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Institutional changes in construction waste management

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Abstract

The construction industry is a major contributor to both environmental degradation and resource depletion. The industry responsible for more than 30 percent of the total amount of waste generated within the European Union relies on a linear mode of production where waste is considered as materials end-of-life, resulting in excessive consumption of natural resources. To improve this situation EU has proposed to apply the principles of Circular Economy to the management of waste. The circular economy builds on the decoupling of economic activity and consumption of finite resources. It is described as a novel production model that promises substantial environmental benefits by bridging the tension between business prosperity and its environmental impact. The European Commission has made attempts to increase resource management efficiency by incorporating these principles in action plans and directives, but Sweden still struggles to diffuse them within the sector. This thesis therefore addresses the gap between the actual practices of construction waste management and the transformations the sector is expected to carry out to implement these principles. In order to understand and analyze the barriers and enablers (what is preventing and what could foster the transition) to a circular economy, I build on the two concepts of institutional work and institutional logics. The concept of institutional work focus on the role of actors and the actions carried out that either maintain the existing or create new conditions for construction and demolition waste management. The concept of institutional logics is mobilized to explain the institutional context by focusing on sets of material practices and symbolic constructs that constitute organizing principles and constrain behavior amongst field members, including individuals, groups and organizations. The research draws on a social constructivist approach and qualitative research methods that shed light on two central actors in the construction waste management process, the demolition companies and the contractors. The empirical material consists of 31 interviews, site visits and meeting observations.

My results show that there are two confronting logics that draw on different sets of assumptions, values and beliefs, where the established waste management logic clashes with the emerging circular economy logic. This creates tension as actors need to balance between contradictory organizational demands. The institutional work perspective shows how the different actors respond to these contradictory demands and how actions at the micro-level, may have implications at the level of the field. Much of the efforts to challenge the established practices are carried out by the environmental managers. Though assigned formal responsibility to implement more sustainable waste management practices within the organization, their positioning in the organization together with an unsupportive legislative frame makes it difficult for them to diffuse elements corresponding to the emerging logic. The individuals operating at the level of projects are therefore able to dismiss the proposed improvements that are not aligned with the existing structures, ideas and values of the field. Part of the environmental managers' efforts is therefore directed outside the organizational borders as they engage in inter-organizational networks and development projects that contribute to the spreading and normalization of sustainability initiatives within the field. This thesis shows that even though improvements can be identified, in increasing sorting ratios and reducing waste generation, the institutional work carried out by the actors seems to maintain the predominantly linear waste management processes in the industry. However, the transition towards circular principles is a long-term endeavor that requires change across the whole field, where efforts within inter-organizational networks show promising avenues for development.

Keywords: CDWM, Construction and demolition waste management, Circular Economy, Institutional Work, Institutional Logics.

List of appended papers

Paper I: ***Improving Renovation Waste Management in Sweden: The Role of the Demolition Company***

Andersson, R, Buser, M and Bosch, P (2019)

This paper was included in the Proceedings of the 35th Annual ARCOM Conference, 2-4 September 2019, Leeds, UK, Association of Researchers in Construction Management, 84-93.

Paper II: ***On the Road to Nowhere? The Challenges of Aligning Construction and Demolition Waste Practices with Circular Economy***

Andersson, R and Buser, M (2020)

This paper was included in Proceedings of the 36th Annual ARCOM Conference, 7-8 September 2020, UK, Association of Researchers in Construction Management, 536-545

Paper III: ***Public policies as obstacle to sustainable CDWM practices***

Andersson, R (2020)

This paper was included in IOP Conference Series: Earth and Environmental Science, 588, 022009.

Paper IV: ***From waste to resource management? Construction and demolition waste management under the lens of Institutional work***

Andersson, R and Buser, M

Under review for possible publication in Construction Management and Economics.

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Rickard Andersson
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1 Introduction

The following chapter provides the background for this research project, including a description of the existing challenges that the construction industry faces with regards to construction and demolition waste management (CDWM), who it may concern and how it will be addressed within the frame of this study. This is followed by a description of the purpose of the study and the research questions. The chapter ends with an outline of the thesis structure.

1.1 Background

The matters of environmental issues have raised questions worldwide as to how societal and industrial transformation can take place that would result in more sustainable production and consumption patterns. However, many of the attempts made to relieve the pressure, including the introduction of new technologies or governing mechanisms, the creation of economic incentives and changes in consumer behavior, often fail to be implemented. Technologies fail to be diffused, governing mechanisms are only realized on paper and consumer behavior does not comply with the expectations (Fuenfschilling and Truffer, 2014).

The consumption of natural resources worldwide has more than tripled since the 70-ties and continues to increase (Oberle et al., 2019). The construction industry is a large consumer of material and energy and as such a major contributor to the generation of waste, representing more than 30 percent of the total amount generated within the European Union (European Commission, 2019). The solid waste generated from the many activities related to construction, renovation and demolition work is often referred to as construction and demolition waste (CDW) and is comprised of a wide variety of materials such as wood, steel, concrete, gypsum, masonry, plaster, metal, and asphalt (Yuan and Shen, 2011). The efforts to improve construction and demolition waste management (CDWM) are often directed towards adopting practices adhering to higher levels in the waste hierarchy, which has been described as an influential philosophy in prioritizing waste management practices to reduce its economic, environmental and societal impact (Van Ewijk and Stegemann, 2016). The highest level of the hierarchy, and most preferable is to prevent the generation of waste, followed by the reuse, recycling and recovery of the material and the less preferable option of safe disposal. (Yuan and Shen, 2011). The improper management of CDW may have dramatic consequences, resulting in soil and water contamination, land depletion and deterioration, excessive energy consumption, emissions and resource scarcity (Lu and Yuan, 2011) as well as reduced financial profitability in the industry (Ajayi et al., 2016).

But the management of CDW is showing great potential for improvement that may mitigate these negative effects. Multiple regulatory actors such as the EU, UN and Swedish government have recognized the issue and defined a policy framework to support the transition towards sustainable waste management. The United Nations has incorporated waste management in the built environment as part of their sustainable development goals (SDGs). The European Union has due to the excessive consumption of natural resources in the built environment declared CDW as a priority waste stream that needs to be addressed. They have also defined in the waste framework directive (EU2008/98/EC) the goal that 70 % of non-hazardous construction and demolition waste (by weight) must be recycled or recovered. Both the goal and the stipulation of CDW as a prioritized waste stream have been adopted in Sweden through the national waste plan and waste prevention program (Swedish environmental protection agency, 2018). However, the goal hasn't been realized in Sweden so far (Swedish environmental protection agency, 2020b).

A large part of the academic production on the topic has pointed towards the challenges in the sector for improving CDWM, where factors such as; the poor material qualities of CDW (Ghaffar et al., 2020), lack of public (Wang et al., 2019) and economic incentives (Lu et al., 2019), scarce interest and demand from clients (Osmani and Villoria-Sáez, 2019), actors attitudes towards reuse (Sáez and Osmani, 2019), lack of training (Park and Tucker, 2017) and ineffective contract forms (Ghaffar et al., 2020). There is also a recognition that both developing as well as developed countries struggle with achieving higher levels of recycling. That even though many of the developed countries have a robust waste management infrastructure and policies to support the adoption, they are unable to change the existing practices (Jain et al., 2020).

A proposed concept for increasing resource efficiency and minimize the environmental impact in the sector is to incorporate circular economy principles (Adams et al., 2017). The circular economy has been described as a "*systemic approach to economic development designed to benefit businesses, society, and the environment*" where it is "*regenerative by design and aims to gradually decouple growth from the consumption of finite resources*" (Ellen MacArthur Foundation, 2015). The concept has received vast attention from policymakers, resulting in protocols, transition roadmaps, guidelines, legislative frames and action plans on international, national and industry levels. The European Commission is strongly supporting and encouraging the uptake of CE amongst its member countries by issuing various ambitious CE policies (Lazarevic and Valve, 2017, European Commission, 2020).

Although initiatives have been taken by several actors to improve the management of waste in the sector, it still seems far from realizing the effects proposed by the circular economy (Jain et al., 2020). The literature describes three levels for the implementation of CE, the micro-, meso- and macro-level, where the adoption of the theoretical frame of institutional theory and its constitutive concepts allows the study of the current situation at the individual and organizational level, the field level and the macro institutional level (Suddaby et al., 2007). The transition to CE in construction has been described to require a fundamental reshaping of the way waste management is organized, as it is currently so strongly anchored in the dominant linear economy (Zhang et al., 2019). It is therefore necessary to focus on both social and behavioral factors, and especially the elements that guide them (Jain et al., 2020). The institutional logic perspective can therefore contribute by showing how the institutional setting frames the existing assumptions, values and beliefs amongst embedded actors (Thornton et al., 2012), to thereby explore how these elements guide the currently established way of working. This also includes the different forms of pressure and their effects on organizational behavior with regard to the management of CDW (Jain et al., 2020).

Another explanation for not achieving higher levels of sustainable waste management practices is that it represents a major societal challenge that requires an overall change in technologies, policies, markets, practices and cultural meanings. It is an intricate process where multiple actors contribute to either the reproduction, maintenance or transformation of these elements (Geels, 2011). The focus on the industry level has been described as particularly important as the various industry practices are responsible for the vast majority of the environmental impact. The adoption of institutional theory can contribute to the understanding of the ongoing change process and inertia in the industry (Stål, 2015). This research builds on two theoretical concepts within institutional theory. The concept of institutional logics is used to explore how the institutional setting governs the behaviors and understandings of individuals or collective actors (Zilber, 2013). It also builds on the concept of institutional work that shifts the attention towards the different actor's roles in contributing to either maintaining, creating or possibly disrupt the existing institution (Lawrence et al., 2009a). By focusing on the different actor's attempts to shape organizational practices, it also informs us on the process of how organizational practices become diffused within a field (Greenwood et al., 2002).

These theoretical frameworks also contribute to the understanding of how the actor's behavior is constrained by the institutional structures, whilst at the same time show how "embedded actors" can unshackle themselves from the pressures for institutional conformity and perform actions to challenge the existing institution (Battilana and D'aunno, 2009, Fuenfschilling and Truffer, 2014).

1.2 Aim and research questions

The current policy framework is putting pressure on the industry to change its current CDWM practices. But it seems that the transition towards more sustainable practices is only slowly progressing. The transition towards a circular economy is described as a multilevel issue, including actors at both the macro, meso and micro-level. The assumption is that the policy framework defined at a higher level is transferred and interpreted within organizations and thereafter translated into organizational practices. However, as the ongoing efforts to change the existing situation do not seem to have resulted in the intended outcome, this research aims to explore the different actor's responses towards the societal and forthcoming legislative demands. Further, to identify how the actor's behaviors are constrained by the institutional setting, but also their attempts to reshape the established ways of managing CDW. It builds on the theoretical framework of institutional theory, more precisely the lenses of institutional logics and institutional work to explore the situation and make an account for the existing situation. An overarching research question was therefore defined to explore the underlying reasons for this: *How can institutional theory inform us on the current CDWM situation in Sweden with regards to sustainable transition?*

Two research questions were formulated at the beginning of this project to assist in fulfilling the aim of the research. These research questions have been formulated based on the existing literature on the topic and the theoretical frame adopted within the study. The first question addressed the complexity within the institutional setting in which actors operate by focusing on how their behavior is justified through their underlying norms, values and beliefs (Thornton et al., 2015). The second question explores the matter of how, why and when actors make attempts to challenge and maintain the existing practices, and to understand the underlying reasons for it (Lawrence et al., 2013). Thereby better understand the efforts involved in maintaining the current situation, but also the efforts involved in changing it.

RQ1 – How does the institutional field logic frame the actor's behavior in their everyday CDWM activities?

RQ2 - What forms of work do the actors undertake to shape the CDWM practices within the frame of transition?

1.3 Structure of the thesis

This chapter has introduced the background of the research, its purpose and the defined research questions within the scope of this study. The second chapter continues by presenting part of the previous research on the topic of CDWM, introduces the concept of the circular economy and also presents the public policy framework and current situation in Sweden.

This is followed by a review of the theoretical frame of institutional theory and its sub-concepts of institutional logics and institutional fields, which are the lenses through which the empirical material has been analyzed. Then follows a representation of the research methods, which describes how and why the research design, data collection methods and analysis have been chosen.

It thereafter presents a summary of the four papers included in this thesis, followed by a discussion structured according to the defined research questions. Lastly, the conclusions are presented together with a reflection about future work.

2 Waste management and the policy framework

The following section introduces the reader to previous research on waste management within the construction sector and the concept of circular economy as a proposed framework for sustainable waste management. It is thereafter followed by a representation of the current situation in Sweden and the public policy framework defined by legislative actors, which thereby put pressure on the sector to initiate a transition towards sustainable waste management.

2.1 From waste management to circular economy

The construction industry is considered a major contributor to environmental degradation where its impact is a result of, but not limited to, land depletion and deterioration, energy consumption, solid waste generation, dust and gas emission, noise pollution, and consumption of non-renewable natural resources (Lu and Yuan, 2011) in both developed and developing countries (Mahpour, 2018). Construction and demolition waste includes a mixture of surplus material that is generated throughout the entire construction process (Jin et al., 2019). In addition to its vast environmental impact, the management of waste is also an important activity due to the considerable cost to dispose of the material, where the high value of the materials is lost if the products cannot be recovered (Mangialardo and Micelli, 2017). The management of waste can be described as an interdisciplinary issue covering both social, economic and environmental aspects, which has been treated from various viewpoints such as engineering, technological, management and policy perspectives (Jin et al., 2019). It is an issue that has concerned both practitioners, policymakers and researchers around the world. Research on the topic has covered multiple topics such as waste treatment methods (Yuan and Shen, 2011), the environmental impact (Kucukvar et al., 2014), waste material properties and potential (Poulikakos et al., 2017), life cycle assessment (Bovea and Powell, 2016), quantification and estimation of waste volumes (Zheng et al., 2017) and policy-making (Ajayi and Oyedele, 2017, Di Maria et al., 2018) among others. There are multiple explanations to account for the lack of improved CDWM practices such as the lack of economic incentives, insufficient support, insufficient regulatory support, immature market, awareness about CDW reduction activities, client awareness, inadequate training and education (Yuan et al., 2011, Crawford et al., 2017).

