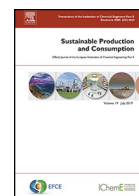




Contents lists available at ScienceDirect

Sustainable Production and Consumption

journal homepage: www.elsevier.com/locate/spc

Emerging circular economies: Discourse coalitions in a Norwegian case

Isaac Arturo Ortega Alvarado^{a,1,*}, Thomas Edward Sutcliffe^b, Thomas Berker^b, Ida Nilstad Pettersen^a^a Department of Design, NTNU - Norwegian University of Science and Technology, Norway^b Department of Interdisciplinary Studies of Culture, NTNU - Norwegian University of Science and Technology, Norway

ARTICLE INFO

Article history:

Received 14 July 2020

Revised 7 October 2020

Accepted 8 October 2020

Available online 13 October 2020

Keywords:

Circular economy

Emerging visions

Discourse coalitions

Green growth

Individual consumption

ABSTRACT

The transition to a circular economy (CE) remains an anticipated future with alternative pathways for its fulfillment. Most research on CE is normative about technological approaches and interpretations for production and sustainable development. However, critical reviews of CE help understand that CE's emergence is constrained to current dominant goals. As a set of imagined futures, the visions of CE are produced and shared in discursive practices. We hypothesize that the existence of alternative discourses about CE originates from alignment with or divergence from current dominant goals. Green growth holds the dominant position as a goal in the European discourse about CE. In this study, we present an empirical case of an emerging CE in the region of Trøndelag in Norway. This case uses qualitative data collected through interviews with informants in the public and private sectors (profit and non-profit organizations). The analysis of these interviews involved the use of a discourse coalition framework as a method. We identified three discourse coalitions: 1) Waste as resources: a vision of better product design and waste sorting technologies making recycling more efficient. 2) Sharing economy: a vision of industrial symbiosis, and new business models for local commercial offerings in sharing, reuse, repair of products. 3) Reduction of individual consumption: a vision of individual changes in lifestyle, coupled with local services and skill acquisition/transfer for reuse and repair. The first two operate in alignment with the political goal of green growth. The third one diverges by questioning it and setting focus on individual consumption reduction. We found discursive competition in CE when the focus is on the goal underlying its enactment. From this finding, we raise the question of which kinds of technological implementation and political challenges would come from shifting CE's policy goal to reducing individual consumption. To illustrate an alternative CE that emerges from consumption reduction, we discuss its implications based on the insights from our empirical case. The main contribution of the article is to provide evidence and an example of an emerging aspect that can be integrated more prominently in CE and that requires a stance that is not based on economic growth.

© 2020 The Author(s). Published by Elsevier B.V. on behalf of Institution of Chemical Engineers. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>)

1. Introduction

The transition from a linear to a circular economy (CE hereafter) is yet unrealized, and it remains an anticipated future. CE is expected to engender positive change in how people assess, value, and use material resources (Stahel, 2019; Wastling et al., 2018).

* Corresponding author.

E-mail addresses: isaac.a.o.alvarado@ntnu.no (I.A. Ortega Alvarado), thomas.e.sutcliffe@ntnu.no (T.E. Sutcliffe), thomas.berker@ntnu.no (T. Berker), ida.nilstad.pettersen@ntnu.no (I.N. Pettersen).¹ Mail address: NTNU, Department of Design, Kolbjørn Hejes Vei 2b, 7491 Trondheim, Norway.

The dual nature of resource usage in consumption and production (Savini, 2019) opens an opportunity to question CE's emergence concerning its visions and practical enactment as alternative pathways for its fulfillment (see Clube and Tennant, 2020; Genovese and Pansera, 2020).

From an environmental perspective, CE comes as a response to the current inefficient and unsustainable use of material resources (Stahel, 2016; Morsetto, 2020). Reports from international organizations (Roy et al., 2018; Hertwich et al., 2019; UNFCC, 2019) have included CE as an enabler for low carbon futures. CE could contribute to the reduction of greenhouse gas emissions (Wysokińska, 2016) by avoiding new extraction of raw materials, excessive production, and waste. Despite this, the ex-

tent of CE's impact on the environment and the social system is both technically and socially contested (Korhonen et al., 2018; Corvellec et al., 2020).

CE is an elusive concept; a plethora of previous literature reviews have studied its multiple interpretations (see Kirchherr et al., 2017; Geisendorf and Pietrulla, 2018; Homrich et al., 2018; Korhonen et al., 2018; Kalmykova et al., 2018; Prieto-Sandoval et al., 2018; Millar et al., 2019; Suárez-Eiroa et al., 2019). These previous literature reviews summarize constitutive principles and formulate new operational definitions of the concept. Although some of these works acknowledge a lack of political and social aspects in CE's definition, they do not address the existence of alternative visions. Furthermore, CE is considered an umbrella term (Homrich et al., 2018), which is contested (Korhonen et al., 2018) concerning a vision linked to production, business models, and environmental damage decoupled from economic activity. Focus is mainly given to approaches and interpretations in scientific, public, and commercial documents. Most of these reviews address production and sustainable development requirements, which contribute to normative views that advance certain technical implementations (Clubbe and Tennant, 2020). These approaches to CE are circumscribed to a narrative that, in the terms used by Genovese and Pansera (2020, p.12), follows a depoliticized technocratic eco-modernist vision, which limits the potentiality of CE to offer alternatives that question not only how we produce but why or what we produce. Thus, to study alternative visions of CE requires a different starting point.

The enactment and planning of CE is profoundly influenced by the imaginations of those who promote it; apparently, it is constrained by the renewal of the rehearsed ideas of economic growth. Völker et al. (2020) put this rehearsal as a set of indicators embedded in policy, both representing the current world and the shape of the future from which CE gets its value. These are imagined sociotechnical orders that motivate action (Jasanoff, 2015, p.20). Furthermore, these imaginations and future expectations (see Borup et al., 2006) operating under specific worldviews and power dynamics (Dye, 2020; Beckert, 2013). As a concept, CE is a container for multiple imaginations (Corvellec et al., 2020). It acts as an 'empty signifier' (Valenzuela and Böhm, 2017), filled with the discourses and practices of specific actors. As any other imagined future (see Hajer and Pelzer, 2018, pp.223–224), CE visions are put forward by aligning with or challenging current dominant political and economic ideas.

Academic literature offering critical revisions of CE does a better job in addressing the alternative imaginations and visions that may coexist in CE's discourses and practices, as done, for instance, by Welch et al. (2017) in questioning CE as a new model of consumption concerning everyday life. Another example is Temesgen et al.'s (2019) work, which enquires about the core values of CE and considers necessary to examine the worldview in which it operates. A review of values within CE is also present in the work of Hobson (2016, 2019, 2020), which offers a trajectory of questioning the impacts CE will have in the redistribution and reconfiguration of social relations once societies become CEs. This questioning departs from the exploration of links between CE, capitalism, and alternative economics such as degrowth (Hobson and Lynch, 2016). Similarly, Temesgen et al. (2019) establish a relation between mainstream visions of CE and economic growth, concluding that any discussion in shifting to a CE should include a conviction in reducing resource consumption even at the expense of economic growth. These critical views contribute to our understanding of CE as a set of emerging alternative visions. These visions are constrained by current goals that limit their performance. Thus, these critical reviews are our point of departure; as they imply, first and foremost, questioning CE in relation to economic growth.

We base our following study on the hypothesis that CE's alternative discourses and practical performances originate from alignment with or divergence from current dominant political goals based on economic growth, which results in competing visions of CE. This article aims to identify alternative pathways in emerging CE discourses and visions.

1.1. Background: from the EU to a regional and local CE focus

The shift to a CE has been adopted and actively promoted by the European Union's (EU) governing bodies during the last decade, most visibly with the adoption in 2015 of the Circular Economy policy package "Closing the loop – An EU action plan for the Circular Economy" (European Commission, 2015). It initially focused on material recovery and recycling from waste as a route for regional resource security and efficiency. In its latest iteration (European Commission, 2020), the plan includes sustainable product policy actions. The plan is adapted to the guidelines of the European Green Deal (European Commission, 2019), which is the EU's new growth strategy "where economic growth is decoupled from resource use" (European Commission, 2019, p.2).

Green growth is a continuation of the economic imperative of growth; it is problematized as an inhibitor for necessary societal change (see Wiedmann et al., 2020; Sandberg et al., 2019). Green growth proposes the decoupling of economic growth from environmental impacts. However, according to Hickel and Kallis (2020, p. 1), "there is no empirical evidence that absolute decoupling from resource use can be achieved on a global scale against a background of continued economic growth." Despite this, questioning economic growth is not politically acceptable (Hickel and Kallis, 2020, p. 15). The dominance of economic growth explains its adoption as the current goal for EU's CE.

Although Norway is not an EU country, Norway is highly influenced by the EU as a European Economic Area (EEA) member. Furthermore, it appears to be no different in the formation of a CE discourse through policy. Norway's National government's earliest intention for the creation of a specific policy on CE was put forward through a communication to the National Parliament in 2017 entitled "Waste as resource – Waste politic and Circular Economy" (Klima- og miljødepartementet, 2017). CE entered this political space by reproducing the European Commission's expectations and aligning with green growth discourse:

"It is expected, especially at the European level, that a greater degree of material recycling of waste will contribute to developing new business opportunities and jobs and access to secondary raw materials. It will also contribute to lower greenhouse gas emissions. This is the basis for the European Commission's work on circular economy." (Klima- og miljødepartementet, 2017, p.7, our translation).

