



# ”Your research or my tinkering won’t help”: On (the lack of) Climate Adaptation Imaginaries in the Swedish Arctic

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## ABSTRACT

Developing ‘Climate Adaptation Imaginaries’, this paper explores visions of futures in relation to climate change and adaptation in the Swedish Arctic, a region where climatic changes are rapid and pronounced. The analysis draws on interviews with civil servants working with adaptation, fieldwork in the region of Norrbotten in Sweden, and relevant documents. The analysis focuses on future visions and whether, and how, they incorporate adaptation to the climate crisis as a strategy to achieve the vision. Particular focus is given to how adaptation is understood in terms of approach (reactive vs. proactive), aim (incremental vs. transformational) and focus (direct effects, or whether transboundary effects are included). Four different kinds of visions emerge in the material: economic growth coupled with a reactive approach; ‘green’ economic growth with proactive and incremental adaptation; a transformed locally anchored and regenerative society; and finally, a range of dystopia(s). It is only the two visions based on economic growth that are collectively held, materially embedded and hold political influence in the region. A variety of dystopias emerge as the main alternative presented by civil servants. This leaves adaptation guided by at best proactive, incremental and short-term focused strategies, and at worst driven by disparate dystopic visions.

## 1. Introduction

...for let us make no mistake: the climate crisis is also a crisis of culture, and thus of the imagination.

(Ghosh, 2017, 9)

In his book *The Great Derangement – Climate Change and the Unthinkable*, Amitav Ghosh (2017) argues that the ideas and ideals of the Enlightenment have locked science and politics in assumptions of uniform and gradual processes, where Nature is the inert and a passive backdrop to humanity’s progress. Ghosh takes this point a step further by showing how these assumptions have become foundational for our culture in general. He argues that if the disruptive and devastating events caused by the climate crisis were described in a novel we would not accept them as plausible. According to Ghosh, we have lost the imagination needed to understand the world we are creating. This means that the climate crisis is not only, or even primarily, a technical or financial problem (for a similar argument see Hulme, 2009). It is a crisis of culture that goes deep, posing fundamental ethical and political questions about humanity’s place in the cosmos and how we create a good society in the Anthropocene (Frame and Cradock-Henry, 2022; Otto, 2018).

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It is clear that we need new ways to exist in the world (Eriksen et al., 2015). The first step is then to *imagine* new ways to exist, as individuals, but more importantly as a society (Khotari, 2021). We need to imagine new, desirable and ambitious futures that respond to and accommodate this new climate-changed world. Imagining the future is thus political; conversely, political action is also (or should be) profoundly imaginative (Ghosh, 2017; Jasanoff, 2015b).

This study aligns with Critical Futures Studies (Godhe and Goode, 2018) and thus concerns itself with how our assumptions of the future shape what we see as possible and necessary today (Andersson and Westholm, 2019; Van Assche, Verschaegen, and Gruezmacher, 2021; Veenman, Kusters, and Beckers, 2021; Vervoort and Gupta, 2018). In the context of the climate crisis the importance of visions and assumptions is clear. We need to think not only of the present, but also a few years and up to several centuries ahead, simultaneously (Magnan, 2014). Indeed, climate governance, and especially adaptation, always has a future-oriented component (DeLeo, 2017). This means assumptions, priorities and simplifications are necessary (Jessop, 2010). It further means that these assumptions underpinning our visions of the future are powerful drivers of action (or inaction) and therefore central to explore (Tozer and Klenk, 2018).

Indeed, within social science and humanity studies engaging with suitability issues there has been an increased interest in anticipation and temporalities (Godhe and Goode, 2018). The role of imagination is also coming to the fore, in for example environmental politics scholarship (Hammond, 2021). Yet combining the role of assumptions, temporalities and imagination, especially with a critical edge, remains an overlooked area for climate research (Andersson and Westholm, 2019; Stoddard et al., 2021) – not least in the more specific adaptation governance literature (Vervoort and Gupta, 2018). This study aims to contribute to filling this gap in the literature by utilizing and developing the concept of ‘Climate Adaptation Imaginaries’ in relation to climate adaptation governance.

In this study I understand adaptation as ‘active future making’ (Bauriedl and Müller-Mahn, 2018), but rather than focus on what kind of futures specific adaptation actions might lead to, I explore visions of the future that shape adaptation strategies in the present. I draw primarily on the Political Economy strand of the imaginaries literature (e.g. Fairclough, 2013; Jessop, 2010; Levy and Spicer, 2013) and define imaginaries broadly as collectively held, materially embedded, normative and politically contested visions of desirable futures to strive for. Importantly, imaginaries in this literature by definition contain strategies to create conditions in the present to achieve their desired future (Levidow and Papaioannou, 2013). It is in this context that I insert adaptation to be understood as a specific category of strategy to achieve the collective vision of an imaginary (that relates and responds to the climate crisis).

To capture and categorise important assumptions in relation to adaptation I distinguish between different approaches, aims and focuses. I categorise adaptation according to: 1) reactive or proactive approach (Biagini et al., 2014); 2) incremental or transformative aim (Pelling, 2011); and lastly, 3) focus, whether adaption is only concerned with direct effects or if and to what extent transboundary risks are recognized and addressed (Anisimov and Magnan, 2023). What imaginaries, or the composite term of ‘Climate Adaptation Imaginaries’, thus highlights is how assumptions of the future, and often implicit ideals and values of what a desirable society is, shape the space for adaptation policy and action in the present.

The empirical context is the Swedish Arctic, more precisely the Norrbotten administrative region. The Arctic is a geographical area where climatic changes are rapid. Here, warming has been between two and four times faster than the global average (Jacobs et al., 2021; Rantanen et al., 2022), and the effects of climate change are already visible in the changing seasons and landscape (Rosqvist, Inga, and Eriksson, 2022). The public sector, not least the municipalities, have a key role in adaptation (Carlsson-Kanyama, Carlsen, and Dreborg, 2013; Kanarp and Westberg, 2023; Lidskog and Rabe, 2022). The public sector and its institutions are also of particular significance from an imaginaries perspective. When an imaginary becomes integrated into the governance discourses of public institutions, the imaginary tends to shape the life worlds of the people under those institutions’ jurisdiction (Jasanoff, 2015b). The empirical material includes interviews with civil servants working with adaptation, notes from fieldwork, and documents from municipalities and the County Administrative Board in Norrbotten. The geographical location, with rapid and pronounced changes, can be expected to promote early development of new imaginaries relating to a changing climate. Civil servants working with adaptation in the Arctic thus become an especially interesting group. As the Arctic is regarded as a canary in the coal mine for climate change (Borgå, 2019; Voosen, 2021), the Climate Adaptation Imaginaries in the public sector in the Arctic may be seen as an indication of where we are currently heading in response to the climate crisis.

Taking the need for new imaginaries as a starting point, this study asks:

- *What are the competing visions for society in the Swedish Arctic, in the context of climate change, as presented in policy and by civil servants? Are there visions that can be described as collectively held, materially embedded, and politically dominant, i.e. as imaginaries?*
- *How do the different visions, through assumptions, simplifications and ideals, shape adaptation strategies and priorities?*
- *Who benefits from the currently dominant Climate Adaptation Imaginary?*

## 2. Theory: imaginaries and adaptation

I start this section by outlining my understanding and usage of imaginaries. I draw here on aspects from the ‘Political Economy’, ‘Sociotechnical’ and ‘Social’ literature on imaginaries, as they contribute with different important insights when applying imaginaries to climate adaptation governance. In the first section, I combine the Sociotechnical understanding of imaginaries as future-oriented

and collectively held visions of desirable futures, with the Political Economy literature's focus on the strategies and political functions of imaginaries. As imaginaries by definition are collective, and part of my material is based on interviews with individuals, I address the relation between individuals and imaginaries in the second section. It is here in the second section that I draw more explicitly on the Social imaginaries literature. In the third and last section, I move to connect imaginaries to climate adaptation governance and provide a definition of Climate Adaptation Imaginaries.

### 2.1. *Imaginaries as collective, embedded and political*

Imaginaries are “collectively held and performed visions of desirable futures” (Jasanoff, 2015a, 19). Fundamentally, an imaginary aims to create conditions in the present to achieve its vision of a desired (future) society (Levidow and Papaioannou, 2013). Imaginaries have consequences not only by shaping priorities and political goals, but also in (re)arranging material conditions and outcomes (Eriksson, Fischer, and Ulfbecker, 2020). It follows that imaginaries are by definition normative (Mutter, 2021) and, building upon the Political Economy strand of the literature, imaginaries are striving for hegemony (Jessop, 2012). Which in turn means that imaginaries are contested, and they should be understood as “performative” in the political landscape in which they exist (Wissman-Weber and Levy, 2018).

As Davoudi, 97f et al. (2018) aptly put it:

[imaginaries] are produced through political struggles over conceptions, perceptions and lived experience [and] circulated and propagated through images, stories, texts, data, algorithms and performances. They are infused by relations of power in which contestation and resistance are ever present.

In this struggle to define the desirable future, imaginaries carry strategies and the distribution of responsibility for particular issues, like adaptation, as well as ideas on how to organize society in order to achieve the desired future. All imaginaries thus imply a mode of “organizing production and consumption, and a prioritization of environmental, cultural and consumerist values” (Levy and Spicer, 2013, 660), which means “imaginaries of a climate changed future also hold significant consequences for the organization of social life and production of space” not only in the future, but also in the present (Paprocki, 2020, 253).

### 2.2. *Individuals, visions and imaginaries*

In the previous section, I outlined the characteristics and functions of imaginaries at the societal level. In this article, I am also interested in how civil servants view the future and how this relates to imaginaries as expressed in policy (Salazar, 2012). The relation between individuals and the, by definition, collective imaginaries thus needs to be addressed.

