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Governing the second deep transition towards a circular economy: How rules emerge, align and diffuse

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ABSTRACT

The recently developed Deep Transitions framework has so far been mainly used to explore the first deep transition towards industrial modernity. This paper looks at a potential second deep transition towards a circular economy, which is hoped to lead to a more sustainable global economic system. Our focus is on exploring the role of the EU in developing and diffusing this emerging set of rules. We draw on ideas from the international relations literature to explain why and how the EU adopted the idea of a circular economy, helped formulate it into a set of rules and how it promoted its international diffusion. The paper concludes with lessons about the case and critical reflections about the Deep Transitions framework. In particular, we argue for taking a more actor-based approach when researching the unfolding second deep transition.

1. Introduction

This paper contributes to a recent strand of work within the field of sustainability transitions (Grin et al., 2010; Markard et al., 2012): the Deep Transitions framework (DT framework). This framework combines the multi-level perspective on socio-technical transitions (Geels, 2002) with techno-economic paradigms (Freeman and Perez, 1988) and was developed by Schot and Kanger. They define a deep transition as “a series of connected and sustained fundamental transformations of a wide range of socio-technical systems in a similar direction” (2018, p. 1045). Schot and Kanger propose that a limited number of meta-rules, which are shared across socio-technical systems, have driven innovation and system evolution into particular directions for the past 250 years. One example of a meta-rule is the drive to use fossil fuels in systems such as agriculture, energy or mobility. This direction of development, what they call the first deep transition towards industrial modernity in the 19th and 20th century, has led to significant negative social (inequality) and environmental (climate change, biodiversity loss) consequences. They argue that such meta-rules need to change in line with demands for sustainability and that a second deep transition might emerge as a response to these challenges. The framework aims to explain the emergence, acceleration, stabilization and directionality of such deep transitions.

The initial theoretical publications (Kanger and Schot, 2018; Schot and Kanger, 2018) as well as empirical applications (van der Vleuten, 2019) are based on historical analyses of the first deep transition. In contrast, this paper aims to study ongoing change processes, which may constitute part of a second deep transition towards a more sustainable global economic system and in particular what, through the lens of the DT framework, may be called an emerging set of meta-rules around the circular economy (CE). A CE can be defined “as a regenerative system in which resource input and waste, emission, and energy leakage are minimised by slowing, closing, and narrowing material and energy loops” (Geissdoerfer et al., 2017, p. 766). CE is not bound by a specific socio-technical
system, but entails a transformation of all production and consumption processes. Moving to a CE globally is therefore potentially on par with the magnitude of changes ushered in by the global mass production meta-regime after World War II.

CE Implementation is at an early stage, yet there are various examples of how the concept has started to guide behaviour towards more sustainable production and consumption practices (Kalmykova et al., 2018; Lewandowski, 2016). To date, CE has mostly shaped practices in waste management and recycling (Winans et al., 2017), while practices of reusing or remanufacturing materials and more sustainable production and consumption practices (Kalmykova et al., 2018; Lewandowski, 2016). To date, CE has mostly shaped (Kalmykova et al., 2018; Yuan et al., 2006a, b) which has led to requirements for cleaner production for individual companies (Ghisellini et al., 2016), the introduction of eco-industrial parks (Winans et al., 2017) and plans to turn major urban centres into ‘eco-cities’ (Geng and Doberstein, 2008). While China has been very active in developing and implementing domestic CE initiatives, it has been less active internationally on the issue (Ghisellini et al., 2016).

In contrast, the European Union (EU) adopted the idea of a CE much later, but is nonetheless seen as a frontrunner (McDowall et al., 2017) as it has been especially active in the international promotion of a CE (Winans et al., 2017). The idea of a transition to a CE manifested in the EU Action Plan for the Circular Economy (EC, 2015a), which was part of the Commission’s Circular Economy Package (Bourguignon, 2016). Next to suggestions for legislative changes, the package also included €650 m in research funding (Velte et al., 2018). The EU is therefore one of the most important funders of CE ideas and practices. Most importantly, the Commission’s conceptual work on CE has influenced international organisations in defining targets and in recognizing their importance for policy making – most notably the United Nations Environment Programme (UNEP, 2018).

The prominence of the EU in international discussions around the CE allow us to explore one of the interesting conceptual questions within the deep transition framework: How does the coordination and diffusion of rules across systems happen internationally? We approach this question by focussing our research on the role the EU is playing in developing and diffusing the emerging set of rules around the CE. The EU is a particularly interesting actor to use as an entry point into our study since it also aggregates the experiences of different member states and is active across a whole range of socio-technical systems, and therefore potentially is a key actor performing aggregation work (Schot and Kanger, 2018) as part of socio-technical, transnational as well as cross-system entanglements that shape deep transitions (Van der Vleuten, 2019). More broadly, the EU is often seen as an international environmental leader and a key player in international environmental politics since the 1990s (Wurzel et al., 2019). It has signed more than forty major environmental agreements (MEA) and is the only organisation that is a member of all MEAs (Dony, 2020). Environmental legislation is also a core component of the European single market agenda (Burns et al., 2019). While the competences on environmental policy are shared between the EU and its Member States (Article 4 (2) point e) TFEU, the EU is in possession of sufficient competences to participate in decisions and discussions concerning agreements such as MEAs on its own (Dony, 2020). The EU has variously been described as a supranational federation (Von Bogdandy, 2012), or as a ‘political system’, but not a state, nor an international organisation (Hix, 2005).

The remainder of the paper proceeds as follows: Section 2 further discusses the DT framework and complements it with ideas from international relations literature. After setting out our methodology (Section 3), we analyse the processes through which the EU contributed to the development and international diffusion1 of CE (Section 4). The discussion section reflects on the results and discusses the need to better conceptualise the role of internationally active organisations in deep transitions. The conclusion summarises the contributions of the paper.

2. The Deep Transitions framework: the emergence of rules and how they travel

2.1. Rules within the Deep Transitions framework

Rules are a central concept in the DT framework as a deep transition can be seen as a process by which rules emerge, come to be aligned to each other and diffuse to various systems, obtaining differing degrees of scope and systemicity. Schot and Kanger (2018, p. 1053) draw on North’ definition of rules as “humanly devised constraints that structure human action, leading to regular patterns of practice”. They claim that a limited number of meta-rules, which are shared across socio-technical systems, have driven system evolution into particular directions for the past 250 years. One example of a meta-rule is the drive to use fossil fuels in systems such as agriculture, energy or mobility.2 They argue that such meta-rules need to change to enable sustainability. Meta-regimes are defined as “semi-coherent rule sets directing the behaviour of a set of actors in multiple socio-technical systems” (Schot and Kanger, 2018, p. 1055). An example is mass production that has been applied across industries after World War II (see Table 1 for an overview of the

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1. We are focussing specifically on how the EU promotes CE rules beyond their own member states rather than within the EU. This is because the framework described in section 2 is not particularly geared towards exploring the processes of EU-member state policy making (and for which there are more appropriate frameworks, see e.g. Borzel, 2002). More importantly several analyses of EU policy making and interactions with member states regarding CE already exist (see e.g. Domenech and Bahn-Walkowiak, 2019) and which we draw on.

