



## Domesticating circular economy? An enquiry into Norwegian subnational authorities' process of implementing circularity

Thomas Edward Sutcliffe & Isaac Arturo Ortega Alvarado

To cite this article: Thomas Edward Sutcliffe & Isaac Arturo Ortega Alvarado (2021) Domesticating circular economy? An enquiry into Norwegian subnational authorities' process of implementing circularity, *Journal of Environmental Policy & Planning*, 23:6, 752-765, DOI: [10.1080/1523908X.2021.1910016](https://doi.org/10.1080/1523908X.2021.1910016)

To link to this article: <https://doi.org/10.1080/1523908X.2021.1910016>



© 2021 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group



Published online: 02 Apr 2021.



Submit your article to this journal [↗](#)



Article views: 721





View related articles [↗](#)



View Crossmark data [↗](#)

# Domesticating circular economy? An enquiry into Norwegian subnational authorities' process of implementing circularity

Thomas Edward Sutcliffe <sup>a</sup> and Isaac Arturo Ortega Alvarado <sup>b</sup>

<sup>a</sup>Department of Interdisciplinary Studies of Culture, Norwegian University of Science and Technology, Trondheim, Norway;

<sup>b</sup>Department of Design, Norwegian University of Science and Technology, Trondheim, Norway

## ABSTRACT

This article focuses on the introduction of the concept of circular economy into a Norwegian context by concentrating on two levels of subnational authorities against the backdrop of the national level. By drawing on recorded qualitative data collected in the region of Trøndelag and Oslo, we deploy the concept of domestication to analyse how the diffusion of CE as a political, future-oriented concept is appropriated, i.e. through symbolic, practical and cognitive dimensions. Additionally, we consider the performativity of the future as a component in the adoption of the concept. Our findings suggest that the adoption of CE at these levels of governments in Norway is an ongoing process where the co-construction of the dimensions happens concurrently. Relating to the future, the national level takes a translative approach and goes after an increased interest and activity by private actors. At the first subnational level, in the case of the Trøndelag county, the public sector operates as a channel between knowledge of best practices and private actors who can mobilise action. Meanwhile, at the third subnational level, we find at the municipality of Trondheim, a public authority that proactively changes specific practices and regulates (or normalizes) the CE through their own means.

## KEYWORDS


Circular economy; domestication; subnational authorities; policy implementation; future performativity

## 1. Introduction

Circular economy (CE) has become a key approach to deal with challenges of global warming, resource scarcity and overconsumption. In Europe, the European Union's (EU) Commission is leading the development towards circularity through 'Closing the Loop' (2015) and the 'New Circular Economy Action Plan' (2020) which is a main pillar of The European Green Deal for sustainable growth (European Commission, 2019).

CE has since become a prominent development area within city-regional governance and scholarship on this topic has thus far been primarily concerned with commercial realisation and infrastructural change (Savini, 2019), but also with (re-)conceptualisations of CE (e.g. Kirchherr et al., 2017). Despite various conceptualisations, CE remains fragmented (Rizos et al., 2017) and acts as an 'umbrella' encapsulating variety of understandings (Marin & De Meulder, 2018). Few contributions focus on regional and local contexts of policy implementation, despite evidence suggesting that subnational authorities such as counties and municipalities are increasingly important spaces for implementation of EU regulatory policies (Borghetto & Franchino, 2010). In this paper, we set out to empirically study the diffusion of the Commission's CE policies in a Norwegian context by focusing on the subnational levels – Trøndelag county, and municipality of Trondheim – against the backdrop of the national level.

**CONTACT** Thomas Edward Sutcliffe  [thomas.e.sutcliffe@ntnu.no](mailto:thomas.e.sutcliffe@ntnu.no) 

 Supplemental data for this article can be accessed <https://doi.org/10.1080/1523908X.2021.1910016>.

© 2021 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group

This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

The first half of the last decade saw the Norwegian government embrace the idea of ‘the green shift’ to describe the road towards a low-carbon society by 2050, which the then governmental platform Sundvolden embraced (Office of the Prime Minister, 2013a, p. 60). Last decade’s latter half witnessed a turn in focus towards resource scarcity and management of wastes (as resources) in both the European and Norwegian policy sphere (European Commission, 2015; 2019; Meld. St. 45, 2017). The action plan ‘Closing the Loop’ (2015) quickly awoke interest among Norwegian business stakeholders, interest organisations, the waste management sector, and policy makers. As of 2019, the political discourse on the green shift in Norway persists, but CE is now part of the latest governmental platform of Granavolden, which aims at making Norway ‘a pioneer of a green, circular economy which utilises resources better’<sup>1</sup> (Office of the Prime Minister, 2019, p. 86). Appurtenant to this is the ongoing development of a national strategy on CE which has no clear release date at the time of writing this article.

Until now, the national government has held hearings, meetings, and dialogues with stakeholders about challenges and opportunities that a CE transition brings. The government identifies particularly regulatory and legislative barriers as impairing a CE transition, thus echoing Pheifer’s (2017) point that these aspects hinder increased material circulation. However, it also seeks to improve technologies of recycling and the establishment of circular business models (Ministry of Trade, Industry and Fisheries, 2019), which De Jesus and Mendonça (2018) identify as ‘hard’ barriers. The broader waste industry aims at improving waste management technologies to reach a higher level of recycling as part of EUs waste directive (European Parliament, 2008). This extends the Norwegian government’s tradition and wider effort of developing better systems for recycling and incineration.

In relation to the future CE has a double function, as a pathway to better resource use and as an end-goal – alternative to the current linear economy. Despite this, there is no clear indication to how a CE is to be performed as a pathway or an end-goal. Although CE is a contested concept (Skene, 2017), policy makers prescribe it as a requirement for future societies. While specific Norwegian CE policies on the national level are still emerging, subnational authorities are already implementing CE as part of their work in establishing targets and prioritizing current actions. The handling of waste in Norway – as elsewhere – is the responsibility of municipal actors, which together with high environmental ambitions codified in municipal and regional action plans, explains why CE was embraced quickly by subnational governments as central vision for the future.