In Jessop's view, an imaginary denotes a kind of *shared* mental map, with assumptions and simplifications, necessary to process and make sense of a “supercomplex reality” (Jessop, 2010). These interpretive schemata (Salazar, 2012) are “semiotic systems” informing understanding (Levy and Spicer, 2013) and social cohesion (Dawney, 2011; Taylor, 2002). When imaginaries become widely shared, naturalized and institutionalized, they shape the interpretations and practices of individuals. At the opposite end of the spectrum, before being naturalized, the vision developing into an imaginary can originate from a small group of people or even a single individual (Frame and Cradock-Henry, 2022; Jasanoff, 2015a). Exploring individuals' ideas and assumptions about the future thus serves two purposes. Firstly, it can indicate whether, and which, imaginaries have a hegemonic position, by exploring visions that reoccur and shape practices in different settings. Secondly, small groups of people in circumstances that prime future-looking practices (for example civil servants responsible for adaptation in a rapidly changing landscape such as the Swedish Arctic) can also be expected to have visions with potential to get traction and evolve into new imaginaries.

A word on the terminology going forward. A key element of an imaginary is its vision of the future. For it be considered an imaginary this vision must be collectively held, with material and political influence to shape the present. It is however in the vision, and the assumptions and simplifications it demands, that the connection between the collective and the individual lies. I therefore use vision (of the future) both for individuals and, when collectively held, for imaginaries. Key here then is that an individual can express an individual vision (that is not part of an imaginary), or an individual can express a vision that is collectively held and then (potentially) part of an imaginary. Studying imaginaries thus entails studying visions of the future, and figuring out which are collectively held.

### 2.3. *'Climate Adaptation Imaginaries' – adaptation as a strategy to achieve an (implicit) ideal society*

Adaptation to human-induced climate change is today fundamentally intertwined with, and responding to, expectations of climate-induced shocks and stresses (Biagini et al., 2014; DeLeo, 2017; Wissman-Weber and Levy, 2018). In short, adaptation is a future-oriented practice. Hence, it is crucial to understand the assumptions guiding the visions of different futures in order to understand preferred adaptation strategies.

What thinking with imaginaries highlights is that adaptation is not an end in itself. Adaptation is always bound up in, and struggled over, in competing visions of desirable futures. In this perspective the preferred adaptation pathway is not simply a response to an (anticipated) climate effect. Instead adaptation becomes a strategy for creating (or maintaining) the desirable society of an imaginary. Thus, a 'Climate Adaptation Imaginary' holds a collective vision of a desirable future society that at least relates to the changing climate conditions and promotes specific adaptation strategies to realize its desired society.

Analysing Climate Adaptation Imaginaries thus comprises eliciting the vision of desirable future guiding adaptation policy and

work, and exploring what assumptions are foundational for the preferred adaptation strategy. In this paper, I analyse adaptation, understood as a strategy to achieve a vision, according to three aspects. The first aspect considers whether the visions of the future assume a reactive or proactive<sup>1</sup> approach to adaptation (Biagini et al., 2014; Löf, 2013). This differentiation has been used for a long time in the adaptation literature (c.f. Smit et al., 2000), and sits at the intersection between stimuli, timing, and expectations. Responding to a heat wave as it is occurring or enhancing capacity to deal with a flash flood after an area has been flooded, are examples of reactive approaches. A proactive approach to adaptation is aiming to manage and prepare for expected climate-induced shocks or stresses that have not yet occurred. Reactive responses as a future-oriented practice may seem counter-intuitive. However, reactive responses relate to expectations and an overarching anticipatory understanding of adaptation in two ways. First, a reactive approach is based on expectations of either unlikelihood of climate change having a substantial effect or that these effects are manageable without targeted preparations (c.f. Vervoort and Gupta [2018] for a general argument along the same lines). Secondly, if adaptation measures are implemented after a shock, like a heat wave, this action is based on the assumption that it could happen again.<sup>2</sup> Arguably then, all adaptation measures today have an anticipatory element.

The second aspect of adaptation I use is the aim of the strategy, whether it aligns with an incremental or transformational ambition with adaptation (Shi and Moser, 2021). Another way of describing this distinction is to ask whether the strategy aims to maintain the current political, economic, and cultural systems, or to fundamentally change (parts of) these aspects of society in response to the climate crisis. The incremental approach is often driven by (a belief in) technological developments to ensure the persistence of the current system; it can also include modification to institutions and organisational formations in order to protect the functional integrity of the system (Read, 2021; Pelling, 2011).<sup>3</sup> Transformational adaptation refers instead to reconfigurations of a system in order to adapt (Löf, 2010). The focus is on causes of vulnerability to the climate crisis, with an aim to reform or radically alter aspects of the social, political, economic or cultural norms of society (Read, 2021; Pelling, 2011). Transformational adaptation is, depending on the scale and system definition used, beyond the capacity of a municipality or a region acting on its own. Nevertheless, it is important to note that both IPCC and The Swedish Expert Council on Climate Change Adaptation are urging for a transformational approach to adaptation, recognising that fundamental changes in society are necessary (IPCC, 2022; Schultze et al., 2022). In this paper, I address this by taking a pragmatic approach to transformational adaptation by focusing on the intention or recognition of the need for transformational approaches, as expressed in documents and/or by interviewees. This focus on intention and recognition further connects to an important aspect of transformational approaches to adaptation, namely the openness and willingness to “undertake major psychological adjustments” in order to respond effectively to the unfolding climate crisis (Read, 2021, 291; see also Wamsler et al., 2020).

The third and last aspect in relation to adaptation and future visions is what types of risks are in focus. Here I distinguish between direct effects in the geographical vicinity, and transboundary (including cascading) effects. Direct effects are rather self-explanatory, i. e. shocks and stresses, such as heat waves, droughts, cloud bursts etc. occurring in the municipality (or region). Transboundary climate effects are impacts that cross or even jump over national/administrative borders, such as large forest fires, disruptions in international supply lines, food security and migration (Anisimov and Magnan, 2023). Transboundary risks are of particular importance to Norrbotten (and Sweden and other industrialised countries in general), since both the region and the country are highly integrated with, and dependent on, international markets (Berninger et al., 2022).

### 3. Material and methods

This section is divided into four parts. The first situates the case and gives a brief historical background, and the second provides a short description of how the public sector in Sweden works with adaptation governance. The third section describes the material in more detail, how it was generated or collected. Finally, the fourth explains how the material was analysed.

#### 3.1. The Swedish Arctic: “Where the green transformation is already happening”

The Arctic is a contested term, and Sweden practically became an ‘Arctic country’ with the creation of the Arctic Council in 1996 (Keskitalo, 2019). However, in all definitions (part of, or all of) Norrbotten is included in the Arctic. More importantly for this study, Norrbotten, its municipalities and the people I have met in my work increasingly describe and promote the region as Arctic. One example is how the municipalities are marketing themselves internationally as the Swedish Arctic, with “untamed” nature and Arctic lifestyles.<sup>4</sup> This is relevant to the extent that the Arctic imagery is used to revive problematic images of Northern Sweden, and Norrbotten in particular, as an untouched, wild and a largely empty region with vast natural resources. This is reminiscent of discourses from the beginning of the 1900s when the region went through rapid industrialisation as forests, ores and rivers were exploited by the Swedish state to fuel the development of the whole country. At the time, there were explicit comparisons with resource-rich colonies (Persson, Harnesk, and Islar, 2017), and the region was described as the Swedish America and “the Land of the Future” (Sörilin 1988). This is problematic, not least since it is a cultural landscape where the indigenous Sámi people have established land

<sup>1</sup> I have opted for using proactive instead of the, in the adaptation literature, more common ‘anticipatory’. This is to minimize confusion as I argue that adaptation to human-induced climate change regardless of approach can be considered an anticipatory practice.

<sup>2</sup> Consider a meteor-strike in a city centre as a counter-example. It is unlikely the city would take measures to reduce its vulnerability to another meteor strike.

<sup>3</sup> Read terms this ‘shallow adaptation’ and Pelling uses the term ‘resilience’ in the current system to describe this approach.

<sup>4</sup> See “This is Swedish Lapland,”: <https://www.swedishlapland.com/this-is-swedish-lapland/>

rights according to immemorial prescription (e.g. Allard, 2011) - it is not (nor was) empty.

Today the region is experiencing a second industrial revolution, with the focus once again on the vast natural resources waiting to be used in a region again described as a “land of the future” (Persson, Harnesk, and Islar, 2017). The pressure this time is not only to fuel the economic development of Sweden, but also increasingly the EU and a global market (European Commission, 2023; OECD, 2021). However, the new industrialization project has a distinct ‘green’ focus. The County Governor<sup>5</sup> of Norrbotten recently described the region as the place “where the green transformation is already happening” (Swedish Climate Policy Council, 2023). The Swedish Government, the region itself and the representatives of the private sector describe it as a region that is leading the response to the climate crisis (cf Larsson, 2022; Sveriges Radio, 2022). (Pictures 1 and 2).

### 3.2. Responsibilities for adaptation in the Swedish governing system

As this study focuses on the public sector in Norrbotten, particularly the municipalities and the County Administrative Board (CAB), I briefly describe the roles and responsibilities of these organisations in relation to adaptation in Sweden.

