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# The role given to citizens in shaping a circular city

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## ABSTRACT

A circular city (CC) presents opportunities to address the urban nexus of citizens and material flows in a circular economy (CE). Still, the role of the citizen in shaping both CCs and CE is understudied. We start with a conceptual review of how the role of the citizen has been studied for CCs. There, we identify acknowledgment of the citizen as a political actor and subject to behavior change. We further investigate the role given to and expected from citizens in the case of the city of Trondheim in Norway, where the agendas and discourses of CE are already widespread. In this city, the role given to citizens is oriented towards commercial or political activity, with the local government playing a role in enabling citizens' agency. We conclude that the local government can leverage a more politically oriented citizenship to support the public services and infrastructures needed.

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## Introduction

The circular city (CC) is a concept that brings the implementation of a circular economy (CE) to the boundaries and scales of cities (c.f., Brears, 2021; Bucci Ancapi et al., 2022). A CC means that cities are recognized as units of production and consumption, where people's everyday life unfolds as part of social and economic processes. Using the city as a unit of analysis also offers the opportunity to verify changes in patterns of materials resource use. Thus, objectives for a CE, such as reducing the need for new extraction of raw materials, reducing or eliminating waste production, and keeping products in use for longer, are contentions for the urban agendas of CCs.

The future inclusion of CCs as part of policy and urban planning is a foreseeable path (Bassens et al., 2020). The advent of this concept is part of the relocation of meaning around circularity discourses, going from economies to societies (Calisto Friant et al., 2020) and development (Williams, 2022). The relocation of meaning implies particular understandings of the relations between public authorities, private organizations, and the rest of the people (e.g. Ghisellini et al., 2021). This triad represents the most prominent roles of actors in the governance of contemporary societies.

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Most of the work in the literature about CE is dedicated to the roles of governments (i.e. public or State actors) and private sectors (i.e. production for commercial activity). However, the role of citizens is understudied and usually subsumed to the decisions of the other two types of actors. Hobson (2016, p. 99) notes that the lack of attention to the citizen is underpinned by a dominant perception that limits citizens to rejecting or accepting practices formulated by others on their behalf. This perception is particular to an understanding of citizens as driving demand for produced goods and services as consumers.

The involvement or participation of citizens in the planning for CE in cities is expected as citizens are part of the triad already mentioned. Regarding their involvement, Izdebska and Knieling (2020) evidence how in some cases, citizens are only considered in unidirectional modes of communication (e.g. informing or telling how to behave about waste). The participation of citizens in CCs would however go beyond the initial planning or projects put forward by particular actors. In cities, citizens are dwellers and users of services and products, and animate material flows through their daily activities, mainly in consumption, to fulfill different needs and wants.

Citizens' lifeworld and social relations sustain the need for specific provision systems and material flows (Kębłowski et al., 2020). Most of the carbon footprint in cities results from citizens' consumption (Schröder et al., 2019). In addition, most production outside of urban spaces or the non-city (c.f., Bucci Ancapi et al., 2022) is mainly motivated by urban consumption. This situation puts cities as the favored space to intervene in to change production and consumption patterns. However, cities are not in political or administrative vacuums and take other scales of organization as the backdrop. Therefore, conditions beyond a city's boundaries always influence the context of its production and consumption governance.

The relation between the citizens' role and other actors represents a challenge to any form of governance. These other actors are in the private sector (markets, industries, and businesses) and the public sector (local authorities and public services). These actors initially mobilize the concept of CE and start processes of translation and diffusion of its discourses and practices to citizens. Two questions guide this work: 1) What roles have been studied for citizens in defining CCs? 2) What roles are assumed for citizens in a CC? The former question is explored through a conceptual review in section two. The latter is explored in a case based on Trondheim in Norway (sections 3 and 4).

## Conceptual review

We departed from the notion that a CC reinforces CE as a group of managing principles for the urban space (Lakatos et al., 2021; Williams, 2022). CC is starting to be used as an extension of CE in formulations about territoriality, regions, and urban spaces (c.f., Brears, 2021; Bucci Ancapi et al., 2022).

The CC concept has found its way into projects and experiences in European cities' management plans. The use of the CC concept is also supported and backed by the European Union through different financial initiatives (e.g. Circular City Funding Guide, n.d.; Ideal Cities, n.d.; Klimate-KIC, n.d.). Other actors promoting CE in Europe also have their take on the concept. For example, a definition of the CC concept is given in a document entitled "Circular Cities Action Framework" (Circle Lab for Cities program, n.d.):

A circular city is one that promotes a just transition from a linear to a circular economy across the urban space, through multiple city functions and departments and in collaboration with residents, businesses and the research community. (Circle Lab for Cities program, n.d., p. 3).

This definition uses the term residents, which is another way to refer to the people in a city, and frames them as collaborators. The framing of people as collaborators can be interpreted as a move from government forms based on administration or management and addressing a governance paradigm based on the self-regulation of all actors in a city through their relationships.

