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From waste to resource management? Construction and demolition waste management through the lens of institutional work

Rickard Andersson[a] and Martine Buser[a,b]

[a]Division of Building Design, Department of Architecture and Civil Engineering, Chalmers University of Technology, Gothenburg, Sweden; [b]Department of Business Development and Technology, Aarhus University, Herning, Denmark

ABSTRACT

The European Union has issued action plans to reduce the production of construction waste and increase the reuse and recycling of materials in the hope of triggering a rapid transition towards a Circular Economy (CE). The management of construction and demolition waste, however, struggles to apply these measures. Our purpose, therefore, is to analyse how different actors involved in the management of waste could contribute to transform existing practices so that they respond to the shifting demands of legislation and support CE. To understand how this transformation work is performed, we build on the concept of institutional work, which enables us to describe how actors, rather than accepting institutions as permanent and immovable, contribute to their development by creating, maintaining or disrupting the existing institution. Drawing on qualitative research methods, we collected empirical data through 31 semi-structured interviews, observations of meetings and site visits. Our results show that whereas the production of waste is somewhat reduced, and the sorting of fractions improved, the institutional work performed is not sufficient to translate sustainability into new economic values. Although the work performed legitimizes CE principles and enables new initiatives, it mostly fails to change normative associations and to define new rules of action that support CE.

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Introduction

It is a common assumption that new legislation supported by societal and political concerns for the protection of the environment should put pressure on the construction industry and trigger transformation in construction processes. Whereas the energy consumption of buildings has been considerably reduced, building processes and handling of waste are still heavy consumers of resources (Leising *et al.* 2018). In the European Union, the industry is still responsible for 25-35% of annually generated waste. After having focussed on the reduction of waste and disposal at landfills and the handling of hazardous materials, the European Commission has recently proposed the uptake of Circular Economy (CE). The EU Action Plan for Circular Economy (European Commission 2015, 2020) has established general measures to support this transition. It involves all stages of the product cycle: from design, production and consumption to waste management. It also includes the creation of a market for the reuse of secondary raw materials. Accordingly, the construction sector needs to improve and align its practices towards CE principles; existing waste should be either reused or recycled and new production of waste should either be avoided or reduced by optimization of material use and processes (EU2020).

However, in practice, the potential for reducing Construction and Demolition Waste (CDW) is yet to be achieved (Jin *et al.* 2019). In particular, it seems that most of the construction companies have not yet reached the expected level of reuse or recycling (Sáez and Osmani 2019). Studies have identified a number of barriers to explain this failure, such as the low quality of CDW materials, inadequate legislation (Ghaffar *et al.* 2020), lack of public (Wang *et al.* 2019) and economic incentives (Lu *et al.* 2019), scarce interest and demand from clients (Polesie 2012, Osmani and Sáez 2019), absence of managers' commitment (Teo and Loosemore 2001), negative attitudes towards reuse practices (Sáez and Osmani 2019), lack of training (Park and Tucker 2017), ineffective contract forms (Ghaffar *et al.* 2020), shortage of space and

CONTACT Rickard Andersson rickande@chalmers.se Chalmers University of Technology, Sven Hultinsgata 6, SE-412 96 Gothenburg, Sweden

information on site (Sezer 2015). The situation is especially critical for Sweden, which has time and again been pointed out as performing poorly within CDW (Hall and Nguyen 2012, Sáez and Osmani 2019). To overcome these barriers, a large number of academic studies have provided recommendations as to how the sector could improve by offering simulations or models of life cycle analysis (Kucukvar *et al.* 2014 2016, Rašković *et al.* 2020), improvement of material flow (Wu *et al.* 2019), adaptation of project planning to circular economy (Sanchez and Haas 2018), diffusion of best practices and supply chain optimization (Gálvez-Martos *et al.* 2018) and new business models (Leising *et al.* 2018, Paletta et al 2021). Academic studies also advice construction actors to comply with guidelines and implement one or more of the above-mentioned strategies to recycle waste construction materials (Wu *et al.* 2019) or to optimize and reinforce policies and guidelines (Ajayi *et al.* 2017, Osmani and Sáez 2019, Kabirifar *et al.* 2021).

Scholars working with sustainable transitions have also criticized the top-down linear thinking which assumes that the implementation of new legislative frames is enough to trigger changes. They have underlined that those governmental, national and local legislations and incentives may not always be enough to ensure the application of new directives (Geels 2019). If sustainable goals must be achieved, there is also a need to transform existing and often taken-for-granted established ways of working (Grin *et al.* 2010). So far, academic studies addressing practices, work and organization and adaptation towards CE remain scarce in CDW (Wu *et al.* 2019), and according to authors (Kabirifar *et al.* 2020, Oti-Sarpong *et al.* 2021) in urgent need to be developed.

In the present paper, we describe and analyse how actors react to the forthcoming regulations and how their actions may contribute or not to the adoption of new practices and challenge the established ways of working in CDW management (CDWM). To do so, we build on the concept of institutional work within the context of a field-level institution, namely that of Construction Waste. This enables us to obtain insights into some of the micro-dynamics of institutionalization to further explore challenges of CDWM. We want to identify which forms of institutional work are mobilized to maintain, create and possibly disrupt actual practices and enable the principles of CE economy to be applied (Lawrence *et al.* 2009). So, in this paper we address the following research question: how does institutional work contribute to a transformation of the Swedish CDW institutional field to enable alignment with the CE principles?

The transition to CE implies a transformation of the organization of the sector and a new distribution of roles between all actors (Geissdoerfer *et al.* 2017). To understand how regulators, professionals, formal and informal governance bodies, field-configuring events and organization norms and actors influence each other and can contribute to the transition of CDW towards CE principles, we need to conceptualize a context which is larger than the single organization and its network and adopt a middle range theory (Green and Schweber 2008). Our premise is that CDW constitutes a field-level institution where actors share a common understanding of formal and informal processes, norms of conduct, contractual agreement and taken-for-granted behaviours. This institution regulates actors' behaviours and actions in the given field and simultaneously is shaped by these behaviours and actions (Hampel *et al.* 2017).

Drawing on a qualitative study of the main stakeholders involved in CDWM, we investigate how institutional work changes over time as actors position themselves to respond to the shifting demands of legislation. We explore how the CDW field institution may be shaped under new circumstances by focussing on the ongoing efforts of actors seeking to reconcile competing agendas and possibly incompatible objectives (Lawrence *et al.* 2011). The paper contributes to a better understanding of the barriers to improvement of CDW management and the emerging dynamics to promote a sustainable agenda. Whereas waste management has not been a prioritized topic in construction management so far, the recent increased attention given the Circular Economy principles has the potential to transform the production and renovation of buildings (Adams *et al.* 2017, Ghisellini *et al.* 2018). According to these principles, buildings should be constructed with components and materials which can be redeemed and reused for new purposes at the end of the product's life cycle, which means that materials should enter a new life instead of being discarded and burnt (Ilic *et al.* 2018). CE promises an efficient use of resources which would thereby reduce the environmental impact and overconsumption. However, studies in other sectors than construction have suggested that the transition to CE is not aligned with conventional linear models of production and therefore creates tension in organizations (Ilic *et al.* 2018, Stål and Corvellec 2018).

Following upon the theoretical frame and the method sections, we present the outcome of the

empirical data with an overview of the institution field of CDWM and the ongoing changes within the legal frame. Then, we analyse the different forms of identified institutional work in this environment and how these contribute or not to the creation of a sustainable CDW field before we draw conclusions.