The municipalities have a central role in adaptation (Carlsson-Kanyama, Carlsen, and Dreborg, 2013; Lidskog and Rabe, 2022), not least through their ‘planning monopoly’, as land use is primarily decided by each municipality through its Comprehensive Plan<sup>6</sup> (Fredriksson, 2011). The municipalities’ Comprehensive Plans are interesting and important in the context of Climate Adaptation Imaginaries in two ways. First, the municipalities are required to assess and respond to climate related risks in their Comprehensive Plans (Government, 2018). Second, the Comprehensive Plan is the municipality’s most important strategic instrument for long-term management and planning of the entire municipality. It is fundamentally forward-looking and essentially describes the municipality’s vision for its development (Fredriksson, 2011). The Comprehensive Plan is not legally binding; rather it spells out the municipality’s intentions. However, in practice, it is important whether, and how, adaptation is addressed in the comprehensive plan. As one of the interviewees expressed it: “if it is not in the Comprehensive Plan it does not exist”.

The CABs, which are extensions of the Swedish Government into the regions of Sweden, have had a coordinating role in climate change adaptation since 2009 (Government Offices of Sweden, 2009). The CABs have limited capacity for policy-making on adaptation but instead primarily provide expertise and supervision on adaptation for regional actors, including coordination in the region and vertical coordination between local and national levels (Keskitalo, 2010). The CABs also have an important role in evaluating the municipalities’ work with adaptation, not least with the Comprehensive Plans, and have the power to prevent development plans if climate risks, such as floods, erosion and sea level rise, are not adequately accounted for. In 2019 a new climate ordinance extended the CABs’ responsibilities to actively work with adaptation, not just support and coordinate in the region (Swedish Government, 2019).

### 3.3. Material and data generating methods

The material generated and analysed for this study consists of fieldwork in the region, 10 in-depth interviews and analysis of 15 documents. The primary material is represented by 10 semi-structured, in-depth interviews conducted by me between April 2019 and April 2020. Each interview lasted 50 - 100 min, and followed an interview guide consisting of four parts: 1) the interviewees’ background, both professionally and academically, and how they got into working with adaptation; 2) their current work, how much was related to adaptation and how adaptation was placed and prioritised in their organisation; 3) other important and influential actors in their work with adaptation; 4) their view of the future and priorities for their organisation (and society) in relation to adaptation and the climate crisis. The interviews closed with a meta-interview on how they experienced being interviewed and whether they felt I had missed anything of importance for understanding their work. Two research assistants transcribed all interviews. The translations from Swedish to English are my own.

The interviewees represent five municipalities in Norrbotten and the CAB of the region. All are either a contact person and a chief operative civil servant in their organisation, or they are head of the department responsible for adaptation in their organisation. In some cases, this is the same person, i.e. they are both head of department and chief operative civil servant.

The material also includes notes from fieldwork. The fieldwork has been valuable to make connections to a number of civil servants, hear reflections and discussion in work situations and more informal situations, and situate the reasoning and perspectives emerging from interviews and documents in a broader political context. The fieldwork, during September 2019 and February 2020, included visits to the CAB in Norrbotten and Municipality A, and a number of conferences, seminars and lunch meetings with civil servants in Norrbotten.

Additionally, searching the six organisations’ web pages for all documents mentioning ‘adaptation’ or ‘climate’ generated more than 150 documents. Most of these documents were irrelevant for this study, either addressing ‘business climate’ or less frequently protocols from meetings where headings included ‘climate’ but did not mention climate change or adaptation in the following text. These were not included in the data set analysed and presented in the findings. From the five municipalities and the CAB, 15 documents were in the end selected for the analysis: the five comprehensive plans from the municipalities, three policy documents from Municipality A, the regional development plan and six other relevant reports and policies on adaptation from the CAB.

Because of the interviews’ primary focus on adaptation, priorities and assumptions about climate impacts, the future aspect is largely implicit, except for the last segment of the interviews. The comprehensive plans are, in contrast, explicitly future-oriented as

<sup>5</sup> I.e. the Head of the County Administrative Board

<sup>6</sup> “Översiktsplan”, in Swedish



**Picture 1.** Norrbotten County in Sweden. [Source: WikiCommons].



**Picture 2.** Sweden in Europe. [Source: The World Factbook 2021.].

**Box 1**

## The Interviewees.

1. Head of department, and specialized in security issues.
2. Long career in public sector in different roles, and more than 10 years with adaptation.
3. Head of the department, with a background as an engineer and Environment & Health Inspector. Worked for more than two decades with most things connected to municipal planning and environmental issues.
4. Environment and Energy Advisor with international experience and a long career working with mitigation and adaptation projects.
5. Chief operative civil servant regarding adaptation. Holds a PhD in geology and has worked with water issues.
6. Head of comprehensive planning and with many years of experience with municipal planning, focused on longer perspectives, in a number of different municipalities in Norrbotten.
7. Head of department and a civil engineer by training. Many years at the municipality, mainly working with water issues and infrastructure.
8. Municipal ecologist, with three decades of experience in the municipality, working with strategic issues and long term planning with a focus on environmental issues.
9. Project leader and head of comprehensive planning, with three decades of experience in the municipality, and more than five years work with adaptation specifically.
10. Head of department and chief city gardener with more than two decades experience in the municipality. Works with implementation of adaptation measures.

they describe the visions and plans of and for the municipalities. Here, adaptation is not necessarily explicit, but when it is it indicates a degree of institutionalisation.

In an effort to anonymize the interviewees they are referred to by an assigned number, not by name, and described only in terms of their experience in [Box 1](#), and cited using only their given number in the Findings section. Similarly, the municipalities have been given a capital letter rather than being named. It is not possible to anonymise the County Administrative Board, which is simply referred to as the CAB. General characteristics of the municipalities are briefly sketched in [Box 2](#). The experiences and roles of the individuals, and the size and characteristics of the organisations, have relevance for the analysis, yet my focus is not on the individuals or on comparison of the municipalities per se. I am interested in the visions emerging, and the assumptions made, about climate change, adaptation and the future(s), particularly to the extent that emerging visions can be understood as collectively held, with political and material consequences and accompanying strategies to realize the vision, i.e. Climate Adaptation Imaginaries. The use of different methods for generating data has in this regard been important as it allows for a triangulating approach in analysing the data ([Alvesson and Sköldberg, 2018](#)), in order to elicit which visions are collectively held.

### 3.4. Data analysis

Following Salazar, I understand imaginaries to be intangible, meaning that the “only way to study them is by focusing on the multiple conduits through which they pass and become visible” ([Salazar, 2012](#), 866), which can be in the form of discourses, images, practices or architecture etc. Studying imaginaries thus entails tracing how collective and often implicitly held visions of the future, in a certain field, are manifested in, for example, discourse. Variations on discourse and qualitative content analysis are thus common approaches to study imaginaries (c.f. [Hagbert et al., 2020](#); [Levidow and Papaioannou, 2013](#); [Lewis, 2018](#); [Olin and Mladenović, 2022](#); [Ösgård and Spierings, 2021](#); [Preece et al., 2022](#); [Sokolova, 2023](#)). Drawing on insights from these recent studies, the first round of analysis used an inductive approach, combining ‘open coding’ and progressive focusing ([Crang and Cook, 2007](#); [Iphofen, n.d.](#)),

**Box 2**

## The Municipalities.

- A – Comparatively large urban area situated by the coast.
- B – A coastal municipality, with relatively small population.
- C – Among the poorer municipalities in Sweden, situated along the coast.
- D – Inland municipality with growing population. Recognized for its work with adaptation.
- E – A big inland municipality with a decreasing population and huge areas of protected land.

exploring themes emerging from the interviews. The second iteration used an athenatic approach (Veenman, Kusters, and Beckers, 2021) and focused on: 1) visions of the future; 2) strategies to achieve these futures; 3) responsibilities and/or how society should be organised according to the vision; and finally 4) the likelihood that the different visions would materialise, as perceived by the interviewees. The third iteration focused on how the visions and strategies to achieve the visions incorporated adaptation, specifically in terms of reactive vs. proactive, incremental vs. transformation, and direct and transboundary effects.

The second part of the analysis is based on the comprehensive plans and other relevant documents on adaptation and followed a similar procedure. The process was more structured here and focused on the explicit visions in the documents, followed by searching for all instances that mentioned climate. The analyses of the visions of the future are quite straightforward, as describing a vision for the municipality is one of the main purposes of the comprehensive plans; here my interest is primarily to what extent climate change is part of, or seen as affecting, the realisation of the vision. Focus areas and priorities to achieve the vision are also expressed in these documents and are of importance from an imaginaries perspective as they express the equivalent of strategies. The segments mentioning climate have been read first of all with the focus on whether adaptation is mentioned explicitly or implicitly. Secondly, the documents have been analysed using the same categories applied to the interviews: reactive vs. proactive, incremental vs. transformation, and direct and transboundary effects.

#### 4. Findings

The findings are structured as a response to the first research questions: *What are the competing visions for society in the Swedish Arctic, in the context of climate change, as presented in policy and by civil servants? Are there visions that can be described as collectively held, materially embedded, and politically dominant, i.e. as imaginaries?* Four visions emerge through my material and are presented in turn in the findings. The first two of these can be described as part of Climate Adaptation Imaginaries.

In each section I connect to and answer the second research question: *How do the different visions, through assumptions, simplifications and ideals, shape adaptation strategies and priorities?* This is approached through describing the adaptation strategy promoted in the vision through the categories of approach, aim and focus as described in the theory section. In the fourth section on dystopias it is rather the disconnect between current strategies and a desirable vision of society that is in focus.

A fifth and last section is added to reflect upon the third research question: *Who benefits from the currently dominant climate adaptation imaginary?* In this section I also present findings on the relation between visions in the documents and the visions presented by individuals, which in many organizations show a disconnect between the visions of the civil servants working with adaptation and the written policies that guide their work.