Fratini et al. (2019) propose an agenda for the governance of urban sustainability transitions, seeing cities as suitable arenas to understand and experiment with CEs. da Cruz et al. (2019) notes the contribution cities can make when it comes to understanding governance as part of relations of actors. Thus, for the governance of CE, cities offer the opportunity to address the interrelations that shape the roles of different actors.

Concerning CE, Hobson (2019) discusses two ways of approaching the citizen as part of the systemic transformation of a CE. On the one hand, CE is strongly linked to views of the citizen as a rational and individually driven subject that can change its relation to material resources and other actors by choice. On the other hand, CE is challenged by citizens' embeddedness in current socio-material relations, where citizens act conditioned by what they already do. In sum, citizens can be approached as choice-makers or actors conditioned by the current socio-material relations.

In terms of governance, the two approaches mentioned above offer two ways of involving citizens. In the first one, citizens are involved as individuals responsible for change by having options to select from –for example, through products and services available through market strategies for provision. In the second one, changes require infrastructures and modes of learning that consider the integration of CE into the everyday life of citizens, which is not just a question about choice but a matter of constant production and reproduction of normality.

The material resources consumed and used in everyday life represent the physical dimension of normality. This is for example evidenced in the types and amounts of materials used in specific places and periods. Consumption is also an important aspect of cities, particularly in the move from industrial to post-industrial cities (e.g. Jayne, 2006, pp. 153–177). In post-industrial cities, a clear distinction is made between places for production and places for consumption. Industrial activity is usually displaced to the city's margins or outside its boundaries. This distinction puts most contemporary cities as spaces for consumption, commercial transaction (i.e. retail), and waste generation.

According to Soneryd and Ugglå (2015), “consumer responsibility” is a trait of green governmentality, which leads to policy formulations that place all or most of the weight – of responsibility and blame– for green or sustainable transformations upon individual citizens. While consumers are supposed to make rational lifestyle changes, other actors are expected to be facilitators or enablers (Soneryd & Ugglå, 2015, p. 914). However, consumer responsibility does not account for the dependency of consumption on global flows of materials (Gregson et al., 2015). This situation implies a disconnection between production and consumption that could lead to the failure of CCs, as all the

responsibility is given to citizens without other mechanisms for controlling or managing material resources.

A CC also supposes local management of material resources. This management usually considers the micro or individual interactions of users and products, for example, through product lifetime extension to prevent waste generation. At the macro or social level, material resource management considers material flow regulation (cf., Lucertini & Musco, 2022). However, it is unclear what role global product provision may play in shaping the circularity of particular cities. Or, from a local perspective, the extent to which city actors can control the inputs and outputs of material resources within territorial boundaries.

Furthermore, CCs also suppose local integration of production and consumption cycles closer to the people serviced by material resources. Thus, the use phase of products is a priority in formulating city services for provision (Williams, 2019a). This raises questions about how such services are presented and understood in the context of CC governance. Moreover, which sectors or individuals are responsible and accountable for ensuring the prevalence of these services and their functions as part of a CE normality.

### ***Citizens' participation***

Regarding CEs in cities, Fratini et al. (2019) indicate an asymmetry in participation, where the emphasis is put on the roles of businesses and technologies (Fratini et al., 2019, p. 986). The involvement of citizens in CCs is sometimes limited to participation in prescribed activities and spaces. This is a particular trait of case studies about implementing CE projects, where changes in practices or behaviors are enabled in normative ways (as exemplified by Bolger & Doyon, 2019). In these cases, the role of enablers is given to local governments (i.e. municipalities as the city's governmental body).

Calls to include citizens as part of CCs (e.g. Fratini et al., 2019; Marin & De Meulder, 2018) also require paying attention to the practicalities of said inclusions. For example, Carrière et al. (2020, p. 11) call to include citizens as actors beyond political agendas, which means that individual political affiliations are a potential challenge for participation in CCs. However, these challenges are not exceptional to CCs and showcase the difficulty posed by including citizens –in functions other than government or commercial sectors.

### ***What citizens do***

It is possible to separate citizens' roles from the roles of government authorities and commercial actors by looking at citizens' acts –in behaviors or practices. These acts also embed consumption (Warde, 2005). Concerns about consumption, lifestyles, and cultures appear to be culprits and opportunities for intervention in CCs. For example, Campbell-Johnston et al. (2019) consider behavior change one of the soft barriers to a CE and point to consumers as inhibitors of the acceleration of CE.

Another assumption is that local governments can direct citizens to specific lifestyles, often underpinned by commercial or industrial offerings. In addition, a difficulty for change is posed by citizens who as carriers of practices interact within and conforming to existing socio-spatial arrangements (Hobson, 2020). In this regard, Turcu and Gillie

(2020, p. 80) question the dependency on indicators –statistical data– that may constrain behavior to normative expected patterns, or hide citizen-led initiatives that have not been accounted for.

For the roles of citizens, CCs might also influence the structuration of time and labor – involving changes in practices. For example, Wuyts et al. (2020, p. 18) argue that to participate in a CE, some citizens may have to learn skills and take on activities for repair and reuse during their free time. However, Hobson (2020) notes that what citizens do is context-dependent, which explains why some circular practices are not performed as expected.