The concept of institutional work

To study the adaptation of CDW Management to a changing legislation frame, we adopt the lens of institutional theory, building on the concepts of institutional field and institutional work (Greenwood *et al.* 2002, Leca *et al.* 2009). Scott (2013, p. 56) defined institutions as comprising "regulative, normative, and cultural-cognitive elements that, together with associated activities and resources, provide stability and meaning to social life". Accordingly, Suddaby and Greenwood specified (2009, p. 176): "this institution may take the form of juridical regulations, informal rules or codified social arrangements, norms of conduct, or cognitive structures that provide understanding and give meaning to social arrangements". These institutions can be described as more or less taken-for-granted repetitive social behaviours underpinned by normative systems and cognitive understandings. By giving meanings to social exchanges, these enable the self-reproduction of social order (Greenwood *et al.* 2008, p. 4–5).

To connect the macro level of institutional theory with the lived experience of actors, we rely on the concept of institutional field. An institutional field represents an intermediate level between organization and society and is instrumental to processes by which socially constructed expectations and practices become disseminated and reproduced (Scott 1994, 2014). It is defined as a community of organizations that interact together "frequently and fatefully" (Scott 2014) in a "recognized area of institutional life" (DiMaggio and Powell 1983). Research on institutional fields has developed a wide variety of insights (see Zietsma *et al.* 2017 for a review). Scott describes a field as "a collection of diverse, interdependent organizations that participate in a common meaning system" (Scott 2014, p. 106). According to Scott (2010) even if the concept is related to that of "industry" it does not need to be defined by market criteria but can concern any kind of involvement in a particular issue or policy community. In essence "field" is an alternative to market concepts (Scott 2010). The benefit of building on the concept of field is the possibility to incorporate field-level structures, participating organizations and the actors working within and between these organizations (Scott 2010, p. 8). The structures include collective interest organizations, regulators, informal governance bodies, field-configuring events, status differentiators, organizational templates, categories or labels and norms (Hinings *et al.* 2017). These establish the boundaries of each community of organizations, defining its membership, the appropriate ways of behaving and the appropriate relationships between organizational communities.

Whereas institutions and institutional field both describe how social structures are reproduced, the concept of institutional work focuses on understanding how actions affect institutions (Hampel *et al.* 2017). Extending work on institutional entrepreneurship, institutional change and innovation, the study of institutional work is concerned with the analysis and categorization of practical actions through which institutions are created, maintained and disrupted and how they may transform the organizational field (Lawrence *et al.* 2009, Leca *et al.* 2009). The concept enables us to study how actors rather than merely accepting and reproducing the existing CDWM institutional field, can contribute to its development. Accordingly, we can "explore the practices and processes associated with actors' endeavours to build up, tear down, elaborate, and contain institutions, as well as amplify or suppress their effects" (Hampel *et al.* 2017, p. 3). The concept also sheds light on the dynamics of the institutionalization process where individuals and groups of individuals both contribute to reproducing the established institution whilst at the same time enact change by challenging, modifying and disrupting it through their everyday practices. Though these actions may be intended to either preserve or change the established practices within organizations, their outcomes may be more or less successful and lead to unintended adaptations and institutional consequences (Lawrence 2011). So, the concept of institutional work contributes to define the role of agency in relation to institutions and to illustrate the notion of embedded agency which describe how actors whose thoughts and actions are constrained by institutions are nevertheless able to work to influence those institutions (Greenwood *et al.* 2006).

In its original definition, institutional work is defined as "the purposive action of individuals and organizations aimed at creating, maintaining and disrupting institutions" (Lawrence and Suddaby 2006, p. 215) and highlights the how, why and when of this action taking place (Lawrence *et al.* 2011). Individuals are

Table 1. Maintenance work adapted from Lawrence and Suddaby (2006).

Forms of institutional work	Definition	Examples in the study
Enabling work	The creation of rules that facilitate, supplement and support institutions	Referring to the lack of control and sanction for not applying the legislation
Policing	Ensuring compliance through enforcement, auditing and monitoring	Relying on existing standardized contracts disregarding waste
Valourizing and demonizing	Providing for public consumption positive and negative examples that illustrates the normative foundations of an institution	Relying on the customers' existing demands Belief that the market is self-regulating Presenting CE as economically non-realistic
Mythologizing	Preserving the normative underpinnings of an institution by creating and sustaining myths regarding its history	Building on the tradition and conservatism of the sector
Embedding and routinizing	Actively infusing the normative foundations of an institution into the participants' day to day routines and organizational practices	Mobilizing time and cost pressure of projects to maintain actual practices

described as capable beings that both intentionally or unintentionally influence their institutional setting through their behaviour, thoughts and feelings. Focus is on the actors' roles in the tension between continuity and change in institutional work (Hampel *et al.* 2017). These actions may be very dramatic and highly visible or just mundane and hardly noticeable acts integrated in daily routines (Lawrence *et al.* 2009). Individuals engaged in institutional work are either absorbed in consciously and strategically reshaping social situation or focussed on managing the exigencies of immediate situations to cope with institutional change (Lawrence *et al.* 2011). Institutional work, therefore, addresses the different types of actions which actors engage in to construct meaning, beliefs, rules or standards and thereby shape the course of institutional change. In their literature review, Lawrence and Suddaby (2006) listed these actions and, by building on similarities and differences, produced three categories: maintaining, creating and disrupting institutions. They divided institutional work according to its intended outcomes rather than the means used to achieve particular institutional objectives (Hampel *et al.* 2017). Whereas many authors have developed and extended the original list of institutional work by defining their own reference frame (Dahlmann and Grosvold 2017, Hampel *et al.* 2017, Lehmann *et al.* 2019), adding new dimensions such as emotional and unconscious processes (Voronov and Vince 2012) or the role of space (Siebert *et al.* 2017), our purpose is rather to build on the existing concept as a tool to identify and organize actors' positions and actions towards the changes initiated by the new regulations (Beunen and Patterson 2019).

Maintaining institutions

To subsist, institutions need to be maintained. Actors need to constantly preserve existing institutions in their daily actions, either routinely and unintentionally, or by actively counteracting ongoing change or by destabilization. Lawrence and Suddaby (2006) identified six distinct practices. Other scholars have added new forms such as repair work (Heaphy 2013) and re-enactment (Lok and De Rond 2013).

These practices involve the support, repair or re-creation of mechanisms that ensure compliance (Fuenfschilling and Truffer 2016). Table 1 presents a list and definitions of the maintenance work identified by Lawrence and Suddaby (2006). In the context of climate change, the concept of maintenance has been mobilized as a mechanism to explain the inertia of institutions to address these challenges (Munck af Rosenschöld *et al.* 2014).

Creating institutions

Lawrence and Suddaby (2006) identified three types of institutional work aimed at creating institutions: practices involving political work to bring about new regulations and policies or access to material; the reconfiguration of existing beliefs and meanings in order to modify normative institutions and a change of cognitive environment in accordance with the new institution. The authors characterized these three types in nine forms of institutional work aiming at creating institutions (see Table 2). The commonality between these forms is that they have the ability to create rules as well as rewards and sanctions to enforce the new rules (Lawrence and Suddaby 2006). This implies that specific actors hold positions in a given field which legitimates their exercising this authority and actively engaging in institutional work. Several new forms of creating work have been added to the nine original ones (Hampel *et al.* 2017). For example, specific to the construction industry, see Lieftink *et al.* (2019) identified in a Dutch case three new types of what they called relational institutional work: awareness creation, selective networking and coalition building.

Table 2. Creating work adapted from Lawrence and Suddaby (2006).