Lately, studies have shown that counties and municipalities' role in the shaping of policies has increased in some Nordic countries. Sjöblom (2018), for example, writes that since the 1990s in Finland, there has been a reallocation of authority from national to sub-national levels to improve their decision-making abilities. In Sweden, Lidström (2018) describes that top-down influence from the EU has spurred local and regional levels to mediate this influence over the Swedish state in some cases. For Norway, we find three levels of governance: national government, counties, and municipalities. The role of the subnational authorities is to operate within the laws and regulations set by the state. However, these authorities are self-governed, which means they also need to govern according to their local context, but within national guidelines (Kommunal- og moderniseringsdepartementet, 2020).

In Norway, a report about participation in EU projects shows that municipalities and counties engage in such projects to en-

hance knowledge and improve competence about new measures affecting citizens and policy areas (Schou and Indset, 2015). Even though EU's regional politics is not a part of the EEA membership, Norwegian municipalities and counties engage in the European Territorial Cooperation (ETC) Interreg, which seeks to enhance social and economic transregional and transnational integration (Indset et al., 2018). Borghetto and Franchino (2010) explain that sub-national authorities play increasingly important roles in relation to the implementation of EU directives and policies. The current Norwegian government is working on a national strategy for a CE, while Trøndelag County has already included CE as one of its main pillars for regional development. Hence, it is relevant for the paper to examine the regional context as it is an ongoing transition to a CE.

1.2. Approach

Concretely, we delve into discourses uttered about CE to gain insight into alternative visions supported or hindered in practice. Through an empirical case, which is a situated case constructed with interviews from actors influencing the implementation of a local CE in the County of Trøndelag in mid-Norway. The actors include public servants, but also a much broader array of positions in society. Three research questions guide this work:

- 1) Which visions are promoted as pathways to reach a CE?
- 2) What is prioritized in envisioned CE pathways?
- 3) How does economic growth influence the emergence of specific pathways for a circular economy?

The article is structured in six sections. A preamble has been presented in this introduction. The second section offers the aspects used to frame the discourses of CE and serve as a bridge to the empirical study conducted in the region of Trøndelag in Norway. Section three presents the material and methods used to construct and analyze this empirical case. In section four, the results are presented, offering a review of three identified discourse coalitions. In section five, the dimensions of discourse are assessed in relation to economic growth as the current goal for CE. The article finalizes with a conclusion section in which the study's limitations and an agenda for further research are presented.

2. Framing: discourses and CE

In this section, we present the aspects that frame our understanding of CE – regarding it as a set of discourses about a yet unrealized future. One future stabilizes in specific imaginaries that are socially shared and co-produced (Völker et al., 2020). These stabilizations emerge from the practical enactments of alternative CE visions, which mainly consist of discursive utterances at the time of the study. In this regard, our CE framing as discursive practices resembles De Angelis & Ianulardo's (2020) work. CE is seen as a cognitive framework shaping positive rhetoric (practices for persuasion) towards more environmentally, economically, and socially sustainable production and consumption systems. We go beyond their framing of CE by acknowledging the existence of competing visions under the same concept.

We take on discursive methodologies (see Schmidt, 2011; Isoaho and Karhunmaa, 2019) to operationalize the study of CE discourses in practice. We depart from a definition of discourses as shared understandings of the world (Dryzek, 2013) that are produced and reproduced in practice (Hajer, 1995). This means that we understand discourses as uttered in alignment with or in divergence from goals that may not always be transparent of an ideology (Van Dijk, 2006). Our focus is on these underlying goals that support specific visions of CE, which can be taken as an ideological formulation, even if it is not a conscious decision.

We consider the concept of ideology (Van Dijk, 2006; Griffin, 2006). It is tightly linked to specific political goals, such as economic growth which plays a role as a contention in CE discourses. Griffin (2006) notes the cultural role of ideology in its coercive and emancipatory functions in maintaining or challenging the social, economic, or political status quo. Van Dijk (2006, pp. 116–117) defines ideologies as socially shared foundational beliefs that control and organize systems of thought and are the base for discourse and social practices, as they allow members of a society to organize and coordinate actions, as an interface between social structures and individual agency.

2.1. Discourse coalitions

Our purpose is to identify competing visions¹ of CE and their position in relation to economic growth as emerging new modes of organizing the economy. For this reason, we have identified discourse as the unit in which the visions can be located, and economic growth as an already stabilized foundational belief or status quo. However, an analysis of isolated discourses is not enough to identify the competing visions. To aggregate the available discourses, we operationalize our study under the framework of discourse coalitions (Hajer, 2005). This framework enables us to identify CE's alternative visions as stabilized or institutional discourses and their structuration (or presence) among a set of actors. It also provides the tools to take a stance about their situation concerning foundational beliefs that underlie the practitioners' utterances. Hajer's (2005, p.302) framework defines discourse coalitions as:

"A discourse-coalition refers to a group of actors that, in the context of an identifiable set of practices, shares the usage of a particular set of storylines over a particular period of time."

As for other discursive approaches (Hewitt, 2009), in discourse coalitions, the focus is on the language used. Unlike other analytical frameworks, such as advocacy coalitions (e.g., Pierce et al., 2017), discourse coalitions do not pay attention to actors' actual interactions, networks, or physical proximities that influence the dissemination of ideas. Instead, it directs attention towards the presence of similar socially shared understandings (structuration). This presence represents an alignment of the actors through storylines and metaphors that explain or validate their mode of thinking.

In discourse coalitions, the analysis takes an argumentative form (see van Eemeren et al., 2015). Therefore, the intention is to reconstruct this thought or belief system found behind the utterances that support or reject one or another way of doing and being. The subject of power/knowledge is also essential in discourse analysis; as uttered discourses legitimize or diverge from the status quo. Jørgensen and Phillips (2002, p.14) put it this way:

"Power is responsible both for creating our social world and for the particular ways in which the world is formed and can be talked about, ruling out alternative ways of being and talking."

The coercive and emancipatory functions of ideology (Griffin, 2006) are present in the two dimensions offered by Hajer (2005). In structuration: through reproduction and acceptance of socially shared ideas; and in institutionalization: through the stabilization of specific forms of understanding. For a CE, its alternative visions could challenge or support dominant social and political goals; in this case, green (economic) growth. What an actor utters is also framed within prevailing structures, such as holding to the goal of economic growth over other ones.

The discourse coalitions framework (Hajer, 2005) allows for identifying adopted or rejected metaphors and storylines as part

¹ We could here also use the wording sociotechnical imaginaries of prospected futures, social orders in the terms of Jasanoff (2015).

of discourses, enabling the reconstruction of an underlying ideology. This type of study offers the opportunity to argumentatively reconstruct shared belief systems (Van Dijk, 2006) that do not appear explicitly in the discursive statements.

2.2. Discourses in CE literature

Regarding the study of CE as discourses, we identified two previous studies taking a discursive approach: 1) Nylén and Salmi-nen (2019) apply the concepts of discursive space and discursive structuration (Hajer, 1995), and identify a controversy about the meanings given to maintaining materials in their higher quality. 2) The second study (Persson, 2015) focuses on meanings given to CE. It proposes a definition based on CE's shared meanings from the workers' perspective in the Swedish public sector. Although these two studies follow a discursive approach, they do not reveal the underlying ideologies that support or hinder the emergence of alternative forms of CE.

We also acknowledge two recent works, one by Johansson and Henriksson (2020), which identifies CE as a weak form of circularity that does not include social aspects in its discursive framing. The second is the work of Nikitina (2020), who studied public discourses of waste management and CE in radio broadcasts in Russia. This author identified a poor representation of CE, which has practical repercussions as spontaneous circular practices that emerged with citizens' support were cut short when the government introduced a transport monopoly for waste. Thus, it distinguishes a CE that is merely technological from one that emerges as part of the life support system shaped by the economy. The four studies identified are evidence to assert that CE operates a set of contested alternative discourses and practices.

Aside from these discursive studies – emerging from reviews of content and empirical data; a recent literature review by Calisto Friant et al. (2020) has made a comprehensive presentation of discourses related to circularity, particularly in how they are approached as an evolving set of discourses. A collection of challenges or gaps in the literature about CE is offered and furthered with the formulation of a discourse typology based on a translation of meaning from circular economies to circular societies. The first set of results addresses one specific challenge as "alternative visions of circularity" (ibid., p.6). However, the study does not refer to alternative visions within CE's framing; instead, it looks at ideas that could be approached as circularity but are alternative to CE. Thus, it focuses on the researchers' interpretations of alternative concepts instead of studying how CE is understood and apprehended by the sources. Despite this difference to our approach, the typology offered (ibid., pp. 10–12) provides a good starting point to further discuss the kinds of CE discourses available. In this review (ibid.), four types of discourses are identified based on two dimensions: 1) social, economic, environmental, and political integration. And 2) technological innovation and ecological collapse. It also shows that CE does not have to be studied as a concept lacking consensus, as Merli et al. (2018) pointed out. Different discourses can instead be regarded as competing visions. We will refer to these later in our discussion in section five.