Much of the extensive consumption of natural resources and generation of waste in the construction industry can be derived from its mode of production, corresponding to the conventional linear economic model (Benachio et al., 2020). In the linear economy, virgin materials are extracted and then processed into a product that can be used on site. Products are discarded, once the products become obsolete, which often occurs before the end of their useful life (Mangialardo and Micelli, 2017). In the linear economy, waste management has traditionally been limited to efforts to improve treatment methods for the waste generated or increase reuse or recycling activities. But these efforts do not maximize the potential value of the material (Romero-Hernández and Romero, 2018).

A proposed framework to reduce the environmental impact from the consumption of resources is therefore through the incorporation of the Circular Economy (CE) concept that aims to "*redefine growth, focusing on positive society-wide benefits*" by "*gradually decoupling economic activity from the consumption of finite resources, and designing waste out of the system*" (Ellen MacArthur Foundation, 2013, Gallego-Schmid et al., 2020). It does so by building on three principles of; designing out waste and pollution, extending the usage of materials and regeneration (Ellen MacArthur Foundation, 2013). The incorporation of the CE therefore involves a paradigmatic shift for waste management that is not limited to improve the already existing practices but to maximize the use of materials through the creation of a closed-loop economy (Romero-Hernández and Romero, 2018). It promotes a shift in the current production and consumption patterns that significantly reduce the impact

on our planet and its environmental capacity (Leising et al., 2018). To transcending from the previously dominant perspective of waste management where the main efforts have primarily been to discard waste materials by either landfilling or incinerating (Ghisellini et al., 2016).

The concept builds on the idea to try and maintain the existing value for as long as possible by reusing the material and only discard products once the value is dissolved, thereby conserving the value in material flows. The concept is commonly framed as a novel production model that offers substantial environmental improvement in comparison with the conventional linear mode of production which is often referred to as the 'take-make-dispose' model, where resources are consumed through extraction, use and disposal of natural resources (Ellen MacArthur Foundation, 2013, Esposito et al., 2018). It has been described as a new possible route towards a paradigmatic shift in production processes that will consequently result in an industrial transformation towards sustainable production and consumption patterns (Korhonen et al., 2018b). The concept has received increased attention which seems to be related to its ability to link environmental sustainability with economic potential, generating benefits to both the economic actors that implement the system, the society as a whole and the environment (Geissdoerfer et al., 2017). Which for practitioners and organizations implies that their sustainable development work doesn't have to be at the expense of their financial performance. Part of its development has been ascribed to practitioners, members of the business community and policymakers due to its conformity to the 'business sense', that there is a cost linked to the creation of a product which should therefore be prolonged for as long as possible (Korhonen et al., 2018b).

The concept has been described as an umbrella concept consisting of loosely coupled sub-concepts and ideas to encompass a diverse set of phenomena. Umbrella concepts create links between different pre-existing concepts by focusing on some shared characteristics between them (Blomsma and Brennan, 2017, Korhonen et al., 2018b). It has also been accused of being theoretically weak by referring to the lack of a coherent definition of what circular economy means and entails (Suárez-Eiroa et al., 2019, Bocken et al., 2016), where it can range from collaborative consumption models (Sharing, trading, renting) (Geissdoerfer et al., 2018, Ghisellini et al., 2016) to large scale industrial symbiosis which makes the concept blurry and as such difficult to apprehend the success of its implementation (Stål and Corvellec, 2018).

Multiple interpretations and definitions exist for the concept of circular economy (Reike et al., 2018) that share common elements including the elimination of waste and maximizing the value of materials (Kirchherr et al., 2017). The Ellen MacArthur Foundation (2015, p.5) defines CE "*as one that is restorative and regenerative by design and aims to keep products, components, and materials at their highest utility and value at all times, distinguishing between technical and biological cycles*". For this study, rely on the description of the circular economy in construction that is proposed by Adams et al. (2017). It builds on a literature review and describes the components of CE for waste management in construction and defines different circular economy activities throughout a building's life cycle stage, from design to end-of-life. Among the multiple activities proposed to realize CE within the construction sector are design for disassembling, recycling and reuse, procurement of reused and recycled materials, selecting eco-friendly suppliers, material and delivery, minimizing waste and increase reuse during construction and reuse to close the loop (Adams et al., 2017).

The literature defines three levels of implementation for CE, the micro-, meso- and macro-level (Suárez-Eiroa et al., 2019, Ghisellini et al., 2016). The first two focus on companies and organizations that work to implement CE within the industry. The micro-level focuses on the adoption of CE by carrying out strategies to incorporate circularity within the organizations, whilst the meso level refers to the interaction between organizations to collaboratively enable circular flows of materials within inter-firm

networks (Suárez-Eiroa et al., 2019). The increasing number of organizations within the chain also creates a diversity of actors, interests and preferences, which in turn makes the governance, management and decision-making efforts even more complex (Korhonen et al., 2018b). Lastly, the macro-level refers to the implementation of CE on a societal level, including cities, regions, nations and international communities. At this level, public policy frameworks are considered the main instrument to enable transformation (Suárez-Eiroa et al., 2019).

Many of the barriers towards CE can be linked to cultural issues (Kirchherr et al., 2018). There is often a lack of both interest and awareness among the customers combined with an internal company culture that is hesitant towards the adoption of CE. The interest and discussions concerning its potential are often limited to isolated parts of the organizations working with sustainability issues (Kirchherr et al., 2018). Further, the organizations are consistently entrenching themselves in already established practices and therefore dismiss improvement proposals that are not aligned with the existing processes (Liu and Bai, 2014). Even though some companies do embrace circularity, it will also necessitate that their entire supply chain is willing to commit and engage in those changes, which makes it an even more challenging endeavor (Kirchherr et al., 2018). Among the reason for actors' difficulties to implement more circular material flows is the consumer's attitude towards it, that customers prefer products made from virgin materials and that products made from recycled material are of inferior quality (Ranta et al., 2018).

Other barriers are related to the market, where much is concerned with the cost of both virgin materials and circulated ones. For one, that the cost of virgin materials is often very low, making it a more attractive choice when procuring raw material. But also, that the recovery activities to transform the material into a reusable product incur such high costs that it is unable to compete with products made from virgin materials, at least without financial support (Kirchherr et al., 2018). The lack of financial support is also put forward as a key barrier that is underpinned by a lack of a policy framework that supports producers to engage in CE. Another key aspect is the technological solutions that need to be made available. That even though there are many technological developments made, it still seems that they are only slowly starting to enter the market and that further work is needed. Along with this, there are also related issues such as ensuring technical support and sufficiently educated personnel (De Jesus and Mendonça, 2018).

Others also point out that actors in the construction have a good general understanding of the concept and acknowledge the benefits of it, but have difficulties understanding how the concept can be applied in practice (Benachio et al., 2020). Even though the CE has shown its ability to attract attention from a diverse set of actors from different industries and organizations, its implementation still seems to be limited. Some improvements related to waste management are realized through increased recycling efforts within a few developed countries, but so far haven’t resulted in reuse (Ghisellini et al., 2016). Its application in construction is similarly described to be in its infancy and the few identified improvements concerning CDWM are primarily limited to either waste minimization or recycling activities (Adams et al., 2017, Gallego-Schmid et al., 2020, Leising et al., 2018).

Mahpour (2018) presents a list of barriers to the transition towards a circular economy in construction, these issues are related to the dismantling, sorting, transporting, and recovering processes, agency and ownership in CDWM, lack of integration of sustainable waste management, and knowledge concerning the implication of implementing CE in the construction industry. The implementation of CE in construction would also require a redesign of the existing process, including a reshuffling of the actors’ responsibilities and involvement throughout the entire process. This would also require the development of new business and ownership models that fit with the new process (Leising et al., 2018).

The CE is characterized by a focus on maximizing what is already in use, throughout a product's entire lifecycle. This includes activities during design, production, use and end of life. By incorporating circular principles during these stages, it contributes to maintaining the value of the materials and also reduce the extraction of virgin materials (Mangialardo and Micelli, 2017). The realization of CE is not only requiring closing loops by reusing 'waste' and resources, it also includes keeping materials in the loop for as long as possible by developing long-lasting reusable products (Leising et al., 2018).

Although the concept promises great benefits for the industry and the environment, and much attention has been given to waste management in construction and the transition towards a circular economy, however, little attention has been given to the different actor's roles and efforts to shape organizations' waste management practices.

2.2 The public policy framework

As previously mentioned, the literature defines three levels of implementation for CE, the micro, meso and macro-level where the public policy framework is considered as the main instrument to enable transformation (Ghisellini et al., 2016, Suárez-Eiroa et al., 2019). Several actors participate in the formulation of public policies to encourage the construction sector's transition towards CE. These policies are viewed as a trigger to initiate change in the sector, and the following section therefore presents an account, although not exhaustive, of the existing policy framework faced by the construction industry in Sweden.

2.2.1 EU Framework

The CE is a concept that has been widely adopted among policymakers and is viewed as an important mechanism to support the transition towards more sustainable production models in multiple sectors (Korhonen et al., 2018a). The implementation of CE necessitates societal support in terms of legislative and financial subsidies and where policymakers must design a governance system that guide and support organizations to overcome the barriers associated with the CE and engage them to adopt its principles (Ranta et al., 2018, Liu and Bai, 2014). It is therefore necessary to develop a framework that integrates policies and strategies that stimulate societies to manage their resources in a more sustainable manner (Ghisellini et al., 2016). Particular considerations should be taken to the different actor's interpretations and understanding of the concept within the CE landscape (e.g. academic, policy, business, and nonprofit actors) (Blomsma and Brennan, 2017).

The EU has set its aim at transforming the union and its member countries into a circular economy, thereby increasing resource efficiency by closing material loops and turning waste into a resource. They released their first circular economy action plan in 2015 that "*includes measures that will help stimulate Europe's transition towards a circular economy, boost global competitiveness, foster sustainable economic growth and generate new jobs*" (European Commission, 2015). An updated version of the action plan was issued in 2020 which includes specific focus areas for construction and buildings. The action plan describes a new comprehensive strategy for a sustainable built environment by promoting circular principles throughout the lifecycle of buildings (European Commission, 2020). The strategy includes enabling reselling of construction materials by updating the construction product regulation (EU) No 305/2011 to the introduction of recycled content requirements, promote circular design initiative that focuses on improving durability and adaptability of buildings, the integrating of life cycle assessment in public procurement, a revision of the material recovery targets defined by the EU and initiatives to increase sustainable and circular use of excavated soils (European Commission, 2020).

The EU policy framework is placing the businesses and consumers as key actors in this transition process. Both local and national authorities are both obliged and encouraged to act as a catalyst by putting demands and incorporating the framework in both legislation and guidelines, where the EU has a fundamental role by supporting and ensuring that the right regulatory framework is implemented. But although this is a regulatory framework, it is still not binding (Milios, 2018). The member countries of the European Union are urged to implement the necessary measures to foremost try to prevent and minimize the generation of waste. But as this is seemingly an impossible task, the waste that is generated needs to be managed in such a way so that it minimizes the impact on both the environment and health.

The management of CDW still varies greatly between the different member countries which in part has been explained by local variations in terms of legislation and its enforcement, construction and demolition practices and recycling infrastructure. As such, the member states' CDWM performance within the EU varies greatly in fulfilling its recovery target (from 10 % to over 95 %) (Sáez and Osmani, 2019).

2.2.2 UN Framework

The United Nations are similarly trying to address this issue through the sustainable development agenda where they are defining a transformational vision, goals and targets to encourage all member countries to take action, whilst at the same time realizing the immense challenges to sustainable development that societies are faced with. These new goals and targets were defined to guide and set the course of action for the upcoming 15 years. The SGDs are voluntary based, where the member countries' efforts should be built on the three dimensions of sustainable development: the economic, social and environment (United Nations, 2015).

Even though the sustainable management of CDW is not specifically addressed within the SDGs, it contributes to the achievement of the SDG11 for *sustainable cities and communities* as well as the SDG12 on *responsible consumption and production*. Three of the targets are more directly addressing these issues. First, to reduce the environmental impact from cities, where special attention is given to waste management. Secondly, to realize environmentally sound management of waste throughout its entire life cycle and according to the international framework. They also encourage practices that improve waste management practices according to the waste hierarchy. And thirdly, that each member country should strive to substantially reduce waste generation through prevention, reduction and increased recycling and reuse activities.

2.2.3 The current situation in Sweden

This study set out to explore the current situation in Sweden regarding CDWM, where the point of departure has been in the 2008/98/EC goal defined by the European Commission that aims to increased resource efficiency within the construction industry. It states that efforts should be made so that 70 percent of non-hazardous construction and demolition waste should either be prepared for reuse, recycled or have undergone other types of recovery activities by the year 2020 (European Commission, 2008). The goal put particular focus on non-hazardous waste, whilst the hazardous waste seems to already be managed sufficiently. The current situation concerning waste management in Sweden according to the latest report issued by the Swedish environmental protection agency claim that 35,2 million ton of waste was generated in Sweden (2018, excluding mining waste) where the largest amount is generated within the construction industry, 12,4 million tons and thereby constitute more than 35 percent of the total amount of waste generated in Sweden (Swedish environmental protection agency, 2020b). Sweden has adopted the goal defined by the European Commission and has incorporated it as one of the interim targets for the national environmental targets (Swedish environmental protection

agency, 2019). The Swedish environmental protection agency (2020b) conclude from their latest assessment in 2018 that Sweden is so far only at 50 percent, and even though there is uncertainty about the data, the goal still seems far from realized. Small improvements are identified, moving from 49,5 percent to 52,1 between the years 2016 – 2018 (Swedish environmental protection agency, 2020a).

