the carbon content in their products	Legislation	(July 1, 2016 Friday). Research and Markets - Global Bioplastics & Biopolymers Market Trends & Forecasts 2016-2021 - BASF, Braskem & Corbion Dominates the $5.08 Billion Industry. *PR Newswire*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5K4R-0281-DXP3-R18F-00000-00&context=1516831.	Waste supplier	Plastic Producer	Bioplastic	1								(+)1						
			Another driving factor of growth is fluctuations in the prices of petroleum, forcing the companies to search for a stable source of raw material	Financing	(July 1, 2016 Friday). Research and Markets - Global Bioplastics & Biopolymers Market Trends & Forecasts 2016-2021 - BASF, Braskem & Corbion Dominates the $5.08 Billion Industry. *PR Newswire*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5K4R-0281-DXP3-R18F-00000-00&context=1516831.	Waste supplier	Plastic Producer	Bioplastic		1							(+)1						
2016	Jul	13	Global Industry Analysis, Market Size, Share, Growth, Trends 2016-2023: Published report	Professional publication	(July 13, 2016 Wednesday). Plastic Recycling - an Innovation That Redefines Recycling for Greener Future: Global Plastic Waste Recycling Industry Survey and Trends Analysis 2023. *ReleaseWire*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5K78-K6C1-JCMN-Y1CM-00000-00&context=1516831.	Producer Responsibility Organizations	Knowledge institution, Newstex	RC	1							(+)1							
			Applications of recycled content are escalating due to more advanced recycling technologies. Density of plastic waste is expected to increase.	Knowledge Sharing	(July 13, 2016 Wednesday). Plastic Recycling - an Innovation That Redefines Recycling for Greener Future: Global Plastic Waste Recycling Industry Survey and Trends Analysis 2023. *ReleaseWire*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5K78-K6C1-JCMN-Y1CM-00000-00&context=1516831.	Third party	Knowledge institution, Newstex	RC		1		(+)1											
			The more established techiques are mechanical rexyxling and incineration	Knowledge Sharing	(July 13, 2016 Wednesday). Plastic Recycling - an Innovation That Redefines Recycling for Greener Future: Global Plastic Waste Recycling Industry Survey and Trends Analysis 2023. *ReleaseWire*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5K78-K6C1-JCMN-Y1CM-00000-00&context=1516831.	Third party	Knowledge institution, Newstex	MR		1				-1									
2016	Aug	25	The Netherlands is progressing to a ban on microplastics used in everyday household products from toothpaste to shower gels and cosmetics that will take effect by the end of 2016	Goals/Targets	Jim Lane. (August 25, 2016 Thursday). Microbeads. Reviled, yes. Useful, yes. What's the alternative?. *Biofuels Digest*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5KJ8-N7X1-JCMN-Y3B4-00000-00&context=1516831.	Producer Responsibility Organizations	Dutch Government	MR, RC		1							(+)1						
2016	Sep	14	A Circular Economy in the Netherlands by 2050 (Published report)	Guidance	https://www.government.nl/binaries/government/documents/policy-notes/2016/09/14/a-circular-economy-in-the-netherlands-by-2050/17037+Circulaire+Economie_EN.PDF	Producer Responsibility Organizations	Dutch Government	General	1						(+)1								
2016	Oct	5	A Dutch scheme for recycling household plastic waste has been battered by environment agencies, who have written to MPs saying the results are 'woefully' poor	Negative reputation	https://www.dutchnews.nl/news/2016/10/plastic-heroes-recycling-scheme-takes-a-battering/	Third party	Environmental organizations	MR		1						-1							
2016	Oct	29	Dutch authorities recently backed a pioneering scheme to 3D print a full-sized house in the heart of the city	Financing	By Gavin Haines, Travel writer. (October 29, 2016 Saturday). 10 amazing things you probably didn't know about Amsterdam. *telegraph.co.uk*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5M23-V9C1-JCJY-G48K-00000-00&context=1516831.	Producer Responsibility Organizations	Dutch authorities	Bioplastic MR	1			(+)1											
			The project is the brainchild of DUS Architects, which recently printed a cabin in Amsterdam Noord, the onetime industrial wasteland that's fast becoming the city's hippest new suburb	New project	By Gavin Haines, Travel writer. (October 29, 2016 Saturday). 10 amazing things you probably didn't know about Amsterdam. *telegraph.co.uk*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5M23-V9C1-JCJY-G48K-00000-00&context=1516831.	Waste supplier	Construction Company, New entrant	Bioplastic MR	1									(+)1					
			the diminutive dwelling was printed with bio-plastic and can be completely recycled (or, rather, reprinted)	New project	By Gavin Haines, Travel writer. (October 29, 2016 Saturday). 10 amazing things you probably didn't know about Amsterdam. *telegraph.co.uk*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5M23-V9C1-JCJY-G48K-00000-00&context=1516831.	Waste supplier	Construction Company, New entrant	Bioplastic MR	1			(+)1											
			Available for short-term lets, as of 2017,	New project	By Gavin Haines, Travel writer. (October 29, 2016 Saturday). 10 amazing things you probably didn't know about Amsterdam. *telegraph.co.uk*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5M23-V9C1-JCJY-G48K-00000-00&context=1516831.	Waste supplier	Construction Company, New entrant	Bioplastic MR	1			(+)1											
2016	Nov	17	Global integrated energy producer and provider Total and Corbion are joining forces to develop bioplastics by creating a 50/50 joint venture to produce and market polylactic (PLA) polymers	Leading Organizations	The Nation. (November 17, 2016 Thursday). @HD2 B1 briefs head;PLA polymerisation plant. *The Nation (Thailand)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5M66-3BR1-DYTP-P012-00000-00&context=1516831.	Third party	Energy producer, New entrant	Bioplastic	1								(+)1						
			The new company will be based in the Netherlands and will launch operations in the first quarter of 2017,	New project	The Nation. (November 17, 2016 Thursday). @HD2 B1 briefs head;PLA polymerisation plant. *The Nation (Thailand)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5M66-3BR1-DYTP-P012-00000-00&context=1516831.	Third party	Energy producer, New entrant	Bioplastic	1								(+)1						
			The project needs to be subjected to regulatory approvals.	New project	The Nation. (November 17, 2016 Thursday). @HD2 B1 briefs head;PLA polymerisation plant. *The Nation (Thailand)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5M66-3BR1-DYTP-P012-00000-00&context=1516831.	Producer Responsibility Organizations	Dutch Government	Bioplastic	1						(+)1								
2016	Nov	25	Challenges in the CE in the NL (Report): Recycling municipal waste is only 51%, while the de EU target for 2030 is 65%	Negative reputation	http://www.conama.org/conama/download/files/conama2016/STs%202016/1998972403_ppt_HHuisman.pdf	Producer Responsibility Organizations	Municipalities	MR		1						-1							
2016	Dec		The Learning Center Plastic Packaging Waste (LCKVA) has conducted research into the influence of various collection systems on the composition of the collected plastic / PMD packaging waste	Guidance	https://kidv.nl/samenstelling-ingezameld-kunststof-pmd-verpakkingen	Third party	The Learning Center Plastic Packaging Waste	MR	1					(+)1									
			The research, which was carried out by Eureco and Wageningen University, is divided into two phases	Partnership	https://kidv.nl/samenstelling-ingezameld-kunststof-pmd-verpakkingen	Third party	The Learning Center Plastic Packaging Waste	MR	1													(+)1	
			This first part of the study shows that the chosen collection system (only Plastic / Plastic & Drinking cartons / Plastic, Metal & Drinking cartons) has little effect on the purity of the collected material	New project	https://kidv.nl/samenstelling-ingezameld-kunststof-pmd-verpakkingen	Third party	The Learning Center Plastic Packaging Waste	MR	1								(+)1						

			The degree of purity of the PMD appears to be highly dependent on the frequency with which the residual waste is collected.	Successful Project	https://kidv.nl/samenstelling-ingezameld-kunststof-pmd-verpakkingen	Third party	The Learning Center Plastic Packaging Waste	MR	1						(+)1								
			The research shows that plastic packaging waste becomes less pure as the frequency of collection decreases	Negative reputation	https://kidv.nl/samenstelling-ingezameld-kunststof-pmd-verpakkingen	Third party	The Learning Center Plastic Packaging Waste	MR	1										-1				
			In addition, the PMD is less pure in municipalities that work with reverse collection (separate flows at home, dispose of residual waste) than in municipalities where residual waste is collected at home	Negative reputation	https://kidv.nl/samenstelling-ingezameld-kunststof-pmd-verpakkingen	Producer Responsibility Organizations	Dutch Municipalities	MR	1										-1				
2017	Jan	1	The Consortium for a Coherent European Enhanced Landfill Management Strategy project (COCOON) by the EU	New project	energy producer and provider	Producer Responsibility Organizations	Landfill Management Strategy project (COCOON)	MR	1					(+)1									
2017	Jan	25	More than 180 parties signed the National Raw Materials Agreement in The Hague	Agreement	States News Service. (January 25, 2017 Wednesday). MORE THAN 180 SIGNATORIES FOR THE NATIONAL RAW MATERIALS AGREEMENT. *States News Service*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5MPY-D741-JCBF-S1JH-00000-00&context=1516831.	Value chain		General	1												(+)1		
			The document contains agreements on having the Dutch economy operate on the basis of reusable raw materials.	Agreement	States News Service. (January 25, 2017 Wednesday). MORE THAN 180 SIGNATORIES FOR THE NATIONAL RAW MATERIALS AGREEMENT. *States News Service*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5MPY-D741-JCBF-S1JH-00000-00&context=1516831.	Producer Responsibility Organizations		R	1						(+)1								
			Signing on behalf of the Cabinet were Minister for the Environment Dijksma and Minister Kamp (Economic Affairs)	Agreement	States News Service. (January 25, 2017 Wednesday). MORE THAN 180 SIGNATORIES FOR THE NATIONAL RAW MATERIALS AGREEMENT. *States News Service*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5MPY-D741-JCBF-S1JH-00000-00&context=1516831.	Producer Responsibility Organizations	Cabinet	R	1						(+)1								
			The Dutch business community was represented by Hans de Boer (VNO-NCW) and Michal van Straalen (MKB-Nederland).	Agreement	States News Service. (January 25, 2017 Wednesday). MORE THAN 180 SIGNATORIES FOR THE NATIONAL RAW MATERIALS AGREEMENT. *States News Service*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5MPY-D741-JCBF-S1JH-00000-00&context=1516831.	Waste suppliers, Recyclers, Converters	Dutch business community	R	1						(+)1								
			Minister Kamp also sees opportunities for the Dutch economy through cost savings and the creation of a new manufacturing industry:	Goals/Targets	States News Service. (January 25, 2017 Wednesday). MORE THAN 180 SIGNATORIES FOR THE NATIONAL RAW MATERIALS AGREEMENT. *States News Service*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5MPY-D741-JCBF-S1JH-00000-00&context=1516831.	Producer Responsibility Organizations	Cabinet	R	1											(+)1			
			According to Michal van Straalen of MKB-Nederland (organisation representing small and medium-sized businesses), small innovative companies in particular can play an important role through innovations that break with existing habits and processes	Intermediates	States News Service. (January 25, 2017 Wednesday). MORE THAN 180 SIGNATORIES FOR THE NATIONAL RAW MATERIALS AGREEMENT. *States News Service*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5MPY-D741-JCBF-S1JH-00000-00&context=1516831.	Recyclers, Converters	Medium scale business association	MR		1							(+)1						
2017	April	4	Member of European Parliament Gerben-Jan Gerbrandy has urged the European Commission to take plastics recycling seriously in its upcoming plastics strategy later this year.	Goals/Targets	(April 4, 2017 Tuesday). MEP urges European Commission to take plastics recycling seriously. *Industrial Goods Monitor Worldwide*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5N7K-52C1-F11P-X1X4-00000-00&context=1516831.	Producer Responsibility Organizations	EU Commission	MR	1							(+)1							
			Later this year, the European Commission will publish a strategy on plastics and it will be based on three fundamental problems with plastics, he said	Guidance	(April 4, 2017 Tuesday). MEP urges European Commission to take plastics recycling seriously. *Industrial Goods Monitor Worldwide*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5N7K-52C1-F11P-X1X4-00000-00&context=1516831.	Producer Responsibility Organizations	EU Commission	General		1					(+)1								
			Citing the three proposals put forward by the Ellen MacArthur Foundation for redesigning, reusing and recycling plastics packaging, he said the decision makers at the European Commission should use the findings of the EMF for the plastics strategy later this year.	Financing	(April 4, 2017 Tuesday). MEP urges European Commission to take plastics recycling seriously. *Industrial Goods Monitor Worldwide*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5N7K-52C1-F11P-X1X4-00000-00&context=1516831.	Producer Responsibility Organizations	Ellen MacArhur Foundation	MR, R	1					(+)1									
			Plastics Recycling Show Europe is held in Amsterdam 29-30 March. The event is organised by Crain Communications, publisher of Plastics News Europe.	Event	(April 4, 2017 Tuesday). MEP urges European Commission to take plastics recycling seriously. *Industrial Goods Monitor Worldwide*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5N7K-52C1-F11P-X1X4-00000-00&context=1516831.	Recyclers, Converters	Incumbent	General	1					(+)1									

			In a plenary session of the European Parliament on 14 March, MEPs voted for legislation for the European Union to aim for a recycling rate target of 70% by 2030	Legislation	(April 4, 2017 Tuesday). MEP urges European Commission to take plastics recycling seriously. *Industrial Goods Monitor Worldwide*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5N7K-S2C1-F11P-X1X4-00000-00&context=1516831.	Producer Responsibility Organizations	Dutch Government	MR		1				(+)1								
			For packaging materials, including paper, cardboard, plastics, glass, metal and wood, MEPs proposed an 80% target for 2030, with interim 2025 targets for each material.	Goals/Targets	(April 4, 2017 Tuesday). MEP urges European Commission to take plastics recycling seriously. *Industrial Goods Monitor Worldwide*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5N7K-S2C1-F11P-X1X4-00000-00&context=1516831.	Producer Responsibility Organizations	Dutch Government	MR		1				(+)1								
			MEPs also supported waste package plans for the EU to limit the share of landfilling to 5% and to deliver a 50% reduction in food waste by 2030.	Goals/Targets	(April 4, 2017 Tuesday). MEP urges European Commission to take plastics recycling seriously. *Industrial Goods Monitor Worldwide*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5N7K-S2C1-F11P-X1X4-00000-00&context=1516831.	Producer Responsibility Organizations	Dutch Government	MR		1				(+)1								
2017	April	20	Biology- based factories could become very important, producing anything from aviation fuel to plastics are on their way	New project	Dick Ahlstrom. (April 20, 2017 Thursday). Is humble yeast the next wonder product?; Irish researchers aim to push yeast engineering to a whole new level. *The Irish Times*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5NC0-93M1-JC8Y-84WH-00000-00&context=1516831.	Waste suppliers	New entrants	CR	1		(+)1											
			Those factories are part of The four-year research project with a EUR 6.3 million budget from the EU.	Financing	Dick Ahlstrom. (April 20, 2017 Thursday). Is humble yeast the next wonder product?; Irish researchers aim to push yeast engineering to a whole new level. *The Irish Times*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5NC0-93M1-JC8Y-84WH-00000-00&context=1516831.	Producer Responsibility Organizations	EU, Research program	CR	1								(+)1					
			It is being led by University College Cork	Coalition	Dick Ahlstrom. (April 20, 2017 Thursday). Is humble yeast the next wonder product?; Irish researchers aim to push yeast engineering to a whole new level. *The Irish Times*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5NC0-93M1-JC8Y-84WH-00000-00&context=1516831.	Producer Responsibility Organizations	University College Cork	CR	1			(+)1										
			It includes 10 partners: UCC and Irish spin-out UCC Academy along with scientists and companies in Germany, Sweden, the Netherlands and France.	Particiaption	Dick Ahlstrom. (April 20, 2017 Thursday). Is humble yeast the next wonder product?; Irish researchers aim to push yeast engineering to a whole new level. *The Irish Times*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5NC0-93M1-JC8Y-84WH-00000-00&context=1516831.	Producer Responsibility Organizations	Government, Industry	CR	1											(+)1		
2017	April	21	A recent report from Greenpeace has condemned the world's largest soft drinks producers for not doing enough to address ocean pollution caused by plastic bottles	Negative reputation	Ben Cooper. (April 21, 2017 Friday). Why is the soft drinks sector losing the recycling game? - Sustainability Spotlight. *just-drinks global news*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5NC9-HYJ1-F14X-V188-00000-00&context=1516831.	Producer Responsibility Organizations	GreenPeace	R	1					-1								
			The report is particularly critical of the lack of progress on bottle re-use which suggests to Ben Cooper that this may have to feature more prominently in sustainability strategies if further damaging criticism is to be avoided.	Negative reputation	Ben Cooper. (April 21, 2017 Friday). Why is the soft drinks sector losing the recycling game? - Sustainability Spotlight. *just-drinks global news*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5NC9-HYJ1-F14X-V188-00000-00&context=1516831.	Producer Responsibility Organizations	GreenPeace	R	1			-1										
			Among these, Greenpeace calls out the lack of "commitments, targets or timelines to reduce the amount of single-use plastic bottles they use"	Negative reputation	Ben Cooper. (April 21, 2017 Friday). Why is the soft drinks sector losing the recycling game? - Sustainability Spotlight. *just-drinks global news*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5NC9-HYJ1-F14X-V188-00000-00&context=1516831.	Producer Responsibility Organizations	GreenPeace	R	1					-1								
			Coca-Cola GB says its plastic bottles now contain 25% recycled material and it has committed to increase this to 40% by 2020	Leading Organization	Ben Cooper. (April 21, 2017 Friday). Why is the soft drinks sector losing the recycling game? - Sustainability Spotlight. *just-drinks global news*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5NC9-HYJ1-F14X-V188-00000-00&context=1516831.	Waste supplier	Retailer, Incumbent	RC	1					(+) 1								
			Louisa Casson, oceans campaigner at Greenpeace, says the performance of the six globally on recycled content is "pretty patchy". According to the report, the six companies use a combined average of just 6.6% recycled plastic in their bottles	Negative reputation	Ben Cooper. (April 21, 2017 Friday). Why is the soft drinks sector losing the recycling game? - Sustainability Spotlight. *just-drinks global news*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5NC9-HYJ1-F14X-V188-00000-00&context=1516831.	Producer Responsibility Organizations	GreenPeace	RC	1					-1								
			In response, PepsiCo says it is "committed to designing 100% of our packaging to be recoverable or recyclable by 2025, while partnering to significantly increase packaging recovery and recycling rates".	Leading Organization	Ben Cooper. (April 21, 2017 Friday). Why is the soft drinks sector losing the recycling game? - Sustainability Spotlight. *just-drinks global news*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5NC9-HYJ1-F14X-V188-00000-00&context=1516831.	Waste supplier	Retailer, Incumbent	MR	1					(+) 1								
	May	23	2nd International Recycling Forum on Agricultural Plastics	Event	Ben Cooper. (April 21, 2017 Friday). Why is the soft drinks sector losing the recycling game? - Sustainability Spotlight. *just-drinks global news*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5NC9-HYJ1-F14X-V188-00000-00&context=1516831.	Value chain	Forum	MR	1				(+) 1									
			According to Jan Bauer, commercial director of RIGK GmbH and the EPRO (the European Association of Plastics Recycling and Recovery Organisations) working group on recycling plastics from agriculture, the significant potential for recycling such plastics often still remains untapped.	Negative reputation	Ben Cooper. (April 21, 2017 Friday). Why is the soft drinks sector losing the recycling game? - Sustainability Spotlight. *just-drinks global news*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5NC9-HYJ1-F14X-V188-00000-00&context=1516831.	Recyclers	European Association of Plastics Recycling and Recovery Organisations	MR	1					-1								

			"Collection systems aimed at reprocessing these used plastics in order to put them to new use as a raw material are already in operation around the world to bring about change in this situation".	Positive reputation	Ben Cooper. (April 21, 2017 Friday). Why is the soft drinks sector losing the recycling game? - Sustainability Spotlight. *just-drinks global news*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5NC9-HYJ1-F14X-V188-00000-00&context=1516831.	Recyclers	European Association of Plastics Recycling and Recovery Organisations	MR	1		(+) 1											
			"Further increasing the number and efficiency of these systems entails intensifying cooperation between all manufacturers, traders, users, collectors and recyclers of used agricultural plastics, with the involvement of governmental and non-governmental organisations,"	Positive reputation	Ben Cooper. (April 21, 2017 Friday). Why is the soft drinks sector losing the recycling game? - Sustainability Spotlight. *just-drinks global news*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5NC9-HYJ1-F14X-V188-00000-00&context=1516831.	Recyclers	European Association of Plastics Recycling and Recovery Organisations	MR	1							(+) 1						
			The symposium was organised by RIGK	Financing	Ben Cooper. (April 21, 2017 Friday). Why is the soft drinks sector losing the recycling game? - Sustainability Spotlight. *just-drinks global news*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5NC9-HYJ1-F14X-V188-00000-00&context=1516831.	Recyclers	European Association of Plastics Recycling and Recovery Organisations	MR	1				(+) 1									
			RIGK, which organises and overseas the collection and recycling plastic packaging in Germany.	Leading organization	Ben Cooper. (April 21, 2017 Friday). Why is the soft drinks sector losing the recycling game? - Sustainability Spotlight. *just-drinks global news*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5NC9-HYJ1-F14X-V188-00000-00&context=1516831.	Recyclers	European Association of Plastics Recycling and Recovery Organisations	MR	1				(+) 1									
2017	May	24	EPBP Approval for Synvina's PEF Plastic Packaging Material as Recyclable in Existing Systems.	New project	(May 24, 2017 Wednesday). EPBP Approval for Synvina's PEF Plastic Packaging Material as Recyclable in Existing Systems. *Plus Company Updates(PCU)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5NM9-6241-J9XT-P3K3-00000-00&context=1516831.	Producer Responsibility Organizations	European PET Bottle Platform	MR	1							(+) 1						
			PEF is said to offer benefits to the packaging industry as a bio-based plastic with improved barrier properties for gases like carbon dioxide and oxygen which leads to a longer shelf life of packaged products.	New project	(May 24, 2017 Wednesday). EPBP Approval for Synvina's PEF Plastic Packaging Material as Recyclable in Existing Systems. *Plus Company Updates(PCU)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5NM9-6241-J9XT-P3K3-00000-00&context=1516831.	Waste supplier	Plastic Producer	MR	1		(+) 1											
			Synvina is a Joint Venture of Avantium and BASF, located in Amsterdam. It operates a pilot plant in Geleen, Netherlands, where it produces furandicarboxylic acid (FDCA) from renewable resources on pilot plant scale and markets the new polymer polyethylenefuranoate (PEF). With its recyclability, Synvina's PEF is claimed to offer an advantage to the packaging industry in comparison to alternative bio-based plastics or barrier materials.	New project	(May 24, 2017 Wednesday). EPBP Approval for Synvina's PEF Plastic Packaging Material as Recyclable in Existing Systems. *Plus Company Updates(PCU)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5NM9-6241-J9XT-P3K3-00000-00&context=1516831.	Waste supplier	Plastic Producer	MR			(+) 1											
2017	May	31	Unilive has unveiled technology that will recycle the hundreds of billions of plastic sachets that are discarded every year.	Leading Organization	(May 31, 2017 Wednesday). Plastic sachet recycling technology launched / Pilot plant planned in Indonesia / Waste collection schemes to be established. *Industrial Goods Monitor Worldwide*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5NNS-3JK1-JDJN-63GH-00000-00&context=1516831.	Waste supplier	Plastic Producer, Incumbent	MR		1	(+) 1											
			It is in partnership with the Fraunhofer Institute for Process Engineering and Packaging	Partnership	(May 31, 2017 Wednesday). Plastic sachet recycling technology launched / Pilot plant planned in Indonesia / Waste collection schemes to be established. *Industrial Goods Monitor Worldwide*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5NNS-3JK1-JDJN-63GH-00000-00&context=1516831.	Producer Responsibility Organizations	Fraunhofer Institute for Process Engineering and Packaging	MR								(+) 1						
			Uniliver will open a pilot plant later this year at an undisclosed site in Indonesia to test the technologys long-term commercial viability.	New project	(May 31, 2017 Wednesday). Plastic sachet recycling technology launched / Pilot plant planned in Indonesia / Waste collection schemes to be established. *Industrial Goods Monitor Worldwide*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5NNS-3JK1-JDJN-63GH-00000-00&context=1516831.	Waste supplier	Plastic Producer, Incumbent	MR	1		(+) 1											
			the consumer goods group is also looking to set up collection schemes to channel the sachets to be recycled	New project	(May 31, 2017 Wednesday). Plastic sachet recycling technology launched / Pilot plant planned in Indonesia / Waste collection schemes to be established. *Industrial Goods Monitor Worldwide*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5NNS-3JK1-JDJN-63GH-00000-00&context=1516831.	Waste supplier	Plastic Producer, Incumbent	MR	1						(+) 1							
			Unilever said it is currently testing this by working with local waste banks, governments and retailers, and will look to empower waste pickers	Testing phase	ben Cooper. (April 21, 2017 Friday). Why is the soft drinks sector losing the recycling game? - Sustainability Spotlight. just-drinks global news. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5NC9-HYJ1-F14X	Waste supplier, Third parties	Banks, governments and retailers	MR	1							(+) 1						
2017	May		WRAP: Recycling Guidelines	Guidance	https://kidv.nl/recycling-guidelines	Producer Responsibility Organizations	WRAP	MR	1						(+) 1							
2017	Jun	2	Back in January, students from Netherlands-based Eindhoven University of Technology unveiled Lina – the world's first biocomposite car.	New project	(June 2, 2017 Friday). Dutch Students Present Lina - The World's First Biocomposite Car. *Plus Company Updates(PCU)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5NP8-2PV1-J9XT-P2MD-00000-00&context=1516831.	Producer Responsibility Organizations	Eindhoven University	Bioplastic	1			(+) 1										
			This month, the students have been displaying the car at a handful of high-profile events, including Dutch Technology Week and the Shell Eco marathon in London	Successful project	(June 2, 2017 Friday). Dutch Students Present Lina - The World's First Biocomposite Car. *Plus Company Updates(PCU)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5NP8-2PV1-J9XT-P2MD-00000-00&context=1516831.	Producer Responsibility Organizations	Eindhoven University	Bioplastic	1				(+) 1									
			Lina employs a combination of bio-based composites and bioplastics to create a lightweight chassis.	Successful project	(June 2, 2017 Friday). Dutch Students Present Lina - The World's First Biocomposite Car. *Plus Company Updates(PCU)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5NP8-2PV1-J9XT-P2MD-00000-00&context=1516831.	Producer Responsibility Organizations	Eindhoven University	Bioplastic	1		(+) 1											
			A honeycomb core made of PLA (polylactic acid) – a 100% biodegradable resin derived from sugar beets – is placed between two flax fiber composite sheets to produce a sandwich panel offering high stiffness and strength at minimal weight	Successful project	(June 2, 2017 Friday). Dutch Students Present Lina - The World's First Biocomposite Car. *Plus Company Updates(PCU)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5NP8-2PV1-J9XT-P2MD-00000-00&context=1516831.	Producer Responsibility Organizations	Eindhoven University	Bioplastic	1		(+) 1											
	Jun	8	GESAMP, the scientific agency of the International Maritime Organisation, has carried out research into the most commonly found waste items in the worldwide 'plastic soup'. It looked at the material, the applications (common application) and buoyancy (gravity).	Negative reputation	https://www.bottlebill.org/images/PDF/Dutch%20study%20on%20caps_Doppenrapport_EN_2017_DEF_small.pdf	Producer Responsibility Organizations	Scientific agency of the International Maritime Organisation	MR		1			(+) 1									
			The most common material was Plastic caps made of polypropylene (PP) and polyethylene (HDPE of PE-HD)	Negative reputation	https://www.bottlebill.org/images/PDF/Dutch%20study%20on%20caps_Doppenrapport_EN_2017_DEF_small.pdf	Producer Responsibility Organizations	Scientific agency of the International Maritime Organisation	MR		1				-1								
2017	Jun	17	In September 2016 the government launched a comprehensive program for a "national raw materials agreement".	Guidance	https://global-recycling.info/archives/1257	Producer Responsibility Organizations	Dutch Government	General	1													