Although there are not many studies approaching CE as discourses, there are examples of studies that look at the content of CE policy implementation in Europe (Gregson et al., 2015; Lazarevic and Valve, 2017; Fratini et al., 2019). These studies seek to reveal the structuring ideas behind emerging modes of CE. These studies are closer to the kind of argumentative reconstruction position that we assume. Some foundational ideas behind CE found in these studies are: 1) CE as a moral project, achievable through local production and recycling (Gregson et al., 2015). 2) CE as a set of expectations to solve environmental problems without hindering economic growth while assuring renewal, security, and

competitiveness of material resources (Lazarevic and Valve, 2017). 3) CE as an opportunity for social co-production beyond the technological fix (Fratini et al., 2019). We frame these studies as discursive as they also look at the shared meanings of CE. Notwithstanding, the politics, expectations, or co-productions revealed do not point to CE as a set of alternative visions. We consider alternative discourse coalitions as a categorization in which alternative visions can be identified. The empirical study we present in the following section describes the analytical elements and dimensions used to approach our empirical case.

3. Material and methods

Our empirical study is a case of discourse coalitions on a local emerging CE from qualitative data obtained through 26 semi-structured interviews conducted from April to November of 2019 in Norway (find interview guidelines in the supplementary material).

Three aspects make this region a relevant case for studying discourses on emerging CEs at a local level within Europe: 1) The discursive influence of the EU is easy to follow in this region. Initial evidence is found in the participation of the County of Trøndelag in an interregional project between Sweden and Norway to co-create an innovation arena for CE (SMICE, 2020). 2) Norway is also bound to European commercial rules, through the EEA Agreement (EEA AGREEMENT, 2016). The fact that Norway is not a full member of the EU makes it easier for some informants to establish a discursive distance from EU policy mandates. 3) The increasing importance set on the contention of material flows at the meso-level (cities and regions), which is possible to evidence due to the autonomy given to local authorities in Nordic countries.

We identified the presence of CE in four strategic regional government documents:

- 1) The strategy for innovation and value creation in Trøndelag (Trøndelag fylkeskommune, 2017) presents CE as one of their priority areas.
- 2) The waste management plan for Trondheim Municipality 2018 – 2030 (Trondheim Kommune 2019) presents CE concerning a waste hierarchy.
- 3) In Trondheim Municipality's plan for energy and climate (Trondheim kommune, 2017), as part of the strategy for consumption and waste.
- 4) In the proposed climate strategy for the County (Trøndelag fylkeskommune, 2020) as one of the strategies to reach a carbon-neutral society.

Trondheim Municipality documents are included because Trondheim is the biggest city in this region, Norway's third largest population (Statistisk sentralbyrå, 2020), and the region's leading political and industrial center with significant influence over other municipalities.

3.1. Data collection

The data collection started as a mapping of initiatives related to CE, in both the public and private sectors – non-profit initiatives included. A first informal interview was conducted with the person in charge of the work on CE at the County council. Following this meeting, the criteria used for the recruitment of informants were: 1) Presence or influence in the Trøndelag region. 2) Existence of written communication, in their website, or working documents indicating CE as a related activity. And 3) suggestions by some of the other informants. By situating the case in this geographic region, it was possible to understand the kind of actors leading the local shift to a CE and their position regarding the Eu-

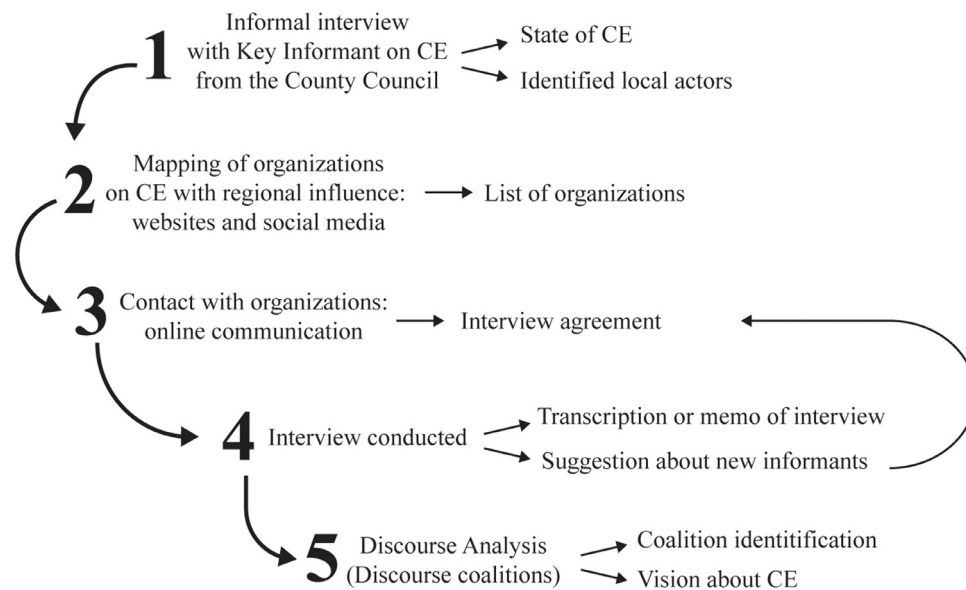


Fig. 1. Steps followed for the data collection.

Table 1
Distribution of informants' organization by sector and subcategory.

Sector	n=	Subcategory	n=
Public	7	Public sector local authority	5
		Public sector national authority	1
		Public sector services	1
Hybrid	3	Public interest - waste management	1
		Public interest association - Group	2
Non-profit	6	Public sector research (University)	2
		Private sector civil society (Diffuse interest)	4
Private	10	Private sector interest association	1
		Private sector small and medium enterprise	4
		Private sector industrial enterprise	1
		Private sector cluster	4
		Total	

ropean Union’s vision and the dominant goal of economic growth (Fig. 1).

Some limitations emerged from the data collection and were related to the novelty of the concept and its recent introduction in the region. On the one hand, we can confidently assume that we reached key views representing the different sectors with participation and influence in the regional CE, as we found when the stories and relations between actors kept repeating. On the other hand, it is possible that we left out some views, particularly those that are not regarded as CE or have no direct interaction with the network of actors we approached.

The informants were actors from the County of Trøndelag and other organizations and institutions with influence in the region. The interviewees were purposively selected from public and private sectors (see Table 1), at different levels (National, Trøndelag County, Trondheim Municipality). New informants were included until we reached theoretical saturation.

The sector categorization in Tables 1 and 2 corresponds to the source of the informants' organization's financial resources. It includes, 1) Public: belong to authorities within the organization of the Norwegian State. 2) Private: financed by commercial activity. 3) Hybrid: autonomous organizations that receive financial resources from private and public sources. 4) Non-profit: these are organizations that receive financial resources from public or private sources but are primarily motivated by other factors than profit maximization.

The data gathered was recorded as audio and later transcribed or documented as interview memos. In total, 26 documents (Table 2) constitute the primary sources of analysis. The content was analyzed and categorized according to Hajer's (2005) elements of discourse coalitions. The identified coalitions were analyzed under Hajer's (2005) two dimensions, structuration, and institutionalization. Later, we discuss the discourse dominance in alignment with or divergence from economic growth.

3.2. Analytical method

Hajer's model (2005) is the base for our argumentative interpretation based on three elements:

- 1) Discourse: the production and reproduction of ideas, concepts, and categories that structure the meaning given to social and physical phenomena in a set of practices.
- 2) The metaphors: the meaning is given to one concept in relation to others, which must be studied under specific questions and subjects from the focus by the research design.
- 3) Storylines: these are condensed narratives that help in understanding how the problem is framed. It has a temporality, in the sense that it explains the causes of a past event or the formation of a future expectation.

The most important aspect of discourse coalitions, according to Hajer (2005), is to discuss these elements in relation to power. Two dimensions are offered to elaborate on power, discourse structuration, and discourse institutionalization. Structuration is the extent to which discourse is used by several actors to make sense of reality. In complement, discourse institutionalization happens when the discourse is stabilized in specific systems, physically or in policies. If both processes take place, then a discourse is considered dominant.

We expand on the three elements by adding two more:

- 1) Alignment to the discourse: it is directly linked to the structuration dimension and represents the informants in a sample who are identified within a specific coalition.
- 2) Enacted vision: it is the aspect of the discourse which is performed in support of a prospected future. It is also the physical or policy system that stabilizes and may become institutionalized.

Table 2
Sample of participant and sources for analysis.

Informant	Position	Sector	Source
1	Municipal advisor for environmental unit	Public	Transcription of Interview
2	Municipal advisor on green businesses	Public	Transcription of Interview
3	Municipal advisor on waste management	Public	Transcription of Interview
4	Advisors on digitalization & circular economy	Private	Transcription of Interview
5	Regional waste management project coordinator	Hybrid	Transcription of Interview
6	Director at the cluster for municipal waste management companies	Hybrid	Transcription of Interview
7	Advisor for planning, economy, and development at County council.	Public	Transcription of Interview
8	Advisor and climate coordinator at County council	Public	Transcription of interview
9	Coordinator at an organization for the promotion of CE	Private	Transcription of Interview
10	Advisor for Norway's Environmental Agency	Public	Transcription of Interview
11	Director of Sustainability at public university	Non-profit	Transcription of Interview
12	An employee at service unit at public university	Non-profit	Memo of Interview
13	Design advisor at a recycling company	Private	Transcription of Interview
14	Design advisor at packaging industry cluster	Private	Transcription of Interview
15	Research and development manager at packaging industry cluster	Private	Transcription of Interview
16	Founder of a second-hand clothing store	Private	Memo of Interview
17	Founder at a voluntary organization for reuse of furniture	Non-profit	Transcription of Interview
18	Manager at recovery station for local waste management	Hybrid	Transcription of Interview
19	Founder of a start-up for reuse of building materials	Private	Memo of interview
20	Founder of a former second-hand clothing store	Private	Transcription of Interview
21	Coordinator for forest industry cluster	Private	Transcription of Interview
22	Organization advisor for an environmental conservation civil organization	Non-profit	Transcription of interview
23	Project leader for an environmental conservation civil organization	Non-profit	Transcription of interview
24	Volunteer for an environmental and solidarity organization	Non-profit	Transcription of Interview
25	Founder of a vegetarian restaurant	Private	Transcription of Interview
26	Librarian and project coordinator at the local library	Public	Transcription of Interview

These two elements facilitate the integration of the two dimensions considered by [Hajer \(2005\)](#). This way, the framework can be used as our analytical tool. Section four presents the results we obtained from applying the framework of discourse coalitions on the 26 documents included in the data we gathered from our informants.