2. The delineation of individual socio-technical systems in the DT framework is identical to other transitions research, which takes its point of departure in core societal functions (e.g. transport, communication, housing). Such needs are fulfilled through socio-technical systems, which consist of a cluster of aligned elements, e.g. artefacts, knowledge, user practices and markets, regulation, cultural meaning, infrastructure, maintenance networks and supply networks (Geels, 2005).
It is important to clarify that there are different conceptual implications that can be associated with the terms ‘rules/meta-rules’ (simple plural form), ‘set of rules/meta-rules’ and ‘regime/meta-regime’: While all of these terms indicate the existence of multiple rules/meta-rules, they do not necessarily give an indication regarding the state of alignment or even the status within a system or across multiple-systems. This means that the notion of multiple ‘rules’ does not necessarily equal a ‘set of rules’, as the rules would have to be aligned to each other. Equivalently, the notion of a ‘set of rules’ does not necessarily indicate the existence of a ‘regime’ as it would have to be the ‘dominant set of rules’ in a single system. The same applies to the use of ‘meta-rules’, ‘set of meta-rules’ and ‘meta-regime’. The processes through which rules emerge, become aligned, form a regime and diffuse are conceptualised through a phase model.

2.2. Phases within the Deep Transitions framework

The framework distinguishes between different phases in deep transitions: (1) a gestation phase in which rules emerge and compete in several niches of individual socio-technical systems; (2) an irruption phase which leads to the partial alignment of rules to sets of rules and possible emergence of regimes in certain systems; (3) a frenzy phase in which multi-regime interaction leads to increasing coupling between regimes and to the formation of alternative, possibly competing sets of meta-rules; (4) A turning point and synergy phase in which the combination of an endogenous crisis and an external macro-shock leads to a turning point, tipping the scales decisively in favour of one set of meta-rules to become the dominant meta-regime; (5) a synergy phase in which the new meta-regime selects niches compatible with its logic, continues to diffuse to various systems, and starts to shape the structure and dynamic of the landscape; and (6) a maturity phase in which the gradual exhaustion of the dominant meta-regime opens up a window of opportunity for alternative rules and sets of rules (Schot and Kanger, 2018). We are particularly interested in the frenzy phase as this is when alternative sets of meta-rules are formed. We consider the emergence of CE ideas in policy and practice such an emerging set of meta-rules and therefore a potential new meta-regime for reasons we will discuss in more detail below.

2.3. How do rules emerge and travel internationally?

One important observation of the transitions literature about today’s systems of delivering services such as housing, mobility or electricity is that they are remarkably similar across the world. One interesting question in the context of the DT framework and the potential second deep transition towards a CE is therefore: What are the mechanisms behind this international coordination? Drawing on historical as well as sustainability transitions literature, Schot and Kanger (2018, p. 1052) argue that transnational and international organisations play an important role as they are “responsible for developing standards, facilitating mutual learning, providing training and development, aggregating the lessons learned in different countries, and acting as international intermediaries (Kaiser and Schot, 2014). As such they constitute an important transfer mechanism between states and nationally bounded organizations, as well as an arena for discussing and negotiating the directionality of transitions. The study of these international and transnational actors can therefore help to explain how regimes diffuse from one system to another and develop a specific spatial reach”.

They propose that “These actors bring together experiences and ideas from different sectors, nurture mutual learning processes, help to establish networks between various stakeholders, and shape expectations about the future of the niches. The nature of these activities is markedly different from the dynamics of the irruption phase: instead of largely uncoordinated interactions, the aggregation work performed in the frenzy phase is much more purposeful, geared towards homogenization and standardization” (Schot and Kanger, 2018, p.1054).

As an example of such processes, Kanger and Schot (2018) point to the League of Nations, the International Labour Organisation (ILO), the Marshall Plan with its Productivity Missions and the Fulbright Programme as channels of influence which diffused mass production rules to Europe and shaped industrial practices post World War II. Some of these examples can be categorised as international organisations as defined in the international relations literature3, while some cannot. So speaking more broadly, what Kanger and Schot are proposing is that a range of international activities (be they bilateral, multi-lateral or transnational) may be important in the formation, alignment and diffusion of rules. We therefore use the broader term of international intermediaries as proposed by Kanger and Schot.

While constituting an interesting claim, we argue that thinking about these processes of international coordination and cooperation in the emergence, alignment and diffusion of rules merits further development. In order to investigate the processes of interest in our study (the role of the EU in the development and diffusion of the CE) and to pinpoint some relevant starting points for further

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3 In this literature, an international organisation is defined as an “organization established by a treaty or other instrument governed by international law and possessing its own international legal personality” (Bouwhuis 2012). Members of international organisations are normally states.
conceptual development we draw on (Schot and Kanger, 2018).

2.3.1. Emergence of policy ideas in the international sphere

One of the best-known starting points to studying how new policy ideas emerge and evolve into rules\(^4\) (or meta-rules) internationally is the seminal work of Peter Haas and colleagues on the role of international expert networks, which they term ‘epistemic communities’. Haas defines an epistemic community as “a network of professionals with recognized expertise and competence in a particular domain and an authoritative claim to policy-relevant knowledge in the issue-area” (1992, p. 3). He argues that decision makers, confronted with growing technical uncertainties and complex problems of global concern, face the increasing importance – but also difficulty – of international policy coordination. He proposes an analytical approach focusing on the role of epistemic communities in “articulating the cause-and-effect relationships of complex problems, helping states identify their interests, framing the issues for collective debate, proposing specific policies, and identifying salient points for negotiation” (Haas, 1992, p. 2). While originally this expertise was mainly associated with academics, more recent contributions agree that expert knowledge underpinning policy action is found also in other actors such as Non-Governmental Organisations (NGOs), transnational business networks, states and international bureaucracies (e.g. Demortain, 2017). Such expert networks are influencing both national policy making as well as international organisations and others involved in shaping international rules.

Since the 1990s there has been extensive research on epistemic communities, providing useful insights into why and when policy makers are likely to consult or defer to expert knowledge and advice. As a general rule, Demortain (2017) stresses that the overall institutional context has to tie policy makers to potential knowledge providers; they “must be in search of validated knowledge” (Demortain, 2017). In Haas’ original framework the search for validated knowledge occurs primarily as the result of an *epistemic deficit* which stems from the complexity and uncertainty of a policy problem. Complexity and uncertainty arise, (1) if a policy issue is transboundary in scope, (2) its underlying cause-effect relations and assumed solutions are being seen as inherently scientific or technical as opposed to political, and (3) if there is at least a certain degree of differing assumptions regarding the appropriate policy options (Haas, 2016). All of these aspects seem especially relevant in the context of international intermediaries as described in the DT framework. As there is a general trend of technocratisation of policy processes and a growing need for technical and scientific expertise (Carayannis et al., 2012), it can be assumed that the role of epistemic communities as a network of diverse actors with different kinds of expertise becomes ever more significant in the emergence of new policy ideas. Moreover, the focus on uncertainty and complexity is highly relevant in the context of sustainability transitions.