Changes in the use of time would impact the social division of labor and even change the perception of work time as a commodity sold. Hobson et al. (2021) focus similarly on the work necessary to participate in consumption as part of the changes a CE would bring about. Thus, the development of a CC is, to some degree, conditioned to the engagement of citizens in the self-provision of material means.

### ***Political responsibilities***

Some proponents of CCs lean towards practice and lifestyle changes (e.g. Williams, 2019a). These changes can imply the formation of an ideal citizenship, which means setting normative standards for what citizens must do as part of being responsible – common in green governance (Brand, 2007)– but often without formulating changes for other actors. An overreliance on citizens changing their daily practices without other accompanying infrastructures or policy initiatives that reinforce systemic change with the other involved actors could be seen as a political decision that support the status quo.

Savini (2019) criticizes CCs by looking at the negative effect of policies in promoting the uptake of circular practices that might create a co-dependency on waste accumulation. This critique raises questions about whether cities risk becoming systems dependent on waste creation to sustain their functions. For example, wasted materials are seen as a source of income through exportation, which can be disrupted –it already happened with the ban on imports by China in 2017 (c.f., Gregson & Crang, 2019).

Material flow tracking technologies and indicators also provide data entry points for waste management, intending to control the material flows in a CC (e.g. Paiho et al., 2020; Zeller et al., 2019). However, the reliance on waste indicators could be unfavorable for efforts aiming to reduce overall consumption. On the one hand, waste indicators usually support value streams from sorted and recovered wasted materials. On the other hand, overall consumption reduction may require regulations of production and markets.

Marin and De Meulder (2018) argue that CC proposals tend to lack a political perspective, which explains why the sharing and distribution of responsibilities in CCs is not a priority. This also leads to reproduction of the technocentrism of CE discourses, which, according to Völker et al. (2020), exist between scientific and political knowledge.

Furthermore, in the redefinition of power in CCs, it is required that CE imaginaries are based on responsible narratives that consider the desirability and engagement of all and prioritize the biophysical realities of the environment (Strand, 2022).

In the following section, we present the characteristics of the case study of Trondheim.

## Materials and methods

To study the citizens' role in a CC we construct a case study from data collected from two previous studies in Trondheim, a city and municipality in Norway, and published elsewhere (Ortega Alvarado et al., 2021; Ortega Alvarado et al., 2022). The qualitative data from these studies include the transcripts of 17 interviews from a first study and five interviews from a later one. The case here is reconstructed and reinterpreted concerning the roles given to the citizens, by actors who already work on CE and those who advance it outside of the main institutional means. Trondheim is presented as a hypothetical CC in the making.

The sample to construct this case study uses 22 interviews. Of these interviews, 17 are from the first study and include representatives from the public sector, small or medium enterprises, and civil society organizations; these interviews were conducted between February and October of 2019. The complementing five interviews are from the second study; these include three examples of actors who have started a small commercial or social project and two people that related to the practice through their jobs; these interviews were conducted between October 2020 and March 2021.

In Trondheim, CE is already included as part of the managing principles for public sector policymaking. The city is an example of a European city where CE is actively promoted as part of the city governance. In the transition to a local CE, the Municipality collaborates with the private sector, academia, and non-profit organizations to identify models and knowledge to become a model city for sustainability.

In Trondheim, the intentions behind a CE are expressed in planning reports by municipal and regional authorities (Trondheim kommune, 2017, pp. 33–35; Trondheim kommune, 2019, pp. 9–11; Trøndelag fylkeskommune, 2017, p. 8). Over the last 5 years the interest in advancing the CE in Trondheim has increased. For example, at least two local networks seek to promote and experiment with possibilities for CE. One is promoted by The Chamber of Commerce and Industries in Trondheim (Næringsforeningen i Trondheimsregionen in Norwegian), under the name Sirkulært (<https://www.sirkulart.com/>). The other network is promoted by the local branch of the Norwegian environmental organization Future in our hands (Framtiden i våre hender in Norwegian), under the name Sirkellaget (<https://www.sirkellaget.no/>). In addition, many other initiatives involving application and research projects in Trondheim showcase the spreading of the concept to the general population.

Another important event was the local waste management company's reopening of a reuse store close to the city center in 2020. The store previously existed on a smaller scale, located outside of the city center. The current store functions as a platform for a CE based on reusing and repairing products. The waste management company actively communicates on it using social media. The effectiveness and goals of their current communication are however outside of the scope here.

In the case study, ideas about the roles of citizens are based on the understandings of people already working on CE in Trondheim. In addition, some roles have already been taken up by people in the city, who frame their position and opportunities as part of an upcoming CC. Here, we take the roles expected for or given to citizens as a new unit of analysis, highlighting a remark by one interviewee as our point of departure. This interviewee indicated that the Municipality of Trondheim “wants to become the

loan-share-fix-city”. This remark implies a view of the Municipality as an enabler of specific circular consumption practices (see Maitre-Ekern & Dalhammar, 2019; Mak & Terryn, 2019).