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			Minister Sharon Dijksma (Infrastructure and the Environment) and Minister Henk Kamp (Economic Affairs) made agreements with the Dutch business community, government authorities, and NGOs aiming at realizing a one hundred percent circular economy.	Agreement	https://global-recycling.info/archives/1258	Producer Responsibility Organizations	Dutch Government	General	1					(+) 1								
			The Dutch Cabinet declared its intention to sit down with the three largest banks – ABN-AMRO, Rabobank, and ING –	Financing	https://global-recycling.info/archives/1259	Producer Responsibility Organizations, Third parties	Cabinet, Banks	General	1							(+) 1						
			The banks have already stated their willingness to support investments in circular projects.	Financing	https://global-recycling.info/archives/1259	Producer Responsibility Organizations, Third parties	Cabinet, Banks	General	1								(+) 1					
			Sharon Dijksma announced the availability of 27 million Euro to – inter alia – make it easier for the 7,000 primary schools in the Netherlands to separate their waste.	Financing	https://global-recycling.info/archives/1260	Producer Responsibility Organizations, Third parties	Infrastructure of Environment, Schools	MR		1							(+) 1					
			the Ministries of Environment, Interior, Public and Foreign Affairs published a Government-wide Program with three strategic goals: high-quality utilization of raw materials in existing supply chains; replacement of fossil-based, critical and non-sustainably produced materials by new sustainably produced, renewable, and generally available raw materials; and development of new production methods, new design products, differently organized areas as well as newly promoted ways of consumption.	Goals/Targets	https://global-recycling.info/archives/1261	Producer Responsibility Organizations	Infrastructure of Environment	General	1				(+) 1									
2017	Jun	27	The Dutch are collecting more plastic for recycling than ever but the quality is going down which makes the plastic more difficult to reuse, according to a report for the transport and environment ministry and quoted by broadcaster NOS.	Negative reputation	https://www.dutchnews.nl/news/2017/06/the-dutch-are-recycling-more-plastic-but-the-quality-is-going-down/	Producer Responsibility Organizations	Transport and environmental ministry	RC		1					-1							
			Hester Klein Lankhorst of the sustainable packaging institute KDV told NOS that the focus of recycling campaigns needs to change	Negative reputation	https://www.dutchnews.nl/news/2017/06/the-dutch-are-recycling-more-plastic-but-the-quality-is-going-down/	Producer Responsibility Organizations	KDV	MR		1				-1								
			Olaf Prinsen, of the waste collectors association NVRD says pressure should be put on food companies to make sure their packaging can be recycled in the first place.	Guidance	https://www.dutchnews.nl/news/2017/06/the-dutch-are-recycling-more-plastic-but-the-quality-is-going-down/	Converters	Waste collectors association	MR		1			(+) 1									
2017	Jun	29	The Funguschain project seeks to obtain mushroom-based high valuable components from new processes using the cascading system, a method consisting of several similar processing steps in which the output of one stage feeds the next) Innovative and sustainable compounds for a wide range of products such as bioplastics	New project	(June 29, 2017). Biodegradable cleaning products and eco-friendly plastics from mushroom waste. *Indian Agriculture News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5NX5-40S1-DYDW-72BC-00000-00&context=1516831.	Waste supplier	Plastic producer, new entrants	Bioplastic	1		(+) 1											
			Led by Dutch company BioDetection Systems, the project brings together a total of sixteen partners including universities, research centres and companies from Spain, the Netherlands, Ireland, Germany, Italy, the United Kingdom, Belgium, Croatia, Sweden and Portugal.	Particiaption	(June 29, 2017). Biodegradable cleaning products and eco-friendly plastics from mushroom waste. *Indian Agriculture News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5NX5-40S1-DYDW-72BC-00000-00&context=1516831.	Third party	Technology provider, new entrants	Bioplastic	1							(+) 1						
			The project, with a budget of (EURO)11 million, is co-financed by the Bio-based Industries Consortium under the European Union Horizon 2020 research and innovation programme.	Financing	(June 29, 2017). Biodegradable cleaning products and eco-friendly plastics from mushroom waste. *Indian Agriculture News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5NX5-40S1-DYDW-72BC-00000-00&context=1516831.	Producer Responsibility Organizations	European Union Horizon 2020 research and innovation programme	Bioplastic	1								(+) 1					
2017	Jul	7	Italian consumer goods firm, Fater, has upgraded the recycling technology it has developed to sanitize, separate and recycle used nappies as part of an EU backed circular economy project	New project	(July 6, 2017 Thursday). Dirty Diaper Recycling Project Brings Nappies into the Circular Economy. *Plus Company Updates(PCU)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5NYG-3F71-J9XT-P2DB-00000-00&context=1516831.	Recycler	new entrants	MR	1							(+) 1						
			The company explained that the EMBRACED project brings a consortium of 13 partners together to create the capability to recycle cellulose from used diapers into bio-products in a way that creates value.	Participation	(July 6, 2017 Thursday). Dirty Diaper Recycling Project Brings Nappies into the Circular Economy. *Plus Company Updates(PCU)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5NYG-3F71-J9XT-P2DB-00000-00&context=1516831.	Recycler	new entrants	MR	1												(+) 1	
			The consortium is an EU-funded initiative	Financing	(July 6, 2017 Thursday). Dirty Diaper Recycling Project Brings Nappies into the Circular Economy. *Plus Company Updates(PCU)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5NYG-3F71-J9XT-P2DB-00000-00&context=1516831.	Producer Responsibility Organizations	EU	MR	1								(+) 1					
			The initiative promotes the recycling of absorbent hygiene products, and create ways how to transform into higher value materials such as fertilizers and bio plastics	New initiative	(July 6, 2017 Thursday). Dirty Diaper Recycling Project Brings Nappies into the Circular Economy. *Plus Company Updates(PCU)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5NYG-3F71-J9XT-P2DB-00000-00&context=1516831.	Producer Responsibility Organizations	EU	MR	1												(+) 1	
			It has received funding from the European Union (Bio Based Industries Joint Undertaking (BBI JU) under Horizon 2020) to realize in the Netherlands with the partner AEB Amsterdam a highly innovative project that helps progress in circular economy	Financing	(July 6, 2017 Thursday). Dirty Diaper Recycling Project Brings Nappies into the Circular Economy. *Plus Company Updates(PCU)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5NYG-3F71-J9XT-P2DB-00000-00&context=1516831.	Producer Responsibility Organizations	EU	MR	1								(+) 1					
			It is about to realize in the Netherlands with the partner AEB Amsterdam a highly innovative project that helps progress in circular economy	Partnership	(July 6, 2017 Thursday). Dirty Diaper Recycling Project Brings Nappies into the Circular Economy. *Plus Company Updates(PCU)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5NYG-3F71-J9XT-P2DB-00000-00&context=1516831.	Producer Responsibility Organizations	EU	MR	1							(+) 1						
2017	Jul	10	Nelipak Healthcare Packaging Joins Healthcare Plastics Recycling Council.	Lobbying	antea. (July 10, 2017 Monday). Nelipak Healthcare Packaging Joins Healthcare Plastics Recycling Council. *3BL Blogs*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5P0G-68W1-F03R-N3KW-00000-00&context=1516831.	Recycler	Plastic Recycling Council	MR	1												(+) 1	
			Nelipak is an member of HPRC. HPRC is a private technical coalition of industry peers across healthcare, recycling and waste management industries seeking to improve recyclability of plastic products within healthcare	Lobbying	antea. (July 10, 2017 Monday). Nelipak Healthcare Packaging Joins Healthcare Plastics Recycling Council. *3BL Blogs*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5P0G-68W1-F03R-N3KW-00000-00&context=1516831.	Waste supplier	Plastic Producer, Incumbent	MR	1							(+) 1						
2017	Jul	13	Dutch waste technology companies are advising Canada regarding modernising their waste processing.	Deals between Industries	https://rwsenvironment.eu/news/2016/the-netherlands/	Recycler	Canada, Dutch waste technology companies	MR		1			(+) 1									

			Rijkswaterstaat is helping to create contacts with Canadian government organisations	Deals between Industries	https://rwsenvironment.eu/news/2016/the-netherlands/	Producer Responsibility Organizations	Canada, Rijkswaterstaat	MR	1												(+) 1	
2017	Jul	13	Rijkswaterstaat helps festivals reduce waste	Successful project	https://rwsenvironment.eu/news/2016/rijkswaterstaat/	Producer Responsibility Organizations	Rijkswaterstaat	MR		1											(+) 1	
			The festival organisers are also seeking to cooperate with the Green Deal Schone Stranden to keep the beaches on the island of Vlieland clean	Goals/Targets	https://rwsenvironment.eu/news/2016/rijkswaterstaat/	Producer Responsibility Organizations	EU, Green Deal	MR	1												(+) 1	
			Other festival organisers are experimenting with refundable cups and reusable stage scenery	Goals/Targets	https://rwsenvironment.eu/news/2016/rijkswaterstaat/	Waste supplier	Festival	R	1		(+) 1											
2017	Aug	15	China has confirmed it is to stop taking many types of recycling material	Deals between Industries	Kevin O'Sullivan. (August 15, 2017 Tuesday). China to stop taking recycling material; All scrap plastics and unsorted paper will be banned by the end of the year. *The Irish Times*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5P7X-WHM1-JC8Y-81XH-00000-00&context=1516831.	Producer Responsibility Organizations	Chinese Government, Dutch Government	General		1									(+) 1			
2017	Aug	17	Fitzroy Amsterdam has taken an entirely new approach to reusing beach plastics for packaging	Goals/Targets	(August 17, 2017 Thursday). Coca-Cola labels find new life as rum bottle caps. *Basic Materials & Resources Monitor Worldwide*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5P8D-G881-F11P-X1V7-00000-00&context=1516831.	Waste supplier	Packaging designers, new entrants	CR	1		(+) 1											
			Fitzroy Amsterdam's strategy, From waste to wasted, involves collecting plastic Coca-Cola bottle labels from the beaches of the Dutch North Sea Islands, melting them, and forming them into caps for its new Fitzroy Premium Navy Rum.	Deals between Industries	(August 17, 2017 Thursday). Coca-Cola labels find new life as rum bottle caps. *Basic Materials & Resources Monitor Worldwide*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5P8D-G881-F11P-X1V7-00000-00&context=1516831.	Waste supplier	Packaging designers, new entrants	CR	1					(+) 1								
			Fitzroy Premium Navy Rum, with its one-of-a-kind recycled label-based caps, was introduced in April 2017 and is sold online and by Dutch wine retailer Chabrol Wines.	Leading Organization	(August 17, 2017 Thursday). Coca-Cola labels find new life as rum bottle caps. *Basic Materials & Resources Monitor Worldwide*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5P8D-G881-F11P-X1V7-00000-00&context=1516831.	Waste supplier	Packaging designers, new entrants	CR	1							(+) 1						
			Baart says that Fitzroy is also working with distributors worldwide to make Fitzroy Navy Rum accessible to everyone	Goals/Targets	(August 17, 2017 Thursday). Coca-Cola labels find new life as rum bottle caps. *Basic Materials & Resources Monitor Worldwide*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5P8D-G881-F11P-X1V7-00000-00&context=1516831.	Waste supplier	Packaging designers, new entrants	CR	1							(+) 1						
2017	Sep		This report by research bureau CE Delft answers the question under which conditions biobased plastics contribute to a circular economy	Guidance	https://kidv.nl/biobased-plastics-in-a-circular-economy	Producer Responsibility Organizations	Research bureau CE Delft	Bioplastic	1				(+) 1									
			The study was commissioned by the Ministry of Infrastructure and the Environment, which uses the results as a basis for formulating policy with regard to biobased plastics	Participation	https://kidv.nl/biobased-plastics-in-a-circular-economy	Producer Responsibility Organizations	Ministry of Infrastructure and the Environment	Bioplastic	1												(+) 1	
			CE Delft concludes, among other things, that biobased plastics can contribute to reducing CO2 emissions and reducing the demand for fossil raw materials	Positive reputation	https://kidv.nl/biobased-plastics-in-a-circular-economy	Producer Responsibility Organizations	Research bureau CE Delft	Bioplastic	1						(+) 1							
			However, its wide application can also lead to irresponsible pressure on the food and ecosystem.	Negative reputation	https://kidv.nl/biobased-plastics-in-a-circular-economy	Producer Responsibility Organizations	Research bureau CE Delft	Bioplastic		1					-1							
			When biobased plastics have reached the end of their useful life, mechanical recycling has the most positive effects: it has a favorable effect on the greenhouse gas balance and leads to less demand for raw materials	Positive reputation	https://kidv.nl/biobased-plastics-in-a-circular-economy	Producer Responsibility Organizations	Research bureau CE Delft	Bioplastic	1					(+) 1								
			However, this is only profitable with larger volumes.	Negative reputation	https://kidv.nl/biobased-plastics-in-a-circular-economy	Producer Responsibility Organizations	Research bureau CE Delft	Bioplastic	1							-1						
2017	Nov	7	Ellen MacArthur Foundation issues call to ban oxo-degradable plastic packaging	Positive reputation	Kevin O'Sullivan. (August 15, 2017 Tuesday). China to stop taking recycling material; All scrap plastics and unsorted paper will be banned by the end of the year. *The Irish Times*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5P7X-WHM1-JC8Y-81XH-00000-00&context=1516831.	Producer Responsibility Organizations	Ellen MacArthur Foundation	Bioplastic		1									(+) 1			
2017	Dec	1	Wageningen UR investigated the quantities and recyclability of household packaging waste that ends up at sorting installations after collection	Knowledge sharing	https://kidv.nl/recyclebaarheid-van-verpakkingen-op-de-nederlandse-markt	Producer Responsibility Organizations	Wageningen UR	MR	1				(+) 1									
			The research shows that 56% of the packaging on the Dutch market is easily recyclable	Knowledge sharing	https://kidv.nl/recyclebaarheid-van-verpakkingen-op-de-nederlandse-markt	Producer Responsibility Organizations	Wageningen UR	MR	1						(+) 1							
			Six percent of the packaging is in principle easily recyclable for applications such as consumer items, but not ideal because this packaging can disrupt the recycling of other packaging towards more circular applications.	Negative reputation	https://kidv.nl/recyclebaarheid-van-verpakkingen-op-de-nederlandse-markt	Producer Responsibility Organizations	Wageningen UR	MR		1									-1			
2017	Dec	4	Bio-on and AkzoNobel continue their collaborative relations hip	Deals between Industries	(December 4, 2017 Monday). Bio-on and AkzoNobel continue their collaborative relationship. *Hugin - English*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5R3N-FDF1-JDPT-Y1C7-00000-00&context=1516831.	Recycler, waste supplier	New entrant, Incumbent	Bioplastic	1							(+) 1						

			The two companies obtained excellent and promising results during the implementation of the SEAFRONT Project	Testing phase	(December 4, 2017 Monday). Bio-on and AkzoNobel continue their collaborative relationship. *Hugin - English*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5R3N-FDF1-JDPT-Y1C7-00000-00&context=1516831.	Recycler, waste supplier	New entrant, Incumbent	Bioplastic	1			(+) 1										
			The aim of the collaboration is to continue to investigate the use of Bio-on's biodegradable and bio-based polymers as components in fouling control coatings designed to prevent the undesirable accumulation of marine organisms on boats, designed to prevent the undesirable accumulation of marine organisms on boats,	New project	(December 4, 2017 Monday). Bio-on and AkzoNobel continue their collaborative relationship. *Hugin - English*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5R3N-FDF1-JDPT-Y1C7-00000-00&context=1516831.	Recycler, waste supplier	New entrant, Incumbent	Bioplastic	1			(+) 1										
2017	Dec	9	research phase 2 composition of collected plastic / pmd packaging	Testing phase	(December 9, 2017 Saturday). 31130757 Research Phase 2 Composition Of Collected Plastic / Pmd Packaging. *TendersInfo - Contract Awards*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5R4X-0XF1-F11P-X4S0-00000-00&context=1516831.	Producer Responsibility Organizations	Dutch Municipalities	MR	1			(+) 1										
			The aim of the project is to find the most important variables that explain differences in the composition of collected plastic / pmd packaging waste between municipalities in the netherlands	Testing phase	(December 9, 2017 Saturday). 31130757 Research Phase 2 Composition Of Collected Plastic / Pmd Packaging. *TendersInfo - Contract Awards*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5R4X-0XF1-F11P-X4S0-00000-00&context=1516831.	Producer Responsibility Organizations	Dutch Municipalities	MR	1			(+) 1										
2017	Dec	21	Two Day Polymer/BioPlastic Failure & Defects Course: Problem Solving Case-Histories (Amsterdam, Netherlands)	Event	(December 21, 2017 Thursday). Two Day Polymer/BioPlastic Failure & Defects Course: Problem Solving Case-Histories (Amsterdam, Netherlands - April 25th-26th, 2018). *PR Newswire*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5R7F-FK71-DXP3-R2KM-00000-00&context=1516831.	Tthird party	Platform	Bioplastic	1			(+) 1										
2017	Dec	25	The four countries of the Kingdom of the Netherlands (Aruba, Curaçao, the Netherlands and St Maarten) report jointly to the United Nations High-Level Political Forum on Sustainable Development.	Guidance	https://sustainabledevelopment.un.org/memberstates/netherlands	Producer Responsibility Organizations	Dutch Government	General	1					(+) 1								
2017	Dec		In the Packaging Framework Agreement 2013 - 2022, it has been agreed that material organizations will take steps to make the product-packaging chain more sustainable	New initiative	https://kidv.nl/kennisbank#/gezocht-op:In+the+period+2016+to+2018%2C+the+KIDV+supported+these+organizations+in+drawing+up+sustainability+plans+for+plastic%2C+metal%2C+paper+and+cardboard%2C+glass+and+wood./toon:34	Producer Responsibility Organizations	KDV	General	1					(+) 1								
			Material organizations and affiliated companies have a lot of in-house knowledge that can be used for this	Participation	https://kidv.nl/kennisbank#/gezocht-op:In+the+period+2016+to+2018%2C+the+KIDV+supported+these+organizations+in+drawing+up+sustainability+plans+for+plastic%2C+metal%2C+paper+and+cardboard%2C+glass+and+wood./toon:35	Producer Responsibility Organizations	KDV	General	1							(+) 1						
			In the period 2016 to 2018, the KIDV supported these organizations in drawing up sustainability plans for plastic, metal, paper and cardboard, glass and wood.	Guidance	https://kidv.nl/kennisbank#/gezocht-op:In+the+period+2016+to+2018%2C+the+KIDV+supported+these+organizations+in+drawing+up+sustainability+plans+for+plastic%2C+metal%2C+paper+and+cardboard%2C+glass+and+wood./toon:36	Producer Responsibility Organizations	KDV	General	1					(+) 1								
2017	Dec		CEFLEX is a pan-European flexible packaging value chain consortium set up with the aim, no less, of facilitating the creation of a practically and economically viable circular economy in flexible packaging	Participation	https://packagingeurope.com/ceflex-transformative-collaboration-circular-economy-flexible-packaging/	Producer Responsibility Organizations	CEFLEX	General	1												(+) 1	
			The new idea in the CEFLEX approach is to unite the whole value chain – from chemical companies and converters through to brand owners and recyclers in an endeavour that would be unthinkable without joined-up thinking and complementary action	Engagement	https://packagingeurope.com/ceflex-transformative-collaboration-circular-economy-flexible-packaging/	Producer Responsibility Organizations	CEFLEX	MR, RC	1											(+) 1		
			Dedicated consultants, led by Graham Houlder, oversee a comprehensive programme of seven workstreams, covering everything from design for recycling, sustainable end markets for PCR, to business cases, facilitation of new technologies, and so on	Engagement	https://packagingeurope.com/ceflex-transformative-collaboration-circular-economy-flexible-packaging/	Producer Responsibility Organizations	CEFLEX	MR,RC	1			(+) 1										
			Knowledge is gathered and fed into workstreams from collaborations and commissioned research	Knowledge sharing	https://packagingeurope.com/ceflex-transformative-collaboration-circular-economy-flexible-packaging/	Producer Responsibility Organizations	CEFLEX	MR,RC	1				(+) 1									
			And, crucially, the stakeholders play an active role, not least in scrutinising and refining the agenda as it progresses	Engagement	https://packagingeurope.com/ceflex-transformative-collaboration-circular-economy-flexible-packaging/	Producer Responsibility Organizations	CEFLEX	MR,RC	1											(+) 1		
2017	Dec		European Strategy for Plastics in A Circular Economy	Guidance	https://kidv.nl/media/externe_rapportages/european-strategy-plastics.pdf?1.1.7	Producer Responsibility Organizations	Dutch Government	General	1					(+) 1								
			Plastic pollution was also identified as one of the main pressures on healthy oceans at the international 'Our Ocean Conference', hosted by the EU in October 2017.	Knowledge sharing	https://kidv.nl/media/externe_rapportages/european-strategy-plastics.pdf?1.1.8	Third party	Conference	General		1			-1									
			A resolution on marine litter and microplastics was adopted at the United Nation Environment Assembly in December 2017	Successful project	https://kidv.nl/media/externe_rapportages/european-strategy-plastics.pdf?1.1.9	Producer Responsibility Organizations	United Nation Environment Assembly	General	1						(+) 1							
2018	Jan	17	The European Commission published on 16 January its very first [1]Europe-wide strategy for plastics, which called for all plastic packaging to be recyclable by 2030, while also expressing aims to reduce the use of single-use plastics and restrict use of microplastics	Guidance	(January 17, 2018 Wednesday). EU chems aim to engage on recycling, but true circular economy still far. *ICIS Chemical News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5RF7-7DN1-JCN4-H0VB-00000-00&context=1516831.	Producer Responsibility Organizations	EU Commission	MR		1				(+) 1								
			the EU is willing to try and help the industry make the transition, although trade group [2]PlasticsEurope said on 16 January, following the Commission s announcement, that it only expects 60% of plastic packaging to be reused or recycled by 2030	Guidance	(January 17, 2018 Wednesday). EU chems aim to engage on recycling, but true circular economy still far. *ICIS Chemical News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5RF7-7DN1-JCN4-H0VB-00000-00&context=1516831.	Producer Responsibility Organizations	EU Commission	MR, R						(+) 1								

			There will be new eco-design measures so on the way you design the product to tackle the issue of recyclability	Goals/Targets	(January 17, 2018 Wednesday). EU chems aim to engage on recycling, but true circular economy still far. *ICIS Chemical News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5RF7-7DN1-JCN4-H0VB-00000-00&context=1516831.	Producer Responsibility Organizations	EU Commission	MR	1							(+) 1							
			With the new package, quality standards for sorted plastics waste are expected to be developed.	Goals/Targets	(January 17, 2018 Wednesday). EU chems aim to engage on recycling, but true circular economy still far. *ICIS Chemical News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5RF7-7DN1-JCN4-H0VB-00000-00&context=1516831.	Producer Responsibility Organizations	EU Commission	MR	1							(+) 1							
			an EU-wide voluntary campaign for enterprises where they can pledge how much they will increase their uptake of recycled plastics will be lauched by 2030	New initiave	(January 17, 2018 Wednesday). EU chems aim to engage on recycling, but true circular economy still far. *ICIS Chemical News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5RF7-7DN1-JCN4-H0VB-00000-00&context=1516831.	Producer Responsibility Organizations	EU Commission	MR,RC		1					(+) 1								
			consumers currently lack information of the several substances contained in the products,	Negative reputation	(January 17, 2018 Wednesday). EU chems aim to engage on recycling, but true circular economy still far. *ICIS Chemical News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5RF7-7DN1-JCN4-H0VB-00000-00&context=1516831.	Producer Responsibility Organizations	EU Commission	MR, Bioplastics		1						-1							
			the EU is also mulling to introduce measures to improve the labelling and definition for plastics	Goals/Targets	(January 17, 2018 Wednesday). EU chems aim to engage on recycling, but true circular economy still far. *ICIS Chemical News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5RF7-7DN1-JCN4-H0VB-00000-00&context=1516831.	Producer Responsibility Organizations	EU Commission	MR	1						(+) 1								
			trade group European Bioplastics (EUBP) said the new strategy falls short on presenting a comprehensive approach by limiting the focus of the strategy on mechanical recycling	Negative reputation	(January 17, 2018 Wednesday). EU chems aim to engage on recycling, but true circular economy still far. *ICIS Chemical News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5RF7-7DN1-JCN4-H0VB-00000-00&context=1516831.		Trade group European Bioplastics	MR		1						-1							
			Concrete steps towards reducing the dependency on fossil feedstock by linking the circular economy with the bioeconomy and supporting innovative bio-based plastics solutions have been further postponed, the group said	Negative reputation	(January 17, 2018 Wednesday). EU chems aim to engage on recycling, but true circular economy still far. *ICIS Chemical News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5RF7-7DN1-JCN4-H0VB-00000-00&context=1516831.	Third party	Trade group European Bioplastics	Bioplastic, RC		1					-1								
			the contributions of biodegradable plastics to a circular economy are recognised but concrete measures are still missing.	Negative reputation	(January 17, 2018 Wednesday). EU chems aim to engage on recycling, but true circular economy still far. *ICIS Chemical News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5RF7-7DN1-JCN4-H0VB-00000-00&context=1516831.	Third party	Trade group European Bioplastics	Bioplastic		1					-1								
			the PS Loop project by BASF a pilot plant is built in the Netherlands	New project	(January 17, 2018 Wednesday). EU chems aim to engage on recycling, but true circular economy still far. *ICIS Chemical News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5RF7-7DN1-JCN4-H0VB-00000-00&context=1516831.	Waste supplier	Plastic Producer, Incumbent	CR	1				(+) 1										
			the pilot plant is built in the Netherlands	New plant	(January 17, 2018 Wednesday). EU chems aim to engage on recycling, but true circular economy still far. *ICIS Chemical News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5RF7-7DN1-JCN4-H0VB-00000-00&context=1516831.	Waste supplier	Plastic Producer, Incumbent	CR	1			(+) 1											
			It was supported by a broad industry initiative, partly supported by public funds, where HBCD [hexabromocyclododecane, a flame retardant] containing EPS [expandable polystyrene] waste will be chemically recycled. However there is a necessity for strong support of the EU and its member states	Financing	(January 17, 2018 Wednesday). EU chems aim to engage on recycling, but true circular economy still far. *ICIS Chemical News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5RF7-7DN1-JCN4-H0VB-00000-00&context=1516831.	Waste supplier	Plastic Producer, Incumbent	CR	1						(+) 1								
			However there is a necessity for strong support of the EU and its member states	Financing	(January 17, 2018 Wednesday). EU chems aim to engage on recycling, but true circular economy still far. *ICIS Chemical News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5RF7-7DN1-JCN4-H0VB-00000-00&context=1516831.	Producer Responsibility Organizations	Incumbent	CR	1										-1				
2018	Jan	18	Danone has announced plans to move all the PET bottles used for its Evian brand to be made from recycled plastic by 2025.	Goals/Targets	Olly Wehring. (January 18, 2018 Thursday). Danone's Evian to go "circular" with 100% recycled plastic for bottles. *just-drinks global news*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5RFC-TK01-F14X-V1S6-00000-00&context=1516831.	Waste supplier	Retailer, Incumbent	RC	1							(+) 1							
			Danone announced of a research mission with a Netherlands-based start-up, The Ocean Cleanup, which has designed technology that can remove plastic from the sea.	Goals/Targets	Olly Wehring. (January 18, 2018 Thursday). Danone's Evian to go "circular" with 100% recycled plastic for bottles. *just-drinks global news*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5RFC-TK01-F14X-V1S6-00000-00&context=1516831.	Waste supplier, Third party	Retailer, Incumbent, Third party, New entrant	MR	1			(+) 1											
2018	Jan	18	GEA recently held a Circular Packaging Event in Weert, The Netherlands	Event	Jenny Eagle, . (January 18, 2018 Thursday). 'The actions of one UK retailer are insignificant when more than 85% of plastic marine pollution comes from Asia and Africa'. *DairyReporter.com*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5RF9-FBN1-JC6M-X40N-00000-00&context=1516831.	Waste supplier	Plastic Producer, Incumbent	General	1					(+) 1									

			companies Bobst, Borealis, Erema and Henkel to discuss alternative developments in plastic packaging including a Full PE Laminate by Borealis and Borouge	Leading Organizations	Jenny Eagle, . (January 18, 2018 Thursday). 'The actions of one UK retailer are insignificant when more than 85% of plastic marine pollution comes from Asia and Africa'. *DairyReporter.com*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5RF9-FBN1-JC6M-X40N-00000-00&context=1516831.	Waste supplier	Plastic Producer, Incumbent	MR	1				(+) 1										
2018	Jan	22	LyondellBasell supports the vision of the EU plastics strategy as well as the commitment expressed by trade association PlasticsEurope to achieve 100% re-use, recycling or recovery of all plastics packaging in the EU by 2040	Leading Organizations	(January 22, 2018 Monday). LyondellBasell sees potential in EU plastics packaging strategy. *ICIS Chemical News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5RG9-38T1-JCN4-H41X-00000-00&context=1516831.	Waste supplier	Plastic Producer, Incumbent	MR, R	1						(+) 1								
			LyondellBasell s Hyperzone high density polyethylene (HDPE) project under construction and scheduled to start up in 2019 is being engineered to produce a higher quality grade of PE.	New plant	(January 22, 2018 Monday). LyondellBasell sees potential in EU plastics packaging strategy. *ICIS Chemical News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5RG9-38T1-JCN4-H41X-00000-00&context=1516831.	Waste supplier	Plastic Producer, Incumbent	RC	1			(+) 1											
2018	Jan	30	Report from the Commission to the European Parliament and the Council on the impact of the use of oxo-degradable plastic, including oxo-degradable plastic carrier bags, on the environment.	Knowledge Sharing	(January 30, 2018 Tuesday). Register of Commission documents: Report from the Commission to the European Parliament and the Council on the impact of the use of oxo-degradable plastic, including oxo-degradable plastic carrier bags, on the environment Document date: 2018-01-16 COM_COM(2018)0035 COM documents. Impact News Service. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5RJ1-4S11-JDG9-Y1XJ-00000-00&context=1516831.	Producer Responsibility Organizations	EU Commission	Bioplastic		1				(+) 1									
			there is no conclusive evidence on a number of important issues relating to beneficial effects of oxo-degradable plastic on the environment.	Negative reputation	(January 30, 2018 Tuesday). Register of Commission documents: Report from the Commission to the European Parliament and the Council on the impact of the use of oxo-degradable plastic, including oxo-degradable plastic carrier bags, on the environment Document date: 2018-01-16 COM_COM(2018)0035 COM documents. Impact News Service. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5RJ1-4S11-JDG9-Y1XJ-00000-00&context=1516831.	Producer Responsibility Organizations	EU Commission	Bioplastic		1				-1									
2018	Feb	8	PET Bottle Recycling Market: Analysis and Forecast to 2023. The global market of PET Bottle Recycling is growing rapidly and focusing on scrap recycling. the global PET packaging market followed by North America with 23.1 percent and Western Europe with 19.6 percent in 2014.	Knowledge Sharing	(February 8, 2018 Thursday). PET Bottle Recycling Market : Global Synopsis, Highlights, Key Findings, Major Companies Analysis and Forecast to 2023. *ReleaseWire*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5RKS-P9R1-JCMN-Y35G-00000-00&context=1516831.	Producer Responsibility Organizations	Newstex	MR	1								(+) 1						
2018	Feb	26	Mondi develops fully recyclable plastic laminate for pre-made pouches	Leading Organizations	(February 26, 2018 Monday). Mondi develops fully recyclable plastic laminate for pre-made pouches. *MarketLine NewsWire (Formerly Datamonitor)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5RS2-1141-DYG0-744B-00000-00&context=1516831.	Waste supplier	Plastic Producer, Incumbent	MR	1			(+) 1											
2018	Mar	12	In Ekoplaza in Amsterdam all of the 700-plus products in the shop are wrapped in a biodegradable faux plastic, which will completely decompose after just 12 weeks on the compost heap. Ekoplaza would roll out the initiative to its other 74 stores by the end of the year	New initiave	By Giulia Crouch. (March 12, 2018 Monday). PLASTIC (FREE) FANTASTIC Inside the world's first supermarket where NOTHING is wrapped in plastic packaging; It looks like a regular convenience store, with over 700 products shrink-wrapped in what appears to be transparent plastic. But Ekoplaza, in central Amsterdam, is the first supermarket in the world to use a biodegradable natural alternative. *thesun.co.uk*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5RVK-8MS1-F021-64Y7-00000-00&context=1516831.	Waste supplier	Retailer, Incumbent	Bioplastic	1			(+) 1											
2018	Mar	29	EPRO found that the national recycling schemes in Europe, based on extended producer responsibility (EPR), manage wel. Each country has normally, either by law or a covenant, fixed national targets for recycling and energy recovery. These regulations are based on the EU directive on Packaging and Packaging Waste.	Legislation	March 29, 2018 Thursday). EU Breaks 40% Mark for Plastic Packaging Waste Recycling in 2016. Industrial Goods Monitor Worldwide. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5S05-YPJ1-JDJN-600R-00000-00&context=1516831.	Producer Responsibility Organizations	EU directive on Packaging and Packaging Waste	MR	1						(+) 1								
			Each country has normally, either by law or a covenant, fixed national targets for recycling and energy recovery. These regulations are based on the EU directive on Packaging and Packaging Waste.	Legislation	March 29, 2018 Thursday). EU Breaks 40% Mark for Plastic Packaging Waste Recycling in 2016. Industrial Goods Monitor Worldwide. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5S05-YPJ1-JDJN-600R-00000-00&context=1516831.	Producer Responsibility Organizations	EU directive on Packaging and Packaging Waste	MR	1													(+) 1	
			All the EU 28+ 2 countries in 2016 exceeded the EU minimum targets of 22.5% recycling. 26 countries (24 in 2014) recycled more than 30%, 15 countries even surpassed 40%. In 2014 the NL ranked second along with Germany, Sweden, Ireland, Spain with 51.2% recycling rate.	Goals/Targets	March 29, 2018 Thursday). EU Breaks 40% Mark for Plastic Packaging Waste Recycling in 2016. Industrial Goods Monitor Worldwide. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5S05-YPJ1-JDJN-600R-00000-00&context=1516831.	Producer Responsibility Organizations	Dutch Government	MR		1						(+) 1							
2018	Apr	9	Uniliver, has partnered with Ioniqa and Indorama Ventures.	Leading Organizations	(April 9, 2018 Monday). Unilever explores PET plastic recycling tech for food packaging. *Industrial Goods Monitor Worldwide*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5S2H-0C81-F11P-X42Y-00000-00&context=1516831.	Waste supplier	Retailer, Incumbent	MR, RC	1								(+) 1						
			Ioniqa has developed a technology to convert PET waste - including coloured packs back into transparent virgin grade material.	Leading Organizations	(April 9, 2018 Monday). Unilever explores PET plastic recycling tech for food packaging. *Industrial Goods Monitor Worldwide*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5S2H-0C81-F11P-X42Y-00000-00&context=1516831.	Converter	Incumbent	MR, RC	1			(+) 1											
			The technology from the spin-off from the Eindhoven University of Technology, Netherlands has passed pilot stage and is moving towards industrial scale testing.	Testing phase	(April 9, 2018 Monday). Unilever explores PET plastic recycling tech for food packaging. *Industrial Goods Monitor Worldwide*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5S2H-0C81-F11P-X42Y-00000-00&context=1516831.	Producer Responsibility Organizations	Eindhoven University	MR, RC	1					(+) 1									
			The project is about a magnetic catalyst to strip plastic down to the molecular level, remove colour and impurities, then turn it into transparent food-grade material	New project	(May 9, 2018 Wednesday). Can we reinvent plastic - cleaner and greener?; Scientists are desperately searching for ways to reinvent plastic but until then manufacturers, supermarkets and buyers must control their bad habits. By Marcus Gover, chief executive of resource efficiency experts Wrap. *The Evening Standard (London)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5S8Y-2YB1-DY9P-N0T7-00000-00&context=1516831.	Waste suppliers	Retailers, Incumbent, new entrant	CR	1			(+) 1											