2.3.2. Formation and alignment of sets of meta-rules

Based on the epistemic community literature, the formation and alignment of new sets of meta-rules can be described as a direct result of the interaction between experts and decision makers. This is often conceptualised as ‘institutional learning’. In Haas’ original framework, learning occurs “directly, through interpersonal persuasion, communication, exchange and reflection”, leading to “the recognition or appreciation of new causal models and shared values” (Haas, 2001, p.11582). Dunlop (2015) describes this as a ‘deficit model of learning’: As decision makers experience an *epistemic deficit*, their bounded rationality leads them to seek advice, thereby allowing an epistemic community to enter the policy arena. In this understanding, epistemic communities are either “self-regulating enclaves of experts” (ibid. p. 238), responding to decision makers’ calls for advice or they are deliberately selected by decision makers. Demortain (2017), however, argues that a search for validated knowledge does not exclusively have to stem from uncertainty, but it can also originate from policy makers seeking to justify certain preconceived political approaches as impartial and scientifically validated (Dunlop, 2017; Stone, 2017). Dunlop describes this as the logic of ‘learning as calculation’ (Dunlop, 2015, p. 239), highlighting that both decision makers and epistemic communities may engage based on interest rather than values or technical rationales. Decision makers may use expert knowledge strategically to control a policy domain or gain political advantage. Experts within epistemic communities may want to be involved in policy making and can be seen as “self-selecting policy actors driven by normative

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\(^4\) While international relations literature also refers to ‘rules’, especially in the more constructivist approaches, ‘norms’ is the core concept (often used interchangeably with ‘rules’). When outlining these theoretical approaches, we therefore revert to the term ‘norms’, while our use of ‘rules’ or ‘meta-rules’ implicates transfer to or reflection on the DT framework. However, we take up the term ‘ideas’, as it is used in the international relations literature: “Ideas may or may not have behavioural implications: norms by definition concern behaviour.”(Finnemore, 1996, p.22). Ideas may evolve into norms resp. rules/meta-rules.
and policy beliefs” (p. 239). Moreover, decision makers can become active members of an epistemic community (acting as policy experts) and therefore contribute to the co-development of new policy ideas which will then be integrated into the work of an international intermediary without much reflection. Dunlop (2015) argues that none of these logics on their own suffices to explain learning, but that they should be considered in combination.

So far, the DT framework conceptualises the role of international intermediaries in developing sets of meta-rules as (1) bringing together experiences and ideas from different sectors, (2) nurturing mutual learning processes amongst policy makers and experts, (3) helping to establish networks between various stakeholders and (4) shaping expectations. Collectively, these processes (aggregation work) are believed to contribute to the international homogenization and standardisation of rules (Schot and Kanger, 2018). Based on international relations literature, there are two main points that need to be considered when analysing these aggregation processes: (a) Interests based on normative and policy beliefs need to be a core aspect of analysis. The aggregation work of an international intermediary should not be understood as purely rational processes where decision makers look to experts for knowledge. Rather, it can comprise highly political processes in which bureaucrats seek to justify certain preconceived political approaches as impartial and scientifically validated, while experts may also act on their own initiative based on their normative and policy beliefs. (b) The formation and alignment of sets of meta-rules can be understood as a co-evolutionary process based on different kinds of expertise. It is not just an act of orchestration by policy makers who bring together knowledge and ideas based on independent scientific or technical expertise. ’Expertise’ rather needs to be understood much broader also including business or policy expertise. Bureaucrats of an international intermediary themselves can become members of an epistemic community, directly influencing the development of new meta-rules and their alignment to new sets of meta-rules.

2.3.3. International diffusion of rule sets

There are different strands of international relations literature that can provide a conceptual understanding of diffusion and its mechanisms. While some contributions mainly understand it as the diffusion of policies from one country to another, Gilardi (2013) argues that this understanding falls short with regard to three aspects: “[…] diffusion does not occur only at the international level, […] national governments are not the only relevant units, and it is not only specific policies that diffuse” (p. 454). He highlights that there is a consensus that diffusion is always a result of interdependence, which should therefore be considered as the central diffusion mechanism. Interdependence, however, can take on different forms:

“[… ] the emerging consensus is that most mechanisms can be grouped in four broad categories, namely coercion, competition, learning, and emulation. Coercion is the imposition of a policy by powerful international organizations or countries; competition means that countries influence one another because they try to attract economic resources; learning means that the experience of other countries can supply useful information on the likely consequences of a policy; and emulation means that the normative and socially constructed characteristics of policies matter more than their objective consequences.” (ibid, p. 465)

Gilardi points out that in this context the term ‘policy’ should be understood much broader, also including norms, principles, ideas as well as specific policy models. In line with this understanding of diffusion, it can be argued that international intermediaries can play an important role with regard to all of those mechanisms. There is a wide range of literature engaging with diffusion mechanisms that occur in international policy making (Park, 2006).

Haas (2001) describes diffusion mechanisms as either geared towards other international arenas or towards national governments. In connection with the first, he highlights interagency coordination, jointly administered programs and co-financing. Concerning diffusion from an international intermediary to national governments, Haas underlines training, demonstration effects, (anticipation of) project funding, leadership by officials of an international organisation or sponsoring meetings as central mechanisms. Other literature (e.g. Broome et al., 2018; Littoz-Monnet, 2017) highlights the growing significance of ‘observing, measuring and evaluating performance’, including instruments like targets, indicators, league tables or benchmarking. There are also mechanisms operating towards both international intermediaries and national governments, such as international negotiations (e.g. the United Nations Framework Convention on Climate Change). It is important to note, that in the literature on epistemic communities it is often assumed that only when an epistemic community’s influence has been institutionalised to a certain degree in the context of an international intermediary, its ideas can become “more deeply diffused and embedded internationally” (Demortain, 2017, p. 79). This underlines the notion of different phases that is also underpinning the DT framework.

3. Data collection and analysis

Data collection included the retrieval of relevant documentary evidence, including published research on the emergence and development of CE ideas as well as primary material (reports, policy papers, briefings) published by the EU, relevant international organisations and think tanks. Relevant academic literature was identified by searching scientific databases (Google Scholar, Science Direct) for publications that review the development and implementation of CE, while excluding the large number of single case studies and technical studies on the topic. Primary sources were gathered by searching the websites and publication databases of international organisations for publications on CE, but also on related terms such as resource efficiency, resource productivity and sustainable production and consumption. Apart from the EU, we considered the United Nations (and all its branches working on relevant topics), the Organisation for Economic Co-operation and Development (OECD) and the World Economic Forum (WEF), which, based on the review of scientific literature, were identified as key international intermediaries regarding CE.

This documentary evidence was complemented by nine semi-structured interviews with actors knowledgeable about the role of the EU in developing and diffusing CE meta-rules (see Table 2). The interviewees came from different types of organisations (public policy
and administration, researchers, NGOs, and an independent think tank). Importantly, our interviewees included EU ‘insiders’ (interviewees 1–5), but also independent academics/experts from civil society (interviewees 6, 7, 9) as well as a policy makers from an international organisation the EU was collaborating with, to also include potentially critical, ‘external’ perspectives on the activities of the EU. After researching experts from the field and conducting first interviews, snowball sampling was used to identify further interviewees,\(^5\) until, combined with triangulation from the documentary evidence, there was a saturation in terms of identifying new mechanisms through which the EU was trying to diffuse CE meta-rules beyond their own member states. The interviews were conducted based on a semi-structured questionnaire, which operationalised key concepts of the framework, and were recorded and transcribed for analysis.

In terms of data analysis, the documentary evidence was used to establish a rough timeline of events, inform the interviews as well as to triangulate claims made by interviewees. The interview transcripts were, as a first step, coded according to a structuring content analysis (Mayring, 2015) using the core aspects identified as relevant in the three primary process categories of interest in our analysis: (1) emergence, (2) formation and alignment as well as (3) diffusion. As a second step, the framework was adapted to also reflect additional aspects that were brought up during the interviews or that emerged from the documentary evidence. We iterated between conceptual ideas, interview evidence and the documentary evidence from primary and secondary sources, and across the research team, until a consistent and intersubjectively shared interpretation of the data emerged which is presented in the next section.