##### 4.1. An imaginary of maintaining economic growth, with reactive and incremental adaptation

The goal in the first collectively held vision is continued economic growth, increased tourism and further industrialisation, and adaptation is barely seen as necessary for achieving this vision. To the extent that adaptation is addressed, it is through a reactive approach. The aim is incremental, although this is a broad understanding of 'incremental' because rather than espousing an effort to protect the current economic, political and cultural system, it is more based on an assumption that these systems will continue to exist and function even without proactive adaptation. Since the need for adaptation is assumed to be covered through a reactive strategy, the identification of different types of risk is not really addressed. In short, transboundary risks are not on the radar.

To give some concrete examples: Municipalities B and C have no strategy or priorities relating to adaptation in their Comprehensive Plan, and Municipality E only has an implicit mention stating that it is "important to take climate change effects into account" in the planning (Municipality E's Comprehensive Plan). The future visions in these three documents all centre on economic development, with no mention of climate change or adaptation. Municipality B frames their vision for the municipality as an organisation that actively engages in global changes, yet do not mention climate at all in their elaboration of their vision. Instead, the future vision is focused on economic growth, effective use of funds and being an attractive place for people and businesses (Municipality B's Comprehensive Plan). Municipality E's vision focuses on being a meeting place known for its culture and grand landscapes in the Arctic. The elaboration on how to get there is, however, through a growing economy, explicitly connecting to the regional economic growth plan (Municipality E's Comprehensive Plan).

Three interviewees (3, 4, 7), representing these municipalities, give a similar picture. There is no long-term planning or strategies, no money, no political leadership, and adaptation is understood as a technical and reactive issue in their organisations. When looking ahead there are no problems on the horizon, according to the political leadership. The future of these municipalities will not be decided by climate effects, nor barely even influenced by them, it seems.

The CAB has a slightly different take, in that they do mention climate change explicitly in many steering documents; this does not, however, translate into a more proactive adaptation strategy. In their regional development plan,<sup>7</sup> and related innovation strategy, climate change and sustainable development are mentioned, but the focus is firmly on economic development, formulated as sustainable economic growth. Climate change, especially mitigation, is described in relation to innovation and business opportunities. The region's vast (uninhabited) land and natural resources, combined with high-tech and heavy industries, are repeatedly highlighted as comparative advantages on the global market, positioning Norrbotten as a potential leader for testing and developing innovations to

<sup>7</sup> Corresponding to the municipalities' comprehensive plan.



drive sustainable economic growth, not just in Norrbotten and Sweden, but also to export solutions globally (Havnesköld, Andersson, and Medelid 2013; Länsstyrelsen Norrbotten, 2012). Adaptation is never mentioned in these documents.

The interviewees (1 and 2) working with adaptation in the CAB confirm that the dominant vision in the CAB does not consider adaptation much at all. If leadership, higher up in the CAB hierarchy, mention adaptation, it is often misunderstood and / or confused with mitigation, according to the interviewees. As interviewee 2 puts it: “the focus is generally only on business development and economic growth in the region” and mitigation has a place in that vision, while adaptation does not.

Given that this vision of a desirable society is spread over different organizations and presented in documents, interviews and pop-up in seminars and through my fieldwork, it is a collectively held vision. This vision is present in the testimonies of the interviewees and also written into the Comprehensive Plans, indicating that it indeed shapes the political landscape and adaptation strategies – even if those strategies are reactive and incremental, meaning they are more concerned with maintaining the current society.

#### 4.2. *An imaginary of transitioning to ‘green’ economic growth, with proactive and incremental adaptation*

The second collectively held vision shares many features with the first, not least in having the ideal of a society built around economic growth; but here, it takes on a distinct ‘green’ version of economic growth and industrial expansion. In this version, proactive adaptation is seen as a necessary strategy for achieving the vision of an ideal society.

For example, this collectively held vision can be found in the Comprehensive Plans of Municipalities D and A, which both engage with adaptation in their Comprehensive Plans. In Municipality D’s Comprehensive Plan, adaptation features both as an important aspect in itself but is also integrated in many other parts of the document, especially in maintenance and construction of buildings, (green) infrastructure, agriculture, nature conservation etc. The overarching vision is a growing municipality, with high employment (Municipality D’s Comprehensive Plan). The specifications, or strategic foci, on how to achieve the vision focus on (ubiquitous) growth, safety and quality of life (ibid.). In none of these three strategic and more concrete foci is climate or adaptation mentioned, despite the general inclusion of climate change as an important factor.

Municipality A stands out in a number of ways from the other municipalities in the county. As with Municipality D, both climate change and adaptation is reoccurring in the Comprehensive Plan. Municipality A is unique in the region in having a policy document specifically on adaptation. Additionally, they have a Vision Document that looks ahead further than the Comprehensive Plan, and a report on global issues that are seen as relevant for the municipality. In these three additional documents, the engagement with potential and desirable futures are clear, and there are some strong formulations on climate change and sustainability in general. For example they write that “we view our nature and its resources as a treasure, from which we borrow from coming generations” and they see “sustainability [as a matter of] survival” (Municipality A’s Vision Document). Part of the vision addresses being “prepared for change” through adaptation, which includes changes in consumption patterns, and a high degree of self-sufficiency in the region regarding food, energy and other goods. The Vision Document repeatedly returns to the importance of a positive outlook on the future. It is, however, clear this positive outlook is connected to economic growth and technological development in the region, where they see themselves as placed in a uniquely privileged position to innovate and export solutions. In the Comprehensive Plan, which takes precedence over the Vision Document, adaptation to climate change is mentioned as an important guiding principle in all of the municipality’s work. Adaptation also gets its own section under the heading “better climate change adaptation”, which somewhat paradoxically states that the municipality is, and will be, generally unaffected by climate change (Municipality A’s Comprehensive Plan).

The CAB, being a larger organization, exhibits two competing imaginaries, even in documents. As explained in the previous section, the most important guiding documents from the CAB (the Regional Development Plan and Innovation Strategy) both assume reactive adaptation is an adequate strategy. The reports and policies coming from the department working with adaptation naturally have a different view on adaptation needs in the region. The approach to adaptation in these documents is, unsurprisingly, proactive. Additionally, having a role in coordinating and maintaining an overview, the CAB’s adaptation policy document is the one that goes furthest in considering transboundary and even cascading effects. One example is how climate shocks can have devastating effects on crucial infrastructure in Norrbotten, which would have severe consequences locally, but also spill over into Northern Norway and Finland (Länsstyrelsen Norrbotten, 2014).

What emerges from these documents from Municipalities A and D, and the adaptation policy and reports from the CAB, is a proactive approach to adaptation, with some elements of transformational aspirations highlighting behavioural changes and balancing resource extraction with nature’s regenerative capacity (Municipality A’s Vision Document and Adaptation Policy), and connecting adaptation with justice and equality (Länsstyrelsen Norrbotten, 2020). This is, however, subsumed under a collective vision of a society based on continued economic growth and increased exports made possible by Norrbotten’s “unique position to provide tech solutions” to climate change (Länsstyrelsen Norrbotten, 2017); i.e. the adaptation aim is clearly incremental, geared towards protecting the economic core. The CAB mentions transboundary risks to a limited extent in reports, but without any strategy to deal with these risks. Similarly, for Municipality A, despite the in many ways ambitious formulations on sustainability, and focus on global trends and markets, adaptation remains a local affair, as it is only direct effects in the geographical area that are considered in the documents.

Interviewees 5 and 6, and 8, 9 and 10, representing different roles in two different organisations that uphold the collective vision of society based on ‘green’ economic growth, all say they are working with adaptation based on the IPCC’s scenario RCP8.5. Interviewee 9 elaborates on the choice by saying:

we are closer to the RCP8.5 scenario right now than any other, and as a municipality we cannot change the [emission] development on our own. But we are responsible for adaptation and it would be irresponsible to not plan for the worst feasible scenario.

However, it is clear from all five interviewees that they focus exclusively on direct effects in their geographical location. It also becomes clear that even though their Comprehensive Plans and policies mention mid-century and even end-of-century time frames, in practice they work with a 10 year period of planning. This means that “it does not really matter what scenario we use” (interviewee 8), since the scenarios start to diverge beyond the time frames that are used in the everyday work in the organisations. Crucially, it also means that an ambitious framing (bordering on transformational language) can be combined with a practical approach to adaptation that is limited, incremental and focused on maintaining current systems. Interviewee 9 expands on this, stating that there is a sense of politicians allowing the progressive language and high ambitions on climate mitigation and adaptation, as long as it does not cost anything.

This too can be described as a specific climate adaptation imaginary, as it is collectively held to the extent that versions of a very similar vision of an ideal future society is presented in different mediums by different people in different organizations. It is further accompanied by an adaptation strategy in order to achieve this ideal society. The vision and accompanying strategies are also clearly embedded in policy and shaping the work with adaptation in the region.

#### 4.3. *Beyond economic growth - the alternative visions*

In the interviews, the civil servants were prompted to look ahead towards 2050 and beyond. They were asked to consider their organisation (and region) in a global context of transboundary risks, and assess their current work, plans and priorities for adaptation. Most of the interviewees found the act of looking ahead, and considering if they thought current strategies were adequate, somewhat unsettling and unusual. They indicated that these longer timeframes are not something they usually discuss. However, in their response to the questions, almost all of them opened up in different ways into either more dystopic or desirable futures, or both. So, what surfaced was something other than the two Climate Adaptation Imaginaries described above. One of the interviewees, representing a front-runner municipality, was instead mildly shocked by the question, insinuating that it is inappropriate as it raises such troubling issues and dark thoughts. This interviewee then quickly self-identified as an optimist, stating “I think, and hope, humanity will be able to act in time to solve the crisis. It is important, I remind myself, to see the little changes and believe in the difference we all can make do in our small way” (interviewee 6), and then did not want to expand on this issue further.