Forms of IW	Definition	Examples identified in the study
Advocacy	The mobilization of political and regulatory support through direct and deliberate techniques of social persuasion	Building on CE principles and forthcoming legislation to advocate for changes Lobbying for the application of CE principles at local and national levels
Defining	The construction of rule systems that confer status or identity, define boundaries of membership or create status hierarchies within a field	Establishing new rules and goals related to waste within the organization Creating prizes and rewards New certification systems
Constructing identities	Defining the relationship between an actor and the field in which that actor operates	Defining new set of competences, roles and functions in the organization New actors entering the CDW field
Changing normative associations	Re-making the connections between sets of practices and the moral and cultural foundations for those practices	Creating thematic groups related to CE within the organization Investing in electric machines and vehicles.
Constructing normative networks	Constructing of interorganizational connections through which practices become normatively sanctioned and which form the relevant peer group with respect to compliance, monitoring and evaluation	Allying with other companies, research and academic institutions Participating in research projects
Mimicry	Associating new practices with existing sets of taken-for-granted practices, technologies and rules in order to ease adoption	Building on the existing competition between departments to promote CE Investing in the same initiatives as the competitors
Theorizing	The development and specification of abstract categories and the elaboration of chains of cause and effect	Creating new vocabulary Building on the CE concepts
Educating	The educating of actors in skills and knowledge necessary to support the new institution	Creating training Diffusing new competences

Disrupting institutions

Institutions may be disrupted when actors find the existing institutional setting not supportive of their activities and they tend to "redefine, recategorize, reconfigure abstract, problematize and, generally, manipulate the social and symbolic boundaries that constitute institutions" (Lawrence and Suddaby 2006, see Table 3). Disrupting institutions consists of three practices (Lawrence and Suddaby 2006, p. 235): disconnecting sanctions by working through the state apparatus to disconnect rewards and sanctions for some sets of practices, technologies or rules; disassociating moral foundations by disassociating the practice, rule or technology from its moral foundation as appropriate within a specific cultural context and undermining assumptions and beliefs which means decreasing the perceived risks of innovation and differentiation by undermining core assumptions. Disrupting an institution is the less documented form of institutional work (Fuenfschilling and Truffer 2016), and for some authors is sharing similar features with the creation of institutions (Zvolska *et al.* 2019)

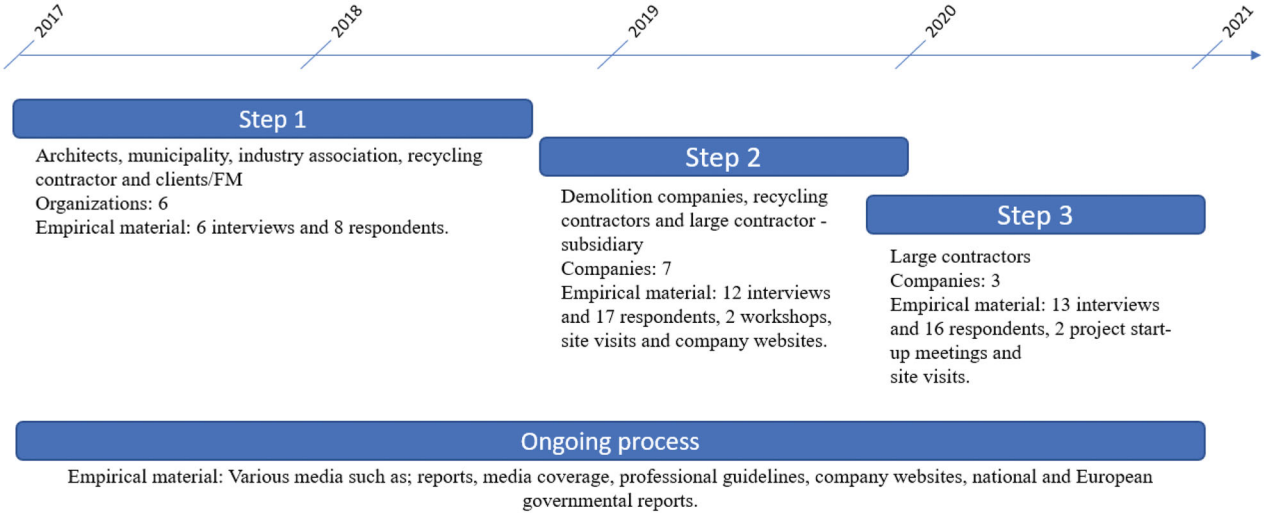
Critics of the concept of institutional work have underlined the broadness of the concept which risks becoming meaningless as it includes all kind of actions intentional or not. Alvesson and Spicer (2019, p. 207) proposed a differentiation between what they call plain old work, work inherent to the fulfilment of daily tasks, and the work of creating sets of rules, promoting a new model for an industry or criticizing dominant ideas about a particular type of organization which might count as "institutional work". In the present paper, we try to follow their advice and focus on institutional work related to maintenance, creation of disruption of the actual CDW in relation to the expected adaptations required by the transformation of the legislative frame.

In many fields over the last 20 years, institutional work has been largely mobilized, but it has made a late entry in Construction Management (Bresnen 2017, Chan 2018). Studies have focussed on, among other: individuals developing environmental expertise in the AEC industry, showing that even though the role of environmental managers has been well established, these struggle to transform the existing institution. Their role is characterized by a short-time focus, whilst the work of influencing institutions would necessitate a long-term approach and the commitment of the line managers to support their work (Gluch and Bosch-Sijtsema 2016). Others examine individuals organizing strategic sustainable facilities Management and renovation in their everyday work life (Gluch and Svensson 2018) and the role of materiality in this process (Svensson and Gluch 2022); how BIM managers work to increase digitalization in the construction sector (Bosch-Sijtsema and Gluch 2021), how municipalities contribute to driving sustainability focussing on wood construction (Salmi *et al.* 2022); the role of coordination contributing to project performance in

Table 3. Disrupting work, adapted from Lawrence and Suddaby (2006).

Forms of IW	Definition	Examples identified in the study
Disassociating moral foundations	Disassociating the practice, rule or technology from its moral foundation as appropriate within a specific cultural context	Describing existing institution as outdated Advocating for a market-based approach of CDW building on quantity and market demands
Undermining assumptions and beliefs	Decreasing the perceived risks of innovation and differentiation by undermining core assumptions and beliefs	Describing the actual situation and coming changes as built on false assumptions

Table 4. Flowchart of the different phases of data collection.



design-build management (Urup 2016) drawing on partnership (Gottlieb *et al.* 2020) or demonstrate how actors use relational institutional work in interorganizational projects aiming at institutionalizing a new project delivery method (Lieftink *et al.* 2019). The articles collected for the literature review building on institutional work and the construction sector focus on single individual, organization or type of project, we identify a gap to examine how different forms of institutional work are mobilized when a specific field is under regulative transformation can contribute to modify this existing field and possibly instore a new regime. In doing so we can identify what these actions are and how they contribute or not to transform the existing norms and practices into a sustainable CDW field.

Method

Research setting and data collection

To identify the ongoing activities related to the new regulatory framework in the field of CDW, we have adopted an abductive strategy, drawing on the frame of institutional work by Lawrence and Suddaby (2006) (Dahlmann and Grosvold 2017, Berghout *et al.* 2018, Graf and Jacobsen 2021). The study builds on an interpretative approach and a combination of qualitative research methods and data sources addressing different levels (Meyer and Rowan 1977, Scott 2010) highlighting the degree to which organizational structure and behaviour are driven by sets of socially constructed beliefs, norms and rules negotiated and enforced in communities of organizations (DiMaggio and Powell 1983)

Combining the analysis of data drawn from multiple levels enables the study of singular professional activities embedded in the environment of institutional complexity and create a link between these activities and the potential transformation at the level of the field (Shadnam and Lawrence 2011). We focussed on the interplay among actors' intentions regarding CDW, their activities, actions taken and expected outcomes. A synthesis of available literature and document analysis have been undertaken to trace major developments of new legislation.