From this, we outline the following research questions: *How is the concept circular economy introduced in Norwegian subnational contexts, and in what ways is it adopted?* We answer to this enquiry by drawing on *domestication* (Silverstone et al., 1992; Sørensen, 2006) to describe the dynamics of appropriation, construction of meaning, learning processes, and the enactment of CE adaptation. A future-oriented outlook complements this perspective as we analyse the performances of the subnational authorities, as future expectations lead to alternative forms of governance. Bauwens et al. (2020) addressed CE governance in a study of CE scenarios by considering the roles played by public authorities and strong commercial actors in driving the CE vs. the voluntary involvement of the citizens and concluded that future CEs could be driven by either authoritarian or participatory forms of governance. Here we follow a more explorative approach analysing how subnational authorities make the vision of a circular future ‘their own’ by adapting it to the specific context in which they act, but also by changing existing practices to become aligned with the vision.

This article aims at tracing the adoption of CE policies as a pillar of the specific Norwegian brand of sustainable transition called the ‘green shift’. We continue by presenting the theoretical framework and methods before we penultimately put forward the results and analysis before tying up the main findings and insights from the foregoing chapters in the conclusion.

## 2. Domestication and performativity

Subnational authorities play increasingly important roles in EU policy and regulative implementation (Borghetto & Franchino, 2010). The EU depends on the diffusion of its policies and regulations into its member states, but the adaptations of those do not happen top-down and in a linear fashion but are locally adjusted

(Alasuutari, 2009; 2015). Acharya (2004) writes that a precondition of diffusion is the establishment of congruence between the ‘foreign’ policy and local beliefs and practices. Thus the idea of policy diffusion is according to Alasuutari (2015) insufficient as it does not fully capture what happens when the policy becomes taken up by a public authority. Local actors construct and contest the level of appropriateness of the policy, which implies a reinterpretation and transformation of the original policy (Alasuutari, 2015). The domestication framework provides tools to analyse this through how locality and cultural context play into the work with global policies (Alasuutari, 2009; Marsh & Sharman, 2009).

We take inspiration from two strands of domestication studies. First, through media studies where Silverstone et al. (1992) described the process in which technologies were ‘tamed’ into systems of routines and practices of humans in domestic spaces. The authors observed four stages of domestication: appropriation, objectification, incorporation and conversion. Second, a synthesis of this original formulation of the framework took shape within science and technology studies (STS) traditions, which extended the scope from media to technology and knowledge in a general sense. Sørensen (2006; see also Sørensen et al., 2000) distinguished three dimensions:

1. **Symbolic:** The construction of meaning of the artefact, including the role the artefact eventually could play in relation to the production of identities of the actors involved.
2. **Practice:** The construction of a set of practices related to an artefact. This could mean routines in using the artefact, but also the establishment and development of institutions to support and regulate this use.
3. **Cognitive:** Cognitive processes related to learning of practice as well as meaning (Sørensen, 2006, p. 47).

A key aspect of domestication is that of mutuality, in which artefacts and users mutually adapt. Domestication, then, is a way to understand how artefacts and people co-produce use in a particular place (Sørensen, 2006; Sørensen et al., 2000). The specific location does not need to be the domestic spaces early domestication literature focused on (e.g. Lie & Sørensen, 1996), but can also be nation states and sub-national authorities (Alasuutari, 2009; Appadurai, 1996). The framework has proven its usefulness in extensions from material artefacts to the knowledge and visions of a desirable future embedded for instance in policies (Alasuutari, 2009; Skjølvold, 2014). In this paper, we focus on subnational domestication of CE with the national level as a backdrop. We enquire into the construction of meaning, practices, and learning enabling us in paying attention to the locality that conditions the acceptance or not of the domestication process of CE (Alasuutari, 2015).

Previous discussions of the implementation of CE policy have focused on prospects about resource efficiency in relation to product life cycles, considering product design, consumption, and end of life as the main components in a CE policy mix (Hartley et al., 2020; Milios, 2108). These three aspects are incorporated in the EU framework, based on technical solutions for waste prevention through recycling targets and product policy related to the eco-design directive (European Parliament, 2009) and the waste directive (European Parliament, 2008). CE, as proposed by the EU, is a prospected socio-technical future that is de facto introduced in the governance attempted by the regional public sectors (Konrad & Böhle, 2019). Thus, if policies are the object of concern, this future orientation in the governance of CE should be addressed as part of the domestication process. The adoption of CE that results from the negotiation between currently held practices, symbolic, cognitive meanings and future expectations is what drives an attempted form of governance. As noted by Konrad et al. (2017), anticipatory intervention to shape technoscience in a positive direction is achievable by examining present performances. The domestication of CE is also to be found in the proto governance<sup>2</sup> forms that are performed based on these future expectations.

The time dimension in domestication is explored by Skjølvold (2014) in a study about a decade long implementation of advanced electricity meters in Norway. In this study, future is considered in its prospective capacity as seen from the past, with the intention of examining past performances in the governance. He draws inspiration from Brown and Michael’s (2003) ‘sociology of expectation’, by which a recollection of past futures (retrospecting prospects) was developed to identify the performances that influenced the emergence of smart grid electrical meters. The main contribution of Skjølvold (2014) is the formulation of a typology of

performative futures, which can be applied to studies of domestication. These are *translative performativity*, referring to efforts in which the interest in a certain future is transferred from one actor to another, and *transformative performativity*, which refers to efforts in which direct change is put into action, influencing the three dimensions of domestication.

Skjølsvold's (2014) typology of future performance is relevant for our study as it offers us a fourth dimension to analyse the domestication based on action (performances) taken by the public sector in the process of adopting CE. The proposed framework, then, allows us to focus on how an EU policy and concept of CE becomes part of subnational authorities' work by considering the locality, cultural context, and practices of these authorities targeting CE as path or goal for the future. In the following, our methodological considerations are presented before analysing CE in Norwegian contexts.