Sorting the material into clean fractions on site continues to be of high priority and has received increased support through the latest incorporation into the legislative frame and waste regulation (2020:614). It thereby becomes mandatory in Sweden to sort CDW according to a minimum of six fractions: wood, mineral waste, metal, glass, plastic and gypsum. There is also an increased focus on the traceability of material, where information about the materials in buildings needs to be stored and made available in the future. Buildings and materials should also be designed so that they can be easily dismantled and its material separated, which makes it even easier to sort the materials into clean fractions (Government offices of Sweden, 2020)

3 Theoretical frame

The following chapter describes the theoretical framework adopted in this study. This entails a representation of the theoretical lens of institutional theory and the concepts of institutional logics and institutional work which has shaped the research design and constitute the basis of the analysis.

3.1 Institutional theory

This research builds on the theoretical frame of institutional theory, this enables a better understanding of the socially constructed forces that shape organizational reality and behavior. The framework creates a better understanding of how the organizational structures, processes and practices are governed as a result of both endogenous and exogenous forces from within the organizational and external societal expectations, values, and rules. The isomorphic pressure within institutions can cause patterns of behavior amongst organizations operating in a given field (DiMaggio and Powell, 1983). According to Scott (2014, p.56) institutions can be defined to be comprised of "*regulative, normative, and cultural-cognitive elements that, together with associated activities and resources, provide stability and meaning to social life*". These three elements are central blocks within institutions that both shape and stabilize actors' behaviors within that institution. It is necessary that the institution provides both guidance and the necessary resources to generate certain behavior, and thereby prevent other behaviors. Where the deviation from the institutionally prescribed behaviors should also be associated with some kind of cost (Lawrence et al., 2011). The three elements of the regulative, normative and cultural-cognitive elements highlight that this behavior is also shifting from the conscious and unconscious and between the legally enforced and the taken-for-granted behavior (Scott, 2014). Or as described by Mahalingam and Levitt (2007, p.523) institutions can be viewed to consist of "*a set of norms, rules and values operating in a given environment"* that can be used to better understand how it generates *"regularity of behavior among actors affected by that environment*". Institutions are constituted by the multitude of shared practices, technologies and rules that are adopted within a field. These can be more-or-less institutionalized depending on the degree to which they have been diffused and the different rewards and sanctions that either create resistance to change them or support their continued existence. The sanctions and rewards constitute a meaning system consisting of social sanctions, pressure for conformity, intrinsic rewards and values that together shape the legitimized practices within that institution (Lawrence et al., 2002).

The institutionalist perspective has emphasized the enduring aspects of social life that govern behavior. It has traditionally put a focus on how organizational behaviors are governed by the institutional field in which it operates, whilst underlining its stability. Highly institutionalized contexts have been referred to as an '*iron cage*' where it constrains actors and produces similarities amongst actors through their adoption of specific forms and practices that are considered as legitimized within the field. However, although there is a strong element of endurance within institutions that have been well established in the literature, a more common approach to studies on institutional theory has instead shifted to focus on institutional change (Lawrence et al., 2009a). Showing that institutional fields should not be viewed as stable entities, but that they instead adapt over time as e.g. new organizations enter it and infuse it with new ideas and thereby contribute to the complexity within it. Different organizations will be more or less exposed to the complexity depending on their interaction and positioning within the field, central versus peripheral (Greenwood et al., 2011). Hinings et al. (2017) make the distinction between different types of organizational fields and claim that they can be either emerging, mature, fragmented or turbulent.

A central concept when studying institutional processes and organizations is the nation of institutional fields (Scott, 2014). The concept is presented by Zietsma et al. (2017, p.5) as a cornerstone of

institutional theory as it is the "*predominant source of pressures for institutional conformity and the site of institutional embeddedness*". Scott (2014, p.106) describes the concept of organizational fields as "*a level that identifies a collection of diverse, interdependent organizations that participate in a common meaning system*". The field level emphasizes the interaction of multiple organizations that often share related resources, produce similar outputs or rely on the same set of technologies. The field consists of networks of actors that are created and shaped by the actors, but where the fields over time also shape the actors (Hinings et al., 2017). The stability of the institutional field is built upon the shared logics, the actor's common interests and the governance structure within the field. As these constituent elements of a field align with each other and are shared among the different actors, they also reinforce old patterns and contribute to maintaining the existing institution (Levy and Scully, 2007). Thereby leading to field stability that both regulate and regularize day-to-day interactions among its participants (Hinings et al., 2017). Within this research context, the CDWM process gathers multiple actors, e.g. interdependent organizations, that together share a common understanding of formal and informal processes, norms of conduct, governance structure and contractual agreements as well as taken for granted behaviors that together constitute an institutional field.

The construction industry can be viewed as highly institutionalized, spurred by a great need for coordination in construction projects where actors are independently carrying out tasks in temporary organizations and under strong time-pressure (Urup, 2016). It heavily relies on regulatory systems governing building practices that build on e.g. the legislative frame, involvement of local authorities and building codes and standards. Contracts are also standardized and determine the distribution of responsibilities. The construction and work processes as well as the roles within them are also described as strongly institutionalized (Kadefors, 1995). Whilst these standardizations and routines generate efficiency within the process, they also restrict flexibility where deviations from these established practices often result in resistance from the actors. This depiction of the construction sector as a highly institutionalized industry is shared within the frame of this research of how construction and demolition waste management is carried out. That the sector consists of multiple actors that together share a common meaning system and understanding of what the legitimized practices are for managing waste throughout the entire construction process (Kadefors, 1995).

In the following section, the two concepts of institutional logics (Thornton et al., 2012) and institutional work (Lawrence and Suddaby, 2006) are introduced. These concepts have been used as theoretical lenses to analyze the current situation of CDWM within the context of this research project. Institutional logics refers to the patterns of assumptions, values and beliefs by which individuals and organizations provide meaning to their social life and govern individual and collective actors understanding of legitimized behaviors within a particular institutional setting and institutional work refers to the identification of individuals efforts to either create, maintain or disrupt institutions. However, as put forwards by Zilber (2013), by adopting a constructivist approach institutions should not be viewed as something that 'exists' out there. It is a socially constructed reality and there is not such a thing as an institutional logic or institutional work that can be captured and presented, these are merely analytical perspectives that are used to try and make sense of the phenomenon that has been identified.

3.2 Institutional logics

Institutional logics can be defined as ''*the socially constructed, historical patterns of material practices, assumptions, values, beliefs, and rules by which individuals produce and reproduce their material subsistence, organize time, and space, and provide meaning to their social reality*'' (Thornton and Ocasio, 1999, p.804). The field level logics constrain field members, including individuals, groups and entire organizations by defining which behaviors and meanings are considered appropriate (Zietsma et

al., 2017). The concept has been used to describe how individual behavior is governed through its relation to organizational forms and normative societal structures, as the logics provide both identity and meaning to actors (Skelcher and Smith, 2015). The institutional logics are comprised of elemental categories which can be referred to as building blocks. They make out the foundation that prescribes the organizing principles and illustrates how individuals and organizations are influenced by the institutional order as they define the institutional actor's interest, preferences and repertoires of behavior (Thornton et al., 2015). Though these logics constrain and legitimize behavior among individuals, groups, and organizations, they also provide individuals with social constructs that actors can reconstruct according to their own interests. That even though actors are described as embedded and shaped by the institutional setting in which they operate, they are also able to act partially independent from them (Haveman and Gualtieri, 2017).

An increasing area of study within institutional theory is the institutional complexity that occurs when multiple institutional logics become established within a field. This provides actors with space where they can elaborate or manipulate cultural and material resources, resulting in the transformation of identities, organizations and society (Skelcher and Smith, 2015). These attempts can result in both fragmentation and contestation within the field. The existence of multiple logics simultaneously influences organizational actors and provides them with contradictory schemas for behavior (Bertels and Lawrence, 2016). But where the institutional logics affects organizations and individuals differently, both through the adoption of different logics, but also the degree to which they become diffused. These multiple, competing and often contradictory logics have given rise to studies on the emergence of new logics, the change and transition into a dominant one and the rise of conflict as a result of them (Ocasio and Radoynovska, 2016). The plurality of logics highlights a second feature, the notion of agency, that actors can recognize the existence of them and thereby respond and adapt to them in a way that makes sense in the relationship between the normative expectations of the logics and the organizational context in which they operate (Skelcher and Smith, 2015). As the contradictions between logics become prominent, organizations and their members seek to interpret such contradictions as incompatible or paradoxical and thereby deploy strategies as a response to try and resolve them (Kraatz and Block, 2008).

Organizations can be characterized as more or less stable, consisting of a single strong logic or balance between multiple ones. Emerging fields are illustrated as significantly more unstable that provide space for actors to enter with relative ease. Thereby bringing in alternative logics rooted in other fields and perform work that aims to shape the emerging and potentially dominant logic (Greenwood et al., 2011). Though new logics can emerge from within or become introduced in the institutional field as a result of exogenous forces, they are often rooted in a more long-standing institutional logics, such as the ideal types proposed by Thornton et al. (2015), the market, state, community, family, religion, profession, and corporation. The process of institutionalization should not be considered as resulting in an end state, it is a continuous process where a specific institutional context is not dominated by one single sovereign logics, but often include a combination of several (Haveman and Gualtieri, 2017). This is referred to as institutional pluralism, where the organizations that consist of more than one logic are faced with more than one institutional identity and socially sanctioned purpose. This may lead to persistent tensions within organizations due to contradictory demands (Kraatz and Block, 2008).

Though change is often most visible at the macro levels of analysis, the actual mechanisms through which change unfold are best understood by focusing on the micro-level interaction. Therefore it’s important to study the process of how individuals interpret and integrate seemingly contradictory logics at the micro level to understand the underlying reasons of how a change in the institutional logics are enacted at the macro-level (Bévort and Suddaby, 2016).

The challenge of bridging or merging competing institutional logics is a well-recognized challenge that organizations face. Institutional work offers an explanation as to how individuals cope with contradictory institutional logics and partake in the shaping of them through their everyday practices (Smets and Jarzabkowski, 2013). In organizations facing competing logics in terms of market-based logic and an emerging environmental logic within the organizations, some actors perform different types of institutional work to try and bridge the tensions between them. One example is to make attempts to strengthen the embeddedness of a peripheral logic by diffusing its values, assumptions, rules, and beliefs across the organization. However, when the two logics are seemingly incompatible, these efforts can also result in the reinforcement of the already established logic (Dahlmann and Grosvold, 2017).

3.3 Institutional work and change

The bridging or merging of institutional logics is a challenge that many organizations face, where institutional work helps to explore how actors within these organizations negotiate the tensions inherent in the pluralistic settings (Dahlmann and Grosvold, 2017). Institutional work is a concept developed within the wider frame of institutional theory and is an agency-oriented framework that emphasizes the actor's role in shaping their institutional context. The concept is partly founded in the sociology of practice, where practices are viewed as individuals' and groups' responses to the demands that are put on them in their everyday lives. It views actors as creative and knowledgeable and sheds light on the micro/individual level in the actors' attempts to either transform or maintain the institution (Lawrence and Suddaby, 2006). The theoretical perspective puts a particular focus on the *how, why and when* actors perform actions and the particular elements that influence the actor's ability to do so (Hampel et al., 2017). The definition of the concept proposed by Lawrence and Suddaby (2006, p.215) states that institutional work is "*the purposive action of individuals and organizations aimed at creating, maintaining and disrupting institutions*", where it thereby shifts the traditional view on institutions as shaping the actor's behavior, where instead, the actors shape the institution. Thereby emphasizing the actor's role and ability to '*effecting, transforming and maintaining*' both institutions and its field. Institutions are therefore depicted as a result of the actor's behavior that either reproduce, challenge, or modify them, which may ultimately result in the institutions diminishing.

Institutional work builds on some key assumptions, that individuals and collective actors are able to recognize their ability to make change happen and thereby act in ways that involve awareness about their relation to the institution. As such, institutions should not be considered as static or permanent, but as malleable entities that are part of continuous transformation, partly through the institutional work of actors. Where the actors' actions are performed with the intent to '*build-up, tear down, elaborate and contain institutions*' (Hampel et al., 2017, p.3). These actions have been described to range from "*heroic*" actions to "*nearly invisible and often mundane*" institutional work (Lawrence and Suddaby, 2006, p.1). A central issue in this discussion of institutional change is the notion of embedded agency, which is a continuous debate within institutional theory literature. The so-called 'paradox of embedded agency' refers to an actors' ability to change institutions as their 'actions, intentions and rationality' are all governed by the very institution that they wish to change (Battilana and D'aunno, 2009). That actor's behavior is constrained by the need to be regarded as legitimate, which is defined by the pressure to conform with the broad set of norms within the specific institutional setting. Earlier work has therefore portrayed the individuals and organizations to only have limited ability to shape the institution of which they are part of. But it would be problematic to discuss the actor's role in shaping their institutional context if continue to suppose that it is solely the institution that shapes the actor's behavior (Lawrence et al., 2009a).

As such, it is necessary to challenge this assumption and whilst multiple explanations exist, one response to this is to not merely view actors as passive participants that accept the established structures within the institution. Instead, those actors are able to partake in the process of shaping the institutional context through continuous alteration. Those actors should be considered as aware, skillful and reflexive beings able to interpret, translate or occasionally even transform them (Kraatz and Block, 2008). That even though institutions are described to consist of widely accepted, used and taken for granted practices, norms and values among individuals, they are still able to act independently (Battilana and D'aunno, 2009).