The empirical material has been gathered between 2017 and 2020 in three successive phases. A flowchart specifying the different phases of collecting empirical material is presented in Table 4.

Phase one consisted of an exploratory study aiming at mapping the field of CDW in the region of West Sweden. During our participation to a research

network (Constructivate Mistra closing the loop 2017–2019) gathering 28 practitioners and researchers concerned with the future of waste in construction, we identified 6 actors actively engaged in CDW and advocating for changes in the sector with whom we conducted semi-structured interview.

In addition to these data, we started to collect information from reports, documents and media coverage, including professional guidelines, norms and certifications, company websites, renovation projects and quality control protocols, waste material descriptions, price lists and price calculations, as well as national and European governmental reports and legislations. The synthesis of this literature and document analysis has enabled us to gain a broader understanding of the development of the institutional field, the different actors' roles in the process and to trace the major developments of the regulative frame. It also provided information about some of the interviewees' ongoing projects (Bryman 2016).

To follow the institutional work agenda, we focussed on the micro-level actions and interactions of individuals as the phenomena of interest. Therefore, the next two steps of data collection focussed on interviews and observations as primary data sources, enabling us to capture practitioners' everyday activities as well as the meanings they ascribe to them (Zilber 2008, Smets and Jarzabkowski 2013). So, to do so we have focussed on two specific actors, namely the demolition companies and the three largest contractors operating in West Sweden as they are both being directly engaged with the production of CDW on site and the handling afterwards. The demolition companies were identified through snowball sampling and sourcing the web from a map search engine using specific trade words and concepts (Bryman 2016). Out of 21 companies contacted, seven companies took part in the study gathering 11 participants. The interviewees position in the organization was also part of the selection. Either manager or owner their social position reflects their formal authority and thereby ability to impose change in the organization (Battilana *et al.* 2009).

For the third phase, we chose to contact the three largest contractors in Sweden as they play a leading role in shaping the CDW institutional field. Choosing main actors within a field is consistent with an exploration of what is still an emerging phenomenon (Yin 2009). We initially interviewed the environmental manager at the regional level. Though their formally assigned role may vary, they share the common task to develop and implement CDWM processes within their organization. They introduced us to site managers enabling us to collect information on practices and attitudes towards CDW at the level of the project. A total of 13 project-, site- and production managers distributed between four sites were part of the project.

Data were primarily collected through semi-structured interviews with practitioners of the CDW institution field. Interviews are commonly used as data-collection method when studying institutional work to identify actors' roles in shaping the institutional context they are part of (Lawrence *et al.* 2011, Granqvist and Gustafsson 2016, Dahlmann and Grosvold 2017). They allow us to understand how individuals interpret their surroundings, explain their actions and elaborate on description of practices. We are therefore better able to understand the underlying reasons as to why individuals perform particular actions, what they do to shape the institutional context and under what circumstances (Hampel *et al.* 2017). Though the semi-structured interviews were shaped according to the function of the respondents, they mainly consisted of three sets of open questions focussing on: (1) the function, task and responsibility of the interviewees; (2) their current practices of CDWM and the opportunities, challenges and barriers they identify related to the new regulative frame and (3) their perceptions, actions or/and reactions towards meeting these challenges and overcoming the barriers.

The interviews took place either at the interviewees' offices or on the construction site. The duration of the interviews ranged from one to one and a half hours. On eight occasions, they were performed as group interviews with more than one representative of the organization. All participants were informed about the aim of the study and that their contribution would be anonymized (Bryman 2016).

The data set comprises 41 interviewees including seven demolition companies, three large contractors, two clients, one professional association, two municipality offices active in environmental protection, two large recycling companies and a large architecture company, Table 5.

Data were also collected through observation of two half-day workshops that mobilized practitioners on the topic of circular economy and two project start-up meetings, gathering the main contractor, their recycling companies and subcontractors, to explain a new organization of CDWM on site. These meetings were later complemented with a visit of the building site to observe the results of implementation. The site visits and workshops were documented in field notes

Table 5. Interviews' overview.

Key actors	Interviews	Interviewees	Positions
Large contractors	10	13	Project-, site-, production manager
	3	3	Environmental manager
Demolitions small –medium contractors	6	10	Project-, site-, production manager
	1	1	Sustainability manager
Large contractor – subsidiary	2	3	Business development manager,
Recycling contractor	4	5	Business development manager, coordinator
Architect	1	1	Environmental manager
Municipality	1	2	Unit manager – Environmental dept. manager
Construction industry association	1	1	Officer in charge of WM
Clients/FM	2	2	Project managers
Total	31	41	

supported by recording sheets, photos and some of the discussions were recorded (Silverman 2015). The observations allowed us to examine the practices of institutional work, how actors interact with, construct and draw upon the context of everyday activities and how these practices contribute to the shaping of institutions (Jarzabkowski *et al.* 2009).

Data analysis

After having transcribed the interviews and the recorded part of the observations, we adopted an abductive approach in which we iterated between data, literature and tentative analysis emerging from the data (Dubois and Gadde 2002, Jarzabkowski *et al.* 2009) to identify the forms of work performed in accordance with the typology of institutional work presented by Lawrence and Suddaby (2006, Lawrence *et al.* 2013, Hampel *et al.* 2017).

Using Nvivo software we follow common practice in qualitative data analysis using open coding to identify relevant concepts in the data and group them into categories, seeking evidence of what could constitute institutional work performed either internally within the organization or externally in an attempt to influence the existing field (Clarke *et al.* 2015, Bryman 2016, Silverman 2015, 2020). We started by identifying initial codes, translating terms, language and actions as performed by the informants. Examples of the initiated codes we used include "resisting changes", "valourizing existing practices" "verbalizing tension between existing practices and new demands" or "engaging in external network activities".

Then, we searched for themes to identify relationships between and among these initial codes and to assemble them into themes (Clarke *et al.* 2015, Silverman 2015, 2020). We refined these themes by connecting them with the literatures on institutional work (Lawrence and Suddaby 2006, Lawrence *et al.* 2013, Hampel *et al.* 2017). The results were thereafter organized in two categories. First, a discursive category (Schmidt 2010) illustrating the actors' particular opinions towards the topic and how they generated, argued about and communicated their ideas (Schmidt 2010, 2015), e.g. by re-labelling CDWM terms or positioning themselves openly during the workshops. Second, an action category focussed on the work performed to shape the institutional context, e.g. through participation in network or defining of organizational goals. These two rounds of thematic analysis were completed by the two authors separately see Tables 1, 2 and 3 (Clarke *et al.* 2015).

Each time, we compared, discussed and debated our findings. We also triangulated the diverse sources to increase the trustworthiness of our results (Bryman 2016). As the goal of our study is qualitative and explorative, we have no ambition to claim generalization of our findings.

Institutional work, CDW and construction

The following section presents our findings and starts with a description of the Swedish CDW institutional field, describing first the changes occurring in the regulative framework then the roles of the main actors in the field. It then identifies the forms of institutional work found: the ones accounting for the stabilization of the existing institution and maintenance strategies, the ones associated to the creation of new institutions and the ones related to the disruption strategy. Though we rely on all the data collected, the main emphasis here is on the role of the contractors and the demolition companies. We analyse their roles in influencing, transforming and maintaining the existing institutional field.