### 3. Methods

From a science and technology studies (STS) perspective, science and technology and their interaction with people are social activities (Sismondo, 2010). The dominant methodological tradition within STS is qualitative research producing empirically grounded observations of socio-technical interactions. Empirically, this paper draws upon a purposive-sampled set of 27 semi-structured expert interviews, which we jointly conducted between April 2019 and February 2020. This data set represents a heterogeneous group of stakeholders ranging from policy makers, industry, local businesses, waste management, and non-profit organisations involved in CE work. Of these 27, in this article we focus particularly on eight informants belonging to the national and subnational governments. The remaining 19 are important as they refer to the interactions with the 8 as part of the adoption of CE in the Trøndelag region, processes that are analysed in depth in [reference deleted for peer review].

The selection process started from an informal meeting with a special advisor on CE at the county municipality in Trøndelag. She talked about the state of CE in Trøndelag and provided names of stakeholders and people relevant to a CE transition in the region. Here, a snowball approach coupled with online searches of the mentioned stakeholders took shape to assess whether they had first-hand experience with the topic of CE in Trøndelag. Throughout the interviews further stakeholders were recommended which we later approached. This method continued until we reached thematic saturation as well as the same stakeholders kept repeating.

From this greater data set of 27 informants, this paper narrows the focus by enquiring into the subnational levels of governance with the national level as the backdrop, which ended in a total of 8 people representing the national ( $n = 1$ ), county ( $n = 3$ ) and municipality ( $n = 4$ ) (Table 1). We offered anonymisation to prevent that political or institutional concerns would prevent our informants to talk freely about their experiences with domesticating CE, which is why their names are changed here with initials indicating the level of government they are engaged in. We encountered difficulties in accessing additional national level representatives likely due to their ongoing work with the national CE strategy, but one key informant was willing to share insights

**Table 1.** Overview of informants.

| Informant (name) | Position                         | Affiliation (level)                              | Governance level    | Method                               |
|------------------|----------------------------------|--|---------------------|--------------------------------------|
| Nora             | Political advisor                | Ministry of Climate and Environment              | National government | Skype interview (in Norwegian)       |
| Claire           | Senior advisor                   | Trøndelag county municipality                    | County municipality | Interview (in English)               |
| Catherine        | Advisor                          |  |                     | Interview (in English)               |
| Christian        | Senior advisor                   |  |                     | E-mail correspondence (in Norwegian) |
| Maya             | Climate advisor                  | Trondheim municipality                           | Municipality        | Interview (in Norwegian)             |
| Martha           | Climate advisor                  |  |                     | Interview (in English)               |
| Magnar           | Municipal engineer (now retired) |  |                     | Interview (in English)               |
| Madeleine        | Public librarian                 | Trondheim public library, Trondheim municipality |                     | Interview (in English)               |

into their work and national agenda. Based on our selection process which involved interviews with altogether 27 informants, we have reason to believe that the eight informants posit important knowledge and key positions particularly in the subnational governance of CE. These were the individuals that regional actors from all sectors pointed us to when we asked about politics and policy. Thus their utterances and descriptions of the domestication process carry weight. Table 2 showcases the documents that are relevant to the governance levels of our study.

The data analysis for this article began with reading the eight interview transcripts and being mindful towards topics or patterns that are relevant for the article's research question. From there, a second round commenced where we coded the transcripts using a deductive and concept driven approach in which the three dimensions of domestication – practical, symbolic and cognitive – served as the categories for our data-driven analysis. Here, we were attentive to their accounts of the things they did (practical dimension), how they constructed meaning (symbolic), and sections describing learning aspects related to CE work (cognitive). We grouped the categories (dimensions) of domestication and added relevant themes and related quotes as seen exemplified in Appendix 1. Appendix 2 shows our interview guide.

Ragin (1998, p. 105) distinguishes between 'small-N' and 'large-N' studies, where the former provides an opportunity for in-depth descriptions of one case and the latter produces broad generalizations. Based on this he proposes a framework that bridges 'small-N' and 'large-N' studies by comparing specific traits across a larger number of cases. Our study, which focuses on a specific region in Norway – Trøndelag and its largest city – belongs to the 'small-N' end of the spectrum described by Ragin and has in line with this the ambition to provide an in-depth analysis of the relevant actors' domestication activities within this region and how they relate to the national level. In a next step, which is outside the scope of this article, our results could be used as one element in a more comprehensive comparative study including other regions in Norway or on the European level.

Another weakness related to our empirical work is inherent to snowballing as selection method. We cannot rule out that there are clusters of CE activities that are completely unrelated to the work of our informants. Since they are in key positions, this is unlikely, but our informants' specific interpretations of the weakly bounded concept CE may have excluded relevant actors that do not necessarily consider themselves as driving a CE agenda per se but are working with elements of circularity. At the time of collecting this data, we are confident that we spoke to the relevant stakeholders within Trøndelag, but a future study could expand and identify additional representatives within each organisation, such as at the national level to get a firmer grasp of the processes taking place.

#### 4. Introduction of CE within subnational authorities in Trøndelag

CE became a topic for Trøndelag county in three ways. Senior advisor Christian said that it 'came as a part of the 'public debate' where climate issues and research and development cooperation introduced the term', and the concept '[...] was first mentioned in 2015 in passing [...] in yearly budget documents and became explicit in 2016'. Senior advisor Claire who works with EU interregional projects saw that CE 'emerged in the SMICE project' where one focus area was 'efficient management of natural resources'. Another EU-project similarly addressed CE in a transnational collaboration between regions and stakeholders in Sweden and Norway.

