JUST ADAPTATION AT RESOURCE FRONTIERS:
Climate and empowerment in post-Soviet northern Russia

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Abstract

Despite an emerging interest in integrating climate policy and development goals, little is known about the potential synergies and trade-offs in resource extraction regions, particularly for Indigenous and rural communities that host resource projects. This thesis explores the institutional and political context in two resource extraction regions that shape resource development and climate change outcomes and mediate planning and implementation of initiatives to support adaptation decisions. The aim of the thesis is to identify the potential of climate change adaptation to contribute to the development of more equitable outcomes and processes for host communities.

I present a conceptual framework called ‘just adaptation at resource frontiers’ that seeks to explicate the cross-scale political economy and ecological forces acting in the context of a changing global economy and climate change. The framework is applied and refined based on an empirical study, using interviews, purposive observations, focus groups and document analysis, in four cases in the Republic of Komi and the Republic of Sakha in Arctic and sub-Arctic Russia. Here, Indigenous subsistence-based and rural livelihoods face 'double exposure' to expanding oil exploitation and the impacts of climate change. Host communities bear the impacts inequitably, and they lack recognition of their rights and effective participation in governance.

Despite different contexts between case study communities in Komi and Yakutia, the findings show that a) the impacts of oil exploitation and climate change intersect and manifest in altering the dynamics of environmental degradation, resulting in adverse societal outcomes; b) community responses incorporate traditional orders, reproducing governance patterns from the Soviet era, hindered by the state and private interests that favour oil exploitation; c) expansion of oil exploitation is determined by power and politics cutting across the legacies of the past, imaginative geographies of hydrocarbon resources, struggles for resource rents, and struggles over authority and recognition; d) relational injustice mediates the power of communities to shape adaptation decisions in relation to oil projects; e) collective action to fight environmental pollution and inequitable outcome and processes has emerged, and increasingly using climate change narratives rather than opposing the hydrocarbon sector directly.

The thesis argues that there is a need to conceptualise and develop adaptation pathways (and pathways towards development) that avoid 'double exposure' in resource frontiers, and this can be achieved by a more nuanced understanding of cross-scale power dynamics and justice as a starting point. The thesis contributes to knowledge by offering conceptual, methodological and policy insights into a more holistic understanding of adaptation in resource extraction regions, specifically in northern Russia.
Declaration

This is to certify that

i) the thesis comprises only my original work towards the degree of PhD,

ii) due acknowledgement has been made in the text to all other material used,

iii) the thesis is less than 100,000 words in length, exclusive of tables, maps, bibliographies and appendices.

Julia Loginova
April 2018
Preface

The motivation for this study stems from a series of personal experiences concerning the environment, resource extraction and Indigenous peoples. Growing up in Russia’s resource periphery for coal, forest and oil — the Komi Republic — I first travelled to the Izhma rayon in 2010 to conduct a rural development workshop. Being Komi myself, there I met Komi-Izhma people seeking recognition by the central government of their indigeneity. In the Usinsk oil fields, I witnessed the striking evidence of environmental pollution because of crude oil extraction. Hundreds of wells were drilled; pipelines were leaking; gas flared into the atmosphere; money was underinvested in degrading infrastructure; governments and companies have been continuously accused of ignorance and corruption. I asked whether destructive landscapes typify remote life in Russia, and resource frontiers in general. Across Russia and around the world, some Indigenous groups have been already extinguished, others lost (and are losing) their languages, cultures and traditional livelihoods.

I came to the University of Melbourne in 2014, with the support of the Australian Government Research Training Program. During my fieldwork in the Komi and Sakha Republics, I have seen many extraction sites; the environmental degradation in some areas was devastating. As I began to engage with people in villages, the material and discursive evidence of oil extraction was deep-rooted, pervading opportunities to fish and herd reindeer, to access forest and tundra, and to hope for the future. A subset of families and villages had grown richer from the benefits they received from resource projects, but others had not. Overarching this was ambiguity about the Soviet legacy, volatilities in the resource market, geopolitical developments and, as a result, ever-changing attitudes of the central government to the environment and people. The questioning that accompanied these experiences translated into a curiosity of communities’ efforts to confront unfair circumstances in Russia and elsewhere, and to what extent climate change empowers for transformations.

On a personal level, this research focus has provided me with the opportunity to connect to processes that have long personal relevance to me, as well as to learn from communities and regions throughout the world. My passion for the topic has also created opportunities to establish research collaboration and to begin to produce research that reflects the
important struggles. This thesis is not only to increase scientific knowledge and gain an academic degree but to support justice claims and potentially contribute to transformations. Publications arising from the thesis include:

Peer-reviewed book chapters:


Peer-reviewed conference papers:


Other work:

Acknowledgements

This thesis was possible due to unconditional support of my supervisors. I would like to express my deepest gratitude to Prof Simon Batterbury for initially accepting me to undertake this PhD, for providing opportunities to broaden my perspectives in Lancaster Environment Centre, and for patiently helping me to edit this thesis. I am very grateful to Dr Anna Hurlimann and Dr Ole Fryd for their commitment, support and valuable advice at the various stages of my research.

I must express my heartfelt thanks to all those people I learnt from during the fieldwork in Komi, Yakutia and Moscow. Ivan, your passion for justice has inspired my work all along. Nikolay, although no longer with us, thank you for opening many doors and sharing your dedication to the future of Indigenous peoples. Eduard and Vyacheslav, I would never make it so far to tundra without your companionship on vezdekhody (goes-anywhere-vehicles) and boat rides. Irina and Svetlana, thank you for letting me stay in your homes and all the dinners we cooked and shared.

I must also appreciate fruitful and provoking discussions with Prof Anthony Bebbington, Dr Scott Heyes, Dr Matthias Kowasch, Dr Marti-Orta Martinez, Prof Kevin O’Connor, Prof Rauno Sairinen, Prof Ben Saul, Prof Gail Whiteman and Dr Emma Wilson. I want to thank Prof Tor Gjertsen for introducing me to the exciting world of research, teaching me how to catch a fish, and being a supporter ever since.

I must thank greatly fellow PhD students at Carlton and my old and new friends. Yann, the thesis would never happen without your encouragement. Alessandro, Denisse, Paula and Marcela, thank you for sharing many laughs and tears throughout our research journeys. My old and new friends, I appreciated your warm company in Melbourne, Moscow and Lancaster. My heartfelt gratitude is to Alex for being there during the final challenging period.

And last but not least, I am indebted to my family for care and understanding me seeking an opportunity to learn the world from many points of view.

I have learnt a huge amount from all of you.
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<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>APG</td>
<td>Associated petroleum gas</td>
</tr>
<tr>
<td>CSR</td>
<td>Corporate Social Responsibility</td>
</tr>
<tr>
<td>EIA</td>
<td>Environmental Impact Assessment</td>
</tr>
<tr>
<td>EMERCOM</td>
<td>Ministry of the Russian Federation for Affairs for Civil Defence, Emergencies and Elimination of Consequences of Natural Disasters</td>
</tr>
<tr>
<td>ESPO</td>
<td>Eastern Siberia – Pacific Ocean oil pipeline</td>
</tr>
<tr>
<td>FPIC</td>
<td>Free, Prior and Informed Consent</td>
</tr>
<tr>
<td>GHG</td>
<td>Greenhouse gas</td>
</tr>
<tr>
<td>IAIA</td>
<td>the International Association for Impact Assessment</td>
</tr>
<tr>
<td>IIPFCC</td>
<td>the International Indigenous Peoples’ Forum on Climate Change</td>
</tr>
<tr>
<td>ICMM</td>
<td>the International Council on Mining and Metals</td>
</tr>
<tr>
<td>INDC</td>
<td>Intended Nationally Determined Contribution</td>
</tr>
<tr>
<td>IPCC</td>
<td>the Intergovernmental Panel on Climate Change</td>
</tr>
<tr>
<td>IPIECA</td>
<td>the International Petroleum Industry Environmental Conservation Association (The Global Oil and Gas Industry Association for Environmental and Social Issues)</td>
</tr>
<tr>
<td>IUCN</td>
<td>the International Union for the Conservation of Nature</td>
</tr>
<tr>
<td>IWGIA</td>
<td>the International Work Group for Indigenous Affairs</td>
</tr>
<tr>
<td>KMNS</td>
<td>korennyye malochislennyye narody Severa, Sibiri i Dal'nego Vostoka (Indigenous small-numbered Peoples of the North, Siberia and the Far East)</td>
</tr>
<tr>
<td>KR</td>
<td>the Komi Republic</td>
</tr>
<tr>
<td>OVOS</td>
<td>Otzenka vozdeistviia na okruzhayushuyu sredu (environmental impact assessment)</td>
</tr>
<tr>
<td>RAIPON</td>
<td>the Russian Association of Indigenous Peoples of the North</td>
</tr>
<tr>
<td>RF</td>
<td>The Russian Federation</td>
</tr>
<tr>
<td>Roshydromet</td>
<td>the Russia Federal Service for Hydrometeorology and Environmental Monitoring</td>
</tr>
<tr>
<td>Rosnedra</td>
<td>the Russian Federal Agency for the Subsoil Use</td>
</tr>
<tr>
<td>Rosprirodnadzor</td>
<td>the Russian Federal Service for the Supervision of Natural Resource Usage</td>
</tr>
<tr>
<td>RQ</td>
<td>Research question</td>
</tr>
<tr>
<td>SPC</td>
<td>Save Pechora Committee</td>
</tr>
<tr>
<td>SR</td>
<td>the Sakha Republic (Yakutia)</td>
</tr>
<tr>
<td>TTP</td>
<td>Territoriya tradisitionalnogo prirodopol'zovaniya (territories of traditional natural resource use)</td>
</tr>
<tr>
<td>UA</td>
<td>Unit of Analysis</td>
</tr>
<tr>
<td>UN</td>
<td>the United Nations</td>
</tr>
<tr>
<td>UNDRIP</td>
<td>the United Nations Declaration on the Rights of Indigenous Peoples</td>
</tr>
<tr>
<td>UNESCO</td>
<td>the United Nations Educational, Scientific and Cultural Organisation</td>
</tr>
<tr>
<td>UNFCCC</td>
<td>the United Nations Framework Convention on Climate Change</td>
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**Glossary**

*Indigenous and ethnic groups involved in the research*

The Komi are Finno-Ugric people (350,000 people) in the north-east of European Russia. They speak Komi language; their traditional livelihoods include hunting, fishing, gathering, agriculture, cattle breeding, woodworking.

The Komi-Izhma (Izhma-Komi, Komi-Izhemtsy, Izvatas) (16,000 people) are the northernmost subgroup of the Komi. They speak Komi-Izhma dialect of Komi language. Traditional livelihoods are semi-nomadic reindeer herding, cattle breeding, fishing, hunting, gathering.

The Nenets (45,000 people) are Samoyedic people in northern Arctic Russia. They speak Nenets language. Traditional livelihoods are centred around nomadic reindeer herding.

The Sakha (Yakuts) (480,000 people) are the Turk people in Siberia. They speak Sakha (Yakut) language. Traditional livelihoods are semi-nomadic hunting and fishing in the north and animal husbandry (horse and cattle) in the south. Sakha is an endonym while Yakut is used in the Russian-speaking environment.

The Evenks (Evenki, Ewenki, Evenkis) (70,000 people, including 40,000 people in Russia) are Tungusic people in northern Asia (Russia, Mongolia, China). They speak Evenk language. Traditionally, they are hunter-gathers and pastoralists of reindeer.

The Evens (Eveny) (23,000 people) are the Tungusic people in Siberia and the Russian Far East. They speak Even language. Traditional livelihoods are centred upon nomadic pastoralism of domesticated reindeer, also hunting, fishing and animal-trapping.

*Russkoustintsy* (400 people) refers to one of the groups of ethnic Russians who travelled from the European part of Russia to resettle in the remote Arctic between the end of 16th and the second half of 17th century.
**Russian-language terms**

Indigenous small-numbered peoples of the North, Siberia and the Far East (*korennyye malochislennyye narody Severa, Sibiri i Dal’nego Vostoka, KMNS*) is an official term for Indigenous groups in Russia numbering fewer than 50,000 people, living in the territories of their ancestors, preserving traditional way of live and self-identifying themselves as self-supporting ethnic communities.

Territories of traditional natural resource use (*territoriya traditsionnogo prirodopol’zovaniya, TTP*) is a type of land use and protected areas in Russia, established for the protection of the traditional ways of life and traditions of Indigenous small-numbered peoples.

*Rodovaya obschina (obschina)* is a voluntary association of Russian citizens who belong to Indigenous small-numbered peoples of the North, Siberia and the Far East and are united on the principle of the kinship or territory in order to protect the traditional habitat, preserve and develop a traditional way of life, livelihood, *promysel* and culture. Used interchangeably with a ‘clan’ as a group of people united by actual or perceived kinship.

*Promysel* is an activity with a purpose to gain an advantage in any matter in a volume that can sustain one’s life and one’s family. It can refer to hunting, fishing, gathering, artisanal gold mining, craft and other activities. Used interchangeably with a ‘livelihood’ as means of securing the necessities.

*Uchastok, zaimka, peski* are variations of a name for a type of an extended family settlement away from developed territories. It is a fixed land plot, often with adjusted river area, inherited through kinship relationships and used for fishing, hunting and gathering of mushrooms and berries.

*Rayon (Ulus in the Sakha Republic)* is a type of administrative unit and a subnational entity smaller than a region. Used interchangeably with a ‘district’.

*Nasleg* is the Sakha term used for the lowest level rural territorial-administrative unit.

*Natsional’nyi nasleg* is a territorial social unit in the Sakha Republic formed with the aim to protect and preserve traditional natural resource use and its management, to revive culture and languages of Indigenous peoples in places of their compact living.
CHAPTER ONE Introduction

1.1 Resource frontiers and the empowerment of climate

The extraction of natural resources has been fundamental for economic development (Norgaard, 1994). Yet, the exploitation of underground natural resources for economic growth has been associated with environmental degradation, social inequality and cultural misrecognition (e.g., Bridge, 2004; Gilberthorpe & Hilson, 2014). Regions exploited for the extraction of resources are commonly referred to as ‘resource frontiers’ within the fields of political economy and political ecology of natural resources. Resource frontiers are characterised by the idea of the displacement of existing systems of Indigenous values and rights, exhibiting challenges of participation and representation of remote communities in resource development (Tsing, 2011).

Today, anthropogenic climate change is fast becoming a determinant for the status of resource extraction. Extreme weather events have been increasingly affecting resource extraction worldwide. International and national climate governance have been targeting extractive industries, in particular, the exploitation of fossil fuels. Commodity markets have been changing in response to the transition to low-carbon economies (e.g., Arrobas et al., 2017). Public resistance to extraction projects and governments’ inactions on climate change has been growing, including climate litigation (e.g., Neslen, 2016). These processes are likely to increase in intensity in the future. This research focuses on the implications of climate change impacts and responses for resource frontiers where Indigenous subsistence-based and rural livelihoods co-exist with the globalisation-driven extraction of resources.

1 For example, floods affected mines in Queensland, Australia in 2008, 2010 and 2013 (Heber, 2013) and oil production in Nigeria in 2012 (Nwachukwu, 2012); landslides and rain damaged oil and gas pipelines in Colombia in 2011 (Puig et al., 2015); fires affected oil sands production in Alberta, Canada in 2016 (EIA, 2016).
2 The Paris Agreement (UNFCCC, 2015) set a limit to the increase of global average temperature below 2°C above pre-industrial levels. In response, several countries have enforced policies to limit exploration and extraction of fossil fuels (for example, France by Law 1839, 2017).
Chapter One. Introduction

At present, the relationship between climate change and resource extraction is addressed in the academic literature in a limited way (see recent reviews by Phillips (2016) and Odell et al. (2018)). The empirical research has tended to focus on climate change impacts and responses for resource extraction operations (Ford et al., 2010; Pizarro et al., 2017; Sharma et al., 2013). Recent studies have suggested that ecosystems and communities that host resource extraction projects are vulnerable to the intersecting impacts of climate change and resource extraction (Eisenstadt & West, 2016; Henry et al., 2014; Sharma et al., 2014). The intersecting impacts can be framed as an outcome of ‘double exposure’, a term suggested by O’Brien and Leichenko (2000) to describe the simultaneous impacts of climate change and globalisation. Within this framework, interactions between climate change and expanding extractive industries result in new risks and new challenges for governance, as demonstrated in Bebbington et al. (2015).

One of the significant discussions in moral philosophy is the unequal distribution of environmental and climate change impacts (Paavola & Adger, 2006; Schlosberg & Collins, 2014; Thomas & Twyman, 2005). From this perspective, subsistence-oriented — often Indigenous — communities that host resource extraction projects contribute little to global greenhouse gas emissions, bear environmental degradation and participate unequally in resource development; yet, they are the most vulnerable to double exposure (Birch, 2016; Eisenstadt & West, 2016). Adaptation has been recognised as necessary to the cultural and economic survival of populations facing the impacts of climate change unequally (Paavola & Adger, 2002; Thomas & Twyman, 2005).

A variety of definitions of the term adaptation can be found in the literature. Adaptation to climate change is one of the two global responses (other being mitigation) set by international policy (for example, Article 4 of the United Nations Framework Convention on Climate Change (UNFCCC, 1992)). In the latest fifth report of the Intergovernmental Panel on Climate change (IPCC), adaptation is defined as “the process of adjustment to actual or expected climate and its effects” (Barros et al., 2014, p. 1758). Political ecologists have critiqued the scholarly work in the social sciences that has followed this approach for inadequately considering the root causes of vulnerability (Taylor, 2015; Watts, 2015), for example, legacies of resource extraction (Cameron, 2012).
Emerging work on political economy and ecology aspects of climate adaptation seeks to explicate cross-scale relations of power and politics implicated in climate change responses (Eriksen et al., 2015; Nightingale, 2017; Sovacool, 2018). These studies refer to adaptation as a broad term related to autonomous and planned responses to perceived environmental changes, and they emphasise the synergies between adaptation, mitigation and development (Thornton & Comberti, 2017).