From a governance perspective, our study focuses on relations between actors in the city to identify the roles given to citizens. We see the framing of citizens’ roles with implications for the future provision of services and development of infrastructures as part of the structuration of a city’s socio-spatial arrangements.

### ***Trondheim’s characteristics***

Trondheim is the third largest city by population in Norway, following Oslo and Bergen. However, unlike the former two, Trondheim is not part of a cluster of urban settlements. In addition to its spatial isolation, Trondheim is one of the oldest settlements in Norway, with a history as the first capital. This situation makes Trondheim an interesting case, in that it shares a larger city’s autonomy and a smaller one’s scale.

The city’s main political body is Trondheim’s Municipality (kommune in Norwegian). Municipalities in Norway are the public organizations closest to the citizens, providing services in education (primary and lower secondary school), care, and waste management services. Municipalities are also responsible for local (urban) planning, culture, and business development (Norwegian Ministry of Local Government and Modernisation, n.d., p. 11).

Furthermore, some of the services given to citizens are coordinated between municipalities with the aid of a political body known as a county council (fylkeskommune in Norwegian). This political body has a regional scope and coordinates aspects such as regional business development and public transportation that influence the livelihood of significant cities and smaller towns. In the case of Trondheim, it is part of the Trøndelag region and is serviced by its county council.

These two political bodies organize their services and tasks according to the strategies and goals defined by the National Government (regjeringen in Norwegian). Fifteen specialized ministries, their branches, and the office of the Prime Minister make up the National Government of Norway; they work according to the legal framing and budget distribution defined by the Norwegian Parliament (Stortinget).

Norway is also part of the European Free Trade Agreement and the European Economic Area Agreement, which means that National, Regional, and Municipal economic initiatives must follow requirements for competition and distribution within European markets –which can be seen as the permanent compromise of Norway to the European Union (c.f., Selle & Østerud, 2006, p. 555) This membership in the EFTA, also puts some restrictions on the level of control Norway can have on the products circulating within Norway due to commercial reasons.

Although the authorities of a city like Trondheim can decide on some aspects of its transition to a CC, there is also a dependence on a governmental structure that is multi-level (i.e. national, regional, municipal) and on political and commercial aspects that are influenced from abroad (i.e. the international organization of markets). Furthermore, the input and output of material resources is not under the control of this municipality. However, municipalities in Norway have responsibility over the none owned

waste that is collected through local waste management arrangements –according to the law on pollution (Klima- og miljødepartementet, 2023).

Regarding waste management, Trondheim households and public spaces have had a regular waste collection service for more than a century. However, it changed from private to public ownership during this period. In the 1980s, the local waste collection company was made part of the technical department of the Municipality and later transformed into a department before being put into the private sector in the 1990s as a company partially owned by the municipality (Carstens, 2018). Lately, the perspective of waste at the municipality and the waste management company has shifted to consider the opportunities to use “waste” as “resources.” According to Carstens (2018), the company also used some waste as resources in the years before the second world war. Still, it was a practice that changed with the restructuring of the company and the introduction of new techniques for waste management.

## Case study

The analysis of the 22 interviews focused on content related to citizens. It resulted in a categorization of changes or roles expected from citizens. The results are summarized in Table 1.

We base our study on the expectations for the CC of Trondheim, questioning what roles citizens are assigned. We identify a first example of assignation of roles in the municipality’s use of individual responsabilization as part of a campaign for the promotion of behavior changes through the concept “Litt smarter” –translated to “a little smarter”. The concept is used in the municipality’s website “Trondheim 2030” and defined as individual measures taken in relation to climate change and the environment (Trondheim kommune, 2020a). Although the municipality orients the role of the citizen as part of individual responsibilities, their efforts are aimed at infrastructure and service change. This case study further develops these claims.

The introduction of CE in Trondheim is now negotiated against a national strategy grounded in economic growth (c.f., Miljødirektoratet, 2021). This grounding orients the work done by the municipality and the central role given to commercial actors, and to the economic value of waste treatment as resource. Thus, at the surface, citizens’ roles in CCs are addressed as those of consumers. However, defining citizens as consumers does not show the complete picture of the roles given to citizens.

We further identify intentions to facilitate product reuse and repair practices, activities essential to a CE, as signals of interest in including principles of circularity as part of the city planning –which go beyond the scope of waste management. This is exemplified by the re-localization of the waste management company’s reuse store from the city’s outskirts, where the main waste treatment plant is located, to an address at walking distance from the city center.