4. Analysis: the emergence, formation and diffusion of “Circular Economy” as a new set of meta-rules in the context of the European Union

The idea of a CE has gained increasing attention from actors in science, policy making and industry over the past decade. But despite this recent surge in interest, it is not as new as is often assumed (Reike et al., 2018). Academically, its origins are rooted in ecological and environmental economics as well as industrial ecology (Ghisellini et al., 2016). It developed out of a variety of contributions and concepts including spacetman economy (Boulding, 1966), limits to growth (Meadows et al., 1974), cradle-to-cradle (Stahel and Reday-Mulvey, 1981) and steady-state economy (Daly, 2005). It can be argued that CE has not only evolved as an academic concept but, with a certain delay, also as a policy idea in the international arena. In this regard, the EU seems to have been quite involved, especially compared to other international intermediaries, which is why it constitutes a relevant entry point for our analysis.

Following Reike et al. (2018), the development of CE in the EU context can be characterized in three phases: (1) A phase of waste management, in which waste as the output of production and consumption was acknowledged as a problematic source of pollution (1970–1990), (2) a phase of eco-efficiency, in which the problem focus was expanded to also incorporate the connection between natural resource consumption and environmental degradation (1990–2010), and (3) a phase of resource-efficiency, where the focus on environmental problems stemming from growing resource input and waste output was connected with the prospect of economic benefits from decreasing those factors (2010–present). We argue that phase one (waste) and two (eco-efficiency) can be characterized as the emergence of CE as a policy idea, while phase three (resource-efficiency) constitutes the formation of a new set of meta-rules which the EU attempts to actively diffuse internationally.

4.1. The emergence of CE as a policy idea

Several aspects can be considered relevant regarding the question of why and how CE initially evolved as a policy idea in the context of the EU. As already mentioned, we mainly associate phase one and two with the emergence of CE as a relevant policy idea, in which the general context led to the recognition of a new policy problem. Because of its scope (transnational) and perceived characteristics (scientific/technical rather than political), this policy problem was seen as rather complex and uncertain. As an interviewee endorsed with regard to phase one, during the 1980s within the EU there were widespread concerns about how to handle “the huge mountains of waste” that were expected “to double over the next few years” (interview 6). Consequently, waste management became the focus of new legislation in several European countries.

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\(^5\) Of course, some of the suggested interviewees we contacted did not respond to our request to be interviewed which reduced the number of interviewees.
Over the following decades and as part of a shift to phase two, it became apparent that not only waste as the output of production and consumption, but also its inputs were a cause for concern. It was acknowledged that growing resource consumption was driving environmental degradation and thus both waste and resource consumption had to be addressed as elements of the growing ecological crisis. This new line of thought reinforced the perceived complexity of the policy problem. It manifested in new policy activities such as the “6th Environmental Action Programme” (EC, 2002), where ‘waste’ and ‘natural resources’ were one of four focal points, the “Thematic Strategy on the Sustainable use of Natural Resources” (EC, 2005), the “Sustainable Consumption and Production Action Plan” (EC, 2008), and the Waste Framework Directive (Directive 2008/98/EC).

We argue that as part of connecting the problem of waste with the problem of growing resource consumption during phase two, the main meta-rules, that would later constitute a new set of meta-rules, started to evolve and – to some extent – gain policy relevance. We further argue that it was a number of specific factors at the end of phase two that constituted a context which accelerated the emergence of CE as a policy idea and, consequently, initiated the shift to phase three and the formation of CE as a new set of meta-rules. The appointment of the new College of Commissioners under the second Barroso Commission in 2009 can be seen as an important turning point. As part of the new College, Potočnik, former Commissioner for Science and Research (2004–2009), was appointed Commissioner for the Environment. Potočnik was confronted with the increasingly pressing ecological crisis in which the link between resource use and climate change as well as biodiversity loss became more apparent. As one of his first actions as Commissioner, Potočnik therefore became a central protagonist in the creation of the International Resource Panel (IRP) by UNEP and the EU. Made up of leading scientists, the panel was tasked to provide authoritative and independent advice to decision makers globally (EC, 2005).

In addition to the general perception of urgency, complexity and uncertainty that derived from the overall context of ecological crises, there was also a rising awareness of the ineffectiveness of existing environmental and climate legislation at both global (interviews 6, 8) and EU level (interviews 2, 3, 5). Apart from the ecological crisis, Potočnik and his colleagues were confronted with an economic crisis fuelled by the global financial crisis in 2007/8 as well as a growing awareness of “the volatility of a lot of commodity prices and the increased perception of a growing scarcity of natural resources” (interview 8). It was more and more acknowledged by policy makers and businesses that to secure the competitiveness of EU industries, the EU needed to have a strategy on critical raw materials (interviews 2, 4, 5, 7, 8). Resource use was therefore no longer perceived just as a matter of environmental, but also economic concern.

To further facilitate this need for a new strategy, the start of the new Commission was also accompanied by an institutional restructuring as a new Directorate-General (DG) on Climate Action was created and therefore climate was no longer handled by DG Environment. This left DG Environment in need of “a new identity” (interview 6) and a portfolio that would sustain or even extend cross-cutting influence (interviews 6, 7).

After having explored why and how CE ideas started to gain interest within the EU as a new policy idea, the next section explores in more detail how these initial ideas started to be developed into a new set of meta-rules.

### 4.2. The formation and alignment of CE as a new set of meta-rules

While thinking around eco-efficiency and sustainability already steered discussions towards a more integrated way of conceptualising resource use, debates during phase two were still very much framed from an environmental perspective. Growing resource scarcity was mainly seen as a restrictive factor by business. A shift in debate happened in 2009 when the new Commission started its work and decreasing natural resource use and waste generation, were increasingly portrayed as not only environmentally beneficial, but more importantly a strategy to maximise value retention and secure competitiveness (Miedzinski, 2015). This manifested in the adoption of the “Roadmap to a Resource Efficient Europe” (EC, 2011) as well as the creation of the “European Resource Efficiency Platform”, a high-level body providing recommendations on how to achieve the visions set out in the roadmap.

It was in 2012 that the concept of CE suddenly more or less replaced ‘resource efficiency’ as the central label in EU policy (interview 5). This manifested in legislative proposals in 2014 (often referred to as the first Circular Economy Action Plan) and 2015 (“Closing the loop - An EU action plan for the Circular Economy”; EC, 2015a). We argue that this shift and the policy implications it had as part of phase three (discussed below), indicate the formation of a new set of meta-rules. There was an erratic increase in policy activities, not only specifying the translation of the different meta-rules as part of more and more concrete policy activities, but also binding them together in an overarching policy program (CE Action Plan) in an effort to increase policy coherence.

What are the meta-rules of CE? Kirchherr et al. (2017) examined 114 definitions and conclude that “circular economy is most frequently depicted as a combination of reduce, reuse and recycle activities” (p. 221). About 40 % of all definitions incorporate the so-called 3R framework. The EU CE policy framework has been extended by a fourth R: recover (see Table 3). A core idea of all R frameworks is that of a hierarchy (Kirchherr et al., 2017), meaning that activities related to reducing take priority over reusing, followed by recycling and, lastly, recovering. This hierarchy draws on the 2008 EU Waste Framework Directive (Directive 2008/98/EC).

| Meta-rules | Description |
|------------|-------------|
| Reduce     | Consuming less natural resources and materials in processes of product manufacture and use |
| Reuse      | Discarded products which remain in good condition and still fulfill their original function are reused by other consumers |
| Recycle    | Processing materials to obtain materials of the same or lower quality |
| Recover    | Recovering energy from incineration of materials |

Source: descriptions based on Kirchherr et al., 2017: 224.
2008/98/EC), which determines that member states should develop waste legislation and policy in a way that corresponds to the priority order of the hierarchy. We argue that the 4R – reduce, reuse, recycle, recover – are meta-rules (i.e. single rules in multiple systems) according to the classification of Schot and Kanger (2018). These meta-rules were already developing in phase one and two, but only aligned into a new set of meta-rules during phase three, constituting a potential new meta-regime.