4. Results

Three discourse coalitions resulted from the dialogues with the informants ([Table 3.](#)) by following [Hajer's \(2005\)](#) method and considering the enacted vision in each. We elaborate on the discursive elements and later, on the dimensions of structuration and institutionalization.

4.1. Discourses

The following discursive patterns were identified. In the first pattern, a CE is enacted by focusing on material recovery and re-design of products, including new technologies and new materials, particularly beneficial from the perspectives of waste management and producer responsibility. This is extended to the bioeconomy, with mentioned examples about the use of local resources such as seaweed and tree fibers, but it is mainly focused on the success of recycling targets.

The second pattern is identified in the discourse uttered by informants envisioning a CE enabled by supporting new production models (industrial symbiosis) and services in the private market. This is reached through the sharing of resources and experiences that generate revenues without requiring new material inputs, and it includes ideas about market self-regulation, facilitation of sustainable consumer choices and establishment of new businesses.

The third pattern supposes that a CE can be enacted by reducing consumption and maintaining products in use for longer through reuse and repair. It requires transference of knowledge and skills to consumers about product repair and reuse, coupled with the environmental impacts of their consumption. Locally there are some initiatives promoted by private sector – civil organizations

dealing with reduction of consumption. Some of these initiatives are supported by the local government, but there is still an orientation towards business creation, the main example is a project for co-location of small enterprises along with streams of used materials and products recovered from waste management, with the intention of promoting reuse and repair as a path for lowered consumption.

4.2. The shared understanding of CE

The three discourses identified are also accompanied by specific understandings of what a CE is, in addition to the explicit discursive forms of CE.

The first group understands CE in the metaphor of waste as resources, complemented by recovery and second source material markets. It is easily assessed in the weight in tons of materials that are recycled or reused. This set of metaphors is well in line with those found in CE as promoted by the [European Commission \(2015\)](#). This understanding was already present in the waste management sector and supports the creation of systems, for waste collection and sorting of materials, based on advanced technologies.

The second group understands CE as a political goal. It is about framing the recruitment of industrial and financial sectors in support for new business models. It can be rendered as a frame for collaboration on industrial symbiosis and sharing economy platforms. It supports the creation of new revenue streams and the conversion of industrial activity.

The third understanding is based on consumption as the cause for environmental problems. In this framing, consumer behavior patterns are relevant as well as local market offerings and regulations in the relations between public sector politicians/administrative staff, private sector manufacturer/retailers, and citizens/consumers. It is hindered by free market competition and self-regulation. It supports local small businesses in the reuse and repair sectors, as well as the transference of skills to citizens, necessary for the tasks of maintaining and sharing products.

Table 3
Summary of identified coalitions.

	Coalition 1: Waste as resource	Coalition 2: Sharing economy	Coalition 3: Individual consumption reduction
Discourse	Techno - design - recycling Based on waste management through technical solutions. Supported by sorting of resources at home, design of products for recycling, and producer responsibility. It is assessed by quantitative targets for material recycling (tons).	Local production - symbiosis Based on enabling new business models and economic sectors. While facilitating sustainable decisions to consumers and provision of shared resources in the collaborative and shared economy. It requires the creation of new indicators.	Reduce - reuse - repair Focuses on consumer power. Changes in behavior and lifestyles must be supported by acquisition of knowledge and skills for repair and reuse, and it can be done through local offering. It also claims the need to regulate markets and producers.
Metaphors (about CE)	<ul style="list-style-type: none"> - CE is about resource management. - CE's main problem is technical (recovery of materials). - CE is about the recovery of materials (second source materials in the market). - CE is measurable in tons of materials recycled/reused. 	<ul style="list-style-type: none"> - CE is a buzzword (a frame for collaboration that is broad). - CE is an approach to solve environmental problems (emissions). - CE is a way of thinking that requires integration (Green shift). - CE is about industrial/sector integration (industrial symbiosis and scaling of solutions). - CE is the/a sharing economy. 	<ul style="list-style-type: none"> - CE is sharing. - Consumption reduction is achievable through repairing and reuse of products. - The main barrier in consumption reduction is consumer behavior (culture and knowledge). - Local capacity for reusing and repairing products enables consumption reduction. - Overconsumption is the cause of environmental damage. - Value is more than profits.
Storylines	<ul style="list-style-type: none"> - Planetary limits. - CE is not new. It has been there for many years and now promoted under this concept (since 2015 with the EU CE package). - New targets from the EU for recycling are a motivation to hold on to the concept. 	<ul style="list-style-type: none"> - Planetary limits. - EU CE policy package in combination with the need for local and national policy. - Introduction of CE, through EU projects, such as SMICE and work at the County level. - Climate change (CO₂ emissions reduction) - Need for indicators (assessment tools). - Public procurement. 	<ul style="list-style-type: none"> - Planetary limits. - People/consumers have power but will do the same if there are no regulations on producers. - A local offer of services and Small and Medium Enterprises (SMEs) - Need for a political mandate on consumption.
Aligned informants by sector	Public: 1 Private: 5 Hybrid: 2 Non-profit: 2 Total: 10	Public: 4 Private: 3 Hybrid: 0 Non-profit: 1 Total: 8	Public: 2 Private: 2 Hybrid: 1 Non-profit: 3 Total: 8
Semi- aligned informants by sector	Public: 2 Private: 0 Hybrid: 0 Non-profit: 0 Total: 2	Public: 1 Private: 3 Hybrid: 2 Non-profit: 1 Total: 7	Public: 4 Private: 2 Hybrid: 0 Non-profit: 2 Total: 8
Enacted vision	Waste is managed in inter-municipal plants with technology to mechanically sort material fractions (e.g. near infra-red technology for plastic). These plants provide the resources required to the local market of manufacturers, alongside novel materials from local sources (tree fibers).	The private sector innovates to provide new services for sharing resources (like collective car ownership). The industrial sectors are integrated to produce using local resources and a local value chain (industrial symbiosis and use of seaweed in farming).	Local SMEs are co-located with streams of used products and materials (Similar to ReTuna in Sweden). While the local authorities provide services for the sharing of tools and learning of skills for repair and reuse (library services).

4.3. Storylines

There are common traits in the discourses of almost all the informants. The first one is the adoption of an explanation based on the planetary limits, which requires humans to discontinue the current form of resource consumption. This is coupled to the need to reduce CO₂ emissions to tackle climate change goals. Among the informants from the public sector and those in waste management, there is acknowledgement that CE is not a new concept, instead, it is seen as a buzzword that is not easily put into a practical application.

We identified that some of the informants do not explicitly refer to CE when they talk about different ways of approaching material resources. Particularly, those who set the importance on consumption reduction, do not make a direct link between resource usage and CE. Similarly, those who were already working on new

materials and recycling recognize the importance of a CE, but they do not frame their work as part of it. However, the scope of CE is broad and flexible enough to allow their inclusion by some of the other informants. As a political discourse, CE encompasses several activities, even ones in which the practitioners do not see themselves as part of it.

4.4. Structuration

A first result in the dimension of structuration is that some informants did not refer to CE explicitly, however, they mentioned aspects related to material resources, such as material replacement, local resources, reuse, or recycling. Although these informants do not refer to themselves as carrying activities of a CE, they share some of the storylines and metaphors with those who do. The adoption of CE in the discourse is part of the structuration process.

It means that reframing of existing practices happens in support of specific modes of CE. This reframing is also found in the promotion of a CE by the local government to align actors:

“We cannot have any collision or a different mindset, so we have to be a part of that [CE]. (...) In that setting, we have to be doing the same things.” (Informant from County council).

Some informants mentioned that their specific understanding of a CE based on principles for material use (reduce, reuse, repair, recycling) also molds their practice, as an example:

“So, we have started more and more to focus on the consumption level. Try to reduce the consumption and more reuse and recycle.” (Informant from a civil society organization).

CE had become part of the discourses related to material resources, but lacking content about what to do, which makes it a concept open for reinterpretation:

“... we would like to hear someone saying what a strategy for the CE should look like and answer which questions. There is still no one to say it because it is an area where development is moving very fast, and we are learning new things all the time.” (Informant from national government).

The County is self-governed and acts in its own interest in regional development. In this regard, the statement from the national government informant has no direct influence on the shaping of CE to our knowledge. However, it seems that the regional focus of the County, but also the other interviewed actors, may influence national policy development as the government has openly sought for local and regional examples of how CE can be enacted. As a concrete example of CE implementation, the County has come far in establishing a new facility for reducing waste and prolonging product lifetime of products in the region (co-location project).