The first category of interviewees (see Table 1) approaches the role of the citizen in relation to waste sorting –an individual responsibility– and recovery from waste –an infrastructural responsibility. From this perspective, the citizen’s main contribution to CC is engaging in correctly sorting different materials to enable recycling. However, the interviewees consider this a shared responsibility, and propose product design and technologies for mechanical solutions that minimize the burdens of waste sorting. The

**Table 1.** Roles for citizens in the 22 interviews used in the sample of this case study.

Category	Source	Interviewee's position	Role of citizen, summarized
1. Waste sorting and waste recovery made easier	First study	Municipal advisor	Citizens' main task is to separate waste correctly. The other actors provide infrastructure and goods to circulate.
		Coordinator at regional waste management	Citizens' task is to sort waste, but people need information about what happens to the waste.
	Second study	An employee at a municipal waste management company	The willingness of citizens to sort plastic is central, but this can be replaced by mechanical means of waste sorting.
		A former employee at an electronics store	Functional products in waste containers can easily be recovered and repaired if people know what to look for. Therefore, wasted products should be available without restriction.
2. Awareness to change behavior	First study	An employee at a reuse store at local waste management	People need to be shown the possibilities of reusing discarded products.
		Volunteer at Civil organization	Consumer's power is deciding what to buy and what to consume.
		Co-owner of SME	More people need to be interested in having a sustainable lifestyle.
		University Professor	Citizens should be engaged in avoiding unnecessary consumption and waste.
		Industrial park – CE and digitalization advisors	Citizens should know where their products come from and where they go after being discarded.
3. Demand for commercial and policy solutions	First study	Advisor at county council	Citizens should be involved as SME owners working in specific sectors (furniture, clothing, etc). People must judge what they use and dispose of. Individuals need to mobilize, especially at the municipal level.
		Advisor at county council	The right individual choices should be facilitated by design. Individuals should have the opportunity to be more than consumers. Individuals need to understand that it is a political issue.
	Second study	Initiator of clothes fixing club	Every material has potential. People can save a lot of money if they can repair themselves.
	4. Changing practices, knowledge transfer, and market regulations	First study	Advisor for an environmental civil organization
Advisor for an environmental civil organization			Information about material use must be provided to regular citizens. Recycling is a good mindset, but people must change their lifestyles (the big picture).
Volunteer at civil organization			People need to take up the habit of looking for reuse first. This can be learned, and regulations can help.
Former owner SME			People should change their consumption behavior. The government should put some restrictions (on producers and sellers).

*(Continued)*

**Table 1.** Continued.

Category	Source	Interviewee's position	Role of citizen, summarized
5. Public provision for consumption reduction	Second study	Initiators of a bicycle kitchen	People can share knowledge and create a community by sharing technical knowledge without being experts.
	First study	Municipal advisor	Citizens need to become aware and be "smarter" about resource use. Services should be provided to the citizen to facilitate and make second-hand appealing. People can be mobilized to request services.
		Municipal advisor	The citizen should reduce their consumption. The municipality can offer some services, but the private sector is also responsible for this matter. People have political power.
		Municipal public library	Citizens should know what they can repair and access tools and products that are not for daily use. Adequate skills are also a necessity.
	Second study	Initiator of tool sharing and free fridge	People can have public infrastructure for the sharing of material resources and their surplus.
		An employee in a housing project	People can learn to self-regulate for sharing. Skills to take care of their own spaces and material conditions are necessary. Still, professional aid is also essential to maintaining things in function for longer.

interviewees are also aware that citizens disengage from waste sorting when system shortcomings become known; for example, when it is known that plastics are burned instead of recycled, reducing the environmental benefits. Working on design and mechanical sorting strategies is also a way of making systems less reliant on citizen behavior change.

Furthermore, an interviewee from the second study challenges the notions of what the infrastructure for waste sorting could facilitate –particularly when it refers to objects that have been wasted. Electronic devices are disposed of by returning the damaged product to the seller or any electronics store. However, even in the stores the materials get wasted without distinguishing between the types of products discarded. As the interviewee mentions:

... the information about the products in the container is sent to the Miljødirektoratet [Norwegian Environmental Agency] in kilos ... It doesn't matter if there are cell phones, ovens, or TVs; it is only kilos. A former employee at an electronics store

In this case, the interviewee recognizes that most citizens do what current policies mandate. They discard the products in the right place expecting that the materials will be handled or reused locally. However, the products are not categorized locally by the stores. These products are taken to processing plants in other places:

These automatized plants are not in the municipalities. It's further on in the value chain ... We had a sorting plant just south of Trondheim, but it was bankrupt. Former waste management advisor in Trondheim's Municipality

Here, there is a mismatch between citizens' actions and what happens after things have been given away as waste. This example shows that relying only on waste sorting is not enough to make a functional CC.

The second category (see [Table 1](#)) takes citizens as passive subjects that can be made aware of a CE. This should in turn result in behavior change –individual responsibility. The citizen is informed and expected to gain awareness about existing possibilities. The commercial and public actors take the role of translators, seeing awareness as a necessary step before lifestyle or behavior change. The interviewees also note an increasing awareness about the environmental impacts of products among people, which in turn also puts pressure on businesses. In summary, this group considers awareness of environmental impacts (through communication) to redirect consumers’ power (in buying choices) and behavior (i.e. waste sorting), which would result in businesses’ change (better practices and products). One interviewee sees the importance of using influencers to leverage cultural change:

... you need influencers also, so that is the kind of actors we want to think about. How do they market themselves? ... kind of what it is said in business that “culture always kills strategy”. So, if you are a visionary and have a big strategic plan for a company, in that case, if the culture doesn’t want to change or is comfortable in its situation, it will be hard to make any strategic plan go through. Volunteer at Civil organization

In contrast to the use of influencing or translating actors, one of the interviewees in this group also notes a perceived impossibility of informing or communicating cultural change as long as no other changes are made in the structural aspects of society:

I don’t see in a hypothetical long-term future a system that is much more in line with nature, without society having a totally different structure. I don’t think that is possible, unless there is a real crisis, or a series of real crises. I don’t think that people are willing to sacrifice or make those changes without really being forced to. So, a shift will take long time. University professor

These two examples evidence an existing incongruence in perceptions about how change can be informed. On the one hand, one compels to making solutions attractive but without changing the system, while the other sees the necessity to have an overall systemic change in the first place.