The institutional field of CDW in Sweden: the regulative frame

The organization of CDW in Sweden is regulated by national legislation under the responsibility of municipalities and is strongly influenced by EU policies.

Previous to the recent concerns on climate change, the legislation framing the management of waste concentrated on the tracing of hazardous waste and the reduction of landfill. In 2008, the European Commission introduced the Waste Framework Directive (2008/98/EC) with the objective to transform Europe into a recycling society by defining recovery targets for non-hazardous CDW. In Sweden, this directive was framed in Sweden's Waste Plan 2012–2017 (Swedish Environmental Protection Agency 2012) building on the five steps of the waste hierarchy: Prevention; Preparing for reuse; Recycling; Other recovery, e.g. energy recovery and, Disposal, e.g. landfill. This plan, to a greater extent, emphasized the need to reduce the quantity and hazardous nature of waste through preventing its generation in the first place and ensuring the complete and correct sorting of the various fractions. For construction in particular, this meant that by 2020, preparation for reuse, recycling and other recovery of non-hazardous construction and demolition waste should have reached at least 70% by weight compared to the 50% at the date of the publication of the directive. In 2021, it is still very difficult to assess the results of this plan as the statistics of CDW are calculated by extrapolating from quantities reported by the companies themselves. Whereas the national agencies claim that the amount of recycled CDW has significantly increased during the last few years, they also advocate for better tools to monitor the actual production of CDW in Sweden and accordingly its recycled percentage.

Besides, the legislative frame, agencies and associations such as The Swedish National Board of Housing, Building and Planning, the Swedish Environmental Protection Agency and the Swedish Construction Federation have all published guidelines to frame and help CDWM on sites. They provide advice on materials classification and hierarchies and underline the various responsibilities of the actors involved during the successive construction phases. The various certification systems such as ISO 14001, 90011 and green building certifications such as BREAM or Miljöbyggnad (a Swedish national certification) also provide the sector with norms and standards regarding WM.

Apart from landfill and the management of hazardous waste, instruments to promote CE in Sweden mostly rely on voluntary compliance to guidelines. The municipalities are assigned the task to ensure compliance with the regulatory frame, partly through site inspections. However, these rarely seem to occur according to the respondents from both the contractors and demolition companies. The municipality representatives are well aware of the situation and blame it on the lack of resources in term of both personnel and budget.

In 2015, the EU launched their first Circular Economy action plan (COM/2015/0614), containing measures to stimulate the transition towards a Circular Economy. According to these CE measures, buildings should be constructed with components and materials which can be redeemed and reused for new purposes at the end of the product's life cycle; hence, materials should enter a new life instead of being discarded and burnt. The Circular Economy plan shifted focus in constructing and renovating of buildings and infrastructure from the management of produced waste to the management of material. Although multiple interpretations and definitions exist for the concept of circular economy, actions necessary to realize CE in the construction sector are: the design for disassembling, recycling and reusing; the choice of eco-friendly suppliers, material and delivery; minimizing waste and increasing reuse during construction, minimizing waste and repair during maintenance and deconstruction and reuse to close the loop (Reike *et al.* 2018). A last version of the EU action plan was published in the beginning of 2020 (COM/2020/98), emphasizing a streamlined regulatory framework to ensure adoption of life cycle assessment in public procurement or the possibility to require recycled content for some construction products (p.11). The regulatory frame in Sweden has been updated in the winter of 2021. However, it is very likely according to our respondents that stakeholders will act before that by anticipative regulation.

The institutional field of CDW in Sweden

Aside from the regulatory framework, the Swedish CDW institutional field builds on a collection of diverse, interdependent actors who share a common system of meaning. Central in the field are facilities owners or clients, main contractors, subcontractors, demolitions companies, waste and recycling companies and to a growing extent their suppliers. Even though the client has the possibility to request specific handling of waste, in practice, the management of waste has so far barely been mentioned in contracts (Andersson 2021). The contractor plays a central role in the organization of the CDW field. The company is legally accountable for the quality and quantity of waste generated during the production phase and is responsible for logistics, health and safety and sustainability aspects on site. The work on site differs

depending on whether the project is a new built or demolition/renovation. For the latter, an audit is necessary to assess the quantity and type of waste which is expected to be produced and a follow-up of these figures is requested. The scope of production and reduction of waste is, in this case, part of the design phase, but the main work of handling waste takes place during the production phase. As such, the contractors and/or demolition companies sort the fractions on site, transport them and thereafter hand them over to the recycling companies to be properly treated. If fractions, for example gypsum, has to be recycled – its quality needs to be tested when the material is still onsite – a process which usually delays the ongoing work. Collaboration between the relevant actors builds on the common interests: to discard waste, if not to increase benefit at least to reduce handling cost. The actors share a similar understanding of the types of work and quality to be delivered. However, all the actors are not equal, and large contractors play a leading role in the CDW field.

The successive legislations presented above, supported by societal and political concerns for the protection of the environment are the actual conditions which we assume trigger changes and account for the destabilization of the existing CDW institutional field. We now turn to how institutional work was mobilized in the field to face these coming demands and start with the forces maintaining it.

Maintaining the institutional field

In the data gathered, both during interviews and observations, we identified a number of different forms of institutional work mobilized to maintain the existing CDW.

Policing work within the industry, which enforces compliance to rules and continues to reproduce existing practices, is based on a tradition of organizing work, in which participants' roles and the practices in construction projects are often based on standard-like organizing templates with the intent to increase efficiency in projects. The division of tasks and responsibilities is mainly defined and governed by the content of standardized contracts, which continue to reproduce the existing practices within the industry. However, the contracts only briefly describe the conditions for CDW delivery, building on three elements: cost, time and quality of the disposed material. For example, in most of the contracts between one client and its contractors for renovation projects, waste sorting requirements were described as "*ought to be done, if there is space for it*" and not as a "*contractual obligation*" (Project manager, Client). Besides, the conditions and improvement of the work on site and the possibility of reuse or recycling are seldomly included in contracts.

According to the demolition companies, the specific sections allocated to WM in their contracts with contractors are often vague and contain only general statements such as "*waste should be sorted as much as possible*" and that *"we should try to reuse the waste that is generated"*. Even though the contracts often include some general demands on WM, it is only mentioned out of necessity

> In any formal document you send to the administration, no one will read the parts concerning waste and environment. You can include in the text that: To whomever reads this, I will give you a cake if you call this number. Nobody ever rings. That's the way it is, they never check that part. (SME Demolition contractor)

The demolition companies are chosen based on other criteria such as prices and time allocation. It seems as though the contractors are not always aware of their responsibility for the demolition waste. "*I realized it when I came here. That it is the demolition company that manages our waste. It is ours, but we don't include it in our [statistics]*" (Environmental manager, Contractor). The contractors we talked to, assess the quality of the demolition companies work by the speed at which they dismantle and clean on site. The quality and quantity of the waste and the way in which it is handled afterwards are rarely discussed. By only including elusive demands concerning CDWM, these contractors allow the demolition subcontractors to disregard any need for improvement. This is problematic as many of them only focus on financial incentives: "*it's all about money, ultimately that's what it's all about, everyone needs to earn money on it*" (Demolition subcontractor). Such contracts have also become the common basis for evaluating projects within the contractors' own organizations and are generally perceived as the "*source of right/rule of the game*". The contracts act as a template that guide and legitimize behaviours within the projects and the content rarely changes, especially regarding the aspect of CDWM. These demands are transferred throughout the chain of actors: "*… I wouldn't say that there are such demands unless they are specified by the customer. That's our starting point. We look at the demands on us and have the same for our subcontractors*" (Project manager, Contractor). Accordingly, the process of monitoring projects also reproduces the norms and

beliefs systems by highlighting and *valourizing* the specific elements that are appraised within the organization.