Institutional work is carried out by change agents within the institutional context by leveraging institutional resources and challenging the institutional 'status quo' within a field, thereby contributing to the creation of a new institution or transformation of an existing one. Their ability to induce change within that context is however dependent on both their position within the field and the field characteristics (Battilana et al., 2009).

Another underlying assumption in institutional work theory is that institutions are socially constructed. They are results from ongoing human achievement through their behaviors, thoughts and feelings that both create and maintain the existing institution. The actions can be both unintended and a result of the individual's own awareness concerning the institutional setting and their desire to affect it. But the success of these efforts is dependent on a set of factors and cultural resources that govern their ability to do so (Hampel et al., 2017). However, the outcomes of actors' purposeful action to transform institutions do not solely result in achieving the desired end state. On the contrary, institutional work often involves a myriad of day-to-day efforts that often fail, but which together contribute to both institutionalization and institutional change. That these actions may often have an impact on the institutional setting that results in unintended institutional consequences (Lawrence et al., 2011, Hampel et al., 2017).

Existing studies presume that institutional actors faced with institutional complexity can elaborate on the various choices available and thereafter choose the ones that are most favorable to them. But where the process is much more dynamic, involving multiple strategies to cope with the complexity at hand. Those actors are often involved in the mundane work of institutions but without necessarily being intentional in the sense of purposive actions with a specific aim in mind. That even though there is a lack of clear intention, practical work does have implications on the institution where it does purposively maintain established practices and reject alternative behavior proposed by an alternative logic. So these actions should not be labeled as unintentional, just because they lack a clear institutional vision (Smets and Jarzabkowski, 2013). But at the same time, it is also important to distinguish between what institutional work is, and what it isn't. To differentiate institutional work from 'plain old work' (Alvesson and Spicer, 2018, p.207) and follow their advice when identifying the purposive action to shape the institution, thereby reducing the risk of adopting a broad catch-all term that would include almost anything and nothing.

3.3.1 Typology of institutional work

Lawrence and Suddaby (2006) provide a typology of institutional work that illustrates different forms of actions that actors perform to shape the institution. This has been organized according to the three categories of institutional work: creating, maintaining and disrupting institutions.

The creation work includes include prescriptions of what the actors do that aim towards the formation of institutions and focus on the characteristics and conditions that contribute to the establishment of new institutions. It consists of three categories containing nine different forms of creation work. The

first category is referred to as political work including advocacy, defining and vesting which build on actors' attempts to reconstruct rules, property rights and boundaries, which thereby restricts access to material resources.

The maintenance work is concerned with the actor's efforts to maintain the existing institution and its associated practices. Even though institutions in themselves presuppose a degree of endurance, there are still few institutions that have enough reproductive mechanisms that would deem maintenance work as unnecessary. The work to maintain institutions are however ranging from a degree of comprehensibility, where some actions are more noticeable, such as the work aimed to enforce rules, whilst the reproduction of norms and belief systems are often much more subtle and intangible. The first three forms of maintenance work are primarily concerned with ensuring compliance to rule systems. They include *enabling*, *policing* and *deterring* work. The other three are primarily focusing on the efforts to reproducing the already established norms and belief systems and are labeled as v*alorizing and demonizing*, *mythologizing* and *embedding and routinizing* work.

The disruptive institutional work aims to undermine and deter the mechanisms that prevent actors to behave in ways that don't comply with the institutionally prescribed ways. These actions constitute a part of the process of deinstitutionalization and consist of 'disconnecting sanctions', 'disassociating moral foundations' and 'undermining assumptions and beliefs'.

3.4 Institutional theory and sustainable transition

The industrial consumption and production patterns in industrial activities have significant effects on its sustainability. Institutional theory has been described as useful to provide explanations for the inertia at the industry level which is based on collectively held assumptions, values and beliefs that can often differ from the individual level. It may also be common that the practices adopted within the industry are considered as legitimized as well as meaningful by the actors within it, but at the same time questioned by outside actors (Stål, 2015). Institutional theory has the potential to describing how sustainable transition occurs as it shapes its pace and direction. It can be used to illustrate both the processes involved to generate change as well as the constraining actions that prevent it (Andrews-Speed, 2016). It is becoming increasingly more apparent that institutional change and institutional stability are dependent on sustained human endeavors to either maintain, alter, contest or even reject the already existing institution (Beunen and Patterson, 2019). The concept of institutional work helps by informing us about how the structures and instrumental actions are combined to support and realize the incorporation of sustainable practices within a context (Silva and Figueiredo, 2017).

Institutional work also contributes to the understanding of the current situation regarding CDWM by focusing on the active role of individuals and organizations in the change process, which thereby provides knowledge on how the micro-level interaction among actors has implications on the macro level. How their actions contribute to both the stability and flexibility within an institutional field (Beunen et al., 2017). Although studies on institutional work often aim to highlight the actor's efforts to change the established institutional arrangements, it also underlines the importance of the ongoing efforts of actors to maintain it. Where the absence of such work could otherwise result in a transformation in unintended directions as a result of both endogenous and exogenous forces (Patterson and Beunen, 2019).

The current mode of production in the construction sector corresponds to the linear economy and thereby creates institutional barriers that need to be addressed to realize the transition to CE (Fischer and Pascucci, 2017, Ghisellini et al., 2016). The policy framework is put forward as an important element, where the creation and enforcement of policies and laws, which also include the negotiations about its meaning within the institutional setting. But even though policies, laws and regulations take

part in shaping the coercive pressure within the institutional context, it would also necessitate a corresponding shift in the beliefs, values, expectations and cognitive routines of the various actors (Andrews-Speed, 2016, Patterson and Beunen, 2019). Institutional work has demonstrated that is not enough to introduce change reforms, but the proposed changes need to be adapted towards the existing structures and ideas of others (Patterson and Beunen, 2019). However, the sustainable transition is not always a matter of top-down management of implementing a more sustainable work process but instead relies on a group of strategically aligned actors that perform actions over long time periods to push the transition (Brown et al., 2013).

The transition to CE requires efforts on multiple levels including individual managers, organizations, field-level actors, and ultimately shifts at the societal level towards institutionalization of responsible management (Radoynovska et al., 2020). The circular economy partly builds on the establishment of inter-organizational value chains that would allow for a common space where shared practices and understanding for how waste management should be carried can emerge (Blomsma and Brennan, 2017) which thereby would enable the emergence of a new CE logic. The emergence of a new institutional logic corresponding to the CE would therefore necessitate a shift in the already established assumptions, values and rule system of the linear economy as well as the inter-firm collaborations and interaction to realize circular economy processes (Fischer and Pascucci, 2017).

The individuals assigned responsibility to implement sustainable practices in organizations may be referred to as environmental managers. They are often faced with the need to operate in a pluralistic setting where they need to manage the tension between the need to ensure financial prosperity with the emerging environmental demands (Dahlmann and Grosvold, 2017). This requires them to make strategic choices to advance organizational goals, where the effective adoption of sustainable practices seems to be linked to its alignment with the established organizational logic. Thereby reducing the risk of compromising on the already prescribed assumptions and values (Rossoni et al., 2020). It is also stressed that the ability of actors to successfully perform institutional work is very much dependent on both their position within the organization and the support they receive from it. But where environmental managers are often assigned with little formal authority and are therefore unable to enact change that challenges the established organizational norms, beliefs, and routines and promote new practices inside their organization (Daudigeos, 2013). But in cases where they receive formal support and authority, they still struggle to enforce change and are face with the need to shape their own practices to gain acceptance from their institutional members (Gluch and Bosch-Sijtsema, 2016). Also, sustainable transition represents an issue where actors often lack clear incentives to engage in the transition as the goal is not directed towards their own individual benefit. Its contribution is directed towards a ‘collective good’ and thereby creates conflicts for actors with contradictory values and motives (Geels, 2011).

One way for professionals to gain legitimacy for their work is to engage in boundary-spanning activities, outside the organizational borders (Daudiegos, 2011). Actors participating in these collaborations often share a common aspiration to improve for the sake of the environment and include actors from multiple sectors and regime levels. These inter-organizational collaboration shape both the direction and speed of the transition over time and has e.g. been critical in the creation of new institutional routines in urban stormwater management (Brown et al., 2013). What was important in that case was the actor’s involvement in the creation of these networks by defining the connections between actors. The institutional work is comprised of building collaborative networks that promote collective learning amongst practitioners and contributes to gain legitimacy and agency in the field. These collective efforts were then utilized to carry out disruptive and creation work that pushed forwards a shift in the policy framework.

As actors may be influenced through cognitive, normative or regulative processes to adopt circularity in their line of work, they may respond to those demands by involving in decoupling activities. They mitigate the effects of those demands by only incorporating elements so they appear to engage with circularity, without having to change the actual practices that result in the continued prevalence of linear processes in the organization (Stål and Corvellec, 2018). This may also be referred to as ceremonial adoption, as the requirements have been formally fulfilled, but where the internalization by organizational members has not been achieved (Rossoni et al., 2020). The implementation of sustainable practices should therefore not be limited to ensure alignment with the public policy framework, or organizational demands, but to incorporate sustainable practices into the everyday lives of individuals within organizations (Silva and Figueiredo, 2017).

4 Research method

The following section introduces the research method adopted within this research project. Including the research design, the methods for collecting empirical material, analysis, and reflections on the trustworthiness of the research.

4.1 Research approach

The research aims to broaden the understanding of the actors' role, in terms of individuals and organizations, in transforming the way waste is managed within the sector. To investigate how they contribute to the existing practices and account for the current situation in the sector. This was done through an explorative research design, which builds on qualitative research methods to gather the empirical material. It also adopts a constructivist approach that views reality, and the institutions as something that is socially constructed (Zilber, 2013). The particular phenomena studied are therefore created through the individual structuring and idealization of their surroundings and a result of individual processing (Flick, 2014). The empirical material has been gathered on two occasions. Prior to my Ph.D., a first study was carried out between 2017-2019 focusing on waste management within the construction industry (Buser and Bosch-Sijtsema, 2018) I have access to their interviews and a second study which is the ongoing Ph.D. project (2018-2023).

The phenomenon in focus for this Ph.D. is on the tension between the actor's role in changing waste management practices within the construction industry and how the institutional setting is governing the practices adopted. The qualitative research methods enable both exploration and explanation in understanding the perceived barriers and challenges to improve the existing practices and include interviews with both project-, site-, production and environmental managers. It also enables to capture the actors' actions, their underlying motives and how they make sense of their surroundings (Silverman, 2013). The qualitative methodology is aligned with the aim to generate a deepened understanding of the particularity in this context and to create an understanding of both the actor's behavior and attitude towards the matter (Flick, 2014). The study is concerned with the individuals in the context and how the institutional context shapes their behavior and makes their understanding of events meaningful.

The interpretative research approach is aligned with the theoretical frames of institutional work and institutional logics as it seeks to describe the *how* and *why* of social actions as the theory is concerned with how actors consciously act to shape their institutional setting on a micro-level (Hampel et al., 2017). Where actors are viewed as capable beings, that are capable to perform actions that are contra intuitive to the institutional prescriptions. It is further emphasized that neither institutions, institutional work or institutional logics are something that exists or something that individuals 'do', it is merely a theoretical lens that is used to analyze a specific phenomenon, where the theory enables us to both organize and interpret the complex and ambiguous social world (Zilber, 2013).

The broad theoretical frame of institutional theory was given from the beginning, where the research builds on an abductive research approach and draws on the iteration between the rich and detailed material gathered and the different streams within institutional theory. The methods include semi-structured interviews, observations on-site and in contexts gathering actors to discuss topics related to CDWM and various policy documents. This involved a reiterative process throughout all the phases of the research process, where the analysis has involved continuous revisits with the different theoretical concepts and the data available to make sense of it (Mantere and Ketokivi, 2013). The theory and empirical material thereby influence each other, where the process both helped to make sense of the material, but also raises new questions.

4.2 Research process

The research process has consisted of data gathered in four studies and was carried out during the period 2017-2020. A thematic representation of the research process is shown in Figure 1 below.

The initial data set was collected prior to the initiation of this Ph.D., as part of another research project carried out between 2017-2018, labeled as Study A. The project focused on waste management practices within the construction industry and was the departure point of this Ph.D. project (Buser and Bosch-Sijtsema, 2018). Study A building on interviews gathered material on the challenges of waste management in Sweden collected from various actors within the industry, e.g. contractors, architects, recycling companies, municipalities and industry associations. The material thereby providing an overview of the context of CDWM, the relation between the different actors involved in the CDWM process, and a list of the main challenges the industry is facing.

The initial study undertaken in this Ph.D. project (Study B) focused on the demolition companies as they play a central role regarding the management of waste, especially during the demolition phase. These companies are also often neglected in the waste management literature (Bosch-Sijtsema and Buser, 2017) but become particularly important in a Swedish context as they are often assigned the responsibility to ensure proper management of the material on-site and what happens with it afterward. Study B includes interviews with managers in different positions as well as site visits. It also included complimentary interviews with one recycling representative and a subsidiary of one of the large contractors.

The focus for the second phase in the research process (Study C) shifted towards the large contractors. The reason for this is partly due to the contractor's central role in organizing CDWM in the construction process, but also as they can be viewed as 'incumbent firms' with the necessary means to accelerate the sustainable transformation towards improved CDWM practices in the industry (Geels, 2011). To thereby gain a better understanding of how they organize the work of waste management and their relation to their subcontractors and other external parties such as suppliers and clients. The focus within these organizations were primarily two groups, the environmental managers, preferably the ones responsible for improving waste management within the organizations and the second group gathering actors involved during the construction projects, namely project- and site managers, supervisors, quality engineers and construction engineers.