Recent studies highlight the potential of climate change adaptation to address the root causes of vulnerabilities and injustices, framed as transformational adaptation (Crate & Nuttall, 2016; Holland, 2017; Kates et al., 2012; Schlosberg, 2012). Pelling (2011) frames adaptation as “an opportunity for social reform, for the questioning of values that drive inequalities in development and our unsustainable relationship with the environment” rather than a non-political technological solution with a defensive orientation (Pelling, 2011, p. 9). Pelling defines adaptation as “the process through which an actor is able to reflect upon and enact change in those practices and underlying institutions that generate root and proximate causes of risk, frame capacity to cope and further rounds of adaptation to climate change” (2011, p. 35). In this study, adaptation follows the Pelling’s conceptualisation but refers specifically to the intersecting impacts of climate change and resource extraction, mindful of several observations that vulnerable communities face many other challenges, often more pressing than climate change impacts (Cameron, 2012); however, climate change impacts may aggravate existing vulnerabilities and result in the new winners and losers (Leichenko & O’Brien, 2008).

To date, adaptation to climate change in resource extraction regions has not been explored mindful of the social and political environment of the resource frontiers. Frontier dynamics challenge the assumption that the increased societal expectations for climate change responses will be automatically accommodated by efficient institutions (Bebbington, 2015; Hirons et al., 2014; Kronenberg, 2013). Moreover, while some nations develop their low-carbon economies, this may contribute to the inequitable distribution of impacts and resources available for adaptation across communities and nations. For example, a decreased demand for crude oil can push governments and companies to secure oil cheaper in a short-term, leaving communities with a degraded environment in the longer term (O’Rourke & Connolly, 2003). Therefore, adaptation at
resource frontiers is intertwined in fundamental forms of spatial and temporal justice. Understanding the potential for just adaptation at resource frontiers is limited without attention to the underlying historical institutions and power relations across different scales that mediate common practices and the routines of decision-making towards change (Eriksen et al., 2015; Lawhon & Murphy, 2012; Sovacool, 2018). This thesis critically engages with these debates by seeking to provide a conceptual and empirical understanding of just adaptation at resource frontiers, based on the study of the oil industry (exploration, extraction and transportation) in northern Russia.

1.2 The northern frontier of Russia

The focus of this study is on the Arctic and the sub-Arctic regions of the Russian Federation (RF) (hereinafter referred to as northern Russia notwithstanding important local variations explained in chapter three). The ‘northern frontier’ represents an illustrative case for examining the implications of double exposure to expanding oil industry³ and the impacts of climate change for local populations. The region has been warming twice as fast as the rest of the planet (Larsen et al., 2014; Roshydromet, 2017). Vast territories of tundra and boreal forests act as a planetary climate regulator; yet, emerging challenges of permafrost thawing and forest fires potentially worsen climate change (Larsen et al., 2014). At the same time, climate change has rendered the region more accessible for the exploitation of oil (Dittmer et al., 2011). The oil industry has been expanding in northern Russia, despite many constraints (technological, financial and geopolitical, including low oil prices in 2014–2016) (Aalto, 2016). The underlying reason of the oil industry expansion, however, hinges on Russia’s efforts to secure its place as a powerful economic and political actor in the Arctic and the global arena (Powell, 2008). These efforts include sustaining the federal budget with oil revenues and expanding the export volumes (Vatansever, 2017).

Importantly, northern Russia is a home to numerous groups of Indigenous and non-Indigenous population with rural-based livelihoods, in addition to urban dwellers and industrial workers. The northern environment is vitally important for their livelihood,

³ for this reason northern Russia (and the whole Arctic) has also been conceptualised as an ‘energy frontier’ (e.g., Nuttall, 2010; Tynkkynen et al., 2018).
culture and identity (Fondahl, 1998; Vakhtin, 1992). Growing resource extraction-oriented state and corporate presence in northern Russia has profoundly affected lives of remote populations (Habeck, 2002; Stammler & Ivanova, 2016; Yakovleva, 2011). Increasingly, impacts of climate change and adaptation strategies have been documented among northern communities (Bodenhorn & U tłurgasheva, 2017; Crate, 2018; Forbes et al., 2016; Ksenofontov et al., 2017).

There is a need to continue the research on how leveraging natural resources comes at the expense of creating and reproducing regional and local vulnerabilities and inequalities, given rapid and ubiquitous environmental changes in the post-Soviet Russia (Buccellato & Mickiewicz, 2009; Davidov, 2013). In doing this, local agency and voice to contest inequitable processes should not be ignored (Pierk & Tysiachniouk, 2016; Stammler & Ivanova, 2016). There is a need to bring the Russian context into broader debates on climate justice, low-carbon development and material demand and supply reduction (Sidortsov, 2016). Importantly, researchers have urged against the uncritical application of Western-concepts to the regions with a specific culture and centuries-old traditions developed between Indigenous and the Russian population (Forbes & Stammler, 2009).

1.3 Research problem and research questions

This thesis addresses the research problem of understanding and conceptualising adaptation to double exposure in regions affected by the exploitation of oil (exploration, extraction and transportation) in the context of climate change. The aim of the study is to explore the potential of adaptation to assist the development of more equitable processes and outcomes for communities that host resource extraction projects. This will be based on the empirical investigation of:

− experiences of double exposure and adaptation in four local cases (the Pechora River valley, the Bolshezemelskaya tundra, the Aldan plateau, and the Indigirka River delta);

− and governance challenges and collective action in two regional cases (the Republic of Komi and the Republic of Sakha (Yakutia)).

Chapter four introduces the cases and provides a detailed explanation of the case study selection.
To address the research problem and aim stated above, the thesis explores five Research Questions (RQs).

RQ 1. How do Indigenous and rural communities in Komi and Yakutia experience the impacts of oil exploitation in interaction with climate-related processes?

RQ 2. How do Indigenous and rural communities in Komi and Yakutia respond to the impacts of oil exploitation and climate change?

RQ 3. Is the expansion of the oil industry supported at the subnational level in Komi and Yakutia, and why?

RQ 4. How do Indigenous and rural communities in Komi and Yakutia participate in oil projects?

RQ 5. What collective strategies have been used to influence government and companies and to support Indigenous and rural communities in Komi and Yakutia in shaping adaptation decisions?

1.4 Approach and research field

The thesis employs an interdisciplinary approach (see overview in table 1-1) to address the RQs listed above. The thesis has evolved to resonate with the concepts and methods of three disciplinary fields. It starts with contributions from the interpretative social sciences that position human meaning-making at the centre of the research. In this way, drawing on rural sociology and sociology of natural resources, the approach reveals social structures and processes in specific localities. Insights from human geography are used to place the fieldwork in a culturally and historically spatially-contingent knowledge. A political economy and ecology lens offer a critical reading of the governmentality of climate change adaptation and resource development.
Chapter One. Introduction

Table 1-1. Approach to the study

| Theoretical perspectives | – Interpretative social sciences, rural sociology and sociology of natural resources  
|                         | – Human geography  
|                         | – Political economy and ecology |
| Paradigm                | Interpretive, critical |
| Epistemology            | Subjectivism |
| Ontological position    | Historical realism |

The interdisciplinary approach is problematic as it crosses interpretive and critical paradigms as well as cross-cultural contexts (Graybill et al., 2006). It requires an explicit choice over the ontological and epistemological structuring of knowledge and methodology to grasp the interactive nature of the creation of meanings and reality in a particular setting. To achieve this, the methodology needed to employ the elements of subjectivism (Crotty, 1998). This epistemology recognises various ways of knowing (for example, traditional and scientific), subjective and biased interpretations by the research participants (DeWalt, 1994). The role of the researcher is to attempt to get the full access to interpretations and experiences of those involved in the research. Ontologically, it embraces historical realism, when ideological constructions can be explained by certain social, economic, cultural and political realities (Guba & Lincoln, 1994). These choices are consistent with the approaches in the field of political ecology that highlight ‘real’ institutions and practices that are place-based and culturally appropriate, informed by field data (Cleaver & De Koning, 2015).

1.5 Research design and research strategy

Given the lacuna in the conceptual understanding of the relationship between climate change and resource extraction, this research was designed to develop and elaborate a conceptual framework to identify the potential of adaptation to assist the development of more equitable processes and outcomes for communities that host resource extraction projects. Therefore, the research design necessitated: 1) to develop a conceptual framework based on a review of the literature, 2) to gather empirical data, and 3) to analyse the data gathered and to embed the findings within the chosen research paradigm and theoretical background to advance the conceptual framework.
To encompass the epistemological and ontological requirements explained above, qualitative research was chosen as a primary method of analysis, as it offers the relevant research design, techniques and data collection process for those kinds of research (Berg & Lune, 2004). Sovacool (2014) identified a need for the real-life perspectives in resource extraction research, including “human centred methods of data collection, including research interviews, focus groups and field research” (Sovacool, 2014, pp. 25-26). Qualitative research methods have been criticised for their subjectivism, difficulty of replication, problems of generalisation and lack of transparency, which however can be reduced with careful design (Bryman, 2015). However, unlike quantitative approaches, qualitative research can provide new context-specific rich knowledge that could lead to the development of theoretical understanding of a phenomenon despite human, financial and time constraints of a PhD project.

A case study approach was considered the most appropriate research strategy. It helps to identify the holistic and essential characteristics of real-life events and allows an integrated examination of situations from various angles, considering the contextual and situational factors (Yin, 2014). The strength of this approach lies in offering “depth, high conceptual validity, understanding of context and process, understanding of what causes a phenomenon and fostering new hypotheses and research question” (Denzin & Lincoln, 2011, p. 314). The study is based primarily on empirical fieldwork conducted in four resource extraction areas of northern Russia (the Pechora River valley, the Bolshezemelskaya tundra, the Aldan plateau, and the Indigirka River delta), bounded within the administrative regions of the Komi Republic and the Sakha Republic. Data collection, including desktop research, was finalised in January 2017.

Previous studies highlighted the challenges of conducting qualitative research in Russia (Voldnes et al., 2014). The Russian north is considered as one of the most heavily militarised areas in the world, and rather conservative politically (Hoogensen et al., 2009). The entire Arctic coast has been declared a border zone with restricted access to many places (Stammler & Ivanova, 2016). Additionally, many resource projects have been proclaimed as strategically important for the Russian state, rending any disturbance to their implementation as a threat to national interests (Stammler & Ivanova, 2016). In the last decade, an increasing number of studies have appeared in international literature
Chapter One. Introduction

covering the issues of resources and Indigenous peoples in northern regions of Russia (e.g., Pierk & Tysiachniouk, 2016; Stammler & Peskov, 2008; Wilson, 2015), indicating improvement in accessibility of places and people for the research. Furthermore, the Crimea annexation\(^4\) and the following economic and political instability in Russia since the year 2014 potentially affect the ways qualitative research can be conducted and the research goals can be achieved without adverse outcomes for the research participants and the researcher. Chapter four further explains the research methodology, including the ways the challenges have been addressed using a careful research design and conduct of the research strategy given the positionally of the researcher.

1.6 Structure of the thesis

The thesis comprises ten chapters in total. Figure 1-1 presents a diagrammatic overview of the thesis structure. Chapter one introduces the research background, sets the research aim and defines research questions that this study seeks to answer. Following this Introduction, chapter two critically introduces the theoretical dimensions of the research and provides the underpinnings for a conceptual framework. It begins with the explanation of the relationships between climate change and resource extraction, and conceptualisation of dynamics in resource extraction regions from the perspective of a ‘resource frontier’ approach. It then examines the different adaptation pathways applicable to resource frontiers. The chapter finally ends by suggesting a just approach to adaptation in resource extraction regions.

Chapter three establishes the empirical context for the study, drawing upon existing literature specifically related to the relationships between oil exploitation in Russia and climate change. It starts with critical reflections on the governance and political economy of oil extraction in Russia. Empirical studies, particularly about oil extraction projects, are outlined to introduce a collection of key concerns to lead this study.

\(^4\) Crimea, the peninsula of the Ukrainian territory since 1954, was annexed by the RF in early 2014 (TASS, 2014b).
Chapter four presents in detail the research design and describes the implementation of the methodology. The chapter introduces two regional cases (Komi and Yakutia) and four local cases (the Pechora River valley; the Bolshezemelskaya tundra; the Aldan plateau and the Indigirka River delta). It explains the strategies for the selection of the cases and unfolds data collection and data analysis methods, addressing particular RQs. The chapter also reflects on the issues of positionality and ethics and explains various steps that were undertaken to achieve the research aims.

Figure 1-1. The thesis’s structure
Chapters five to nine present and discuss empirical findings based on the case studies.

Chapter five addresses RQ 1 and applies the framing of double exposure to four areas in Komi and Yakutia to highlight the intersecting impacts of oil exploitation and climate change on livelihoods and villages of Indigenous and rural communities. The analysis shows that oil licences increasingly overlap traditional land uses, which are now also affected by climate change. The intersecting impacts manifest in altering the patterns and the dynamics of environmental degradation, with adverse societal outcomes experienced by communities in relation to traditional livelihoods and land use, belonging to place, liveability of settlements, human and animal health, and development opportunities. Overall, communities envision their locality as increasingly connected to global processes that favour oil exploitation and perceive double exposure as unjust.

Chapter six focuses on RQ 2 and documents community responses to a diversity of environmental changes associated with oil exploitation and climate change, identified in chapter five. Using a political ecology lens, the analysis establishes deep connections between current community responses and historical socio-economic and political transformations in the Soviet and post-Soviet Russia. Current responses incorporate traditional orders and institutions, reproduce patterns of the Soviet period and are adapted to the modern economy. However, the clash of community responses with the rules of the state and private interests has persistently shaped the current response space. Given existing social relations, institutions and power, just adaptation should consider ways to support autonomous adaptation and expand collaborative response space.

Chapter seven examines whether the expansion of the oil industry is supported in Komi and Yakutia, and why (RQ 3). The chapter traces the evolution of subnational governance in the two regions and identifies key factors that legitimise the expansion of the oil industry: (i) the geographical advantage and longevity; (ii) a driver for development; (iii) autonomy; (iv) integration into global economy; and (v) sustainable and climate-conscious development. Linking these factors to the literature on politics of oil, the findings show that the legacies of the past, imaginative geographies of hydrocarbon resources, struggles for resource rents and the cultural politics are entrenched in the support given to the oil industry. These political economic aspects combine to influence
design and implementation of regional climate-motivated responses. For example, leaving oil in the ground contradicts the regional development agenda.

Chapter eight focuses on the participation of Indigenous and rural communities in Komi and Yakutia in resource development. It provides a detailed analysis of the evolution of community-company relations in four oil projects. The findings indicate experienced relational injustice shaped by strategies of inclusion and exclusion of communities and community members from participation in the oil projects. These strategies ‘from above’ are employed by the oil companies and the governments to legitimise authority over space required for the oil projects and to achieve a social license to operate. The discussion centres on responding to RQ 4 and provides recommendations for minimising relational injustice.

Chapter nine identifies whether environmental and political-economic challenges have facilitated collective action in Komi and Yakutia to support Indigenous and rural communities in shaping adaptation decisions, and what strategies have been employed (RQ 5). The chapter analyses the evolution of collective action around the oil industry in Komi and Yakutia. The findings indicate fragmentation and fluidity of collective action enabling remote communities, bearing adverse impacts of double exposure and marginal to central power, to connect to global movements that demand climate justice and Indigenous rights. The political capabilities framework is employed to identify the power of communities to influence governments and oil companies to address climate change and enable adaptation responses.

Chapter ten discusses the empirical findings from chapters five to nine in the context of the literature introduced in chapters two and three. The discussion returns to the RQs to better understand the implications of the empirical findings from northern Russia for understanding the potential of adaptation to climate change to assist in the development of more equitable processes and outcomes in resource extraction regions. The chapter concludes by summarising the contributions made through this thesis and providing suggestions for future areas of research and practice.
CHAPTER TWO Resource extraction and climate change: towards the conceptual framework

2.1 Introduction

This chapter provides a review of the theoretical knowledge to comprehend in detail the research gaps and to outline a conceptual framework for thinking of the potential of climate change responses to assist the development of more equitable processes and outcomes for communities affected by resource extraction projects. The chapter reviews existing knowledge in the literature on human geography, political ecology, political geography and development and management studies related to climate change adaptation in regions exploited by the extractive industry.

The themes which this literature review explores are threefold. The first refers to the conceptualisation of resource frontiers and their status in the context of climate change (section 2.2). The section briefly describes resource extraction as a physical and a political economic process (with the specific focus on crude oil). It then reviews the implications of climate change for oil extraction regions using the framework of relationships between resource extraction and climate change developed by Odell et al. (2018). A significant research lacuna identified in this theme relates to the critical understanding of climate change impacts and responses in resource extraction regions.

The second theme is that of adaptation pathways at resource frontiers (section 2.3). The section focuses on the evolution of the concept of adaptation to describe responses to environmental change and introduces the framework of adaptation pathways suggested by Pelling (2011). A critical review of adaptation pathways in resource extraction regions is provided using this framework. It concludes that emerging initiatives of climate change responses in resource extraction regions tend to frame adaptation as a matter of resilience building (technological and managerial adjustments). Critical scholarship urges the need in longer-term transitions and deeper transformations. The potential of climate change adaptation to effect more socially equitable and environmentally sustainable change on the ground so far has not been explored in relation to resource frontiers.
The final theme centres on the conceptual framework for the study called ‘just adaptation at resource frontiers’ that bridges the critical advancements in resource extraction and climate change literature (section 2.4). The framework integrates four strands in understanding the socio-environmental and socio-political relationships implicated in the climate change responses. The four strands include: (i) an inclusive debate about risks; (ii) power and politics acting in resource frontiers; (iii) participation in resource projects and adaptation planning; (iv) collective action and political capabilities. These strands offer an appropriate account for understanding how the power of resources ‘below the surface’ impacts the processes ‘above the surface’ that demand more equitable processes and outcomes as climate change adaptation advances.

2.2 Resource frontiers in a changing climate

This section introduces the main physical and political economic features of resource frontiers and unfolds the complex interrelationships between resource extraction and climate change, with the focus on crude oil extraction.