##### 4.3.1. *A vision of a local and regenerative society, achieved through transformational adaptation*

An alternative to the Climate Adaptation Imaginaries focused on economic growth emerges from three of the interviewees. Interestingly, all three present a very similar vision of a transformed society responding not only to direct but also transboundary effects. It is a vision that centres on a locally anchored, community-based society, where food and energy are largely produced locally, fossil free and sustainably over time; this is achieved by balancing resource extraction and consumption against nature’s regenerative capacity. This would, according to the interviewees, mean not only reductions in general consumption, energy use, transport and travelling, but also a society that is more just and resilient against shocks and stresses, in which democracy comes closer to the citizens. In addition, the sense of connection to nature and the local environment is increased and indigenous rights are respected. The description of the desirable society that is adapted and adapting to climate change is rather similar across these three interviews, but the emphasis on what needs to change and how to get there differs between them.

The first version of this vision begins in the economic structures. Specifically, that we need to break with the current economic paradigm geared towards economic growth at all costs. Creating a properly circular economy should be combined with, or even achieved through, strengthening local communities and bringing democracy closer to the citizens. A reformed municipality is seen as the centre of this transformed society, acting as “a natural hub for local collaborations and partnerships” (interviewee 4), anchoring society and its economy in the local environment and creating resilience in the region. In this way, society will be able to withstand shocks in, for example, the global food market or energy system. Furthermore, the municipalities ought to collaborate more directly internationally to share experiences and solutions, whereas the national level can support with expertise and focus on law making and monitoring that laws are followed.

The second variety of this vision starts with a focus on democracy and justice, on the right to livelihoods in rural areas and fair resource distribution, both within Sweden and globally. As interviewee 3 puts it: “There is a hypocrisy at the heart of our climate crisis debate”, and as long as fair resource distribution is not addressed we will not progress in transforming society. Here too, the aim is transformation to a society which produces (most) of its own food and energy in the region, and only trades for necessities. This will mean, according to interviewee 3, that we in the high-emitting societies, like Sweden, need to work on sufficiency (using less and being content with less) to be able to distribute resources more fairly. The pathway to the envisioned society, according to interviewee 3, goes through strengthening democracy, by focusing the political discussion on justice and fair distribution globally. In extension, it means enabling people being able to sustain themselves and have a decent life wherever they choose to live. As interviewee 3 concludes, the “climate crisis is for me primarily a crisis for democracy”. It is unclear where the responsibility for moving towards this future lies. On the one hand, the interviewee sees that municipalities have a role to play in shaping its inhabitants’ behaviour, but national (and international) leadership is necessary, not least to “reign in the market and big companies”. On the other hand, it is clear that the interviewee has low confidence in current political leadership and political structure, as they see it as hypocritical and focused on centralisation and unsustainable economic growth.

From interviewee 2, this vision is prompted by questions of how they view the future, where they think we are heading right now, what they think we need to do. The interviewee then draws inspiration from Sámi communities and culture and puts emphasis on how “we must learn to see ourselves as co-existing and dependent on Nature”. Economic and political reforms are implied, but not in focus. The strategy to achieve this new society goes through education and new types of knowledge-exchanges, and in that sense it can be categorised as anticipatory, even potentially transformational, as it aims to build new capacities and mind-sets (Feinstein and Mach, 2020). While both drawing inspiration from Sámi communities and promoting smaller, and increasingly self-reliant communities, interviewee 2 at the same time argues for an active and strong state. Interviewee 2 sees this as important, especially to enable the planning and enforcement of land use regulation over large areas and long periods, but also in relation to the behavioural changes needed in terms of both mitigation and adaptation. Using themselves as an example, the interviewee admits that despite working with climate issues they “eat meat”, “drive a diesel car”, “fly a lot for work” and “consume quite a lot” in general. Although they support reducing their impact in all those areas, they finish with saying “we can’t all be Greta Thunberg” and suggests regulation is needed.

These three interviewees all express a vision of a society that has transformed economic, political and cultural parts of society in order to respond meaningfully to the climate crisis. In terms of adaptation as a strategy to achieve this society, it is clearly a proactive approach, with a transformational aim, with a strong focus not only on direct effects but also on transboundary and cascading effects. Digging a little bit deeper into how the transformations should be achieved, the three interviewees’ visions become a little less homogenous. But they all include a focus on education, strengthening local democracy and increasing collaboration and trade in the region (not necessarily within Sweden’s borders). The role of the State is mostly to set the rules and enforce them, not least regulating big companies. There are some differences here though. Where one interviewee sees that the State needs to play an active role and be more intrusive, another sees a shift in power to local governments that can be closer the citizens. The third interviewee is more sceptical of the State altogether. Setting aside that these visions cannot be described as collectively held in the public sector in Norrbotten, the differences in strategies and where responsibility lies would also suggest it is not a Climate Adaptation Imaginary. What unifies these three visions, however, is that none of the interviewees, sadly, really believes in the vision materialising.

It should be highlighted that these more coherent alternative visions are the exceptions. Two interviewees do not express any desirable visions of the future when prompted to look ahead towards mid-century and beyond (interviewees 5 and 6); a third provides a vague vision that is not connected to climate change or adaptation (interviewee 7). Interviewee 1 provides a vision where adaptation takes the path of militarization, which according to them will make adaptation more efficient and keep Sweden safe and democratic, but is not necessarily a desirable future even for them. Finally, interviewees 8, 9 and 10 do, when prompted, and on the back of dystopic visions, turn to a more positive vision of a society that is more regionally self-reliant and welcoming of migrants, but all quickly dismiss this as unlikely.

#### 4.3.2. Dystopias emerge as the main alternative to current imaginaries

If alternative desirable futures were generally hard to imagine, what emerges instead from all but one of the interviewees are different versions of dystopias. There is a range of different dystopic visions here, beginning with a ‘mild’ dystopia of increasing climate-related shocks and stresses, including more flooding, heavy rain and heavy snow, heat waves, landslides and buildings damaged by rising humidity. It will get worse but it will be manageable is the sentiment (interviewee 5).

Two other interviewees take the same kind of mild dystopia as a starting point, but shift focus. According to interviewees 10 and 3, the climate is already visibly changing, and even if the current changes are not threatening liveability in Norrbotten, they are already fundamentally reshaping the landscape and the seasons. Interviewee 10 points out that many who live in Norrbotten do so because they enjoy the cold and snowy winters and that the region is also marketing itself as an Arctic region. Hence, the most immediate and difficult adaptation measure needed, according to interviewee 10, is psychological rather than technical: dealing with the looming identity crisis for individuals and the region as a whole, as the wintery ‘arctic’ landscapes increasingly disappear. Interviewee 3 is more personal, and in a sense gives voice to the problem of ‘solastalgia’ (Albrecht et al., 2007), as they are “already mourning the disappearing winter landscapes and the loss of species in the area”.

Interestingly, when prompted to think in longer perspectives and consider the possibility of transboundary risks, interviewee 5 acknowledges the need for “radically decreasing consumption, limiting flying, and making energy production fossil free”. The vision is similar to the positive, rural and local community vision that emerges from other interviewees, but here it takes on a distinctly negative and dystopic framing, involving sacrifice and a less enjoyable life.

Darker scenarios emerge as well, where the public sector’s work is driven exclusively by reacting to the shocks and stresses of climate change (interviewee 5). Another version sees the need for adaptation continuously increase but the funds remain insufficient and responding effectively is continuously pushed aside by other political priorities, in turn making marginalised and already vulnerable groups pay the price (interviewee 2). Future visions envisage melting glaciers, rapid sea-level rise and fresh water shortages (interviewees 8 and 9) leading to conflicts, mass migration even full-scale wars (interviewees 1, 8, 9, 10). The darkest scenarios range all the way to global collapse and the end of society as we know it (interviewees 3 and 4).

There is a sense from all the interviewees, except number 6, that regardless of the depth of the darkness, it is the dystopic visions that are seen as most likely, or even expected. As interviewee 4 elaborates: they identify the economic growth paradigm as the fundamental problem, but see no indication that we will break free from this paradigm in time to stop catastrophic consequences. Society as we know it will most likely end, and as they put it, “your research or my tinkering with projects here in the far north won’t change anything”. Still, they say, it is the right thing to try, and to continue trying, to do something. Interviewee 4 concludes: “it is sad and ethically wrong that so many people and species will have to die due to avoidable climate changes”, but even in this dystopia humans are believed to survive and rebuild.

#### 4.4. A disconnect between policy and the civil servants' visions

Examination of the Comprehensive Plans reveals a division between municipalities that include adaptation in their Comprehensive Plans and those that do not. From the interviews, a division emerges between interviewees who provide desirable visions of the future and those that struggle to do so. An interesting finding is that these two divisions do not coincide, as one would expect. Individuals providing visions of desirable futures, with a transformed society, represent municipalities that do not actively work with adaptation. In contrast, individuals working in municipalities that have included adaptation in Comprehensive Plans (often the interviewees are even responsible for the inclusion of adaptation in the Comprehensive Plans) struggle to formulate visions of desirable futures. This indicates that the two Climate Adaptation Imaginaries, are not believable or desirable for the civil servants, as the adaptation strategies promoted do not seem convincing, especially in mid- to long-term perspectives, and especially when faced with transboundary risks. Clearly, the Climate Adaptation Imaginaries protect the current status quo, possibly with a shift within the industry and business sector in the 'green' version.

Furthermore, all interviews point to how interviewees' academic and professional background shape their understanding and priorities in relation to adaptation. This reinforces [Wamsler and Brink's \(2014\)](#) findings that the lack of mainstreaming and related knowledge has rendered the public sector's work with adaptation fragmented and often technical. However, this study finds that adaptation often becomes framed in whatever relevant personal experience, not just technical experience, is available. For example: military experience frames adaptation as a security issue; engineers define adaptation as a technical problem; experience working with marginalised groups leads to a focus on impacts on vulnerable people; a previous focus on water issues leads to focus on water in adaptation as well. On the surface, this is perhaps expected. However, it points to a lack of core skills and knowledge that comes with working with adaptation and, more importantly, a lack of priorities and vision. As interviewee 4 expresses it, "it is difficult to do something when there is no clear assignment, no direction, and no clear aim of what we want to achieve".