2018	Apr	24	By 2025, at least 55% of municipal waste (from households and businesses) should be recycled, says the text, as agreed with Council of Ministers.	Goals/Targets	EU Reporter Correspondent. (April 24, 2018 Tuesday). #CircularEconomy: More recycling of household waste, less landfilling. EU Reporter. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5S5R-1V91-JCMN-Y390-00000-00&context=1516831.	Producer Responsibility Organizations	Dutch Government	MR	1						(+) 1							
			The target will rise to 60% by 2030 and 65% by 2035. 65% of packaging materials will have to be recycled by 2025, and 70% by 2030	Goals/Targets	EU Reporter Correspondent. (April 24, 2018 Tuesday). #CircularEconomy: More recycling of household waste, less landfilling. EU Reporter. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5S5R-1V91-JCMN-Y390-00000-00&context=1516831.	Producer Responsibility Organizations	Dutch Government	MR	1						(+) 1							
			By 2024, biodegradable waste will also have to be either collected separately or recycled at home through composting.	Goals/Targets	EU Reporter Correspondent. (April 24, 2018 Tuesday). #CircularEconomy: More recycling of household waste, less landfilling. EU Reporter. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5S5R-1V91-JCMN-Y390-00000-00&context=1516831.	Producer Responsibility Organizations	Dutch Government	Bioplastic	1						(+) 1							
2018	Apr	24	A focus on consumers and convenience has been integral to the success of plastic bottle deposit schemes in countries such as the NL. The schemes typically work by refunding a small fee, paid at the time of purchase, to the consumer at automated collection points - often located in supermarkets and convenience stores.	New initiative	Helen McGeough. (April 24, 2018 Tuesday). Don't keep it bottled up: Getting serious about plastic; Business and government must collaborate to help the recycling initiative take flight. City A.M.. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5S5N-X5X1-JBVM-Y3DG-00000-00&context=1516831.	Waste suppliers	Consumers	MR	1						(+) 1							
			For consumers to appropriately engage with a deposit return scheme, they must understand the value of plastic as a material. This level of education is one that should be spearheaded by the government.	New initiative	Helen McGeough. (April 24, 2018 Tuesday). Don't keep it bottled up: Getting serious about plastic; Business and government must collaborate to help the recycling initiative take flight. City A.M.. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5S5N-X5X1-JBVM-Y3DG-00000-00&context=1516831.	Waste suppliers	Consumers	MR	1										(+) 1			
2018	May	9	major retailers and global brands competing to come out with plastics reduction campaigns and even improve their packaging bad habits	Leading Organizations	(May 9, 2018 Wednesday). Can we reinvent plastic - cleaner and greener?; Scientists are desperately searching for ways to reinvent plastic but until then manufacturers, supermarkets and buyers must control their bad habits. By Marcus Gover, chief executive of resource efficiency experts Wrap. *The Evening Standard (London)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5S8Y-2YB1-DY9P-N0T7-00000-00&context=1516831.	Waste suppliers	Retailers, Incumbent	RC	1					(+) 1								
			Waitrose announced the removal of disposable coffee cups from its stores	New initiative	(May 9, 2018 Wednesday). Can we reinvent plastic - cleaner and greener?; Scientists are desperately searching for ways to reinvent plastic but until then manufacturers, supermarkets and buyers must control their bad habits. By Marcus Gover, chief executive of resource efficiency experts Wrap. *The Evening Standard (London)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5S8Y-2YB1-DY9P-N0T7-00000-00&context=1516831.	Waste suppliers	Retailers, Incumbent	R		1					(+) 1							
			Nestlé announced its intention to switch to 100 per cent reusable, recyclable or compostable packaging by 2025, or sooner	Leading Organizations	(May 9, 2018 Wednesday). Can we reinvent plastic - cleaner and greener?; Scientists are desperately searching for ways to reinvent plastic but until then manufacturers, supermarkets and buyers must control their bad habits. By Marcus Gover, chief executive of resource efficiency experts Wrap. *The Evening Standard (London)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5S8Y-2YB1-DY9P-N0T7-00000-00&context=1516831.	Waste suppliers	Retailers, Incumbent	MR, R	1					(+) 1								
2018	May	13	New, plant-based bioplastics, made from substances such as starch, cellulose, rapeseed oil, algae, wood, or organic waste, offer cleaner, lower-carbon, more renewable alternatives.	Knowledge Sharing	MARCUS GOVER. (May 13, 2018 Sunday). PLASTIC FANTASTIC; Scientists are desperately searching for ways to reinvent plastic but until then manufacturers, supermarkets and buyers must control their bad habits, says Marcus Gover. *The Independent - Daily Edition*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5S9R-13W1-F072-401M-00000-00&context=1516831.	Waste suppliers	Plastic producers	Bioplastic	1						(+) 1							
			Using a higher proportion of recycled content in plastic packaging is another important way of greening the production process.	Knowledge Sharing	MARCUS GOVER. (May 13, 2018 Sunday). PLASTIC FANTASTIC; Scientists are desperately searching for ways to reinvent plastic but until then manufacturers, supermarkets and buyers must control their bad habits, says Marcus Gover. *The Independent - Daily Edition*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5S9R-13W1-F072-401M-00000-00&context=1516831.	Waste suppliers	Plastic producers	RC	1						(+) 1							
			Worldwide, bioplastics are booming, with global markets forecast to exceed £22 billion by 2020.	Knowledge Sharing	MARCUS GOVER. (May 13, 2018 Sunday). PLASTIC FANTASTIC; Scientists are desperately searching for ways to reinvent plastic but until then manufacturers, supermarkets and buyers must control their bad habits, says Marcus Gover. *The Independent - Daily Edition*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5S9R-13W1-F072-401M-00000-00&context=1516831.	Waste suppliers	Plastic producers	Bioplastic	1						(+) 1							
2018	May	17	the global recycled plastics market is estimated at USD 36.93 billion in 2017 and is projected to reach USD 50.36 billion by 2022, at a CAGR of 6.4% between 2017 and 2022. Packaging was estimated to be largest segment of recycled plastics market in 2017.	Knowledge Sharing	antea. (July 10, 2017 Monday). Nelipak Healthcare Packaging Joins Healthcare Plastics Recycling Council. *3BL Blogs*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5P0G-68W1-F03R-N3KW-00000-00&context=1516831.	Producer Responsibility Organizations	Newstex	RC	1						(+) 1							
			Factors such as the increasing use of recycled plastics in many new applications in packaging, automotive, and electrical & electronics industries and many favorable initiatives by governments in many countries promoting use of recycled plastics offer lucrative opportunities for growth of recycled plastics market.	Knowledge Sharing	antea. (July 10, 2017 Monday). Nelipak Healthcare Packaging Joins Healthcare Plastics Recycling Council. *3BL Blogs*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5P0G-68W1-F03R-N3KW-00000-00&context=1516831.	Producer Responsibility Organizations	Newstex	RC	1							(+) 1						
			Increasing consciousness regarding environmental benefits provided by recycled plastics has been major factor contributing to growing use of recycled plastics in this industry.	Knowledge Sharing	Kevin O'Sullivan. (August 15, 2017 Tuesday). China to stop taking recycling material; All scrap plastics and unsorted paper will be banned by the end of the year. *The Irish Times*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5P7X-WHM1-JC8Y-81XH-00000-00&context=1516831.	Producer Responsibility Organizations	Newstex	RC		1					(+) 1							
2018	May	30	European Commission announced a raft of measures to reduce single-use plastics and encourage the development and use of "cleaner" alternatives.	Goals/Targets	(January 17, 2018 Wednesday). EU chems aim to engage on recycling, but true circular economy still far. *ICIS Chemical News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5RF7-7DN1-JCN4-H0VB-00000-00&context=1516831.	Producer Responsibility Organizations	Dutch Government	R		1				(+) 1								
			The EU's Packaging and Packaging Waste Directive will also be reviewed as part of this process.	New initiative	(January 17, 2018 Wednesday). EU chems aim to engage on recycling, but true circular economy still far. *ICIS Chemical News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5RF7-7DN1-JCN4-H0VB-00000-00&context=1516831.	Producer Responsibility Organizations	Dutch Government	R		1				(+) 1								
			Within the rules there is already an essential requirement for packaging to be designed, produced and commercialised in such a way to permit its reuse or recovery and minimise its impact on the environment.	New initiative	(January 17, 2018 Wednesday). EU chems aim to engage on recycling, but true circular economy still far. *ICIS Chemical News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5RF7-7DN1-JCN4-H0VB-00000-00&context=1516831.	Producer Responsibility Organizations	Dutch Government	R		1					(+) 1							
			For bioplastics in a survey of 1,700 German citizens published at the 11st European Bioplastics Conference in Berlin, almost half (43%) had heard of the term 'bioplastics', but 84% of those had no idea what it meant.	Event	Jenny Eagle, . (January 18, 2018 Thursday). 'The actions of one UK retailer are insignificant when more than 85% of plastic marine pollution comes from Asia and Africa'. *DairyReporter.com*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5RF9-FBN1-JC6M-X40N-00000-00&context=1516831.	Waste supplier	Consumers	Bioplastic	1						-1							
2018	May	31	The Parliament recently adopted a new legislative package for the Action Plan by a large majority and the Council now has to officially adopt it.	Legislation	Olly Wehring. (January 18, 2018 Thursday). Danone's Evian to go "circular" with 100% recycled plastic for bottles. *just-drinks global news*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5RFC-TK01-F14X-V1S6-00000-00&context=1516831.	Producer Responsibility Organizations	Dutch Government	MR	1					(+) 1								
			It has one target by 2035, all member states should recycle at least 65% of their municipal waste. European households and businesses will have to recycle at least 55% of their municipal waste by 2025, according to stricter new rules passed by the European Parliament on Wednesday (18 April)	Legislation	Olly Wehring. (January 18, 2018 Thursday). Danone's Evian to go "circular" with 100% recycled plastic for bottles. *just-drinks global news*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5RFC-TK01-F14X-V1S6-00000-00&context=1516831.	Producer Responsibility Organizations	Dutch Government	MR	1						(+) 1							
			A study by the Ellen MacArthur Foundation calculated necessary investments of around (EURO)108 billion for the necessary system expansion in all member states. This reveals that the targets are very optimistic and only some country memebers will successfully achieve those targets.	Knowledge Sharing	(January 30, 2018 Tuesday). Register of Commission documents: Report from the Commission to the European Parliament and the Council on the impact of the use of oxo-degradable plastic, including oxo-degradable plastic carrier bags, on the environment Document date: 2018-01-16 COM_COM(2018)0035 COM documents. Impact News Service. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5RJ1-4S11-JDG9-Y1XJ-00000-00&context=1516831.	Producer Responsibility Organizations	Ellen MacArthur Foundation	MR	1						-1							

2018	Jun	25	It is expected that the demand for plastic recycling plants in Europe is likely to increase significantly in the years to come. By the end of 2025, sorting and recycling plants with an estimated capacity of 5.2 million tons will be commissioned.	Knowledge Sharing	(February 8, 2018 Thursday). PET Bottle Recycling Market : Global Synopsis, Highlights, Key Findings, Major Companies Analysis and Forecast to 2023. *ReleaseWire*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5RKS-P9R1-JCMN-Y35G-00000-00&context=1516831.	Producer Responsibility Organizations	Newstex	MR	1						(+) 1							
			Strategic partnerships between Key players support the growth and expansion plans of the key players during the forecast period.	Partnership	(February 26, 2018 Monday). Mondi develops fully recyclable plastic laminate for pre-made pouches. *MarketLine NewsWire (Formerly Datamonitor)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5RS2-1141-DYG0-744B-00000-00&context=1516831.	Value chain	Incumbent, New entrant	MR	1												(+) 1	
			On the product and sales side, companies are investing in innovation/RD, brand building, and fostering strong relationships with customers to support their competitive position.	Partnership	(February 26, 2018 Monday). Mondi develops fully recyclable plastic laminate for pre-made pouches. *MarketLine NewsWire (Formerly Datamonitor)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5RS2-1141-DYG0-744B-00000-00&context=1516831.	Waste suppliers, Recyclers	Incumbent, New entrant	MR	1		(+) 1											
2018	May	25	The United Kingdom's Change Please is Announced as Winner of the Chivas Venture 2018 at TNW Conference in Amsterdam	Event	(May 25, 2018 Friday). Will.i.am Awards 'Superstar' Entrepreneurs in Final of $1M Chivas Competition. *PR Newswire Europe*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5SDG-3YD1-DXP3-R36J-00000-00&context=1516831.	Third party	Conference	General	1				(+) 1									
2018	May	30	At supermarket checkouts in the UK, the Netherlands, Belgium, Norway and Italy, shoppers have been ripping off "excessive packaging" in a wave of "plastic attacks	Negative reputation	David Burrows. (May 30, 2018 Wednesday). Plastic pledges - reason to be positive or time to panic?. *just-food global news*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5SFC-T321-F14X-V0KX-00000-00&context=1516831.	Waste suppliers	Retailers, consumers	RC		1					-1							
2018	May		In May 2018 there is been proposed by the European Commission to ban disposable plastic products	Legislation	https://kidv.nl/albert-heijn-basic-waterfles-met-vaste-dop	Producer Responsibility Organizations	EU	R		1					(+) 1							
			Plastic bottles can be used multiple times, except that the bottle caps can be a problem and are covered by the proposal of the ban	Knowledge Sharing	https://kidv.nl/albert-heijn-basic-waterfles-met-vaste-dop	Producer Responsibility Organizations	KIDV	R		1					(+) 1							
			these get lost and end up in nature.	Knowledge Sharing	https://kidv.nl/albert-heijn-basic-waterfles-met-vaste-dop	Producer Responsibility Organizations	KIDV	MR		1									-1			
2018	Jun	14	LyondellBasell in March 2018 invested in Netherlands-based plastics recycling company Quality Circular Polymers (QCP) in a joint venture with SUEZ, where SUEZ will seek to improve waste collection for feedstock at QCP to produce virgin quality polyethylene (PE) and polypropylene (PP).	Financing	(June 14, 2018 Thursday). INSIGHT: Circular economy gets big push with ACC commitment on plastics. *ICIS Chemical News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5SJS-CP61-F046-74BT-00000-00&context=1516831.	Waste supplier	Plastic producer,Incumbent, New entrant	MR, RC	1							(+) 1						
			operations will initially be focused in the Netherlands and Germany, where recycling awareness and capabilities are high,	Leading Organizations	(June 14, 2018 Thursday). INSIGHT: Circular economy gets big push with ACC commitment on plastics. *ICIS Chemical News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5SJS-CP61-F046-74BT-00000-00&context=1516831.	Waste supplier	Plastic producer, incumbent	MR, RC	1						(+) 1							
			LyondellBasell aims to replicate the technology and operations elsewhere over time	Leading Organizations	(June 14, 2018 Thursday). INSIGHT: Circular economy gets big push with ACC commitment on plastics. *ICIS Chemical News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5SJS-CP61-F046-74BT-00000-00&context=1516831.	Waste supplier	Plastic producer, incumbent	MR, RC	1							(+) 1						
	Jul	16	Bio-on successfully completed the first test phase for the special bioplastic production facility	Testing phase	(July 16, 2018 Monday). Bio-on successfully completed the first test phase for the special bioplastic production facility inaugurated on 20 June.. *Hugin - English*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5STD-RYH1-JDPT-Y08T-00000-00&context=1516831.	Waste supplier	Plastic producer,Incumbent, New entrant	Bioplastic	1		(+) 1											
	Jul	20	Major steps concerned with post-consumer recycling include collection, sorting, cleaning, size reduction and separation. Primary, secondary, tertiary and quaternary are the broad varieties of recycling and recovery methods, which primarily involves mechanical reprocessing into products with certain properties. The major restraint for plastic recycling market is recycling mixed plastic waste and collection of plastic recyclables.	Knowledge Sharing	By Giulia Crouch. (March 12, 2018 Monday). PLASTIC (FREE) FANTASTIC Inside the world's first supermarket where NOTHING is wrapped in plastic packaging; It looks like a regular convenience store, with over 700 products shrink-wrapped in what appears to be transparent plastic. But Ekoplaza, in central Amsterdam, is the first supermarket in the world to use a biodegradable natural alternative. *thesun.co.uk*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5RVK-8MS1-F021-64Y7-00000-00&context=1516831.	Recyclers, converters	Plastic producer,Incumbent, New entrant	MR, RC	1							(+) 1						
			Increase in the public awareness has encouraged local authorities and manufacturers for the development of products with recycled substance.	Knowledge Sharing	March 29, 2018 Thursday). EU Breaks 40% Mark for Plastic Packaging Waste Recycling in 2016. Industrial Goods Monitor Worldwide. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5S05-YPJ1-JDJN-600R-00000-00&context=1516831.	Waste supplier	Cunsumers	MR, RC	1						(+) 1							
			Implementation of policies to minimize environmental impacts can have a huge impact on recycling market.	Guidance	(April 9, 2018 Monday). Unilever explores PET plastic recycling tech for food packaging. *Industrial Goods Monitor Worldwide*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5S2H-0C81-F11P-X42Y-00000-00&context=1516831.	Producer Responsibility Organizations	Dutch Government	MR	1					(+) 1								
			The major restraint for plastic recycling market is recycling mixed plastic waste and collection of plastic recyclables.	Negative reputation	EU Reporter Correspondent. (April 24, 2018 Tuesday). #CircularEconomy: More recycling of household waste, less landfilling. EU Reporter. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5S5R-1V91-JCMN-Y39D-00000-00&context=1516831.	Producer Responsibility Organizations	Municipalities	MR		1					-1							
	Jul	24	DSM has developed a polyethylene (PE)/polyamide 6 (PA 6) barrier film for use in food packaging that can be recycled using a technology developed by Germany-based post-consumer plastic specialist APK, the Netherlands. The addition of PA 6 reduces the layer thickness of the film, while APK has developed a technique making it possible to recover re-granulates from the packaging with qualities close to virgin plastics from multilayer composites.	Leading Organizations	Helen McGeough. (April 24, 2018 Tuesday). Don't keep it bottled up: Getting serious about plastic; Business and government must collaborate to help the recycling initiative take flight. City A.M.. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5S5N-X5X1-JBVM-Y3DG-00000-00&context=1516831.	Waste supplier	Plastic Producer ,Incumbent	MR	1		(+) 1											
2018	Jul	26	LyondellBasell advances chemical recycling by signing agreement with the Karlsruhe Institute of Technology ROTTERDAM, Netherlands	Agreement	(July 26, 2018 Thursday). LyondellBasell advances chemical recycling by signing agreement with the Karlsruhe Institute of Technology. *Global English (Middle East and North Africa Financial Network)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5SWJ-4M51-JCNX-3232-00000-00&context=1516831.	Waste supplier	Plastic Producer ,Incumbent	CR	1							(+) 1						
			The focus of the venture is to develop a new catalyst and process technology to decompose post-consumer plastic waste, such as packaging into monomers for reuse in polymerization processes	New project	(July 26, 2018 Thursday). LyondellBasell advances chemical recycling by signing agreement with the Karlsruhe Institute of Technology. *Global English (Middle East and North Africa Financial Network)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5SWJ-4M51-JCNX-3232-00000-00&context=1516831.	Waste supplier	Plastic Producer ,Incumbent	CR	1		(+) 1											
2018	Aug	23	EUROPEN and 67 other European and national associations representing a wide range of packaging materials and sectors across the packaging value chain, have announced joint recommendations on the Commission's proposal for a Directive on the reduction of the impact of certain plastic products on the environment	Goals/Targets	EU Reporter Correspondent. (August 23, 2018 Thursday). Packaging value chain coalition of 68 industry associations launches joint recommendations ahead of negotiations on #SingleUsePlastics proposal. *EU Reporter*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5T3H-HR11-F03R-N4SW-00000-00&context=1516831.	Producer Responsibility Organizations	EU Commission	General	1					(+) 1								
			EUROPEN will contribute to ensure policy coherence based on a fact-finding research, resulting in an effective roadmap	New initiative	EU Reporter Correspondent. (August 23, 2018 Thursday). Packaging value chain coalition of 68 industry associations launches joint recommendations ahead of negotiations on #SingleUsePlastics proposal. *EU Reporter*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5T3H-HR11-F03R-N4SW-00000-00&context=1516831.	Producer Responsibility Organizations	The European Organization for Packaging and the Environment	General	1											(+) 1	

	Aug	28	RPC Group announced the acquisition of U.K. rigid plastics recycler Plasgran Ltd. and an agreement to sell the foodservice business of its U.S. subsidiary Letica Corp. to Graphic Packaging International LLC. The transaction will further diversify our customer base, enhance our geographic footprint, and provide needed capacity to meet the incremental demand for paper cups resulting from the ongoing shift out of polystyrene foam. the Bridge of Allan,have started to prepare for the sale of its European automotive injection molding business, with operations in Zevenaar, the Netherlands and Rongu, Estonia.	Deals between industries	MARCUS GOVER. (May 13, 2018 Sunday). PLASTIC FANTASTIC; Scientists are desperately searching for ways to reinvent plastic but until then manufacturers, supermarkets and buyers must control their bad habits, says Marcus Gover. *The Independent - Daily Edition*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5S9R-13W1-F072-401M-00000-00&context=1516831.	Waste supplier, Recycler	Plastic producer, Incumbent	MR	1							(+) 1						
			However, it warned potential buyers that there is continuing and significant underperformance at the Dutch plant.	Negative reputation	(May 17, 2018 Thursday). Recycled Plastics Market Grow Steady at 6.4% CAGR to 2022, Led by Plastic Disposal and Waste Plastic Scraps. PR Newswire. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5SBT-15G1-JB72-11VB-00000-00&context=1516831.	Waste supplier, Recycler	Plastic producer, Incumbent	MR	1		-1											
2018	Aug		Fact sheet: Biodegradable plastic packaging	Guidance	https://kidv.nl/biologisch-afbreekbare-kunststof-verpakkingen	Producer Responsibility Organizations	KIDV	Bioplastic	1				(+) 1									
			Biodegradable plastics are on the rise.	Knowledge Sharing	https://kidv.nl/biologisch-afbreekbare-kunststof-verpakkingen	Producer Responsibility Organizations	KIDV	Bioplastic	1							(+) 1						
			However, the Sustainable Packaging Knowledge Institute (KIDV) prefers reusable and recyclable packaging over biodegradable packaging.	Negative reputation	https://kidv.nl/biologisch-afbreekbare-kunststof-verpakkingen	Producer Responsibility Organizations	KIDV	Bioplastic	1				-1									
			Biodegradable plastic packaging is in principle degradable in industrial composting plants if it meets the EN 13432 standard	Knowledge Sharing	https://kidv.nl/biologisch-afbreekbare-kunststof-verpakkingen	Producer Responsibility Organizations	KIDV	Bioplastic	1				(+) 1									
			In recent years, the processes of composting plants have accelerated significantly	Knowledge Sharing	https://kidv.nl/biologisch-afbreekbare-kunststof-verpakkingen	Producer Responsibility Organizations	KIDV	Bioplastic	1							(+) 1						
			If the biodegradable plastic ends up with the other plastic waste, it can affect the quality of the recyclate	Negative reputation	https://kidv.nl/biologisch-afbreekbare-kunststof-verpakkingen	Producer Responsibility Organizations	KIDV	Bioplastic	1										-1			
			Biodegradable plastic must therefore be disposed of with residual waste for the time being and not in the organic waste / green bin or other plastic waste.	Guidance	https://kidv.nl/biologisch-afbreekbare-kunststof-verpakkingen	Producer Responsibility Organizations	KIDV	Bioplastic	1										(+) 1			
			The KIDV sees possibilities for the application of biodegradable plastic packaging if, in combination with the product, it has an additional integral advantage that more organic waste is collected	Positive reputation	https://kidv.nl/biologisch-afbreekbare-kunststof-verpakkingen	Producer Responsibility Organizations	KIDV	Bioplastic	1											(+) 1		
			These packaging can also be used well for specific applications in materials that can be processed in closed systems	New project	https://kidv.nl/biologisch-afbreekbare-kunststof-verpakkingen	Waste supplier	Festivals	Bioplastic	1			(+) 1										
			An example of this are cups at a festival, which are then collected and processed.	New project	https://kidv.nl/biologisch-afbreekbare-kunststof-verpakkingen	Waste supplier	Festivals	Bioplastic	1		(+) 1											
2018	Sep	1	APK AG will start up the first commercial plant to recycle multilayer packaging using the company's solvent-based Newcycling process. Because the quality of the products is similar to virgin resins, granulate from the Newcycling process can be reused in applications such as flexible packaging.	New plant	(May 17, 2018 Thursday). Recycled Plastics Market Grow Steady at 6.4% CAGR to 2022, Led by Plastic Disposal and Waste Plastic Scraps. PR Newswire. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5SBT-15G1-JB72-11VB-00000-00&context=1516831.	Third party	Technology Providers, New entrants	MR, RC	1		(+) 1											
			APK is planning a second plant that will handle a minimum of 25,000 m.t./yr of post-consumer plastic waste, with startup planned for the end of 2020	New plant	(May 17, 2018 Thursday). Recycled Plastics Market Grow Steady at 6.4% CAGR to 2022, Led by Plastic Disposal and Waste Plastic Scraps. PR Newswire. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5SBT-15G1-JB72-11VB-00000-00&context=1516831.	Third party	Technology Providers, New entrants	MR, RC	1		(+) 1											
			APK is also involved in a number of additional projects: A joint-development project with Henkel (Düsseldorf, Germany), Mondi Group (Vienna, Austria) and Borealis AG (Vienna, Austria) to replace virgin low-density PE (LDPE) by LDPE re-granulates from Newcycling process; a cooperation agreement with Royal DSM (Heerlen, the Netherlands) for recycling PE/PA6 film; and a strategic partnership with MOL Group (Budapest, Hungary) to further support the commercialization of the technology.	Partnership	(May 17, 2018 Thursday). Recycled Plastics Market Grow Steady at 6.4% CAGR to 2022, Led by Plastic Disposal and Waste Plastic Scraps. PR Newswire. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5SBT-15G1-JB72-11VB-00000-00&context=1516831.	Third party	Technology Providers, New entrants	MR, RC	1							(+) 1						
	Sep	3	Resin producers can play a key role in protecting plastics demand. Many have introduced polymers based on sustainable raw materials. New resins can offer more opportunities to reduce weight.	Negative reputation	David Burrows. (May 30, 2018 Wednesday). Plastic pledges - reason to be positive or time to panic?. *just-food global news*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5SFC-T321-F14X-V0KX-00000-00&context=1516831.	Waste supplier	Incumbents, New entrant	Bioplastic	1											(+) 1		
			Some resin companies, especially in Europe, have acquired recycling companies that might offset any erosion in virgin resin demand.	Knowledge Sharing	David Burrows. (May 30, 2018 Wednesday). Plastic pledges - reason to be positive or time to panic?. *just-food global news*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5SFC-T321-F14X-V0KX-00000-00&context=1516831.	Waste supplier	Incumbents, New entrant	MR, RC	1							(+) 1						
			LyondellBasell, for example, recently acquired a 50 percent interest in Quality Circular Polymers, a plastics recycler based in the Netherlands so that it might offset any erosion in virgin resin demand.	Knowledge Sharing	David Burrows. (May 30, 2018 Wednesday). Plastic pledges - reason to be positive or time to panic?. *just-food global news*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5SFC-T321-F14X-V0KX-00000-00&context=1516831.	Waste suplier, recycler	Incumbents, New entrant	MR, RC	1							(+) 1						
2018	Sep	3	"Rethinking single-use plastics," a study just published by market researchers with major financial institution Citi. The researchers paint an extensive picture of the battle between plastics, paper, metal and glass in packaging	Knowledge Sharing	Michael Lauzon. (September 3, 2018). Report: Single-use plastic packaging must adapt to survive. *Plastics News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5T6J-9DG1-DYFH-V06M-00000-00&context=1516831.	Producer Responsibility Organizations	Finacial Institution, Citi	MR	1				(+) 1									
			Only 14 percent of plastic packaging is recycled, the report stated.	Knowledge Sharing	Michael Lauzon. (September 3, 2018). Report: Single-use plastic packaging must adapt to survive. *Plastics News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5T6J-9DG1-DYFH-V06M-00000-00&context=1516831.	Producer Responsibility Organizations	Finacial Institution, Citi	MR		1					-1							
			Citi researchers cite a study indicating biodegradable polymers demand over the next five years will grow at 9 percent per year starting from the base point in 2017 of a global total of 335,000 tons	Knowledge Sharing	Michael Lauzon. (September 3, 2018). Report: Single-use plastic packaging must adapt to survive. *Plastics News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5T6J-9DG1-DYFH-V06M-00000-00&context=1516831.	Producer Responsibility Organizations	Finacial Institution, Citi	Bioplastic	1							(+) 1						