**Table 2.** Overview of supplemental documents.

| Document name  | Document type                | Government level    |
|--|------------------------------|---------------------|
| Waste as resource – waste politics and circular economy (2016-2017)      | White paper                  | National            |
| Political platform Granavolden   | Political platform statement | National            |
| Strategy for innovation and value creation in Trøndelag (2017)           | Plan                         | Regional, county    |
| Action programme 2018–2019 to the innovation and value creation strategy | Action programme             | Regional, county    |
| Action programme 2020–2021 to the innovation and value creation strategy | Action programme             | Regional, county    |
| Waste management plan for Trondheim municipality 2018–2030               | Plan                         | Local, municipality |
| Energy and climate plan for Trondheim municipality (2017–2030)           | Plan                         | Local, municipality |

Participation in these projects was influential in the future pathway for the recent 2018 merger between the counties of ‘Sør-Trøndelag’ and ‘Nord-Trøndelag’ which became Trøndelag county. This administrative reform, informed by the national level, resulted in the ‘Innovation and Value Creation Plan’ (2017) where CE is one of five pillars of regional development. This document’s appurtenant action programmes operationalise the county’s CE focus where it emphasises ‘increased regional value creation based on smart resource use’ and ‘minimise waste from production and consumption’ (Action Programme 2018–2019, 2018; Action Programme 2020–2021, 2019, p. 4). Claire described the introduction of CE as such: ‘There was this process of developing new plans and new strategic directions, and then the advisors who are involved with the international projects lifted the circular economy as one of the main areas of operationalisation of sustainability’. Third, county advisor Catherine narrates that the appropriation of CE is rooted in international organisations’ work such as within the EU, the Intergovernmental Panel on Climate Change (IPCC), and the International Panel on Biodiversity in the Ecosystems (IPBES).

As for Trondheim municipality and the county’s largest city, climate advisor Maya and Martha state that the EU Commission’s CE policy package and the national government’s white paper ‘Waste as resource’ (2017) were influential to their work. Additionally, the county’s ‘Innovation and Value Creation Plan’ influenced them. CE appears in the ‘Energy and Climate Plan 2017–2030’ and the ‘Waste Management Plan 2018–2030’ in relation to consumption and recycling. Hitherto, we see that CE introduction is influenced by both national and EU work.

## **5. Analysis: domestication of CE in three levels of authorities in Norway**

In this section, we structure the discussion of our results according to the three levels of government and their domestication process of CE. Second, we also discuss each level of government’s future performance of CE. Even though we focus on the regional levels of Trøndelag county and Trondheim municipality it is clear how national CE domestication is an important factor in regional adaptations of the concept. Therefore, we have included an analysis of documents and an interview with an informant involved in the national work.

### **5.1 The national government**

#### **5.1.1 Symbolic domestication**

At the time of writing this article, the Norwegian government is developing a national strategy on CE. The governmental representative Nora expressed that the ‘main motivation is related to that we know that we today have a global economy which is not within Earth’s carrying capacity’. However, she also said that CE is close to people ‘because it is very much about consumer patterns’. Consumers, here, are afforded an important role. Consumption in Norway is characterised by high private consumption, ownership, comfort, and leisure. As such, she noted that ‘the consumer culture is very much embedded in many of us, really, but there is a counter trend now and things can happen quite quick when trends first manifest’. According to the informant, CE is introduced to this culture, the business sector, industry and to policy makers to alter an exploitative economy to a responsible one. Thus Nora reflects on CE’s meanings in very general terms, mentioning Earth’s carrying capacity and current consumer culture.

#### **5.1.2 Practical domestication**

The unfinished national CE strategy is led and conducted by a group of state secretaries from eight ministries, where the Ministry of Climate and Environment are organisers. Dialogues through hearings and meetings with the business sector and industries shape their work in order to identify barriers and opportunities for a CE transition. They have visited and established contact with small-scale businesses and grass-root movements. Despite these small-scale activities of sharing and reuse of products and resources, it is important for the government to see if CE can be upscaled or if it functions better at smaller scale dimensions. As part of the governmental work, Nora says that it is ‘interesting to just gather and find out which parts of

our economy now we will feature as part of the circular economy, and which are not'. This quote sums up most of the CE work that is done by the state secretary group.

Nora reports further no dialogue with subnational authorities on CE work, which is reasoned as such: 'I believe the main reason to why we haven't done that is because there might not be something they haven't properly started working with systematically, despite that they work with elements of CE'. This indicates little collaboration between national and the subnational authority of Trøndelag.

### 5.1.3 Cognitive domestication

Relating to the national government's learning process, Nora stated that '[i]t is of course the IPCC that is our best source of information'. The government used IPCC's reports as they painted a picture of the state of the world, but the political advisor says, 'it can be thought that we need new knowledge about the Norwegian condition', indicating a more local-oriented CE transition. For the informant, however, this did not mean commissioning national studies that would correspond to the work of the IPCC, but gathering information and experiences among stakeholders, which included large industries, but also the small businesses and grassroots organizations in the previous section.

### 5.1.4 Futures

Taking on Skjølsvold's (2014) typology of performative futures and considering that a formal policy is still missing in the governance of CE, in addition to the data from the national representative. We categorize the national efforts related to CE as a translative performance. This way, the interest in enacting CE is transferred from the public sector to private actors, but also *vice versa* as many representatives of the business and waste management sector also advocate for a CE transition (Haugsvær, 2018).

The translative performativity at the national level is also present in the proto governance of CE, in which the normative definition of a future in policies is first made the responsibility of actors outside the public sector. We see this in the lack of integration with the subnational levels (counties and municipalities). The national government takes a role of translator of the visions of CE from the private sector to the public sector. The expectations coming from the EU vision are negotiated back and forth with the private sector before becoming policies.

## 5.2 Trøndelag county

### 5.2.1 Symbolic domestication

For Claire, CE was a central part of the region's development plans where it acted as a 'rallying point' for sustainable change. Advisor Catherine agreed: 'It's a buzzword, a very important buzzword both for the administration and for the politicians' which is sometimes 'difficult to fill with meaning'. Thus different from the informant from the national level, who reflected in general terms about consumer culture, county representatives focused on the use of the concept as a mobilizing force, facilitated by its vague nature. In addition to this, Claire associated CE with meanings that relate to its systemic nature and that distinguish between degrees of actual capacity of the concept to reduce consumption:

It is very easy to push the electrification agenda as a way of reducing emissions, but it is an excuse for keeping consumption on the same levels, so circular economy can also be done wrong very quickly in that you keep the loops too big, when they actually should be reducing, or they should be more localised.