The third category (see [Table 1](#)) includes two county advisors –working at the regional level between the national and municipal governments with direct influence over Trondheim. These two interviewees noted the need to foster change by facilitating “right choices” – minimizing individual responsibility while expecting political mobilization to demand specific solutions. The solutions refer to local actions for public services such as public transportation and services for or regulations to industrial sectors. This framing of the citizen role can be contradictory. On the one hand, the citizen is expected to be politically mobilized. On the other hand, the solutions are expected to take responsibility away from citizens. This is exemplified by one of the county advisors:

... we have to design a society where the right choice is the easiest one. I may not care what’s inside my laptop. I just want it to work when I turn it on. And, it must be allowed to not care about CO2 equivalents but still be able to make the right choice. County Advisor

In the same category, adding to this, a local citizen who started an online fixing club for textiles (clothes) notes that it is also about values.

Everything has a potential. I'm extreme, I repair everything (...) I think a lot is about your values (...) [M]y parents have always been repairing, and it does not have to look good, but it works. Initiator of Clothes Fixing Club.

These two examples show two contrasting views about what citizens can do, one giving up on the autonomy of the citizen and the other relying on this autonomy but appending it to having certain values.

The fourth category (see [Table 1](#)) bases the role of the citizen on learning from examples of proper handling of materials, which should result in a practice change. These interviewees also call for more citizens to get involved in circularity, by repairing and reusing products. Such calls are challenged by citizens' lack of knowledge and skills related to product repair and reuse. In addition, the interviewees consider that governments should regulate production –making reparability a mandate– and private producers and retailers should follow along as a responsibility of profiting from market activity. For example, regulations on what can be sold, mandates for more extended guarantees, spare stocks of parts for repair, and skill transference to citizens. As exemplified by one of the interviewees:

The one problem is that things are made, you know, so they can't be repaired. So, you, have to buy a new one. So, the government should say no, if you produce the electronic, you should have it like this and this, and it should be easy to repair. Advisor for an environmental civil organization

Another interviewee also expands on this idea of having the government regulate or intervene in the market:

I think that the government would have to make some rules. Like, I would say, restrictions for maybe meat and also for (...) I say, as long as I'm able to go on holidays to London for 200 NOK [Norwegian kroner]. I will. Because, that's how people are. I mean, yeah. But if we are doing something, I think that would be maybe looking into it. Former owner of reused clothes store

Concerning market regulations, there is a constraint to what the local government can do. Most regulations have to be decided at the national or international scales and according to political mandates. This situation limits what a CC can be and the actions that citizens within a city can expect, as cities do not exist in vacuums.

The fifth category (see [Table 1](#)) includes three interviewees at the municipal level. In this group, public service provision is at the center. The interviewees act based on the understanding that consumption reduction is the most important aspect to achieve. Still, consumption reduction does not have a political mandate through publicly elected political bodies. This means that the administrative workers at the municipality cannot act on it with complete freedom. However, the municipal administrative staff has found some degrees of freedom by taking a hands-on approach and acting on what is politically and publicly allowed. This for example includes introducing services for sharing and reusing products in the local libraries and emphasizing a national commitment to green public procurement. This commitment means acquisition of less furniture and other material artifacts, and maintenance and reuse of existing ones, as part of the physical support of public services. This commitment is aimed as an example from the public sector to the private sectors. One of the interviewees at the municipality puts it in this way:

... we have an internal commitment to show that we must reduce consumption of furniture. We work both towards the consumers in the city, but also the consumers within the municipality. The municipality is a huge buyer, so we have quite a lot of power here. I think when you look at our room for action, maybe that's where we have the most we can say. Municipal advisor

In this same category, the idea of showing through examples is also showcased by local actors that are not part of the municipality. For example, one worker at a housing project mentions the exemplary nature of housing based on principles of sharing by noting:

Why should I buy it [a tool] when my neighbor has it? But how can I ask my neighbor to borrow it that time of year when I need it. How can I break that down? I think I break that down by finding something we can agree upon (...) I want to ask the municipality (...) maybe we can build a small shed to store things (...) there are neighbors who like building and together we can make a community. An employee in a housing project

In this final category, the contention for the role given to citizens is that the other actors, such as the municipality or commercial actors, can act by giving examples and do not need to wait until there is a political mandate coming from the citizens or the governing bodies at other scales. However, in the case of Trondheim Municipality some of the examples are cautiously enacted to avoid frictions with the priorities set by the national government.