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2018	Oct	1	New project: Standardisation quality of recycled plastics to enhance circular applications	Knowledge Sharing	https://www.wur.nl/en/project/Towards-more-circularity-for-PP-and-PE-F006pA.htm	Producer Responsibility Organizations	WUR	RC	1				(+) 1										
2018	Oct	1	the Ellen MacArthur Foundation and the United Nations Environment Programme (UNEP) launched the "New Plastics Economy Global Commitment", an initiative which brings together more than 500 signatories (companies, governments, NGOs, universities and other organizations) around various goals for 2025 in line with a shared vision of creating a circular economy for plastic	New initiative	https://www.veolia.com/en/news/ellen-macarthur-foundation-new-plastics-economy-global-commitment	Producer Responsibility Organizations	United Nations Environment Programme (UNEP)	General	1													(+) 1	
		1	first gregress report	Reporting	https://www.veolia.com/en/news/ellen-macarthur-foundation-new-plastics-economy-global-commitment	Producer Responsibility Organizations	United Nations Environment Programme (UNEP)	General	1					(+) 1									
2018	Oct	1	A new 100-foot stretch of bike lane in Zwolle is made from 70 percent recycled plastic, which includes waste from plastic bottles, festival beer cups, packaging, and plastic furniture. The material, which looks similar to that used on running tracks, is formed into hollow, lightweight pre-fabricated parts that can be installed in pieces instead of poured like concrete and asphalt. A tube inside the pieces is able to hold storm water or carry cables, making it a multi-functional piece of infrastructure.	Sucessful Project	Florence Schulz. (May 31, 2018 Thursday). Plastic recycling dilemma in the EU. EurActiv.com. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5SFK-GDY1-JCF9-442T-00000-00&context=1516831.	Producer Responsibility Organizations	Dutch government	MR, RC	1							(+) 1							
2018	Oct	10	With the necessity of natural products and due to government regulations, the global Bio-Based Chemicals Market might rise rapidly by 2023	Legislation	(October 10, 2018 Wednesday). With the necessity of natural products and due to government regulations, the global Bio-Based Chemicals Market might rise rapidly by 2023 :. *MENA English (Middle East and North Africa Financial Network).* https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5TFR-XJT1-F04Y-T3WB-00000-00&context=1516831.	Producer Responsibility Organizations	Dutch value chain	Bioplastic	1								(+) 1						
2018	Oct	18	UK fraud: allocations include Illegal shipments of plastic waste are being routed to the Far East via the Netherlands. UK exports to Turkey and the Netherlands soaring.	Negative reputation	https://recyclinginternational.com/plastics/fraud-with-plastic-scrap-from-uk-has-dutch-connection/17581/	Producer Responsibility Organizations	Dutch Government	MR		1						-1							
			The EA has been passed allegations that export firms are using the Netherlands to effectively launder plastic waste - exploiting looser controls over shipments to Europe - before illegally moving it out to other countries in the Far East, where they might struggle to get approval under the UK licence system.	Negative reputation	https://recyclinginternational.com/plastics/fraud-with-plastic-scrap-from-uk-has-dutch-connection/17581/	Producer Responsibility Organizations	Dutch Government	MR		1						-1							
2018	Oct	23	Researchers from the university and the Environment Agency Austria monitored participants from the UK, Finland, Italy, Japan, the Netherlands, Poland, Russia, and Austria.	Negative reputation	(June 25, 2018 Monday). PET Bottle Recycling Market : 2018 Key Country Analysis, Industry Size, Future Prospective with Leading Company Profiles. M2 PressWIRE. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5SMY-YKB1-F0K1-N43W-00000-00&context=1516831.	Producer Responsibility Organizations	University and the Environment Agency	MR		1			(+) 1										
			The results showed every sample tested positive for the presence of microplastics - with up to nine different types identified. The most common plastics were polypropylene and polyethylene-terephthalate (PET). Both are commonly found in food and drink packaging.	Negative reputation	(June 25, 2018 Monday). PET Bottle Recycling Market : 2018 Key Country Analysis, Industry Size, Future Prospective with Leading Company Profiles. M2 PressWIRE. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5SMY-YKB1-F0K1-N43W-00000-00&context=1516831.	Producer Responsibility Organizations	University and the Environment Agency	MR		1				-1									
2018	Oct	24	Unilever and Veolia today announced that they have signed a collaboration agreement to jointly work on emerging technologies that will help create a circular economy on plastics across various geographies, starting in India and Indonesia.	Leading Organizations	https://www.unilever.com/news/press-releases/2018/unilever-and-veolia-sign-collaboration-agreement-on-sustainable-packaging.html	Waste supplier	Retailer, Incumbents	MR	1								(+) 1						
2018	Oct	25	KDV report about chemical recycling Chemical recycling of plastic packaging: analysis and possibilities for upscaling	Knowledge Sharing	https://kidv.nl/chemische-recycling-van-kunststof-verpakkingen-analyse-en-mogelijkheden-voor-opschaling	Producer Responsibility Organizations	KIDV	CR	1				(+) 1										
			chemical recycling also has its own challenges.	Negative reputation	https://kidv.nl/chemische-recycling-van-kunststof-verpakkingen-analyse-en-mogelijkheden-voor-opschaling	Producer Responsibility Organizations	KIDV	CR	1					(+) 1									
			it is important that all parties involved use the same definition of chemical recycling	Guidance	https://kidv.nl/chemische-recycling-van-kunststof-verpakkingen-analyse-en-mogelijkheden-voor-opschaling	Producer Responsibility Organizations	KIDV	CR	1						(+) 1								
			it requires an exchange of knowledge between the waste sector and the chemical sector in order to tackle the technical challenges together	Guidance	https://kidv.nl/chemische-recycling-van-kunststof-verpakkingen-analyse-en-mogelijkheden-voor-opschaling	Producer Responsibility Organizations	KIDV	CR		1				(+) 1									
			the government can contribute to the upscaling of the techniques with incentives for chemical recycling aimed at resource conservation and climate gains	Participation	https://kidv.nl/chemische-recycling-van-kunststof-verpakkingen-analyse-en-mogelijkheden-voor-opschaling	Producer Responsibility Organizations	KIDV	CR	1												(+) 1		
			The packaging industry can also play an important role in the upscaling of chemical recycling, for example by using the recyclate for new packaging	Participation	https://kidv.nl/chemische-recycling-van-kunststof-verpakkingen-analyse-en-mogelijkheden-voor-opschaling	Producer Responsibility Organizations	KIDV	CR	1								(+) 1						
			companies and designers can take this form of recycling into account when designing new packaging, for example by reducing the use of interfering substances	Participation	https://kidv.nl/chemische-recycling-van-kunststof-verpakkingen-analyse-en-mogelijkheden-voor-opschaling	Producer Responsibility Organizations	KIDV	CR	1												(+) 1		

2018	Oct	29	LIFE PEPPCYCLE will establish two large-scale lines for sorting and recycling high-density polyethylene and polypropylene from mixed waste streams.	New project	(October 29, 2018 Monday). European Union: Annex* LIFE programme: 2017 projects. *Thai News Service*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5TKR-SV41-DXMS-8082-00000-00&context=1516831.	Producer Responsibility Organizations	EU Commission	MR	1			(+) 1											
			The recovered material will be processed into high-quality recyclates, which can be used for the consumer goods market. The project intends to show that 100% substitution for virgin materials is possible, whilst making significant savings in energy and carbon dioxide emissions	New project	(October 29, 2018 Monday). European Union: Annex* LIFE programme: 2017 projects. *Thai News Service*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5TKR-SV41-DXMS-8082-00000-00&context=1516831.	Producer Responsibility Organizations	EU Commission	MR, RC	1			(+) 1											
2018	Nov	11	Any new system must take into account the EU circular economy package. It requires food and drink companies and other retailers to cover the net costs of household recycling collections by local authorities.	Negative reputation	(July 4, 2018 Wednesday). Smurfit Kappa Group is pleased to announce that it has completed the acquisition of Reparenco, a paper and recycling business in the Netherlands, for 226;130;�460 million.. *Plus Company Updates(PCU)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5SPX-9J01-DXCW-D19R-00000-00&context=1516831.	Producer Responsibility Organizations	Dutch authirities, recyclers	MR, RC	1						(+) 1								
2018	Nov	23	Unilever partner Ioniqa is building a factory in the Netherlands capable of continuously upcycling 10,000 tons of used PET plastic	Leading Organizations	(November 23, 2018 Friday). -Unilever: With this technology, we are contributing to a cleaner world'. *ENP Newswire*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5TT5-PRF1-JD3Y-Y52D-00000-00&context=1516831.	Waste suppllier	Retailer, Incumbent, New entrant	MR	1								(+) 1						
			Ioniqa was founded ten years ago in a lab in Eindhoven	Leading Organizations	(November 23, 2018 Friday). -Unilever: With this technology, we are contributing to a cleaner world'. *ENP Newswire*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5TT5-PRF1-JD3Y-Y52D-00000-00&context=1516831.	Waste suppllier	Retailer, Incumbent, New entrant	MR	1				(+) 1										
			This co-operation began in 2016 when we presented our technology at the annual Unilever Research Prize in Vlaardingen, after which we got Unilever's commitment to become our launch customer	Partnership	(November 23, 2018 Friday). -Unilever: With this technology, we are contributing to a cleaner world'. *ENP Newswire*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5TT5-PRF1-JD3Y-Y52D-00000-00&context=1516831.	Waste suppllier	Retailer, Incumbent, New entrant	MR	1					(+) 1									
			We started testing the technology for use in food packaging. At that stage, we had never made a plastic bottle using our feedstock before, let alone one suitable for food	Testing phase	(November 23, 2018 Friday). -Unilever: With this technology, we are contributing to a cleaner world'. *ENP Newswire*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5TT5-PRF1-JD3Y-Y52D-00000-00&context=1516831.	Waste suppllier	Retailer, Incumbent, New entrant	RC	1			(+) 1											
			The first Hellmann's Mayonnaise bottle proved we could do it.	Successful project	(November 23, 2018 Friday). -Unilever: With this technology, we are contributing to a cleaner world'. *ENP Newswire*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5TT5-PRF1-JD3Y-Y52D-00000-00&context=1516831.	Waste supplier	Retailer,Incumbent	RC	1					(+) 1									
2018	Nov		Research shows that there is a lot of support among consumers for separate collection,	Positive reputation	https://kidv.nl/weggooiwijzer	Producer Responsibility Organizations	KIDV	MR	1												(+) 1		
			but they want to know in which bin the waste should be	Negative reputation	https://kidv.nl/weggooiwijzer	Producer Responsibility Organizations	KIDV	MR		1						-1							
			The free Weggooiwijzer system helps with this	Guidance	https://kidv.nl/weggooiwijzer	Producer Responsibility Organizations	KIDV	MR	1									(+) 1					
			Logos (icons) on the packaging indicate to which category of waste the various parts of a packaging belong	New project	https://kidv.nl/weggooiwijzer	Producer Responsibility Organizations	KIDV	MR	1							(+) 1							
			Consumers can see at a glance where each packaging should be disposed of.	Engagement	https://kidv.nl/weggooiwijzer	Producer Responsibility Organizations	KIDV	MR	1							(+) 1							
2018	Dec	13	the Coca-Cola Company today announced a new agreement extending a loan to Ioniqa Technologies (The Netherlands) to facilitate the development of Ioniqa's proprietary technology to produce high-grade, recycled PET content from hard-to-recycle PET waste. The agreement is designed to accelerate the development and deployment of high-grade recycled content PET for use in bottles used by The Coca-Cola Company.	Leading Organizations	https://ioniqa.com/the-coca-cola-company-announces-loan-agreement-with-ioniqa/	Waste supplier	Retailer, Incumbent	RC	1								(+) 1						
2018	Dec	18	producers pay for the net cost of the collection and recycling of their packaging out to consultation shortly	Negative reputation	https://www.theguardian.com/environment/2018/dec/18/packaging-producers-to-pay-full-recycling-costs-under-waste-scheme	Waste supplier	Plastic producers	MR	1					(+) 1									
2018	Dec	21	The new WIVA Infinity Container combines the superior protection and handling of specific healthcare risk waste with the environmental benefits of using recycled plastic resin. Made of 100% recycled plastics.	Partnership	https://www.mauserpackaging.com/en/Site-components/News/News/MPS-Medical-Waste-Container-Made-of-Recycled-Material	Waste supplier	Plastic Producer, New entrants	RC, R	1			(+) 1											
			the recent development is a great example of how partners in the supply chain are teaming up on a joint vision of a circular economy to reduce the environmental impact of a specific product.	Partnership	https://www.mauserpackaging.com/en/Site-components/News/News/MPS-Medical-Waste-Container-Made-of-Recycled-Material	Waste supplier	Plastic Producer, New entrants	RC, R	1								(+) 1						
			Being the leading producer of medical waste containers in Europe, Mauser Packaging Solutions collaborated with QCP (Quality Circular Polymers) and SUEZ to develop new recycling plastics suitable to meet the highest quality standards applicable for packaging designed to handle healthcare risk waste	Partnership	https://www.mauserpackaging.com/en/Site-components/News/News/MPS-Medical-Waste-Container-Made-of-Recycled-Material	Waste supplier	Plastic Producer, New entrants	RC, R	1			(+) 1											
			The new product concept was successfully tested according to the United Nations Dangerous Goods protocols	Testing phase	https://www.mauserpackaging.com/en/Site-components/News/News/MPS-Medical-Waste-Container-Made-of-Recycled-Material	Waste supplier	Plastic Producer, New entrants	RC, R	1			(+) 1											
			highly appreciated support from several Dutch authorities, such as the IL&T (Transport Inspection), the Ministry of Infrastructure and Transport and T&CPI; (Testing Authority), Mauser Packaging Solutions gained a special permit allowing the container to be used in the Dutch market and on Dutch roads.	Partnership	(July 24, 2018 Tuesday). DSM to utilise Germany's APK PE/PA 6 recycling tech for food packaging plastics. ICIS Chemical News. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5SW9-6Y21-JCN4-H0JC-00000-00&context=1516831.	Waste supplier	Plastic Producer, New entrants	RC, R	1													(+) 1	

2018	Dec	27	First Mile have teamed up with KeyKeg and OneCircle to create a circular programme	Partnership	by Jonathan Braude. (August 28, 2018 Tuesday). RPC Recycles Letica Foodservice. *The Deal Pipeline*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5T5V-8VD1-JBSN-12P4-00000-00&context=1516831.	Waste supplier	Plastic Producer, New entrants	R	1							(+) 1						
			The programme aims at recycling plastic kegs, turning them into new, useable plastic kegs.	New project	by Jonathan Braude. (August 28, 2018 Tuesday). RPC Recycles Letica Foodservice. *The Deal Pipeline*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5T5V-8VD1-JBSN-12P4-00000-00&context=1516831.	Waste supplier	Plastic Producer, New entrants	R	1		(+) 1											
			Lightweight Containers is the producer of KeyKeg and UniKeg: the world`s leading one-way beverage kegs.	Leading Organizations	by Jonathan Braude. (August 28, 2018 Tuesday). RPC Recycles Letica Foodservice. *The Deal Pipeline*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5T5V-8VD1-JBSN-12P4-00000-00&context=1516831.	Waste supplier	Plastic Producer, New entrants	R	1											(+) 1		
			the European Commission announced a raft of measures to reduce single-use plastics and encourage the development and use of "cleaner" alternatives	Goals/Targets	by Jonathan Braude. (August 28, 2018 Tuesday). RPC Recycles Letica Foodservice. *The Deal Pipeline*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5T5V-8VD1-JBSN-12P4-00000-00&context=1516831.	Producer Responsibility Organizations	EU	R	1					(+) 1								
			Mars, PepsiCo, Nestlé, Unilever and Danone have all signed a pledge led by the Ellen MacArthur Foundation (EMF) to use 100% recyclable, compostable or reusable plastic packaging by 2025	Leading Organizations	by Jonathan Braude. (August 28, 2018 Tuesday). RPC Recycles Letica Foodservice. *The Deal Pipeline*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5T5V-8VD1-JBSN-12P4-00000-00&context=1516831.	Waste supplier	Incumbents, Ellen MacArthur	MR, R	1					(+) 1								
			Ellen MacArthur Foundation estimates that 32% of plastic packaging "leaks" into the environment and, 40 years on from the launch of first universal recycling symbol, just 14% of plastic packaging is recycled.	Negative reputation	by Jonathan Braude. (August 28, 2018 Tuesday). RPC Recycles Letica Foodservice. *The Deal Pipeline*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5T5V-8VD1-JBSN-12P4-00000-00&context=1516831.	Producer Responsibility Organizations	Ellen MacArthur Foundation	MR	1						-1							
2019	Jan	1	the European Green Deal was signed to transform the EU's economy into a more sustainable one	Guidance	https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en	Producer Responsibility Organizations	Green Deal	General	1					(+) 1								
2019	Jan	4	Unilever and Bio-on to use biotech to produce microplastics.	New project	Lucy Whitehouse, . (January 4, 2019 Friday). Unilever s 2018: what did the beauty giant get up to?. *CosmeticsDesign-Europe.com*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5V44-WMY1-JC6M-X444-00000-00&context=1516831.	Waste supplier	Retailer, Incumbent, New entrant	Bioplastic	1		(+) 1											
			the duo has entered into a strategic alliance using exclusive technologies to create, manufacture and sell personal hygiene and care products	Partnership	Lucy Whitehouse, . (January 4, 2019 Friday). Unilever s 2018: what did the beauty giant get up to?. *CosmeticsDesign-Europe.com*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5V44-WMY1-JC6M-X444-00000-00&context=1516831.	Waste supplier	Retailer, Incumbent, New entrant	Bioplastic	1							(+) 1						
2019	Jan	11	In the Netherlands, one recycling plant recycles household packaging and making a financial success of it	Successful project	Frédéric Simon. (January 11, 2019 Friday). Crunch time for crisp makers as EU waste targets loom. EurActiv.com. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5V5K-3FR1-DYXB-V3BD-00000-00&context=1516831.	Recycler	New entrant	MR	1		(+) 1											
			there is not one single biopolymer that would degrade in the ocean," Grefenstein said. "Most biopolymers just degrade in industrial composting plants.	Negative reputation	Frédéric Simon. (January 11, 2019 Friday). Crunch time for crisp makers as EU waste targets loom. EurActiv.com. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5V5K-3FR1-DYXB-V3BD-00000-00&context=1516831.	Producer Responsibility Organizations	Dutch Government	Bioplastic		1					-1							
			plant-based plastics need fertilisers, water and pesticides to grow, Alvarès pointed out, warning this only displaces the environmental impact of plastic pollution into the agriculture sphere	Negative reputation	Frédéric Simon. (January 11, 2019 Friday). Crunch time for crisp makers as EU waste targets loom. EurActiv.com. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5V5K-3FR1-DYXB-V3BD-00000-00&context=1516831.	Producer Responsibility Organizations	Dutch Government	Bioplastic		1					-1							
			Another concern is that bio-plastics can lead to increased littering because people assume the product is bio-degradable and therefore throw it away quite easily	Negative reputation	Frédéric Simon. (January 11, 2019 Friday). Crunch time for crisp makers as EU waste targets loom. EurActiv.com. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5V5K-3FR1-DYXB-V3BD-00000-00&context=1516831.	Waste supplier	Consumers	Bioplastic		1					-1							
			The world's largest drinks companies, Coca-Cola and PepsiCo, have laid down ambitious plans to roll out 100% plant-based plastic bottles across the globe	Goals/Targets	Frédéric Simon. (January 11, 2019 Friday). Crunch time for crisp makers as EU waste targets loom. EurActiv.com. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5V5K-3FR1-DYXB-V3BD-00000-00&context=1516831.	Waste supplier	Retailer, Incumbent	Bioplastic	1					(+) 1								
			The Break Free From Plastic movement, an NGO coalition, has done a brand audit of plastic litter most commonly found on beaches across the world. It found Coca-Cola, PepsiCo, and Nestlé were the three most frequently identified brands	Partnership	Frédéric Simon. (January 11, 2019 Friday). Crunch time for crisp makers as EU waste targets loom. EurActiv.com. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5V5K-3FR1-DYXB-V3BD-00000-00&context=1516831.	Third party	NGO	MR		1				(+) 1								
			In February last year, Coca-Cola announced its World Without Waste initiative, with a commitment to use only recyclable plastic in its bottles by 2025	Goals/Targets	Frédéric Simon. (January 11, 2019 Friday). Crunch time for crisp makers as EU waste targets loom. EurActiv.com. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5V5K-3FR1-DYXB-V3BD-00000-00&context=1516831.	Waste supplier	Retailer, Incumbent	MR	1					(+) 1								
			By 2030, an average of 50% of Coca-Cola bottles will be made from recycled content.	Goals/Targets	Frédéric Simon. (January 11, 2019 Friday). Crunch time for crisp makers as EU waste targets loom. EurActiv.com. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5V5K-3FR1-DYXB-V3BD-00000-00&context=1516831.	Waste supplier	Retailer, Incumbent	RC	1						(+) 1							
2019	Jan	29	a new EU packaging waste directive was adopted which will set much more ambitious recycling targets and requirements to make the products more easily recyclable than they are today.	New initiative	Dave Keating. (January 29, 2019 Tuesday). Tough new EU recycling rules could be game-changer for packaging. *EurActiv.com*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5V9D-JN81-JCF9-44F7-00000-00&context=1516831.	Producer Responsibility Organizations	Packaging waste directive	RC	1					(+) 1								
			Last week, the industry association Metal Packaging Europe held an event in Brussels with a central message: metal has key recyclability benefits, and should be used more in packaging in order to meet the new EU targets.	Event	Dave Keating. (January 29, 2019 Tuesday). Tough new EU recycling rules could be game-changer for packaging. *EurActiv.com*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5V9D-JN81-JCF9-44F7-00000-00&context=1516831.	Waste supplier	Industry association	MR	1				(+) 1									
			In the Netherlands, one recycling plant is doing what many in the industry have labelled "impossible", by recycling household packaging and making a financial success of it at the Belgian-Dutch border	New plant	Dave Keating. (January 29, 2019 Tuesday). Tough new EU recycling rules could be game-changer for packaging. *EurActiv.com*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5V9D-JN81-JCF9-44F7-00000-00&context=1516831.	Recycler	New entrant	MR	1		(+) 1											

	Jan	29	In May last year, a new EU packaging waste directive was adopted which will set much more ambitious recycling targets and requirements to make the products more easily recyclable than they are today.	New initiative	Dave Keating. (January 29, 2019 Tuesday). Tough new EU recycling rules could be game-changer for packaging. EurActiv.com. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5V9D-JN81-JCF9-44F7-00000-00&context=1516831.	Producer Responsibility Organizations	Packaging directive	MR	1					(+) 1									
			The Commission is working with a consultancy on using LCA to develop rules for Extended Producer Responsibility, which will have to be followed by 2024	Partnership	Dave Keating. (January 29, 2019 Tuesday). Tough new EU recycling rules could be game-changer for packaging. EurActiv.com. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5V9D-JN81-JCF9-44F7-00000-00&context=1516831.	Producer Responsibility Organizations	Third party	MR	1				(+) 1										
			A stakeholders meeting will be held on 11-12 March in Brussels to further develop these requirements.	Event	Dave Keating. (January 29, 2019 Tuesday). Tough new EU recycling rules could be game-changer for packaging. EurActiv.com. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5V9D-JN81-JCF9-44F7-00000-00&context=1516831.	Producer Responsibility Organizations	Third parties	MR	1				(+) 1										
			PlasticsEurope is promoting a measurement called Life Cycle Thinking (LCT), which makes use of LCAs in analysing the environmental impacts of their products across the lifespan.	New initiative	Dave Keating. (January 29, 2019 Tuesday). Tough new EU recycling rules could be game-changer for packaging. EurActiv.com. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5V9D-JN81-JCF9-44F7-00000-00&context=1516831.	Producer Responsibility Organizations	Plastic Europe	MR	1						(+) 1								
			the Confederation of European Paper Industries has stressed that the new real recycling rates in the package will play in the favour of paper packaging, since it also has high recycling rates, of around 80%.	Knowledge sharing	Dave Keating. (January 29, 2019 Tuesday). Tough new EU recycling rules could be game-changer for packaging. EurActiv.com. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5V9D-JN81-JCF9-44F7-00000-00&context=1516831.	Producer Responsibility Organizations	Confederation of EU	MR	1							(+) 1							
			the full effect of the new measurement system may not be known until 2027, when the results of the first reporting are in and fully analysed	Knowledge sharing	Dave Keating. (January 29, 2019 Tuesday). Tough new EU recycling rules could be game-changer for packaging. EurActiv.com. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5V9D-JN81-JCF9-44F7-00000-00&context=1516831.	Producer Responsibility Organizations	Third parties	MR	1							-1							
			citizens are likely to have new requirements placed on them for recycling in order to get governments to meet the 2025 targets.	Participation	Dave Keating. (January 29, 2019 Tuesday). Tough new EU recycling rules could be game-changer for packaging. EurActiv.com. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5V9D-JN81-JCF9-44F7-00000-00&context=1516831.	Waste supplier	Consumers	MR	1												(+) 1		
2019	Feb	1	NL Plastic Pact is launched	New initiative	https://www.foodpackagingforum.org/news/dutch-plastic-pact-publishes-baseline-data	Producer Responsibility Organizations	EU Commission	General	1						(+) 1								
2019	Feb	4	A student team at the Technical University of Eindhoven in the Netherlands introduced Noah, the world's first circular, cradle-to-cradle sustainable car, a fully recyclable EV made of bio-based materials	New project	Karen Laird. (February 4, 2019). Single-serve coffee cups, PC lead biobased developments. *Plastics News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5VCD-0581-DYFH-V0CF-00000-00&context=1516831.	Producer Responsibility Organizations	Eidhoven University	Bioplastic	1				(+) 1										
2019	Feb	18	In Germany and the Netherlands, the introduction of a network of reverse vending machines - dispensing cash in return for empty bottles and cans - led to recycling rates of 98% and 95%, respectively.	New initiative	Mattha Busby. (February 18, 2019 Monday). Food waste bins should be collected weekly, says Michael Gove; Drive to 'reduce, reuse, recycle and cut waste' could include plastic tax and deposit scheme. *The Guardian(London)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5VFN-4D11-F021-60XY-00000-00&context=1516831.	Producer Responsibility Organizations	Dutch Governement	MR		1					(+) 1								
	Feb	20	Significant Growth Foreseen by Plastic Recycling Market During 2017- 2027	Knowledge sharing	Mattha Busby. (February 18, 2019 Monday). Food waste bins should be collected weekly, says Michael Gove; Drive to 'reduce, reuse, recycle and cut waste' could include plastic tax and deposit scheme. *The Guardian(London)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5VFN-4D11-F021-60XY-00000-00&context=1516831.	Recycler	The Guardian	MR	1								(+) 1						
2019	Feb	26	EU-funded project aims to depolymerise MMA and chemically recycle	New project	(February 26, 2019 Tuesday). Topic Page: Circular economy. *ICIS Chemical News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5XPS-P541-F046-7000-00000-00&context=1516831.	Producer Responsibility Organizations	EU	CR	1			(+) 1											
			Plan to build a new plant in The Netherlands for chemical recycling, run by Heathland, a member company of the MMAtwo project	New plant	(February 26, 2019 Tuesday). Topic Page: Circular economy. *ICIS Chemical News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5XPS-P541-F046-7000-00000-00&context=1516831.	Producer Responsibility Organizations	EU	CR	1			(+) 1											
2019	Mar	1	The mechanical recycling is a well-established technology for recycling polypropylene and is projected to be the leading process segment during the forecast period 2018-2023	Knowledge sharing	(March 1, 2019 Friday). Recycled Polypropylene Market Size To Expand at a Notable CAGR Of 6% During 2018 - 2023. *Global English (Middle East and North Africa Financial Network)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5VJ7-XC81-F04Y-T240-00000-00&context=1516831.	Recycler	MENAFN	MR		1							(+) 1						
			Recycled Polypropylene Market Size To Expand at a Notable CAGR Of 6% During 2018 - 2023	Knowledge sharing	(March 1, 2019 Friday). Recycled Polypropylene Market Size To Expand at a Notable CAGR Of 6% During 2018 - 2023. *Global English (Middle East and North Africa Financial Network)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5VJ7-XC81-F04Y-T240-00000-00&context=1516831.	Recycler	MENAFN	MR,RC	1								(+) 1						
			The packaging is the leading application segment and is projected to grow at the highest CAGR during the review period, owing to the rising demand for recycled propylene in the food packaging applications	Knowledge sharing	(March 1, 2019 Friday). Recycled Polypropylene Market Size To Expand at a Notable CAGR Of 6% During 2018 - 2023. *Global English (Middle East and North Africa Financial Network)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5VJ7-XC81-F04Y-T240-00000-00&context=1516831.	Recycler	MENAFN	MR,RC		1							(+) 1						
2019	Mar	8	The chemicals recycling industry is growing in scale and versatility	Knowledge sharing	(March 8, 2019 Friday). Chemicals recycling industry too young to achieve targets in timeframe packaging firm. *ICIS Chemical News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5VKP-S7G1-JCN4-H1WC-00000-00&context=1516831.	Recycler	ICIS Chemical News	CR	1								(+) 1						
			Chemical Recycling is unlikely to become sufficiently large in a short enough time that proposed	Negative reputation	(March 8, 2019 Friday). Chemicals recycling industry too young to achieve targets in timeframe packaging firm. *ICIS Chemical News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5VKP-S7G1-JCN4-H1WC-00000-00&context=1516831.	Recycler	ICIS Chemical News	CR		1						-1							
			Dialogue with buyers can produce changes that spread out to the wider market, Roberts added,	Participation	(March 8, 2019 Friday). Chemicals recycling industry too young to achieve targets in timeframe packaging firm. *ICIS Chemical News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5VKP-S7G1-JCN4-H1WC-00000-00&context=1516831.	Recycler	ICIS Chemical News	CR		1						(+) 1							
			There is a collaboration between RPC and Netherlands-based paints and coatings firm AkzoNobel earlier this decade	Partnership	(March 8, 2019 Friday). Chemicals recycling industry too young to achieve targets in timeframe packaging firm. *ICIS Chemical News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5VKP-S7G1-JCN4-H1WC-00000-00&context=1516831.	Recycler	ICIS Chemical News	CR	1								(+) 1						
			The producer wanted to increase content of recycled plastic content in its paint containers, but would need to accept that the containers would no longer be the pure white that was standard in the industry at the time.	New project	(March 8, 2019 Friday). Chemicals recycling industry too young to achieve targets in timeframe packaging firm. *ICIS Chemical News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5VKP-S7G1-JCN4-H1WC-00000-00&context=1516831.	Recycler	ICIS Chemical News	CR	1						(+) 1								