As Nora reflects, it is important to identify if CE loops work at small or large scales, where smaller scales would be preferable. A similar point is made by advisor Catherine who discusses CE more in relation to keeping resources within the region:

For us as a county, it's just as important to bring the circular economy idea into our industries, that there are so many resources at the moment being shipped out from the region. We have to close the loop and we have very good possibilities for that, because we have a big corn production, a big vegetable production, a big house or husbandry productions. And the links between the blue and the green sector are there. But it can definitely be exploited in a much bigger extent.



A future where materials and resources are locally managed and contained is desirable in Catherine's view. Doing this entails collaborating with the different sectors to find solutions.

In the context of a county, regional resource loops are preferable not only because of their sustainability potential but also given the county administration's task to support regional businesses. The meaning of CE, thus, as regional 'rallying point' is aligned with the interest in strengthening both Trøndelag county, but potentially all other counties – that can establish their own regional loops – as well.

### 5.2.2 Practical domestication

As described above, the county's practices related to CE took form through involvement in interregional EU-projects. Since then, the focus has been on establishing collaboration with regional industries, businesses, the R&D sector, while also continuing work with international projects. As with the national government, much of the work entails finding CE barriers and opportunities. The main strategy used here is to look for 'best practice' that can be implemented to Trøndelag:

I think our way of working has been to find specific examples of what happens in other places, so best practice. And see what the low-hanging fruit, or what do we see that we can do in Trøndelag. Mostly to have achievable results so people get motivated and see that this is relevant for us and doable. (Claire)

Through the lens of Alasuutari (2009; 2015), this is an example of how CE is interpreted and adjusted to the local way of working and thinking. Capacity and knowledge jointly have effects of what is possible to do and accomplish. 'A lot of the implementation happens more by this road of less resistance. You do what you are able to do' and '[t]here might be something that you should be doing, but it is not possible for various reasons', Claire says. It is important for the county to be 'out there' and not sit inside and write policies.

Regarding CE implementation in the region, Claire distinguishes between plans that aim at the whole region and their realisation which necessarily happens distributed unevenly:

it is definitely not implemented in the entire region. I think implementation happens in pockets and in very small groups. With all due respect to my colleagues and to plans, it is not like a plan is implemented in its entirety, it is a piece of paper until someone decides that they want to do something with it.

A key point here is that documents function as guiding tools for work in the region. For the county, it has meant working towards businesses and industries to find out what is possible, i.e. which practice could be presented as best practice and be implemented throughout the county. In this sense, it is interesting that there is no closer communication between the national government and the county despite Claire's efforts: 'We have tried. We have contacted [the national bodies working with CE policies], but we haven't received an invitation to engage'.

### 5.2.3 Cognitive domestication

Climate advisor Catherine, like Nora at the national level, referred to the global knowledge base provided by IPCC and IPBS. A distinct element of learning by doing, however, was introduced by Claire, who in addition stressed the importance of contributing to a scientific knowledge base:

our approach now is twofold, so we work both on best practice stakeholders, translate to the regional context, implement which is kind of work 'do-as-you-go', and then we work on the other track which is more the scientific way of first trying to develop a knowledge base and that is what we are doing with the research communities.

The research communities she mentions here refer to the presence of a large R&D community in Trøndelag, which among others hosts the main campuses of Norway's largest university. The county participated as public actor in many research projects and centres, where it typically contributed through providing test and pilot cases. In this way, the county was able to build a knowledge base that helped concretise their work, which the county's 'Innovation and Value Creation Plan' emphasises.

In terms of cognitive appropriation of the CE concept, the county informants have added two new elements: First the idea of learning by doing in collaboration with local actors, which was informed by and

aimed at creating best practice examples. Second, a more scientific approach followed in collaboration with local research communities.

#### 5.2.4 Futures

The expectations for the future at Trøndelag county are not only taken from the EU Commission's vision, but also the projects in which the county's senior advisor Claire has been involved in. In a certain way, these projects were devices for the transference of interest to the county. However, this is not the only transference performed. A subsequent one is performed when the advisors take the experiences learned from projects and transfer them to local private actors, as best practices or learned lessons from abroad, with the same aim of mobilising interest.

The translative performativity of CE that is enacted within the county shares similarity in approach with what was expressed by the representative at the national level but differs in that it intends to create a local vision of CE based on imitating or adopting practices that are considered successful elsewhere. This translative performance of CE is at the same time a device to create local future expectancies. It means there is an emergent local vision of CE, and it has been adopted through the interaction and practices mobilised by the county advisors.

### 5.3 Trondheim municipality

#### 5.3.1 Symbolic domestication

The municipal interpretations of CE share the view with of the national government and the county that the openness of the concept provides opportunities. However, the description of what these opportunities were differed. Because the climate work in the municipality centres strongly on CO<sub>2</sub> emissions, climate advisor Maya focused on CEs broader focus on resource use: 'CE is more than reduction in emissions. It is about resources beyond climate gas emissions'. She pointed out that the municipality 'wishes to make it completely natural for people to share instead of owning it themselves'. In line with this, climate advisor Martha saw the motivation for working on sustainability issues in resource scarcity:

My personal motivation for working on the climate and environmental issue, I think the biggest driving, at the core of this, I mean CO<sub>2</sub> emissions is of course a big problem, but the biggest problem is that we don't have enough resources to consume, [...] if we continue to do things like that and consume and live, the way we live, we will need four planets [...] For me, the circular economy is really a mechanism for the effective use of resources.