But how did this formation and alignment take place? According to our conceptual considerations in Section 2, it is important to understand how institutional learning takes place.

It is argued that it was Potočnik who made resource efficiency a key priority (Miedzinski, 2015). Confronted with the political and institutional context outlined above, it seemed central to Potočnik – an economist – to overcome the perception “that environmental benefits would have to come at the cost of industrial competitiveness” (interview 2, also 1, 3, 6). As a result, resource efficiency became one of seven ‘Flagship Initiatives’ under the Europe 2020 strategy (Miedzinski, 2015), which was soon followed by the ‘Roadmap for a resource efficient Europe’. In 2011 Potočnik brought together an expert group of economists on “The economics of environment and resource use” (EC, 2014a) to support him with independent advice (interviews 2, 7). In 2012, he established the ‘European Resource Efficiency Platform’ (EREP), a high-level body consisting of members of the Commission and the European Parliament, member state representatives, academics as well as representatives from business, trade unions and consumer organisations (EC, 2014b). The Platform should provide high-level policy advice on how to implement the aims of the roadmap and facilitate the transition towards a more resource-efficient economy (EC, 2011; Miedzinski, 2015).

It was in the context of the first meeting of the EREP in June 2012 (EC, 2019b), that the idea of a CE gained attention in the Commission, when Ellen MacArthur was invited to give a presentation:

“Her explanation of the logic behind circular approaches was very compelling and very convincing. And that was really what [...] put circular economy on the map in the Commission.” (interview 2, also 5).

While resource efficiency continued to be a guiding principle, as a political concept or narrative it did not suffice in bringing together the environmental and economic perspectives (interview 4) as it did not appeal to stakeholders outside the environmental corner (interviews 2, 3). So language quickly shifted to CE: “Essentially it is about shifting concepts to try and find resonance within a shifting and dynamic group of stakeholders inside and outside of the policies” (interview 5). The influence of the Ellen MacArthur Foundation (EMAF) was argued to be central by all of the interviewees. This resonates with analyses of the origins and conceptual development of CE (Geisdoerfer et al., 2017; Kirchherr et al., 2017; Korhonen et al., 2018). Through effective communication, EMAF created a narrative that resonated with businesses and policy makers (interviews 1, 3, 4, 5, 8).

The new narrative was followed by the legislative proposal in 2014 with the first EU Circular Economy Action Plan which was withdrawn shortly after, when the new Commission took office (Domenech and Bahn-Walkowiak, 2019). Juncker followed Barroso as Commission President, with jobs, growth and investment at the top of his list, while environment “was nowhere to be seen among his priorities” (interview 3). However, the withdrawal of the first Circular Economy Action Plan sparked controversy amongst a range of stakeholders that had been involved in its development (interviews 2, 3, 5, 9):

“While they [industry stakeholders] were probably not too happy with the first package of July 2014, they actually wanted to continue to discuss this and continue to engage.” (Interview 3, also 4).

Following those debates, the new Commission started to work on a relaunch of the CE Action Plan. They argued for the “need to construct a system-wide model actually bringing together the economic, social and environment narrative and insert it into the priorities of the Commission” (interview 3).

Vandenberghe, former Head of Cabinet under Potočnik and then Director for ‘Climate action and resource efficiency’ at DG Research and Innovation in the new Juncker-Commission, established an expert group on a Systemic Approach to Eco-Innovation to achieve a low-carbon, Circular Economy’. It was composed of “three or four representatives from industry and a handful of likeminded academics” who should “convince us, the Commission, that circular economy is indeed a viable concept” (interview 8). The report “From Niche to Norm” (EC, 2015b) was presented to the Commission and the European Parliament “right during the last days and weeks of the final vote about the second Circular Economy Package in the Commission” (interview 8). While other factors and activities certainly also influenced the adoption of the second Circular Economy Action Plan (not least the activities of EMAF), the expert group successfully elaborated the holistic and systemic dimension of CE as a new economic model, thereby directly connecting it to Juncker’s top priority of jobs, growth and investment (interviews 3, 5, 8).

This shift from resource efficiency to CE was more than just a new label. Several aspects constituted a new way of thinking about necessary policies:

- An acknowledgement that not only existing waste legislation needed changes, which were implemented for example by amending the EU Waste Framework Directive in 2018 to specifically include CE (Directive (EU) 2018/851 of the European Parliament and the Council), but that there was also a need to develop specific strategies on materials such as plastics, which led to the “EU Strategy for Plastics” (Pardo and Schweitzer, 2018), now including a ban on several single use plastic products (EC, 2019a).
- An acknowledgment of the necessity to focus on all stages of a product’s life cycle led to an incorporation of existing policy initiatives around ecodesign (e.g. Ecodesign Directive 2009) and their further development (e.g. “Ecodesign Working Plan 2016–2019”). As a result, new requirements for material efficiency were put in place to ensure the availability of spare parts, ease of repair and end-of-life treatment for several products (EC, 2019a).
- An acknowledgement that “sustainability models needed to come out of the exclusive environmental corner” (interview 3). This resulted in a communication by the European Commission (“A renewed EU Industrial Policy Strategy” 2017), stating an objective to build on EU leadership in CE to support companies in adapting to a CE transition (Pardo and Schweitzer, 2018).
In this process of aligning various rules, which had been around in different policy areas and socio-technical systems for a while, into the 4R framework which started to guide policy formation and implementation, the EU was also able to draw on different experiences made within its member states (MS), including the broad range of national policy instruments for resource efficiency (Ekins et al., 2019; Wilts and O’Brien, 2019). Domenech and Bahn-Walkowiak (2019, p. 16) found that:

“The rapid ascension of the resource efficiency agenda in EU policy has run in parallel with the development of national strategies. As it occurs in other areas of EU policy making, regulatory policy making at the EU has a ‘reciprocal, two-level character’ (Liefferink and Andersen, 2005). On the one hand, policy making is highly influenced by MS and, on the other hand, the EU policy framework has a direct influence in the national policy making processes, because of its legal capacity to impose targets and regulations at the national level”.

So here we can observe a process that the DT framework describes as aggregating lessons learned in different countries.

Conversely, the CE set of meta-rules is in part implemented quite differently in different MS (Domenech and Bahn-Walkowiak, 2019; Pardo and Schweitzer, 2018), which emphasises that it is not yet dominant in terms of guiding actors’ behaviour or at least that there is some interpretative flexibility. Following the CE Action Plan (EC, 2015a), several MS have developed CE initiatives, ranging from national strategies, which in some cases specify legislative proposals and specific targets, to monitoring frameworks and initiatives at municipal or regional level (see Table 4 for examples). Most CE policies listed in Table 4 emphasize resource productivity, recycling and waste reduction, thus reflecting the core of the CE set of meta-rules. However, the way MS understand and implement CE varies. For example, while the Danish Ministry of Environment and Food includes the sharing economy and eco-labelled products, and the Slovenian Environmental Ministry defines food, manufacturing and mobility as priority areas, a CE initiative by the French Ministries for Ecological Transition and Economy and Finances addresses the reduction of carbon emissions and job creation (Pardo and Schweitzer, 2018). This divergence indicates the early stage in the development of CE as a set of meta-rules. In order to monitor progress at member state level, the EU developed a “Monitoring Framework for the Circular Economy” (EC, 2018a), which from the perspective of the DT framework can be interpreted as aggregation work geared towards homogenization and standardization.