2.2.1. Resource frontiers

Extraction of natural resources continues to constitute the basic activity by which humans acquire raw materials and energy sources, which are then traded and consumed (Bridge, 2016). As a physical process, resource extraction involves the separation and removal of underground resources from their immediate environment, and their subsequent transformation into raw materials (Bridge, 2016). Two general mining methods include underground and open pit extraction; however, other methods have been developed to suit the nature of certain resources (placer mining for gold and gemstones, in-situ mining for copper and uranium, drilling and fracking for oil).

Crude oil is among the basic raw materials. It is a type of fossil fuel composed of hydrocarbon deposits and other organic materials. Crude oil occurs naturally and it is a non-renewable resource. Oil is found together with natural gas and saline water, and is

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5 The focus on crude oil extraction is explained by the prevalence of the oil industry in case study regions in northern Russia, building on and supplementing the recent studies that concentrated on surface mining (e.g., Phillips (2016)).
commonly obtained through drilling. Water extracted as a by-product along with oil is known as produced water. Oil varies greatly in colour and viscosity. It is refined to produce consumable products, including gasoline, diesel and various petrochemicals, that are then distributed and consumed. At the end of the hydrocarbon commodity chain is carbon capture. It is a technology that allows streaming of the carbon dioxide emissions produced from the use of oil to be stored underground in depleted oil fields. The typical stages of oil development include: (i) exploration and prospecting; (ii) drilling and field development; (iii) exploitation and production; (iv) well abandonment and land restoration (table B–1 in Appendix B).

Oil must be continuously explored to compensate for exhausted oil deposits. To understand this, it is useful to distinguish resources from reserves. The McKelvey box diagram is a simple visual way that reflects these categories based on their geological certainty and economic feasibility (figure 2-1).

![Classification of reserves and resources based on the McKelvey box](image)

Figure 2-1. Classification of reserves and resources based on the McKelvey box

Source: an adapted version of McKelvey (1973, p. 13).

Reserves are identified and economically-viable for extraction resources (McKelvey, 1973). It has been commonly assumed that there is the increasing scarcity of oil reserves, termed ‘peak oil’ by M. King Hubbert (1956). There numerous stances about the timing and composition of the ‘peak oil’ (Sorrell et al., 2010). Unconventional oil is being
increasingly extracted and produced using other than conventional technologies, including oil shale, oil sands and tight oil (Bridge & Le Billon, 2017).

The development of oil is not only a physical process but also a social relation (figure 2-2). Bridge (2008) explains that any hydrocarbon commodity chains are embedded with interactions between governments and companies that surround oil exploration, oil extraction and production, refining, distribution, consumption and carbon capture.

Previous studies have identified the ways how the deposits ‘below the surface’ have implications for the processes ‘above the surface’. In these studies, bringing resources to the surface is intertwined with the dynamic interplay of social and political relations, competing economic interests and power at stake in the political economy of extraction (e.g., Bebbington & Bury, 2013). Three themes, explained below, are critical for the understanding these relations of power.

First, oil reserves are distributed unevenly, and oil-based wealth results in inequality. Oil reserves are concentrated in a few countries (Venezuela, Saudi Arabia, Canada, Iran, Iraq, Russia, and others), and scattered unevenly within them. The demand for raw commodities is a key factor of globalisation, determining what Adam Smith called the ‘wealth of nations’ (Roodman, 2014). Certain actors have developed technologies and capacities for extracting subsoil resources, gaining an advantage over other actors.

Figure 2-2. Hydrocarbon commodity chain.

Source: Bridge (2008).
Chapter Two. Resource extraction and climate change: towards the conceptual framework

Distribution of the revenues generated from the trade in oil is highly uneven (Ross, 2012). These factors, therefore, result in the social creation of inequality across various scales (Ross, 2012).

Second, oil extraction shapes resource-dependency, with implications for the quality of governance and the conduct of politics, commonly termed the ‘resource curse’ (Auty, 2002; Watts, 2004). While highly contested, the resource curse thesis, also known as the paradox of plenty, explains why countries that are rich in natural resources feature less democracy, less economic stability, but more corruption and more civic conflicts and wars (Ross, 2012).

Third, oil extraction comes with externalities for communities affected by resource extraction projects (the host communities). Resource-based development offer opportunities for host communities to build wealth and promote local social and economic well-being. While some communities can seize opportunities through strategic and pragmatic engagement (strategies ‘from below’) (Wanvik & Caine, 2017), the evidence suggests that such ‘development’ is highly contested (e.g., Bebbington et al., 2008). Environmental degradation is evident in many oil-producing regions, including Ogoniland in Nigeria (Onuoha, 2009), the Amazon in Peru and Ecuador (Orta-Martínez et al., 2007), and northern territories of Russia (Walker, Crittenden, et al., 2006). There have been major concerns in relation to distortions of established livelihoods systems and population displacements, social conflicts, violence and corruption linked to the ‘curse’ of valuable resources (Bebbington & Bury, 2013; Bridge, 2004; Gilberthorpe & Hilson, 2014).

To grasp these three features, it is useful to conceptualise resource extraction regions as ‘resource frontier’ spaces. Critical to understanding the dynamics of resource frontiers is that resource extraction expands towards remote areas driven by the underlying processes of the political economy (Peluso & Lund, 2011; Rasmussen & Lund, 2017). Landscapes and seascapes that are abundant in natural resources also support long-term socioecological relations and traditional livelihoods (Gilberthorpe & Hilson, 2014). Such overlap is primarily due to historical patterns of land appropriation and human migration (Langton & Longbottom, 2012).
As a result, there is a clash of cultural norms, Indigenous values and traditional institutions with the neoliberal approach to development, resulting in struggles for resources, adverse impacts and conflicts (Tsing, 2011). Moreover, these spaces are far from the centres of the state and corporate decision-making. The differences in culture, values and institutions lead to common patterns of the ‘exclusion’ of host communities from the effective participation in development and decision-making (Hall et al., 2011). As a political economic process, resource extraction entails “expanding value and power via the identification, capture, and control of extractable materials” (Bridge, 2016, p. 1). Additionally, resource extraction can intersect with geopolitics, state and military power (Bridge, 2014).

Criticism linked to poor social and environmental outcomes of resource extraction based development has resulted in a comprehensive sustainable development agenda, with Corporate Social Responsibility (CSR) at its front (Whitmore, 2006). CSR refers to voluntary corporate actions to assess and take responsibility for the company’s social and environmental effects (Blowfield & Frynas, 2005). Yet, the criticism towards CSR points out that it aims to legitimise resource extraction projects simply by providing a framework for delivering sustainability credentials (Brock & Dunlap, 2018; Frynas, 2005). Climate change is fast becoming a key element of the sustainable development agenda of the resource extraction industry (e.g, Leventon et al. (2015)), and this needs to be critically understood.

2.2.2 Climate change and resource extraction regions

Cumulative human actions have been impacting the composition of the atmosphere, which alters the climate system. The IPCC’s reports provide a summary of the scientific evidence that future climates will not be like past climates (IPCC, 2014). In addition to the scientific prognosis, changes in weather and the physical components of the environment have been progressively observed among subsistence-based Indigenous and rural populations (Savo et al., 2016). In this study, climate change is understood as a hybrid entity between physical transformation described by a set of meteorological indicators and its inherent social and cultural dimensions (Hulme, 2008).
Chapter Two. Resource extraction and climate change: towards the conceptual framework

Climate change has implications for the current and future status of resource extraction activity. Yet, scholarly work in the social sciences has only begun to examine the relationships between resource extraction and climate change, and serious gaps remain (Bebbington, 2015; Martus, 2018; Phillips, 2016). Odell et al. (2018) in the recent review of mining and climate change suggest that the resource extraction literature “is not yet equipped to speak to what seems likely to become a critical driving factor in extractive industry governance” (2018, p. 2). At the same time, climate change research applied to resource extraction regions have been critiqued for overlooking the critical importance of resource extraction and its political economy as human dimensions of climate change (Cameron, 2012).

A framework developed by Odell et al. (2018) examining the categories of relationships between climate change and mining is a useful way to bridge the important insights from both bodies of literature. The framework identifies six relationships between climate change and mining (figure 2-3): (1) resource extraction activity affects climate change; (2) climate change affects resource extraction activity; (3) their interaction results in intersecting impacts; (4) both climate change and resource extraction activity are affected by public policy and industry practice; (5) there are perceptions and responses that affect public policy and industry practice, and (6) this is contextualised in the political economic context. This framework has been built on another effort by Phillips (2016), where the author linked relationships between the physical processes of open-pit mining and climate change. In the following, this framework is applied to the specific relationships between climate change and extraction of oil, mindful what various types of resources (oil, gas, metals or minerals) can have distinct relationships with climate change.

1. **Impacts of oil extraction on climate change.**

The impact of oil on greenhouse gas (GHG) emissions occurs largely through the use of oil and its products (for transport, energy supply, industry and residential buildings) (Bruckner et al., 2014). The impact also occurs during the oil extraction and production process, largely through fugitive emissions that are attributed to non-combustion sources (equipment leaks, process venting, losses in evaporation, disposal of gas streams by flaring or venting, and equipment failures and accidents) (Schwietzke et al., 2016). Several attempts have been made to quantify how much GHG the oil industry emits at
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the global and regional level\textsuperscript{6}. However, the oil industry is diverse and complex, with oil
having a varied chemical composition, and there is a lack of data for all oil-producing
fields. With the shifts to unconventional methods of extraction and to the extraction of
deposits that are of declining grade and in less favourable environments, the additional
demand for energy and water increases the sector's footprint (Bruckner et al., 2014).

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{diagram.png}
\caption{The categories of relationships between climate change and resource extraction.}
\textit{Source: Odell et al. (2018, p. 205).}
\end{figure}

2. Climate change impacts oil extraction activity.

At the local level, oil extraction is expected to operate under different conditions than it
currently does. There are global and regional scientific predictions that resource
extraction will have to contend with more challenging access to energy and water (Arent
et al., 2014). Other challenges for resource extraction are extreme climatic conditions that

\textsuperscript{6} For example, the Oil-Climate Index, developed by Carnegie Endowment for International Peace,
estimates the profile and the amount of GHG emissions along an individual oil’s supply chain of different
oils (downstream, midstream and upstream). Available at \url{https://oci.carnegieendowment.org/}, accessed
April 2, 2018.
Chapter Two. Resource extraction and climate change: towards the conceptual framework

are predicted to occur more frequently, and with increased severity in future (Arent et al., 2014). Despite great scientific uncertainties about these dynamics, the impacts of climate change on the resource extraction operations and its value-chain can be assessed (Northey et al., 2017). In relation to oil, extraction and transportation infrastructure is vulnerable to climate change impacts (Carlson et al., 2016). Material risks bring greater potential for spills, equipment failure and other damages (Jernelöv, 2010). Additionally, climate change opens new areas for oil extraction. For example, the melting of the sea ice in the Arctic opens access to previously inaccessible resource deposits, if the commodity prices are sustained (Mager, 2009).

3. The intersecting impacts.

Communities and ecosystems that are affected by the exploitation of oil and host oil extraction sites, infrastructure and refineries are vulnerable to the intersecting impacts of resource extraction and climate change Carlson et al. (2016) framed the impacts of sea level rise and storm surge and oil refineries on local physical and human systems as spillover effects. Eisenstadt and West (2016) studied perceptions and believes about climate change among Indigenous peoples in Ecuador and found that communities affected by oil drilling (Kichwa and Waorani in the Napo province) perceive climate change impacts stronger than not affected communities. The author explains this contrast by experienced air pollution and a critical views about the industry among community members.

Host communities and their socioecological relations are seen as vulnerable to double exposure to the impacts of climate change and the expanding extractive industries driven by globalisation (O'Brien & Leichenko, 2000). The intersecting impacts mutually reinforce each other across temporal and spatial dimensions, co-exist with broader social and economic changes, and create winners and losers in resource extraction regions (O'Brien & Leichenko, 2003). The intersecting impacts of mining and climate change have a potential to aggravate existing vulnerabilities among communities and ecosystems (Phillips, 2016).

Distribution of the intersecting impacts of oil extraction and climate change from the global perceptive and among communities presents dilemmas of justice (O'Rourke &
Chapter Two. Resource extraction and climate change: towards the conceptual framework

Connolly, 2003; Thomas & Twyman, 2005). Communities hosting resource extraction contribute little to globalisation and climate change, benefit inequitably from opportunities these processes represent, and they are the most vulnerable to double exposure (Leichenko & O'Brien, 2008). There are challenges not only about distributional justice, but issues of the representation of minorities and lack of their meaningful participation in the decision making about resource extraction projects (e.g., Gavidia & Kemp, 2017) and climate change responses (e.g., Paavola & Adger, 2006; Thomas & Twyman, 2005).

4. Public policies and industry practices affect both oil extraction and climate change.

This relationship indicates how international and national public policy initiatives and industry practice affect both climate change and resource extraction activity, often at the same time. For example, national policies that promote the expansion of oil industry (as in contemporary Norway and Russia) can have the impact of increasing GHG emissions, while international climate governance may force oil companies to minimise their contribution to climate change.

The 2015 Paris Agreement for Climate Action is a global framework for resource extraction regions to join the efforts to limit dangerous global warming to less than 2°C compared to pre-industrial levels (UNFCCC, 2015). To achieve this goal, many of world’s reserves of oil (one third), gas (half) and coal (80 per cent) reserves should remain underground from 2010 to 2050 (McGlade & Ekins, 2015). The 2030 Agenda for Sustainable Development and the Sustainable Development Goals established a pro-climate action focus (Goal 13) (UNSDSN, 2015). The White Paper “Mapping Mining to the Sustainable Development Goals” interprets Goal 13 to include reduction of emissions, but also building climate change resilience, recognising climate change in planning and investment, and engaging in dialogue with other stakeholders over climate change challenges (WEF, 2016, p. 54). Mining industry-based associations, whose climate programs have concentrated on mitigation for a long time, have begun to extend their foci to building adaptation and resilience. In the recent years, the Global Oil and Gas Industry Association for Environmental and Social Issues (IPIECA), the International Council on Mining and Metals (ICMM) and Business for Social Responsibility (BSR) have
developed guidelines in a suite of documents that assist companies in identifying climate change risks, preparing effective responses, and developing climate-related sustainability reports (BSR, 2011; ICMM, 2011, 2013; IPIECA, 2013, 2016). These guidelines do not challenge ‘business-as-usual’ and are centred on the continuation of extraction.

5. **Perceptions and responses.**

Despite growing awareness about the potential overlap of climate change and resource extraction in the recent decades, the responses from nation-states, and from corporate and civil society actors, have been inconsistent. Hydrocarbon corporations have been given an opportunity to reconsider their business models to employ innovative solutions to offset their climate impacts (for example, through renewable energy projects and the Sustainable Development Mechanism). Oil multinationals have been supporting emissions reductions (Kolk & Levy, 2001), not least by engaging in the UN Climate Change negotiations (Slezak, 2016), but at the same time, they continue to explore and expand their operations. Some states have put restrictions on fossil fuel exploration and extraction (for example, France\(^7\) and New Zealand\(^8\)), while others have increasingly granted licences (for example, Norway\(^9\)). Fossil fuel-rich developing countries experience the greatest exposure in the climate-constrained world, and countries like East Timor and Equatorial Guinea are advised to facilitate exploration and accelerate development of resources to benefit from the oil sector, while they still can (Manley et al., 2016).

This relationship also includes environmental and Indigenous peoples’ movements acting in resource extraction regions and beyond them that focus on the adverse impacts of resource extraction on human health, water resources and Indigenous rights (Bebbington et al., 2008; Peet & Watts, 2004; Velicu & Kaika, 2017). Despite the presence of

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significant knowledge about collective action and movements, the specific interest in their influence on climate change responses in the academic literature is only emerging (Caniglia et al., 2015; Piggot, 2017). For example, Piggot (2017) has identified different tactics employed by the movements worldwide to disrupt fossil fuel industry and push climate policy (civil disobedience, demonstration, economic disturbance, judicial and legislative pressure, education and persuasion and electoral strategies).

6. **Political economic and governance context.**

The five previous relationships above are entangled in the broader political economy at resource frontiers (involving quality of governance, fiscal regimes, formal and informal rules, etc.) (Odell et al., 2018). A political economy perspective enables understanding not only the drivers of double exposure but also comprehend how facing the need to address climate change, the dominant classes are holding onto their power. For example, a political economy perspective explains that some countries promote the oil industry, not least by subsidising its production or the final product, because they are locked-in the expectations for revenues or they exercise geopolitical power (Claes & Hveem, 2016). This focus helps to understand constraints to change as well as incentives for more inclusive practices.

In summary, the conceptual framework suggested by Odell et al. (2018) is an initial way to conceptualise the relationships between climate change and oil extraction, and there is a potential for its further advancement. Many gaps remain in understanding each relationship because of limited existing empirical studies. A growing number of climate change initiatives linked to resource extraction regions indicate an urgent need to inform the research and practice. Little is known about how climate change responses can be developed in resource extraction regions, and which interests will be prioritised. The next section introduces the concept of climate change adaptation and its application to resource frontiers.

**2.3 Adaptation pathways at resources frontiers**

This section first clarifies the key terms and outlines the evolution of adaptation as a concept to describe responses to environmental change. It states that the recent trend in climate change adaptation research places the focus on justice in adaptation processes and
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its outcomes. Second, based on a review of adaptation pathways at resource frontiers, a
lacuna is identified in the critical understanding of the potential for adaptation in resource
extraction regions to address justice and fairness. Third, the theories of justice are
introduced and evaluated for uncovering existing and potential injustices in resource
frontiers in a climate-constrained world.

2.3.1 Climate change adaptation: evolution of the concept and adaptation pathways

Climate change adaptation is commonly seen as a necessity and opportunity but remains
an ambiguous exercise. From a philosophical perspective, living with climate change
includes actions that are not simply adaptive. The actions should include a movement
from orientation on material consumption to (re)building relationships with nature.
Generally, adaptation refers to a response to a perceived change. Yet, it is a misleadingly
simple concept. The abstract nature of adaptation is difficult to translate into an empirical
research framework in relation to real life problems.

Nevertheless, adaptation to climate change is a highly popular concept for describing
“adjustments to environmental change” in the scholarly networks on resilience,
vulnerability and adaptation (Janssen et al., 2006; Nelson et al., 2007), and over the two
decades the concept has become essential for planning in the face of climate change
(Davoudi et al., 2009; Füssel, 2007). The generalisability of much published research on
this concept is problematic not only due to its large volume, but also because in
contemporary literature, adaptation as a concept and an analytical lens means different
things to different people (Head, 2010; Pelling, 2011).