### 5. Concluding discussion

This study started out with the proposition that we need new, ambitious and collective visions in order to adapt to the climate crisis, i.e. new Climate Adaptation Imaginaries. The findings suggest there are no such Climate Adaptation Imaginaries in the Swedish Arctic. Instead, what emerges are two Climate Adaptation Imaginaries that share a similar vision of a society based on continued economic growth and industrial expansion. These two imaginaries are primarily separated by the engagement with climate change and the accompanied adaptation strategy to achieve its vision of society. In the first version, climate change is primarily cast as an opportunity for the region to leverage its natural resources and technical expertise to cater to an international market – adaptation is barely needed to achieve this vision.

In the other, more progressive and prominent, 'green' version of the economic growth imaginary, climate change is seen both as an opportunity and as a concern. It is seen as an opportunity in the same way as the competing imaginary, but climate change is acknowledged as a concern to the extent that proactive adaptation is promoted as the preferred strategy. This is however limited to an incremental approach focused on direct effects. This simplification, focusing on direct effects, is somewhat paradoxical as the imaginary of 'clean' and 'green' growth at the same time builds upon assumptions of continued dependence on international trade and the interconnectedness of global markets ([Vezzoni, 2023](#)). Both these imaginaries hold a vision of a society that is still heavily reliant on massive energy use and resource extraction, which rather than taking us forward puts us back at square one ([Össbo, 2023](#)). Consequentially continued "green colonialism" ([Fjellheim, 2023](#); [Normann, 2021](#)) or "developmentality" ([Khotari, 2021](#)) is built in to these imaginaries. Transformational aims and recognition of negative transboundary effects simply do not fit in these imaginaries, as this would question fundamental assumptions and feasibility of the end goals and the ideal (future) society.

There are counter hegemonic visions emerging. They are not widely shared, nor materially and politically embedded, to the extent that warrants a label as an imaginary. However, the visions are remarkably similar at the surface and presented by representatives from different organisations. It is a vision of a transformed society, locally anchored, community based, mostly self-reliant on food and energy, with fair distribution of resources and a rejuvenation of democracy where sufficiency is a guiding principle. Importantly, this vision includes and responds to transboundary risks, indicating that this is an important starting point for imagining new desirable futures, which are relating to, and relevant for, a world increasingly shaped by the climate crisis. This vision is clearly marginal, both in my material but also, as the interviewees make clear, it is not widely shared or accepted in their organisations.

Furthermore, it is clear that even for professionals working with climate change and adaptation, consideration of long-term perspectives and transboundary risks is seen as unsettling. It is also clearly something they are unused to consider and talk about. This mirrors findings from both [Coulter et al. \(2019\)](#) and [Hyttiäinen et al. \(2022\)](#) and is a reminder that the affective aspect of Climate Adaptation Imaginaries is important even, or perhaps especially, in professional settings ([Riesto et al., 2022](#)). This is significant because what emerges as the predominant alternative to the dominant Climate Adaptation Imaginaries are different dystopic visions of the future. Dystopic aspects are not necessarily unusual in relation to imaginaries. Indeed, it has been argued that dystopias, or 'monsters' to avoid, can function as the main driver of imaginaries ([Giuliani, 2020](#); [Dennis, 2015](#)). However, in the case of Norrbotten what emerges is not a unified vision of a dystopia to avoid, which could serve as common driver, but a range of very different dystopias. Crucially, what some view as a desirable future is painted as a dystopia by others. What unifies these dystopias are two things: 1) they are largely seen as the expected future(s); and 2) they are based on a vision of the future that acknowledges transboundary risks but stays with an incremental approach to adaptation.

Through developing Climate Adaptation Imaginaries, this study contributes to the growing literature on anticipation and foresight in adaptation governance by turning the relationship upside down. It is rarely an explicit vision of a society, which is continuously

adapting to the climate and within the ecological boundaries, that shapes adaptation policy; rather, it is an often-implicit vision of an ideal society (disconnected from climate and ecological boundaries) and associated assumptions that shape adaptation policy. This disconnectedness from climate and ecological boundaries, by necessity, leads to short-sightedness (even in a policy area that demands long-term perspectives) as the assumptions given by the imaginary's vision are only believable in a very limited time frame. How we move past the impasse of our 'crisis of culture' is beyond the scope of this paper. However, one important finding from this study is clearly that we need to open up to and acknowledge transboundary risks, but without new collectively shared visions of desirable futures, we are likely to realise dystopias.

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## References

- Albrecht, Glenn, Sartore, Gina-Maree, Connor, Linda, Higginbotham, Nick, Freeman, Sonia, Kelly, Brian, Stain, Helen, Tonna, Anne, & Georgia Pollard. (2007). Solastalgia: the distress caused by environmental change. *Australasian Psychiatry*, 15(1 suppl), S95–S98. <https://doi.org/10.1080/10398560701701288>
- Allard, Christina (2011). The nordic countries' law on sami territorial rights. *Arctic Review on Law and Politics*, 2(2), 159–183.
- Alvesson, Mats, & Sköldböck, Kaj (2018). *Reflexive Methodology: New Vistas for Qualitative Research* (Third edition). London: SAGE.
- Andersson, Jenny, & Westholm, Erik (2019). *Slaget om framtiden: I gränslandet mellan forskning och politik*. Stockholm: Santérus.
- Anisimov, A., & Magnan, A. K. (2023). *The Global Transboundary Climate Risk Report*. Stockholm, Sweden: The Institute for Sustainable Development and International Relations & Adaptation Without Borders.
- Bauriedl, Sybille, & Müller-Mahn, Detlef (2018). Conclusion: The Politics in Critical Adaptation Research'. *A Critical Approach to Climate Change Adaptation*. Routledge.
- Berninger, Kati, Lager, Frida, Botnen Holm, Tara, Tynkkynen, Oras, Klein, Richard J. T., Aall, Carlo, Dristig, Amica, Määttä, Helena, & Perrels, Adriaan (2022). In Marion Davis (Ed.), *Nordic Perspectives on Transboundary Climate Risk: Current Knowledge and Pathways for Action*. TemaNord: Nordic Council of Ministers. <https://doi.org/10.6027/temanord2022-531>.
- Biagini, Bonizella, Bierbaum, Rosina, Stults, Missy, Dobardzic, Saliha, & McNeeley, Shannon M. (2014). A typology of adaptation actions: a global look at climate adaptation actions financed through the global environment facility. *Global Environmental Change*, 25(March), 97–108. <https://doi.org/10.1016/j.gloenvcha.2014.01.003>
- Borgå, Katrine (2019). The arctic ecosystem: A canary in the coal mine for global multiple stressors. *Environmental Toxicology and Chemistry*, 38(3), 487–488. <https://doi.org/10.1002/etc.4360>
- Carlsson-Kanyama, Annika, Carlsen, Henrik, & Dreborg, Karl-Henrik (2013). Barriers in municipal climate change adaptation: Results from case studies using backcasting. *Futures*, 49(May), 9–21. <https://doi.org/10.1016/j.futures.2013.02.008>
- Coulter, Liese, Serrao-Neumann, Silvia, & Coiactto, Eddo (2019). Climate change adaptation narratives: Linking climate knowledge and future thinking. *Futures*, 111 (August), 57–70. <https://doi.org/10.1016/j.futures.2019.05.004>
- Crang, Mike, & Cook, Ian (2007). *Doing Ethnographies*. Los Angeles: SAGE.
- Davoudi, Simin, Ruth Raynor, Bryonie Reid, Jenny Crawford, Olivier Sykes, & Shaw, David (2018). Policy and practice spatial imaginaries: Tyrannies or transformations. *Town Planning Review*, 89(2), 97–124. <https://doi.org/10.3828/tpr.2018.7>
- Dawney, Leila (2011). Social imaginaries and therapeutic self-work: The ethics of the embodied imagination. *The Sociological Review*, 59(3), 535–552. <https://doi.org/10.1111/j.1467-954X.2011.02015.x>
- DeLeo, Rob A. (2017). Anticipatory policymaking in global venues: Policy change, adaptation, and the UNFCCC. *Futures, The Politics of Anticipation: On knowing and Governing Environmental Futures*, 92(September), 39–47. <https://doi.org/10.1016/j.futures.2016.09.001>
- Dennis, Michael A. (2015). Our Monsters, Ourselves: Reimagining the Problem of Knowledge in Cold War America. In Sheila Jasanoff, & Sang Hyun Kim (Eds.), *Dreamscapes of Modernity: Sociotechnical Imaginaries and the Fabrication of Power* (pp. 56–78). The University of Chicago Press: Chicago; London.
- Eriksen, Siri H., Nightingale, Andrea J., & Eakin, Hallie (2015). Reframing adaptation: The political nature of climate change adaptation. *Global Environmental Change*, 35(November), 523–533. <https://doi.org/10.1016/j.gloenvcha.2015.09.014>
- Eriksson, Camilla, Fischer, Klara, & Ulfbecker, Ebba (2020). Technovisions for food security as sweden restores its civil defence. *Science, Technology and Society*, 25(1), 106–123. <https://doi.org/10.1177/0971721819889924>
- European Commission. (2023). *European Critical Raw Materials Act*. ([https://ec.europa.eu/commission/presscorner/detail/en/ip\\_23\\_1661](https://ec.europa.eu/commission/presscorner/detail/en/ip_23_1661)).
- Fairclough, Norman (2013). *Critical Discourse Analysis: The Critical Study of Language*[Nachdr.] (Second ed.). London: Routledge.
- Feinstein, N. W., & Mach, K. J. (2020). Three roles for education in climate change adaptation. *Climate Policy*, 20(3), 317–322. <https://doi.org/10.1080/14693062.2019.1701975>
- Fjellheim, Eva Maria (2023). You can kill us with dialogue:" Critical perspectives on wind energy development in a nordic-saami green colonial context. *Human Rights Review*, 24(1), 25–51. <https://doi.org/10.1007/s12142-023-00678-4>
- Frame, Bob, & Cradock-Henry, Nicholas A. (2022). Views from nowhere, somewhere and everywhere else: The tragedy of the horizon in the early anthropocene. February, 20530196211059199 *The Anthropocene Review*. <https://doi.org/10.1177/20530196211059199>.
- Fredriksson, Charlotta (2011). *Planning in the 'New Reality' – Strategic Elements and Approaches in Swedish Municipalities*. Doctoral Dissertation. Stockholm, Sweden: Royal Institute of Technology.
- Ghosh, Amitav (2017). The Great Derangement: Climate Change and the Unthinkable. *The Randy L. and Melvin R. Berlin Family Lectures*. Chicago: The University of Chicago Press.
- Giuliani, Gaia (2020). *Monsters, Catastrophes and the Anthropocene: A Postcolonial Critique*. London: Routledge. <https://doi.org/10.4324/9781351064866>
- Godhe, Michael, & Goode, Luke (2018). Critical Future Studies - A Thematic Introduction. *Culture Unbound*, 10(2), 151–162. <https://doi.org/10.3384/cu.2000.1525.2018102151>
- Government Offices of Sweden. (2009). *Eno<sup>s</sup>is sammanhållen Klimat- och energipolitik - Klimat*.
- Hagbert, Pernilla, Wangel, Josefín, & Broms, Loove (2020). Exploring the potential for just urban transformations in light of eco-modernist imaginaries of sustainability. *Urban Planning*, 5(4), 204–216. <https://doi.org/10.17645/up.v5i4.3302>
- Hammond, Marit (2021). Imagination and critique in environmental politics. *Environmental Politics*, 30(1–2), 285–305. <https://doi.org/10.1080/09644016.2021.1880062>