Furthermore, the EU’s version of CE is also contested. Experts continue to significantly disagree about how to best achieve the transition towards a CE. Reike et al. (2018) argue that there are three main points of disagreement between two competing ‘schools of thought’: the need for absolute resource input reduction (i.e. absolute reduction vs eco-efficiency), the need for a modification of the economic order (i.e. the capitalist system) and the balance between sustainability dimensions (whether or not social considerations are explicitly included). In the reformist school, Reike et al. place actors like the EMAF, the EU, OECD and WEF, while the transformationist school consists of a handful of critical scholars as well as green NGOs. Domenech and Bahn-Walkowiak (2019) argue that while the EU openly envisages that economic growth can be decoupled from resource inputs through resource productivity, most member states “refer to resource policies as an efficiency issue, not an issue of reducing the absolute input” (Ibid. p. 16). Only in Denmark, the commitment to a sharing economy can be seen as a policy approach which strives for absolute reductions (Ministry of Environment and Food of Denmark, 2017). There is also a growing network of NGO actors in the EU arguing that it is a myth to expect resource productivity to lead to absolute reduction by decoupling resource input from economic growth and that this myth needs to be ‘debunked’ in order for CE to be a far reaching agenda with the potential to fundamentally change the economic system (Parrrique et al., 2019). In this sense one can interpret CE as a set of meta-rules that is not only contested from mainstream regime actors who have little interest in making the shift to a CE, but also from critics who argue that the concept has been stripped of some of its more radical connotations and is instead promoted by powerful actors focussing on notions in line with continued economic growth and business opportunities.

### 4.3. International diffusion of CE as a set of meta-rules and emerging meta-regime

We now ask how the EU attempted to diffuse CE as a new set of meta-rules in order to increase the spatial reach as envisaged by the DT framework. According to interviewees, the EU has used a variety of channels to ‘sell’ the CE meta-rules:

“We have used the approach of establishing a Memorandum of Understanding or partnership statements to do work on specific lines under circular economy. We have funded projects within international organisations and programs. We are working on inserting the concept into free trade agreements. […] We’ve pushed this in G7, we have pushed this in G20 and most recently, at the 4th United Nations Environment Assembly […]” (Interview 3).

In the following, we take a closer look at the different processes which were used by the EU to promote its version of CE. Following Haas (2001), who describes international diffusion as a process that can be aimed at either other international arenas or national governments (or both at the same time, see Section 2), we structured the analysis into two subsections. In the context of the EU we

| Types of legislation                                      | Member State examples                                                      |
|----------------------------------------------------------|---------------------------------------------------------------------------|
| National circular economy strategies with targets         | Denmark, France, Germany, Netherlands, Scotland                           |
| National circular economy strategies with qualitative objectives only | Finland, Italy, Luxembourg, Slovenia                                       |
| National circular economy assessments                    | Greece, Spain                                                             |
| National indicator frameworks                            | France, Netherlands                                                       |
| Municipal or regional circular economy initiatives        | Brussels, Catalonia, Flanders, London                                      |
focused on (1) diffusion towards third countries outside the EU through bi- or multilateral mechanisms as well as (2) the diffusion towards other international intermediaries. These sections list all of the activities we could identify through interviews and documentary evidence.

4.3.1. Diffusion towards third countries

One of the most referred-to instruments is the “Memorandum of Understanding on Circular Economy Cooperation” between the EU and China which was signed in July 2018 (EC, 2018b). The Memorandum can be characterised as a high-level policy dialogue in the form of bilateral and multilateral meetings, information exchange on research, capacity building, training programs, workshops and personnel exchange activities. It is, however, unclear whether this can be interpreted as a diffusion attempt since China is one of the CE frontrunners and adopted it as a policy principle before the EU. In that sense, the exchange between experts from the EU and China could rather be interpreted as a form of international policy coordination and an attempt to share best practices, which the DT framework considers an important part of aggregation and intermediation work.

However, it is also important to acknowledge differences in the understanding of CE between the EU’s set of meta-rules and those of the Chinese government. A comparison of CE policies in the EU and China reveals that

“China’s approach to the CE reflects a greater concern with industrial production, water, pollution, and places greater attention to scale (through a multilevel system of experimentation under hierarchy) and place (through incorporation of CE ideas into land-use planning). CE policy is framed as part of a wider response to the environmental challenges created by rapid growth and industrialization. Europe’s conception of the CE has a narrower environmental scope, focusing on waste and resources, with little regard for pollution, and Europe’s view is largely silent on issues of scale or place. Europe’s CE policies are framed in economic as much as environmental terms, focusing on the potential for resource efficiency to boost competitiveness” (McDowall et al., 2017, 657–658).

Another instrument is the ‘SWITCH to Green Flagship Initiative’ that “should be seen in the context of the EU action plan on circular economy, which acknowledges the global dimension of the circular economy and foresees EU cooperation with international organisations and other interested partners” (SWITCH to Green, 2019). As one of the interviewees summarised, the SWITCH programmes are “400 Million Euro worth of EU spending on propagating sustainable consumption and production, green economy and circular economy in developing countries” (interview 8). The SWITCH programmes each have three components: policy development, project funding and facilitation of networking and knowledge exchange. Interestingly, some of the SWITCH initiatives (namely SwitchMed, Switch-Asia and SWITCH Africa Green) were coordinated by UNEP and provided support to communities, entrepreneurs and businesses in Mediterranean, Asian and African countries respectively, providing tools and connections for social and eco-innovations (UNEP, 2020). UNEP, however, while drawing on some of the CE ideas, considers these activities as part of their focus on ‘sustainable production and consumption’ (Sustainable Development Goal 12).

Another diffusion channel consists of so-called EU Circular Economy Missions, a series of high-level political and business delegation visits to third countries. Missions between 2016 and 2019 went to Chile, China, South Africa, India, Colombia, Mexico, Japan, Indonesia, Malaysia and Singapore. In a targeted, country-specific way, the overall aim is “to have a policy discussion about circular economy and to see whether the country in question could be interested in interacting with us or even considering to see how that would sit with its own strategies for industrial and economic development” (interview 3). Apart from a general policy dialogue there is an interest in diffusing best-practices in terms of innovative business ideas and new technologies, which is why business representatives (e.g. from Tetra Pak or BASF) have accompanied CE missions. These missions can very much be interpreted along the lines of the DT framework in terms of bringing together experiences and ideas from different sectors and countries, nurturing mutual learning processes amongst policy makers and experts as well as establishing networks and shaping expectations across a variety of countries.

Interviewees also pointed to trade agreements as an instrument for the further diffusion of CE that is high up on the EU agenda (interviews 3, 4). One example is the trade agreement between the EU and New Zealand which contains the commitment that “New Zealand will also aim [for] the transition to a circular economy” (EC, 2019c). The free trade agreement between the EU and Vietnam contains a paragraph on the ‘remanufacturing’ of goods. According to Pardo and Schweitzer (2018, p. 4) “the EU has become a frontrunner by pushing for the adoption of global standards related to product durability, reparability and recyclability and by including the circular economy in the sustainable development chapters of its free trade agreements”. This is an example of where the formation and diffusion of rules goes beyond of what is currently conceptualised as processes leading to the diffusion of rules in the DT framework, because of the legal force of international trade agreements which are much more enforceable than most other international rules (Pauwelyn, 2000).