Other informants pointed to the management of resources, with reuse or recycling as central issues, but struggled to identify the main aspects to assess it as part of their integration to CE. However, they take on CE by adopting the term and later assessing their practices:

“So, Trøndelag says that the circular economy is one of the five most important things, and the companies at [name of an industrial park], they did not know what the circular economy was.” (Informant from a local industrial park).

“... we don't have any formal competence within our organization, or anyone educated on circular economy, no real advisors on circular economy at the organizational level, but it all comes from the work with it [recycling].” (Informant from a local recycling company).

Another aspect of the structuration of CE in Trøndelag is related to the diffusion of the concept. The government and industrial production clusters promote it based on abstract aspects (such as policies and instruments for assessment). While at the practical level, such as in the municipal services, the retailers, and small enterprises, CE's adoption is part of an ongoing discussion with other actors.

“It started when [advisor from Trøndelag County] came here and told us about this. Then we said yes to try to be one of the businesses or people that organize it, try to make it happen.” (Informant from local small business).

The structuration of discourse is also related to shared storylines. In this case, we identify a shared storyline about the planetary limits, which implies that resources should not continue to be exploited or used as they currently are. Nevertheless, motivations for acting are different according to the organization's proximity

to citizens. Informants closer to citizens/consumers, in municipal services or trade of second-hand products, see resource consumption as part of individual behavior and needs. Those in government agencies and industrial clusters, look at resources as part of political goals. Two quotes exemplify it:

“Being efficient with your resources happens more by necessity than by idealism. So, people are more willing to look at less wasteful ways of doing things when they can't afford to be wasteful.” (Informant from a local civil society organization).

“Politically, we have two priorities, and they are cutting greenhouse gas emissions and taking care of nature... I don't think we will succeed either in cutting enough greenhouse gas emissions or taking care of nature if we do not change the way we use our resources, and that is when the CE comes in...” (Informant from national government).

In the structuration of CE in the region of Trøndelag, indicators seem to have a strong role. The CE vision by the EU imposes specific goals on recycling but not on other aspects such as consumption as exemplified in the following quote:

“... resource consumption [referring to individual consumption] is not sustainable, then you have to find out through indicators and numbers what is the problem you want to deal with.” (Informant from municipal government).

In summary, the process of structuration of CE discourses is currently unfolding. At the national and county levels, in both the discourses of those in the public sector and those in organizations with private interest, it is actively promoted as waste management and new business models. At the municipal level, small enterprises, and civil society organizations, the concept is contested by including concerns related to individual consumption and challenging economic growth as the central goal. This is exemplified in the following two quotes:

“... by saying that it's only the increase of revenue of businesses that will make the city center livelier. Then we are really stuck with our own shit in a way, in capitalism everything must be money.(...) But the State hinders the more sustainable, more local driven, all these, like grassroots initiatives, which are probably not reported as properly as possible.” (Informant from municipal government).

“... we have too much money, too much of everything, and of course if you go back to my grandparents (...) They didn't have much... it's not that many years [since] and the mentality has changed... if something is broken you have to repair it. But now, we say that if something is broken, I have to buy a new one... If you think about Norway, after the 1950's and forwards, we have more and more money, and better and better lives. Not for everyone of course, but for many.” (Informant from local library)

4.5. Institutionalization

The dimension of institutionalization refers to the stabilization of discourse in systems, physically or in policies. We have identified three sets of visions that compete to be stabilized systems of CE, each corresponding to one of the three coalitions. The first one prioritizes recycling and technology required to reach the targets set by the European Commission. The second prioritizes sharing economy and new businesses as it is promoted by the County council. Furthermore, a third one prioritizes reducing consumption through individual actions by acquiring less, reuse, and repair of goods with local offerings.

In the waste management sector, informants share an awareness of CE as something they must put forward by following a po-

litical mandate on recycling targets and markets for recycled materials, as established by the EU for 2030. In this perspective, CE has a risk of failing if there is no local market for secondary resources, and if recycling is not made more efficient. For example:

“They [the government] only used policy instruments in one end [waste management] without doing anything to help out in the other end [producers] when we have sorted out the fractions, and the fractions must be used [have a market]. If it is not used, it is going to be burnt.” (Informant from the cluster of municipal waste management companies).

“... we recommend using technology, as it is done in ROAF, a plant north of Oslo, where they have some machines that separate the fractions, and it should be the model for all of Norway.” (Informant from a cluster of packaging producers).

Solutions to the implementation of CE are also framed as about sharing existing resources, whether in the industrial sector as industrial symbiosis or in the small business, in collaboration to share materials and knowledge. Unlike in recycling, the targets for sharing, or the way to proceed with it, has no political mandate. Informants from the public sector frame it as something they cannot take on, and the private sector must provide the solutions. An example mentioned is membership service for car sharing:

“... the sharing economy, it is super important... the carpool, for instance... with them, you do not own the car, but you are owning the ownership of a lot of cars, and then you're just using it when you need a car.” (Informant from a civil society organization).

The third set of solutions expressed in some informants' discourses relates to the repair and reuse of existing products. As with sharing, there is no political mandate about consumption reduction, as that would suppose a transgression of the public sector into the private ones. That's why it requires the effective use of knowledge to convince other stakeholders in the region:

“... we do not go out and say that now consumption will go down. We go out and talk about it being “smart” to share.” (Informant from the municipal government).

There is general recognition about the need for overall reduction of consumption of resources. However, at the local level, in the discourses by two informants at the municipality and those in small enterprises in Trondheim, reduction of consumption is about individual consumption of products, and there is awareness about a need for regulations or restrictions to be imposed on manufacturers and commercial actors. We can assume that consumption approaches and debates will become relevant to CE discourses in Norway, for instance the Circularity Gap Report Norway by [Circle Economy \(2020\)](#) – a non-profit organization for the promotion of CE in Europe, reports that the Norwegian economy is only 2,4% circular and sets part of the blame on the high consumption patterns in the country.

At the Trøndelag County level, consumption concerns are enacted by prioritizing the sharing economy and putting it forward through the provision of support for small businesses, more specifically in a project for co-location of commercial offerings for repair and recirculation of used products. However, an alternative path is the voluntary work of repairers in teaching repairing skills and the provision of spaces for people to meet to engage in repair and reuse practices. Trondheim Municipality also promotes reuse by offering tool sharing services at local libraries and has targets for product reuse at the local waste management company set through a second-hand store.

Although the enactment of the three discursive visions is in place to some extent, the institutional dimension is dominated by waste recovery targets, as evidenced in the adoption of EU's

quantitative targets for material recovery, particularly of plastics. The targets are used to measure reuse and recycling from waste streams, as indicated by an informant from a local waste management enterprise: *“... we do have the goal of x kilograms per inhabitant, so it is like lean - we have some KPI's. We will start with it by kilograms.”* This dominance aligns with the goal of green growth through revalorization of waste as resource and has a political mandate established by default. In contrast, concerns about individual consumption are an emerging discourse.

The informants in this study show agreement on a storyline about planetary limits. Despite existing academic contributions supporting this understanding (e.g., [Rockström et al., 2009](#)), economic growth and market competitiveness dominate in practice. This dominance favors the emergence of a CE based on businesses and profitable green technologies for recycling under the so-called green growth, which argues that it is possible to decouple economic growth from nature's degradation. We set out to look closer at the relationship between our informants' storyline of planetary limits and policies supporting green growth. To showcase this, we present some excerpts from policy documents.

In Norway's current national governmental political platform 'Granavolden' ([Statsministerens kontor, 2019](#)) it is stated that *“[t]he government wants to lead a policy which strengthens Norway's competitiveness, creates green growth and new green jobs while climate gas emissions are reduced”* (our translation). *“The global challenges related to the climate and the environment require a readjustment to a society in which growth and development take place within nature's sustainability limits. Society must go through a green shift.”* (Trøndelag Fylkeskommune, 2019). Growth is latent in work towards a more sustainable future. At the municipal level, in Trondheim, consumption reduction also appears in the discourse. The energy and climate plan for 2017–2030 states that *“reduction in consumption is, therefore, a key to reach long-term goals of reducing climate gas emissions”* ([Trondheim Kommune, 2017](#)). The plan also argues that *“green workplaces within energy production and environmental technology are expected to become a significant source of growth globally”* (ibid., p. 37). This evidence shows that continued growth is politically motivated, in line with [Hickel & Kallis' \(2019\)](#) assumption of policies being drivers of (green) growth thinking.

5. Discussion

We start this section by mentioning some limitations we encountered during the analysis. A first limitation of this study relates to the identification of key informants in the region, which we have already addressed in section three. We do not think this invalidates our analysis, but it opens the door to reframe and explore through research the presence of other actors whose discourse and practices are 'circular in nature' but not yet recognized as such.

A second limitation is how discourses and visions relate to practices under CE, to support its realization. Although we meant to illustrate and exemplify them through our inclusion of enacted visions in the empirical case, we acknowledge that there is a gap between the utterances and the actual practices that will be enacted based on the visions formulated. Particularly in CE, it is difficult to take a stance on competing aspects in practice. We do think that we have covered this to some extent by providing insight under the light of economic growth, but it could also be fruitful to conduct a similar analysis connected to other aspects, for example, social justice.

Under the two dimensions put forth by [Hajer \(2005\)](#) and linking emerging CEs to the dominance of (green) growth, we find that growth underlies the institutionalized vision in Trøndelag. It is a result of the process (practice) by which it has been adopted, i.e., mainly by following the ideas exposed by the European Commis-

sion. Under this adoption, the enactment of CE's follows the goal of economic growth decoupled from environmental impacts. This way of thinking favors discourses based on technical solutions, such as those for recycling. The national government has taken on the European Commission's stance on waste as resource which furthers the political desire to develop recycling facilities. Despite this, it is the local companies dealing with waste management that decide how to take care of waste and which solutions to pursue. However, there is a rupture in CE's local discourses, which appears in some of our informants' utterances as cautious incursions that question economic growth as the central goal.