- Havnesköld, Gunilla, Per-Erik Andersson, and Carola Medelid. 2013. 'Innovationsstrategi för Norrbottens län 2013–2020'. Luleå: Länsstyrelsen Norrbotten. (<https://www.lansstyrelsen.se/norrbotten/om-oss/vara-tjanster/publikationer/2013/innovationsstrategi-for-norrbottens-lan-2013-2020.html>).
- Hulme, Mike (2009). *Why We Disagree about Climate Change: Understanding Controversy, Inaction and Opportunity*. Cambridge, UK; New York: Cambridge University Press.
- Hyytiäinen, Kari, Kolehmainen, Liisa, Amelung, Bas, Kok, Kasper, Lonkila, Kirsi-Marja, Malve, Olli, Similä, Jukka, Sokero, Mikael, & Marianne Zandersen. (2022). Extending the shared socioeconomic pathways for adaptation planning of blue tourism. *Futures*, 137(March), Article 102917. <https://doi.org/10.1016/j.futures.2022.102917>
- IPCC. 2022. 'Summary for Policymakers [H.-O. Pörtner, D.C. Roberts, E.S. Poloczanska, K. Mintenbeck, M. Tignor, A. Alegría, M. Craig, S. Langsdorf, S. Lösschke, V. Möller, A. Okem (Eds.)]. In: Climate Change 2022: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Lösschke, V. Möller, A. Okem, B. Rama (Eds.)]. Cambridge University Press. In Press.'
- Iphofen, Ron. n.d. 'Research Ethics in Ethnography/Anthropology'. European Commission. Accessed 22 July 2021. ([https://ec.europa.eu/research/participants/data/ref/h2020/other/hi/ethics-guide-ethnog-anthrop\\_en.pdf](https://ec.europa.eu/research/participants/data/ref/h2020/other/hi/ethics-guide-ethnog-anthrop_en.pdf)).
- Jacobs, Peter, Nathan Lenssen, Gavin Schmidt, and Robert Rohde. 2021. 'The Arctic Is Now Warming Four Times As Fast As the Rest of the Globe' 2021 (December): A13E-02.
- Jasanoff, Sheila. (2015a). Future Imperfect: Science, Technology, and the Imaginations of Modernity. In *Dreamscapes of Modernity: Sociotechnical Imaginaries and the Fabrication of Power* (p. 1). Chicago; London: The University of Chicago Press.
- Jasanoff, Sheila. (2015b). Imagined and Invented Worlds. In Jasanoff, Sheila, & Kim, Sang-Hyun. *Dreamscapes of Modernity: Sociotechnical Imaginaries and the Fabrication of Power* (pp. 321 - 341). Chicago; London: The University of Chicago Press.
- Jessop, Bob (2010). Cultural political economy and critical policy studies. *Critical Policy Studies*, 3(3–4), 336–356. <https://doi.org/10.1080/19460171003619741>
- Jessop, Bob (2012). Economic and ecological crises: Green new deals and no-growth economies'. *Development*, 55(1), 17–24. <https://doi.org/10.1057/dev.2011.104>
- Kanarp, G. C. S., & Westberg, Lotten (2023). Adapting climate change – How government authorities in Sweden make sense of adaptation through a network practice. *Journal of Environmental Planning and Management*, 1–21. <https://doi.org/10.1080/09640568.2023.2171278>
- Keskitalo, E. Carina H. (2010). Adapting to Climate Change in Sweden: National Policy Development and Adaptation Measures in Västra Götaland. In E. C. H. Keskitalo (Ed.), *Developing Adaptation Policy and Practice in Europe: Multi-level Governance of Climate Change* (p. 189). Springer. <https://doi.org/10.1007/978-90-481-9325-7>.
- Keskitalo, E. C. H. (2019). *The Politics of Arctic Resources: Change and Continuity in the 'Old North' of Northern Europe. Transforming Environmental Politics and Policy* (ed.). London; New York, NY: Routledge Taylor & Francis Group.
- Khotari, Ashish. 2021. Visioning the Future as an Act of Subversive Democracy. In Arkbound Foundation (Ed.) *Climate Adaptation - Accounts of Resilience, Self-Sufficiency and Systems Change* (pp. 248 - 236). Arkbound Foundation.
- Länsstyrelsen Norrbotten. 2012. 'Regional utvecklingsstrategi'. Luleå: Länsstyrelsen Norrbotten. (<https://www.lansstyrelsen.se/norrbotten/om-oss/vara-tjanster/publikationer/2012/regional-utvecklingsstrategi.html>).
- Länsstyrelsen Norrbotten. 2014. 'Regional Handlingsplan För Anpassning till Förändrat Klimat'. Luleå.
- Länsstyrelsen Norrbotten. 2017. 'Klimatförändringar i Norrbottens län - areella näringar och ekosystemtjänster'. Luleå. (<https://www.lansstyrelsen.se/norrbotten/om-oss/vara-tjanster/publikationer/2017/klimatforandringar-i-norrbottens-lan-areella-naringar-och-ekosystemtjanster.html>).
- Länsstyrelsen Norrbotten. 2020. 'Idéskrift och underlag för jämställd klimatanpassning'. Luleå: Länsstyrelsen Norrbotten. <https://www.lansstyrelsen.se/norrbotten/om-oss/vara-tjanster/publikationer/2020/ideskrift-och-underlag-for-jamstalld-klimatanpassning.html>.
- Larsson, Peter (2022). 'Rapport från Samordnaren för Samhällsomställning vid Större Företagsetableringar och Företagsexpansioner i Norrbotten och Västerbotten'. Stockholm, Sweden: Regeringskansliet.
- Levidow, Les, & Papaioannou, Theo (2013). State imaginaries of the public good: Shaping UK innovation priorities for bioenergy. *Environmental Science & Policy, SI: Environmental and Developmental Discourses: Technical Knowledge, discursive spaces and politics*, 30(June), 36–49. <https://doi.org/10.1016/j.envsci.2012.10.008>
- Levy, David L., & Spicer, André (2013). Contested imaginaries and the cultural political economy of climate change. *Organization*, 20(5), 659–678. <https://doi.org/10.1177/1350508413489816>
- Lewis, Keith (2018). "The "Buen Vivir" and "Twenty-First Century Socialism"". *Journalism Studies*, 19(8), 1160–1179. <https://doi.org/10.1080/1461670X.2016.1264273>
- Lidskog, Rolf, & Rabbe, Linn (2022). Making climate risks governable in Swedish municipalities: Crisis preparedness, technical measures, and public involvement. *Climate*, 10(7), 90. <https://doi.org/10.3390/cli10070090>
- Löf, Annette (2010). Exploring adaptability through learning layers and learning loops. *Environmental Education Research*, 16(5–6), 529–543. <https://doi.org/10.1080/13504622.2010.505429>
- Löf, Annette (2013). Examining limits and barriers to climate change adaptation in an indigenous reindeer herding community'. *Climate and Development*, 5(4), 328–339. <https://doi.org/10.1080/17565529.2013.831338>
- Magnan, Alexandre (2014). From Vulnerability to Adaptation to Climate Change: Food for Thoughts in Social Sciences. In *Vulnerability of Coastal Ecosystems and Adaptation* (pp. 223–262). John Wiley & Sons, Ltd. <https://doi.org/10.1002/9781119007739.ch6>
- Mutter, Amelia (2021). Embedding imaginaries- electric vehicles in Sweden's fossil fuel free future. *Futures*, 129(May), Article 102742. <https://doi.org/10.1016/j.futures.2021.102742>
- Normann, Susanne (2021). Green colonialism in the nordic context: Exploring southern saami representations of wind energy development. *Journal of Community Psychology*, 49(1), 77–94. <https://doi.org/10.1002/jcop.22422>
- OECD. 2021. Mining Regions and Cities Case of Västerbotten and Norrbotten, Sweden. OECD Rural Studies. OECD. <https://doi.org/10.1787/802087e2-en>.
- Olin, Janne J., & Mladenović, Miloš. N. (2022). Imaginaries of road transport automation in Finnish governance culture—a critical discourse analysis. *Sustainability*, 14(3), 1437. <https://doi.org/10.3390/su14031437>
- Ösgård, Anton, & Spierings, Bas (2021). It just didn't really happen": The lived space of entrepreneurial Urbanism in Ørestad, Copenhagen. *Geoforum*, 123(July), 117–128. <https://doi.org/10.1016/j.geoforum.2021.05.004>
- Össbo, Åsa (2023). Back to square one. green sacrifice zones in Sápmi and Swedish policy responses to energy emergencies'. *Arctic Review on Law and Politics*, 14, 112–134.
- Otto, Sarah P. (2018). Adaptation, speciation and extinction in the anthropocene. *Proceedings of the Royal Society B: Biological Sciences*, 285(1891), 20182047. <https://doi.org/10.1098/rspb.2018.2047>
- Paprocki, Kasia (2020). The climate change of your desires: Climate migration and imaginaries of urban and rural climate futures. *Environment and Planning D: Society and Space*, 38(2), 248–266. <https://doi.org/10.1177/0263775819892600>
- Pelling, Mark (2011). *Adaptation to Climate Change: From Resilience to Transformation*. London: Routledge.
- Persson, Sofia, Harnesk, David, & Islar, Mine (2017). What local people? Examining the Gállok Mining Conflict and the Rights of the Sámi Population in Terms of Justice and Power. *Geoforum*, 86(November), 20–29. <https://doi.org/10.1016/j.geoforum.2017.08.009>
- Preece, Chloe, Whittaker, Laryssa, & Janes, Stephanie (2022). Choose your own future: The sociotechnical imaginaries of virtual reality. *Journal of Marketing Management*, 0(0), 1–19. <https://doi.org/10.1080/0267257X.2022.2112610>
- Rantanen, Mika, Karpechko, Alexey Yu, Lipponen, Antti, Nordling, Kalle, Hyvärinen, Otto, Ruosteenoja, Kimmo, Vihma, Timo, & Laaksonen, Ari (2022). The Arctic Has Warmed Nearly Four Times Faster than the Globe since 1979. *Communications Earth & Environment*, 3(1), 1–10. <https://doi.org/10.1038/s43247-022-00498-3>
- Read, Rupert. 2021. Dodo, Phoenix or Butterfly? Why it's time fro TrAdaptation. In Arkbound Foundation (Ed.) *Climate Adaptation - Accounts of Resilience, Self-Sufficiency and Systems Change* (pp. 285 - 299). Arkbound Foundation.