2019	Mar	22	Plastic Recycling Market to Reflect Steady Growth Rate by 2027	Knowledge sharing	(March 22, 2019 Friday). Plastic Recycling Market to Reflect Steady Growth Rate by 2027. *ReleaseWire*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5VPP-33V1-F03R-N0PN-00000-00&context=1516831.	Recycler	Newstex	MR		1						1						
2019	Apr	7	A business selling compostable coffee cups and biodegradable food boxes by Vegware	New project	Severin Carrell Scotland editor. (April 7, 2019 Sunday). Compostable cup sales soar, but Greens say is it enough?; Packaging that breaks down to compost sounds like a no-brainer, but there is opposition. *The Guardian(London)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5VTY-J321-F021-61BR-00000-00&context=1516831.	Waste supplier	New entrant	Bioplastic	1		(+) 1											
			Vegware's exports also jumped by a third, leading to a 50% increase in staffing as well as new distribution centres in the Netherlands and California	Leading Organization	Severin Carrell Scotland editor. (April 7, 2019 Sunday). Compostable cup sales soar, but Greens say is it enough?; Packaging that breaks down to compost sounds like a no-brainer, but there is opposition. *The Guardian(London)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5VTY-J321-F021-61BR-00000-00&context=1516831.	Waste supplier	New entrant	Bioplastic	1							(+) 1						
2019	May	4	Unilever s currently in an industrial-scale testing phase of chemical-based technology to convert waste plastic back into virgin-grade, food-safe material.	Leading Organization	Daniel Selwood. (May 04, 2019). Unilever set to unveil 'good as new' recycled plastic in 2020. *The Grocer*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5W1G-HVH1-JCP9-202J-00000-00&context=1516831.	Waste supplier	Incumbent	CR	1		(+) 1											
			It will come as the result of a partnership formed in April 2018 with Ioniqa, a 'clean-tech' spinoff from the Eindhoven University of Technology in the Netherlands, and India's Indorama Ventures, the world's largest producer of PET resin.	Partnership	Daniel Selwood. (May 04, 2019). Unilever set to unveil 'good as new' recycled plastic in 2020. *The Grocer*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5W1G-HVH1-JCP9-202J-00000-00&context=1516831.	Waste supplier	New entrant	CR	1							(+) 1						
			The news comes as Nestlé Waters, PepsiCo and Lucozade Ribena Suntory owner Suntory Beverage & Food Europe have announced their backing for a biological-based means to return used PET to its original state.	Leading Organization	Daniel Selwood. (May 04, 2019). Unilever set to unveil 'good as new' recycled plastic in 2020. *The Grocer*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5W1G-HVH1-JCP9-202J-00000-00&context=1516831.	Waste supplier	Incumbent	CR	1		(+) 1											
			The trio of soft drinks giants this week joined a consortium founded by beauty multinational L'Oréal and Carbios, a bio-tech company based in France, aiming "to reinvent the lifecycle of plastic and textile polymers" through enzyme-based technology	Event	Daniel Selwood. (May 04, 2019). Unilever set to unveil 'good as new' recycled plastic in 2020. *The Grocer*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5W1G-HVH1-JCP9-202J-00000-00&context=1516831.	Waste supplier	Incumbent	CR	1				(+) 1									
			The result will be marketed on an industrial scale for use in food and drink packaging.	New project	Daniel Selwood. (May 04, 2019). Unilever set to unveil 'good as new' recycled plastic in 2020. *The Grocer*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5W1G-HVH1-JCP9-202J-00000-00&context=1516831.	Waste supplier	Incumbent, New entrant	CR	1			(+) 1										
			Carbios has developed a process that breaks down PET waste into its original 'building blocks', which can be used to produce high-quality material equivalent to virgin plastic.	New project	Daniel Selwood. (May 04, 2019). Unilever set to unveil 'good as new' recycled plastic in 2020. *The Grocer*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5W1G-HVH1-JCP9-202J-00000-00&context=1516831.	Recycler	New entrant	CR	1		(+) 1											
2019	May	7	Arla's packaging sustainability strategy includes making 600 million fresh milk cartons renewable and 500 million yoghurt pots recyclable across six countries by the end of 2019	Goals/Targets	(May 7, 2019 Tuesday). Arla achieves one billion sustainable packaging target. *MarketLine NewsWire (Formerly Datamonitor)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5W54-V9J1-DYG0-71WW-00000-00&context=1516831.	Waste supplier	Arla, Incumbent	MR, Bioplastic	1						(+) 1							
			The new packaging will be available to the consumer market in Sweden, Denmark, Finland, Germany, the Netherlands and the UK.	New project	(May 7, 2019 Tuesday). Arla achieves one billion sustainable packaging target. *MarketLine NewsWire (Formerly Datamonitor)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5W54-V9J1-DYG0-71WW-00000-00&context=1516831.	Waste supplier	Arla, Incumbent	MR, Bioplastic	1							(+) 1						
2019	May	22	In Europe, stringent government regulations and ban over landfill of plastic waste had resulted in more than 96% of plastic waste recovery rate for use in energy recovery and recycling in 9-leading countries which include Germany, Switzerland, Norway, Belgium, Denmark, Luxembourg, Sweden, Austria, and Netherlands during 2018	Legislation	(May 22, 2019 Wednesday). Plastics Market in Europe is Estimated to Grow at a CAGR of 3.8% by 2024 - IndustryARC. *PR Newswire Europe*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5W5N-JCV1-DXP3-R3YK-00000-00&context=1516831.	Producer Responsibility Organizations	Dutch Government	MR		1					(+) 1							
			Lack of technology leading to difficulty in separation of impurities from plastic waste is the major challenge in plastic recycling.	Negative reputation	(May 22, 2019 Wednesday). Plastics Market in Europe is Estimated to Grow at a CAGR of 3.8% by 2024 - IndustryARC. *PR Newswire Europe*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5W5N-JCV1-DXP3-R3YK-00000-00&context=1516831.	Recyclers		MR		1		-1										
			Further, high cost associated with plastic recycling process was key barrier to plastic recyclers	Negative reputation	(May 22, 2019 Wednesday). Plastics Market in Europe is Estimated to Grow at a CAGR of 3.8% by 2024 - IndustryARC. *PR Newswire Europe*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5W5N-JCV1-DXP3-R3YK-00000-00&context=1516831.	Recyclers		MR		1						-1						
			European Union is encouraging the recyclers towards development improved quality standards of recycled products, mandatory requirement to recycle all the packaging plastics, and reduced VAT on recycled products will boost the growth of recycled plastics market in Europe	New initiative	(May 22, 2019 Wednesday). Plastics Market in Europe is Estimated to Grow at a CAGR of 3.8% by 2024 - IndustryARC. *PR Newswire Europe*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5W5N-JCV1-DXP3-R3YK-00000-00&context=1516831.	Producer Responsibility Organizations	Dutch Government	MR		1			(+) 1									
			European Commission strategic plans of launching pledging campaign over awareness on recycling of plastics, actions towards separation and collection of plastics for effective recycling, initiative and rules over labelling and use of biodegradable plastics, implementation of rules to reduce marine litter of plastics caused during delivery of waste from ships, strategic plans of increased usage of recycled plastics in diverse applications will propel the recycled plastics market in Europe.	New initiative	(May 22, 2019 Wednesday). Plastics Market in Europe is Estimated to Grow at a CAGR of 3.8% by 2024 - IndustryARC. *PR Newswire Europe*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5W5N-JCV1-DXP3-R3YK-00000-00&context=1516831.	Producer Responsibility Organizations	Dutch Government	MR	1											(+) 1		
2019	May		In order to take further steps at sector level in making packaging more sustainable, 22 sector organizations have drawn up a Sector Plan for Sustainable Packaging 2019-2022 in collaboration with the Knowledge Institute for Sustainable Packaging (KIDV)	Participation	https://kidv.nl/branchep lannen	Producer Responsibility Organizations	KIDV	MR, R	1												(+) 1	
			The plans clarify what the near future of sustainable packaging looks like.	Guidance	https://kidv.nl/branchep lannen	Producer Responsibility Organizations	KIDV	MR, R	1					(+) 1								
			It contains concrete objectives and measures, aimed at, for example, reducing the amount of packaging material and making packaging fully recyclable and reusable.	Guidance	https://kidv.nl/branchep lannen	Producer Responsibility Organizations	KIDV	MR, R	1					(+) 1								
2019	Jun	29	Eco-friendly bottled water startup Bottle Up has made its debut with two bioplastic SKUs intended to cut plastic waste caused by tourism	New project	Daniel Selwood. (June 29, 2019). Bottle Up looks to fight tourist plastic with water launch. *The Grocer*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5WFD-W5R1-F05B-S362-00000-00&context=1516831.	Waste supplier	New entrant	Bioplastic	1		(+) 1											
			While the brand has chosen the UK for its debut, it was founded in the Netherlands	New project	Daniel Selwood. (June 29, 2019). Bottle Up looks to fight tourist plastic with water launch. *The Grocer*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5WFD-W5R1-F05B-S362-00000-00&context=1516831.	Waste supplier	New entrant	Bioplastic	1							(+) 1						

2019	May		Companies and governments set targets for the use of renewable and recycled material in packaging	Goals/Targets	https://kidv.nl/biobased-en-gerecyclede-grondstoffen-in-kunststof-verpakkingen-belemmerende-regelgeving	Producer Responsibility Organizations	KIDV	Bioplastic, RC	1						(+) 1								
			technical and economic bottlenecks of biobased and recycled plastic	Negative reputation	https://kidv.nl/biobased-en-gerecyclede-grondstoffen-in-kunststof-verpakkingen-belemmerende-regelgeving	Recycler	KIDV	Bioplastic, RC		1							-1						
			also the legal framework is perceived as an obstacle by various chain parties.	Negative reputation	https://kidv.nl/biobased-en-gerecyclede-grondstoffen-in-kunststof-verpakkingen-belemmerende-regelgeving	Value chain		Bioplastic, RC	1						-1								
			Commissioned by the KIDV and with funding from the Waste Fund Foundation, Tilburg University has made an inventory of whether and to what extent legislation restricts or stimulates the use of biobased and recycled raw materials in plastic packaging.	Partnership	https://kidv.nl/biobased-en-gerecyclede-grondstoffen-in-kunststof-verpakkingen-belemmerende-regelgeving	Producer Responsibility Organizations	KIDV, Tilburg University	Bioplastic, RC	1					(+) 1									
			The study concludes that legislation and regulations at European and Dutch level rarely form obstacles to the use of biobased and recycled plastic in packaging.	Legislation	https://kidv.nl/biobased-en-gerecyclede-grondstoffen-in-kunststof-verpakkingen-belemmerende-regelgeving	Producer Responsibility Organizations	KIDV, Tilburg University	Bioplastic, RC	1						-1								
			Only in the case of the use of recycled plastic in food packaging is a distinction made between virgin and recycled plastic.	Legislation	https://kidv.nl/biobased-en-gerecyclede-grondstoffen-in-kunststof-verpakkingen-belemmerende-regelgeving	Producer Responsibility Organizations	KIDV, Tilburg University	RC	1							(+) 1							
			The signal that many parties perceive the legal frameworks as an obstacle is confirmed in the discussions that Tilburg University held with manufacturers and importers of packaged products from the three product groups	Legislation	https://kidv.nl/biobased-en-gerecyclede-grondstoffen-in-kunststof-verpakkingen-belemmerende-regelgeving	Producer Responsibility Organizations	KIDV, Tilburg University	Bioplastic, RC	1												-1		
			They experience the rules as unclear and complex or the rules are aimed at specific sub-interests, such as food safety, environmental protection and public health protection.	Legislation	https://kidv.nl/biobased-en-gerecyclede-grondstoffen-in-kunststof-verpakkingen-belemmerende-regelgeving	Producer Responsibility Organizations	KIDV, Tilburg University	Bioplastic, RC	1							-1							
			The European Food Safety Authority (EFSA) provides advice and target percentages for the use of recyclate in food contact materials	Guidance	https://kidv.nl/biobased-en-gerecyclede-grondstoffen-in-kunststof-verpakkingen-belemmerende-regelgeving	Producer Responsibility Organizations	The European Food Safety Authority	RC	1						(+) 1								
			In the case of r-PET, 95% of the recyclate must in principle originate from food packaging, in order to prevent the recyclate from containing hazardous substances.	Guidance	https://kidv.nl/biobased-en-gerecyclede-grondstoffen-in-kunststof-verpakkingen-belemmerende-regelgeving	Producer Responsibility Organizations	The European Food Safety Authority	RC	1					(+) 1									
			The study shows that chain parties interpret this EFSA target percentage as binding, which is stricter than legally necessary	Negative reputation	https://kidv.nl/biobased-en-gerecyclede-grondstoffen-in-kunststof-verpakkingen-belemmerende-regelgeving	Producer Responsibility Organizations	The European Food Safety Authority	RC	1												-1		
			If the producer can demonstrate that the characteristics of the recyclate and their process meet the requirements for food safety, it is possible to deviate from this target percentage	Knowledge sharing	https://kidv.nl/biobased-en-gerecyclede-grondstoffen-in-kunststof-verpakkingen-belemmerende-regelgeving	Producer Responsibility Organizations	The European Food Safety Authority	RC	1							(+) 1							
			Chain parties also experience obstacles that are not of a legal nature. For example, the (perceived) preferences of consumers or aesthetic requirements that are common within the sector, such as the desire for a completely transparent packaging or a specific color of the packaging	Negative reputation	https://kidv.nl/biobased-en-gerecyclede-grondstoffen-in-kunststof-verpakkingen-belemmerende-regelgeving	Value chain		RC	1												-1		
			A different price of biobased or recycled raw materials compared to virgin raw material can also play a role. In addition, the broad collection of most plastic packaging from households leads to technical limitations when reusing the plastic, partly due to loss of quality.	Negative reputation	https://kidv.nl/biobased-en-gerecyclede-grondstoffen-in-kunststof-verpakkingen-belemmerende-regelgeving	Value chain		Bioplastic, RC	1									-1					
			These technical and economic bottlenecks, in combination with the non-transparent market for recycled plastic in particular, hinder the use of the material	Negative reputation	https://kidv.nl/biobased-en-gerecyclede-grondstoffen-in-kunststof-verpakkingen-belemmerende-regelgeving	Value chain		RC	1								-1						
2019	Jul	30	Market reports associated with Plastic Additives have been presented by Market Research Future, which states that the market would rise and anticipated to amass high revenues by the year 2023.	Knowledge sharing	(July 30, 2019 Tuesday). Plastic Additives Market Size is Anticipated to Witness Healthy Growth by Forecast to 2023 *GlobeNewswire*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5WPD-6DF1-JBKN-D0BY-00000-00&context=1516831.	Waste supplier	Market Research Future	MR		1							-1						
			Europe region is also one of the essential regions in this market, which has occupied a substantial share of the market owing to increased research and development activities in plastic materials. In this region, the U.K, Germany, Belgium, and the Netherlands have recorded to become the major economies	Knowledge sharing	(July 30, 2019 Tuesday). Plastic Additives Market Size is Anticipated to Witness Healthy Growth by Forecast to 2023 | Healthier Lifestyle has Motivated Plastic Additives Industry Expansion at High Rate, Confirms MRFR; Plastic Additives Market Report Insights and Industry Analysis by Type (Plasticizers, Flame Retardants, Impact Modifiers, Antioxidants, Antimicrobials, UV-Stabilizers), End-Use Industry (Packaging, Automotive, Agriculture, Building & Construction, Consumer Goods, Electrical & Electronics), Region - Competitive Market Size, Share, Trends, and Forecast, 2018 - 2023. GlobeNewswire. ht	Waste supplier	Market Research Future	MR		1							-1						
			Plastic Additives are increasing in prominence due to awareness among people for a healthy life	Participation	(July 30, 2019 Tuesday). Plastic Additives Market Size is Anticipated to Witness Healthy Growth by Forecast to 2023 | Healthier Lifestyle has Motivated Plastic Additives Industry Expansion at High Rate, Confirms MRFR; Plastic Additives Market Report Insights and Industry Analysis by Type (Plasticizers, Flame Retardants, Impact Modifiers, Antioxidants, Antimicrobials, UV-Stabilizers), End-Use Industry (Packaging, Automotive, Agriculture, Building & Construction, Consumer Goods, Electrical & Electronics), Region - Competitive Market Size, Share, Trends, and Forecast, 2018 - 2023. GlobeNewswire. ht	Waste supplier	Market Research Future	MR		1						(+) 1							
2019	July		fact sheet: Chemical recycling of plastic (packaging) in European legislation by KIDV	Guidance	https://kidv.nl/chemische-recycling-van-kunststof-verpakkingen-in-europese-wetgeving	Producer Responsibility Organizations	KIDV	CR	1					(+) 1									
			Chemical recycling is on the rise	Knowledge sharing	https://kidv.nl/chemische-recycling-van-kunststof-verpakkingen-in-europese-wetgeving	Producer Responsibility Organizations	KIDV	CR	1								(+) 1						
			This relatively new technique offers opportunities for processing plastic packaging waste	Knowledge sharing	https://kidv.nl/chemische-recycling-van-kunststof-verpakkingen-in-europese-wetgeving	Producer Responsibility Organizations	KIDV	CR	1							(+) 1							

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			At the same time, there are also questions from various parties in the packaging chain with regard to techniques and legislation.	Participation	https://kidv.nl/chemische-recycling-van-kunststof-verpakkingen-in-europese-wetgeving	Producer Responsibility Organizations	KIDV	CR	1										(+) 1		
2019	Aug	6	Magnum launches industry-first tubs made from recycled plastic	New project	Waqas Qureshi. (August 6, 2019 Tuesday). Magnum launches industry-first tubs made from recycled plastic. *Packaging News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5WRR-GV61-JDHR-823K-00000-00&context=1516831.	Waste supplier	Retailer	RC	1		(+) 1										
			The move is part of Unilever's wider global commitment to ensure that at least 25% of its plastic packaging will come from post-consumer recycled content by 2025	Leading Organization	Waqas Qureshi. (August 6, 2019 Tuesday). Magnum launches industry-first tubs made from recycled plastic. *Packaging News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5WRR-GV61-JDHR-823K-00000-00&context=1516831.	Waste supplier	Retailer, Incumbent	RC	1						(+) 1						
2019	Aug	12	The European Commissioners Director General for the Environment Daniel Calleja Crespo has urged businesses to focus more on sustainability	Goals/Targets	(August 12, 2019 Monday). Household Appliance Manufacturers Fight Back Against Plastic Pollution. *FinancialWire*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5WT0-X8M1-JD3Y-Y2BX-00000-00&context=1516831.	Producer Responsibility Organizations	EU Commission	General	1										(+) 1		
			He also re-emphasised his commitment towards strengthening the position of recycled plastics		(August 12, 2019 Monday). Household Appliance Manufacturers Fight Back Against Plastic Pollution. *FinancialWire*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5WT0-X8M1-JD3Y-Y2BX-00000-00&context=1516831.	Producer Responsibility Organizations	EU Commission	RC	1					(+) 1							
			The AO group a domestic appliance and consumer electronics supplier in the UK, Germany and the Netherlands also as recently announced plans for a new recycling facility.	New plant	(August 12, 2019 Monday). Household Appliance Manufacturers Fight Back Against Plastic Pollution. *FinancialWire*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5WT0-X8M1-JD3Y-Y2BX-00000-00&context=1516831.	Recycler	Incumbent	MR	1		(+) 1										
2019	Aug	21	Newproject: new method of watertreatement where bactirias produce PHA, an essentil component for the substitution of petrolium-based materials (plastics)	New project	(August 21, 2019 Wednesday). -University of Bath: Untapped potential - harvesting bioplastics from wastewater. *ENP Newswire*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5WVX-NYX1-JD3Y-Y0B1-00000-00&context=1516831.	Waste supplier	New entrant	Bioplastic	1		(+) 1										
			A report titled PHARIO, released in 2017, describes the successful and profitable production of PHA at a pilot scale in a real operating wastewater treatment plant in the Netherlands	New project	(August 21, 2019 Wednesday). -University of Bath: Untapped potential - harvesting bioplastics from wastewater. *ENP Newswire*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5WVX-NYX1-JD3Y-Y0B1-00000-00&context=1516831.	Waste supplier	New entrant	Bioplastic	1							(+) 1					
2019	Sep	6	Industry has committed to eliminate leakage of plastic pollution into the environment as concerns about its impact as well	Goals/Targets	Michael Ravenscroft with Mark Thomas and Robert Westervelt. (September 6, 2019 - September 16, 2019). Closing the loop on plastics; Industry steps up investment and innovation to address waste challenge. *Chemical Week*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5X5G-39N1-JCBV-401H-00000-00&context=1516831.	Waste supplier, Recyclers	Incumbent, New entrant	MR	1					(+) 1							
2019	Sep	11	According to the new market research report the Pouches Market is estimated to account for USD 36.4 billion in 2019 and is projected to reach USD 46.1 billion by 2024, recording a CAGR of 4.8%	Knowledge sharing	(September 11, 2019 Wednesday). Pouches Market Worth $46.1 Billion by 2024 - Exclusive Report by MarketsandMarkets(TM). *PR Newswire Europe*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5X1J-8VX1-DXP3-R2TP-00000-00&context=1516831.	Producer Responsibility Organizations	Newswire	General		1						-1					
2019	Oct	3	The Coca-Cola Company unveiled its first-ever sample bottles made using recovered and recycled marine plastics, demonstrating that, one day, even ocean debris could be used in recycled packaging for food or drinks	New project	(October 3, 2019 Thursday). Breakthrough Technology Takes Plastic From the Ocean and Uses It in a Coca-Cola Bottle; Sample Packaging Demonstrates Possibilities for Transformational Potential in Recycling. *Business Wire*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5X68-9D31-JBG1-82DV-00000-00&context=1516831.	Waste supplier	Retailers, Incumbent	RC	1		(+) 1										
			Through a partnership between Ioniqa Technologies, Indorama Ventures, Mares Circulares (Circular Seas) and The Coca-Cola Company, about 300 sample bottles were made using 25% recycled marine plastic retrieved from the Mediterranean Sea and beaches	Partnership	(October 3, 2019 Thursday). Breakthrough Technology Takes Plastic From the Ocean and Uses It in a Coca-Cola Bottle; Sample Packaging Demonstrates Possibilities for Transformational Potential in Recycling. *Business Wire*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5X68-9D31-JBG1-82DV-00000-00&context=1516831.	Third Party	Technology provider	RC		1										(+) 1	
2019	Oct	7	Netherlands - Consumer products giant Unilever, whose brands include Dove soaps and Lipton teas, said Monday it aims to halve its use of non-recycled plastics by 2025.	Goals/Targets	Mike Corder. (October 7, 2019 Monday). Consumer goods giant Unilever vows to slash use of plastic; Consumer goods giant Unilever vows to slash use of plastic. *Canadian Press*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5X6Y-MTD1-DY9S-T0CT-00000-00&context=1516831.	Waste supplier	Retailers, Incumbent	RC	1					(+) 1							
			The company also said Monday it aims to collect and process more plastic packaging than it sells by 2025	Goals/Targets	Mike Corder. (October 7, 2019 Monday). Consumer goods giant Unilever vows to slash use of plastic; Consumer goods giant Unilever vows to slash use of plastic. *Canadian Press*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5X6Y-MTD1-DY9S-T0CT-00000-00&context=1516831.	Waste supplier	Retailers, Incumbent	MR	1						(+) 1						
			Analytics firm GlobalData say that surveys show young consumers are influenced by environmental considerations when they buy something	Knowledge sharing	Mike Corder. (October 7, 2019 Monday). Consumer goods giant Unilever vows to slash use of plastic; Consumer goods giant Unilever vows to slash use of plastic. *Canadian Press*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5X6Y-MTD1-DY9S-T0CT-00000-00&context=1516831.	Waste supplier	Consumers	General	1										(+) 1		
			Elvira Jimenez, a plastics campaigner with Greenpeace, welcomed the Uniliver's announcement	Goals/Targets	Mike Corder. (October 7, 2019 Monday). Consumer goods giant Unilever vows to slash use of plastic; Consumer goods giant Unilever vows to slash use of plastic. *Canadian Press*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5X6Y-MTD1-DY9S-T0CT-00000-00&context=1516831.	Producer Responsibility Organizations	NGO	MR,RC	1										(+) 1		
			she said the environmental organization would like to see Unilever shift its focus even further toward packaging and products that can be reused or refilled	Goals/Targets	Mike Corder. (October 7, 2019 Monday). Consumer goods giant Unilever vows to slash use of plastic; Consumer goods giant Unilever vows to slash use of plastic. *Canadian Press*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5X6Y-MTD1-DY9S-T0CT-00000-00&context=1516831.	Producer Responsibility Organizations	NGO	R	1					(+) 1							
2019	Oct	8	Nienke Hoogvliet, a designer based in the Netherlands, was commissioned by a Dutch municipal water authority to develop a use for bioplastics derived from sewage waste	New project	Peter Guthrie. (October 8, 2019 Tuesday). Georgetown Art gallery features trash turned art. *The Georgetown Voice: Georgetown University*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5X74-NXN1-JBSN-3556-00000-00&context=1516831.	Recycler	New entrant	Bioplastic	1		(+) 1										
			She eventually settled on a design for a biodegradable cremation urn to help solve the problem of soil and water pollution at burial and ash-scattering sites.	New project	Peter Guthrie. (October 8, 2019 Tuesday). Georgetown Art gallery features trash turned art. *The Georgetown Voice: Georgetown University*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5X74-NXN1-JBSN-3556-00000-00&context=1516831.	Recycler	New entrant	Bioplastic	1		(+) 1										
2019	Oct	9	Developments in chemical recycling technologies are creating new opportunities for recovering resources from plastic packaging waste.	Knowledge sharing	(October 9, 2019 Wednesday). Chemical recycling offers major potential for plastic packaging. *Industrial Goods Monitor Worldwide*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5X7C-0CH1-JDJN-60F7-00000-00&context=1516831.	Recycler	Incumbent, New entrant	CR	1		(+) 1										
			Companies actively involved in recycling plastics through solvent dissolution include ones based in the USA, the Netherlands and Germany	Knowledge sharing	(October 9, 2019 Wednesday). Chemical recycling offers major potential for plastic packaging. *Industrial Goods Monitor Worldwide*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5X7C-0CH1-JDJN-60F7-00000-00&context=1516831.	Recycler	Incumbent, New entrant	CR	1		(+) 1										

			Virgin polymer producer Indorama has invested in companies in the USA and the Netherlands	Financing	(October 9, 2019 Wednesday). Chemical recycling offers major potential for plastic packaging. *Industrial Goods Monitor Worldwide.* https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5X7C-0CH1-JDJN-60F7-00000-00&context=1516831.	Waste supplier	Plastic producer, Incumbent	CR		1							(+) 1					
2019	Oct	15	LyondellBasell today announced that it is building a new small-scale pilot facility at its Ferrara, Italy site moving another step closer to converting post-consumer plastic waste into new plastics on a commercial scale	New plant	Oliver Morrison, . (October 15, 2019 Tuesday). Cheaper plastic set to test market s true commitment to sustainability , warns report. *FoodNavigator.com.* https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5X8W-3N41-JC6M-X0J8-00000-00&context=1516831.	Waste supplier	Plastic producer, Incumbent	CR	1		(+) 1											
2019	Oct	15	The launch of the Plastics Pact in the UK was rapidly followed by France, the Netherlands and Chile	New initiative	Targeted News Service. (October 15, 2019 Tuesday). Waste and Resources Action Programme: Updated Report Brings Clarity to Market Situation for UK Recovered Plastics. *Targeted News Service.* https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5X91-SS81-DYG2-R1YM-00000-00&context=1516831.	Producer Responsibility Organizations	Dutch Government	General	1					(+) 1								
			Lipton s decision to switch to 100% recycled plastic in the Netherlands	Goals/Targets	Targeted News Service. (October 15, 2019 Tuesday). Waste and Resources Action Programme: Updated Report Brings Clarity to Market Situation for UK Recovered Plastics. *Targeted News Service.* https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5X91-SS81-DYG2-R1YM-00000-00&context=1516831.	Waste supplier	Retailer, Incumbent	RC	1						(+) 1							
			Earlier this year Lipton stopped using plastic straws and lids in all cocktails and plastic stampers in the hospitality industry.	Leading Organization	Targeted News Service. (October 15, 2019 Tuesday). Waste and Resources Action Programme: Updated Report Brings Clarity to Market Situation for UK Recovered Plastics. *Targeted News Service.* https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5X91-SS81-DYG2-R1YM-00000-00&context=1516831.	Waste supplier	Retailer, Incumbent	MR, R	1						(+) 1							
			S&P Global Platts' report warned that it s now cheaper to buy new plastic to make drinks containers than it is to buy recycled material	Negative reputation	Targeted News Service. (October 15, 2019 Tuesday). Waste and Resources Action Programme: Updated Report Brings Clarity to Market Situation for UK Recovered Plastics. *Targeted News Service.* https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5X91-SS81-DYG2-R1YM-00000-00&context=1516831.	Recyclers	S&P Global Platts	RC		1									-1			
			Converters have been eyeing the possibility of switching much of their flake buying capacity into cheaper virgin resin, for certain end uses such as sheet and film	Negative reputation	Targeted News Service. (October 15, 2019 Tuesday). Waste and Resources Action Programme: Updated Report Brings Clarity to Market Situation for UK Recovered Plastics. *Targeted News Service.* https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5X91-SS81-DYG2-R1YM-00000-00&context=1516831.	Converters	Incumbent, New entrant	RC		1									-1			
2019	Nov	5	Second progess report of the Ellen MacArthur Foundation and the United Nations Environment Programme (UNEP) "New Plastics Economy Global Commitment"	Knowledge sharing	https://www.ellenmacarthurfoundation.org/news/global-commitment-2020-progress-report-published	Producer Responsibility Organizations	Ellen MacArthur Foundation	General	1				(+) 1									
2019	Nov	11	Berry Global Group, Inc. announced today its collaboration with global chemical industry leader, SABIC in driving the innovation and use of polyolefin resins made from chemical recycling	Partnership	https://ir.berryglobal.com/news-releases/news-release-details/berry-global-joins-sabic-production-and-use-circular-polymers	Waste supplier, Recyclers	Plastic producer, Incumbent	CR	1							(+) 1						
			SABIC announced at the end of 2018 its intended project to build a semi-commercial unit in the Netherlands to refine and upgrade valuable feedstocks produced from the recycling of low-quality, mixed plastic waste	New plant	https://ir.berryglobal.com/news-releases/news-release-details/berry-global-joins-sabic-production-and-use-circular-polymers	Recycler	Incumbent	CR	1		(+) 1											
			During 2019, SABIC has already produced initial volumes of these certified circular polymers using its existing manufacturing facilities.	New project	https://ir.berryglobal.com/news-releases/news-release-details/berry-global-joins-sabic-production-and-use-circular-polymers	Recycler	Incumbent	CR	1			(+) 1										
			From this initial volume, Berry has manufactured a recyclable, coextruded stand-up pouch containing 30 percent PCR sourced from SABIC's circular polymer.	New project	https://ir.berryglobal.com/news-releases/news-release-details/berry-global-joins-sabic-production-and-use-circular-polymers	Waste supplier, Recyclers	Plastic producer, Incumbent	CR	1		(+) 1											
			Berry's long list of sustainability initiatives, including being a signatory to the Ellen MacArthur Foundation New Plastics Economy Global Commitment, an active member in the Association of Plastic Recyclers , and is, together with SABIC, a founding member of the Alliance to End Plastic Waste .	New initiative	https://ir.berryglobal.com/news-releases/news-release-details/berry-global-joins-sabic-production-and-use-circular-polymers	Waste supplier	Plastic producer, Incumbent	CR	1					(+) 1								
2019	Nov	14	McDonald's launches innovative 'Better M' platform to showcase packaging & recycling solutions and Europe-wide customer trials	New initiative	https://corporate.mcdonalds.com/corpmcd/en-us/our-stories/article/ourstories.better-mplatform.html	Waste supplier	Retailer, Incumbent	MR	1						(+) 1							
			In the Netherlands, restaurants offer recycled paper masks as part of the Happy Meal instead of balloons.	New initiative	https://corporate.mcdonalds.com/corpmcd/en-us/our-stories/article/ourstories.better-mplatform.html	Waste supplier	Retailer, Incumbent	RC	1						(+) 1							
2019	Nov	15	hemp user is Krown Design, based in the Netherlands. Krown's director Jan Berbee started as European distributor for mycelium packaging inserts, pioneered as a compostable plastic foam replacement by US design collective Ecovative Design, which now supplies Ikea.	New project	Louis Wustemann. (November 15, 2019 Friday). Meet the designers growing furniture from fungi. *FT.com.* https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5XH8-THP1-F039-62R3-00000-00&context=1516831.	Waste supplier	Plastic producer, New entrant	Bioplastic	1		(+) 1											
2019	Nov	21	Shell uses plastic waste to produce chemicals	Leading Organization	(November 21, 2019 Thursday). Shell uses plastic waste to produce chemicals. *PR Newswire.* https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5XJR-20H1-JB72-12X4-00000-00&context=1516831.	Waste supplier	Plastic producer, Incumbent	CR	1		(+) 1											