To outline the critical difference in approaches to adaptation, it is useful to consider the
historical evolution of the concept. Bassett and Fogelman (2013) explained the
problematic nature and evolution of adaptation. During the 1970s–1980s, the nature of
adaptation as a concept was debated between two schools: the natural hazards school and
its political economic critique (associated with the emergence of political ecology (Watts,
2015)). The natural hazard school viewed adaptation as an adjustment. Burton et al.
(1993) and White (1945) were among the main contributors to this conceptual approach
to adaptation. In their studies, adaptation suggests purposeful adjustments to
environmental change as a biophysical risk and to its effect on society. The natural
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hazards school was criticised by the political economy scholars that considered risk as a function of vulnerability, and a natural hazard being a trigger (Wisner et al., 2004). Watts (1983) developed a key conceptual contribution to the adaptation literature. In his work on the origins of famine in northern Nigeria, he demonstrated that adaptation goes beyond human response to natural hazard or environmental change but incorporates all processes of transformations and interactions with nature, including extraction for wealth creation. In this school of thought, adaptation is a part of the broader and deeper processes of social change and political economy (Ribot, 2011; Ribot, 2009).

After reviewing 558 articles that address adaptation, Bassett and Fogelman (2013) conclude that the contemporary burgeoning climate change adaptation literature can be classified in a similar way (although their review was critiqued for a limited set of data (Lorenz et al., 2014)). The framework of adaptation pathways proposed by Pelling (2011) is one comprehensive way to distinguish climate change responses aimed at proximate causes of vulnerability from those seeking broader systemic change in social and political regimes. Pelling distinguishes three adaptation pathways: resilience-oriented, transitional and transformational.

The first adaptation pathway is oriented at resilience. Climate impacts are seen as the major source of vulnerability, and in this way this approach is linked to the adjustment adaptation in the natural hazards school (Bassett & Fogelman, 2013). In this approach, vulnerabilities are assessed, following suggestions for the technical measures and institutional design. The idea of institutional design is underpinned by the Ostrom’s (1990) work that promotes adaptive governance, polycentric institutions, cooperative arrangement and social learning. The resilience-oriented focus of adaptation is presented in the IPCC’s reports that reflect state of the art knowledge on climate change relevant for policymakers. It is a boundary organisation between science and policy, and thus, it influences science and policy through problem framing. In the latest fifth IPCC report adaptation is framed as “the process of adjustment to actual or expected climate and its effects” (Barros et al., 2014, p. 1758). The main idea of adaptation as resilience (incremental adaptation in the IPCC’s terms) refers to securing the continuation of desired systems into the future in the face of a changing context and uncertainty (Pelling, 2011).
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The debates that fit the typology ‘adaptation as transition’ seek to “implement innovations and exercise existing rights within the prevailing order” (Pelling, 2011, p. 68). ‘Transition’ ideas have been guided by substantively different approaches. ‘Sociotechnical transitions’ (Geels, 2005) is a shift to low-carbon development, as an attempt to restructure the global fossil-fuel based economy through social innovations and technology. A ‘sustainability transition’ is required to adapt societies and economies to sustainable production and consumption (e.g., Raskin et al., 2002). ‘Just transition’ concerns with the impacts on different social groups (e.g., Evans & Phelan, 2016). What is common is adaptation taking place in governance and institutions, including achieving institutional legitimacy, the inclusion of previously excluded values, and implementation of legal responsibilities.

Further interdisciplinary dialogue suggested that adaptation through a variety of technical and institution-building measures will not be sufficient unless the political realities are considered (Ribot, 2009; Taylor, 2015; Watts, 1983). Addressing power relations can be achieved by reframing ‘adaptation’ to capture how power and politics shape adaptation needs, priorities and outcomes (Nightingale, 2017). These attempts are evident in a small, but growing number of examples in political ecology and vulnerability studies to adaptation as an intellectual and a development project (Eriksen & Lind, 2009; Manuel-Navarrete & Pelling, 2015; O’Brien, 2012; Tschakert, van Oort, et al., 2013).

These studies fit into the transformational typology of approach (similar to the political economy critique of the early natural hazard school (Bassett & Fogelman, 2013)). The approach is to harness opportunities for climate change that challenge the status quo of the underlying structures and values embedded in the global political economy, and shift the balance of power towards greater equality and justice (Pelling, 2011). This approach criticises the resilience- and transition-oriented approaches for bias towards the status quo in power relations, for downplaying the significance of real-world culture and rules, and for its potential to generate short-term technological and managerial optimism (e.g., Fazey et al., 2018). Reflecting process in adaptation framing, the IPCC’s reports also refer to transformational adaptation, defined as “adaptation that changes the fundamental attributes of a system in response to climate and its effects” (Barros et al., 2014, p. 1758).
The framework of adaptation pathways (Pelling & Manuel-Navarrete, 2011) is useful for the identification of social, cultural and political pathways through which adaptation responses unfold. It also improves understanding of the interplay between knowledge, values and power in complex, contested and dynamic contexts (Bassett & Fogelman, 2013). These pathways interplay, but can create boundaries and limitations for each other (Hadarits et al., 2017; Leach et al., 2007).

A growing imperative indicates that the separation of adaptation and mitigation is intellectually problematic at the ground level of analysis. Mitigation can rather be viewed as a subset of adaptation as “an adaptive act aimed at ameliorating or reversing the root causes of the anthropogenic forcing processes behind climate change” (Pelling, 2011). Scholars emphasise the co-benefits of integrating adaptation, mitigation and development (Naess et al., 2015; Thornton & Comberti, 2017). In this conceptualisation, adaptation is defined as “the process through which an actor is able to reflect upon and enact change in those practices and underlying institutions that generate root and proximate causes of risk, frame capacity to cope and further rounds of adaptation to climate change” (Pelling, 2011, p. 34).

However, many issues arise when climate change is considered along with development needs. In particular, struggles over control over resources and authority play an important role (Naess et al., 2015; Nightingale, 2017). These are mediated through institutions; it is a fundamental term used in the adaptation literature. The common definition of institutions refers to regularised patterns of behaviour that are shaped by underlying rules and norms (Ostrom, 1990). Dovers and Hezri (2010, p. 11) in a review of the use of concept ‘institutions’ in adaptation literature suggests the following interpretation: institutions are “predictable arrangements, laws, processes or customs serving to structure political, social, cultural or economic transactions and relationships in a society”.

In summary, while a variety of definitions of the term adaptation can be found in the literature, none of the conceptualisations of adaptation is complete. Different notions draw to one or more dimensions of adaptation: technological, cultural, institutional or political. In isolation, these conceptualisations might be ineffective, and a comprehensive definition of adaptation highlights the many ambiguous questions about who adapts, adapts to what, how adaptation occurs and what are the outcomes. The responsibility for
adaptation does not lie with one actor or institution. It may be appropriate to suggest that adaptation requires mutual understanding and agreement among various actors and institutions across cultural and socio-political divides. The attention to the political realities and justice implications under which climate change responses are proposed or being implemented is urgent, according to the growing amount of political ecology work that indicates on the adaptation failures. This is especially so in the context of regions with competing resource uses and interests, among which are regions exploited for the extraction of natural resources.

2.3.2 Climate change adaptation in resource extraction regions

This section provides a critical review of climate change responses in resource extraction regions based on the typology of adaptation pathways (Pelling, 2011), introduced in the previous section. It identifies that industry-based research to date has been largely framing adaptation as a matter of resilience’s building. At the same time, a growing amount of critical scholarship argues for the need and opportunity for more longer-term transitions and deeper transformations. The section demonstrates an imperative to address the political economy and justice implications in resource extraction regions in a climate-constrained world is an emerging focus of research (e.g., Bebbington et al., 2015; Evans, 2008; Hirons et al., 2014).

Three processes motivate climate change responses in resource extraction regions. First, various initiatives follow from global advances in climate change governance. Second, future mining is expected to operate under different conditions than it currently does, with adverse impacts on the industrial operations, regional economy, communities and ecosystems. And third, communities and civil society take action, pressing policymakers and companies to consider and disclose climate change risks and adopt policies that constrain fossil fuel extraction (Piggot, 2017).

The emerging initiatives are context, site, and project specific, but they indicate experimentations in governance and planning. The priority can be placed on the reduction of emissions or adaptation, or integrated approaches can be prioritised. For example, impact assessment has potential to integrate actual and anticipated climate change risks, adaptation and mitigation measures into the planning of new, expanding and
Chapter Two. Resource extraction and climate change: towards the conceptual framework commissioning mining sites and fields (Agrawala et al., 2012). Regulatory agencies in a range of countries (Canada, the US, Chile, and the European Union) as well as international institutions (the International Finance Corporation and the World Bank) have formalised this need (Capstick et al., 2014). Another example of governance experiments is designating no-go areas for mining and setting restrictions on technologies and materials (for example, restrictions of open-pits have been applied in Costa Rica, and in some provinces of Argentina and the Philippines (Gera, 2016). The Belize government voted to implement a moratorium on all new oil exploration in its waters to protect coral reefs. While permanent or temporary initiatives can be concerned with the environmental impacts of resource extraction, they can have intentional or unintentional benefits as mitigation or adaptation activities (Adger et al., 2005).

The framing of resilience-oriented adaptation is evident in industry-based programs and guidelines of climate change adaptation (BSR, 2011; ICMM, 2013; IPIECA, 2013; WEF, 2016). For example, the guidelines provided by the IPIECA for developing adaptation activities suggest adaptation actions are best taken by those who take proactive efforts to manage climate-sensitive operations and resources.

The White Paper developed by WEF, UNDP, Columbia Center on Sustainable Investment and Sustainable Development Solutions Network developed “Mapping Mining to the Sustainable Development Goals”, where they suggest that the business can: (i) reduce emissions (improve energy efficiency; use renewable energy; use low-emissions fuels; align with Intended Nationally Determined Contribution (INDCs); measure and report direct, indirect, and product-related emissions); (ii) build climate change resilience (plan for climate change impacts on mines and communities; strengthen emergency response plans; model climate-related environmental impacts); (iii) recognise climate change in planning and investment (use scenario planning to inform views on climate and energy risks and opportunities; use climate projections in design and placement of operations and infrastructure; adopt corporate, climate change, carbon management and disclosure policies; use shadow carbon prices to inform portfolio evaluation and investment decisions; include climate change on the board agenda); (iv) collaborate and leverage (participate in climate-related R&D and pilots; engage in intra- and cross-industry climate dialogue; publicly support carbon pricing) (WEF, 2016).
Business for Social Responsibility, a non-profit organisation, provides similar guidelines for adaptation and resilience for the extraction industry: (i) work with communities to develop concrete adaptation plans; (ii) integrate climate-compatible development into initiatives for sustainable local benefits from project operations; (iii) explore how investments in ecosystems services can improve local resilience; (iv) work with stakeholders to understand their emerging concerns; (v) initiate cross-industry collaboration on regional adaptation strategies (BSR, 2011).

In the scholarly literature in relation to oil extraction, there are several studies that examine the implications of climate change policies on oil-rich countries. They assert that the answer for these countries lies in diversification of the economy, promotion of the competitiveness of the fossil fuel sector through increased exploration, avoidance of subsidising fuel consumption, acceleration development of resources and heavy state investments in companies in the fossil-fuel sector (Manley et al., 2016). Kolk and Levy (2001) in their study of the early shifts in corporate climate strategies among oil multinationals identified three sets of company-specific factors that explain the development of climate policies: locational (for example, regulatory policies and culture, societal concerns and pressure), internal organisation factors (for example, degree of centralisation and the presence of climate scientists), but it was rather market position and economic competition that affected uptake on climate actions. Carlson et al. (2016) performed risks assessments from the impacts of climate change on coastal oil-refining operations in the US. They found storm surges, if enhanced by climate change, will destroy or damage energy facilities, stop or affect production and inundate host communities. They conclude that financial risks offer the greatest opportunity to engage companies in adaptation responses.

The broader mining industry has received substantially more attention than oil extraction. Here, the debates have concentrated on the assessments of vulnerability and adaptive capacity of the mining industry at various stages of a mine life cycle in Canada (Ford et al., 2010; Ford et al., 2011; Pearce et al., 2011) and Australia (Hodgkinson et al., 2014; Loechel et al., 2013; Pizarro et al., 2017); economic rationale for climate change responses (Damigos, 2012; Prowse et al., 2009); and the importance of enhanced planning (Carkovic et al., 2016; Sharma & Franks, 2013).
In sum, resilience-oriented adaptation entails maintaining resource extraction in place by protecting industrial infrastructure, employees and avoiding environmental disasters. Taken together, research and industrial guidelines suggest: 1) technocratic measures that include cost-effective technological and managerial solutions often integrated in traditional risk management with the reactive focus on an ‘event’ rather than proactive focus on potential impacts; 2) minimising operational disruptions and economic losses; (3) reducing climate footprint; 4) extending planning and corporate responsibilities beyond a mine to host communities and landscapes along a temporal horizon that considers climate risks. Adaptive regulation and stakeholder involvement as ‘climate champions’ play a major role in enabling adaptation responses (Hodgkinson et al., 2014).

Previous studies related to transitional adaptation have placed risks related to climate change within other socio-economic, political and environmental processes that affect resource extraction regions. Transition-oriented adaptation in mining regions emphasises innovations in resource governance across various scales, and the potential of climate responses to motivate more sustainable mining and greener economy (Irarrázabal, 2006; Jegede, 2016), including through voluntary corporate initiatives (Dyer et al., 2013; Leventon et al., 2015).

Irarrázabal (2006) argued that climate change strategies are implicated in the industry’s voluntary actions, in particular sustainable mining agenda and CSR. He identified positive and negative environmental and economic implications of climate change on mining in Africa and argued that climate-related risks might undermine Africa’s economic development. The author suggested that climate responses can motivate sustainable mining and the green economy, for example through the development of alternative sources of energy for mining and reforestation.

At the scale of a mine site or a region, two articles addressed the integration of challenges and opportunities presented by climate change into development efforts through Climate Compatible Development, defined as “development that aims to minimise the harm caused by climate impacts, while maximizing human development opportunities presented by a low emissions, more resilient future” (Dyer et al., 2013, p. 2). Leventon et al. (2015) studied the role of the mining industry in Climate-Compatible Development in Zambia and found that mining companies have been increasingly designing CSR
strategies to align with livelihoods of host communities, and have profoundly influenced mitigation, adaptation and development components of Climate-Compatible Development. Dyer et al. (2013) discussed the advantages of partnerships between mining companies and host communities implicated in Climate-Compatible Development in Zambia. Based on the analysis of two projects, they argued that partnerships offer opportunities for addressing the gaps in CCD projects where would not be achieved if acting solo. For example, while mining can provide financial resources, communities can offer local expertise and labour.

The inclusion of host communities and workers in decision-making about the future of resource extraction and their equal participation in the implementation of any initiatives are vital to ensure inclusive and informed adaptation with more equitable outcomes (Birch, 2016; Evans & Phelan, 2016). For example, Eisenstadt and West (2016) show that Indigenous Kichwa and Waorani communities in the Napo province in Ecuador affected by oil extraction consider ‘climate change’ narrative as a means to advocate against state and oil companies for their needs and rights. The authors also suggest that “Indigenous people may be strong natural allies in climate change mitigation and adaptation” (Eisenstadt & West, 2016, p. 55).

Scholarly work concerns the legitimacy of future mining within the current regime of climate change governance and the fairness of transitions when moving resources away from supporting resource extraction towards sectors that support renewable energy and alternative pathways. The idea that our society should limit extraction and use of fossil fuel reserves to prevent climate change (McGlade & Ekins, 2015) generated a debate on whether, and under which conditions, fossil fuel extraction projects should proceed. Bos and Gupta (2016) argued that the rights-to-development and equity principles are implied in decisions about future oil projects. They suggest that new oil projects in Kenya should proceed because citizens of the country largely support oil extraction. In fact, there are many challenges to transitions.

In Canada, the 2016 Fort MacMurray fires in Alberta affected oil sands producing regions. The immediate response to the disruptions was to restart the production immediately, without questioning the implications of and for climate change. Patterson et al. (2018) suggest this is because of the dominant logic of resilience-oriented
adaptation, and ‘jobs versus environment’ discourse. Rather a dialogue with oil-industry workers and civil society organisations is needed to ensure support to skilled workers to transit to renewable energy works. These studies suggest that experiments in climate change and resource extraction governance are hardly limited by the boundaries of one nation; they are implicated in multiple forms of governance at various scales (Ali et al., 2017).

The contributions that fit the typology ‘transformational adaptation’ emphasise the adverse fallouts from political economic structures in which development and power are highly unequal, and justice is poorly served. They are more critical of ‘business as usual’ in resource extraction regions than resilience- and transition-oriented approaches and politicise climate change responses. A representative 2012 paper by Cameron critiqued climate change adaptation research that becomes to dominate how issues of vulnerability to climate change and adaptation needs are framed and addressed in northern Canada, inadequately considering colonial histories, framing adaptation as “a technical contemporary and local problem” (2012, p. 107). She argued that this literature systematically overlooks colonialism and the profound significance of resource development in the Arctic. This omission, she states, “contributes to a broader delimitation of Inuit political interventions into… resource development, and climatic change” (Cameron, 2012, p. 105).

A few contributions highlighted the risks of neglecting the heterogeneity of local representation and traditional institutions, which threatens the equity of potential benefits from climate change responses, and can potentially exacerbate vulnerabilities and conflicts. Hirons et al. (2014) demonstrated how the mining companies’ emerging strategies to manage carbon emissions from land-use changes, promoted by global climate change governance (specifically by the Reducing Emissions from Deforestation and Degradation), reflects the increasingly neoliberal approach to climate change actions through the commodification of carbon and payments for ecosystem services. Based on a study of the potential of regions with forestry-based legacies to provide the benefits of carbon sequestration for the mining companies in Ghana, they argue that global climate change responses marginalise the concerns and interests of local communities and have a
potential to exacerbate existing inequitable benefit-sharing practices and conflicts through local elite capture and alienating communities from the land (Hirons et al., 2014).