The third phase in this research process (Study D) focused on the policy and legislative framework concerning CDWM and how it defines the conditions for adopting more sustainable waste management practices. This was done by gathering various directives, reports, and guidelines issued by actors such as the EU, Swedish government, municipalities and industry associations.

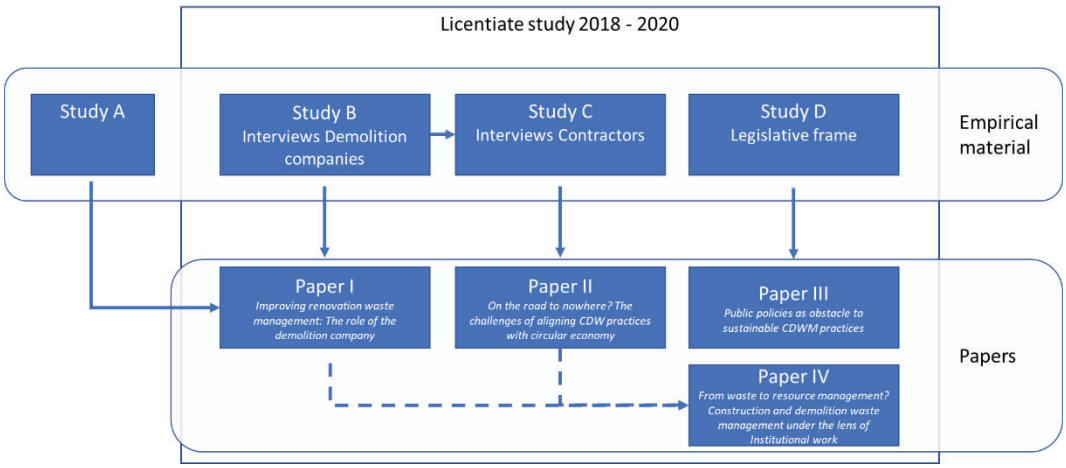

Figure 1 - Research process

A thematic representation of the different paper's contributions to the research questions is illustrated in Figure 2 below. Where all the papers included in this licentiate thesis contribute to the overarching research question. Paper II contributes to research question 1 by building on the theoretical framework of institutional logics, showing how the actor's behavior is shaped by their underlying values, beliefs and assumptions. Both paper I and IV contribute to research question 2 by building on the theoretical framework of institutional work to explore the different actors' attempt to either create, maintain or disrupt the established CDWM institution.

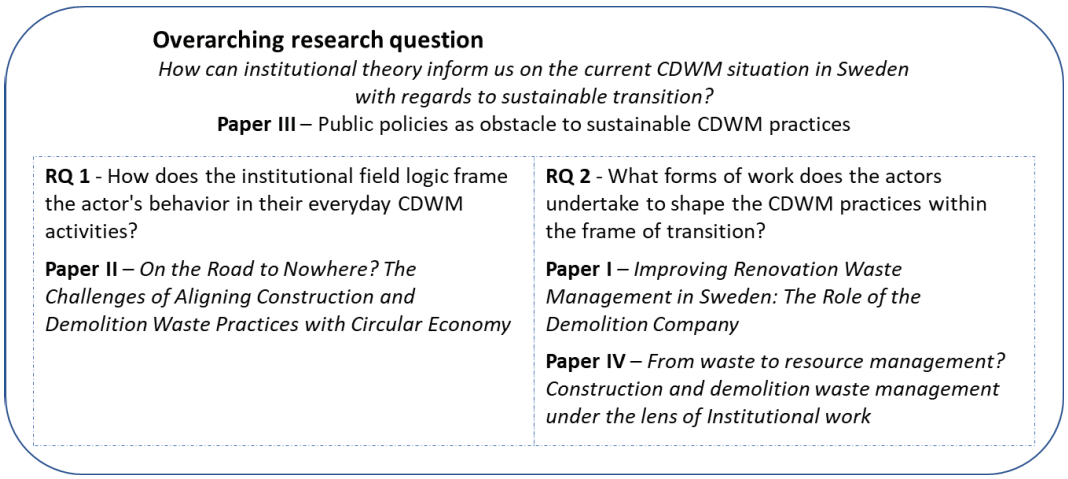

Figure 2 - Overview RQs and papers

4.3 Data collection

Three methods for collecting empirical material have been used within the frame of this research. It includes semi-structured interviews, observations and site visits and a document study. The following sections present the process of gathering the material.

4.3.1 Semi-structured interviews

The main method for collecting empirical material is semi-structured interviews with the intent to gather the experiences, perspectives and subjective viewpoints of the participants (Flick, 2014). This method is also described as particularly "*useful for understanding how people make sense of their work and the issues they believe are important*" (Barley and Kunda, 2001, p.84). It partly involved the gathering of a more descriptive understanding of the different practices adopted in the CDWM process, the context in

which it is carried out and the complexity of the field that the respondents are facing. An important aspect was also to encourage the respondents to elaborate on the activities within their line of work, and the perceived potential to improve the current situation (Smets and Jarzabkowski, 2013). This has provided a description of the respondent's subjective understanding, justification and explanation of what they do and why they do it (Dahlmann and Grosvold, 2017). Thereby also providing both a retrospective account of the development towards the current situation, but also the actors' perception concerning the potential for improvements. This has enabled a better understanding of the underlying reasons as to why individuals perform particular actions and what their intent is when doing so. But it is necessary to realize that the strategic actions of actors do not always result in the intended outcomes, that they may instead have unintended institutional effects (Patterson and Beunen, 2019). This will however contribute to increased understanding of the process where individuals translate their institutional surroundings into actions.

The sampling of respondents in Study B has been based on a combination of selecting actors providing demolition services with the construction industry. It builds on a sample of convenience where the accessibility and possibility to carry out face-to-face interviews were privileged (Bell et al., 2018). The different participants were found by searching the internet for companies in the nearby region where the study was carried out. For study C the sample consisted of large contractors in Sweden, where the initial contact was made with the environmental managers within the three organizations as we wanted to get in contact with individuals responsible for issues related to sustainability and waste management. These individuals were thereafter asked to provide contact information to individuals operating within the project organization.

An interview guide was designed prior to the interviews with the demolition companies and this was later adapted towards the contractors. The guidelines were categorized into three sections. The first part focused on the respondent’s background such as educational background, professional experience and current role in the organization. The second part asked for a generic representation of their project process and how elements of waste management are incorporated. The third part shifted towards their perception, the potential for improvements and their ongoing efforts and the perceived challenges to change WM practices. Some adaptation was made to the guidelines according to information available about existing projects and efforts to improve CDWM in the organization. Different emphasis was also placed depending on the respondent’s role in the organization and their scope of responsibility.

All the interviews carried out in study B and study C was carried out by myself, at times accompanied by one of my Ph.D. supervisors. The interviews were carried out either at the respondent’s office or the construction sites and lasted between one to one and a half-hour. On eight occasions, they were performed as group interviews with more than one representative from the organization. In total, the empirical material in terms of interviews comprises 31 interviews gathering 41 respondents, among which my own contribution consists of 22 interviews with 30 respondents. They mainly include the large contractors and demolition companies, but also other actors such as recycling contractors, clients, architects, municipality representatives and a representative from the Swedish construction federation. An overview of the interviewees is presented in Table 1 below, where the numbers within brackets indicate the numbers of interviews carried out in study A and the number without brackets are either carried out during study B or study C.

Organization	Interviews	Respondents	Positions
Large contractors	10 3	13 3	Project-, site-, production manager Environmental manager
Demolitions small-medium contractors	6 1	10 1	Project-, site-, production manager Environmental manager
Large contractor - subsidiary	(1) 1	(1) 2	Business development manager,
Recycling contractor	(3) 1	(4) 1	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	(9) 22	(11) 30	

Table 1 - Interviews

4.3.2 Site visits and observation

A complementary method for collecting empirical material throughout this research project has been to attend different meetings and site visits where CDWM was either organized, discussed or carried out or. I was part of five site visits carried out either alone or in the company of one of my supervisors. The site visits in relation to the interview provided the opportunity to observe and get an overview of the site and allowed for the interviewees to reflect on the opportunities or challenges that come with it. A site visit was also performed at a recycling plant in connection to the interview with the representative. The study also included attending 2 startup meetings arranged by the main contractors in one of their projects where they introduced a new waste management concept to their subcontractors. This was later complemented with a site visit to observe and gather the practitioner's view on its implementation. The different site visits, which took around two hours were documented with both notes and pictures and some of the discussions were also recorded.

The observations have also included participation in 2 workshops and 3 seminars covering the topics of circular economy and waste management, gathering practitioners of the construction sector.

The main focus when visiting sites, attending workshops or participating to meetings was to observe and gain understanding about the context and the actor's attitude towards and perceived challenges to improve CDWM practices. This was done to gather the interpretations and understandings of their reality and see what the participants do. To identify how actors exert elements of their understanding as a means to shape the view of others through the adoption and dismissing of certain elements (Zietsma and McKnight, 2009), how they argue for and against to either dismiss or accept the proposed actions to improve CDWM. This provides insights into the process of how a shared understanding and consensus can emerge from negotiation and co-creation during the actor's interactions. The observations took place on different occasions from October 2019 until November 2020 and the number of observations is presented in Table 2 below.

	Occasions	Type	Purpose
Construction project related	5	Start-up meetings, site visits	Increase understanding of the contextual conditions that define the CDWM process; Introduce a new CDWM concept for subcontractors
Industry-related	7	Webinars, workshops, presentations	Discussions and presentations related to actors' efforts to implement sustainable CDWM practices in their business.
Total	12		

Table 2 - Observations and site visits

4.3.3 Documents study

Study D of this Ph.D. project consists of a document review of the existing policy framework referring to waste management within the construction industry. The primary focus of this work was to gain a broader understanding of the legislative framework that is putting pressure on the actors to transition to more sustainable practices. Public policies have been viewed as an inclusive term that ranges from legislations, directives and other regulatory measures as well as other types of documents such as guidelines and defined targets.

The review includes documents issued by actors on three levels. The highest actors being on the macro-level and include state regulators such as the European Commission and the United Nations. They are providing broad guidelines as to how the member countries can create sufficient conditions to improve waste management and initiate the transition to a circular economy. These directives aim to reduce the amount of waste generated, increase reuse and recycling and improve how the waste is managed. The second level includes the legislative frame in Sweden that describes the purpose, definitions, distribution of responsibilities and the necessary actions to both prevent and manage waste. The third level includes industry guidelines defined by industry associations as well as municipalities' recommendations and guidelines related to CDWM. The primary document from the Swedish construction federation was the "*Resource and waste guidelines during construction and demolition"* which is widely recognized in the industry and has been approved by the member organizations. The material gathered has been issued during a timespan ranging from the beginning of 2000 to unissued material aimed to be published at the beginning of 2020.

4.4 Analysis

The integral part of analyzing the material and the ability to understand and make sense of the social world is essential in contributing to the understanding of the phenomenon. The method adopted for identifying, analyzing and reporting patterns within the data has mainly consisted of thematic analysis (Flick, 2014). Though the data set and aim of the papers have been different, the process of analysis has corresponded to the phases described by Braun and Clarke (2006). The initial step of arranging the empirical material has been to transcribe the recorded interviews. The empirical material available from study A was already transcribed and was therefore included with the additional empirical material. The collected data mainly consisted of interviews but were also complemented with field notes and protocols from the different observations made. The transcriptions from the interviews that are followed up from the observations are matched together with the observation material. Once the data has been gathered, I read through it several times to familiarize myself with it. A process of generating codes, consisting of data extract which was thereafter categorized into different themes. This stage was done based on the content of the empirical material, the aim of the specific paper but also the theoretical lens adopted in the different papers. The themes were thereafter reviewed in more detail to refine the codes and

evaluate how it contributes to the aim of the paper. Once the themes have been defined and reviewed, they act as a base for presenting the findings from the analysis in a compelling way. In retrospect, it feels like the analysis has been a continuous iterative process corresponding to Musante and DeWalt (2010, p.200) that involves "*reading, thinking, and writing; and rereading, rethinking, and rewriting*".

4.4.1 Paper I and IV

These two papers shared the same aim which to identify different forms of institutional work performed by the different actors. Paper I primarily build on the empirical material gathered in study B, and incorporates elements of study A. The analysis is therefore primarily concerned with the demolition companies' positioning and perception towards the introduction of more sustainable waste management practices. It focuses on the 'linguistic turn' of institutional work and aims at identifying how the actors' discourse is shaping the institution (Zilber, 2009). It underlines the content of ideas and the interactive processes in the institutional context and how the actors articulate and communicates to promote particular behavior and view to gain legitimacy (Schmidt, 2015). The coding process was therefore categorized according to frequently reoccurring terms and statements reflecting the respondents' attitude towards the topic. The different themes were identified through the use of words and how both barriers and enablers were described in different contexts. It enables the identification of how the actors either support or dismiss the development of new practices. The data extracted were then arranged according to their characteristics in terms of the discursive institutional work of either creating, maintaining or disrupting institutions. Based on this, it was possible to differentiate the different discourses performed by actors to shape the institutional setting and industry practices.

For paper IV, the process of analysis was similar, but where the thematic structure was built on the typology of institutional work presented by (Lawrence and Suddaby, 2006). The empirical material consisted mainly of the interviews and observation notes gathered in study C, the contractors, and complemented with material from study A and B, thereby broadening the scope to include all the actors involved. The themes were identified through the different practices and corresponding barriers or enablers that the different actors brought up during the interview, which corresponds to the forms of institutional work described in Lawrence typology (2006). Patterns of actions emerged based on the actor's formal role within the organization. The environmental managers, which are often assigned responsibility for the transition towards more sustainable CDWM practices, more often performed work aimed at challenging the existing practices within the organizations. Whilst individuals that worked close to the operations within projects were more often belonging to the group of actors performing maintenance work. The process of identifying and categorizing the various forms of institutional work in paper IV was performed separately by the two authors and then compared and discussed to arrive at a coherent understanding.