			The technique, known as pyrolysis, is considered a breakthrough for hard-to-recycle plastics and advances	Knowledge sharing	(November 21, 2019 Thursday). Shell uses plastic waste to produce chemicals. *PR Newswire*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5XJR-20H1-JB72-12X4-00000-00&context=1516831.	Waste supplier	Plastic producer, Incumbent	CR	1					(+) 1									
			Shell's ambition to use one million tonnes of plastic waste a year in its global chemicals plants by 2025.	Goals/Targets	(November 21, 2019 Thursday). Shell uses plastic waste to produce chemicals. *PR Newswire*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5XJR-20H1-JB72-12X4-00000-00&context=1516831.	Waste supplier	Plastic producer, Incumbent	CR	1							(+) 1							
			Shell is a founding member of the Alliance to End Plastic Waste (AEPW)	Partnership	(November 21, 2019 Thursday). Shell uses plastic waste to produce chemicals. *PR Newswire*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5XJR-20H1-JB72-12X4-00000-00&context=1516831.	Waste supplier	Plastic producer, Incumbent	CR	1													(+) 1	
			This not-for-profit organisation is bringing together top minds from across the plastics value chain (chemical and plastic manufacturers, consumer goods companies, retailers, converters and waste management companies) and partnering with the financial community, governments and civil society	Partnership	(November 21, 2019 Thursday). Shell uses plastic waste to produce chemicals. *PR Newswire*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5XJR-20H1-JB72-12X4-00000-00&context=1516831.	Value chain		CR	1													(+) 1	
			The AEPW has committed $1.5 billion over the next five years to help end plastic waste in the environment.	Financing	(November 21, 2019 Thursday). Shell uses plastic waste to produce chemicals. *PR Newswire*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5XJR-20H1-JB72-12X4-00000-00&context=1516831.	Value chain		General	1									(+) 1					
			Shell is also working with its retail, business fuels and lubricants customers to help reduce, reuse and recycle plastic packaging.	Goals/Targets	(November 21, 2019 Thursday). Shell uses plastic waste to produce chemicals. *PR Newswire*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5XJR-20H1-JB72-12X4-00000-00&context=1516831.	Waste supplier	Plastic producer, Incumbent	MR, R	1						(+) 1								
2019	Nov	21	In the Netherlands, TNO has produced ethanol from seaweed and algae that went on to power a car in Denmark that achieved speeds of 80 km/h	New project	Meghan Sapp. (November 21, 2019 Thursday). TNO's seaweed ethanol fuels Danish research vehicle achieving 80 km/h. *Newstex Blogs Biofuels Digest*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5XJH-4991-F03R-N148-00000-00&context=1516831.	Producer Responsibility Organizations	TNO	Bioplastic	1				(+) 1										
			The outcome was part of the MacroFuels EU-funded project	New project	Meghan Sapp. (November 21, 2019 Thursday). TNO's seaweed ethanol fuels Danish research vehicle achieving 80 km/h. *Newstex Blogs Biofuels Digest*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5XJH-4991-F03R-N148-00000-00&context=1516831.	Producer Responsibility Organizations	EU Commission	Bioplastic	1									(+) 1					
2019	Nov	28	The Knowledge Institute for Sustainable Packaging (KIDV) has conducted research into recyclable alternatives to laminates	Guidance	https://kidv.nl/recyclebare-alternatieven-voor-laminaten	Producer Responsibility Organizations	KIDV	MR	1				(+) 1										
			These are the multi-layer, flexible films that are frequently used in food and food packaging	Knowledge sharing	https://kidv.nl/recyclebare-alternatieven-voor-laminaten	Producer Responsibility Organizations	KIDV	MR	1					(+) 1									
			However, laminates are currently not optimally circular in use.	Knowledge sharing	https://kidv.nl/recyclebare-alternatieven-voor-laminaten	Producer Responsibility Organizations	KIDV	MR		1						-1							
			For the time being it is not financially profitable to recycle laminates while retaining quality	Negative reputation	https://kidv.nl/recyclebare-alternatieven-voor-laminaten	Producer Responsibility Organizations	KIDV	MR		1								-1					
			It is also very difficult to make laminates with recycled material.	Negative reputation	https://kidv.nl/recyclebare-alternatieven-voor-laminaten	Producer Responsibility Organizations	KIDV	RC	1								-1						
			Companies with the goal of making all their plastic packaging recyclable by 2030 and using less fossil raw materials therefore face a major challenge	Negative reputation	https://kidv.nl/recyclebare-alternatieven-voor-laminaten	Producer Responsibility Organizations	KIDV	MR	1							-1							
			This comparison and assessment shows that in practice one-to-one replacement of laminates in plastic packaging is in most cases difficult or impossible	Negative reputation	https://kidv.nl/recyclebare-alternatieven-voor-laminaten	Producer Responsibility Organizations	KIDV	MR		1										-1			
			usually makes it difficult to replace this material one on one, without adjusting any of the other factors	Negative reputation	https://kidv.nl/recyclebare-alternatieven-voor-laminaten	Producer Responsibility Organizations	KIDV	MR	1											-1			
			In many cases, the alternative materials are not more expensive to purchase than the original materials.	Positive reputation	https://kidv.nl/recyclebare-alternatieven-voor-laminaten	Producer Responsibility Organizations	KIDV	MR	1									(+) 1					
			However, in a number of cases the workability on the existing equipment and in existing processes is made more difficult	Negative reputation	https://kidv.nl/recyclebare-alternatieven-voor-laminaten	Producer Responsibility Organizations	KIDV	MR	1											-1			
			This can lead to a reduction in line speed and possibly also more product scrap	Negative reputation	https://kidv.nl/recyclebare-alternatieven-voor-laminaten	Producer Responsibility Organizations	KIDV	MR	1										-1				
			These costs can have a significant impact on the total costs of the product-packaging combination.	Financing	https://kidv.nl/recyclebare-alternatieven-voor-laminaten	Producer Responsibility Organizations	KIDV	MR	1								-1						
			In many cases, alternative materials have to be further developed, but also the optimization of the processing equipment and packaging processes has to be considered	Negative reputation	https://kidv.nl/recyclebare-alternatieven-voor-laminaten	Producer Responsibility Organizations	KIDV	MR	1								-1						

			It also appears that the Dutch collection, sorting and recycling structure has not yet been set up for a number of solution directions from the CEFLEX design guidelines.	Negative reputation	https://kidv.nl/recyclebare-alternatieven-voor-laminaten	Producer Responsibility Organizations	KIDV	MR	1						-1							
			The KIDV advocates an unambiguous definition of recyclability and uniform guidelines for designers of materials and packaging, which are aimed at making flexible plastic packaging optimally recyclable	Guidance	https://kidv.nl/recyclebare-alternatieven-voor-laminaten	Producer Responsibility Organizations	KIDV	MR	1					(+) 1								
			In the NL currently, only PE is sorted and recycled as a mono-material (approximately 55% of all flexible materials)	Knowledge sharing	https://kidv.nl/recyclebare-alternatieven-voor-laminaten	Producer Responsibility Organizations	KIDV	MR	1						-1							
			Although this is the most common raw material for flexible packaging, this is not yet sufficient, according to the KIDV	Negative reputation	https://kidv.nl/recyclebare-alternatieven-voor-laminaten	Producer Responsibility Organizations	KIDV	MR	1										-1			
2019	Dec	9	Enerkem uses its proprietary technology to convert non-recyclable, non-compostable MSW into methanol, ethanol and other widely-used chemicals.	New project	https://enerkem.com/company/about-us/	Recycler	Incumbent	CR	1		(+) 1											
			They are expanding into Europe with a new project being worked on in Rotterdam, the Netherlands	New plant	https://enerkem.com/company/about-us/	Recycler	Incumbent	CR	1		(+) 1											
	Dec	18	Twelve Netherlands-based students, participating in ForFarmers Sustainable Business Challenge since early November, presented their final ideas on a sustainability case, linked to the circular farming model, on December 13	New project	Sandra Laville. (December 18, 2018 Tuesday). Packaging producers to pay full recycling costs under waste scheme; Government strategy to make 'polluter pay', with penalties for difficult to recycle items. *The Guardian(London)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5V0D-XY61-F021-64FK-00000-00&context=1516831.	Producer Responsibility Organizations	Students	Bioplastic	1			(+) 1										
			The students suggested replacing the cardboard and plastic used in such feed bags with compostable plastic - bioplastic - and paper	New project	Sandra Laville. (December 18, 2018 Tuesday). Packaging producers to pay full recycling costs under waste scheme; Government strategy to make 'polluter pay', with penalties for difficult to recycle items. *The Guardian(London)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5V0D-XY61-F021-64FK-00000-00&context=1516831.	Producer Responsibility Organizations	Students	Bioplastic	1			(+) 1										
			They also proposed that herbal seeds would be embedded in the paper of the bags and used for composting when the bag was empty.	New project	Sandra Laville. (December 18, 2018 Tuesday). Packaging producers to pay full recycling costs under waste scheme; Government strategy to make 'polluter pay', with penalties for difficult to recycle items. *The Guardian(London)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5V0D-XY61-F021-64FK-00000-00&context=1516831.	Producer Responsibility Organizations	Students	Bioplastic	1			(+) 1										
2019	Dec	19	Getinge to acquire Applikon Biotechnology B.V., a leading company in the fast growing area of bio systems	Leading Organization	(December 19, 2019 Thursday). Getinge to acquire Applikon Biotechnology B.V., a leading company in the fast growing area of bioreactor systems. *Cision Nordic Companies Press Releases (Scandinavia)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5XSN-WVF1-JD6G-P0R6-00000-00&context=1516831.	Waste supplier	Plastic producer, New entrant, Incumbent	Bioplastic	1										(+) 1			
			Applikon Biotechnology B.V. is leading in the development and supply enzymes and bio-plastics for industrial biotechnology	Leading Organization	(December 19, 2019 Thursday). Getinge to acquire Applikon Biotechnology B.V., a leading company in the fast growing area of bioreactor systems. *Cision Nordic Companies Press Releases (Scandinavia)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5XSN-WVF1-JD6G-P0R6-00000-00&context=1516831.	Waste supplier	Technology provider, Incumbent	Bioplastic	1							(+) 1						
2019	Dec	21	With virgin PET prices at low levels throughout 2019, a bulk of the market has substituted away from R-PET where possible, and limited R-PET content percentages where not.	Negative reputation	(December 21, 2018 Friday). Mauser Packaging Solutions Introduces New Medical Waste Container Made of 100% Recycled Material and Receives Dutch Innovation Award. *PR.com*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5V14-0TR1-DXMP-K2H6-00000-00&context=1516831.	Recycler		RC		1						-1			-1			
			The resultant weaker demand has led to oversupply and placed prices under downward pressure throughout 2019	Negative reputation	(December 21, 2018 Friday). Mauser Packaging Solutions Introduces New Medical Waste Container Made of 100% Recycled Material and Receives Dutch Innovation Award. *PR.com*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5V14-0TR1-DXMP-K2H6-00000-00&context=1516831.	Waste supplier	Restaurants, Consumers	RC		1				(+) 1								
			in countries such as the Netherlands, the UK and Germany, supermarket chains are increasingly demanding recycled content across all of their packaging types	Goals/Targets	(December 21, 2018 Friday). Mauser Packaging Solutions Introduces New Medical Waste Container Made of 100% Recycled Material and Receives Dutch Innovation Award. *PR.com*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5V14-0TR1-DXMP-K2H6-00000-00&context=1516831.	Waste supplier	Retailer	RC	1					(+) 1								
			Flake players expect the market to rebalance by the second half of 2020 as a result.	Goals/Targets	(December 21, 2018 Friday). Mauser Packaging Solutions Introduces New Medical Waste Container Made of 100% Recycled Material and Receives Dutch Innovation Award. *PR.com*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5V14-0TR1-DXMP-K2H6-00000-00&context=1516831.	Converters	Incumbent, New entrant	RC		1						(+) 1						
2019	Dec	28	the need for strict controls on imports of plastic waste and addressing issues related to open burning and the haze, were among initiatives taken by the Ministry of Energy, Science, Technology, Environment and Climate Change (Mestecc) in 2019.	New initiatives	(December 28, 2019 Saturday). MESTECC COMMITTED TO ADDRESSING ENVIRONMENT, CLIMATE CHANGE ISSUES. *Malaysia General News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5XVT-XFB1-DYRT-X2N8-00000-00&context=1516831.	Producer Responsibility Organizations	Dutch Government	MR		1				(+) 1								
			Throughout this year, It is estimated that some 100 containers have been sent back to the home countries among them,developed nations such as France, Canada, the Netherlands and Japan	Negative reputation	(December 28, 2019 Saturday). MESTECC COMMITTED TO ADDRESSING ENVIRONMENT, CLIMATE CHANGE ISSUES. *Malaysia General News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5XVT-XFB1-DYRT-X2N8-00000-00&context=1516831.	Producer Responsibility Organizations	Dutch Government	MR		1									-1			
2019	Dec		PLASTICS RECYCLERS EUROPE MAPPING FOR 2019	Guidance	https://kidv.nl/media/externe_rapportages/20210106_pre_report_on_plastics_recycling_statistics_2020.pdf?1.1.7	Producer Responsibility Organizations	KIDV	MR	1				(+) 1									
2019	Dec		Fact sheet: Packaging waste from companies	Guidance	https://kidv.nl/verpakkingsafval-van-bedrijven	Producer Responsibility Organizations	KIDV	MR	1				(+) 1									
			Dutch legislation distinguishes between household waste and industrial waste	Legislation	https://kidv.nl/verpakkingsafval-van-bedrijven	Producer Responsibility Organizations	Dutch Government	MR	1						(+) 1							
			Companies themselves are responsible for arranging the collection of their waste	Legislation	https://kidv.nl/verpakkingsafval-van-bedrijven	Producer Responsibility Organizations	Dutch Government	MR	1							(+) 1						

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			Municipalities are responsible for collecting packaging waste from households	Legislation	https://kidv.nl/verpakkingsafval-van-bedrijven	Producer Responsibility Organizations	Dutch Government	MR	1						(+) 1							
			The packaging waste that is released in the office, retail and service sector consists on average for 36% of PMD	Knowledge sharing	https://kidv.nl/verpakkingsafval-van-bedrijven	Waste supplier	General	MR	1				(+) 1									
			this offers opportunities for the recycling of these raw materials.	Knowledge sharing	https://kidv.nl/verpakkingsafval-van-bedrijven	Recycler	Dutch Government	MR	1							(+) 1						
			KIDV regularly receives questions about the processing of industrial waste,	Participation	https://kidv.nl/verpakkingsafval-van-bedrijven	Producer Responsibility Organizations	KIDV	MR	1											(+) 1		
2019	Dec		The PET 360 drinking cups with strawless lid from Bordex Packaging are made from recycled plastic PET from used packaging from the Netherlands	New project	https://kidv.nl/r-pet-drinkbeker-met-strawless-lid	Waste supplier	Plastic producer	RC	1		(+) 1											
			The cups are mainly intended to be used at festivals	Participation	https://kidv.nl/r-pet-drinkbeker-met-strawless-lid	Waste supplier	Festivals	RC	1							(+) 1						
			The Belgian festival Pukkelpop worked with the rPET cups in 2018.	Successful project	https://kidv.nl/r-pet-drinkbeker-met-strawless-lid	Waste supplier	Festivals	RC	1		(+) 1											
			Waste processor SUEZ collected them and turned them into new cups	Partnership	https://kidv.nl/r-pet-drinkbeker-met-strawless-lid	Recyclers		RC	1		(+) 1											
			At the festival in 2019, visitors therefore drank from cups made of twice recycled plastic	Successful project	https://kidv.nl/r-pet-drinkbeker-met-strawless-lid	Waste supplier	Festivals	RC	1							(+) 1						
			The use of recycled PET means that less claims are made on virgin PET and fossil raw materials	New initiative	https://kidv.nl/r-pet-drinkbeker-met-strawless-lid	Recyclers		RC	1											(+) 1		
2020	Jan	29	Dow has a partnership with The Netherlands-based Fuenix Ecogy Group for the supply of pyrolysis oil made from plastics waste	Partnership	(October 15, 2019 Tuesday). LyondellBasell Announces Construction of New Small-Scale Molecular Recycling Facility. *PR Newswire*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5XB3-SX81-DXP3-R21B-00000-00&context=1516831.	Waste supplier	Retailer, Incumbent	CR	1							(+) 1						
	Feb	17	ABL would sponsor the Green Academy programme	Financing	(November 11, 2019 Monday). Berry Global Joins SABIC in the Production and Use of Circular Polymers from Chemical Recycling. *Business Wire*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5XGK-B981-JBG1-815S-00000-00&context=1516831.	Third party	Banks	General	1								(+) 1					
			The programme is a climate change awareness programme spear headed by E360, Ghana Education Service and the UN University at Maastricht in the Netherlands	Participation	(November 11, 2019 Monday). Berry Global Joins SABIC in the Production and Use of Circular Polymers from Chemical Recycling. *Business Wire*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5XGK-B981-JBG1-815S-00000-00&context=1516831.	Producer Responsibility Organizations	UN University at Maastricht	General	1												(+) 1	
2020	Feb	24	lab CELC produces Linen in the Netherlands, Belgium and France. Linen is a natural plant fibre which can be irrigated with rainwater, it is bio-degradable and has some beneficial properties such as thermo-regulation, anti-bacterial, hypoallergenic and moisture wicking	New project	(February 24, 2020 Monday). Reporting on the Circular Design Lab visit to Future Fabric Expo. *Impact News Service*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5Y91-5851-F0YC-N26G-00000-00&context=1516831.	Waste supplier	New entrant	Bioplastic	1		(+) 1											
2020	Mar	1	In the Netherlands, Sappi has built a pilot-scale plant for the production of cellulose nano fibrils (CNF)	New plant	Printweek staff. (March 1, 2020). Paper tigers. *PrintWeek MEA*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5YB4-8311-JDJN-608R-00000-00&context=1516831.	Waste supplier	Plastic producer, Incumbent	Bioplastic	1		(+) 1											

2020	Mar	4	chairman of the Dutch beet growers' cooperative Royal Cosun, told the session about research it had been doing work on processing leaves from harvested beet to produce vegetable proteins for use in a range of food and drinks, as well as work on the production of bioplastics, which can help reduce reliance on plastics produced from fossil fuels	Event	Marianne Curtis. (March 4, 2020 Wednesday). Dutch clues to getting the best out of beet. *Farmers Guardian*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5YBS-HBB1-JBJF-11WK-00000-00&context=1516831.	Waste supplier	Dutch beets growers	Bioplastic	1						(+) 1							
			Royal Cosun has 9,000 members responsible for growing and processing sugar in the Netherlands	Participation	Marianne Curtis. (March 4, 2020 Wednesday). Dutch clues to getting the best out of beet. *Farmers Guardian*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5YBS-HBB1-JBJF-11WK-00000-00&context=1516831.	Waste supplier	Dutch beets growers	Bioplastic	1							(+) 1					
2020	Mar	6	Nestl is signing up to the European Plastics Pact. The Pact will help Nestl achieve 100% recyclable or reusable packaging and reduce the use of virgin plastics by one third by 2025	Leading Organization	https://www.nestle.co.uk/en-gb/media/pressreleases/allpressreleases/nestle-signs-eppr-commitment-to-reduce-virgin-plastics	Waste supplier	Retailer, Incumbent	MR, RC, R	1						(+) 1							
			The European Plastics Pact, initiated by France and the Netherlands, focuses on accelerating the transition towards a circular plastics economy by 2025	Participation	https://www.nestle.co.uk/en-gb/media/pressreleases/allpressreleases/nestle-signs-eppr-commitment-to-reduce-virgin-plastics	Producer Responsibility Organizations	Dutch Government	General	1						(+) 1							
			15 governments with NGOs, companies and business associations joined and launched the European Plastics Pact - a public-private coalition that aims to avoid plastic waste and bring all actors in the value chain together	Participation	https://www.nestle.co.uk/en-gb/media/pressreleases/allpressreleases/nestle-signs-eppr-commitment-to-reduce-virgin-plastics	Value chain		General												(+) 1	
2020	Mar	10	EASAC's latest report 'Packaging Plastics in a Circular Economy' shows that fundamental and systemic reforms are required along the whole value chain, in order to slow and reverse damage to the environment, biodiversity and ultimately risks to human health	Negative Reputation	States News Service. (March 10, 2020 Tuesday). EUROPEAN ACADEMIES OF SCIENCE WARN: PLASTIC CRISIS REQUIRES FUNDAMENTAL SYSTEM CHANGE. *States News Service*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5YD5-HXN1-JCBF-S0K9-00000-00&context=1516831.	Producer Responsibility Organizations	European Academies' Science Advisory Council	General		1					-1							
			Today, the majority of the EU's plastic waste is not recycled in Europe.	Negative Reputation	States News Service. (March 10, 2020 Tuesday). EUROPEAN ACADEMIES OF SCIENCE WARN: PLASTIC CRISIS REQUIRES FUNDAMENTAL SYSTEM CHANGE. *States News Service*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5YD5-HXN1-JCBF-S0K9-00000-00&context=1516831.	Recycler		MR		1					-1							
			Huge amounts of contaminated and hard-to-recycle plastic is being shipped out of Europe, often ending up in illegal factories and/or being leaked into the local environment and ultimately the oceans	Negative Reputation	States News Service. (March 10, 2020 Tuesday). EUROPEAN ACADEMIES OF SCIENCE WARN: PLASTIC CRISIS REQUIRES FUNDAMENTAL SYSTEM CHANGE. *States News Service*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5YD5-HXN1-JCBF-S0K9-00000-00&context=1516831.	Recycler	European Academies' Science Advisory Council	MR		1									-1			
			At present, the scientists see a very limited potential for biodegradable plastic	Negative Reputation	States News Service. (March 10, 2020 Tuesday). EUROPEAN ACADEMIES OF SCIENCE WARN: PLASTIC CRISIS REQUIRES FUNDAMENTAL SYSTEM CHANGE. *States News Service*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5YD5-HXN1-JCBF-S0K9-00000-00&context=1516831.	Producer Responsibility Organizations	European Academies' Science Advisory Council	Bioplastic	1						-1							
			Also, 'bio' does not equate to reduced environmental impact since alternative feedstocks to fossil fuels can be associated with high greenhouse gas emissions, competition with land for food, or driving land use change.	Negative Reputation	States News Service. (March 10, 2020 Tuesday). EUROPEAN ACADEMIES OF SCIENCE WARN: PLASTIC CRISIS REQUIRES FUNDAMENTAL SYSTEM CHANGE. *States News Service*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5YD5-HXN1-JCBF-S0K9-00000-00&context=1516831.	Producer Responsibility Organizations	European Academies' Science Advisory Council	Bioplastic		1									-1			
2020	Mar	19	Concerns over the long-term impact of the coronavirus outbreak on key European recycling markets sharply escalated this week following the adoption of further containment measures across the continent	Negative Reputation	(March 19, 2020 Thursday). INSIGHT: European recycling markets reel from coronavirus. *ICIS Chemical News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5YG4-0811-JCN4-H40F-00000-00&context=1516831.	Recycler	Incumbents, New entrants	MR	1							-1						
2020	Mar	20	JPF Netherlands, the holding company for all international businesses owned by BC Jindal group, has purchased the laminates division of API Group, to create API Laminates	Partnership	https://www.flexotechmag.com/news/32989/api-laminates-bought-by-jpf-netherlands/	Waste supplier	Plastic Producer, Incumbents, New entrants	MR	1							(+) 1						
2020	Mar	30	End project: Standardisation quality of recycled plastics to enhance circular applications	Successful project	https://www.wur.nl/en/project/Towards-more-circularity-for-PP-and-PE-F006pA.htm	Producer Responsibility Organizations	WUR	RC	1				(+) 1									
			there are multiple pathways to improve the circularity of PE and PP with active participation of all stakeholders, including the EU and national governments to set out a policy	Negative Reputation	https://www.wur.nl/en/project/Towards-more-circularity-for-PP-and-PE-F006pA.htm	Recycler		RC												-1		
2020	April	15	Netherlands-based startup nuud has raised funds on Kickstarter to launch a screw-on applicator for its natural deodorant tubes	New project	Kacey Culliney, . (April 15, 2020 Wednesday). A deodorant revolution ? Dutch startup nuud develops reusable applicator. *CosmeticsDesign-Europe.com*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5YPC-1F81-DYNP-M532-00000-00&context=1516831.	Waste supplier	Retailer, New entrant	Bioplastic	1		(+) 1											
			Certified vegan and packaged in 20ml bioplastic tubes, nuud s highly concentrated and patented formula centres on micro-sized natural silver that prevents odour by neutralising bacteria on the skin, maintaining its effect for several days	New project	Kacey Culliney, . (April 15, 2020 Wednesday). A deodorant revolution ? Dutch startup nuud develops reusable applicator. *CosmeticsDesign-Europe.com*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5YPC-1F81-DYNP-M532-00000-00&context=1516831.	Waste supplier	Retailer, New entrant	Bioplastic	1			(+) 1										
			Currently available in 118 countries worldwide with most business online	New project	Kacey Culliney, . (April 15, 2020 Wednesday). A deodorant revolution ? Dutch startup nuud develops reusable applicator. *CosmeticsDesign-Europe.com*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5YPC-1F81-DYNP-M532-00000-00&context=1516831.	Waste supplier	Retailer, New entrant	Bioplastic	1							(+) 1						
			Biobased screw-on caps due to launch this June	New project	Kacey Culliney, . (April 15, 2020 Wednesday). A deodorant revolution ? Dutch startup nuud develops reusable applicator. *CosmeticsDesign-Europe.com*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5YPC-1F81-DYNP-M532-00000-00&context=1516831.	Waste supplier	Retailer, New entrant	Bioplastic	1							(+) 1						
2020	May	4	Entrepreneurs are using drones and satellites to monitor ocean health and illegal fishing, they're transforming shrimp shell waste into foam packaging, reusing plastic waste to build boats for local fishing communities	New project	(May 4, 2020 Monday). The entrepreneurs bringing us one step closer to solving the world's toughest challenges. *The Mandarin*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:5YV7-7DW1-JD6R-T1F7-00000-00&context=1516831.	Waste supplier, Recycler	New entrant	Bioplastic, R	1			(+) 1										
2020	Jun	15	snack food maker Mondelez International, which owns the Philadelphia brand, said it will start to use the recycled resins as part of its goal to have 5 percent recycled plastic in its packaging in EU	Goals/Targets	Steve Toloken. (June 15, 2020). Chemically recycled plastic used in Mondelez packaging. *Plastics News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:605C-BFC1-JC0G-4089-00000-00&context=1516832	Waste supplier	Retailer, Incumbent	RC	1						(+) 1							
2020	Jun	16	Automatic Waste Collection System Market to See Booming Growth	Knowledge Sharing	(June 16, 2020 Tuesday). Automatic Waste Collection System Market to See Booming Growth with Caverion, Cleantech, Envac, MariCap Oy. *MENA English (Middle East and North Africa Financial Network)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:604X-0G81-JCNX-309P-00000-00&context=1516831.	Recycler	New entrant	MR	1							(+) 1						

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2020	Jun	25	Chemical B.V. has announced that, beginning 1 August 2020, it is expanding and reinforcing its strategic partnership with IMCD Group for the distribution of its specialty plastics	Partnership	(June 25, 2020 Thursday). Eastman partners with IMCD Group to expand its distribution network for specialty plastics in EMEA. *M2 PressWIRE*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:606V-JHF1-JD3Y-Y530-00000-00&context=1516831.	Waste supplier	Plastic Producer, Incumbent	CR	1						(+) 1							
			IMCD will also start serving an expanded EMEA market inc;uding the NL	Partnership	(June 25, 2020 Thursday). Eastman partners with IMCD Group to expand its distribution network for specialty plastics in EMEA. *M2 PressWIRE*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:606V-JHF1-JD3Y-Y530-00000-00&context=1516831.	Waste supplier	Plastic Producer, Incumbent	CR	1							(+) 1						
2020	Jun	28	The Netherlands will ban a number of single-use plastic products from July 2021, in an effort to protect our beaches and oceans	Legislation	https://www.iamexpat.nl/expat-info/dutch-expat-news/netherlands-ban-many-single-use-plastics-next-summer	Government	Dutch Government	R		1					(+) 1							
			The legislation is part of an EU initiative agreed by European Environment Ministers and the European Parliament	Legislation	https://www.iamexpat.nl/expat-info/dutch-expat-news/netherlands-ban-many-single-use-plastics-next-summer	Producer Responsibility Organizations	Dutch Government	R	1					(+) 1								
			All EU member states, including the Netherlands, are required to include this directive in their national legislation	Legislation	https://www.iamexpat.nl/expat-info/dutch-expat-news/netherlands-ban-many-single-use-plastics-next-summer	Producer Responsibility Organizations	Dutch Government	R	1					(+) 1								
			from 2024 caps and lids must be attached to plastic bottles and packaging so as to improve recycling,	Goals/Targets	https://www.iamexpat.nl/expat-info/dutch-expat-news/netherlands-ban-many-single-use-plastics-next-summer	Producer Responsibility Organizations	Dutch Government	MR	1						(+) 1							
			from 2025 plastic bottles must consist of at least 25 percent recycled plastic	Goals/Targets	https://www.iamexpat.nl/expat-info/dutch-expat-news/netherlands-ban-many-single-use-plastics-next-summer	Producer Responsibility Organizations	Dutch Government	RC	1						(+) 1							
2020	Jun	30	Post-consumer plastic packaging waste can be kept separate at home (separate collection) or later be recovered from the municipal solid waste (MSW)	Knowledge Sharing	(June 30, 2020 Tuesday). Netherlands : Recycled plastic film has an odour, regardless how you collect it. *TendersInfo*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:6083-74X1-JDJN-64H2-00000-00&context=1516831.	Recycler		RC	1									(+) 1				
			Research of Wageningen Food & Biobased Research now shows Recycled plastic film has an odour, regardless how you collect it	Negative Reputation	(June 30, 2020 Tuesday). Netherlands : Recycled plastic film has an odour, regardless how you collect it. *TendersInfo*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:6083-74X1-JDJN-64H2-00000-00&context=1516831.	Recycler	Wageningen	RC	1				-1									
2020	Jun		CEFLEX: Design for a circular economy goudelines	Guidance	https://guidelines.ceflex.eu/resources/	Producer Responsibility Organizations	CEFLEX	MR	1					(+) 1								
2020	Jul	6	Netherlands: State Secretary Van Veldhoven launches new campaign to combat packaging waste	Event	(July 6, 2020 Monday). Netherlands: State Secretary Van Veldhoven launches new campaign to combat packaging waste. *Thai News Service*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:608K-1S21-DXMS-80JG-00000-00&context=1516831.	Producer Responsibility Organizations	State Secretary	General	1					(+) 1								
			In addition to the implementation of the European recycling targets, she has set down agreements with the packaging sector regarding specific circular targets for the period up to and including 2025, comprising re-use in addition to recycling	Negative Reputation	(July 6, 2020 Monday). Netherlands: State Secretary Van Veldhoven launches new campaign to combat packaging waste. *Thai News Service*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:608K-1S21-DXMS-80JG-00000-00&context=1516831.	Producer Responsibility Organizations	State Secretary	R	1						-1							
			The EU recycling target for all packaging combined is 70% by 2030.	Goals/Targets	(July 6, 2020 Monday). Netherlands: State Secretary Van Veldhoven launches new campaign to combat packaging waste. *Thai News Service*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:608K-1S21-DXMS-80JG-00000-00&context=1516831.	Producer Responsibility Organizations	Dutch Government	MR	1						(+) 1							
			The Netherlands will already be achieving this target by 2021	Goals/Targets	(July 6, 2020 Monday). Netherlands: State Secretary Van Veldhoven launches new campaign to combat packaging waste. *Thai News Service*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:608K-1S21-DXMS-80JG-00000-00&context=1516831.	Producer Responsibility Organizations	Dutch Government	MR	1						(+) 1							
			By 2025, 74% of all packaging materials in the Netherlands must be recycled and/or re-used	Goals/Targets	(July 6, 2020 Monday). Netherlands: State Secretary Van Veldhoven launches new campaign to combat packaging waste. *Thai News Service*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:608K-1S21-DXMS-80JG-00000-00&context=1516831.	Producer Responsibility Organizations	Dutch Government	MR, R	1						(+) 1							
			With the exceptions of glass and wastepaper, in the near future all the empty packaging must be deposited in the PMD (Plastics, Metal, and Drinks Cartons) bin	Legislation	(July 6, 2020 Monday). Netherlands: State Secretary Van Veldhoven launches new campaign to combat packaging waste. *Thai News Service*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:608K-1S21-DXMS-80JG-00000-00&context=1516831.	Producer Responsibility Organizations	Dutch Government	MR	1						(+) 1							
			The Dutch circular targets and the European recycling targets will be embedded in law and implemented with effect from 2021.	Legislation	(July 6, 2020 Monday). Netherlands: State Secretary Van Veldhoven launches new campaign to combat packaging waste. *Thai News Service*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:608K-1S21-DXMS-80JG-00000-00&context=1516831.	Producer Responsibility Organizations	Dutch Government	MR	1					(+) 1								
2020	Jun	18	Polypropylene (PP) flexible packaging a a recycling stream is underrepresented.	Negative Reputation	https://www.plasticsrecyclers.eu/post/what-is-next-for-increasing-flexible-packaging-recycling	Recycler		MR	1						-1							
			PP flexible films are often not sorted in a separate waste stream, and thus viable sorting and recycling routes need to be developed.	Negative Reputation	https://www.plasticsrecyclers.eu/post/what-is-next-for-increasing-flexible-packaging-recycling	Recycler		MR	1										(+) 1			
			There is also estimated to be in the region of 2 to 2.5 Mt of PP flexible films currently available for collection and recycling annually.	Positive reputation	https://www.plasticsrecyclers.eu/post/what-is-next-for-increasing-flexible-packaging-recycling	Recycler		MR	1										(+) 1			
			If viable sorting and recycling routes for PP flexible films can be established, then achieving a 50% recycling rate would be achievable supposing yield performance at the higher end of PE flexible film recycling due to higher quality sorting	Positive reputation	https://www.plasticsrecyclers.eu/post/what-is-next-for-increasing-flexible-packaging-recycling	Recycler		MR	1													