Curley (2018) studied the Green Jobs initiative of the Navajo Nation (in the US) to transition from coal dependency towards renewable energy projects. The study explains its failure by the complexities of traditional governing structures of the Navajo Nation and the weak legitimacy of new arrangements among community members because of the neoliberal model of the transition. Greenland is an example where traditional Indigenous institutions and neoliberal mining agenda meet, but considering Greenlandic sovereignty and relatively-developed Indigenous institutions, the outcomes are likely to be inclusive of local priorities (Nuttall, 2012). These studies indicate that ‘transition’ initiatives in mining contexts where extractive culture and traditional institutions prevail, will never be optimal.

Moreover, the novelty of such initiatives clashes with the complex realities of global markets, international institutions and geopolitics, causing a misfit of emerging initiatives into the existing global policy. One example is the Yasuni-ITT initiative suggested by the President of Ecuador Rafael Correa to suspend oil extraction in parts of the Yasuni National Park. Pellegrini et al. (2014) explain the termination of this initiative by the inability of decision-makers to resolve tensions entangled in the particularities of the socio-political relations in Ecuador and the inflexibility of international environmental governance. Another example is based on the efforts of China’s Government to enforce restrictions on mining of the rare earth minerals due to its poor environmental and social record is cited in Odell et al. (2018). The authors doubt the World Trade Organisation’s capacity to ensure effective production of renewable resources needed to address climate change without compromising the environment and human security.

An issue with resource extraction projects and climate change initiatives is that they can be implemented uncritically by officials or development agencies in regions where mining is dominant politically. In a discussion of governance challenges in the face of climate risks in El Salvador (a country that has recently rejected large-scale mining), Bebbington et al. (2015) expose conflicts over government mandates, particularly between economic and environmental ministries; difficulties in the management of conflicts over mining leases and social development; and higher-order processes
Chapter Two. Resource extraction and climate change: towards the conceptual framework governing transnationals and their actions across scales. In their view, all of these needed to be resolved in El Salvador before the commencement of large-scale mining, if resilience in the face of climate change risks is a concern.

This deficiency is likely to be greater in remote regions where Indigenous and non-Indigenous people live off subsistence, and traditional institutions are far from centres of political power and are not adapted to modern solutions. The common narrative is that rural and Indigenous communities that seek to continue their subsistence-based livelihoods are challenged by the power of mining corporations, governments and development agencies. An example is the critique of international development support for building collective-oriented institutions that make herder communities more resilient in the face of dzud or droughts in Mongolia. Taylor (2015) explained that these initiatives did not coincide with the national institutional framework that encourages individualisation of herding, expansion of herd size and large-scale mineral extraction. In the end, herders were left with disproportionate livestock losses and debts that pushed some to pursue high-risk strategies of livelihoods diversification. The poorly controlled development of resource extraction combined with the impacts of climate change resulted in a low chance of finding good quality pastures for reindeer herders in Subarctic and Arctic climates (Kuemmerle et al., 2014), and herds in Oman (Sternberg & Chatty, 2016).

An essential characteristic of transformational adaptation is whether local communities are active in taking control over an uncertain future in the face of resource extraction activity and climate change. Peasant farmers and herders in the Peruvian Camaná-Majes-Colca watershed engaged in creative political actions, such as claiming water rights and demanding payments from the mining companies using the water (Stensrud, 2016). The role of ‘social regulation’ is also evident in Kronenberg’s study of open-pit mining under glaciers (2013). He demonstrates how the impacts of gold mining on glacier destruction elicited the values society attach to the glaciers and their symbolism. This awareness helped to protect the vulnerable environment in empowered societal and institutional settings of Argentina and Chile, but not in Kyrgyzstan. Piggot (2017) identified factors that explain the role of social movements in shifting the political landscape towards restricting fossil fuel extraction. These include windows of political opportunity and demands appealing to citizens for action.
In relation to oil extraction regions, debates focus on the liabilities of oil companies for their socio-environmental damages, and suggest that policy solutions are needed that could lower the demand for oil in order to minimise greenhouse gas emissions but also contribute to the mitigation of oil extraction impacts and raise revenues towards poverty-reduction (Martinez-Alier & Temper, 2007). Orta-Martínez and Finer (2010) at the conclusion of their study of Achuar peoples’ resistance methods to oil extraction in the Amazon suggest that “other alternatives should be considered when defining the development strategy such as securing human rights, stability and peace in the whole region, helping to avoid climate change, and preserving unparalleled biodiversity at world level” (2010, p. 216).

Transformation-oriented studies challenge solutions oriented at maintaining the function of resource extraction into the future, framing them as dangerous places with risky jobs exposed to hazards, leading to the displacement of people and significant environmental pollution, affect human and animal health, sustain inequalities and poverty, also contributing to climate change and consumerism. The presence and pervasiveness of some of the political economy elements in extraction regions — especially colonialism, corruption, conflicts — should be a concern for researchers and planers that it is a misleading path to ignore the social and political environment of mining regions. Moreover, there are questions to be asked whether the expansion of mining industry is sufficiently needed, considering its poor socio-environmental record, cross-scales ethics and justice implications for climate and future generations. These contributions call for consideration of a redefined understanding of the role of political economy in climate change responses (Sovacool, 2018). Scholars argue that climate change responses need to be politicised, and issues around political economy across different scales need to be recognised (Eriksen et al., 2015; Lindegaard, 2018; Sovacool, 2018).

In summary, although the case for the economic and reputational benefits of increased attention to climate change has been clearly articulated in the resilience-oriented initiatives, the environmental, social and health costs of extraction of oil in changing climate conditions have been largely absent. Apart from Bos and Gupta (2016) and Eisenstadt and West (2016), there is a general lack of research about climate change responses in oil extraction regions that concern societal outcomes and socio-political
Chapter Two. Resource extraction and climate change: towards the conceptual framework transformations (there is a larger amount of scholarly work oriented at mineral mining). And perhaps more importantly, the analysis of adaptation in oil extraction regions that can address inequalities that oil generates among communities and individuals is almost absent from the public discourse. Kates et al. (2012) set two conditions when transformational adaptation is important: large vulnerability in certain regions, populations and resource systems; and severe climate change. Following criteria set by Kates et al. (2012), incremental transformation in oil-producing regions might be insufficient. In oil frontiers, the scale of the climate change and the growing influence of outside interests mean that transformation is both desired and especially likely. They can be classified as very vulnerable regions and activities, where even moderate climate change may result in environmental disasters (offshore and onshore oil spills, pipeline ruptures and tailings failure), with adverse societal outcomes.

2.3.3 Justice in climate change adaptation

There is sizeable literature suggesting the vulnerable groups experience the negative effects of climate change disproportionately (e.g., Graham et al., 2018; Paavola & Adger, 2002; Wilson, 2014). Climate change impacts are likely to impact most on societies where natural-resource dependency is high (Thomas & Twyman, 2005). Yet, climate change is placed amongst other factors affecting equity in natural resource use. In regions exploited for resource extraction, these factors are associated with the political economy of resource extraction. This section introduces existing theories and approaches to justice linked to the debates about how climate adaptation can redress, create or exacerbate inequality.

The idea of justice has played an important role in climate change debates, as climate change responses are being increasingly articulated and practised by scholars, policymakers and activists. Climate justice is entrenched with concerns about “who suffers most its consequences, who caused the problem, who is expected to act, and who has the resources to do so” (Mohai et al., 2009, p. 420). Patterson et al. (2018) argued that social justice is an effective concept to enhance the political feasibility of climate change responses. At the scale of international governance towards climate change, achieving justice implies an exercise to balance rights and responsibilities, with the assumption that nation-states are relevant actors for actions. Scholars, however, argued that it is important to take into account actors and values at various scales, not only nation-states, but also
communities, private sector corporations, sub-national governments and non-governmental organisations (Harris, 2010; Thomas & Twyman, 2005).

Four broader approaches to justice linked to the climate change debates engage with cross-scale analysis. First, transformational adaptation prioritises community-scale justice but, as explained in the previous section of this chapter, emphasises the broader underlying political economy of development and power relations (Pelling, 2011). The second approach places two limits on sustainable development: planetary ecological boundaries and social conditions necessary for human development (Leach et al., 2013). The third approach, climate justice, refers to equity in numerous ways: between the global North and South, between genders, ethnicities and generations (Patterson et al., 2018). And the fourth approach, just transitions, is about the process of achieving transitions in ways that acknowledge the access to energy, security for workers, and procedural justice in decision-making (Evans, 2007). Amongst these four approaches, it is transformational adaptation that addresses an overlap of climate change vulnerability with other forms of vulnerability and protects people from maladaptive, or lack of any, disruptions produced by inequitable political economic structures. Emergent issues raised by global climate change reflect and increase pre-existing social inequalities (Schlosberg & Collins, 2014). Just adaptation then is about contesting systematic structures that produce inequalities and risks (Gillard et al., 2016).

Distributive and procedural elements of justice are central to the discussions over justice in climate change adaptation research (in this literature, justice is often used interchangeably with equity and fairness (Ikeme, 2003)). Distributive theories of justice have been built on Rawls’s classic definition of justice as the fair allocation of resources in a way that they provide the greatest benefits (Rawls, 1971). For example, distributive environmental justice explains that exposure to pollution and other environmental risks from the oil industry is indeed unequally distributed among societies (Mohai et al., 2009). This approach is egalitarian from the philosophical perspective, and has been contested. For example, Paavola and Adger (2006) have argued that “distributive justice is unlikely to be able to provide a sufficient foundation for climate justice because of the heterogeneity of involved parties”. This is because distributive impacts can be exacerbated by procedural injustices when they lead to political disenfranchisement.
Chapter Two. Resource extraction and climate change: towards the conceptual framework (Paavola & Adger, 2006). There can inequitable access to resources, relative lack of access to environmental decision making and formal procedures of conflict resolution (Agyeman, 2005). Therefore, the pursuit of justice demands understanding that societal institutions benefit some while denying resources and rights to others. They suggest that procedural justice can be more informative for the understanding and design of climate change solutions. Social inequalities affect how vulnerable communities are less able to cope with the impacts of climate change (Paavola & Adger, 2002). Also, adaptation processes have the potential to exacerbate inequalities by creating winners and losers (Sovacool, 2018).

One of the significant discussions in justice philosophy is that the existing intellectual core centres on the Western philosophical tradition of justice, while many decisions and actions will be shaped at the local level, where other notions of justice and needs might exist. Scholars have increasingly argued that justice entails recognition of cultural and societal differences that prevent certain groups from participating in decisions that affect their lives meaningfully. Schlosberg (2009) argued that environmental justice needs to acknowledge which risks are to be addressed, as well as the concept of justice which can vary among different cultural groups. An ideal solution does not overlook studied people’s concerns. He suggests that it is the exclusion of Indigenous knowledge systems, including conceptualisations of nature, that is a form of cultural misrecognition. Recognitional element justice can mediate these injustices through the recognition of differences and cross-cultural communications. For example, Whiteman (2009) demonstrated how Indigenous Cree communities in the Canadian Arctic define justice as healing emerging from deep-seated beliefs of the interconnectedness of all life forms, drawing on individual and collective identity (Whiteman, 2009).

Recently, the idea of justice has been increasingly underpinned by the Sen’s approach. Amartya Sen argued that all people have the right for capabilities and opportunities in order to accomplish the goals they set for themselves (Sen, 2009). Forsyth (2014) suggests that understanding of justice based on Sen’s theory better grasps the adaptation challenge and has a potential to bridge the adaptation and mitigation divide. Therefore, he argued that environmental justice needs to acknowledge which risks are to be addressed, based
Chapter Two. Resource extraction and climate change: towards the conceptual framework on the inclusion of diverse values and priorities of vulnerable communities (according to the Sen’s theory) rather than addressing all concerns (according to Rawlsian theory).

Holland (2017) suggests that Sen’s approach to justice can assist in identifying political reforms and strategies that advance the interest of vulnerable populations. Schlosberg et al. (2017) analysed how public engagement can assist in the development of just processes and outcomes in adaptation. Based on a case study in Australia, they argued that there is “a discursive disconnect between the governmental focus on a risk or resilience-based approach and a community concern with the vulnerability of basic needs and capabilities of everyday life” (Schlosberg et al., 2017, p. 413). They suggest that it is deliberative engagement in adaptation planning that can help to address issues of justice.

In summary, an emerging focus in the climate change adaptation research is on the potential of climate change responses to effect socially equitable and environmentally sustainable change on the ground. So far, this lens has not been applied to regions exploited for resource extraction, where the existing social vulnerabilities and injustices can be aggravated by climate change impacts. In the following section, a conceptual framework will be developed to address this gap. It was suggested that climate change responses oriented at transformation (inclusive development and resource governance) rather than solely at strengthening resilience (technological and managerial adjustments) or transition (low-carbon development and institutional innovations) (according to the typology of Pelling, 2011) have a potential to minimise injustices found in resource extraction regions and minimise the risks of maladaptation (Magnan et al., 2016). An expansion of incremental adaptation towards transformation (Kates et al., 2012) is critical at a time when underlying power structures and processes continue to favour resource extraction around the world, whilst climate footprints grow, and uneven wealth distribution and exploitation of vulnerable communities and ecosystems keep rising (Gilberthorpe & Hilson, 2014; Martinez-Alier & Temper, 2007; White, 2013).

2.4 Just adaptation at resource frontiers

Climate change responses present opportunities for correcting inequalities that leave host communities vulnerable to the impacts of climate change and resource extraction. However, the specific features of resource extraction regions and resource politics can
present obstacles for adaptation (Bebbington et al., 2015). It is important to reveal these opportunities and obstacles, if maladaptation is to be avoided. The starting point is that climate change responses intersect with the development context and its politics (Eriksen et al., 2015; Naess et al., 2015; Nightingale, 2017). Accordingly, the framework draws on the academic traditions that advocate for the analysis of climate change responses that explicitly address political economic context. Particularly, scholarly work in the fields of human geography and political ecology has contributed important insights into the understanding of how environmental change and its outcomes are mediated through institutions, discourses and underlying power structures found in resource frontiers (Bebbington, 2015; Bridge, 2014; Watts, 2015) with implications for climate change initiatives (Hirons et al., 2014; Hulme, 2008; Sovacool, 2018; Taylor, 2015).

Building on the concepts and insights from these bodies of literature, the framework ‘just adaptation at resource frontiers’ is developed and suggested as a conceptual and exploratory framework for the analysis of this research. A target for just adaptation is to address the long-standing distributional, relational and recognitional injustices that resource extraction generates. It brings attention to the moral and ethics of resource extraction. Lertzman and Vredenburg (2005, p. 251) argued that “it is unethical to forfeit the viability of Indigenous cultures for the benefit of industrial extraction. Furthermore, it is ethical to engage with Indigenous peoples in a manner consistent with their wishes, cultures and means for survival as they determine these to be”.

The framework ‘just adaptation at resource frontiers’, discussed in detail below, integrates four strands of literature useful for understanding the socio-environmental and socio-political relationships implicated in the climate change responses in resource extraction regions that address justice. First refers to an inclusive debate about risks. The second strand examines the power and politics linked to resource extraction and how the political economy of extraction influences climate change governance. The third strand explores the participation of communities in resource projects and adaptation planning. The fourth strand emphasises collective action to effectuate change and political capabilities of vulnerable populations. Figure 2-4 demonstrates the four main strands of the framework, introduced below.
With regard to determining the theoretical character of just adaptation, scale is of particular relevance. Scale is a classic problem in political ecology and political geography literature (Perreault et al., 2015; Wilbanks & Kates, 1999), where it is both an empirical and epistemological tool of the understanding and representation of the world. The main idea is that there is a mismatch between the scales at which the problems of environmental issues are manifested and experienced and the scales at which they are produced and can be resolved (Williams, 1999). Therefore, the framework advocates for a cross-scale analysis of how regional and local processes interact with national and global scales.

### 2.4.1 An inclusive debate about risks

The first strand of the framework stresses that just adaptation requires an inclusive debate about which risks are to be prioritised (Forsyth, 2014). Recognition of the importance of protecting vulnerable communities unequally affected by the adverse impacts of climate change, resource extraction and their interactions necessitates understanding how risks are perceived ‘from below’ (Wilbanks & Kates, 1999) and what matters to local people (Birch, 2016; Cameron, 2012). A political ecology approach emphasises the importance of plural perspectives and narratives (Perreault et al., 2015).
Chapter Two. Resource extraction and climate change: towards the conceptual framework

The concept of risk can provide a valuable context-specific understanding of how certain environmental changes are experienced and the meanings they have among groups. Perceptions of risks can provide indications of the societal outcomes of double exposure to expanding extractive industries and the impacts of climate change. Risk results from harm and danger, but it is made meaningful by naming and responding to it (Dean, 1998). A relational approach to risk (Boholm & Corvellec, 2011) considers risk as emerging from situated events under certain circumstances and hinges upon what people value. It is an epistemic evaluative construct that describes a risk object in relation to another object (an object at risk) depending on what is known and believed about the relationship between them. In other words, risk is conceptualised as a social and cognitive act that connects a potentially harmful phenomenon to something of value. A risk object can include a natural phenomenon, a technology or behaviour that is seen as potentially harmful to something that has value. An object at risk could be livelihoods, nature or human health; these are endowed with value.

Perception of risks varies among individuals and communities, and the socio-cultural and the socio-economic factors underpin the differences. Past experiences of environmental change are important for understanding current and future adaptation because historical institutions affect people’s ability to adapt to change (Ribot, 2011; Tschakert, van Oort, et al., 2013). Karlsson and Bryceson (2016) argued that the history of livelihood change can enrich understanding of experienced risks. They analysed the processes of livelihood adaptation in two coastal communities in Belize over the last 180 years and found that global political and economic processes influenced the adaptive capacity for local livelihood strategies in diverse ways. An understanding of perceived risks of host communities is important because they can become drivers for climate change responses (Eisenstadt & West, 2016; Odell et al., 2018), that have a potential to contribute to greater justice (Forsyth, 2014).