4.4.2 Paper II

Paper II was inspired by pattern inducing, to identify logics by analyzing the material and group the text segments that show how the actors discourse and norms guiding their practices and behaviors are shaped by particular logics closely intertwined with the context (Reay and Jones, 2015). The theoretical framework for the paper is institutional logics, the conceptualization of the two logics builds on the description by both Thornton et al. (2012) and Haveman and Gualtieri (2017). This deductive approach enables the identification of the characterizing dimensions the individuals and groups use to make sense and evaluate their everyday activities. This was done by identifying how they justify and argue for both the adoption and dismissal of different practices involved in the CDWM process. This contributes to the understanding of how their own and the organizational norms and values shape the CDWM process and also their process of making sense of their surroundings and how the institutional setting is defining

the appropriate behaviors and existing practices in the industry (Renner and Taylor-Powell, 2003). To thereby be able to show how the two logics identified create contradictions and incompatibilities between the established way of managing waste and a more sustainable one. The process of identifying the constituent elements of the two logics were performed separately by the two authors and then compared and discussed to achieve a common understanding.

4.4.3 Paper III

The analysis of the material for paper III is based on the systematic procedure of document analysis and aims to identify ambiguity, inconsistency or even omission across public policy levels and areas (Silverman, 2013). Where the focus was on some of the basic assumptions that these documents share about the origin of the problem, the definitions related to the phenomena, as well as the proposed solutions for it together with its described roadmap for implementation. This was done with the intent to develop understanding and empirical knowledge about how the policies concerning CDWM are defining the conditions and pressure on the actors for adopting more sustainable WM practices. As the research builds on a constructivist view, it is been necessary to acknowledge that the meaning of the data will be dependent on the researcher's own interpretation of the content (Silverman, 2015).

The material was initially gathered around the different actors to create an overview of their attempts to induce change, this also includes a selection process of discarding material that was not relevant for the study. The analysis was categorized into three themes. The first being the lack of clear data that primarily focuses on the national level and EU framework. Secondly, the regulatory framework and industry guidelines, that primarily focused on hazardous waste, but where little attention was given to non-hazardous CDW. Lastly, the third area was related to the attention given to higher-level recycling efforts in the policy framework. These three areas were thereafter interpreted to increase the understanding of how the empirical material contribute to shape the actor's view on the matter and support them in their transition (Rainey and Jung, 2014).

4.5 Methodological considerations

To broaden the understanding of the phenomena, it was necessary to explore how the individuals' understanding is shaped by their experiences and background, which in turn shape their perception of their surrounding context and results in particular behaviors. It thereby became possible to justify their particular behavior and the underlying reasons for making attempts to either transform or maintain the industry practices (Patton, 2002). Based on this, the intention is not to claim generalization for our findings. Instead, it aims to provide a representation of the different actors' efforts to shape practices and to elaborate on how the current practices are shaped by the context in which the actors operate.

By adopting an interpretative approach and qualitative methods, the research build on the description of the quality criteria of credibility, transferability, dependability, and confirmability with the intent to increase the trustworthiness of the research (Patton, 2002, Korstjens and Moser, 2018). To increase the credibility of the research, it includes multiple sources from where the empirical material has been gathered (interviews, documents and observations) as well as including different actors within the field. This enables triangulation of the material and to capture the multiple perspectives of reality, rather than identify a singular truth (Silverman, 2015).

As the main intent is not to claim generalizations for our findings, the attempts to increasing the transferability of the study mainly lie in providing detailed information about the research process and the context it has been conducted. Thereby providing others with information to decide whether the findings would be applicable in other contexts. This includes descriptions of the different methods and

the context of where it was gathered including a description of how it has been analyzed. By doing so, it enables cross-comparison of the findings amongst the different sources as well as achieving a more coherent understanding of it (Bell et al., 2018).

The aspect of dependability in the research process involved submerging in the data by reading and re-reading, to increase the understanding of what it contains and means. But also to include a clear account of the purpose of the study, how and why the different participants for the study were selected, how the empirical material was gathered and during which periods as well as for how the material was prepared for and interpreted (Thomas and Magilvy, 2011).

The confirmability is concerned with reducing the risk and adopting a self-critical attitude of how the researcher's preconceptions affect the research. To ensure that the analysis of the material is not subjected to biased views of the researcher (Thomas and Magilvy, 2011). That even though it is difficult to be truly objective, it is still important that personal values shouldn't be overly influential in the process (Bell et al., 2018). To increase the confirmability of the study and ensure proper interpretation of the data, all the work of analyzing the material except for paper III has been carried out by more than one researcher. The findings were then compared, discussed and debated, thereby reducing the risk of overt influence of personal interpretations. For paper III, both the findings and its underlying process were discussed together with my supervisor to reduce the lack of bias.

4.6 Reflection on research method

The adoption of the concept of institutional theory intuitively postulates the inclusion of observations to capture the situations where these practices are carried out. Alternative methods could have been included, both other qualitative methods or a mixed-method approach by incorporating quantitative data collection methods. Though this might be the case, studies on institutional logics and institutional work often rely on interviews as the primary method to gather actors' experiences, efforts, and insights (Dahlmann and Grosvold, 2017). The strength of the method lies in its ability to provide an insider perspective from the respondents on the efforts they perform. However, as interviews have been used as the main method for collecting empirical material, the research mainly builds on a retrospective account from the respondents, which needs to be recognized.

There is also an issue related to impression management, that the respondents may try to conceive a reality that promotes both themselves and the organization of which they are part of. They may also try to conceive a biased reality or even a faulty understanding of the actual situation that aligns with their own preferences (Alvesson and Spicer, 2012). The interviews should therefore not be viewed as a method to extract an indisputable truth from the respondent, but instead to gather an individual's account of how they perceive their reality. This is also part of the analysis to not accept the responses and gathered material as robust evidence, but to analyze the data to identify and interpret meaning patterns, or themes and thereby make sense of the information they provide. An attempt to mitigate the risk of respondent exerting impression management has been to inform the respondents of the goal of the study and that both their own and the organizations' names will be anonymized in the study.

Though observations have also been included within the scope of this research, it has not included the examination of actors where they carry out the CDWM practices. Observation would thereby have informed on the actions and interactions at the individual level and thereby reduce the over-reliance on retrospective accounts and interpretation of what may be considered as more purposive than it originally was (Chia and Holt, 2009). However, as much of the efforts carried out to shape the organizational practices is both longitudinal and involves multiple actors, it would have been difficult to access

situations, and grasp an overview of the different forms of institutional work carried out by the different actors.

5 Summary of papers

This chapter presents a summary of each paper included in this licentiate thesis.

5.1 Paper I: Improving Renovation Waste Management in Sweden: The Role of the Demolition Company

Previous studies have shown that the role of these companies is often neglected in the discussion regarding CDWM. Where they, especially in a Swedish context become central as they are often assigned the responsibility by the contractors or client to execute the demolition work on site. They are also the ones deciding what happens with the material after it has been dismantled.

The focus of this paper has therefore been to highlight their role in the CDWM process, and to "*identify and analyze the perceived challenges met by these companies to increase recycling*". To do so, the paper builds on the theoretical frame of institutional work which emphasizes on the micro-level actions of individuals, or collective groups actions to shapes the institutional context. Here, the primary focus was on the symbolic and discursive strategies enacted by the organizational members to either create, maintain or disrupt the institution. As laid out in the previous section, this is done by building on the semi-structured interviews with the representatives from the demolition companies together with the existing empirical material from study A. The material was thereafter thematically analyzed according to the theoretical framework of institutional work and previous studies related to CDWM.

The paper has shown how actors within the demolition companies employ discourse and narratives in different ways that correspond to the three categories of creation, maintenance and disruptive institutional work. For the few individual actors performing creation work, they explain how they engage in networks interested in the development of CDW practices and attend professional workshops and seminars to share and diffuse their ideas, knowledge and practices with others. They also offer their professional knowledge to their customers in terms of training and expertise, thereby providing them with new vocabulary and knowledge to help transform the industry. The maintenance work is primarily carried out by conservative actors who are repeating the traditional views and assertions about the construction sector and waste management as reasons to not engage in the transition to sustainable WM. They refer to the construction sectors' conservative nature, the lack of financial incentives, time and space on site, as well as the client's disinterest in sustainable WM. When participating in seminars, invoking their professional experience, they dismiss the CE principles as being unrealistic. The actors performing disruptive work to destabilize the existing institution by adopting a critical discourse towards both the existing and the proposed model of CDWM. It dismisses the financial viability and promotes an alternative paradigm of CDWM that is strongly anchored in realizing the sustainability benefits. They build on a market-oriented discourse that opposes both the conventional CDWM and the CE-oriented initiatives and they refer to research projects and networks spanning outside the construction industry to legitimize their solutions.

5.2 Paper II: On the road to nowhere? The challenges of aligning construction and demolition waste practices with circular economy

This paper addresses one of the contradictions identified during the interviews with both demolition companies and contractors. A recurring element amongst several of the respondents was that they were shifting between seemingly contradictory attitudes towards WM. They showed an urge to improve the WM practices in the sectors, thereby contributing to realizing both environmental and societal benefits. But at the same time described multiple reasons as to why they were unable to change from their current way of working towards more sustainable ones.

The goal of this paper was therefore "*to understand the organizational settings which frame the decisions rather than the decisions themselves*". It builds on the theoretical frame of institutional logic to explore the socially constructed assumptions, values, beliefs and rules that govern the existing practices within the field, thereby contributing with an alternative explanation for the industry's slow transition to a circular economy.

Logics are revealed through language and practices where this paper builds on the material collected in study A, study B and study C, mainly consisting of semi-structured interviews with both the demolition companies and contractors. It thereby builds on the actor's experiences and opinions about the current, but also future CDWM practices. After thematically analyzing the material according to the literature on institutional logics and circular economy, the characteristics of the established waste management logic and the circular economy logics were defined.

The paper highlights the incompatibility between the two logics, where the current legislative and societal demands to incorporate more circular solutions in the industry are facing incompatible demands. The established WM logic share similar characteristics with the market logic, this makes it difficult to translate the CE benefits due to the inherent contradictions in assumptions, values and norms. Although several attempts of implementing CE principles can be identified, the contradictions and incompatibilities between the two logics result in contradictory organizational demands, which hinders practitioners to adopt them. The analysis also shows that the main supporters of the transition to circular principles are the environmental managers, which are often coming from outside the construction industry and struggle to gain legitimacy for their ideas. They often build on networks of actors outside the organization to develop circular initiatives. They bring new ideas and knowledge from other industries, but face difficulties to translate the CE benefits into the project organizations that mainly rely on the established WM logic. The established logic is strongly anchored in a market logic that promotes financial rewards that collide with CE logic that primarily strives for environmental and societal benefits. Even so, it is still possible to identify changes that are slowly becoming routinized.

5.3 Paper III: Public policy as obstacle to sustainable CDWM practices

During the research process, some issues and questions continued to resurface when discussing with both demolition and contractor representatives. This was concerning the legal frame in Sweden regarding CDWM and the pressure it puts on the actors throughout the construction process. As part of the interviews, a question was posed regarding the legislative frame and which specific demands that they must abide by. But this was often followed by an insecure and precarious answer which in turn triggered my interest to investigate it further. The second issue was concerned with the current situation in Sweden regarding CDW and its recovery ratios. That it was difficult to obtain clear figures about the amount of CDW that is currently being recycled, reused or in other ways recovered, where the existing data provided by the Swedish environmental protection agency were inconsistent.

The intention of this paper was therefore to study the existing legislative framework and broaden the understanding of the coercive pressure that is put on the actors by the regulatory framework. How it governs the existing practices and whether there is ambiguity, inconsistencies or even omissions in the framework that potentially could prevent the adoption of more sustainable CDWM practices in the industry. The following aim was therefore defined for the paper, to *"study and analyze how the policy framework and professional guidelines are defining the conditions for adopting more sustainable waste management practices in the industry"*

The research was based on a document study (Study D) where documents published on CDWM during the last 20 years by different policymakers were systematically gathered. The main documents have

been issued by either the European Union, the Swedish government and its enforcing agencies, the municipality of Gothenburg and the Swedish construction federation. The empirical material consisted of legal documents, government reports, EU regulations and guidelines. The study adopts a constructivist view, where the material is analyzed according to the systematic procedure of document analysis.

The paper shows that the current representation concerning the recycling levels in Sweden are insufficient, as they are currently unable to secure a method for estimating those volumes. They are therefore claiming that the goal is already achieved and are relabeling the problem from a need to change in practices to a change in the way it is measured. It also makes it difficult to estimate and evaluate Sweden's efforts in achieving the intended recycling ratios, as long as the estimation method is incomplete. The legislative framework in Sweden has a high focus on managing hazardous waste, but less focus is put on the non-hazardous waste, which represents the majority of waste generated and also the fraction that potentially could achieve higher level recycling. It lacks clear guidelines and even though the discourse is defining the demands, the practices for handling the material on-site are primarily governed by the control-plan. The control plan is authorized by the municipalities' building committees, but the municipality guidelines in this review mainly consist of recommendations, where the actual decisions are based on the municipality representative's interpretation of what is considered as sufficient actions.