Most of the site and contractors project managers interviewed hesitated to engage in new forms of recycling waste. They justified their position by referring to the legal frame and green certification already adopted in the industry and claimed that the compliance to these demands was enough. Besides, they also mentioned the lack of a clear method and process to apply the CE principles in the projects. The sector, they argue, is not ready to integrate these transformations, which would necessitate much stricter enforcement of regulations to be applied. A common explication among the contractors and demolition companies is related to the specificity of the sector. They justify their current WM practices by invoking the "scarcity of space on site", the "lack of financial reward" and the low quality of the fractions collected. During one of the workshops on CE potential for the sector, several of the managers did recognize the environmental issues, but *demonized* the adoption of CE principles by undermining the feasibility of the proposed solutions as summarized by one of the participants: "*this is all fine, but we have to be realistic. I have a business to run, I have people to pay at the end of the month"* (Project manager, Contractor). Thereby the respondents justified their established practices by referring to the high pressures on the industry, both in terms of time and cost and that their business would not survive the financial burden of introducing CE principles in CDWM.

A widespread assumption among the interviewees was related to the conservative nature of the construction industry and its endemic resistance to change. One of the environmental experts of the Swedish construction association posed the following question:

- *You must've heard about the 11th commandment in the construction sector?*
- *Which is?*
- *That it is the way we've always done it! Followed by the 12th: We've never done it like that before! (Officer in charge of waste management)*

This reiteration of the industry's inability to change corresponds to the description of *mythologizing* as it builds on the use of narratives to stabilize the existing institution. This depiction of the industry shapes the way individuals experience and make sense of their institutional context. This type of statements supports the maintenance of the existing practices and legitimizes the lack of initiatives. It also prevents the actors from realizing their ability to change. The responsibility for upgrading the management of waste seems to share the characteristics of a "hot potato": everybody wants to pass on the responsibility for handling it to the next actor in the chain. It goes from the owner of the project, who has the legal responsibility, down via the contractors and finally ends up in the demolition companies. The forms of maintenance work we have identified are summarized in Table 1.

Creating a sustainable WM institutional field

The environmental managers at the large contractors and one of the demolition companies took part in shaping a new set of rules and demands for CDWM through the work of *advocacy*, where they use their position in the field to act as experts and were thereby able to wield influence on formulations through amendments. They thereby took part in *defining* these new demands and also used them to legitimize their work on CDWM. "*It is easy to make progress right now because it's impossible to meet the upcoming demands if you're not managing this [WM]. This makes collaboration a lot easier, both internally and externally"* (Environmental manager, Contractor). The environmental managers we talked to were engaged in different interorganizational projects and research networks concerning waste management e.g. dismantling of window, implementation of a global trade item number, new packaging as well as other projects related to possibilities of recycling specific materials such as gypsum, glass, plastic or concrete. These projects aim to overcome the barriers associated with WM and gather participants from all the large contractors, architects, demolition, recycling and consultant companies and research institutes. These collaborations established *normative networks* which create a common space for building and sharing new knowledge and practices mostly related to recycling of materials. Their work has also been recognized through prizes for sustainability efforts within the sector and were awarded by professional associations. These efforts legitimized the environmental managers' positions both within their own organization and in the industry. These networks contributed to define the joint effort to improve CDWM, such as the development and introduction of the recycling system of transportation pallets in the industry, and these efforts have supported the creation of a new institutional field. There are also examples from both the contractors and demolition companies, where representatives attended

trade conferences and seminars on the topic, presenting their new business model and best practices. A few demolition companies also offered training to their customers and sold their expertise to help them organize and optimize their waste management. Two of the front runner demolition companies have incorporated sustainable WM as an integral part of their strategic agenda and share sustainability information at different levels of the organization through forums and employee meetings.

A common initiative among the three contractors participating in our study is to *define* new goals to increase sorting ratios, both at project, department and organizational levels, which connect WM efforts to the already established organizational demands through monitoring of key performance indicators, i.e. *mimicry*. These goals, building on existing competition between projects, are then displayed and rewarded in these organization. "*It is very effective, and I truly believe in measuring and visualizing the results. This is because of the competitive instinct between units*" (Environmental manager, Contractor). The contractors have also developed an intranet-based marketplace to facilitate sharing of leftover materials between projects. Similar initiatives are also found amongst the demolition companies, where one of the organizations collects waste from both its own and other companies' projects.

An environmental manager in one of the demolition companies who strongly promotes sustainable WM gave us a good example of *theorizing* in an attempt to reshape the perception of waste management "*by calling it waste, we've already accepted it as waste*". Common WM terms have been re-labelled, e.g. "*we do not demolish but deconstruct*", and the material generated during demolition activities is renamed *product* or *resource* instead of "waste". Likewise, "*the end of life understanding of WM*" is substituted to a life cycle understanding, where waste is only viewed as a state in a never-ending transformation.

The environmental managers in our sample share the common background of either having a formal education related to sustainability or professional experience from outside the construction industry (chemistry or environmental management). This provides them with alternative beliefs, frames and meanings that support the creation of a new institutional field. The three contractor organizations as well as three of the demolition companies have included *education* for their own employees on more efficient and environmentally friendly waste handling including health and safety, use of equipment and vehicles and organization of transport. One of the contractors had incorporated mandatory basic training for all employees, complemented with job-specific training for e.g. procurement, project management and handling of CDW.

Most of the contractors have also created internal sustainability networks, gathering participants from different departments within the organization. The intent with these networks is both to create awareness, share knowledge and increase employees' responsibility for environmental issues. The contractors' projects managers hold similar information sessions with their subcontractors, presenting their organisation WM policies, either through start-up meetings or display information screens on site.

However, even though we identified a number of actions with the intent to change practices and consequently create a new institutional field, the transformation of practice at the projects level was limited as CDWM is often down-prioritized due to more pressing issues. The environmental department in the contractor organizations acted as advisors to the board and did not have the mandate to impose directives.

> *Because I don't have the power to …., I can just help them, so I have asked my boss, who is sustainability boss in Sweden to talk to the line manager, highest up. Because now they need to take the pressure from the line. We can't have goals that one department just does not care about. It's not fair to the others.* (Environmental manager, Contractor)

A repeated issue identified by the environmental managers was their inability to translate the potential benefits of sustainable initiatives to the projects: *"It would have been good, but I cannot demonstrate that with improved CDWM the projects would actually save money"* (Environmental manager, Contractor). This situation contributes to maintain the established practices and as such are unable to destabilize the prevalent CDW institutional field.

However, at the national level, each of the three large contractors have produced one or two buildings applying circular economy principles. These showcase projects seem to be the result of local coalitions between clients and project managers embracing the challenge of an exciting project rather than a follow-up of organizational policy, since they may not include the active participation of sustainable managers.

Another common initiative for the large contractors is to target better resource efficiency for water, carbon, material and energy and promote new production modes such as prefabricated modules, which could substantially reduce the production of waste. In

doing so, they also *define a* new model for the sectors.

As broader competences for dealing with CDW are missing for small and medium-sized companies in the sector, a few demolition and recycling actors offer CDWM training as part of their business portfolio and sell their expertise to help their customers organize and optimize their waste management on site.