2.4.2 Power and politics in resource frontiers

The framework focuses on the premise of just adaptation to recognise the intertwined biophysical and socio-political processes and already established institutions that shape adaptation needs (Eriksen & Lind, 2009). Here, adaptation becomes about “adjusting to entangled socio-political contestations, biophysical change, livelihood desires, struggles
Chapter Two. Resource extraction and climate change: towards the conceptual framework for authority to govern change, and desires for social and political recognition” (Nightingale, 2017, p. 12). Therefore, prior to the development and implementation of climate change responses, it is important to understand that any intervention includes realignments of power and politics. Bringing the relations of power and politics into the analysis of the potential of adaptation to contribute to greater justice in resource extraction regions points to how different actors claim legitimacy to govern changing socio-environmental and socio-political relationships.

It not always apparent whether actors will support and abide by initiatives. Also, any efforts can be exploited by interest groups that aim to benefit from interventions or oppose climate action (Bebbington et al., 2015). As Holland (2017, p. 404) states, polluters are powerful actors that “often take a defensive stance because a vulnerable community’s success will require pollution reductions that directly threaten corporate profits”. This shapes an incentive for polluters to oppose the interests of vulnerable communities for climate change initiatives (Patterson et al., 2018). Powerful stakeholders, moreover, ally with public officials to hold onto their power. Power is sustained through materialities that resource extraction generates (Rogers, 2012), as well as discourses related to the role of resource extraction in the developmental model and the dependence of a state or a region on extraction based activities (Bebbington & Bury, 2013).

Nightingale (2017) conceptualises the exercise of power and politics through struggles over authority and recognition. In this conceptualisation, the injustices are the outcomes of the exercise of power rather than an indication of power held. First, struggles for authority reflect the relational dynamic through which legitimacy is claimed and acknowledged. Authority refers to the capacity of institutions (states, companies, village communities, Indigenous groups, and others) to influence other social actors in governing change. It indicates that climate change responses are not mandated through policy; they are an outcome of contested socio-political relations. Second, the focus on recognition highlights the role of discourses and practices to claim legitimacy over resource extraction projects and climate change responses.

Three aspects of authority and recognition are relevant for just adaptation at resource frontiers: authorities and companies claiming legitimacy for resource projects (Pellegrino & Lodhia, 2012); citizens claiming their needs and rights fulfilled by governments and
other actors (Li, 2007); recognition for identity and different ways of knowing (Fraser, 2000). For example, climate change responses might create a false image that the regions are adequately adapting to risks and climate change; they are rather an opportunity for mining companies to augment their sustainability and responsibility performance and maintain their legitimacy. Challenged by the social licence to operate in a changing climate, the mining industry might employ a range of legitimising strategies. CSR is a strategy for the legitimacy seeking behaviours of the mining industry, as shown in the study of Hambach coal mine industry in Germany (Brock & Dunlap, 2018). Resource-based struggles commonly relate to issues over Indigenous and national sovereignty, distribution of rents and land use. Also, a development ideology of a state (Schilling-Vacaflor, 2017) and the resource-state nexus (Bridge, 2014) can influence corresponding managerial techniques.

2.4.3 Participation in resource projects and adaptation planning

The power of resource extraction also determines the patterns of participation in resource extraction projects (through jobs, benefits, consultations, negotiations, and other decision-making). Scholars have exposed the multitudinous ways in which resource extraction projects gain legitimacy and enter remote regions. For example, Bebbington and Bury (2013) identified that a range of strategies is entrenched in the struggles for authority: the discursive strategies, legislative strategies and the use of market mechanisms, an element of ‘the powers of exclusion’ (Hall et al., 2011). As a result, there is a clash of cultural norms, Indigenous values and traditional institutions, resulting in adverse impacts and conflicts (Curley, 2018). The differences in culture, values and institutions lead to common patterns of ‘exclusion’ of host communities from the effective participation in resource extraction projects.

Moreover, remote regions where resource extraction projects develop, and climate change impacts are experienced, are far from the centres of the state and corporate decision-making. At the local level, it is environmental planning, strategic planning and the programs of the CSR, where communities should be given an opportunity to exercise their voice and to articulate their interests. To highlight asymmetries in power, a relational justice approach to community-company relations can be suggested for the analysis (Gavidia & Kemp, 2017; Kemp et al., 2011). It is understood as the way the interactions
between companies and locally affected communities are formed and managed throughout time, “both in terms of how parties communicate their interests and the processes through which decisions are made” (Gavidia & Kemp, 2017, p. 79).

2.4.4 Collective action and capabilities

The fourth strand emphasises the roles of vulnerable communities and their agency to effectuate change. People are seen as active and reflexive agents in development planning and locally grounded adaptation, making ethical decisions about adjustments and transformations for their well-being. Resistance to resource extraction is shaped by the broader political economy (Geenen & Verweijen, 2017). In the absence of an effective response from the public and corporate sector, resistance evolves into overt collective actions. This transition and its outcomes can be understood by emphasising ‘capabilities’ in adaptation decisions (Schlosberg, 2012). Holland (2017) highlights the potential of the political capabilities approach, defined as having the political power to influence adaptation decisions. According to this approach, communities should have control over how they adapt and how decisions are made. A political capabilities approach emphasises conflicting expertise and stakeholder alliances as two features explaining the potential for vulnerable communities to develop and shape adaptation decisions (Holland, 2017).

2.5 Conclusion

The primary aim of this chapter was to expose the complex relationships between resource extraction and climate change and to conceptualise adaptation to climate change in regions exploited for resource extraction, with a focus on exploitation of oil. There has been a recent trend in climate change literature towards adaptation oriented at justice. This focus has not yet been explored in the context of resource extraction regions, and in this chapter a conceptual framework ‘just adaptation at resource frontiers’ has been developed for the exploratory empirical analysis to come later in the thesis. It entails a close look at why injustices exist and what mechanisms create and sustain them.

The framework ‘just adaptation at resource frontiers’ includes lines for research seeking to empirically analyse the past and current societal outcomes and governance challenges in resource extraction regions, to demonstrate the potential to address emerging risks, development needs, and to prevent maladaptive responses. The framework is placed
Chapter Two. Resource extraction and climate change: towards the conceptual framework within debates over the injustices implicated in double exposure to extractive industry expansion and the impacts of climate change (e.g., O'Rourke & Connolly, 2003; Thomas & Twyman, 2005), the future status of resource extraction in a climate-constrained world (e.g., Hirons et al., 2014; Odell et al., 2018; Phillips, 2016), political economy and political ecology of climate change adaptations (e.g., Eriksen et al., 2015; Nightingale, 2017; Taylor, 2015), and resource politics (e.g., Bridge, 2014; Watts, 2004).

Research on how climate change adaptation entrenches in addressing justice is a step forward in identifying pathways to more transformational adaptation in resource extraction regions. The justice perspective can provide the potential for synergies of adaptation, mitigation and development. Synergies lead to improving effectiveness and avoiding trade-offs (Thornton & Comberti, 2017). Moreover, this focus has the potential to increase the social acceptability and political feasibility of climate change responses (Patterson et al., 2018). Moreover, in the climate-constrained world, it is important to adopt a more far-reaching transformative approach to resource extraction. At the same time, there are potential costs of adaptation. The omission of local perspectives may render adaptation efforts inefficient and maladaptive, sometimes legitimising destructive activities from extraction (Magnan et al., 2016). Moreover, there can be unintended consequences of any interventions (Carey et al., 2012).

Before applying this conceptual framework to the empirical context of northern Russia, the following chapter will provide a background to the peoples, history and development of the region. The interrelations between oil extraction and climate change will be presented based on previous studies and relevant policy initiatives.
CHAPTER THREE Russia’s northern frontier in a changing climate

3.1 Introduction

This chapter provides empirical support to the argument that the oil extraction regions and host communities already are, and will continue to be, affected by the impacts of climate change and are implicated in climate change responses based on the example of northern Russia. It explores the literature on the Russian and Arctic studies across the disciplines as well as policy initiatives pertinent to the focus of the thesis. By doing so, the chapter establishes the background for case studies essential to guide the research design and data collection and analysis for the study.

The chapter begins with an introduction to the relationships between the exploitation of oil in Russia and climate change using the framework developed by Odell et al. (2018). Next, the chapter outlines the broader political economy context, including oil politics and climate change governance in Russia, that influences the nature of these relationships. Then, the implications of the relationships are described for the northern regions and peoples using the framing of double exposure (O'Brien & Leichenko, 2000). The chapter concludes with key points to inform the case study research and application of the framework developed in the previous chapter.

3.2 Russia’s oil industry and climate change

There are massive endowments of oil in Russia, constituting 6 per cent of the world’s proven oil reserves (OPEC, 2017). Russia produces annually twelve per cent of the world’s crude oil (ten million barrels per day, including five million barrels per day for export) (EIA, 2017). Russia’s oil sector accounts for 60 to 70 per cent of national export and constitutes 52 per cent of government revenues and 16 per cent of GDP (FSSS, 2017). Since the transition to a capitalist economy in the 1990s, oil-based development has helped Russia to achieve economic growth, decrease poverty and mitigate impacts of economic crises. However, this model has also been associated with vulnerability to global oil prices and slow development of other traditional (agriculture) and innovate
economic sectors, a sign of Dutch disease hypothesis. The main oil fields are concentrated in the North, Siberia, the Black and Caspian Sea region and offshore. See Appendix B, B–2 for information about the major oil fields and infrastructure networks.

The relationships between the exploitation of oil in Russia and climate change can be explained using the framework developed by Odell et al. (2018). As introduced in chapter two (section 2.2.2), the framework establishes six relationships: (1) resource extraction activity affects climate change; (2) climate change affects resource extraction activity; (3) their interaction results in intersecting impacts; (4) both climate change and resource extraction activity are affected by public policy and industry practice; (5) there are perceptions and responses that affect public policy and industry practice, and (6) these relationships are contextualised in the political economic context. The understanding of these relationships is useful to extract a set of key concerns for comprehending theoretical and practical challenges of climate change impacts and responses in Russia’s oil-rich regions.

(1) Oil extraction in Russia affects global climate change

Rich oil reserves and their extensive exploitation place Russia’s oil industry among significant contributors to global GHG emissions. Major emissions occur later in the lifecycle, when and where oil extracted in Russia is consumed domestically and internationally. On the oil production site, it is natural Associated Petroleum Gas (APG) flaring during extraction and processing that contributes to the emissions into the atmosphere. According to observations of APG flaring from space, Russia has the highest flaring rates in the world (more than 22,000 million cubic metres, about 1/7 of the world’s APG flaring). This leads to ecological, social and economic costs, and is particularly problematic given the global trends towards the transition to low-carbon development (Loe & Ladegaard, 2012).

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10 The Dutch disease hypothesis refers to the causal relationship between an increase in the economic development of one sector (for example, the oil industry) and a decline in other sectors (traditional export sectors) (Benedictow et al., 2013).
(2) Climate change affects oil extraction in Russia

The average temperature in Russia has increased at almost double the global average rate. According to the annual reports produced by the Roshydromet, the federal government body providing services in hydrometeorology, the average temperature increased by 1.29°C during the last one hundred years (figure 3-1), while global warming for the same period was 0.74°C (Roshydromet, 2017). Under different scenarios, Russia is predicted to experience mild climate change to radical changes. However, much of this remains unknown and uncertain.

![Figure 3-1. The average annual anomalies of air temperature averaged over the territory of Russia (1936–2016). Source: Roshydromet (2017).](image)

Climate change results in risks and opportunities for many of Russia’s economic sectors (NIC, 2009). There are two ways in which climate change may affect the exploitation of oil in Russia: oil operations are vulnerable to climate change and climate change open new areas for oil extraction. In the existing literature, the first way is linked to the impacts of permafrost thaw on existing and future infrastructure of the oil industry (Mazhitova et al., 2004). Permafrost is a distinct feature of northern Russia, covering almost 70 per cent of Russia’s land area (AMAP, 2012). When permafrost degrades, there are impacts on the integrity of landscapes, groundwater, river runoff, coastal areas, river banks, ecological systems (such as plants and ponds), and the release of carbon that has been sequestered in the frozen soil (AMAP, 2012). Pipelines and other infrastructures that have been designed without the anticipation of changing environment will be subject to failures, resulting in increased environmental pollution (Mazhitova et al., 2004). There
are specific concerns over increased risks of oil spills (onshore and offshore), a process by which oil and produced waters spill from pipelines or tankers leading to soil and water pollution (Hossain et al., 2016; Jernelöv, 2010).

Another challenge that exemplifies the first way refers to alterations in precipitation and seasonal anomalies which have been increasingly documented and observed in northern Russia (AMAP, 2012). In particular, water levels are projected to increase in the already water-abundant regions, resulting in increased natural river discharge (McClelland et al., 2004; Peterson et al., 2002). There are risks of the increasing frequency and severity of extreme weather events, including forest and peat fires, and abnormal flooding following spring debacle (Roshydromet, 2017). Both slow changes and extreme events could lead to infrastructure damage and disrupt oil extraction and transportation. The second way in which climate change affects the exploitation of oil in Russia is through opening new areas for extraction. Melting of Arctic sea ice is seen as opening access to territories and transportation routes previously inaccessible changing ideas about resource frontiers of the industry (Dittmer et al., 2011; Mager, 2009).

(3) Interaction of oil extraction and climate change results in impacts on ecosystems and host communities

There are numerous ways in which the impacts of resource extraction and climate change interact with each other, with implications for host ecosystems and communities. Several studies have highlighted concerns in this regard. For example, in the Arctic reduced snow cover facilitates the migration of species of plants and animals to the north, resulting in some areas of the tundra disappearing and the appearance of poor conditions for reindeer herding (Forbes et al., 2010; Forbes et al., 2016). Oil infrastructure (oil wells, pipelines, roads and sludges) results in an additional reduction in the area of available pastures and violates freedom of movement, which in the past allowed the herders to withstand climatic and other changes (Walker et al., 2010).

For example, autumn and winter rain-on-snow events have become more frequent and severe, sometimes leading to massive reindeer mortality (Forbes et al., 2016), adding additional stress on the ecosystems already stressed by environmental pollution from oil extraction and transportation (Kumpula et al., 2011). Many climate change and resource
extraction events are slow in nature but increasingly act as destabilising factors in fragile environments with consequences which will be felt for years to come (Forbes et al., 2016). Individually, each source of change can alter the structure and function of an ecosystem and aggravate livelihood security locally; but it is the intersecting impacts that are not yet well-understood in northern Russia.

(4) Both climate change and oil extraction in Russia are affected by public policy and industry practice

National and international public policy as well as industry practice affect the relationships between climate change and oil extraction (Odell et al., 2018). As outlined by Sharmina et al. (2013) climate change mitigation has entered the national regulatory agenda in Russia since the 2000s, although it was framed as an energy efficiency problem rather than a climate change problem as such. The Climate Doctrine\textsuperscript{12}, a strategic document of the declarational nature, was developed in 2009. Two years later, in 2011, the government approved the Climate Action Plan\textsuperscript{13}. The goal of these two policy documents was to build a base for actions oriented at the development of the institutional architecture and the organisational capacity to address climate change.

The main governmental department dealing with climate-related issues in Russia is the Federal Service for Hydrometeorology and Environmental Monitoring (Roshydromet), a part of the Federal Ministry of Natural Resources and Environment. Its function is climate monitoring and information provision. Other governmental agencies and ministries also contribute to the climate-related governance, including the Ministry for Affairs for Civil Defence, Emergencies and Elimination of Consequences of Natural Disasters, the Ministry of Energy, the Ministry of Finance, and the Ministry of Economic Development. In fact, issues arising from climate change require planning and policy initiatives across scales and departments. While climate change issues have been institutionalised at the national level, research indicates that the regional governments have not implemented climate change actions in their regional planning due to prioritisation of other areas of

concerns, a lack of knowledge and skills, and budget constraints (Johansen & Skryzhevskaya, 2013; Leppänen et al., 2015; Skryzhevskaya et al., 2015).

(5) Perceptions and responses affect public policy and oil extraction in Russia

What do climate change responses look like in a country like Russia? Sharmina et al. (2013) in their review of the literature argue that Russia has a pivotal role in influencing global climate change mitigation and adaptation due to its geographic, economic and political attributes. Russia has a significant mitigation potential and could play a lead role in international climate policy. However, Russia remains only a signature to the Paris Agreement. Currently, the country’s targets for emission reduction are not ambitious given they are calculated against the level of the 1990s (since then Russia experienced a significant decline in industrial activities and, therefore, emissions). Still, Russia’s INDC for the Paris Agreement have been classified as inadequate.\(^\text{14}\)

The economic recession of 2014–2017 made it easier to meet the annual emission targets without any mitigation actions (Sharmina et al., 2015). Russia could follow a more ambitious ‘fair share’ approach (Holz et al., 2018). In fact, Russia has many opportunities for securing a low-carbon climate-resilient future, including the potential to become a renewable energy exporter (Gorobets, 2015; Pristupa & Mol, 2015; Sharmina et al., 2015). However, few efforts have been made into the required innovations (Henry & Sundstrom, 2012). Russia has been positioning itself as a net winner from climate change (Poberezhskaya, 2014; Wilson Rowe, 2013). The government’s discourses refer to several factors. First, warming climate scenarios imply benefits for agriculture and economic development (Poberezhskaya, 2015). Second, a warmer climate means better access to the northern territories for shipping and resource extraction, as well as offshore drilling in the Arctic Ocean (Dittmer et al., 2011; Poberezhskaya, 2015).

Climate change has not been a priority for the Russian media and national science (Boussalis et al., 2016; Poberezhskaya, 2014, 2015, 2017; Wilson Rowe, 2012, 2013).

\(^{14}\) For example, Climate Action Tracker, an independent science-based assessment, which tracks the emission commitments and actions of countries, classifies the commitments of the RF as critically insufficient. Detailed analysis available at http://climateactiontracker.org/countries/russianfederation, accessed April 2, 2018.
Chapter Three. Russia’s northern frontier in a changing climate

The emerging empirical literature on perceptions of climate change in Russia demonstrates that local people are not engaged in the academic and political discourses, but rather demonstrate climate scepticism (see Graybill (2013) for a study of two rural communities in subarctic alpine Kamchatka).