5.4 Paper IV: From waste to resource management? Construction and demolition waste management under the lens of Institutional work

This paper was developed from paper I. If the opening of the two papers builds on the same premises, which is the basic assumption of this licentiate, the two papers differ greatly in scope and focus. The theoretical frame has been rewritten to include the many forms of institutional work and the concept of field institution; the focus of the study is moved from the demolition companies towards the contractors and the networks engaged in sustainability and now includes the context of CE.

Paper I focused on the discourse and narratives to pursue what has been labeled as symbolic institutional work, whilst this paper builds on the categorization proposed by Lawrence and Suddaby (2006), which includes different forms of actions corresponding to either creation, maintenance or disruptive institutional work. The paper also adopts the concept of institutional field, describing how the actors operating within a given field share a common system of meaning that regulates their behaviors, and at the same time contributes to shaping the field by their actions. The two concepts provide insight into the micro-dynamics of institutionalization, thereby contribute to the understanding of the actor's role in shaping the institutional field.

This paper therefore aims to address the following question: "*How does institutional work contribute to the transformation of the Swedish CDWM institution field to align with sustainable goals?*". To thereby explore how the different forms of institutional work contribute but also oppose the transition towards more sustainable practices and how accordingly the institutional field may change its practices.

The empirical material for the analysis has been extended to include material from both study B and C, thereby building on the interviews with both the demolition companies and contractor companies. For the contractors, this includes respondents responsible for implementing more sustainable waste management practices within their organizations, namely the environmental managers. But also include representatives working within the project departments, mainly project and site managers.

The paper illustrates different forms of institutional work carried out by actors, either individuals or groups of individuals that contribute to shaping the existing institutional field. Much of the maintenance work corresponds to a discourse element as actors defend existing procedures and practices of CDWM, through the reiteration of the commonly conceived barriers and the lack of existing methods to apply the CE principles. By building on financial reasoning, the actors reject development proposals by claiming that it threatens their businesses. The efforts to create a new institution are primarily carried out by the environmental managers within the contractor and demolition companies. They participate in boundary-spanning research projects, the establishment of inter-organizational networks and the development of training programs. Though these efforts have contributed to the development of circular flows of material, secondary markets for material and the spreading and normalization of sustainable CDWM within the field, most of the practices have still not become routinized within the projects. One of the few successful strategies identified has been to rely on the existing competition between departments, which has shown improvements aligned with the legislative framework to increased sorting ratios and reduced waste generation. The actions carried out to disrupt the existing institution mainly include criticizing or dismissing both the creation and maintenance strategy and conveying the environmental impact from the existing practices. To thereby delegitimize the values, beliefs and practices in the institutional field. Though the individuals in the project organizations recognize the need for change, they still make decisions to continue to carry out the established practices. As such, much of their everyday work continues to be carried out according to the conventional practices of the linear economy. So even though improvements have been made, it is clearly not enough to claim adoption of the CE principles.

At the level of the field, the changes taking place cannot only be attributed to the institutional work performed by the actors. However, the concept enables to trace how the CDW field is slowly reorganized. The demolition companies play a new and more active role compared to traditional CDWM and participate in inter-organizations networks. The creation of new functions, new networks and the emergence of new actors are all indications of the transformation at stake. These changes are not only taking place within the organizations but across networks of organizations and amongst active or influential actors within this institutional field.

However, ambiguity and insecurity in the field suggest that the CE principles focusing on resources rather than waste have not been shared and institutionalized and are not able to compete with the current practices, thereby making them less legitimate. 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.

6 Findings and discussion

The following section presents a discussion regarding the findings throughout this research.

6.1 RQ1 - How can institutional theory inform us on the current CDWM situation in Sweden with regards to sustainable transition?

This research sets out to explore how institutional theory can contribute by informing on the current CDWM situation in Sweden. It sets out to broaden the understanding as to why the industry is still far from realizing the environmental benefits proposed by the circular economy vision (Jain et al., 2020). The institutional approach provides a theoretical framework that helps to explain how such major societal changes can unfold, as it requires the active work of multiple actors and requires an overall change in areas such as technologies, policies, markets, practices and cultural meanings (Fuenfschilling and Truffer, 2016). As the theoretical framework of institutional theory consists of multiple concepts, it contributes by both providing an underlying explanation for the current situation, but also as to how, or whether, the situation may be improved. This research project builds on the two concepts of institutional logics and institutional work that provide two different viewpoints on the phenomenon.

The adoption of the institutional logics perspective contributes to the understanding of the current situation by highlighting the different characteristics of the established field logic that is constraining the behavior amongst field members, including individuals, groups and organizations (Zietsma et al., 2017). The concept also contributes by connecting the practices adopted at the individual level with the normative societal structures and organizational forms (Skelcher and Smith, 2015). But as described in the literature, there is potential for logics rooted in other fields to enter, where the circular economy WM logics seems to be strongly influenced and inspired by initiatives coming from outside the construction industry and therefore needs to be adapted to the built environment (Benachio et al., 2020). The emerging logic of CE creates a pluralistic setting that requires actors to balance between contradictory demands, but also provides actors with room to deploy strategies as a response to the inherent contradictions between them. To build on the elements that make sense to them, resulting in diversity in practices.

The two logics that have been identified show how the actors justify their existing behavior by building on different elements of the two logics, this either contributes to the transition towards CE or maintaining the existing practices by continuing to carry out practices aligned with the established CDWM logic. Thereby highlighting the need for the new values, assumptions and beliefs need to be diffused within the organizations, so that the actors can build on them for new practices to be implemented. It thereby contributes by explaining how the underlying values, beliefs and assumptions guide the actors' current practices adopted in the industry, which is further discussed in section 6.2.

The adoption of the institutional work perspective contributes by offering an explanation of the different actors' response, to cope with the contradictory demands defined by the institutional setting, where they simultaneously contribute to the shaping of the institution (Smets and Jarzabkowski, 2013). It shows how actors, primarily the environmental managers, are able to independently perform actions that surpass the institutionally prescribed behaviors and how the pluralistic environment provide actors with multiple schemas for behavior and the space to engage in strategic efforts to perform actions to shape the institution (Lawrence et al., 2009b). The environmental managers, which are strongly influenced by the activities taking place outside of their institutional boundaries thereby performing actions that aim towards changing the institution and the industry practices. Though this research has an interest in highlighting the efforts that contribute to the diffusion of the emerging CE logic in the field, the theory also enables the exploration of the work carried out by actors that maintains the existing institutions. It

thereby provides important insights by partially explaining the current situation regarding CDWM in Sweden, and its inability to achieve higher levels of recycling and reuse. Institutions have been described as inherently enduring and self-reinforcing through coercive mechanisms (Lawrence et al., 2009a). But where the enduring elements and reproduction rely on sustained human endeavors as the institution would otherwise transition into other directions as a result of endogenous and exogenous forces

The agency-related concept provides a way to analyze the endogenous dynamics that generate stability and flexibility in the field. It makes the connection between the micro and the macro level by focusing on the actors' actions and the implication they may have at the macro-level (Beunen et al., 2017). To explore the practices and processes associated with actors' endeavors to diffuse principles of more sustainable waste management practices within the organizations, but also how they become diffused at the level of the field. The two paper (I and IV) included in this thesis adopts institutional work as the lens for analysis and build on the framework proposed by Lawrence and Suddaby (2006), but also on the role of narratives and discourse in institutional work (Zilber, 2009, Bontje et al., 2019, Hardy and Maguire, 2010). The concept contributes by enabling the identification of the different forms of actions undertaken by the actors to shape the existing CDWM practices in the industry, which is further discussed in section 6.3.

Scott (2014) introduces the three pillars of which institutions are made of or supported by, namely the regulative, normative and cultural cognitive elements. The regulative pillar is described as a coercive element that relies on the establishment of rules such as laws, directives and policies, the monitoring of compliance to them together with their associated rewards and sanctions to ensure conformance amongst actors. A study of these different types of rules, related to CDWM, thereby informs us on how the policy framework shapes the practices adopted in the industry. As such, a study was therefore undertaken to identify how the regulative pillar, i.e. the policy framework shapes the CDWM practices in the industry and whether it supports the actors making attempts to shape the industry development towards sustainable CDWM practices.

The construction sector has earlier been described in this document as highly institutionalized and relies on regulatory systems, including the legislative frame, local authorities and building codes and standards (Kadefors, 1995). The policy framework for the management of CDW is defined by multiple actors, which partake in the shaping of the practices adopted in the CDWM process. Though the policy framework defined by the EU and UN aims to put pressure on its member states, it seems that the transformation of these initiatives into a coherent legislative framework to support the industry actors in their transition hasn't been realized so far. The current policy framework in Sweden and the EU has been updated on several occasions and has focused on different issues throughout its development. Where it is possible to identify that progress has been realized in the industry. The first wave of the policy framework that pushed the sorting of waste and proper management of hazardous material, at least the management of hazardous waste has been vastly improved. However, though more recent discourses on WM in the policy framework have emphasized the uptake of Circular Economy principles, much less have been incorporated in the Swedish legislation. There seems to be a common feature amongst the EU member states that resource efficiency policies are both inconsistent and weakly incorporated into the national policy framework (Domenech and Bahn-Walkowiak, 2019). Only a few countries have defined clear targets for resource efficiency, which makes monitoring challenging (Stål and Corvellec, 2018), and enforcement of rules even more difficult (Scott, 2014). The legislative framework has been described as an important element of the regulative mechanisms to support the actors making attempts to challenge the existing institutions (Zietsma and McKnight, 2009). However, it seems that the current framework is not putting pressure to increase the sorting ratios or supports the

transition to CE. It is rather the opposite, that the rigidness of the current products legislation is making it difficult to sell reused material as it puts high demands in terms of quality and liability, which is difficult to achieve due to the lack of valid certification processes. So even though the legislative frame and policy framework is considered an important factor in sustainable transitions (Hedenus et al., 2018) it is still difficult to identify where it has been incorporated in a Swedish context.

One of the explanations for why organizations refrain from complying with the increasing external demands on circular elements seems to be aligned with Stål and Corvellec (2018). They claim that the absence of strict monitoring of firms' circular economy efforts and the common lack of clear standards or operating principles enables them to do so. The main support in the policy framework is the incorporation of CE in the industry guidelines issued that provide operating principles for the industry (Swedish Construction Federation, 2019). They claim to go beyond the existing legislative demands by incorporating elements of the circular economy to realize the national environmental targets and align with societal expectations. These guidelines may contribute to create shared understanding amongst the actors as they are widely accepted as guiding principles but are limited by their voluntary base.

The industry has been declared to have a strong potential to considerably improve the negative impact on the environment (Korhonen et al., 2018a). But even though the existing policy framework is putting pressure on the sector to change it still seems as though the existing regulatory frameworks are not designed to drive the adoption of CE in the built environment. This is partly shown as actors claim their adherence to the current legislative frame as an excuse to adapt to the forthcoming sustainability CDWM demands. But we can also identify efforts amongst the environmental managers, where they make attempts to influence the legislative and policy framework through their interaction with policymakers.

6.2 RQ2 - How does the institutional field logic frame the actor's behavior in their everyday CDWM activities?

This research question is primarily addressed in paper II, where the framework of institutional logics is used to identify the characterizing dimensions of the established logic and an emerging logic in the industry corresponding to the circular economy. The paper adopts the view of Silva and Figueiredo (2017), that the problem of realizing sustainable practices within the construction industry does not simply lie in incorporating the formal structures or adopting instrumental action, but to understand the gap between structures and actions for sustainability by identifying the obstacles towards sustainable practices. They propose that the lack of sustainable practices is related to the divergence between how sustainability is thought of and how to translate it into practices. The institutional logics concept thereby explores this gap as it provides the formal and informal rules that are constituted by a set of assumptions and values for how organizational reality is interpreted, thereby defining what constitutes appropriate behavior (Thornton and Ocasio, 1999). The developments of the sector may therefore necessitate the emergence of a new logic that shapes the actor's perception and behavior toward sustainable practices. But where a new logic may give rise to tension as actors are faced with contradictory schemas for how to carry out their work (Greenwood et al., 2011).

The analysis of the current situation was built on the characterizing elements of institutional logic that are described by Thornton et al. (2015) and Haveman and Gualtieri (2017). The intention here was to provide an account of the currently dominant logic within the CDWM institutional field and the possibility for the constitutive elements of an emerging circular economy logic to be diffused.

The emergence of this new institutional logic denotes that its prescribed practices and behavioral patterns are not equally institutionalized within the context as the already established logic. The degree

of institutionalization is dependent on how widely and deeply it has gained acceptance by the actors occupying the field. This makes it more vulnerable and also less capable to influence behavior (Fuenfschilling and Truffer, 2014). It is the individuals in the construction sectors that have the ability to influence the embeddedness of the emerging logic in the organization through their responses which in part will be dependent on the support they receive from the organization (Dahlmann and Grosvold, 2017).

By building on the characterizing element of institutional logics, it was possible to conclude that the established logic is well aligned with the description of the market logic (Thornton et al., 2015, Rossoni et al., 2020). The established WM logic is directed to the creation of financial value throughout the design, construction and maintenance phase of a building. Waste is viewed as an end result of this process that needs to be managed according to the legislative demands, whilst minimizing the cost of handling. The practices associated with WM are based on a long-standing tradition anchored in clear professional roles, the legislative frame and standardized contracts. It rejects the assumption that the material can be reused due to a lack of demands, the low quality and the high cost to redeem. As practices associated with the emerging logic do not generate financial benefits or value creation that is recognized within the organization or its customers, both the responsibility for it and the work carried out are often transferred to other actors in the chain.