Former municipal engineer Christian proposed a different interpretation of CE, who stated that 'I don't think it is quite new, I think we have worked with circular economy for a lot of years, but we haven't called it circular economy'. In fact, for the municipal waste sector, which shifted its focus towards avoiding waste and recycling long before CE discourses entered Norway, much of CE was business as usual.

Both interpretations understand CE as an opportunity to focus on resources beyond a narrow focus on CO<sub>2</sub> emissions, and CE as a continuation of previous work came together in a conviction that CE would mean for the municipality to provide good infrastructures, explicated by Martha:

I think we have to put more energy on that (creating infrastructure and services) than telling people that they have to change their behavior. I think both are important, but we as an authority, we have the higher possibility to drive the service design. Making it probably as good as today or better but using less resources.

Instead of traditional nudging and behaviour change campaigns which the European Commission is proposing, she believes that the municipality should do more infrastructural work and providing services.

#### 5.3.2 Practical domestication

Climate advisor Maya said that they had a plan to 'facilitate for making it easy to make environmentally friendly choices [...] so here we are kind of 'guiding' in collaboration with voluntary and other stakeholders'. Even though there was no official decision to reduce consumption in the municipality, the municipality had

provided subsidy schemes for small-scale businesses aiming at establishing their circular businesses in the city. In some cases, the municipality actively supported businesses of reuse and redesign of clothes and furniture: ‘We support [name of business] because we see that they contribute towards buying used instead of new’, Maya said. In other cases, stakeholders, and voluntary groups such as Future in our hands (FIOH), ‘Friends of the Earth Norway’ (‘Naturvernforbundet’), and student organisations approached the municipality asking for funds to create reuse markets and clothes swapping. Collaboration with these stakeholders resulted in concrete and permanent practices that supports consumption reduction, which is exemplified by the municipal public library that now rents out tools. Public librarian Madeleine described this:

they (FIOH) got some money from [the municipality] to start a project. After that, I think it has mainly been the library’s project. We don’t work together with them now. It was only in the beginning. [...] We are always positive when somebody has an idea. We thought it was a good idea and we thought that it was good for the environment.

This example shows the porous boundaries of seamless collaboration between public, private, and voluntary work as they share the common goal to reduce consumption. Additionally, the municipality was looking into more circular public procurement, which entailed that it ‘mandated the department leaders to look for used inventory before new’ when seeking to replace furniture or other goods, according to Maya.

Like the case of the county level, municipal interviewees combined CE with municipal tasks, such as the work to attract innovative businesses. Moreover, the adaptation of CE is characterised by local networks moving between the boundaries of public, private, and civil society sectors. It is reasonable to assume that the local nature of the municipality’s perspective has contributed to this form of adaptation.

### 5.3.3 Cognitive domestication

Maya called participation in CE projects ‘learning arenas’ with the tool-library project as example. Martha builds on this description of learning by doing, which closely resembles the perspective encountered in the county:

There is a lot of learning by doing, and of course you have to follow-up [...] What’s going on, the news of course, it is a good channel to get updated, as also when we are revising the plan we have to go over the list of national strategies and regional plans and what’s going on in the local context, and another thing which is quite important, we have a lot of events going on in the city [...] You have to be alert of your surroundings when you are working with these kinds of issues. Yeah, so I think that is the main source, meetings, networking and also follow-up on what’s happening.

Here, Martha highlights the tension between ‘the list of national strategies’ and ‘what’s going on in the local context’. Considering the local conditions in relation to global policies are important for those constructing and implementing policies in the municipality (Alasuutari, 2009; 2015). Being alert to their surroundings and to follow national developments allowed the municipal informants to identify local opportunities.

### 5.3.4 Futures

Municipal expectations for the future were driven by the visions exposed by the EU Commission’s CE package. However, their proximity with Trøndelag’s county also provides another source of knowledge, gained through projects in the experiences by the county council, which in turn influences their performance. Here, the municipality also has a wider range of action, as they manage the waste from households and offer services directly to its citizens.

The performativity at the municipal level leans more towards transformative efforts, and they are exemplified in three practices: green procurement, the service for borrowing tools at the local library, and through the recovery and reuse store ‘BrukOm’ administered by the local waste management company. It does not mean that the municipality can regulate CE as part of all their activities, but that they are transforming specific practices, its symbolic and cognitive meanings even before there is a normative policy indicating how to put forward a CE. This performativity is also coupled with translative efforts by offering workshops to teach about repair of goods and by offering support to green businesses in the repair and reuse sector.

This level of governance is the only one in which the adoption of CE is being taken directly by the public sector, although with certain restrictions imposed by current regulations. From our analysis, it is possible to

say that a more proactive and transformative performance by the public sector is hindered by a lack of a political mandate indicating how the public sector can navigate its offer within a future CE.

## 6. Discussion

We established a framework inspired by studies of domestication complemented with a perspective of translative performativity and transformative performativity to engage with the future aspect of the domestication process of CE. On both regional (county) and local (municipality) level, CE was introduced through EU projects and transnational collaboration.

Our domestication analysis shows that CE is an open concept allowing the subnational levels to introduce their specific concerns. The symbolic, practical and cognitive dimensions of domestication dynamically interlink in the way that the informants interact with private and public sector. Also, the businesses, industry, waste management and R&D of the broader sample (see [reference deleted for peer review]) pointed to learning as a currently required element in order to implement CE policies in Norway. The domestication process of CE was characterised by a multitude of different scale stakeholders going through their own respective domestication processes of CE, which intertwines with existing practices. For the actors formulating and implementing CE policies on the subnational level, four main findings are observed.

First, the national government's work appears to be weakly connected to subnational authorities. National representative Nora assumed that the county had not systematically begun working with CE, which is contrary to the observations at the county level. Our county informants even expressed the desire to enter a dialogue with the national government. Tighter collaboration between subnational authorities and the national government seems in our analysis to be potentially favourable as both are part of a larger process of domestication of the exogenous policy of CE.