## Discussion

The roles identified in this case do not come at face value but require a process of interpretation. In this article, we considered the citizens' roles in their relation to other actors (the local government, the for profit private sector and the organized civil society). CCs are an expansion of the CE concept within an urban agenda and specific socio-spatial arrangements (Hobson, 2020; Petit-Boix & Leipold, 2018; Williams, 2019a, 2019b, 2019c; Wuyts et al., 2020). Although a governance paradigm would imply no a priori assumed roles of the different actors (da Cruz et al., 2019), in practice, it appears that roles are assigned by "incumbent actors" (Fratini et al., 2019). Therefore, it should not be surprising that a CC results in a structuration of material services that follow the logic of capitalist accumulation (Savini, 2019).

We previously hinted at a translation of CE to the general population in the urban space of Trondheim. This translation considers two aspects, one is the commercial side and the second one is the relation to what has previously been understood as waste. These two aspects are components included in almost all formulations of CE. These are also translated to CCs, where commercial aspects and waste management take center stage. These two aspects also indicate how citizens are understood and the roles that are assumed and expected of them.

For the governance of Trondheim as a CC, the roles given to citizens –a priori– would be an influencing factor. In Trondheim, there is a particular emphasis on forms of individual responsibility (Soneryd & Uggle, 2015). However, the complete realization of these individual responsibilities is limited by the subjection of citizens to specific modes of material provision –commercially oriented– and waste management practices –in material sorting and behavior change. Thus, citizens are at a disadvantage according to other actors. On the one hand, the citizen is considered powerful and can elect political

bodies or pressure businesses. On the other hand, the citizen is not perceived as able to discern what is better; thus, citizens must be made aware or aided to change.

Although CE is positioned mainly from the perspective of commercial and governmental actors, citizens are assessed as the leading political agents –at least from the perspective of a municipal government limited in its capacity to action. However, the political agency of citizens is also based on a capacity to be individually responsible when electing bodies with right mandates.

Regarding waste management –as in the first category of interviewees, Valkonen and Loikkanen (2020) talk about a “waste citizenship”, with individual responsibilities for waste reduction and waste sorting. Simultaneously, a significant role is expected from public authorities in managing how citizens behave –at least by providing information and examples but not engaging directly. In the case in Trondheim, there appears to be more engagement by the municipality in providing means that are beyond this “waste citizenship”. However, these engagements are weakened by the perception that the municipality requires a stronger political mandate –only reachable through the responsible choices of citizens.

The case in Trondheim evidences that some issues about transition to a CC could be resolved if public authorities had more space for action instead of having to prioritize the profitability of local businesses. On the one hand, this situation represents a potential controversy between the social scope of the municipality and private interests –favoring the commercial sector as a result of previous paradigms of government based on entrepreneurialism. On the other hand, the municipal government must also negotiate its position and responsibilities concerning the mandates of the national government –and the politically governing bodies representing the citizens. The municipal administration can maneuver CE in a limited way. Although it is responsible for managing the city’s material flows through waste management, material inputs depend on citizens’ consumption behavior and regulation policies decided by political bodies elected by citizens – usually at the national scale.

### ***Municipal responsibility***

Regarding the CE in Trondheim, those focusing on waste management reflect on roles related to waste sorting by removing –or making invisible– tasks through the design of products and the introduction of technologies. On the one hand, the citizen is framed as a rational agent capable of taking up circular behaviors because the system requires them to. On the other hand, the citizen is framed as not being fully trustable and needing easier solutions, thus, through the use of technologies that override their need to be responsive.

From the perspective of creating sustainable options for consumption, it is assumed that the municipality has a role in making citizens aware of the environmental impacts of their consumption decisions. However, this is a form of governmentality that emphasizes mobilizing people and directing rationalities (Rumpala, 2011), where the municipality is seen as a mediator with little power for enactment. This aspect is addressed in Trondheim, where some interviewees refer to facilitation of less impacting choices, which supposes that all available options should be sustainable and offerings be left to the disposition of commercial actors. At the same time, the municipality provides schemes for economic support. This situation creates another contradiction; citizens are

supposed to be able to make better choices but only from the options made available through commercial means.

The public sector could address the formation of possibilities deliberatively, such as letting citizens decide on the kind of consumption they want and expect in their city. However, this would require changing the relationships between citizens, commercial actors, municipalities, and institutional democratic channels. Furthermore, in the case of Trondheim, it would imply a power of the city that is not compatible with the current structure of political power with multiple scales.

### ***Individual responsibility***

Another aspect featured in this case is the skills and knowledge required for participating in a CE. These two components –skills and knowledge– can be seen under the formulation of an “ideal citizenship” in the CE. An “ideal citizenship” describes a mode of participation linked to what is expected from the citizens. There are a range of expectations, from simply sorting waste to buying products in more sustainable ways –for example, secondhand or alternative materials, to more complex participation in organizing communities or starting up commercial projects, thus moving beyond the individual level. The revealing aspect for the future of a CC is how much this “ideal citizenship” will be aided by the municipality or other actors, which could act as platforms for organization or by offering the necessary services as part of a public offering.