No NGO is exclusively engaging with climate-related issues. Some of the organisations embrace these issues as part of their actions (for example, the Russian Socio-Ecological Union). The main factors that constrain the uptake of climate change agenda by NGOs are social distrust, the centralisation of power, long distances, limited budgets, and oppression by the government (Henry & Sundstrom, 2012; Tulaeva et al., 2018). NGOs also struggle with financial issues, little experience in framing and defending their interests, insufficient capacity and expertise, have low awareness of their rights and little trust in authorities (Sharmina et al., 2013). These are more immediate and pressing needs than climate change.

Resistance to the oil industry in Russia has been growing in recent years. For example, the Save Pechora Committee (SPC), a socioenvironmental movement in the Komi Republic, is an example of activism oriented at demanding better CSR (Mena & Waeger, 2014) rather than opposing the oil industry as such (Pierk & Tysiachniouk, 2016). In general, despite the presence of public debate about the oil industry, the influence of society on the oil exploitation in Russia has been minimal (Poussenkova & Overland, 2018).

(6) The political economic context.

The relationships presented above (1 to 5) exist within a broader political economy context (Odell et al., 2018). These relationships influence the political economy of resource extraction in Russia, and the later influences how these relationships unfold. These are explained in the next section.

3.3 Oil governance in Russia in a changing climate

The literature review indicates that the relationships between climate change and oil exploitation in Russia are implicated into national economic security, geopolitical relations, national identity, dynamics of economic and political instability and other
relationships of power. First, Russia’s oil industry is entangled in a rapidly developing low-carbon agenda among consumers of oil, and concerns over energy security in importing countries. In May 2017, the Russian President signed the Economic Security Strategy of the RF until 2030\textsuperscript{15}. This document is an instrument of strategic planning that serves for the realisation of national interests and economic development of Russia. The Strategy defines the threats to the Russian economic security, and among the main threats are the structural changes in the global demand for energy sources and the development of green technologies, including renewable energy and alternative energy sources, as well as depletion of the resource base\textsuperscript{16}.

This concern can be explained by the fact that oil revenues constitute an important pillar of the Russian economy. Dependence on oil revenues is likely to resist international and national responses that might constrain the oil industry, similarly to other fossil fuel-dependent economies. The Russian President Vladimir Putin annually highlights the importance of the transition from the ‘oil needle’, and resource extraction-based economy in general, encouraging modernisation and innovations. However, the tendency of the government to provide benefits to the oil companies brings to the conclusion that the Russian government has continued to prioritise short-term national priorities of development and profits over international climate commitments and climate change impacts on the country. Rather, the need to diversify the national economy is driven by its high vulnerability to oil price fluctuations and crowding out traditional export industries, as the econometric analysis shows (Benedictow et al., 2013).

The relationships between climate change and the oil sector are affected by economic insecurity. Since Russia’s turn to democracy and capitalism in 1991 (from the Soviet command economy), resource extraction has become a business model, filling the state budget with taxes and revenues, providing jobs and infrastructure to remote regions, and contributing to environmental degradation. Nowadays, a mixture of highly interconnected state-owned and privately held corporations dominates Russia’s extraction sector (Stephenson & Agnew, 2016). The last few decades have witnessed a number of policies


\textsuperscript{16} Ibid. Section II, para 12.
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oriented on nationalisation and integrations of oil and mining companies. Because of unsettled ownership structures, corporations dislike engaging in long-term strategies and investment planning and attach the value to the maximisation of short-term profit (Cameron, 2016). Economic instability has also implications for governance responses. In the study of Russia’s APG utilisation goals and their implementation, Loe and Ladehaug (2012) found that in Russia in the face of economic insecurity the authorities prioritise political stability at the expense of structural reforms and investments into reaching the APG utilisation targets.

Furthermore, understanding the relationships between climate change and Russia’s oil industry cannot be isolated from Russia’s geopolitical aspirations. Russia features resource nationalism, characterised by heightened state involvement in the oil sector, including its pipeline network (Domjan & Stone, 2010). Scholars classify Russia as having symptoms of ‘revolutionary resource nationalism’ (along with Venezuela and Mongolia) where the government through resource extraction projects aims to achieve certain political goals rather than purely economic (Bremmer & Johnston, 2009; Ganbold & Ali, 2017). The mega-projects, the Eastern Siberia–Pacific Ocean (ESPO) oil pipeline and the Power of Siberia gas pipeline, commissioned in 2012 and 2019 (expected) respectively, have been largely political projects to establish a partnership with China (Kaczmarski, 2016). Lacking technology and capital, Russian companies welcomed the participation of international companies in joint ventures (Aalto, 2016; Lee & Connolly, 2016). However, following 2014–2015 Ukraine crisis, sanctions limiting such participation has been increasingly endorsed by the European Union, the United States and other countries and international organisations. Western sanctions together with the decline of oil prices to below USD$50/barrel in the second part of the year 2015 have paused some of the Arctic projects, pushing Russia to accelerate cooperation with companies from Asia (particularly from China) (Wishnick, 2017).

Bouzarovski and Bassin (2011) argue that Russia is imagined to be a hydrocarbon superpower, implying that the discursive and material aspects of the oil and gas industry have mutually entangled resulting in an infrastructurally grounded vision of Russia’s national identity. Russia is indeed geographically located between some of the most populous regions of the world (Europe and East Asia), which themselves have lack of
hydrocarbon reserves. The legacies of the Soviet rule have resulted in infrastructure networks connecting remote regions of Russia to Eastern Europe; pipelines to Western Europe and Asia have been developing in more recent years (Bouzarovski & Bassin, 2011). Resource export also fills the Russian aspiration for the global status of Great Power (Rutland, 2015).

Sustaining the hydrocarbon superpower in a changing climate has implications for the quality of resource governance. Some argue that Russia amplifies the typical qualities of many resource extractive states, from Venezuela to Nigeria and Saudi Arabia. Rutland (2015) speculates defining the nature of Russia’s rule as a ‘petro-nation’, while Etkind (2014) sees symptoms of the ‘hyper-extractive state’. Such a state extracts the value directly from nature and distributes benefits among few (Etkind, 2014).

According to the 2017 Resource Governance Index\(^1\), Russia’s oil and gas sector ranks 50\(^{th}\) among 89 assessments. The findings state that Russia’s natural resource governance is consistently poor or weak (NRGI, 2017). In particular, the management and distribution of revenues, political instability, poor voice and poor control of corruption are of concern (NRGI, 2017). Indeed, the resource extraction sector in Russia generates wealth and employment, but also high inequality and environmental degradation (Buccellato & Mickiewicz, 2009). The role of corruption and criminalisation in the economic and political sphere is seen as another threat to economic security and can be seen as a deeply rooted institution of Russian governmentality, together with informal practices and power networks (Ledeneva, 2006).

Russia is a constitutional democracy, established in 1991 after eight decades of the Soviet rule. Russia bears a distinct political and economic context, as a result of complex transitions from the Soviet command economy to a market-based capitalism-oriented development. The transition resulted in the backwardness of the country. It embraced some aspects of neo-liberalism, however, remains strongly dominated by domestic

\(^1\) Resource Governance Index is developed by the Natural Resource Governance Institute. Report about Russia: Oil & Gas is available at [http://resourcegovernanceindex.org/country-profiles/RUS/oil-gas](http://resourcegovernanceindex.org/country-profiles/RUS/oil-gas), accessed April 2, 2018.
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interests and actors. Russia’s 1993 Constitution\textsuperscript{18} is the primary institution that guides state activities and created the modern formal rules that introduced its democratic credentials. In practice, however, under the rule of President Putin (2000–2008, 2012 to the present), democratic institutions remain fragile and underdeveloped (Sperling, 2018). It is an environment based on chaos in which institutions are fluid and uncertain, and rules tend to favour those in power (Holmes, 1997; Kinossian & Morgan, 2014; Lane, 2000; Robinson, 2001; Sil & Chen, 2004).

The characteristics of the Russian government have been attributed as hierarchical and distrustful with an autocratic leadership style, personal networking and informality (Butler & Purchase, 2004; Ledeneva, 2006; Michailova & Hutchings, 2006). Government is little constrained by public opinion and remains insulated from interests group beyond the Kremlin; there is a weak rule of law and institutional capacities are low; the vertical and horizontal fragmentation of the government is high; and hidden informal networks and practices dominate the decision-making (Henry & Sundstrom, 2012; Ledeneva, 2006). What keeps it together as a country is the symbolism of the ‘strong State’ (Gill, 2013).

The presidency of Putin has been largely focused on centralisation of power and authoritarian modernisation (Gel'man & Ryzhenkov, 2011). Federalism implies that regions can also be involved in law-making (Articles 5, 66, 71-73 and 76 of Constitution). There are two tiers of government in Russia. First is state government, that is exercised at the federal and regional levels, second is local self-governance exercised by municipalities See Appendix A for information on the institutional and political structure of the state and municipal government.

The Constitution of the RF acknowledges the right of self-determination of a nation in the form of a republic, a state within the RF. Republics enjoy some autonomy and were established in areas where cultural majorities are Indigenous or other groups of people. Challenges to the federalism model in Russia are minimal compared to other countries with similar modes of government (as for example, in Canada, where some forms of

Aboriginal self-government are considered a challenge to traditional conceptions of the federalism model (Prno & Slocombe, 2012).

Republics can have their Constitutions as an attribute of their statehood (Orttung et al., 2000). Republics have full state authority for their territories, except the functions that are under the responsibility of the federal authorities. Republics have control of their state ownership and its management, the guarantee of protection of rights and freedoms, participation in international relations, the organisation of municipal self-governance and the regional budget. The RF is not always in agreement with republics about the exercising of these competencies. Issues of ownership and use of land, subsoil and other natural resources are under the joint governance of the republic and the RF. According to the agreements of the power separation between the republics and the RF, the republics are in charge of the management of natural resources (establishing the order of use, its protection, quotas, licencing, rents and estimation of natural resources).

According to the Article 9 of the Constitution, land and other natural resources are used and protected by the RF as the basis for life and activities of its peoples. The Russian Constitution enabled the modern rules that govern the ownership and the access to subsurface (subsoil) resources. The subsoil resources are made accessible for exploration and extraction activities through the state function exempting licences.

In 2016, the federal geological fund (Rosgeolfond) contained information about 8,416 active mining licences for hydrocarbons and mineral resources (Rosgeolfond, 2018). In order to conduct operations under land, companies must apply for a licence to the Federal Agency for the Subsoil Use (Rosnedra), a government body of primary importance for resource extraction regulations. There are three types of licences: for geological survey, exploration and production. Subsoil resources, including underground space and contained minerals, energy and other resources, are state-owned19. State property implies that ownership and use of the subsoil resources are subject to federal and regional authority. When subsoil resources are extracted, the raw materials may be under the state

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ownership (federal and regional), municipal, or private according to the licence conditions.

### 3.4 Northern frontier under double exposure

The imaginary of melting of the Arctic has been powerful for the conceptualisation of the rush for its natural resources (Dittmer et al., 2011; Harsem et al., 2011). Over the recent decades, various development initiatives, including oil and gas extraction and transportation projects, have been prioritised for the development of the territories of the Arctic, Siberia and the Far East, including the Russian territorial waters of the Arctic and the Pacific oceans. These remote northern regions have for a long time been imagined and managed by the Russian (and previously the Soviet) government as extraction-oriented landscapes (Bradshaw, 1995). Exploration and extraction of hydrocarbons, coal and other minerals continue to expand because the production from traditional production areas in Western Siberia has begun to decline, and demand grows from the national economy and international markets (Bradshaw, 2013; Kalashnikov et al., 2011). The race for increasing oil production coincides with the problems of low-quality oil reserves, increasing exhaustion of existing oil fields and geopolitical challenges. Yet, northern Russia continue to be home to many groups of Indigenous and rural people who continue to rely on the northern ecosystems for their livelihoods and culture (see map 3-1).

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20 For example, this is highlighted by the Union of Oil and Gas Producers of Russia, founded to protect and represent corporate interests in executive and legislative authorities domestically and abroad. A recent report of its President is available at [http://www.sngpr.ru/tribune.php](http://www.sngpr.ru/tribune.php) (in Russian), accessed April 2, 2018.
Map 3-1. Indigenous peoples of the North, Siberia and the Far East of the RF according to language families and self-identification.

Source: Dallmann (2005).
There are broadly 10 million people inhabiting northern Russia today (in 2010 there were 142.9 million people in Russia (Census, 2010)). Among them 240,000 people are identified as “Indigenous small-numbered peoples of the North, Siberia and the Far East” (korennye malochislennye narody Severa, Sibiri i Dal’nego Vostoka, KMNS). Forty of forty-seven Indigenous groups in Russia are currently included in the official list of KMNS. According to the federal law21, a group to be qualified as KMNS should not exceed 50,000 people, should be living in the territories of their ancestors, preserving a traditional way of life and self-identifying themselves as self-supporting ethnic communities. More numerous Indigenous peoples do not match the criteria, and thus are unrecognised officially as KMNS. This is the case with Komi, Yakut and other ethnic groups (Zadorin, 2013).

There are important differences across this vast region in geography, history, ecology, livelihood opportunities, access to infrastructure and political representations (Schweitzer, 2000). For example, the most northern parts of Russia, tundra landscapes, are dominated by nomadic reindeer herding; while people in the sub-Arctic, the more southern parts of forest-tundra and forest, practice more mixed livelihoods of semi-nomadic forest reindeer herding, small-scale agriculture and pastoralism. However, there are characteristics that are shared across northern Russia. Throughout history, Indigenous and rural people of the Russian north have demonstrated adaptation to changing socio-cultural and socio-political conditions (Forbes et al., 2009; Stammler-Gossmann, 2012).

During the 16th and 17th centuries, the flow of Russian colonisation into the North penetrated deeply into the northern lands (Forsyth, 1994). Russians settled in Siberia and embarked upon extraction and export of fur, wood and gold to the European part of Russia. There are different accounts on the history, but the Russian colonisation and conquest of Indigenous lands can be compared to the European colonisation, with similar unethical strategies and negative impacts (Forsyth, 1994).

After the Revolution of 1917, the Soviet Union was established and the processes of dekulakisation\textsuperscript{22} (1929-1932), collectivization\textsuperscript{23} (1922-1937), World War II (1941-1945), industrialisation (the 1970s), and GULAGs\textsuperscript{24} profoundly influenced Indigenous and rural communities in complex ways. The system of subsistence-oriented reindeer herding, and related livelihood activities, was transformed into large-scale production-oriented entities. The state was taking care of villages through the supply of products, fuels and machinery to maintain production. At the same time, the northern territory was exploited for its resources, for example through nuclear explosions for the military (as in Novaya Zemlya) and developmental purposes (as in Yakutia) (Fujita, 1995).

A next profound change is linked to the dissolution of the Soviet Union in 1991. During the transition period to a market economy, kolkhozes were abolished, opening opportunities for development of private enterprises and farms. The reforms failed to provide growth, and there was an economic and social collapse. For example, the reindeer herding economy of Indigenous peoples went into a deep recession (Krupnik, 2000).

The period from 2000 to the present is characterised by the search for a new system for subsistence livelihoods and trade that has more-than-economic functioning: not large scale and income-oriented, but smaller scale agriculture cooperatives that incorporate the elements of traditional social orders (Vladimirova, 2017). Such entities provide social and economic security, and are at the cultural and symbolic core of communities (Vladimirova, 2017). However, sustaining these entities often requires operating on ‘black market’ since there is a lack of formal recognition of land and marine tenure and resulting usurpation of Indigenous rights for traditional livelihoods (Thornton & Mamontova, 2017). The socio-economic reorganisation has been as a way for rural and Indigenous people to claim confidence in a modern globalising neoliberal world.

\textsuperscript{22} the Soviet campaign of political repressions, including arrests, deportations, and executions of the better-off peasants and their families in 1929–1932.
\textsuperscript{23} the collectivization of the agricultural sector as the solution to increased demand for food, raw materials and export. The system of collective farms, kolkhoz, has been established across Russia agriculture lands, that spread out to reindeer herding, fishing, hunting and trapping. They were transformed into large-scale, production-oriented entities accompanied by the establishment of permanent settlements and compulsory school education.
\textsuperscript{24} The GULAG (Gosudarstvennoe upravlenie lagerei, State Administration of Camps) was the Soviet system of incarceration and internal exile.
Today, being recognised as KMNS provides certain rights in the access to and use of natural resources, government transfer payments, and compensations for disturbance to traditional land use (Tysiachniouk et al., 2018b). The rights are primarily regulated by the laws introduced at the turn of the millennium. These laws include: On Guarantees of the Rights of Indigenous Peoples of the Russian Federation (1999); On the General Principles of the Organisation of the Obschinas of Indigenous Small-Numbered Peoples of the North, Siberia and the Far East (2000); and On the Territories of the Traditional Natural Resource Use of the Indigenous Small-Numbered Peoples of the North, Siberia and Far East (2001).

These laws provided a legislative framework for Indigenous communities to form rodovaya obschinas (a tribal commune, a clan). An obschina is an economic-social entity that preserves a self-supporting traditional way of life and is autonomous in taking economic and social decisions. This unit of organisation enables Indigenous groups to receive an allocation of land. The lands are not owned by the Indigenous minorities, but rather leased to obschinas by the state or municipal authorities for exercising traditional natural resource use. They can overlap with areas designated for “territories of traditional natural resource use” (territoriya tradtsionnogo prirodopol’zovaniya, TTP), another formal mechanism to facilitate protection of traditional livelihoods. A critical problem for Indigenous communities in Russia is an inflexible system of quotas for natural resources, an absence of property rights to land for Indigenous communities, and the unclear procedure for an Indigenous person to obtain the official status of belonging to KMNS (Tulaeva, 2014).

In the recent years there have been a growing number of studies that signal of adverse impacts of climate change on livelihoods and settlements of northern Indigenous and rural communities (Krupnik & Jolly, 2002). Stammler-Gossmann (2012), Crate (2018) and Fujiwara (2018) describe experiences of floods by Sakha people in villages in Yakutia, Ksenofontov et al. (2017) document altering patterns of fishing by Even communities in northern Yakutia, Forbes et al. (2016) explain the effects of rain-on-snow events on the livelihoods of the Nenets reindeer herders. At the same time, there are many other pressing issues on the ground, such as the supply of basic goods and services, language
and culture loss, and the impacts of industrial development and resource extraction (Forbes & Stammler, 2009).