Our second finding is that the level of government had direct bearing on the interpretation of the preferred scale of CEs resource loops. County advisor Catherine argued for regional loops, while the municipal perspective was confined to local waste recycling and local services provided by small businesses and public institutions. CEs openness allowed for a seamless adaptation to the preferred scale of policy making. Again, however, tighter collaboration may be advisable, as one may ask whether links between local, regional, and national resource loops are neglected when each level works within their territory. We found examples of exchange between county and municipality, but the lack of connection to the national level, which was experienced by the informants as exogeneous, is problematic in this respect.

Third, at the county and municipal level, we found competent accounts of learning by doing. The informants described a link between learning in collaboration with researchers and with those involved in the practical implementation of projects. The missing element, however, seemed to be a common repository in which experiences and knowledge was collected and made available. Actors involved in practical initiatives, but also researchers and not the least policy makers on the national level would have profited greatly from this knowledge base.

A fourth finding focuses on the future performativity by the actions taken at each government level in support of a CE. The national level took a translative approach and went after an increased interest and activity by private actors. Trøndelag county operated as a channel between knowledge of best practices and private actors who could mobilise action. Meanwhile, at the municipal level, we found a public authority taking a more proactive role, by changing specific practices and regulating (or normalizing) the CE through their own infrastructures and services. By looking at these three performances, we suggest that the policies coming from the national level should consider some flexibility so that subnational authorities have room to perform in a transformative way according to local concerns.

## 7. Conclusion

The national and county authorities promoted a decentralised CE by focusing on the mobilisation of private actors while at the municipal level the adoption of CE was assumed to be a task that must be integrated in their

institutional work and plans. Yet, we found that CE was adopted and performed as a promissory concept that was merged with existing meanings, practices and knowledge. It is performed to comply with the EU, while its focus and significance for the future is still pending. This represents an opportunity for local authorities to push forward on their agendas about local production and consumption as the specifics of what the policies for circularity will include is still a missing aspect.

A question that remains open is if CE is to be considered a pathway for structural changes or the end-goal. The four findings discussed in the previous section demonstrate that the domestication of CE at the subnational governance level without a strict intervention from the national level allows for the adoption of the concept as a pathway for structural changes, which are motivated by expectations for a more sustainable future based on local concerns. Particularly at the municipal level, we have demonstrated that CE was performed in a transformative way. At the same time, the range of action that the local authorities have is restricted to their municipality.

We have shown that regional activities in fact are important in shaping CE policies according to their own priorities. It is reasonable to expect that this finding also applies to other regions in Europe. How this space for action is created and how it affects the outcomes of CE policies may very well differ in relation to the intervention by national authorities and the legal context of national policies. However, supported by our theoretical frameworks – domestication and performativity of future orientations – we claim that also our more specific findings discussed in the previous section, will be able to shed light on how other regional and local settings appropriate CE. We found disconnects between national and subnational levels, as well as between different subnational entities that each employed learning by doing confined to their areas of responsibility and conceived the extent of relevant resource loops according to their geographical reach. These observations, and the finding that more radical transformative future orientations were held by actors that inhabit more local positions, address fundamentals of subnational governance, and should therefore not only help to understand and improve CE adoption in Trondheim, Trøndelag and Norway, but also elsewhere.

## Notes

1. Our translation from Norwegian.
2. These refer to performances supporting the institutionalization of a desired prospected policy.

## Disclosure statement

No potential conflict of interest was reported by the author(s).

## Funding

This work was supported by Norges Teknisk-Naturvitenskapelige Universitet.

## Notes on contributors

*Thomas Edward Sutcliffe*, MSc. is a PhD candidate at the Department of Interdisciplinary Studies of Culture at the Norwegian University of Science and Technology (NTNU). His current work is on the topic of circular economy, domestic consumption, and policies of circular economy.

*Isaac Arturo Ortega Alvarado*, MSc. is a PhD Research fellow at NTNU-Norwegian University of Science and Technology. His current work is on the area of Design for Sustainability and Social Innovation, he focuses on future thinking, social engagement and circular economy.