New actors in the field are also proposing services and training, focussing on the transition to CE principles for CDWM. Research institutes, professional associations and civil-engineering companies are entering this new market by offering seminars and short-time formation on handling of waste, circular building or the future of waste management. Moreover, proposing the integration of recycled components as part of their project portfolios, architects entering the field of CDW participate as well in the diffusion of CE in the sector. By *constructing new identities* and modifying the conventional distribution of tasks among actors in the field, the work of these newcomers contributes to transform the actual field by *changing the normative associations, theorizing and educating*. The forms of creating work identified in the study are summarized in Table 2.

Disruption

The current CDWM principles according to the legislative frame and the practices adopted within the industry are that all the waste should be sorted to as high a degree as possible to increase the reuse and recycling potential. The general assumption is that virgin materials will continue to be accessible and provided under the responsibility of various suppliers.

However, our interviewees, regardless of organizational affiliation, had realized the industry's impact on the natural environment and considered the established CDWM practices unsustainable. Some of the respondents within the contractor organizations claimed the need to take action and stress that they, both as companies and individuals in the organization, have the possibility to make change happen. "*I have two kids and the climate issue is really at stake right now. I can really feel that I have to contribute with my part, everyone has to do at least what they can*" (Site manager, Contractor). The environmental managers we talked to insisted on their responsibility as change agents and the necessity for all actors in the industry to question the current way of working as well as the distribution of tasks between the partners. One of the demolition companies have attempted to *undermine the assumption* that the quality of the material was inferior and that it was too costly. They managed to redeem some of the material and resell it as construction material, thereby demonstrating the viability of the model.

But there are few examples of disruptive activities in the data, only one company displayed behaviour which could be associated with disruption. This company is a subsidiary of one of the large contractors in Sweden that provides materials and services to the construction and civil-engineering industry. Their offer includes concrete, gravel and crushed rock, transport and construction machinery as well as environmental services such as recycling, land remediation and water treatment. This company's discourse on waste undermined both the existing and new models of CDWM by underlining the lack of financial viability of the existing institutional field. They clearly opposed both the current practices and the sustainable WM model proposed by the legislative framework. Instead, they *disassociated the moral foundations* of CDWM by proposing to focus on *"controllable, traceable and uniform batches of waste"*, i.e. to collect material according to its reuse potential by focussing on large quantities of pure material with high traceability. In doing so, they claim that material with a high recycling potential would be prioritized and its quality preserved. This manager also claimed that the material producers need to take charge of the recovery activities as they have the knowledge and resources to process their materials. This issue was also brought up by one of the contractors' environmental managers, who claimed that the producers are *"key to the transition"* and that the contractor's role as large customers is to demand products produced by recycled materials.

A few numbers of sub-contractors such as electrician, and suppliers such as plastic flooring and carpet or insolation producers have started to propose to themselves manage their material leftover on building sites and even to come back to take care of their product after renovation or demolition. So far, they do not claim financial benefits, but rather described these new business models as a way to create and invest in a long-term relation with their customers.

These actions, for the time being very limited, concern specific rather peripherical material if compared with the actual amounts of waste produced by the sector. A broader application of CE principles would necessitate a reshuffling of the current supply chain and a redistribution of tasks among the actors involved. The work aiming at disrupting the CDW institutional field is summarized in Table 3.

Discussion

The discussion on how institutional work contributes to the transformation of the Swedish CDW institutional field to align with sustainable goals implies scrutinizing firstly practices that maintain existing institutions, then what might create new institutions and thirdly what might disrupt them.

The discussion then goes on to examine ambiguity i.e. actors seeking to reconcile competing agendas and possibly incompatible objectives (Lawrence *et al.* 2011). Finally, the changes in the field of CDWM and the path to circularity and our experience with using institutional work concepts in this context are discussed.

Maintenance of the CDW institutional field

Though institutions are described to be inherently enduring over time, there is still a need for work that support and maintain them. In this section, we reflect over the different types of actions performed, which purposefully supports the existing and actual CDW field. Without this type of reinforcement, the institution would potentially be repositioned and transformed into other directions over time. Actors who work against change, continue to carry out existing procedures either intentionally or not and defend the existing procedures (Patterson and Beunen 2019). Much of the type of maintenance work we have identified consists of discourse, e.g. arguing for the maintenance of the actual tasks' distribution and organization and delegitimizing CE principles (Lawrence *et al.* 2009). The maintenance discourse insists on the financial security of the actual practices and supports the current institutions by repeating and valourizing the existing structures, practices and beliefs. This discourse building on traditional values of the sector argues for a generic understanding of the established practices and preserves the normative underpinning of the existing institution (Zilber 2008). This conservative portrait of the industry is mobilized to preserve and protect the current norms, routines and practices and reject new developments. Actors maintaining the CDW institution describe the CE related proposals for development as decoupled from the reality of the sector and threatening their business. In doing so they demonize and discard the possibility of change (Lawrence and Suddaby 2006).

Creation

Curiously, the very same actors we have talked to that maintained the existing institution also recognized problems of over-consumption of raw materials and the necessity to adhere to sustainability principles. This indicates that the moral legitimacy of these principles, defined by Suchman (1995) as "the right thing to do", is now currently established in the field of CDW. The moral legitimacy does not, however, imply that these principles are applied in practice since, as underlined by Suddaby and Greenwood (2005), moral legitimacy is mainly characterized by a shift in rhetoric.

The more direct and explicit creation work is mainly performed by the environmental managers and we could identify actions corresponding to all the forms of creation work described by Lawrence and Suddaby (2006). Developing training and education, participating in networks and research projects, renaming objects and practices were strategies mobilized by all the environmental managers. In doing so, they participated in the spreading and normalizing of the new CDWM conceptualization and practices. By developing a competitive labelling, the actors claimed a new identity for CDWM, which should enable changes in perception and accordingly in practices (Hampel *et al.* 2017).

These initiatives supported by the legislative frame in Sweden have resulted in some changes in current practices for managing CDW on site. It is possible to identify improvements amongst both the contractor and demolition companies' organizations of work with regards to both hazardous waste and increased sorting ratios.

The normalization of environmental managers as an organizational function for the contractors and for the demolition companies is a strong signal that the field is integrating new roles which can challenge the existing order and contribute to define a new open space (Suddaby and Viale 2011). These managers are able to generate incremental changes within their organization: the reduction of waste on building sites, the investment in electric machines and equipment, the creation of internal training and reward systems, the establishment of internal marketplaces to recycle building components; all of these initiatives are the results of their efforts and contribute to transform actual CDW practices (Lawrence and Suddaby 2006). A successful strategy which we identified as a new form of institutional work was to rely on the existing competition between departments to motivate project managers to increase sorting ratios and reduce their production of waste. Accordingly, the companies can document concrete improvements regarding the quantity of waste. In doing so, they align with the objectives of Sweden's Waste Plan 2012–2017. These

improvements, however, are limited to optimization of the already established practices and do not result in transition from a linear process to circular flows of materials.

However, similar to the results of Gluch and Bosch-Sijtsema (2016), our study shows that the formal position of environmental managers in their respective organizations is not sufficient to systematically impose new practices at the level of the project, and many expressed their frustration and lack of power. This situation could be explained by the position of the environmental managers. Their function in a company's organizational hierarchy, close to top management and support services (as in our sample) and their fairly usual non-construction-related background could account for a lack of legitimacy to influence the work done at the level of the project (Löwstedt and Sandberg 2020).

The environmental managers are only partially successful in imposing sustainability values and practices on the project and site managers. Defining a new set of goals and processes is not enough to transform CDWM practices. It can even create uncertainty about the roles and responsibilities of involved actors and about the rules that need to be followed.

While most of the companies participating in our study had created a system to support reuse of leftovers and waste, none of them actively used the system. Thus, these remained a platform for creation of a new institution which was underutilized.