The economic imperative of growth is a political goal supported in the foundational belief that accumulation of wealth leads to general wellbeing, so economic growth acts as an ideology (Van Dijk, 2006) that underlies these discourses. CE discourses that align with the European Commission's targets and strategy do not diverge from economic growth's status quo. However, when a reduction in individual consumption is part of the discussion, this foundational belief becomes weakened.

Questions to the centrality of economic growth appear when matters of individual consumption are part of the discourse. This discursive divergence from economic growth is not constitutive to CE; instead, it is a tangential aspect that is not concerned with its technical implementation. It is mainly ignored by informants that align with the coalition based on waste as resource and recycling; it is taken as a solvable dilemma by those in the sharing economy coalition, and it is more strongly present in the speech of those in the reduction of consumption coalition. To some extent, Trondheim Municipality and some of the civil society organizations act on it. Some of these informants take a stance on money and capitalism as dominant mediators for human relations but seem unable to break with the business as usual of economic (green) growth or come to terms with an alternative proposition.

We found that none of the CE discourses are competing or contradicting each other in their technical implications. However, two of them are dominant because they align better with the current goal of economic (green) growth, making them the institutional default. On another end, the third coalition represents a pathway that requires breaking from economic growth dominance. It means that discursive and practical incursions on consumption reduction could be the base for an alternative CE. Rethinking CE's technical implementation may also be necessary if recycling or new business models are not the priorities. A different infrastructure and organization for material circulation and provision will be required if aspects of individual consumption are the focus. Such predicament implies actively integrating the collective aspects of consumption.

In section two, we introduced the typology of CE discourses proposed by Calisto Friant et al. (2020), which classifies discourses of circularity according to their integration of social, economic, and environmental consideration, crossed with their perspective on technological innovation and ecological collapse. If we use this typology, in our empirical case we find that the CE discourse in Trøndelag is dominated by a view of reformist circular economy, which sees compatibility with capitalist forms of organizing the society – included with the goal of economic growth. But there is also an opportunity to go a step further and reach a transformational society discourse through CE, which appears through the coalition based on consumption reduction. Although this opportunity is open, it would fall short if social aspects are not deliberately included.

Considering the points made by Johansson and Henriks-son (2020) and Nikitina (2020), to become a more than a reformist discourse, consumption reduction requires an integration of social aspects, which include social justice and questioning what is produced and why (Genovese and Pansera, 2020). We reiterate that some of these aspects are already present in the discursive utter-

ances of some of the informants, however, they are not articulated as they compete with the dominance of economic growth in support of the creation of new revenue-creating business opportunities.

The coalitions based on waste management and sharing economy reproduce technocentric, eco-modernist solutionism. However, a CE which emerges from the acknowledgement that resource depletion is inevitable within systems of capitalistic accumulation (Savini, 2019) would require to recast CE as an integral aspect of the living system of consumers, implying new modes of organization and distribution of work, more active forms of participation of the citizenship and uptake of services by the local authorities or organized groups of citizens.

In the case of Trøndelag, it means a reevaluation of the mechanisms for the introduction and disposal of new materials and products, which is an aspect that currently cannot be put forward without the political involvement of citizens. It also requires a local autonomy that is not possible due to current governance forms mediated by EU market regulations (enforced via EEA rules) and national policies.

A CE including consumption reduction and social aspects is more than just a discursive divergence from the political authorities. It represents a need for a restructuration of the everyday life of citizens. In reduction of consumption, as assumed in the identified coalition, CE would imply restrictions to production and retail, and therefore loss of convenience. This is a divergence that is similarly addressed in discourses that are tangent to CE, such as degrowth, sufficiency, and minimalism. But even those require a recalibration of the technical expectations put on materials and products. Table 4 presents a comparative speculation of what an alternative CE in the sense described here could be.

The speculation in Table 4 does not encompass all the aspects concerning the material dimensions in a CE. However, it offers a glimpse of some of the factors that could directly affect the technical development of CE when the priorities and goals from which it emerges are modified. The integration of consumption reduction means creating spaces and opportunities for citizens to have an everyday life with fewer interactions in commercial activities, thus moving away from the consumer's society. This is well pictured in our empirical case in the activity developed by the local libraries in becoming centers for the loan of tools, in addition to the realization by informants in the non-profit sector and the SMEs about the need of intervening on the market system. This latter aspect is better exemplified in an organization that freely circulates products, such as furniture and bicycles, among students in the city, supported by the voluntary work of other students.

The role of the market, an aspect that is amplified in economic growth driven societies (Wiedmann et al., 2020), is reflected in the concerns raised by the informants, at the local government level (county and municipality), about the kind of activities that should take place as part of the regional development. It is also supported by informants from SMEs in the form of regulations to production and retail. This means that the role of the market in society would have to be reduced or regulated. That is, however, an aspect to be questioned in further research. We found that steps in support of this alternative CE are being taken in the region we presented, but they are still not well articulated because of the dominance that economic growth has over the modes of thinking. It is exemplified in the project for the co-location of CE related initiatives and resources; it is framed in support of new business models and possibly their profitability, but it also has the potential to be a space for the formation of a local community for transference of skills and materials for slow paced consumption and production. This aspect is framed in mentions about repair and reuse practices promoted through education programs and activities for skill transference. The latter put to practice by the local libraries in Trondheim.

Table 4
Comparative speculation of alternative emerging CEs.

	Linear economy	Economic Growth CE	Consumption reduction CE
Material circulation	- Global import/export of raw materials. - Local waste management.	- Recycling technology. - New renewable materials. - Local markets for secondary materials.	- Fewer products to satisfy life's necessities. - Local markets for re-use of products and materials.
Product life	Short life, fast pace of replacement.	Long life, replacement when desired.	Long life, replacement of components when no longer functional.
Production	Continuous production.	Provides services for repair and recovery of materials.	Restricted and distributed.
Responsibility over materials	Transferred with ownership at retail point.	Manufacturer, in some cases maintaining ownership of materials.	Organized citizens or public authorities.
Consumption	Based on commodities and as frequent as possible (keeps sales up).	Supposes dematerialization and access to products when needed (as a service).	Planned, and restricted. Expected forms of production for own consumption.
Source of resources	Mining from natural sources.	Material mining from waste streams.	Local available sources first and conservation.
Value of resources	Availability of raw materials.	Supply and demand.	Attributes given and personal attachments.
Distribution	Global value chains.	Local providers.	Local providers and self-production.
Role of markets Infrastructure for materials	Central to all aspects of life Transportation by commercial actors and waste management as a public task.	Central to all aspects of life. Transportation and stock tracking by commercial actors.	A regulated space. Stock tracking and open spaces for reuse and repair.
Consumer skills	Capacity to pay for the acquisition of products.	Knowledge about care for product-services systems.	Assessment capacity for product reparation and material quality. Knowledge about a local network of skilled people.
Waste	Externality of the economy.	Valuable resource that can be recovered and re-cycled many times.	Avoided by avoiding overconsumption.

The emergence of this local CE, however, can be hindered by the decisions taken at EU and national levels.

6. Conclusion

In the introduction, we set the task of identifying CE discourses and their visions to discuss them as CE's alternative pathways. We identified that economic growth is a foundational goal that drives the current discourse of CE. We studied discourses of CE in practice through an empirical case of an emerging CE in the region of Trøndelag in mid-Norway, and identified three discourse coalitions, with actors from different sectors, supporting or reproducing three visions:

- 1) Waste as resources based on a vision of better product design and waste sorting technologies making recycling more efficient.
- 2) Sharing economy based on a vision of industrial symbiosis and new business models for local commercial offerings in sharing, reuse, repair of products.
- 3) Reduction of individual consumption based on a vision of individual changes in lifestyle, coupled with local services and skill acquisition/transfer for reuse and repair instead of acquiring new products.

The visions in these coalitions are not mutually exclusive; instead, they represent different priorities on how to enact a CE. With regards to our hypothesis: CE's alternative discourses and practical performances originate from alignment with or divergence from current dominant political goals based on economic growth, which result in competing visions of CE. We see competition in the priorities emerging in relation to the goal of economic growth, this was not so evident where only the technical solutions were addressed.

Focusing on structuration and institutionalization of discourses, we concluded that two discourse coalitions are dominant by default as they build on notions about economic growth. Ideas related to the reduction of individual consumption compete with those about economic growth, and could be the basis for the emergence of plausible alternative CEs. Furthermore, this competing aspect is evidence of economic growth's function as an ideology that is maintained or challenged as part of the status quo. The focus on recycling or new businesses as venues for economic growth is only questioned when individual consumption is raised as a concern. Thus, the practical enactment of a CE, its visions and priorities, are also subject to the requirements for economic growth.

By problematizing economic growth as a foundational belief, a question emerges about which central goals could drive alternative CEs. For example, in a hypothetical scenario in which reduction in individual consumption becomes the central policy goal, how would the necessary reduction be assessed? What would be the technical challenges? Would the general civil society back government-regulated consumption? Moreover, which roles would current commercial and waste management actors assume? These questions are material for a future research agenda. With our empirical case, we offer evidence that the central goal of economic growth hinders at least one emerging way of thinking about CE.