## ORCID

*Thomas Edward Sutcliffe*  <http://orcid.org/0000-0003-3389-9502>

*Isaac Arturo Ortega Alvarado*  <http://orcid.org/0000-0002-5225-4999>

## References

- Acharya, A. (2004). How ideas spread: Whose norms matter? Norm localization and institutional change in asian regionalism. *International Organization*, 58(2), 239–275. <https://doi.org/10.1017/S0020818304582024>
- Alasutari, P. (2009). The domestication of worldwide policy models. *Ethnologia Europaea*, 39(1), 66–71. <https://doi.org/10.16995/ee.1046>
- Alasutari, P. (2015). The discursive side of new institutionalism. *Cultural Sociology*, 9(2), 162–184. <https://doi.org/10.1177/1749975514561805>
- Appadurai, A. (1996). *Modernity at large: Cultural dimensions of globalization*. University of Minnesota Press.
- Bauwens, T., Hekkert, M., & Kirchherr, J. (2020). Circular futures: What will they look like? *Ecological Economics*, 175, 106703. <https://doi.org/10.1016/j.ecolecon.2020.106703>
- Borghetto, E., & Franchino, F. (2010). The role of subnational authorities in the implementation of EU directives. *Journal of European Public Policy*, 17(6), 759–780. <https://doi.org/10.1080/13501763.2010.486972>
- Brown, N., & Michael, M. (2003). A sociology of expectations: Retrospecting prospects and prospecting retrospects. *Technology Analysis & Strategic Management*, 15(1), 3–18. <https://doi.org/10.1080/0953732032000046024>
- De Jesus, A., & Mendonça, S. (2018). Lost in transition? Drivers and barriers in the eco- innovation road to the circular economy. *Ecological Economics*, 145, 75–89. <https://doi.org/10.1016/j.ecolecon.2017.08.001>
- European Commission. (2015). Closing the Loop – An EU action plan for the Circular Economy. Located at <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52015DC0614>
- European Commission. (2019). The European Green Deal. Located (07.05.2020) at [https://ec.europa.eu/info/sites/info/files/european-green-deal-communication\\_en.pdf](https://ec.europa.eu/info/sites/info/files/european-green-deal-communication_en.pdf)
- European Commission. (2020). A new Circular Economy Action Plan. For a cleaner and more competitive Europe. Located (07.05.2020) at <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1583933814386&uri=COM:2020:98:FIN>
- European Parliament. (2008). Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives. European Community. Brussels, Belgium. Retrieved from: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32008L0098&from=EN>
- European Parliament. (2009). DIRECTIVE 2009/125/EC of the European Parliament and of the council of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products. European Community. Brussels, Belgium. Retrieved from: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32009L0125&from=EN>
- Hartley, K., van Santen, R., & Kirchherr, J. (2020). Policies for transitioning towards a circular economy: Expectations from the European Union (EU). *Resources, Conservation and Recycling*, 155, 104634. <https://doi.org/10.1016/j.resconrec.2019.104634>
- Haugsvær, S. (2018). Mange aktører ga innspill til sirkulærøkonomi. Located (08.05.2020) at <https://www.venstre.no/artikkel/2018/12/18/mange-aktorer-ga-innspill-til-sirkulaerokonomi/>
- Kirchherr, J., Reike, D., & Hekkert, M. (2017). Conceptualizing the circular economy: An analysis of 114 definitions. *Resources, Conservation and Recycling*, 127, 221–232. <https://doi.org/10.1016/j.resconrec.2017.09.005>
- Konrad, K., & Böhle, K. (2019). Socio-technical futures and the governance of innovation processes—An introduction to the special issue. *Futures*, 109, 101–107. <https://doi.org/10.1016/j.futures.2019.03.003>
- Konrad, K., Van Lente, H., Groves, C., & Selin, C. (2017). Performing and governing the future in science and technology. In C. A. Miller, U. Felt, R. Fouché, & L. Smith- Doerr (Eds.). *The handbook of science and technology studies* (pp. 465–493). (4th edition). Cambridge: MIT Press.
- Lie, M., & Sørensen, K. H. (1996). *Making technology our own? Domesticating technology into everyday life*. Scandinavian University Press North America.
- Marin, J., & De Meulder, B. (2018). Interpreting circularity. circular city representations concealing transition drivers. *Sustainability*, 10(5), 1310. <https://doi.org/10.3390/su10051310>
- Marsh, D., & Sharman, J. C. (2009). Policy diffusion and policy transfer. *Policy Studies*, 30(3), 269–288. <https://doi.org/10.1080/01442870902863851>
- Milios, L. (2018). Advancing to a circular economy: Three essential ingredients for a comprehensive policy mix. *Sustainability Science*, 13(3), 861–878. <https://doi.org/10.1007/s11625-017-0502-9>
- Ministry of Climate and Environment. (2017). Avfall som ressurs– avfallspolitikk og sirkulær økonomi (Meld. St. 45 2016–2017). (Waste as resource – waste politics and circular economy (White paper)). Ministry of Climate and Environment. Located (25.01.2020) at [https://www.regjeringen.no/contentassets/4c45f38bddee47a7b7847af108894c0c/n\\_o/pdfs/stm201620170045000dddpdfs.pdf](https://www.regjeringen.no/contentassets/4c45f38bddee47a7b7847af108894c0c/n_o/pdfs/stm201620170045000dddpdfs.pdf)
- Ministry of Trade, Industry and Fisheries. (2019). Vurderer å oppheve brukthandellova. Ministry of Trade, Industry and Fisheries. Located (30.03.2021) at <https://www.regjeringen.no/no/aktuelt/ny-side9/id2632760/>
- Office of the Prime Minister. (2013a). Political platform for a government formed by the Conservative Party and the Progress Party. Office of the Prime Minister. Sundvolden, 7th October 2013.
- Office of the Prime Minister. (2019). Granavolden political platform for the Norwegian Government, formed by the Conservative Party, the Progress Party, the Liberal Party and the Christian Democratic Party. Office of the Prime Minister. Granavolden, 17th January 2019. Located (18.02.2020) at <https://www.regjeringen.no/no/dokumenter/politisk-plattform/id2626036/>

- Pheifer, A. G. (2017). Barriers and enablers to circular business models. Brielle: White Paper.
- Ragin, C. C. (1998). The logic of qualitative comparative analysis. *International Review of Social History*, 43(S6), 105–124. <https://doi.org/10.1017/S0020859000115111>
- Rizos, V., Tuokko, K., & Behrens, A. (2017). The Circular Economy: A review of definitions, processes and impacts. CEPS Research Report No 2017/8, April 2017.
- Savini, F. (2019). The economy that runs on waste: Accumulation in the circular city. *Journal of Environmental Policy & Planning*, 21(6), 675–691. <https://doi.org/10.1080/1523908X.2019.1670048>
- Silverstone, R., Hirsch, E., & Morley, D. (1992). Information and communication technologies and the moral economy of the household. In R. Silverstone, & E. Hirsch (Eds.), *Consuming technologies. Media and information in domestic spaces* (pp. 15–31). Routledge.
- Sismondo, S. (2010). *An introduction to science and technology studies (Vol. 1)*. Wiley-Blackwell.
- Skene, K. R. (2018). Circles, spirals, pyramids and cubes: why the circular economy cannot work. *Sustainability Science*, 13(2), 479–492.
- Skjølvold, T. M. (2014). Back to the futures: Retrospecting the prospects of smart grid technology. *Futures*, 63, 26–36. <https://doi.org/10.1016/j.futures.2014.08.001>
- Sørensen, K. H. (2006). Domestication: The enactment of technology. In T. Berker, M. Hartman, Y. Punie, & K. Ward (Eds.), *Domestication of media and technology* (pp. 40–61). Open University Press.
- Sørensen, S., Aune, M., & Hatling, M. (2000). Against linearity – On the cultural appropriation of science and technology. In M. Dierke, & C. v Groete (Eds.), *Between understanding and trust. The public, science and technology*. Harwood.