The emerging CE logic is clashing with the established logic based on the different characteristics that were identified. Where one of the central assumptions is that much of the material that is generated through the different phases of a building can be used to substitute virgin materials in future projects. The emerging logic builds on value creation directed towards the society and to improvements for the sake of the public, where all actors are able to, and also should take their responsibility to contribute to sustainable development. The organizational rules are not limited to the legislation but go beyond to incorporate the elements of circular economy proposed in the literature (Adams et al., 2017) and the industry guidelines. Instead of only focusing on reducing the cost for the handling of waste, it adopts a view of resource savings by reducing the consumption of materials, value creation through interdependencies and societal value. However, as the practices are only partly defined, they are so far not implemented nor stabilized within the sector and primarily supported by the environmental managers.

Though the environmental managers still struggle to incorporate these developments into the project organizations, whose direct response is to reject the new contradictory demands, they still succeed to make improvements when the proposed practices are not clashing with the existing CDWM logic. This results in a coping strategy corresponding to symbiosis or blending between the two logics, where sustainability demands are accepted as long as it does not impose on the underlying values, assumptions and beliefs of the established logic (Dahlmann and Grosvold, 2017). Over time, as organizations are commonly converging towards their core identity and underlying institutional logic, the organizations may be bound to change and adapt towards the exogenous change aligned with the forthcoming societal demands on sustainability (Kraatz and Block, 2008).

This section has described the two logics that have been identified in the industry that shape the organizational actors in their everyday CDWM activities, and also how its framing is hampering the transition towards more sustainable CDWM practices. Based on this, the next section focuses on the different actors' actions that may have an impact on the transition towards CE processes. To focus on the efforts that either reinforce the already existing assumptions, values and beliefs or put pressure towards changing them.

6.3 RQ3 - What forms of actions do the actors undertake to shape the CDWM field within the frame of transition?

Although the previous research question sheds light on how the established institutional CDWM logic is preventing the actors close to operations to adopt more circular principles, it is still possible to identify progress within the sector. This section aims to highlight how the different actors perform actions that shape the regulative, normative and cognitive processes, thereby making attempts to shape the future role of circular economy in the industry. The analysis in paper IV builds on the framework provided by Lawrence and Suddaby (2006) on institutional work. It thereby emphasizes the different actor's roles in shaping the institutional context. Which they primarily do by either promoting change through the diffusion of values, assumptions, rules and beliefs associated with the emerging logic, or by making attempts to maintain the existing one (Dahlmann and Grosvold, 2017). The framework has enabled us to identify multiple forms of institutional work, both as part of the individual's mundane activities or more strategic and long-term efforts to create, maintain or even disrupt the existing institution.

As laid out in paper II, there are differences amongst the actors, where the individuals close to the operations and projects are more clearly adhering to a logic that share many characteristics with the market logic, where different aspects such as financial reward, market value and efficiency are all highly valued (Thornton et al., 2015, Rossoni et al., 2020). They thereby perform actions aimed to stabilize the practices that contribute to behaviors aligned with these ideals. The environmental managers are on the other hand often inspired by the activities and sustainable consumption patterns coming from other industries. Thereby supporting the belief systems, frames and practices that adhere to the creation of a new institutional field.

Much of the efforts made to challenge the established way of managing waste can be dedicated to the environmental managers in the organizations. They play an important role in the diffusion of a new institutional logic (Dahlmann and Grosvold, 2017) and are often assigned the formal responsibility by their organization to develop and incorporate more sustainable practices. A large part of their work to transform the organization is dedicated to efforts outside their organizational boundaries. They do so by participating in inter-organizational networks where they focus on the potential of incorporating circular principles and developing circular material flows among the actors. These networks contribute to the diffusion of knowledge and shared practices amongst the actors in the whole value chain. Where they also use these networks to gain legitimacy and influence government agencies and secondary stakeholders (Daudiegos, 2011). The environmental managers also use their formal role as environmental experts to influence policymakers to define a framework aligned with their understanding. The inter-organizational projects include e.g. recovery of plastic pipes, global trade item number, packaging films and projects related to specific materials such as gypsum, glass and concrete and also the potential to increasing recycling of CDW in the construction process. These networks have also been pointed out in previous literature to show that inter-organizational projects can be used as a vehicle for producing and advancing institutional change (Tukiainen and Granqvist, 2016, Lieftink et al., 2019). The environmental managers in this study could be viewed as marginal institutional actors that partake in the development process of an emerging field. This is achieved by positioning the project outside the mature CDWM field, which loosens its constraints (Perkmann and Spicer, 2007). The efforts by the environmental managers in the contractor organizations also have a strong correlation in terms of the specific actions they perform to shape the organizational practices. This implies that the efforts to shape their organizational practices seem to be diffused amongst the contractors. The networks seem to be central here as they provide the link between the micro and meso level, where the actions to

transform the practices within the organizations are brought up to the inter-organizational level, where they can be shared amongst actors in the field.

Attempts have been made within the three contractors on an organizational level by defining recycling and sorting goals. These are then translated by the environmental managers down into both project and departmental goals which connect their WM efforts to the already established process for monitoring through key performance indicators. These attempts partly build on the already existing competition, where organizational members strive to be considered as high-performing units. By defining these internal goals, they also provide a substitute for the commonly lacking evaluation metrics for monitoring which also puts pressure on the actors to take measurements for implementation (Stål and Corvellec, 2018). Another attempt identified amongst both the contractors and one of the demolition companies is to establish internal markets for leftover material to reuse building components. But it doesn't seem that these solutions have been routinized within the organizations participating in this research.

The existing literature provides several explanations for the current situation and presents multiple barriers to transform the linear economy in construction into a circular one (Jin et al., 2019). Many of the barriers that are described are also brought up by the different actors that participated in this research, where it seems to be a coherent understanding amongst the actors as to why there are challenges to transform the sector (Menegaki and Damigos, 2018, Jin et al., 2019). However, what has been shown through the adoption of the institutional work perspective is that these arguments are used as an excuse for not incorporating more sustainable practices. Narratives are translated and shared within the organization to stabilize the existing practices. They adopt a discourse that continues to define an organizational identity of '*who we are*' and reiterate reasons for why they are either unable to or should not change, which contributes to stabilizing the existing structures, assumptions and beliefs within the field (Zilber, 2009).

The construction industry has been described as heavily dependent on standard-like construction practices, contracts, distribution of tasks and responsibilities amongst the actors (Kadefors, 1995). This also seems to apply to the organization of the CDWM process and the demands concerning WM. It has been shown through this research that the content of these standardized contracts continues to reproduce the existing practices within the industry as they are used as policing instruments in organizations, and rarely change. A common perception amongst many of the demolition companies is that sustainability issues are only addressed in formal contracts out of necessity. But where the demands are only vaguely stated.

One of the attempts to promote the transition from the established CDWM practices in the field is also to dismiss or undermine the mechanisms that enable actors to comply with them (Lawrence and Suddaby, 2006). There are however few examples identified within this research that does so. What has been identified is similar to the maintenance actions, that actors adopt discursive elements to undermine the existing practices. Many of them acknowledge and realize the need for change due to the vast generation of waste and the environmental impact of improper management. They therefore adopt narratives corresponding to the environmental departments and dismiss the established practices. But still continues to carry them out and reject their ability to align themselves with the forthcoming demands. So even though the supporters of CE are carrying out actions corresponding to all the different forms of creation work, it doesn't seem to be enough to transform the established CDWM practices within the organizations to the circular economy principles.

7 Conclusion for now and the way forward

This section provides a summary of the main findings that have been pointed out in the discussion and is then followed by a reflection about future research. The section is organized according to the three research questions that were defined at the beginning of the research process to fulfill the aim. The research sets out to explore how the institutional setting is framing the condition for incorporating more sustainable CDWM practices in the construction sector and to study how, or whether a transformation is taking place.

7.1 Conclusion

It would have been a vast undertaking to depict a complete picture of the current situation, where the focal point of this research has therefore been directed towards the contractor and demolition companies' role in transforming the CDWM process. With this said, the transition towards CE is not an issue solely limited to these actors but would rely on the collective efforts from various actors in the value chain.

The overarching question posed for this research is related to how the theoretical framework of institutional theory can contribute to the exploration of the current situation regarding CDWM in Sweden: *How can institutional theory inform us on the current CDWM situation in Sweden with regards to sustainable transition?* Two concepts have been adopted to explore the current situation, where the institutional logics perspective has provided an explanation as to how the constitutive elements of two logics shape the industry practices. Whilst the concept of institutional work highlights the actions carried out by individuals and groups of individuals to shape the institutional field. Thereby connecting the micro-level interaction with the level of the field. Furthermore, a study of the policy framework puts forward the coercive pressure, or lack thereof, to adopt more sustainable CDWM practices in the field. It has shown that the policy framework urges for change but has not resulted in a legislative framework that supports the promoters for change in their efforts to challenge the established practices. The framework partly lacks important data, contains legislative barriers to the transition, and contains unclear guidelines and responsibility distribution which needs to be resolved.

The second research question focuses on how individuals' behaviors are guided by the constitutive elements of an institutional logic and shape the actors' cognition and justify the decisions they make in their everyday life. The question posed is: *How does the institutional field logic frame the actor's behavior in their everyday CDWM activities?* The adoption of the institutional logics perspective has shown that realizing institutional change is not just about introducing new practices, initiatives or reforms, but that it is crucial to understand how those proposals align themselves with the existing structures, ideas or values within the field. The efforts may otherwise give rise to tension and resistance amongst the actors that are unable to align with the forthcoming changes. This research identifies an established institutional field logic corresponding to the characteristics of the market logic, which primarily focuses on efficiency criteria and financial return, thereby guiding actors towards behavior that generates business growth and profit maximization. This logic clashes with an emerging logic corresponding to the principles of the circular economy, as the proposal to incorporate CE principles in CDWM are clearly colliding with many of the characterizing elements of the established logic. Many of the individuals within the project organizations therefore rejects most of the proposed changes as they are unable to resolve the tension between the contradictory organizational demands.

The third research question put the focus on the actor's action to shape the transition towards more sustainable CDWM practices: *What forms of actions do the actors undertake to shape the CDWM field within the frame of transition?* The theoretical framework provides an explanation as to how individuals

respond to the tension inherent in a pluralistic environment that provides contradictory schemas for behaviors, stemming from multiple logics. Multiple forms of work have been identified amongst the actors that contribute to either create, maintain or disrupt the existing institution. The maintenance effort is primarily performed by the actors in the operation and project departments of the organizations, whilst much of the efforts directed towards the disruption of the existing, or creation of a new institution are carried out by the environmental managers. However, several of the individuals carry out seemingly contradictory institutional work. It seems that most of the actors recognize the need for change and the environmental impact from the industry practices, but they also recognize the need to align with the organizational demands. This is demonstrated through their discourse, where they urge for change, whilst at the same time downplay their own role in that process. The different forms of creation work seem to contribute to the diffusion of knowledge and legitimize sustainable practices in the industry. The different forms of institutional work to incorporate more sustainable CDWM practices amongst the environmental managers seems to be shared, which could be coupled to the degree of isomorphism in the sector, as a result of actors' desire for legitimacy in the field. But where the isomorphic pressure for conformity, underpinned by regulative, normative, and cultural-cognitive elements also provide the stability to resist change.

Although these efforts have not realized the current goals defined by the EU on reuse or recycling of CDWM, and that actors perform work to maintain their existing practices, it is still possible to identify improvements. However, it seems that these initiatives have not resulted in the realization of circular CDWM processes. The proposed improvements have not been systematically routinized within the project organizations so far. This might be partly linked to the environmental managers' inability to challenge the institutional structures as they lack the formal authority and support to impose changes in the project organizations. As such, the need for improved CDWM practices remains as most of the current CDWM processes in the industry continue to be aligned with the linear economy, resulting in extensive consumption of natural resources and generation of waste.

7.2 Future research

The research carried out so far has triggered an increased interest to continue to study the work of actors in their efforts to improve the practices within the industry. It has so far been shown that the actors participating in the different inter-organizational projects have resulted in different forms of development initiatives. Examples of this are the development of circular flows of materials, the creation of marketplaces for secondary materials, research on circular material flows and unification of transportation pallets. These inter-organizational projects gather participants in various roles from various organizations within the industry. It would therefore have been interesting to continue this research by focusing on the different actors engaged in these projects. Thereby broadening the scope of actors involved in these networks, which as of now has been primarily limited to the environmental managers. This would include participants such as clients, architects and suppliers, it would thereby provide a more nuanced understanding of the challenges that the industry face.

This research has partially informed on the outcomes from these networks and the different types of initiatives undertaken within them, but it has not focused on how these networks are formed, how the participants are chosen, what their motives for doing so are, but especially how the different initiatives have been initiated and defined by the actors and what the results of these initiatives are on a long term. The study of these projects can contribute to the understanding of how issues are mobilized across several organizations and interpreted and translated across these organizations, thereby contributing to defining the actor's perception of the appropriate measures for action within the field. Where it would also be interesting to follow a few emerging innovative projects and look at how they can be translated

further into the organizations, thereby focusing on the necessary conditions and how to turn sustainable values into economic ones and its ability to generate new business models embracing CE principles. These inter-organizational networks and projects have shown great potential to act as a tool for mobilizing action related to the issue and to act as a platform to develop new initiatives and diffuse them amongst the actors and become integrated within the organizations. Thereby playing an important role by both defining the speed and direction of the transition towards more sustainable CDWM practices in the field. Even though the projects are influenced by the institution, they are also able to shape it.

Another possibility that is not directly linked to these networks would be to get in contact with organizations that have incorporated CE as part of their business proposal. To study whether the principles of the CE have truly been embraced and incorporated. If so, identify what forms of institutional work have been undertaken and compare them to the various forms of work that have been identified within this research project. This could also be indicating whether the transformation is a result of the work undertaken by these actors, or if there may be other factors at stake. The focus would then be directed towards the process of developing such initiatives and integrating CE as an integral part of the organizations that move beyond merely an alignment with the pressure to incorporate CE ceremonially.

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