The main contribution of this article is that we have provided evidence that CE can be conceived as emerging from a different center, that of consumption reduction, which we found to be present in an existing discourse coalition that can be better articulated in practice. We believe that this evidence can contribute to the formulation of technical and political proposals, which consider this alternative perspective as a plausible pathway while envisioning concrete interventions required to move it forward.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at [doi:10.1016/j.spc.2020.10.011](https://doi.org/10.1016/j.spc.2020.10.011).

References

- Beckert, J., 2013. Imagined futures: fictional expectations in the economy. *Theory Soc.* 42 (3), 219–240. <https://doi.org/10.1007/s11186-013-9191-2>.
- Borghetto, E., Franchino, F., 2010. The role of subnational authorities in the implementation of EU directives. *J. Eur. Public Policy* 17 (6), 759–780. <https://doi.org/10.1080/13501763.2010.486972>.
- Borup, M., Brown, N., Konrad, K., Van Lente, H., 2006. The sociology of expectations in science and technology. *Technol. Anal. Strat. Manage.* 18 (3–4), 285–298. <https://doi.org/10.1080/09537320600777002>.
- Friant, C., M., V., W.J., Salomone, R., 2020. A typology of circular economy discourses: navigating the diverse visions of a contested paradigm. *Resour. Conserv. Recycl.* 161, 104917. <https://doi.org/10.1016/j.resconrec.2020.104917>.
- Circle Economy, 2020. Circularity gap report, Norway. Retrieved from: <https://www.circle-economy.com/resources/circularity-gap-report-norway>
- Clube, R.K.M., Tennant, M., 2020. The Circular economy and human needs satisfaction: promising the radical, delivering the familiar. *Ecol. Econ.* 177, 106772. <https://doi.org/10.1016/j.ecolecon.2020.106772>.
- Corvellec, H., Böhm, S., Stowell, A., Valenzuela, F., 2020. Introduction to the special issue on the contested realities of the circular economy. *Cult. Organiz.* 26 (2), 97–102. <https://doi.org/10.1080/14759551.2020.1717733>.
- Dye, B.J., 2020. Ideology matters: political machinations, modernism, and myopia in Rwanda's electricity boom. *Energy Res. Soc. Sci.* 61, 101358. <https://doi.org/10.1016/j.erss.2019.101358>.
- Dryzek, J.S., 2013. *The Politics of the Earth: Environmental Discourses*. Oxford university press.
- EEA AGREEMENT. (2016). Agreement on the European economic area. Retrieved from: <https://www.efta.int/media/documents/legal-texts/eea/the-eea-agreement/Main%20Text%20of%20the%20Agreement/EEAagreement.pdf>
- European Commission (2015). Closing the loop - an EU action plan for the circular economy. Retrieved from: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52015DC0614&from=EN>
- European Commission (2019). The European green deal. Retrieved from: https://ec.europa.eu/info/sites/info/files/european-green-deal-communication_en.pdf
- European Commission. (2020). Circular economy action plan: for a cleaner and more competitive Europe. Retrieved from: https://ec.europa.eu/environment/circular-economy/pdf/new_circular_economy_action_plan.pdf
- Fratini, C.F., Georg, S., Jørgensen, M.S., 2019. Exploring circular economy imaginaries in European cities: a research agenda for the governance of urban sustainability transitions. *J. Cleaner Prod.* 228, 974–989. <https://doi.org/10.1016/j.jclepro.2019.04.193>.
- Geisendorf, S., Pietrulla, F., 2018. The circular economy and circular economic concepts—a literature analysis and redefinition. *Thunderbird Int. Bus. Rev.* 60 (5), 771–782. <https://doi.org/10.1002/tie.21924>.
- Genovese, A., Pansera, M., 2020. The circular economy at a crossroads: technocratic eco-modernism or convivial technology for social revolution? *Capitalism Nat. Soc.* 1–19. <https://doi.org/10.1080/10455752.2020.1763414>.
- Gregson, N., Crang, M., Fuller, S., Holmes, H., 2015. Interrogating the circular economy: the moral economy of resource recovery in the EU. *Econ. Soc.* 44 (2), 218–243. <https://doi.org/10.1080/03085147.2015.1013353>.
- Griffin, R., 2006. Ideology and culture. *J. Polit. Ideol.* 11 (1), 77–99. <https://doi.org/10.1080/13569310500395974>.
- Hajer, M.A., 1995. *The Politics of Environmental Discourse: Ecological Modernization and the Policy Process*. Clarendon Press.
- Hajer, M.A., 2005. Coalitions, practices, and meaning in environmental politics: from acid rain to BSE. In: Howarth, D., Torfing, J. (Eds.), *Discourse Theory in European Politics*. Palgrave Macmillan, UK, pp. 297–315.
- Hajer, M.A., Pelzer, P., 2018. 2050—An energetic odyssey: understanding 'techniques of futuring' in the transition towards renewable energy. *Energy Res. Soc. Sci.* 44, 222–231. <https://doi.org/10.1016/j.erss.2018.01.013>.
- Hewitt, S., 2009. In: *Discourse Analysis and Public Policy Research*, 24. Centre for Rural Economy, pp. 1–16 Discussion Paper Series Retrieved from: .
- Hickel, J., Kallis, G., 2020. Is green growth possible? *New Polit. Econ.* 25 (4), 469–486. <https://doi.org/10.1080/13563467.2019.1598964>.
- Hobson, K., 2016. Closing the loop or squaring the circle? Locating generative spaces for the circular economy. *Prog. Hum. Geogr.* 40 (1), 88–104. <https://doi.org/10.1177/0309132514566342>.
- Hobson, K., 2019. 'Small stories of closing loops': social circularity and the everyday circular economy. *Clim. Change*. <https://doi.org/10.1007/s10584-019-02480-z>.
- Hobson, K., 2020. The limits of the loops: critical environmental politics and the circular economy. *Environ. Polit.* 1–19. <https://doi.org/10.1080/09644016.2020.1816052>.
- Hobson, K., Lynch, N., 2016. Diversifying and de-growing the circular economy: radical social transformation in a resource-scarce world. *Futures* 82, 15–25. <https://doi.org/10.1016/j.futures.2016.05.012>.
- Homrich, A.S., Galvão, G., Abadia, L.G., Carvalho, M.M., 2018. The circular economy umbrella: trends and gaps on integrating pathways. *J. Cleaner Prod.* 175, 525–543. <https://doi.org/10.1016/j.jclepro.2017.11.064>.
- Hertwich, E., Lifset, R., Pauliuk, S., Heeren, N., Ali, S., Tu, Q., Ardenne, F., Berrill, P., Fishman, T., Kanaoka, K., Kulczykka, J., Makov, T., Masanet, E., & Wolfram, P. (2019). Resource efficiency and climate change: material efficiency strategies for a low-carbon future. Zenodo. <https://doi.org/10.5281/ZENODO.3542680>
- Indset, M., Schou, A., and Stokstad, S. (2018). EU på dagsorden i norske kommuner og fylkeskommuner. NIBR-rapport 2018:13 (in Norwegian). Retrieved from: <https://www.ks.no/contentassets/1ab1a1463ce34c2684a7d7bd99db05aa/eu-og-norsk-kommunesektor.pdf>
- Isoaho, K., Karhunmaa, K., 2019. A critical review of discursive approaches in energy transitions. *Energy Policy* 128, 930–942. <https://doi.org/10.1016/j.enpol.2019.01.043>.
- Jasanoff, S., 2015. Future imperfect: science, technology, and the imaginations of modernity. In: Jasanoff, S., Kim, S.H. (Eds.), *Dreamscapes of Modernity: Sociotechnical Imaginaries and the Fabrication of Power*. University of Chicago Press, Chicago, pp. 1–33 Retrieved from.
- Johansson, N., Henriksson, M., 2020. Circular economy running in circles? A discourse analysis of shifts in ideas of circularity in Swedish environmental policy. *Sustain. Prod. Consump.* 23, 148–156. <https://doi.org/10.1016/j.spc.2020.05.005>.
- Jørgensen, M., Phillips, L., 2002. *Discourse Analysis as Theory and Method*. Sage Publications.
- Kommunal- og moderniseringsdepartementet. (2020). Forholdet kommune-stat. Retrieved from: <https://www.regjeringen.no/no/tema/kommuner-og-regioner/kommunalrett-og-kommunal-inndeling/forholdet-kommune-stat/id2340288/>
- Kalmykova, Y., Sadagopan, M., Rosado, L., 2018. Circular economy – from review of theories and practices to development of implementation tools. *Resour. Conserv. Recycl.* 135, 190–201. <https://doi.org/10.1016/j.resconrec.2017.10.034>.
- Kirchherr, J., Reike, D., Hekkert, M., 2017. Conceptualizing the circular economy: an analysis of 114 definitions. *Resour. Conserv. Recycl.* 127, 221–232. <https://doi.org/10.1016/j.resconrec.2017.09.005>.
- Klima- og miljødepartementet, 2017. Avfall som ressurs - avfallspolitikk og sirkulær økonomi. Meld. St. 45. (2016 –2017) Melding til Stortinget. Retrieved from: <https://www.regjeringen.no/no/dokumenter/meld.-st.-45-20162017/id2558274/>
- Korhonen, J., Nuur, C., Feldmann, A., Birkie, S.E., 2018. Circular economy as an essentially contested concept. *J. Cleaner Prod.* 175, 544–552. <https://doi.org/10.1016/j.jclepro.2017.12.111>.
- Lazarevic, D., Valve, H., 2017. Narrating expectations for the circular economy: towards a common and contested European transition. *Energy Res. Soc. Sci.* 31, 60–69. <https://doi.org/10.1016/j.erss.2017.05.006>.
- Lidström, A., 2018. Subnational Sweden, the national state and the EU. *Region. Federal Stud.* 30 (2), 137–154. <https://doi.org/10.1080/13597566.2018.1500907>.
- Millar, N., McLaughlin, E., Börger, T., 2019. The circular economy: swings and roundabouts? *Ecol. Econ.* 158, 11–19. <https://doi.org/10.1016/j.ecolecon.2018.12.012>.
- Morseletto, P., 2020. Targets for a circular economy. *Resour. Conserv. Recycl.* 153, 104553. <https://doi.org/10.1016/j.resconrec.2019.104553>.
- Nikitina, B., 2020. Waste management and circular economy in the public discourse in Russia. In: Ashmarina, S.I., Mantulenko, V.V. (Eds.), *Current Achievements, Challenges and Digital Chances of Knowledge Based Economy*, 133. Springer International Publishing, pp. 451–461.
- Nylén, E.-J.A., Salminen, J.M., 2019. How does the circular economy discourse affect policy-making? The case of streamlining waste utilisation in Finnish earthworks. *Resour. Conserv. Recycl.* 149, 532–540. <https://doi.org/10.1016/j.resconrec.2019.06.029>.
- Persson, O., 2015. What is Circular Economy? - the Discourse of Circular Economy in the Swedish Public Sector.
- Pierce, J.J., Peterson, H.L., Jones, M.D., Garrard, S.P., Vu, T., 2017. There and back again: a tale of the advocacy coalition framework: review of the advocacy coalition framework. *Policy Stud. J.* 45 (51), S13–S46. <https://doi.org/10.1111/psj.12197>.
- Prieto-Sandoval, V., Jaca, C., Ormazabal, M., 2018. Towards a consensus on the circular economy. *J. Cleaner Prod.* 179, 605–615. <https://doi.org/10.1016/j.jclepro.2017.12.224>.
- Rockström, J., Steffen, W., Noone, K., Persson, H.J., Chapin, F.S., Lambin, E.F., Lenton, T.M., Scheffer, M., Folke, C., Schellnhuber, H.J., Nykvist, B., de Wit, C.A., Hughes, T., van der Leeuw, S., Rodhe, H., Sörlin, S., Snyder, P.K., Costanza, R., Svedin, U., ... Foley, J.A., 2009. A safe operating space for humanity. *Nature* 461 (7263), 472–475. <https://doi.org/10.1038/461472a>.
- Roy, J., Tschakert, P., Waisman, H., Abdul Halim, S., Antwi-Agyei, P., Dasgupta, P., Hayward, B., Kanninen, M., Liverman, D., Okereke, C., Pinho, P.F., Riahi, K., Suarez Rodriguez, A.G., et al., 2018. Sustainable development, poverty eradication and reducing inequalities. In: Masson-Delmotte, V., Zhai, P., Pörtner, H.-O., Roberts, D., Skea, J., Shukla, P.R., et al. (Eds.), *Global Warming of 1.5°C. An IPCC Special Report on the Impacts of Global Warming of 1.5°C Above Pre-industrial Levels and Related Global Greenhouse Gas Emission Pathways, in the Context of Strengthening the Global Response to the Threat of Climate Change, Sustainable Development, and Efforts to Eradicate Poverty* In Press.
- Sandberg, M., Klockars, K., Wilén, K., 2019. Green growth or degrowth? Assessing the normative justifications for environmental sustainability and economic growth through critical social theory. *J. Cleaner Prod.* 206, 133–141. <https://doi.org/10.1016/j.jclepro.2018.09.175>.