			There is no sufficient demand for r PP	Negative Reputation	https://www.plasticsrecyclers.eu/post/what-is-next-for-increasing-flexible-packaging-recycling	Recycler			1							-1						
2020	Jul		PackBack (formerly Shared Packaging) was commissioned by the KIDV to investigate whether and how standardization of reusable food packaging can be introduced	New project	https://kidv.nl/standardisation-in-reusable-food-packaging	Producer Responsibility Organizations	KIDV	R	1				(+) 1									
			The research consisted of desk research and interviews with companies in the chain, including producers of food, producers and distributors of packaging, logistics service providers and producers of washing installations	New project	https://kidv.nl/standardisation-in-reusable-food-packaging	Producer Responsibility Organizations	KIDV	R	1											(+) 1		
			One of the results is that square and rectangular shapes of primary meal packaging are preferred, both from a logistics and cleaning point of view	Knowledge Sharing	https://kidv.nl/standardisation-in-reusable-food-packaging	Producer Responsibility Organizations	KIDV	R	1							(+) 1						
			With the research, the KIDV and PackBack want to contribute to the acceleration and adoption of primary reusable food packaging systems.	Goals/Targets	https://kidv.nl/standardisation-in-reusable-food-packaging	Producer Responsibility Organizations	KIDV	R	1						(+) 1							
2020	Jul		The State of Sustainable Packaging	Guidance	https://kidv.nl/the-state-of-sustainable-packaging	Producer Responsibility Organizations	KIDV	General						(+) 1								
2020	Aug	17	Magnum pilot prpgramme for using recycled plastic is launched in Spain, Belgium and Netherlands last year,	New project	(August 17, 2020 Monday). Magnum makes tubs with Sabic's new recyclable plastic. *TradeArabia (Bahrain)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:60M3-VTD1-F11P-X454-00000-00&context=1516831.	Waste suppliers	Retailer, Incumbent	RC	1		(+) 1											
			Magnum is the first to use recycled plastic within the ice cream industry after the successful pilot	Successful project	(August 17, 2020 Monday). Magnum makes tubs with Sabic's new recyclable plastic. *TradeArabia (Bahrain)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:60M3-VTD1-F11P-X454-00000-00&context=1516831.	Waste suppliers	Retailer, Incumbent	RC	1		(+) 1											
2020	Aug		The Biobased Plastics action plan stems from the Plastics transition agenda	Guidance	https://kidv.nl/actieplan-biobased-kunststoffen	Producer Responsibility Organizations	KIDV	Bioplastic	1					(+) 1								
			The plan is specifically aimed at the actions needed to increase the demand for and production of biobased plastics	Goals/Targets	https://kidv.nl/actieplan-biobased-kunststoffen	Producer Responsibility Organizations	KIDV	Bioplastic	1							(+) 1						
			In support of this action plan, consultancy firm CE Delft has drawn up two notes, which are part of the action plan.	Participation	https://kidv.nl/actieplan-biobased-kunststoffen	Third party	Consultancy firm CE Delft	Bioplastic	1							(+) 1						
			Namely: an exploration to arrive at 15% biobased plastic by 2030 and an analysis of the sustainability of biobased plastics.	Guidance	https://kidv.nl/actieplan-biobased-kunststoffen	Third party	Consultancy firm CE Delft	Bioplastic	1						(+) 1							
2020	Aug		Roadmap Chemical recycling of plastics 2030 NL	Guidance	https://kidv.nl/roadmap-chemische-recycling-kunststof-2030-nl	Producer Responsibility Organizations	KIDV	CR	1					(+) 1								
			The Netherlands wants 10 percent of domestic plastic production to be replaced by recyclate from chemical recycling by 2030.	Goals/Targets	https://kidv.nl/roadmap-chemische-recycling-kunststof-2030-nl	Producer Responsibility Organizations	KIDV	CR	1						(+) 1							
2020	Aug		KIDV Roadmap 'Multilayer flexible packaging in a circular economy'	Guidance	https://kidv.nl/roadmap-multilayer-flexible-packaging-in-a-circular-economy	Producer Responsibility Organizations	KIDV	MR	1					(+) 1								
			It focuses on multilayer flexible plastic packaging, made of PE, PP or combinations of these materials. It can be either mono-material or multi-materia	Goals/Targets	https://kidv.nl/roadmap-multilayer-flexible-packaging-in-a-circular-economy	Producer Responsibility Organizations	KIDV	MR	1						(+) 1							
2020	Sep	1	The European Parliament's Single-Use Plastics Directive comes into force in 2021 the law will compel Europe's attractions industry to phase out unnecessary single-use plastics, achieve high collection rates for recycled items, and transition to greener solutions	Legislation	States News Service. (September 1, 2020 Tuesday). EUROPEAN ATTRACTIONS PLAN POSITIVE CHANGES TO COMPLY WITH UPCOMING SINGLE-USE PLASTICS BAN. *States News Service*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:60RJ-X1C1-JCBF-S01Y-00000-00&context=1516831.	Producer Responsibility Organizations	Dutch Government	MR, R		1					(+) 1							
			COVID-19 will increase plastic waste and make trash separation more difficult in the short term at Efteling in Kaatsheuvel, Netherlands	Negative reputation	States News Service. (September 1, 2020 Tuesday). EUROPEAN ATTRACTIONS PLAN POSITIVE CHANGES TO COMPLY WITH UPCOMING SINGLE-USE PLASTICS BAN. *States News Service*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:60RJ-X1C1-JCBF-S01Y-00000-00&context=1516831.	Recycler		MR		1					-1							
			Companies should take a critical look at their inventory and replace plastic where possible	Knowledge Sharing	States News Service. (September 1, 2020 Tuesday). EUROPEAN ATTRACTIONS PLAN POSITIVE CHANGES TO COMPLY WITH UPCOMING SINGLE-USE PLASTICS BAN. *States News Service*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:60RJ-X1C1-JCBF-S01Y-00000-00&context=1516831.	Waste suppliers	Producer, Retailer	MR		1									-1			
			Smit recommends involving employees in the process. "Above all, look for creative solutions to avoid using disposables	Participation	States News Service. (September 1, 2020 Tuesday). EUROPEAN ATTRACTIONS PLAN POSITIVE CHANGES TO COMPLY WITH UPCOMING SINGLE-USE PLASTICS BAN. *States News Service*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:60RJ-X1C1-JCBF-S01Y-00000-00&context=1516831.	Value chain		MR	1									(+) 1				
			Vending machines are placed into the park	New project	States News Service. (September 1, 2020 Tuesday). EUROPEAN ATTRACTIONS PLAN POSITIVE CHANGES TO COMPLY WITH UPCOMING SINGLE-USE PLASTICS BAN. *States News Service*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:60RJ-X1C1-JCBF-S01Y-00000-00&context=1516831.	Recycler		MR	1		(+) 1											

			The project was successful	Successful project	States News Service. (September 1, 2020 Tuesday). EUROPEAN ATTRACTIONS PLAN POSITIVE CHANGES TO COMPLY WITH UPCOMING SINGLE-USE PLASTICS BAN. *States News Service*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:60RJ-X1C1-JCBF-S01Y-00000-00&context=1516831.	Recycler		MR	1			(+) 1											
			The park plans to add more vending machines	Goals/Targets	States News Service. (September 1, 2020 Tuesday). EUROPEAN ATTRACTIONS PLAN POSITIVE CHANGES TO COMPLY WITH UPCOMING SINGLE-USE PLASTICS BAN. *States News Service*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:60RJ-X1C1-JCBF-S01Y-00000-00&context=1516831.	Recycler	Dutch Government	MR	1			(+) 1											
2020	Sep	7	Coca-Cola in Western Europe today takes another important step on its journey to eliminating new virgin oil-based plastic as Coca-Cola in the Netherlands and Coca-Cola in Norway announce their transition to plastic bottles made from 100% recycled plastic (rPET).	Leading Organization	https://www.cocacolaep.com/media/news/2020/coca-cola-in-western-europe-transitions-to-100-recycled-plastic-rpet-bottles-in-two-more-markets/	Waste supplier	Retailer, Incumbent	RC	1							(+) 1							
			Coca-Cola European Partners and The Coca-Cola Company in Western Europe have pledged that by 2025, Coca-Cola will: collect a can or bottle for every one it sells	Leading Organization	https://www.cocacolaep.com/media/news/2020/coca-cola-in-western-europe-transitions-to-100-recycled-plastic-rpet-bottles-in-two-more-markets/	Waste supplier	Retailer, Incumbent	RC	1								(+) 1						
			Also that all its packaging is going to be 100% recyclable	Leading Organization	https://www.cocacolaep.com/media/news/2020/coca-cola-in-western-europe-transitions-to-100-recycled-plastic-rpet-bottles-in-two-more-markets/	Waste supplier	Retailer, Incumbent	MR	1							(+) 1							
			by 2023 Coca Cola will ensure that at least 50% of the content of its PET bottles will come from recycled content, accelerating towards its ambition to use zero virgin oil-based PET in its PET bottles within a decade	Leading Organization	https://www.cocacolaep.com/media/news/2020/coca-cola-in-western-europe-transitions-to-100-recycled-plastic-rpet-bottles-in-two-more-markets/	Waste supplier	Retailer, Incumbent	RC	1							(+) 1							
2020	Sep	11	Recycled Packaging Material Market: Intense Competition but High Growth & Extreme Valuation	Knowledge Sharing	https://www.digitaljournal.com/pr	Recycler		RC	1								(+) 1						
2020	Sep	15	The global impact of COVID-19 will significantly affect the sustainable packaging market in 2020	Negative Reputation	(September 15, 2020 Tuesday). Smart Packaging Market to be $43.6 billion by 2027- Exclusive Report Covering Pre and Post COVID-19 Market Analysis by Meticulous Research®. *PR Newswire Europe*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:60V9-NNT1-JB72-120R-00000-00&context=1516831.	Value chain		General		1							-1						
2020	Sep	16	Prysmian Group, world leader in the energy and telecom cable systems industry, announces its support to the Dutch operator KPN in a pilot project involving a fibre-optic network containing 90% recycled plastic. The pilot projects will be developed in the Netherlands, in Buitenpost (Friesland) and Nijmegen	New project	https://www.prysmiangroup.com/en/press-releases/prysmian-launches-the-first-fibre-optic-network-with-90-recycled-plastic-and-record-reduced-diameter	?		RC	1							(+) 1							
2020	Sep	21	A number of the world's biggest food companies, including Nestlé and Mars, have been criticised in a study analysing their moves to reduce their use of plastic	Negative reputation	Andy Coyne. (September 21, 2020 Monday). Food majors accused of "hypocrisy" over plastic reduction commitments. *just-food global news*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:60WN-4D41-JDNW-436J-00000-00&context=1516831.	Waste supplier	Retailers, Incumbent	General		1						-1							
			Changing Markets accuses the companies which it dubs as 'Big Plastic' of being part of "a well-organised network of organisations that fight against proven solutions to the plastic pollution crisis through similar tactics across the world	Negative reputation	Andy Coyne. (September 21, 2020 Monday). Food majors accused of "hypocrisy" over plastic reduction commitments. *just-food global news*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:60WN-4D41-JDNW-436J-00000-00&context=1516831.	Waste supplier	Retailers, Incumbent	General		1						-1							
			The organisation, which has bases in the Netherlands, Belgium, the UK and the US, analysed voluntary commitments and group initiatives from the companies	Knowledge Sharing	Andy Coyne. (September 21, 2020 Monday). Food majors accused of "hypocrisy" over plastic reduction commitments. *just-food global news*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:60WN-4D41-JDNW-436J-00000-00&context=1516831.	Producer Responsibility Organizations	Organization	General	1					(+) 1									
2020	Sep	28	Amcor develops world-first recyclable retort flexible packaging	Leading Organization	(September 28, 2020 Monday). LyondellBasell Sustainability Report Sets Ambitious Plastic Waste Targets. *MediaNet Press Release Wire*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:60Y3-13M1-JC0X-K232-00000-00&context=1516831.	Waste supplier	Plastic producer, Incumbent	MR	1			(+) 1											
			The new pouch has been independently tested by cyclos-HTP and confirmed to be recyclable	Knowledge Sharing	(September 28, 2020 Monday). LyondellBasell Sustainability Report Sets Ambitious Plastic Waste Targets. *MediaNet Press Release Wire*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:60Y3-13M1-JC0X-K232-00000-00&context=1516831.	Waste supplier	Plastic producer, Incumbent	MR	1					(+) 1									
			Today, it fits collection systems in Germany, Austria, Italy, Norway and the Netherlands, and the list of countries is expected to grow,	Knowledge Sharing	(September 28, 2020 Monday). LyondellBasell Sustainability Report Sets Ambitious Plastic Waste Targets. *MediaNet Press Release Wire*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:60Y3-13M1-JC0X-K232-00000-00&context=1516831.	Waste supplier	Plastic producer, Incumbent	MR									(+) 1						
	Sep	28	LyondellBasell (NYSE: LYB), one of the largest plastics, chemicals and refining companies in the world, today released its annual Sustainability Report with the aim of affecting positive change and is focused on three transformational areas including plastic waste, climate change, and thriving societies.	Leading Organization	(September 28, 2020 Monday). LyondellBasell Sustainability Report Sets Ambitious Plastic Waste Targets. *MediaNet Press Release Wire*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:60Y3-13M1-JC0X-K232-00000-00&context=1516831.	Waste supplier	Plastic producer, Incumbent	General	1												(+) 1		
			LyondellBasell announced one of the most ambitious goals of the industry to produce and market two million metric tons of recycled and renewable-based polymers annually by 2030	Goals/Targets	(September 28, 2020 Monday). LyondellBasell Sustainability Report Sets Ambitious Plastic Waste Targets. *MediaNet Press Release Wire*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:60Y3-13M1-JC0X-K232-00000-00&context=1516831.	Waste supplier	Plastic producer, Incumbent	RC, Bioplastic	1							(+) 1							
			Additionally, the company continues to increase recycling and work collaboratively across the value chain	Participation	(September 28, 2020 Monday). LyondellBasell Sustainability Report Sets Ambitious Plastic Waste Targets. *MediaNet Press Release Wire*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:60Y3-13M1-JC0X-K232-00000-00&context=1516831.	Waste supplier	Plastic producer, Incumbent	MR	1												(+) 1		
2020	Sep	29	Nestlé to pilot recyclable Purina wet pouches in the Netherlands	New project	https://www.nestle.com/media/news/nestle-purina-launch-recyclable-flexible-pouch-wet-pet-food	Waste supplier	Plastic producer, Incumbent	MR	1			(+) 1											
			They were developed in partnership with packaging giant Amcor	Partnership	https://www.nestle.com/media/news/nestle-purina-launch-recyclable-flexible-pouch-wet-pet-food	Waste supplier	Plastic producer, Incumbent	MR	1								(+) 1						
			they can be recycled within the Netherlands existing recycling streams	New project	https://www.nestle.com/media/news/nestle-purina-launch-recyclable-flexible-pouch-wet-pet-food	Waste supplier	Plastic producer, Incumbent	MR	1											(+) 1			

2020	Oct	9	The export of by-products obtained from industrial hemp, including food supplements, topical solutions, bioplastics	New project	(October 9, 2020 Friday). Industrial hemp offers export opportunities with a variety of by-products. *CE Noticias Financieras English*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:611M-97K1-DY1R-B2N6-00000-00&context=1516831.	Waste supplier	Pastic producer, New entrant	Bioplastic	1			(+) 1											
			The world's leading producers within the European Union, France, the Netherlands, Estonia, Germany, Italy and Lithuania.	New project	(October 9, 2020 Friday). Industrial hemp offers export opportunities with a variety of by-products. *CE Noticias Financieras English*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:611M-97K1-DY1R-B2N6-00000-00&context=1516831.	Waste supplier	Pastic producer, New entrant	Bioplastic	1								(+) 1						
2020	Oct	21	Latest Research Study on Global Biodegradable Packaging Market published by AMA reveals Drastic Growth Post 2020	Knowledge Sharing	(October 21, 2020 Wednesday). Biodegradable Packaging Market to See Drastic Growth Post 2020 | Amcor, Kruger, Bemis Company. *iCrowdNews wire (English)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:6141-F0V1-JCTB-F4VM-00000-00&context=1516831.	Waste supplier	Plastic producer	Bioplastic	1								(+) 1						
			The key countries in each region are including the NL	Participation	(October 21, 2020 Wednesday). Biodegradable Packaging Market to See Drastic Growth Post 2020 | Amcor, Kruger, Bemis Company. *iCrowdNews wire (English)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:6141-F0V1-JCTB-F4VM-00000-00&context=1516831.	Waste supplier	Plastic producer	Bioplastic	1								(+) 1						
2020	Nov	11	Coca-Cola Transitions to 100% Recycled Plastic Packaging in Netherlands and Norway	Leading Organization	(November 11, 2020 Wednesday). United States : Coca-Cola Transitions to 100% Recycled Plastic Packaging in Netherlands and Norway. *TendersInfo*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:618M-V0K1-JDJN-601F-00000-00&context=1516831.	Waste supplier	Plastic Producer, Incumbent	RC	1											(+) 1			
			CCEP recently introduced CanCollar, a paperboard packaging solution for multipack cans that is fully recyclable and potentially saves more than 18 tons of plastic annually.	New initiative	(November 11, 2020 Wednesday). United States : Coca-Cola Transitions to 100% Recycled Plastic Packaging in Netherlands and Norway. *TendersInfo*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:618M-V0K1-JDJN-601F-00000-00&context=1516831.	Waste supplier	Plastic Producer, Incumbent	MR	1											(+) 1			
			CanCollar ring technology is produced from sustainable materials and uses no glue or adhesives, keeping its total carbon footprint and production cost to a minimum	New initiative	(November 11, 2020 Wednesday). United States : Coca-Cola Transitions to 100% Recycled Plastic Packaging in Netherlands and Norway. *TendersInfo*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:618M-V0K1-JDJN-601F-00000-00&context=1516831.	Waste supplier	Plastic Producer, Incumbent	MR	1			(+) 1											
			Developed in collaboration with Atlanta-based packaging company WestRock	Partnership	(November 11, 2020 Wednesday). United States : Coca-Cola Transitions to 100% Recycled Plastic Packaging in Netherlands and Norway. *TendersInfo*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:618M-V0K1-JDJN-601F-00000-00&context=1516831.	Waste supplier	Plastic Producer, Incumbent	MR	1								(+) 1						
			the collaboration with WestRock and Coca-Cola Western Europe supports the systems commitment to reduce hard-to-recycle plastic in secondary packaging	Goals/Targets	(November 11, 2020 Wednesday). United States : Coca-Cola Transitions to 100% Recycled Plastic Packaging in Netherlands and Norway. *TendersInfo*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:618M-V0K1-JDJN-601F-00000-00&context=1516831.	Waste supplier	Plastic Producer, Incumbent	MR	1												(+) 1		
2020	Nov	11	Some of the largest packaged goods and retail firms increased their use of recycled plastic in 2019	Goals/Targets	(November 11, 2020 Wednesday). Major packaging users hit 6.2% average recycled content. *Industrial Goods Monitor Worldwide*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:618G-5MD1-F11P-X1CV-00000-00&context=1516831.	Waste supplier	Retailer	RC	1							(+) 1							
			but they have work to do to hit 2025 targets, according to an Ellen MacArthur Foundation update.	Negative Reputation	(November 11, 2020 Wednesday). Major packaging users hit 6.2% average recycled content. *Industrial Goods Monitor Worldwide*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:618G-5MD1-F11P-X1CV-00000-00&context=1516831.	Waste supplier	Retailer, Ellen MacArthur Foundation	RC		1						-1							
			The Ellen MacArthur Foundation recently published the 2020 progress report for companies that have signed onto the organizations New Plastics Economy Global Commitment	New initiative	(November 11, 2020 Wednesday). Major packaging users hit 6.2% average recycled content. *Industrial Goods Monitor Worldwide*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:618G-5MD1-F11P-X1CV-00000-00&context=1516831.	Producer Responsibility Organizations	Ellen MacArthur Foundation	General	1				(+) 1										
			This initiative lays out recycling and other sustainability criteria signatories pledge to meet	New initiative	(November 11, 2020 Wednesday). Major packaging users hit 6.2% average recycled content. *Industrial Goods Monitor Worldwide*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:618G-5MD1-F11P-X1CV-00000-00&context=1516831.	Producer Responsibility Organizations	Ellen MacArthur Foundation	MR	1					(+) 1									
			Companies that have signed this pledge together make up more than 20% of the global plastic packaging market, according to the report	Participation	(November 11, 2020 Wednesday). Major packaging users hit 6.2% average recycled content. *Industrial Goods Monitor Worldwide*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:618G-5MD1-F11P-X1CV-00000-00&context=1516831.	Value chain	Ellen MacArthur Foundation	MR	1												(+) 1		
			While progress varies significantly between signatories, average PCR for packaged goods and retail signatories increased by 22% year on year, collectively reaching 6.2% PCR for 2019, according to the report	Knowledge Sharing	(November 11, 2020 Wednesday). Major packaging users hit 6.2% average recycled content. *Industrial Goods Monitor Worldwide*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:618G-5MD1-F11P-X1CV-00000-00&context=1516831.	Waste supplier	Plastic Producer, Retailer	RC	1											(+) 1			
	Nov	11	Announcement of the winners of the 2020 Packaging Innovation Awards	Event	(November 11, 2020 Wednesday). Major packaging users hit 6.2% average recycled content. *Industrial Goods Monitor Worldwide*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:618G-5MD1-F11P-X1CV-00000-00&context=1516831.	Third party	2020 Packaging Innovation Awards		1				(+) 1										

			Henkel AG & Co KGaA's Social Plastic Ecosystem in collaboration with Plastic Bank for creating a new line of sustainable cosmetic packaging	Partnership	(November 11, 2020 Wednesday). Major packaging users hit 6.2% average recycled content. *Industrial Goods Monitor Worldwide*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:618G-5MD1-F11P-X1CV-00000-00&context=1516831.	Waste supplier, Third party	Plastic Producer, Incumbent , Bank	MR	1					(+) 1									
2020	Nov	17	Companies are encouranged to work with insects to tackle environemtal issues, since insects' exoskeletons can also be used to make a bioplastic	Knowledge Sharing	Marc Horne. (November 17, 2020 Tuesday). Insect farming can be next bug thing in conservation. *The Times (London)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:619P-PG91-DYTY-C0J7-00000-00&context=1516831.	Waste suppliers	Plastic producers, Incumbent, New entrants	Bioplastic	1			(+) 1											
2020	Nov	19	There is criticism of the export of waste. And this has indeed increased significantly in recent years. This is the result of an answer by the Federal Ministry for the Environment (BMU) to a small question by the Green Party parliamentary group, which is available to WELT	Negative Reputation	Carsten Dierig. (November 19, 2020 Thursday). Where the garbage from the yellow bin ends up; Despite significantly improved recycling, waste volumes in Germany have been increasing for years. More and more plastic waste is ending up in Malaysia: in 2019 it was 180,000 tonnes. *Die Welt (English)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:61B4-MGV1-JBK9-22P7-00000-00&context=1516831.	Producer Responsibility Organizations	Green Party parliamentary group	MR		1						-1							
			According to this question, the export volumes of packaging waste from yellow bins and yellow sacks have grown by a factor of 25 within 20 years - from 14,200 tonnes in 1999 to 355,700 tonnes in 2018.	Negative Reputation	Carsten Dierig. (November 19, 2020 Thursday). Where the garbage from the yellow bin ends up; Despite significantly improved recycling, waste volumes in Germany have been increasing for years. More and more plastic waste is ending up in Malaysia: in 2019 it was 180,000 tonnes. *Die Welt (English)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:61B4-MGV1-JBK9-22P7-00000-00&context=1516831.	Recycler	Green Party parliamentary group	MR		1						-1							
			The target regions were mainly countries of the European Union, including Austria and the Netherlands	Negative Reputation	Carsten Dierig. (November 19, 2020 Thursday). Where the garbage from the yellow bin ends up; Despite significantly improved recycling, waste volumes in Germany have been increasing for years. More and more plastic waste is ending up in Malaysia: in 2019 it was 180,000 tonnes. *Die Welt (English)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:61B4-MGV1-JBK9-22P7-00000-00&context=1516831.	Recycler	Green Party parliamentary group	MR		1										-1		
2020	Nov	24	In Europe, a multi-country collaboration is looking to replace synthetic dyes in bioplastics with non-toxic alternatives made from turmeric	Partnership	Rebecca Coons. (November 24, 2020 Tuesday). Turmeric root eyed as natural bioplastics dye. *Newstex Blogs Biofuels Digest*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:61C6-8RY1-F03R-N42M-00000-00&context=1516831.	Waste supplier	Plastic producer	Bioplastic	1													(+) 1	
			The Interreg Northwest Europe project CurCol includes partners from research labs in Ireland, Germany, Belgium, and the Netherlands and is looking to develop biodegradable yellow pigments based on curcuma, or turmeric root	New project	Rebecca Coons. (November 24, 2020 Tuesday). Turmeric root eyed as natural bioplastics dye. *Newstex Blogs Biofuels Digest*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:61C6-8RY1-F03R-N42M-00000-00&context=1516831.	Waste supplier	Plastic producer	Bioplastic	1											(+) 1		
			Led by the Avans Foundation, the CurCol project has €2.61 million ($3.08 million) in funding, €1.57 million of which is directly from the European Union	Financing	Rebecca Coons. (November 24, 2020 Tuesday). Turmeric root eyed as natural bioplastics dye. *Newstex Blogs Biofuels Digest*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:61C6-8RY1-F03R-N42M-00000-00&context=1516831.	Waste supplier	Plastic producer	Bioplastic	1									(+) 1					
			The limited number of biodegradable dyes currently available do not meet necessary standards for use in packaging	Knowledge Sharing	Rebecca Coons. (November 24, 2020 Tuesday). Turmeric root eyed as natural bioplastics dye. *Newstex Blogs Biofuels Digest*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:61C6-8RY1-F03R-N42M-00000-00&context=1516831.	Waste supplier	Plastic producer	Bioplastic	1								-1						
2020	Dec	3	Driven by a shared vision of sustainability and strong collaboration, DSM, SABIC, Cepsa, Fibrant, and Viscofan have together created a partnership	Partnership	(December 3, 2020 Thursday). DSM, SABIC, Cepsa, Fibrant, and Viscofan co-develop novel meat packaging material made from mixed post-consumer plastics. *Impact Financial News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:61FJ-YC31-JDG9-Y1MH-00000-00&context=1516831.	Waste supplier	Plastic producer, Incumbent, New entrants	MR, RC	1													(+) 1	
			They developed a multi-barrier casing for meat products made via advanced recycling of post-consumer plastics	New project	(December 3, 2020 Thursday). DSM, SABIC, Cepsa, Fibrant, and Viscofan co-develop novel meat packaging material made from mixed post-consumer plastics. *Impact Financial News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:61FJ-YC31-JDG9-Y1MH-00000-00&context=1516831.	Waste supplier	Plastic producer, Incumbent, New entrants	MR, RC	1			(+) 1											
			The development of this packaging material underlines a strong commitment to enabling a circular economy by working together with partners throughout the value chain, and addresses the increasing consumer, societal and regulatory demand for more sustainable multi-layer barrier casing solutions.	Engagement	(December 3, 2020 Thursday). DSM, SABIC, Cepsa, Fibrant, and Viscofan co-develop novel meat packaging material made from mixed post-consumer plastics. *Impact Financial News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:61FJ-YC31-JDG9-Y1MH-00000-00&context=1516831.	Waste supplier	Consumers, society	MR	1											(+) 1		
			All of the advanced recycled materials within the value chain will have the globally recognized ISCC Plus certification and will not require re-qualification	Goals/Targets	(December 3, 2020 Thursday). DSM, SABIC, Cepsa, Fibrant, and Viscofan co-develop novel meat packaging material made from mixed post-consumer plastics. *Impact Financial News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:61FJ-YC31-JDG9-Y1MH-00000-00&context=1516831.	Third Party	ISCC Plus certification	RC	1											(+) 1		
2020	Dec	9	Amcor has today launched Eco-Tite R inEurope, the first designed to be recycled, PVDC-free shrink bag for fresh and processed meat, poultry and some cheeses	Leading Organization	(December 9, 2020 Wednesday). New Shrink Bag Can be Recycled in PE Plastic Recycling Streams. *Newstex Blogs New Product News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:61GG-JBW1-F03R-N0HN-00000-00&context=1516831.	Waste supplier	Plastic producer, Incumbent	MR	1								(+) 1						
			Amcor Eco-Tite R has been certified by the cyclos-HTP institute, an independent testing lab	Certification	(December 9, 2020 Wednesday). New Shrink Bag Can be Recycled in PE Plastic Recycling Streams. *Newstex Blogs New Product News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:61GG-JBW1-F03R-N0HN-00000-00&context=1516831.	Third party	HTP cyclos	MR	1											(+) 1		
			Consumers can today recycle the bag where suitable infrastructure is in place, including The Netherlands	Successful project	(December 9, 2020 Wednesday). New Shrink Bag Can be Recycled in PE Plastic Recycling Streams. *Newstex Blogs New Product News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:61GG-JBW1-F03R-N0HN-00000-00&context=1516831.	Waste supplier	Plastic producer, Incumbent	MR	1								(+) 1						
2020	Dec	10	In the districts of Cukurova and Seyhan, in Adana province, rubbish sent by the United Kingdom, France, Italy or the Netherlands is piled up in pits, rivers and on the banks of roads, AFP journalists noted	Negative reputation	(December 10, 2020 Thursday). Turkey, European plastic waste dump. *CE Noticias Financieras English*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:61GV-NFF1-DY1R-B2GD-00000-00&context=1516831.	Producer Responsibility Organizations	Dutch Government	MR		1						-1							
2020	Dec	17	The European Plastics Pact, which launched in Brussels on 6 March 2020, today publishes the European Plastics Pact Roadmap to direct and drive forward urgent action by the 143 signatories, across 20 countries	New initiative	Targeted News Service. (December 17, 2020 Thursday). Waste & Resources Action Programme: European Plastics Pact Roadmap - Tackling Plastic Waste Across Europe. *Targeted News Service*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:61J5-9311-JC11-10F5-00000-00&context=1516831.	Producer Responsibility Organizations	Dutch Government	General	1						(+) 1								
			The European Plastics Pact was established by the Netherlands, France and Denmark to establish a public-private coalition specifically to tackle the challenges of creating a circular economy for plastics and packaging	New initiative	Targeted News Service. (December 17, 2020 Thursday). Waste & Resources Action Programme: European Plastics Pact Roadmap - Tackling Plastic Waste Across Europe. *Targeted News Service*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:61J5-9311-JC11-10F5-00000-00&context=1516831.	Producer Responsibility Organizations	Dutch Government	General	1											(+) 1		
			It comprises of 15 national governments, 82 businesses, 3 regional governments and 43 other organisations, including business/trade associations and NGOs	New initiative	Targeted News Service. (December 17, 2020 Thursday). Waste & Resources Action Programme: European Plastics Pact Roadmap - Tackling Plastic Waste Across Europe. *Targeted News Service*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:61J5-9311-JC11-10F5-00000-00&context=1516831.	Value chain		General	1											(+) 1		
			The European Plastics Pact is part of the Ellen MacArthur Foundation's global Plastics Pact network, working towards a common vision of a circular economy for plastic, in which it never becomes waste or pollution.	New initiative	Targeted News Service. (December 17, 2020 Thursday). Waste & Resources Action Programme: European Plastics Pact Roadmap - Tackling Plastic Waste Across Europe. *Targeted News Service*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:61J5-9311-JC11-10F5-00000-00&context=1516831.	Producer Responsibility Organizations	Ellen MacArthur Foundation	General	1												(+) 1	