Beyond engaging bilaterally with other countries, interview evidence also suggested that the EU tries to diffuse CE meta-rules through multilateral fora. Apart from the EU saying that they “are pushing it” (interview 3) in both G7 and G20 contexts, there is however little evidence on specific activities that could be understood as diffusion efforts, as CE language has not been present in official communiques. There have been, however, some events, high-level meetings or thematic workshops in the realm of resource efficiency “to foster the G7 and G20 resource efficiency agendas, showcasing opportunities and challenges, best practices and policy recommendations” (EC, 2019d). This best practice orientation was underlined by one interviewee who has been involved with the Commission’s work towards the G7:

“It is basically fixing up workshops to try and introduce exchanges of best practices of policies. And typically that’s on specific policies because to people who don’t understand the system dynamics of transitions, that circular economy is very difficult to sell. So you are really looking at what we could do on plastics, what we could do on marine litter, what we could do on extending the lifetime of products and then introducing them to those things” (Interview 5).
As with other policy discussions in the G format, there is a possibility that they influence national policies: “The G7 was talking about plastics and Canada didn’t have an agenda on plastics. And so they had to write a domestic agenda” (interview 5). Working through multilateral fora thus is another mechanism through which CE meta-rules can diffuse to other countries.

4.3.2. Diffusion towards other international intermediaries

Efforts of the EU towards other international arenas were mainly geared towards the United Nations. One recent example is the 4th United Nations Environment Assembly (UNEA) in March 2019. The EU “has tried very hard to put the circular economy concept into the discussions on sustainable consumption and production in the United Nations Environment Assembly resolutions. [...] So now the sustainable production and consumption definition is basically circular economy” (interview 5). Indeed, there is now a reference to CE in the resolution on “Innovative pathways to sustainable consumption and production” and also in the related ministerial declaration. Another example is the IRP. The EU and UNEP are co-founders and co-funders of the IRP as well as members of the steering committee, alongside states and ‘strategic partners’ such as OECD, EMAF, and the International Council for Science (ICSU). Moreover, in 2014, former EU Commissioner for the Environment Potočnik was appointed co-chair of the IRP. This tight bond between the EU and the IRP makes clear this is not just a learning relationship, but the IRP can also be characterised as a diffusion instrument, as one of the interviewees stressed:

“So for example at UNEA there was the Global Resource Outlook produced by the IRP. That is basically the international diffusion of the science on why you need resource efficiency, circular economy and SCP [sustainable consumption and production]. And you know because they are funding the IRP, then the EU certainly partly funded that report, which had a critical role in framing a lot of the discussions at the UNEA Forum” (interview 8).

The analysis shows that the EU is very active in promoting CE as a new set of meta-rules internationally and uses a variety of mechanisms, though not all of the ones identified in the literature on international diffusion of ideas and norms (e.g. Haas, 2001; see Section 2.3.3). Much of the focus of EU diffusion is on bilateral mechanisms. We also identified diffusion mechanisms (e.g. formalised rules in trade agreements) which seem to go beyond the ‘soft’ processes of learning, sharing experiences, establishing networks and shaping expectations envisaged within the DT framework.

5. Discussion

The aim of our analysis was to shed light on the processes through which in the context of EU activities, (1) CE initially emerged as a policy idea, (2) was formed and aligned into a new set of meta-rules, and (3) attempts were made to further diffuse this set of meta-rules internationally. Below we summarise our main insights and use them to reflect on the DT framework in terms of the role of international intermediaries and the processes through which sets of meta rules form and diffuse.

As our initial conceptual considerations suggest, whether a new idea becomes relevant in the context of policy making and potentially evolves into a set of meta-rules depends on the overall context, comprising organisational as well as institutional factors, but also on the specific characteristics of a policy problem. The more the overall contextual factors lead policy makers to be in search of validated knowledge, the more likely it becomes for them to take up and further develop new ideas as part of their own agenda. In line with this, it can be said that the initial emergence of CE as a policy idea in the EU can be explained by a combination of these contextual factors, ranging from the organisational restructuring in the Commission as well as the complexity and uncertainty associated with the policy problems (ecological and economic crises), to a perception of existing policies as ineffective. This combination of factors created an epistemic deficit, which led to the founding of the IRP, but also a window of opportunity for policy makers to revert to a broader range of expertise and new policy ideas.

The DT framework moreover argues that international intermediaries play an active role in aligning meta-rules into sets of meta-rules. International relations literature suggests that to get a better understanding of these processes, different modes of learning need to be considered, e.g. based on an epistemic deficit but also on interests grounded in normative and policy beliefs. It also suggests that learning between policy makers and experts of an epistemic community needs to be considered as a co-evolutionary process. We argue that in our case the institutional learning was partly organised as ‘governmental’, with policy makers actively looking for a solution to solve a complex policy problem, but that the perception of this epistemic deficit was also influenced by certain pre-existing policy beliefs held by a group of policy makers (i.e. that a positive economic narrative needs to be created to solve sustainability issues). Apart from learning initiated by policy makers, there were also purposeful activities by a network of actors around the EMAF who acted upon their own normative and policy beliefs and gained influence on Commission thinking.

The DT framework sees international intermediaries mainly playing a role in the frenzy phase, through facilitating multi-regime interaction, which leads to increasing coupling between regimes and to the formation of alternative sets of meta-rules. One important point that became apparent during our analysis was that the four meta-rules constituting the core of the CE set of meta-rules, already developed quite early as basic principles in more or less separate strands of (policy) discussions within the EU. By taking up these different meta-rules, aligning and complementing them under the narrative of CE and diffusing this set of meta-rules, the EU was playing an important role in the formation and alignment of this emerging set of meta-rules, not only facilitating multi-regime interaction. The importance of pre-developments in phase one and two for the formation and alignment in phase three therefore suggests that international intermediaries can already play an important role in the irruption phase in which the partial alignment of rules to sets of rules takes place.

Moreover, our analysis shows that it is also possible for such sets of meta-rules to emerge and gain traction without first becoming dominant in a specific socio-technical system. The CE set of meta-rules rather influenced niches in various socio-technical systems from
waste management and energy production, to business models and consumer practices in the textile industry before it developed into a set of meta-rules which is hoped to transform the global economic system.

Our analysis also suggests that to gain relevance, a set of meta-rules needs to be embedded in a convincing narrative that attracts different policy-relevant actors. In our case, this narrative was put forward and supported by actors (such as EMAF, business actors) who were perceived as credible and/or relevant by policy actors, which seems to have facilitated its policy relevance. This is a noteworthy point, as the DT framework is too silent on the question of how certain (sets of) rules become dominant.

Our analysis of how the EU promotes the diffusion of CE as a new set of meta-rules shows the use of a variety of mechanisms (including interagency cooperation, foreign diplomacy, free trade agreement negotiations, significant research and project funding, leadership and demonstration effects). Partly, the mechanisms we identified go beyond the ‘soft’ processes of learning, sharing experiences, establishing networks and shaping expectations as envisaged within the DT framework. One example of this is the use of formal trade negotiations to diffuse CE meta-rules to other countries. With the SWITCH to Green Flagship Initiative the EU is moreover using direct financial incentives to diffuse CE in the context of developing countries. In line with theoretical concepts around policy diffusion, we find that the forms of interdependence that can act as diffusion mechanisms are much broader and can also be based on varying nuances of (economic) nudging or even coercion. We therefore propose a widening of the focus of attention from ‘softer’ processes to also include ‘harder’ mechanisms. One does not have to be a neo-realist or neo-Marxist to accept that there are power or structural imbalances within the current international order, which influence the processes through which sets of meta-rules are aligned and diffuse. The DT framework should pay more specific attention to such imbalances.