- Savini, F., 2019. The economy that runs on waste: accumulation in the circular city. *J. Environ. Plann. Policy Manage.* 21 (6), 675–691. <https://doi.org/10.1080/1523908X.2019.1670048>.
- Schmidt, V.A., 2011. Speaking of change: why discourse is key to the dynamics of policy transformation. *Crit. Policy Stud.* 5 (2), 106–126. <https://doi.org/10.1080/19460171.2011.576520>.
- Schou, A. & Indset, M. (2015). EU-programmer: deltagelse og nytte for kommunesektoren. NIBR-rapport 2015:19 (in Norwegian). Retrieved from: <http://www.hioa.no/extension/hioa/design/hioa/images/nibr/files/2015-19.pdf>
- Sjöblom, S., 2018. Finnish regional governance structures in flux: reform processes between European and domestic influences. *Region. Federal Stud.* 30 (2), 155–174. <https://doi.org/10.1080/13597566.2018.1541891>.
- Stahel, W.R., 2019. *The Circular Economy: a User's Guide*. Routledge.
- Stahel, W.R., 2016. The circular economy. *Nature* 531 (7595), 435–438. <https://doi.org/10.1038/531435a>.
- SMICE (2020). Develop for the future! Retrieved from: <https://www.smice.nu/aboutsmice>
- Statistisk sentralbyrå. (2020). De Største Kommunene. Retrieved from: <https://www.ssb.no/befolkning/faktaside/befolkningen>
- Statsministerens kontor. (2019). Granavolden-plattformen: Politisk plattform for en regjering utgått av Høyre, Fremskrittspartiet, Venstre og Kristelig Folkeparti . Retrieved from: <https://www.regjeringen.no/no/dokumenter/politisk-plattform/id2626036/>
- Suárez-Eiroa, B., Fernández, E., Méndez-Martínez, G., Soto-Oñate, D., 2019. Operational principles of circular economy for sustainable development: linking theory and practice. *J. Cleaner Prod.* 214, 952–961. <https://doi.org/10.1016/j.jclepro.2018.12.271>.
- Temesgen, A., Storsletten, V., Jakobsen, O., 2019. Circular economy – reducing symptoms or radical change? *Philos. Manage.* <https://doi.org/10.1007/s40926-019-00112-1>.
- Trondheim Kommune. (2017). *Kommunedelplan: energi og klima 2017–2030*. Retrieved from: <https://www.trondheim.kommune.no/globalassets/10-bilder-og-filer/10-byutvikling/miljoenheten/klima-og-energi/kommunedelplan-energi-og-klima130618.pdf>
- Trondheim Kommune (2019). *Avfallsplan for Trondheim Kommune 2018 – 2030: Kommunedelplan*. Retrieved from: <https://www.trondheim.kommune.no/globalassets/10-bilder-og-filer/10-byutvikling/kommunalteknikk/avfall/avfallsplan-for-trondheim-kommune-2018-2030.pdf>
- Trøndelag Fylkeskommune. (2017). *Value Creation in Trøndelag: strategy for innovation and value creation in Trøndelag*. Retrieved from: <https://www.trondelagfylke.no/contentassets/b91afe6250b342e9b2d73dc270993796/strategy-for-innovation-and-value-creation-in-trondelag.pdf>
- Trøndelag Fylkeskommune. (2020). SÅNN GJØR VI DET: regional strategi for klimaomstilling. Consultation Draft. Retrieved from: <https://www.trondelagfylke.no/globalassets/dokumenter/klima-og-miljo/klima/horingsutkast-regional-strategi-for-klimaomstilling.pdf>
- UNFCCC, 2019. *Un Climate Change Annual Report 2018* ISBN: ISBN 978-92-9219-184-9 Retrieved from: <https://unfccc.int/sites/default/files/resource/UN-Climate-Change-Annual-Report-2018.pdf> .
- Valenzuela, F., Böhm, S., 2017. Against wasted politics: a critique of the circular economy. *Ephemera* 17 (1), 23–60. Retrieved from: <http://www.ephemerajournal.org/contribution/against-wasted-politics-critique-circular-economy> .
- Van Dijk, T.A., 2006. Ideology and discourse analysis. *J. Polit. Ideol.* 11 (2), 115–140. <https://doi.org/10.1080/13569310600687908>.
- van Eemeren, F.H., Jackson, S., Jacobs, S., 2015. *Argumentation*. In: van Eemeren, F.H. (Ed.). *In: Reasonableness and Effectiveness in Argumentative Discourse*, 27. Springer International Publishing, pp. 3–25.
- Völker, T., Kovacic, Z., Strand, R., 2020. Indicator development as a site of collective imagination? The case of European Commission policies on the circular economy. *Cult. Organ.* 26 (2), 103–120. <https://doi.org/10.1080/14759551.2019.1699092>.
- Wastling, T., Charnley, F., Moreno, M., 2018. Design for circular behaviour: considering users in a circular economy. *Sustainability* 10 (6), 1743. <https://doi.org/10.3390/su10061743>.
- Welch, D., Keller, M., Mandich, G., 2017. Imagined futures of everyday life in the circular economy. *Interactions* 24 (2), 46–51. <https://doi.org/10.1145/3047415>.
- Wiedmann, T., Lenzen, M., Keyßer, L.T., Steinberger, J.K., 2020. Scientists' warning on affluence. *Nat. Commun.* 11 (1), 3107. <https://doi.org/10.1038/s41467-020-16941-y>.
- Wysokińska, Z., 2016. The “new” environmental policy of the European union: a path to development of a circular economy and mitigation of the negative effects of climate change. *Compar. Econ. Res.* 19 (2), 57–73. <https://doi.org/10.1515/cer-2016-0013>.