2020	Dec		The KIDV has developed various Recycle Checks to help companies make their packaging recyclable.	Guidance	https://kidv.nl/sorteren-en-recyclen	Producer Responsibility Organizations	KIDV	MR	1				(+) 1									
			The KIDV Recycle Checks are based on the current system of collection, sorting and recycling of packaging in the Netherlands, based on the average situation throughout the country	Guidance	https://kidv.nl/sorteren-en-recyclen	Producer Responsibility Organizations	KIDV	MR		1					-1							
			For some subjects there is a need for more knowledge and insight.	Guidance	https://kidv.nl/sorteren-en-recyclen	Producer Responsibility Organizations	KIDV	MR	1			-1										
2021	Jan	8	From February 2021, FrieslandCampina will be making PET bottles from 100% recycled PET (rPET).	Leading Organization	(January 8, 2021 Friday). FrieslandCampina switches to 100% recycled PET bottles. *Basic Materials & Resources Monitor Worldwide*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:61PT-TX01-JDJN-64YD-00000-00&context=1516831.	Waste supplier	Retailer, Incumbent	RC	1						(+) 1							
			a PET bottle can only be recycled if the consumer has removed the label,	Knowledge sharing	(January 8, 2021 Friday). FrieslandCampina switches to 100% recycled PET bottles. *Basic Materials & Resources Monitor Worldwide*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:61PT-TX01-JDJN-64YD-00000-00&context=1516831.	Recycler		MR	1				(+) 1									
			FrieslandCampina's Research & Development department has also developed a new "zipper" that makes it easier to separate from the bottle	New	(January 8, 2021 Friday). FrieslandCampina switches to 100% recycled PET bottles. *Basic Materials & Resources Monitor Worldwide*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:61PT-TX01-JDJN-64YD-00000-00&context=1516831.	Waste supplier	Retailer, Incumbent	MR	1		(+) 1											
			This makes FrieslandCampina the first company in the dairy sector to make its bottles virtually circular for its brands in the Netherlands, Belgium, the UK and Hungary.	Leading Organization	(January 8, 2021 Friday). FrieslandCampina switches to 100% recycled PET bottles. *Basic Materials & Resources Monitor Worldwide*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:61PT-TX01-JDJN-64YD-00000-00&context=1516831.	Waste supplier	Retailer, Incumbent	MR, RC	1										(+) 1			
			One of the objectives of FrieslandCampina's sustainability program "Nourishing a better planet" is to make the entire packaging portfolio fully circular and carbon neutral and to reduce the amount of packaging materials to a minimum as well.	Goals/Targets	(January 8, 2021 Friday). FrieslandCampina switches to 100% recycled PET bottles. *Basic Materials & Resources Monitor Worldwide*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:61PT-TX01-JDJN-64YD-00000-00&context=1516831.	Waste supplier	Retailer, Incumbent	MR, RC	1										(+) 1			
2021	Jan	13	ICIS global team of Recycling Editors and Analysts capture all the major developments across the recycling and sustainability areas, delivering news and insights to help companies keep up to date with the latest information on brand pledges, regulation and legislation, price developments, and news on new or existing recycling projects, both chemical and mechanical	Knowledge sharing	(January 13, 2021 Wednesday). Topic Page: Circular economy. *ICIS Chemical News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:61S3-1MB1-F046-73T4-00000-00&context=1516831.	Recycler	Global team of Recycling Editors and Analysts	MR	1				(+) 1									
			EU-funded project aims to depolymerise MMA and chemically recycle	Financing	(January 13, 2021 Wednesday). Topic Page: Circular economy. *ICIS Chemical News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:61S3-1MB1-F046-73T4-00000-00&context=1516831.	Recycler		CR	1								(+) 1					
			Plan to build a new plant in The Netherlands for chemical recycling, run by Heathland, a member company of the MMAtwo project	New plant	(January 13, 2021 Wednesday). Topic Page: Circular economy. *ICIS Chemical News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:61S3-1MB1-F046-73T4-00000-00&context=1516831.	Recycler	New entrant	CR	1		(+) 1											
			Currently only 10% of MMA is recycled	Knowledge sharing	(January 13, 2021 Wednesday). Topic Page: Circular economy. *ICIS Chemical News*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:61S3-1MB1-F046-73T4-00000-00&context=1516831.	Recycler	New entrant	CR		1					-1							
2021	Jan	22	SABIC and Plastic Energy are set to commence construction on the first commercial unit to produce its flagship certified circular polymers	Partnership	Chemical Industry Digest. (January 22, 2021). Sabic and Plastic Energy to Start Building Plastic Recycling Unit, Netherlands. *Chemical Industry Digest*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:61TT-RPF1-DXMP-K394-00000-00&context=1516831.	Recycler	Incumbent, New entrant	CR	1		(+) 1											
			They will be part of the TRUCIRCLE portfolio, which is made from the upcycling of mixed and used plastic	Participation	Chemical Industry Digest. (January 22, 2021). Sabic and Plastic Energy to Start Building Plastic Recycling Unit, Netherlands. *Chemical Industry Digest*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:61TT-RPF1-DXMP-K394-00000-00&context=1516831.	Recycler	Incumbent, New entrant	CR	1							(+) 1						
			SABIC along with partner Plastic Energy is set to start the engineering and construction phase for the unit, this will be based in Geleen, the Netherlands	New plant	Chemical Industry Digest. (January 22, 2021). Sabic and Plastic Energy to Start Building Plastic Recycling Unit, Netherlands. *Chemical Industry Digest*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:61TT-RPF1-DXMP-K394-00000-00&context=1516831.	Recycler	Incumbent, New entrant	CR	1		(+) 1											
			and is expected to become operational in the second half of 2022	New plant	Chemical Industry Digest. (January 22, 2021). Sabic and Plastic Energy to Start Building Plastic Recycling Unit, Netherlands. *Chemical Industry Digest*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:61TT-RPF1-DXMP-K394-00000-00&context=1516831.	Recycler	Incumbent, New entrant	CR	1						(+) 1							
			The project will be realized under a 50-50 joint venture called SPEAR (SABIC Plastic Energy Advanced Recycling BV)	Financing	Chemical Industry Digest. (January 22, 2021). Sabic and Plastic Energy to Start Building Plastic Recycling Unit, Netherlands. *Chemical Industry Digest*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:61TT-RPF1-DXMP-K394-00000-00&context=1516831.	Recycler	Incumbent, New entrant	CR	1							(+) 1						
			It is being executed with a Top Sector Energy Subsidy from the Ministry of Economic Affairs in the Netherlands.	Participation	Chemical Industry Digest. (January 22, 2021). Sabic and Plastic Energy to Start Building Plastic Recycling Unit, Netherlands. *Chemical Industry Digest*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:61TT-RPF1-DXMP-K394-00000-00&context=1516831.	Producer Responsibility Organizations	Dutch Ministry of Economic Affairs	CR	1											(+) 1		
2021	Jan	23	OneCircle (formerly Lightweight Containers), the producer and sales organization of KeyKeg and UniKeg plastic kegs for beverages, announced a new partnership with Kwaliflex Food Recycling, one of the largest processors of residual waste streams from the food and beverage industry in Western Europe.	Partnership	(January 23, 2021 Saturday). OneCircle Announces New Recycling Partnership with Kwaliflex. *Basic Materials & Resources Monitor Worldwide*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:61V1-CM71-F11P-X0PK-00000-00&context=1516831.	Recycler		MR	1											(+) 1		
			Today, already 86% of the recovered KeyKeg plastics are reused into new KeyKegs and we look forward to increasing this percentage further and to rapidly increase the number of collected kegs together with OneCircle in a fruitful partnership.	Partnership	(January 23, 2021 Saturday). OneCircle Announces New Recycling Partnership with Kwaliflex. *Basic Materials & Resources Monitor Worldwide*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:61V1-CM71-F11P-X0PK-00000-00&context=1516831.	Recycler	Incumbent	MR	1						(+) 1							

			OneCircle has started successful collection in the Netherlands, United Kingdom, Spain, Switzerland, Ireland, France and Belgium	Successful project	(January 23, 2021 Saturday). OneCircle Announces New Recycling Partnership with Kwaliflex. *Basic Materials & Resources Monitor Worldwide*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:61V1-CM71-F11P-X0PK-00000-00&context=1516831.	Recycler	OneCircle	MR	1		(+) 1											
2021	Jan	26	The global biomaterials market is projected to reach USD 47.5 billion by 2025 from USD 35.5 billion in 2020	Knowledge sharing	(January 26, 2021 Tuesday). The global biomaterials market is projected to reach USD 47.5 billion by 2025 from USD 35.5 billion in 2020, at a CAGR of 6.0%; during the forecast period. Growth in this market is primarily attributed to increasing funds and grants by government bodies and universities for the development of novel biomaterials, increasing demand for implantable devices, growing demand for biomaterials in plastic surgery and wound healing applications, rising incidences of cardiovascular diseases, and rising awareness and research on regenerative medicine.. *GlobeNewswire*. https://advance-lexis	Waste supplier	Plastic Producer	Bioplastic	1							(+) 1						
			Growth in this market is primarily attributed to increasing funds and grants by government bodies and universities for the development of novel biomaterials	Financing	(January 26, 2021 Tuesday). The global biomaterials market is projected to reach USD 47.5 billion by 2025 from USD 35.5 billion in 2020, at a CAGR of 6.0%; during the forecast period. Growth in this market is primarily attributed to increasing funds and grants by government bodies and universities for the development of novel biomaterials, increasing demand for implantable devices, growing demand for biomaterials in plastic surgery and wound healing applications, rising incidences of cardiovascular diseases, and rising awareness and research on regenerative medicine.. *GlobeNewswire*. https://advance-lexis	Waste supplier	Plastic Producer	Bioplastic	1								(+) 1					
2021	Jan	28	UPM moves forward with biofuels growth plans and starts the basic engineering phase of a next generation biorefinery	New project	(January 28, 2021 Thursday). UPM's growth plans in biofuels progress to the next stage. *GlobeNewswire - English*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:61W3-WXG1-F15W-N006-00000-00&context=1516831.	Waste supplier	Plastic Producer	Bioplastic	1		(+) 1											
			UPM will now proceed with a detailed commercial and basic engineering study to define the business case, select the most innovative technology option and estimate the investment need	New project	(January 28, 2021 Thursday). UPM's growth plans in biofuels progress to the next stage. *GlobeNewswire - English*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:61W3-WXG1-F15W-N006-00000-00&context=1516831.	Waste supplier	Plastic Producer	Bioplastic	1			(+) 1										
			During the study UPM will also review the operating environment primarily in two locations: Kotka, Finland and Rotterdam, the Netherlands.	New project	(January 28, 2021 Thursday). UPM's growth plans in biofuels progress to the next stage. *GlobeNewswire - English*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:61W3-WXG1-F15W-N006-00000-00&context=1516831.	Waste supplier	Plastic Producer	Bioplastic	1			(+) 1										
2021	Jan		KIDV has taken the initiative to found PackForward, the international movement for sustainable packaging	New initiative	https://kidv.nl/packforward	Producer Responsibility Organizations	KIDV	General	1											(+) 1		
			To help various stakeholders in the packaging chain move forward with sustainable packaging, cooperation and knowledge sharing at European level is necessary.	Engagement	https://kidv.nl/packforward	Producer Responsibility Organizations	KIDV	General	1											(+) 1		
			The Packforward website provides an overview of important themes that influence the sustainability of packaging: from the production process and the use of product-packaging combinations to the waste phase	Guidance	https://kidv.nl/packforward	Producer Responsibility Organizations	KIDV	General	1				(+) 1									
			The KIDV has taken the initiative for PackForward together with partners Fost Plus, Gront Punkt Norway and Valipac	Partnership	https://kidv.nl/packforward	Producer Responsibility Organizations	Netherlands Institute for Sustainable Packaging	General	1												(+) 1	
2021	Jan		The Platform of Sustainable Packaging Innovators is a platform focused on innovation in packaging and was founded by the Netherlands Institute for Sustainable Packaging	New initiative	https://kidv.nl/innovatieplatform	Producer Responsibility Organizations	Netherlands Institute for Sustainable Packaging	General	1												(+) 1	
			The aim of this platform is to establish connections between sustainable packaging- and recycling ideas and the KIDV network of producers, retailers and recyclers	Engagement	https://kidv.nl/innovatieplatform	Producer Responsibility Organizations	KIDV	General	1											(+) 1		
			In this way start-ups, scale-ups, small and large companies will be helped to (further) accomplish innovations and to be present on the market.	Participation	https://kidv.nl/innovatieplatform	Producer Responsibility Organizations	KIDV	General	1							(+) 1						
2021	Feb	10	Trash Bag Market to See Huge Growth by 2026	Negative reputation	(February 10, 2021 Wednesday). Trash Bag Market to See Huge Growth by 2026 | Allied Plastics, Cosmoplast, International Plastics. *iCrowdNewswire (English)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:61YW-BJD1-JCTB-F47H-00000-00&context=1516831.	Waste supplier	Plastic Producer	MR		1						-1						
2021	Feb	11	Researchers from the Operations Research and Logistics Group at Wageningen University and from Wageningen Economics Research:	Knowledge sharing	(February 11, 2021 Thursday). Netherlands : How is the Dutch food supply chain coping during the corona crisis?. *TendersInfo*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:6208-TCV1-F11P-X3BW-00000-00&context=1516831.	Producer Responsibility Organizations	Wageningen University	MR	1				(+) 1									
			More tin, glass and plastic was needed for use in consumer packaging.	Negative reputation	(February 11, 2021 Thursday). Netherlands : How is the Dutch food supply chain coping during the corona crisis?. *TendersInfo*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:6208-TCV1-F11P-X3BW-00000-00&context=1516831.	Recycler		MR		1						-1						
			As more of this packaging material ended up in consumers' homes rather than in restaurants, the cardboard recycling process got disrupted as well, causing shortages	Negative reputation	(February 11, 2021 Thursday). Netherlands : How is the Dutch food supply chain coping during the corona crisis?. *TendersInfo*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:6208-TCV1-F11P-X3BW-00000-00&context=1516831.	Recycler		MR		1									-1			
2021	Feb	11	Green Bell Packaging works with researchers from across the globe to provide the most cutting-edge options in plastic-free packaging.	Partnership	(February 11, 2021). Calls for more transparency around sustainable product marketing. *News on Fast moving consumer goods in India*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:6202-P6G1-JBYT-H26K-00000-00&context=1516831.	Waste supplier	Plastic producer, New entrant	Bioplastic	1											(+) 1		
			Its BioBag is certified SNI Ekolabel (71887:2016) for degradable bioplastic shopping bags	Certification	(February 11, 2021). Calls for more transparency around sustainable product marketing. *News on Fast moving consumer goods in India*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:6202-P6G1-JBYT-H26K-00000-00&context=1516831.	Third party	SNI Ekolabel	Bioplastic	1											(+) 1		
			and has also passed the acute oral toxicity test (by WIL Research, Netherlands)	Certification	(February 11, 2021). Calls for more transparency around sustainable product marketing. *News on Fast moving consumer goods in India*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:6202-P6G1-JBYT-H26K-00000-00&context=1516831.	Third party	WIL Research, Netherlands	Bioplastic	1											(+) 1		

2021	Feb	11	The current quality of recycled plastic bottles and flacons (PE and PP) is well-suited for various non-food applications	Knowledge sharing	(February 11, 2021 Thursday). Netherlands : Recycled plastics qualify as feedstock, but the leap forward is still ahead. *TendersInfo*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:6208-TCV1-F11P-X3SX-00000-00&context=1516831.	Recycler		RC	1							(+) 1						
			This was concluded from multiple projects that Wageningen Food & Biobased Research has conducted in the last four years	Knowledge sharing	(February 11, 2021 Thursday). Netherlands : Recycled plastics qualify as feedstock, but the leap forward is still ahead. *TendersInfo*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:6208-TCV1-F11P-X3SX-00000-00&context=1516831.	Producer Responsibility Organizations	Wageningen Food & Biobased Research	RC	1				(+) 1									
			Nonetheless, the demand for recycled plastics lags behind the supply	Negative reputation	(February 11, 2021 Thursday). Netherlands : Recycled plastics qualify as feedstock, but the leap forward is still ahead. *TendersInfo*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:6208-TCV1-F11P-X3SX-00000-00&context=1516831.	Waste supplier	Consumers	RC	1											-1		
			The main cause: policies to promote the use of recycled plastics and to discourage virgin plastics fall short	Negative reputation	(February 11, 2021 Thursday). Netherlands : Recycled plastics qualify as feedstock, but the leap forward is still ahead. *TendersInfo*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:6208-TCV1-F11P-X3SX-00000-00&context=1516831.	Producer Responsibility Organizations	EU	RC	1					-1								
			In the Netherlands, packages of polyethylene (PE), such as bottles, are ponderously, separately collected with lightweight packaging waste and mechanically recovered from municipal solid waste These packages are converted in recycled PE	Positive reputation	(February 11, 2021 Thursday). Netherlands : Recycled plastics qualify as feedstock, but the leap forward is still ahead. *TendersInfo*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:6208-TCV1-F11P-X3SX-00000-00&context=1516831.	Government	Dutch Municipalities	MR, RC	1										(+) 1			
			The current quality recycled PE and PP is well-suited for multiple non-food applications	Positive reputation	(February 11, 2021 Thursday). Netherlands : Recycled plastics qualify as feedstock, but the leap forward is still ahead. *TendersInfo*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:6208-TCV1-F11P-X3SX-00000-00&context=1516831.	Recycler		RC	1							(+) 1						
			Currently, recycled plastic cannot compete well with virgin plastics in case the application is highly demanding, like PE bottles with a high stress cracking resistance and PP flip-top-caps with a thin hinge.	Negative reputation	(February 11, 2021 Thursday). Netherlands : Recycled plastics qualify as feedstock, but the leap forward is still ahead. *TendersInfo*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:6208-TCV1-F11P-X3SX-00000-00&context=1516831.	Recycler		RC	1			-1										
2021	Feb	12	Henkel has launched Technomelt Supra ECO - a new range of hot melt adhesives that delivers greater sustainability and lower CO2 emissions while maintaining the performance of the Supra range	New project	(February 12, 2021 Friday). February 11, 2021: Henkel introduces Technomelt Supra ECO to offer greater sustainability without any compromise in performance. *News Bites - Private Companies*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:6204-T9C1-DXKH-N427-00000-00&context=1516831.	Waste supplier	Plastic producer, Incumbent	Bioplastic	1		(+) 1											
			The innovative products are the result of a successful partnership with Dow, which developed a bio-based polyolefin elastomer that can effectively substitute fossil-based materials	Partnership	(February 12, 2021 Friday). February 11, 2021: Henkel introduces Technomelt Supra ECO to offer greater sustainability without any compromise in performance. *News Bites - Private Companies*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:6204-T9C1-DXKH-N427-00000-00&context=1516831.	Waste supplier	Retailer, Incumbent	Bioplastic	1							(+) 1						
			The International Sustainability & Carbon Certification (ISCC)- process will guarantee traceable sourcing so packaging manufacturers will have a dependable way to advance their sustainability goals.	Certification	(February 12, 2021 Friday). February 11, 2021: Henkel introduces Technomelt Supra ECO to offer greater sustainability without any compromise in performance. *News Bites - Private Companies*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:6204-T9C1-DXKH-N427-00000-00&context=1516831.	Third party	International Sustainability & Carbon Certification	Bioplastic	1											(+) 1		
2021	Feb	15	Magnum's new tubs and lids for its pints range are fully recyclable and made with recycled polypropylene plastic (rPP).	Leading Organization	(February 15, 2021 Monday). February 10, 2021: Chesebrough Pond's Inc: Why our fight on food waste is a chain reaction. *News Bites - Private Companies*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:620Y-7641-JB4F-Y1P7-00000-00&context=1516831.	Waste supplier	Retailer, Incumbent	RC	1							(+) 1						
			Initially, 600,000 of the new tubs were launched in Belgium, the Netherlands and Spain in 2019	Leading Organization	(February 15, 2021 Monday). February 10, 2021: Chesebrough Pond's Inc: Why our fight on food waste is a chain reaction. *News Bites - Private Companies*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:620Y-7641-JB4F-Y1P7-00000-00&context=1516831.	Waste supplier	Retailer, Incumbent	RC	1										(+) 1			
			This year, more than 7 million will be introduced across other European countries	Leading Organization	(February 15, 2021 Monday). February 10, 2021: Chesebrough Pond's Inc: Why our fight on food waste is a chain reaction. *News Bites - Private Companies*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:620Y-7641-JB4F-Y1P7-00000-00&context=1516831.	Waste supplier	Retailer, Incumbent	RC	1										(+) 1			
			And from 2021 onwards, the new packs will be rolled out globally.	Leading Organization	(February 15, 2021 Monday). February 10, 2021: Chesebrough Pond's Inc: Why our fight on food waste is a chain reaction. *News Bites - Private Companies*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:620Y-7641-JB4F-Y1P7-00000-00&context=1516831.	Waste supplier	Retailer, Incumbent	RC	1							(+) 1						
2021	Feb	15	In order for flexible PP to be optimally recycled, there is a need for incentivize sorting and recycling companies to produce quality products	Negative reputation	https://www.packaginginsights.com/news/dutch-university-flags-supply-and-demand-mismatch-in-recycled-post-consumer-plastics.html	Recycler		MR		1						-1						
2021	Feb	15	Specialty chemicals company LANXESS signed a binding agreement to acquire 100 percent shares in Emerald Kalama Chemical on February 14, 2021	Financing	(February 15, 2021 Monday). LANXESS signs contract to acquire Emerald Kalama Chemical. *AK&M Online News (English)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:620X-PVT1-JDR4-7115-00000-00&context=1516831.	Waste supplier	Plastic producer, New entrant	CR	1							(+) 1						
			The transaction is expected to be completed in the second half of 2021. It is still subject to approval by the relevant authorities	Goals/Targets	(February 15, 2021 Monday). LANXESS signs contract to acquire Emerald Kalama Chemical. *AK&M Online News (English)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:620X-PVT1-JDR4-7115-00000-00&context=1516831.	Waste supplier	Dutch Government	CR	1											(+) 1		
2021	Feb	25	Over 650 startups from across Britain, the Netherlands, Sweden, Norway and Germany applied to this year's Postcode Lotteries Green Challenge	New project	Staff Reporter. (February 25, 2021 Thursday). British startup SoluBlue gets 430.4K for its seaweed-based alternative to plastic packaging. *Newstex Blogs UKTN*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:6232-VPT1-F03R-N27F-00000-00&context=1516831.	Value chain		General	1			(+) 1										
2021	Mar	6	Ikea and Dell have experimented with replacing polystyrene packaging with a mycelium-based bioplastic	New project	Matthew Sweet. (March 6, 2021 Saturday). How mushrooms can eat plastic, build houses and ease depression. *thetimes.co.uk*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:624X-WXG1-DY4H-K231-00000-00&context=1516831.	Waste supplier	Retailer, Incumbent	Bioplastic	1		(+) 1											
			Researchers are exploring more surprising fungal appetites: at least 50 species possess the capacity to break down plastic waste, raising the prospect of an organism that could convert the contents of your recycling bin into edible biomass.	New project	Matthew Sweet. (March 6, 2021 Saturday). How mushrooms can eat plastic, build houses and ease depression. *thetimes.co.uk*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:624X-WXG1-DY4H-K231-00000-00&context=1516831.	Recycler	New entrants	MR	1		(+) 1											
2021	Mar	16	Deep Branch (a carbon dioxide recycling company that uses microorganisms to convert CO2 into high-quality products), a carbon dioxide recycling company, today announced it has completed an €8M Series A investment round	Financing	(March 16, 2021 Tuesday). Deep Branch Announces EUR 8M Series A Round led by Novo Holdings and DSM Venturing, Paving the Way for Commercial-Scale Production Facility. *PR Newswire*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:6273-K921-DXP3-R0T8-00000-00&context=1516831.	Recycler	New entrant	CR	1								(+) 1					
			The investment complements a combined €4M in non-dilutive funding secured from UK and EU grant-funded projects	Financing	(March 16, 2021 Tuesday). Deep Branch Announces EUR 8M Series A Round led by Novo Holdings and DSM Venturing, Paving the Way for Commercial-Scale Production Facility. *PR Newswire*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:6273-K921-DXP3-R0T8-00000-00&context=1516831.	Recycler	New entrant	CR	1												(+) 1	
			Novo Holdings and DSM Venturing led the round, with participation from Total Carbon Neutrality Ventures and Barclays Sustainable Impact Capital.	Participation	(March 16, 2021 Tuesday). Deep Branch Announces EUR 8M Series A Round led by Novo Holdings and DSM Venturing, Paving the Way for Commercial-Scale Production Facility. *PR Newswire*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:6273-K921-DXP3-R0T8-00000-00&context=1516831.	Recycler	Incumbent	CR	1									(+) 1				
2021	Mar	23	Acuity adopted a new go-to market strategy for each of its US, France and Germany territories designed to replicate that of the UK and the Netherlands for bioplastics	New initiative	Proactive. (March 23, 2021 Tuesday). Small Cap Feast - Pantheon Resources; Chariot Oil & Gas. *Proactive Investors (UK)*. https://advance-lexis-com.proxy.library.uu.nl/api/document?collection=news&id=urn:contentItem:6285-HN21-JBYR-J17S-00000-00&context=1516831.	Waste supplier	Plastic producer, Incumbent	Bioplastic	1						(+) 1							
2021	Mar	26	Albert heijn is removing plastic bags from the fruit and vegetable section in its Dutch shops	New initiative	https://www.retaildetail.eu/en/news/food/albert-heijn-discontinues-plastic-bags-fruit-and-vegetables-netherlands	Waste supplier	Retailer	R		1					(+) 1							
			A more sustainable and reusable alternative will replace the bags.	New initiative	https://www.retaildetail.eu/en/news/food/albert-heijn-discontinues-plastic-bags-fruit-and-vegetables-netherlands	Waste supplier	Retailer	R	1			(+) 1										
			From mid-April, the retailer will distribute the new reusable bags free of charge for a fortnight to customers buying fruit and vegetables	Engagement	https://www.retaildetail.eu/en/news/food/albert-heijn-discontinues-plastic-bags-fruit-and-vegetables-netherlands	Waste supplier	Retailer	R	1											(+) 1		
			Afterwards, customers can purchase bags for 0.30 euros.	New initiative	https://www.retaildetail.eu/en/news/food/albert-heijn-discontinues-plastic-bags-fruit-and-vegetables-netherlands	Waste supplier	Cunsumer	R	1											(+) 1		
			Albert Heijn wants the plastic bags to disappear from all Dutch stores by the end of this year at the latest	Goals/Targets	https://www.retaildetail.eu/en/news/food/albert-heijn-discontinues-plastic-bags-fruit-and-vegetables-netherlands	Waste supplier	Retailer	R	1						(+) 1							
2021	Apr	1	Royal Dutch Shell PLC hit a 14-day low , which is also a bullish signal.	Leading Organization		Waste supplier	Plastic producer, Incumbent	General		1						(+) 1						
2021	Apr	2	The Ellen MacArthur Foundation and The Prince of Wales's International Sustainability Unit launched a $2 million innovation prize on Thursday in London, England. The initiative calls for new ways of designing packaging to prevent plastics from polluting the world's oceans.	Leading Organization	https://www.plasticpollutioncoalition.org/blog/2017/5/18/ellen-macarthur-launches-2-million-innovation-prize-to-solve-plastic-pollution	Third party	Ellen MAcArthur Foundation	MR	1			(+) 1										
2021	Apr		KIDV Recycle Check Flexible Plastic Packaging version 2021	Guidance	https://kidv.nl/kidv-recyclecheck-flexibele-kunststof-verpakkingen	Producer Responsibility Organizations	KIDV	MR	1						(+) 1							