Suppose material flows are to be contained for use and production within the city’s boundaries. In that case, citizens will influence the socio-economic activities and the care given to materials. In this case, skills for production and reproduction of materials in use, reuse, and even the correct discarding should be at the top of the urban agenda. One of the interviewees in Trondheim pointed to the responsibility of municipalities in providing people with the skills required to carry out repair and redesign activities – not so distant from the reassembly of the relation between work and consumption discussed by Hobson et al. (2021).

At the same time, it is noted that individuals or households are not supposed to carry the weight of a CE. Ideally a CC would couple individual responsibilities with regulations on producers (restrictions or controls to what gets produced). An interviewee noted the possible failure of a CE due to citizens’ disengagement from waste sorting –which can be seen as an overstatement. For the waste management sector, the expectations put on technology rely on freeing the user from waste sorting at home but require specific standards given to commercial actors –for example, in product design. The question here is about the regulations and services to implement through policies and how they include notions of individual responsibilities without putting all the weight for success on the citizens.

### ***Commercial actors’ responsibility***

Finally, consumption is also part of the political dimension of CC. However, from a governance perspective –as seen in the case of Trondheim– it represents a challenge, as it is a gray area for the different government scales, but particularly for the relation between actors (viz., public-private). Thus, regulating consumption could mean stepping on other actors’ agency or promoting the goals of only one agenda –for example, focusing

on facilitating the formation of start-ups for profit-making. Although local authorities are interested in reducing the consumption levels of local citizens by providing services, this could involve competing with solutions that commercial actors could also offer.

The main question raised here is between different governance paradigms and the relations between the actors. On the one hand, regarding consumption, in Trondheim, the public actors are expected to provide space and support for solutions coming from private actors. On the other hand, private actors are expected to provide the means and revenue streams to sustain said services. However, citizens themselves can take matters into their own hands by assessing that some private actors' goals are at odds with consumption reduction, and the local government can support these initiatives.

A way to solve the tension between private and public goals is related to the role of the citizen as part of a diffuse political body, which for actors in the public sector in Trondheim means getting definitive political mandates about how to regulate consumption reduction, whether by popular election or mobilization (protest among others). This thus implies a politicization of CE as part of shaping a CC that acknowledges the embeddedness of citizens in sociomaterial dynamics and a more active role for the citizen.

## Conclusion

The concept of CC expands and adapts CE discourses to urban agendas. A CC does not necessarily mean modifying the relations between actors in cities –or the governance paradigms in cities. However, current relations of actors within cities and the political structure can be evidenced in how the transformations of services and material provisions are framed. In the case of Trondheim, the role of the citizen is invoked as part of the democratic process, with power for political mandating. However, this political power competes with the priorities given to commercial actors by the central government.

In this article, a particular interest is in the roles of citizens in shaping a CC, exemplified through a case study constructed from qualitative data in the city of Trondheim in Norway. The research was guided by two questions, presented as:

- (1) What roles have been studied for citizens in defining CCs?
- (2) What roles are assumed for citizens in a CC?

For the first question, in the literature we identify that there is an orientation towards integrating citizens in the efforts of shaping CCs. However, citizen participation does not mean that citizens take an active role in defining the priorities of the CC –for example, whether to focus on public initiatives, technological solutions for waste management or new services. Participation can also be understood as offering citizens technologies to fulfill their individual responsibility –by providing data that authorities can track or reducing the burden from extra work to participate in consumption. So, the role of the citizen sits between political participation –in discussing or shaping and organizing initiatives– and behavior change –waste sorting and information provision.

For the second question, in the case of Trondheim, we identify that the roles of citizens are also varied. These roles depend on the a priori relations that the actors have with citizens –and the current structuration of the political system, which in the case of

Trondheim is defined by a multi-scale governance. However, there is a call to politicize the matters of CE at the local scale. This politicization cannot be addressed when behavior changes through technology deployment is the main goal because it requires re-assessing the relations between actors. This reassessment could foster changes in the power dynamics that would allow local governments to take more ownership of the services and provisions at the city scale, which could reduce the centrality of commercial actors.

Some of the literature about CC mentions the need for spaces and interventions for debate, discussion, and construction of a common framework for circularity. From our interviewees in Trondheim, however, we identify that the inclusion of citizens is not clearly articulated but is already being acted upon by the initiative of particular individuals. This situation raises the question of who should initiate the mobilization for a political agenda of the CC? In Trondheim, civil society initiatives against overconsumption exist but are received under commercial and individual responsabilization standards. In this sense, the innovations that advance the CC in Trondheim are embedded in a market or commercial logic. However, some of these innovations are adopted in the public sector by framing them within existing services –as exemplified by the municipal efforts in Trondheim through procurement and borrowing tools at local libraries. The extent of the adoption within public services depends on the political support perceived by local authorities. Therefore, further research on CC governance should focus on how citizens' role in CCs change according to their responsibilities as political or commercial actors and beyond these two roles.

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