It is also important to point out that attempts at international diffusion with the aim of aggregating lessons across countries and of homogenization and standardization are also accompanied by efforts of re-interpretation or re-negotiation of the rules. The DT framework hints at these aspects in terms of ‘negotiating the directionality of transitions’ (Schot and Kanger, 2018, p. 1054). Our analysis highlighted instances in which there was a divergence or contestation of what the core rules of a CE may be (e.g. EU-China divergence) or whether CE is indeed a promising emerging set of meta-rules. Internationally, CE is still competing with other potential

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Table 5
Towards a typology of international intermediaries.

| Supranational organisations | Transnational expert networks (epistemic communities) | International nongovernmental organisations | Informal institutions for international policy coordination |
|----------------------------|-------------------------------------------------------|-------------------------------------------|----------------------------------------------------------|
| **Definition**             | “a network of professionals with recognized expertise and competence in a particular domain and an authoritative claim to policy relevant knowledge in the issue- area” (Haas, 1992) | “international operating organization which is not established by inter-governmental agreement” (Ahmed and Potter, 2006) | “Created in 1975 after the demise of the Bretton Woods system, the Group of Seven (G7) of key industrialized economies is one of the most influential institutions for international policy coordination and global economic governance” (Fratzscher, 2010) |
| **Example**                | European Union Panel, European Resource Efficiency Platform | United Nations Environment Programme | Ellen MacArthur Foundation |
| **Roles in emergence of ideas, formation and alignment of CE meta-rules and their diffusion** | aggregating lessons from MS, aligning meta-rules, legislative activities codifying CE rules, developing and diffusing standards monitoring frameworks for CE, providing research and project funding, leadership and demonstration effects through providing training and developing best practice examples, interagency cooperation, and foreign diplomacy, free trade agreement negotiations | diffusing new policy ideas, sharing best practice, leadership and demonstration effects, shaping expectations, all of which can lead to learning as well as emulation in member countries and developing standards, but also (re-) negotiating (meta) rules | developing convincing narrative, bringing academic knowledge and business expertise together, pro-actively engaging with policy makers within the EU and internationally (IRP, UNEP), providing context regarding sufficiency of rules in addressing policy problems, contesting narratives and interpretations |

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182
meta-regimes which focus more on demand/consumption in addressing resource depletion (e.g. discussions about sustainable production and consumption as promoted by UNEP). Hence, CE is still far from becoming the dominant meta-regime advanced by leading countries as envisaged in the turning point and synergy phase in the DT framework (Schot and Kanger, 2018). One can only speculate that for example the recent global attention to plastic waste polluting the oceans will be the kind of accumulation of a longer-term trend mentioned by Schot and Kanger, which could provide an impetus for tilting the playing field towards the CE set of meta-rules as part of a second deep transition. Analytically for the DT framework, this highlights the importance of empirically investigating not only the core rules and associated processes of alignment, but of equally paying attention to processes of contestation, divergence and (re-)interpretation of rules.

In summary and most importantly, while our initial entry point for the analysis was the EU as a specific type of international intermediary, our research showed that the processes of emergence, formation and diffusion were also highly influenced by other internationally active protagonists, such as the EMAF as well as a range of expert advisory bodies including the IRP, the European Resource Efficiency Platform, the expert group on a “Systemic Approach to Eco-Innovation to achieve a low-carbon, Circular Economy” and UNEP. These organisations and networks differ in their set-up and membership, including public as well as private actors, which makes us think that it is worth elaborating on the broad range of actors and networks and how they influence the emerging rules of the second deep transition. In Table 5 we point to some of the main actors in our case and how they were involved in the emergence, formation and diffusion of the CE set of meta-rules. One interesting avenue for further research would be to systematically research how the specific institutional underpinning and set up of these different types of organisations affects their ability to influence the emerging rules of the second deep transition.

Our results reinforce the point made by Van der Vleuten (2019) about the importance of studying specific actors (especially ‘system builders’) instead of only abstract actor categories within the DT framework. While the DT framework foregrounds the rules themselves as main analytical categories, Van de Vleuten suggests to also specifically investigate how actors produce convergence as well as divergence through a ‘follow-the-actor’ approach. From our point of view, such an approach is extremely valuable especially in studying the ongoing second deep transition. An actor focus is useful not only for identifying to what extent certain (sets of) rules already start to shape actors’ behaviours, but also for shedding light on processes of contestation, negotiation and re-interpretation of rules which determine how a deep transition unfolds and the direction it takes, aspects which otherwise remain underexplored if the focus is too strongly on the rules themselves.

We therefore propose that much more systematic research is needed on the role(s) of various international organisations and networks in deep transitions. We believe the international relations literature offers some useful conceptual starting points in this regard. One promising avenue is to think more about what forms of authority different actors or networks hold and how this authority influences their ability to shape the development and diffusion of shared rules. For example, Barnett and Finnemore conceptualise international organisations as bureaucracies that exercise authority. Their power lies in authority, which is gained and preserved by the organisation’s external perception as serving a “legitimate social purpose […] in an impartial and technocratic way using their impersonal rules” (Barnett and Finnemore, 2004, p.21). This rational-legal authority defines the basic form and behaviour of international organisations. However, there are also three further types of authority they can hold: delegated authority from member states, moral authority, as international organisations are often created to protect shared principles, and expert authority. Moral authority for example allows bringing in the importance of normative frames and worldviews in developing meta-rules. Barnett and Finnemore (2004, p.25) argue that the “greater the appearance of depoliticization, the greater the authority associated with the expertise”. We think such a broad understanding of authority is relevant and fruitful in the context of deep transitions and is also applicable to a wider set of actors than international organisations.

6. Conclusion

In this paper, our ambition was to investigate the potential second deep transition towards a global CE and especially the question how the emergence, alignment and diffusion of rules happens internationally. Our entry point into this broad question was an empirical interest in the role the EU has been playing in these processes since it is seen as a CE frontrunner and has influenced a number of international organisations (such as UNEP). Based on the results of our study, we make two contributions to the emerging line of research on deep transitions within the sustainability transitions literature.

First, we are providing one of the first ‘real-time’ investigations into how the second deep transition is unfolding utilising specifically the DT framework by Schot and Kanger. We focus our empirical work on a promising emerging set of rules which may re-organise the global economy in more sustainable configurations. Our analysis focusses specifically on the role the EU has been playing in developing and diffusing this emerging rule set internationally. Our analysis shows that this process is still in its early stages and that there is both contestation about the interpretation of the set of rules (regarding its radicality) as well as competition from other rules such as sustainable production and consumption that focus more on reducing consumption. It is also the case that there is little standardisation even amongst the frontrunners (e.g. within the EU or between the EU and China) which again suggests the second deep transition is still in the frenzy phase. It remains to be seen whether the global COVID-19 crises with its impact on global economic activities and supply chains will become the kind of external macro-shock which according to Schot and Kanger (2018) can lead to a turning point which tilts the scale in favour of one set of rules over others.

6 We are grateful to one of the reviewers for pointing this out to us.
Second, our analysis shows that both the processes through which international development and diffusion of emerging rule sets may happen as well as the actors involved in such processes, require conceptual elaboration within the DT framework. We have therefore proposed that more systematic research on the role of various types of international organisations and networks (be they public, private or public-private) is necessary. More generally, we see this as a weakness in the wider sustainability transitions literature as much of the existing work on the governance of transitions (see Köhler et al., 2019 for a recent review) focuses on the role of national policy or local actors. Some exceptions include research that sheds light on international expert networks such as the role of large consultancy firms in globally pushing certain technologies (such as water desalination, see Fuenfschilling and Truffer, 2016). However, generally in this field, the role of international actors and networks in transition processes has received limited attention and should thus be studied more systematically in future research. We hope our suggestions in the previous section will inspire further work in this direction.

Declaration of Competing Interest

The authors report no declarations of interest.

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