- Riesto, Svava, Egberts, Linde, Lund, Anna Aslaug, & Jørgensen, Gertrud (2022). Plans for uncertain futures: heritage and climate imaginaries in coastal climate adaptation. *International Journal of Heritage Studies*, 28(3), 358–375. <https://doi.org/10.1080/13527258.2021.2009538>
- Rosqvist, Gunhild C., Inga, Niila, & Eriksson, Pia (2022). Impacts of climate warming on reindeer herding require new land-use strategies. *Ambio*, 51(5), 1247–1262. <https://doi.org/10.1007/s13280-021-01655-2>
- Salazar, Noel B. (2012). Tourism imaginaries: A conceptual approach. *Annals of Tourism Research*, 39(2), 863–882. <https://doi.org/10.1016/j.annals.2011.10.004>
- Schultze, Lisbeth, Carina Keskitalo, Irene Bohman, Robert Johannesson, Erik Kjellström, Henrik Larsson, Elisabeth Lindgren, Sofie Storbjörk, & Gregor Vulturius. (2022). *Första rapporten från Nationella expertrådet för klimatanpassning 2022 [The First Report by the National Expert Council on Climate Change Adaptation 2022]*. Stockholm: SMHI.
- Shi, Linda, & Moser, Susanne (2021). Transformative climate adaptation in the United States: Trends and prospects. *Science*, 372(6549), Article eabc8054. <https://doi.org/10.1126/science.abc8054>
- Smit, Barry, Burton, Ian, Klein, Richard J. T., & Wandel, J. (2000). An Anatomy of Adaptation to Climate Change and Variability. In Sally M. Kane, & Gary W. Yohe (Eds.), *In Societal Adaptation to Climate Variability and Change* (pp. 223–251). Dordrecht: Springer Netherlands. [https://doi.org/10.1007/978-94-017-3010-5\\_12](https://doi.org/10.1007/978-94-017-3010-5_12)
- Sokolova, Tatiana (2023). Co-Producing “The Future(s) We Want”: How does political imagination translate into democratised knowledge-action models for sustainability transformations? *Environmental Science & Policy*, 144(June), 162–173. <https://doi.org/10.1016/j.envsci.2023.03.018>
- Sörilin, Sverker (1988). *Framtidslandet: debatten om Norrland och naturresurserna under det industriella genombrottet. Kungl. Skytteanska samfundets handlingar*, 33. Umeå: Umeå University.
- Stoddard, Isak, Anderson, Kevin, Capstick, Stuart, Carton, Wim, Depledge, Joanna, Facer, Keri, Gough, Clair, et al. (2021). Three decades of climate mitigation: Why haven't we bent the global emissions curve? *Annual Review of Environment and Resources*, 46(1), 653–689. <https://doi.org/10.1146/annurev-environ-012220-011104>
- Sveriges Radio (SR). 2022. 'Chana rekryterar till den gröna revolutionen - Det Nya Norrland'. 16 May 2022. (<https://sverigesradio.se/avsnitt/chana-svensson-gron-revolution-lulea-det-nya-norrland>).
- Swedish Climate Policy Council, dir. 2023. Sveriges Väg till Nollutsläpp: Rapportlansering 2023. (<https://www.youtube.com/watch?v=AcB4dzuVLpY>).
- Swedish Government (2018). Nationell Strategi För Klimatanpassning. Prop. 2017/18:163. <https://www.regeringen.se/rattsliga-dokument/proposition/2018/03/prop-201718163/>.
- Swedish Government, 2019. Förordning om myndigheternas klimatanpassningsarbete. SFS-nummer 2018:1428. Effective 2019-01-01. <https://rkrattsbaser.gov.se/sfst?fritext=F%C3%B6rordning+%282018%3A1428%29+Om+Myndigheters+Klimatanpassningsarbete&sort=desc> [Accessed 2024-03-24].
- Taylor, Charles (2002). Modern social imaginaries. *Public Culture*, 14(1), 91–124. <https://doi.org/10.1215/08992363-14-1-91>
- This Is Swedish Lapland'. n.d. Swedish Lapland. Accessed 22 June 2023. (<https://www.swedishlapland.com/this-is-swedish-lapland/>).
- Tozer, Laura, & Klenk, Nicole (2018). Discourses of carbon neutrality and imaginaries of urban futures. *Energy Research & Social Science, Energy and the Future*, 35 (January), 174–181. <https://doi.org/10.1016/j.erss.2017.10.017>
- Van Assche, Kristof, Verschraegen, Gert, & Gruezmacher, Monica (2021). Strategy for collectives and common goods: Coordinating strategy, long-term perspectives and policy domains in governance'. *Futures*, 128(April), Article 102716. <https://doi.org/10.1016/j.futures.2021.102716>
- Veenman, S., Kusters, V., & Beckers, P. (2021). Exploring anticipated futures: Dutch grassroot initiatives anticipating futures in the energy transition. *Futures*, 132. <https://doi.org/10.1016/j.futures.2021.102797>
- Vervoort, Joost, & Gupta, Aarti (2018). Anticipating Climate Futures in a 1.5°C Era: The Link between Foresight and Governance. *Current Opinion in Environmental Sustainability, Sustainability Governance and Transformation 2018*, 31(April), 104–111. <https://doi.org/10.1016/j.cosust.2018.01.004>
- Vezzoni, Rubén (2023). Green growth for whom, how and why? The REPowerEU Plan and the Inconsistencies of European Union Energy Policy. *Energy Research & Social Science*, 101(July), Article 103134. <https://doi.org/10.1016/j.erss.2023.103134>
- Voosen, Paul. 2021. 'The Arctic Is Warming Four Times Faster than the Rest of the World'. *Science*, 14 December 2021. (<https://doi.org/10.1126/science.acz9830>).
- Wamsler, Christine, & Brink, Ebba (2014). Planning for climatic extremes and variability: A review of swedish municipalities' adaptation responses. *Sustainability*, 6 (3), 1359–1385. <https://doi.org/10.3390/su6031359>
- Wamsler, Christine, Schöpke, Niko, Fraude, Carolin, Stasiak, Dorota, Bruhn, Thomas, Lawrence, Mark, Schroeder, Heike, & Mundaca, Luis (2020). Enabling new mindsets and transformative skills for negotiating and activating climate action: Lessons from UNFCCC conferences of the parties. *Environmental Science & Policy*, 112(October), 227–235. <https://doi.org/10.1016/j.envsci.2020.06.005>
- Wissman-Weber, Nichole K., & Levy, David L. (2018). Climate adaptation in the anthropocene: Constructing and contesting urban risk regimes. *Organization*, 25(4), 491–516. <https://doi.org/10.1177/1350508418775812>