Disruption

Under the category disruption, we found arguments that criticized or dismissed both the creation and maintenance strategies (Lawrence and Suddaby 2006), thereby contributing to delegitimizing established values, beliefs and practices associated with CDWM. This position rejects both the current CDW institution and arguments for the new model. They do so by either dismissing the feasibility of the proposed legislative frame and guidelines, aiming at optimizing already established practices or by insisting on the danger for the environment of the existing practices. Our study shows that there were only minor attempts at disrupting CDWM and that those attempts had little echo among other participants of the CDWM field.

Ambiguity

As described above, some actors support the actual CDW field organization and dismiss new proposals and at the same time acknowledge the moral legitimacy of the need of reducing overconsumption of material and sharpening public regulations (Suchman 1995). One consequence of this situation is the ambiguous, and sometimes contradictory argumentation of some of the actors, mostly projects and site managers which alternates between supporting CE principles and defending the conventional practices. As mentioned, defining a new set of goals and processes is not enough to transform CDWM and may on the contrary create uncertainty about the roles and responsibilities of the actors involved as well as about the new rules that need to be applied. Similar to the results of Patterson and Beunen (2019), and in response to these uncertainties, our project managers tended to fall back on prevailing and routinized practices and therefore contributed to maintain the existing institution even if they recognized the validity of the CE argumentation. This type of re-action challenges the efforts of institutional work aiming at the transformation of the CDW field. Table 6 summarizes the main institutional work performed by our respondents according to the companies and positions.

The field of CDW and the transition to CE

It is difficult to attribute the changes taking place within the field of WM only to the institutional work

Table 6. Institutional work as performed by the respondents.

Institutional work Key actors (company or person)	Maintain	Create	Disrupt
Demolition company:			
• Small companies (7)	Satisfied with existing measures and existing practices (6)	Incremental changes (1)	Change business models (1)
• Large company (1)			
Contractors			
• Environmental managers (3)	Rely on clients' demands (13)	Legitimize and advocate for changes, create new routines	
↕ Gap	Lack methods and solutions, revert to actual practices (13)	Opportunistic solutions (3)	
• Project and site managers (13)			
Recycling companies (4)	Follow the market (4)	Incremental changes (3)	
Consultants new comer (2)		Sell education, method and training (2)	

performed by the actors. However, the concept of institutional work enables us to trace how the CDW field becomes slowly reorganized. We see how demolition companies play a new and more active role compared to traditional DCWM and participate in interorganizational networks. The creation of new functions, new networks and the emergence of new actors are also indications of what is at stake in the transformation. These changes are not only taking place within singular organizations but across network of organizations and actors who are or become active or influential within the institutional field.

Even though, very few circular buildings have been built in Western Sweden, those that have constitute inspirational showcases for actors of the construction sector, i.e. architects, consulting engineers, contractors and real estate companies. This development can also be considered as an emergent market at local level towards a more sustainable-oriented CDW field.

Projects focussing on possibilities of reusing materials and recycling objects (doors, windows, bricks) are becoming widespread and even if there is no real market for these objects so far, are illustrating the emergence of new practices. Our study shows that certain common initiatives are diffusing within the field and implemented by different companies, underlying the isomorphism phenomenon described by DiMaggio and Powell (1983), as the constraining process that forces one organization to resemble other organizations that face the same set of environmental conditions and where structures shape the development on organizations.

The transition to principles of circular economy necessitates incorporation of new values, such as short- term versus long-term financial gain or societal benefits instead of private ones. Benachio *et al.* (2020) have identified a paradigm shift during the last decade towards CE principles in CDWM literature, however they also recognized that so far, if the CE principles for the industry represent a great potential for reducing waste generation they are not yet implemented in practices. The practice-oriented shift towards CE would require major changes in how CDW is framed and organized as well as how the roles and responsibilities of the actors operating in the field are distributed. It would also challenge the current organization which valourizes short-term financial benefits for each of the actors involved. Similar to the results of Fuenfschilling and Truffer (2016) discussion of water management, we did not perceive the institutional work performed as being sufficient to translate environmental sustainability into new economic values. It failed to change the normative association and to define new rules of action within the field. The ambition of creating a new market to valourize already used materials has so far not been realized either.

Our respondents underline the fact that the current legislative frame which mostly relies on voluntary compliance to guidelines is quite ineffective to motivate a radical change within the CDW institutional field. Many of the interviewees though favourable to the CE principles are nevertheless awaiting a reinforcement of the law for new initiatives to be triggered.

Our contribution underlines these different positions and tensions at the level of the field and enable us to understand how the field-level structures, including regulators, professional, formal and informal governance bodies, field-configuring events and norms as well as organizations, networks and individuals influence each other and can contribute to the transition of CD towards CE principles. The moral legitimacy acquired by circular economy is a first step towards the transformation of the field, however the institutional work performed so far is not sufficient to create a new regime. Our results may guide practitioners and regulators to make informed choices and orient more specifically their strategy to achieve the goals set by the circular economy. The paper has also some general theoretical implications for transition studies as the concept of institutional work offers insights on how institutional change can be conceptualized by focussing on the role played by agency.

Conclusion

The purpose of this paper was to analyse how institutional work can contribute to transform the CDW institutional field according to CE principles in order to respond to the shifting demands of legislation.

Our study offers rather conflicted results: on the one hand the creation of new roles, rules and networks underlines the changes taking place within the field, but on the other hand, many of the conventional practices remain unchanged. We identify forms of institutional work that maintain existing CDW filed institution, some that create and support the transformation of this institution and thirdly those that attempt to disrupt the other ones. Moreover, we identify the role of ambiguity as a characteristic of this transition phase. Whereas actors of the field have relatively well succeeded in implementing former directives of reducing the production of waste and improving the sorting of fractions, the transition

towards CE principles require a far deeper transformation of the existing field.

The work of the environmental managers in endorsing new values and practices, aligned with the changes in the regulatory frame, are clearly not enough to adapt to the CE principles and create a new institutional field of CDW. Most of the respondents realize the need for improvements, but the daily work of the project and site managers together with the demolition companies maintain the actual institution. Actors may be involved in multiple types of institutional work, sometimes contradictory, in attempts to shape the creation of a new institution or discard aspects which they see as unfitting in the existing one. Insecurities and ambiguities in the field suggest that the CE principles focussing on resources rather than waste are not shared or institutionalized and are therefore not strong enough to compete with the actual practices. They have yet to acquire full legitimacy. To date, the institutional work put into the translation of values like economic efficiency or CE principles into concrete actions within the institutional field has not been sufficient to transform the existing institution.

Building on the principles of linear economy and a market of competition, the existing CDW institution overrules the holistic values of sustainability. The autonomy of the actors within the project organizations and the lack of power of the environmental management units can partially account for this situation. Moreover, the soft regulatory frame as applied in Sweden is not a sufficient trigger to transform the institutional field.

The implication of our results is that CE principles incorporate new values and require major changes in what CDWM is for the construction industry, how it is handled and how waste can be reused. But it also raises a range of questions about the new values, such as what is environmental sustainability? How should waste/resources handled be reused? How can environmental benefits concretely be measured or assessed? How could recycled materials be priced to compete with newly produced ones? Such questions will require further exploration. To follow-up, we will attempt to explicitly examine how the concept of circularity is translated and implemented at the level of the projects focussing on innovative cases committed to circular principles and how these translations in practice can influence on patterns of diffusion of circularity principles in the CDWM field.

Due to its reconfiguration capacity, it can be expected that the diffusion of CE principles could have the potential to push the institutionalization of the alternative rationalities and thus foster a more radical transition of the sector. But this is still a development to come.

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