Resource extraction brings transformational changes to remote Indigenous communities that require their proactive engagement and participation in the planning and management on their lands. Free, Prior and Informed Consent (FPIC) is a specific right to Indigenous peoples recognised in international law, including the International Labour Organization (ILO) Convention 169 on Indigenous and Tribal Peoples25 (ILO, 1989; Articles 6, 7, 16, 22) and the United Nations Declaration on the Rights of Indigenous Peoples26 (UNDRIP, 2007; Articles 11, 19, 28, 29). The FPIC “allows them to give or withhold consent to a project that may affect them or their territories” (FAO, 2016, p. 13). The FPIC principle establishes a bottom-up approach to participation and consultation for an Indigenous population preceding a development on land or using resources within their ancestral territory.

Russia has not ratified the ILO Convention 169, and currently there is no legal or other obligation to follow the FPIC processes. However, other legislation provides a means of participation in planning, for example, the regulations related to environmental impact assessment (EIA). EIA is a process for evaluating the effects of a proposed project, plan or activity on the environment, requiring public participation. In Russia, EIA is known as Оценка воздействия на окружающую среду (OVOS). It is required prior to the commencement of environmentally hazardous activities that have a significant environmental and economic impact, including the oil-industry related activities (Koeppel & Kovalev, 2003).

Additionally, the Russian legislation27 establishes the prerequisites for the assessment of socio-cultural impacts of proposed projects on the lands used for traditional natural

resource use by Indigenous peoples. In Russia, this assessment is known as *etnologicheskaya ekspertiza*, having several variations in the English-language literature: anthropological expert review, ethnological expert review, and ethnoecological assessment. In 2017, the Republic of Sakha (Yakutia) was the only region in Russia where the application of *etnologicheskaya ekspertiza* has been institutionalised.\(^{28}\)

A growing number of studies provide evidence that resource extraction activities across the northern regions have had, and will continue to profoundly affect the lives of Indigenous peoples (Dale et al., 2018). The co-existence of resource extraction and subsistence-based livelihoods of Indigenous and rural communities has become a reality for many localities across the north (Crate, 2002; Kumpula et al., 2011; Stammler & Wilson, 2006). In some areas, they provide employment opportunities and provision of infrastructure under the programs of CSR (Stammler & Peskov, 2008; Tysiachiouk & Petrov, 2018). At the same time, scientists have identified extensive negative environmental impacts from past extractive activities, including landscape fragmentation, land cover changes, soil, water and air pollution (Chevychelov & Kuznetsova, 2016; Walker, Crittenden, et al., 2006; Walker, Habeck, et al., 2006). Extraction of resources has affected traditional livelihoods and health of population groups and created land use conflicts (Dallmann et al., 2011; Habeck, 2002; Yakovleva, 2011). Additionally, there are many shortcomings in the current legislation and procedures in place in relation to land issues, participation in planning, EIA and consultations, compensations and benefits, communication and transparency (Crate, 2002; Yakovleva, 2011). There are important equity and justice concerns entrenched in the distribution of benefits and impacts of extractive projects (Tysiachiouk et al., 2018a), as well as in the recognition of the rights and access to participation in resource development (Shaw, 2017).

The Russian Association of Indigenous Peoples of the North (RAIPON) is the main organisation that defends the rights of Indigenous peoples and represents their interests. RAIPON was suspended by the Russian government in 2012, and later reinstated with an enforced change in leadership and priorities (Balzer, 2016). Despite political pressure,

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RAIPON continues to be the most organised and viable group to protect Indigenous peoples’ rights (Balzer, 2016). Emerging studies show that resistance to resource extraction in northern regions is emerging, with communities contesting development with protests and other actions (Balzer, 2016; Pierk & Tysiachniouk, 2016; Stammler & Ivanova, 2016).

3.5 Conclusion

This chapter identified the existing and potential relationships between expanding onshore and offshore oil industry in northern Russia and climate change. The need for more research on remote regions of Russia, including on the implications of double exposure for northern Indigenous and rural populations, is both clear and urgent. Furthermore, this chapter demonstrated the importance of placing these implications within the political economy context of resource and climate governance in Russia. This is an underdeveloped area of study, which this thesis will contribute to. The following chapter explains the methodology employed in this thesis to address this need.
CHAPTER FOUR Methodology

4.1 Introduction

As presented in chapter one, the aim of this study is to explore the potential of climate change adaptation to assist the development of more equitable processes and outcomes for communities that host resource extraction projects based on the empirical cases in northern Russia. The research design includes developing a conceptual framework to identify this potential, gathering and analysing empirical data, and embedding the findings within the research background to advance the conceptual framework. According to the aim and the design of the study, this chapter describes the approach to case study and outlines specific methods of data collection and analysis. The following section explains how the research has been operationalised through an embedded multi-site case study approach, informing on information needs and the design for case studies and units of analysis. Second, the cases are introduced with considerations of their comparability and field workability. Third, the methods of data collection and analysis are detailed for each RQ, including the sources of data, specific activities during the fieldwork and desktop research, and the strategies of data analysis. Finally, the researcher's positionality in relation to the study, limitations and ethical considerations are presented, explaining how they have influenced methodological choices and the focus of the overall study.

4.2 Information needs, design for case studies and units of analysis

Research questions and the conceptual framework ‘just adaptation at resource frontiers’ constructed in the previous chapters define the study’s information needs. To be specific, the first RQ (and the first strand of the framework) focuses on community experiences of intersecting impacts of resource extraction and climate change and their societal outcomes. Perceptions of community members and observations are required to answer this question. The second RQ (and the second strand of the framework) points to the need to consider the importance of resource extraction activity for regional development and to evaluate its status in the context of climate change impacts and policies. This requires access to the entire change of actors — decision makers and practitioners from both
government institutions and corporations — to understand the dynamics of extractive industrial development and the relationships between the state, the regions and resources. The influence of federal and international players cannot be ignored, with reference to geopolitics related to resource extraction projects. The third RQ (and the third strand of the framework) concerns with the participation of affected communities in resource extraction projects, in adaptation plans and in decision-making around them. This necessitates an understanding of communities’ experiences of inclusion and exclusion from specific projects at the local level. The fourth RQ (and the fourth strand of the framework) involves an understanding the roles of socioenvironmental movements and Indigenous groups in resisting the business-as-usual of resource extraction. This involves understanding the evolution of the movements and other groups, and their capabilities to influence adaptation decisions.

The research design that speaks to experiences and outcomes at the local level and to socio-political dynamics across scales necessitates an embedded case study approach (Yin, 2014). Additionally, design for multiple case studies is central to the theoretical conceptualisation of the framework due to multiple representations of phenomena (Yin, 2014). Figure 4-1 illustrates how four local cases — the Pechora River valley (KR1), the Bolshezemelskaya tundra (KR2), the Aldan plateau (SR1) and the Indigirka River delta (SR2) — are embedded within two regional cases — the Komi Republic (KR) and the Sakha Republic (SR).

![Figure 4-1. Design for embedded multi-site case study approach.](source: adopted from Yin (2014))
The case study selection should be relevant to phenomena of interest, should focus on research questions and a conceptual framework, produce believable descriptions and explanations, enable the generalizability of findings and be accessible, feasible and ethical (Yin, 2014). The two regional cases and the four local cases were selected for a variety of reasons.

Two northern Russian regions, the Komi Republic and the Sakha Republic, were purposively selected as regional cases for studying socio-political dynamics surrounding resource extraction in the face of climate change and a changing global economy. The choice of Komi was mainly supported by personal experiences of the researcher of living and working in the region, her knowledge about the case and the networks with local and regional institutions and communities. Yakutia was chosen as it has been commonly associated with the advanced governance of extractive industries and Indigenous rights in Russia (Stammler & Ivanova, 2016). The specific features that make these regions suitable for a comparative enquiry in this study are introduced below.

Four local cases, two in Komi and two in Yakutia, represent one of the key focuses of the study: the expansion of resource extraction and climate change impacts create the premises for their dynamic spatial interactions with the intersecting impacts on communities and ecosystems. The cases have been selected for potential impacts of climate change based on a review of academic literature, media, reports of the government and NGOs, the knowledge of the researcher and consultations with representatives of the Russian Association of Indigenous peoples of the North, Siberia and the Far East. The cases selected have also been affected by projects related to exploitation of crude oil in 2015. Additionally, the cases had to be accessible to the researcher with regard to logistics and security (these are discussed in detail below). Given these requirements, four local cases were selected for the analysis: the Pechora River valley (KR1), the Bolshezemelskaya tundra (KR2), the Aldan plateau (SR1) and the Indigirka River delta (SR2). Similarly to regional cases, the specific aspects of the local cases are provided below.

The thesis’s information needs and design for case studies determine units of analysis. A unit of analysis is defined as a context-specific choice about the major entity to be analysed in a study (Bryman, 2015). The research design requires two units of analysis:
unit of analysis I (UA I) refers to the experiences and perceptions of environmental change by communities across local cases. It primarily informs RQ 1; unit of analysis II (UA II) applies to relations between local communities, NGOs, representatives of different scales of government and resource firms, to be explored in RQs 2, 3 and 4. Table 4-1 illustrates how UAs are related to RQs and the strands of the conceptual framework developed in chapter two.

**Table 4-1. Units of analysis**

<table>
<thead>
<tr>
<th>Research Questions</th>
<th>Related strands of the conceptual framework</th>
<th>Units of analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>RQ 1</td>
<td>Risks from environmental change and societal outcomes of double exposure</td>
<td>UA I</td>
</tr>
<tr>
<td>RQ 2</td>
<td>Political ecology of adaptation</td>
<td>UA II</td>
</tr>
<tr>
<td>RQ 3</td>
<td>Resource governance</td>
<td>UA II</td>
</tr>
<tr>
<td>RQ 4</td>
<td>Participation in resource projects and adaptation planning</td>
<td>UA II</td>
</tr>
<tr>
<td>RQ 5</td>
<td>Collective action and political capabilities</td>
<td>UA II</td>
</tr>
</tbody>
</table>

Figure 4-2 presents that the research design is the same across the regional and local cases in light of the same research questions, as advised by Mills et al. (2009).

*Source: adopted from Yin (2014).*
4.3 Introduction to regional and local cases

This section provides the background to regional and local cases, drawing on available scholarly and secondary literature. The main features of the cases are presented in comparison in tables 4-2, 4-3 and 4-4, to identify their comparability for the analysis. Map 4-1 indicates the locations of the two regional cases and the four local cases in Russia, as well as the federal and regional administrative boundaries and capitals.

Map 4-1. Case study sites.


4.3.1 Governance and extractive industry context in Komi and Yakutia

The Komi Republic (capital Syktyvkar) is situated in north-western Russia covering 417 thousand square kilometres. The SR (capital Yakutsk), the largest administrative-territorial unit in the world (slightly less than half of Australia), has a territory over 3,000 thousand square kilometres in the north-eastern Siberia, with more than 40 per cent of its territory lying above the Arctic Circle. The main characteristics of the two regions are presented in table 4-2. First, the regions have been established in the 1920s-1930s as

The political status of Crimea, a peninsula on the northern coast of the Black Sea, is the subject of a territorial dispute between Ukraine and Russia.
Chapter Four. Methodology

republics — multi-ethnic states within the RF, representing Indigenous peoples and other ethnic groups that inhabit their territories. They adopted Constitutions to legitimise their relative autonomy within the RF after the dissolution of the Soviet Union in 1991 (Orttung et al., 2000).

Table 4-2. Summary characteristics of regional cases

<table>
<thead>
<tr>
<th>Territory, thousand square kilometres</th>
<th>The Komi Republic</th>
<th>The Sakha Republic</th>
</tr>
</thead>
<tbody>
<tr>
<td>416.7</td>
<td>3103.2</td>
<td></td>
</tr>
</tbody>
</table>

| Population, people (2017) | 850,554 (est.) | 962,835 (est.) |


<table>
<thead>
<tr>
<th>Gross Regional Product (2017) - Per person</th>
<th>RUB 523,211 million (USD 8,500 million)</th>
<th>RUB 868,607 million (USD 14,100 million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUB 615,141 (USD 10,000)</td>
<td>RUB 902,134 (USD 15,000)</td>
<td></td>
</tr>
</tbody>
</table>


Second, in both Komi and Yakutia, the landscapes, remote and cold, but endowed with rich subsoil resources, have been transformed by parallel economic and political histories into spaces of hydrocarbons and minerals extraction, processing, transportation and abandonment (Rogers, 2015) (table 4-3). Komi has largely been a base for oil, gas and coal extraction (also forestry) over last 80 years, with future developments focused on the deeper exploitation of deposits where most accessible materials have been mined out (Borozinets et al., 2004).
The major oil extraction area in Komi is the Timan-Pechora oil and gas province with mature high-density oil fields around the production centre in Usinsk (Borozinets et al., 2004). The province’s known reserves contain more than 16 billion barrels of oil, constituting the third most important oil-producing region in Russia (Schenk et al., 2008). More than 230 oil fields and 5,400 oil wells have been developed since industrial-scale oil production began in the 1970s (Schenk et al., 2008). Black coal is mined for the regional and national metallurgical and energy production purposes, while crude oil and natural gas are exported to central Russia and to Europe via pipelines and ships (Borozinets et al., 2004).

Yakutia has hosted an expanding range of mineral (diamonds, gold, uranium, iron ore, tin, etc.) since the 1930s, but industrial oil was first exploited only in the 1970s. Oil and gas are concentrated in the Nepa-Botuobiya oil and gas province and the Angara-Lena oil and gas province. Major transportation infrastructure for oil includes the ESPO oil pipeline operated by Transneft. Rosneft, the major Russian state oil company, is prospecting for oil in the Eastern-Siberian Sea, rendering exploitation of Arctic offshore oil a new frontier for Yakutia.

Therefore, Komi and Yakutia are two geographically distinct regions with various cultural, economic, political and social constituents. However, these regions make good
comparators, given that they represent broadly similar governance and extractive industry context.

4.3.2 Local cases and premises for double exposure

This sub-section introduces four local cases. It describes main characteristics of population and settlements, outlines resource extraction activities and oil projects targeted for the analysis, explains key climate change impacts and identifies premises for the intersecting impacts of oil extraction and climate change. These characteristics are summarised in table 4-4.

The Pechora River valley (KRI)

The Pechora River valley is remotely located in the northern part of the Komi Republic to the west of the Ural Mountains (see map 4-1). Komi and Komi-Izhma people are Indigenous to the area, with Komi-Izhma people demanding official recognition of their status as KMNS (Donahoe et al., 2008; Jin et al., 2015; Zadorin, 2013). Their rural economy is based on semi-nomadic reindeer herding (using the brigade system) and cattle breeding; fishing, hunting and gathering of mushrooms and berries are related livelihood activities (Dwyer & Istomin, 2009; Habeck, 2005). Villages included in this study are Shelyaur (Izhma rayon), Shelyabozh, Ust’-Usa and Kolva (Usinsk town district).

The oil industry has been established in Usinsk town district (part of the Timan-Pechora oil and gas province) since the 1970s (Borozinets et al., 2004); it is where a significant land oil spill occurred in 1994 (EJAtlas, 1994). Extensive environmental pollution in the Usinsk oil fields was documented in the area (Walker et al., 2009; Walker, Crittenden, et al., 2006). Since the 2000s, the industry has entered the Izhma rayon, where Komi-Izhma and Komi people have an established presence. In the last years, protests occurred in the rural areas demanding greater social and environmental responsibility (Pierk & Tysiachniouk, 2016). At the same time, local people have been increasingly negotiating their relations with the oil industry (Tysiachniouk et al., 2018b; Wilson, 2015). The specific oil fields included in the study are Shelyaurskoe and Uzhno-Sedmesskoe operated by Lukoil-Komi.
Table 4-4. Summary characteristics of local cases

<table>
<thead>
<tr>
<th>Population and livelihoods characteristics</th>
<th>KR1</th>
<th>KR2</th>
<th>SR1</th>
<th>SR2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Self-identification and official recognition as KMNS</strong>&lt;sup&gt;31&lt;/sup&gt;</td>
<td>Komi-Izhma, no status of KMNS, but claims have been made. Recognised as Indigenous internationally (Zadorin, 2013) Komi, no status of KMNS, Recognised as Indigenous peoples internationally</td>
<td>Nenets, status of KMNS</td>
<td>Evenks, status of KMNS</td>
<td>Russkoystintsy, no status of KMNS, but guarantees of the rights of KMNS extended at the republic’s level (Zadorin et al., 2017) Evens, status of KMNS Sakha, no status of KMNS, Recognised as Indigenous peoples internationally</td>
</tr>
<tr>
<td><strong>Livelihood activities and settlement type</strong></td>
<td>There are agriculture production cooperatives (semi-nomadic reindeer herding based on the brigade system) and peasant (farming) units for cattle breeding (cows, horses, pigs). Subsistence and recreational hunting (ducks, geese, bear, moose), fishing (salmon, omul, Siberian whitefish, arctic char, and others) and gathering (mushrooms, berries) (Sharapov &amp; Shabayev, 2011). Majority of the population reside in villages with some roads</td>
<td>Nomadic tundra reindeer herding is essential livelihood activity, complemented with fishing. Nomadic reindeer herders are organised in obschinas and production units. Reindeer meat and other products are for subsistence and are partially traded (Golovnev &amp; Osherenko, 1999). There are no settlements where Nenets people reside permanently. One industrial road.</td>
<td>Primary livelihood activity of the Evenks is forest reindeer herding complemented with fishing (sturgeon), hunting (sable, ducks, geese, wild deer, wolves) and gathering (mushrooms, berries). Established obschinas and agriculture production units (Yakovleva, 2011). Have a base in rural locations, connected by roads (winter roads in winter).</td>
<td>Main livelihood activities are centred on fishing for subsistence and trade (broad whitefish, omul, char). Fishers are organised in obschinas and agriculture production units. Additionally, products of trapping and hunting supplement the diet. Evens in Olenegorsk practised reindeer herding in the past (Ksenofontov et al., 2017; Vakhtin et al., 2004). Very remote settlements at a considerable distance from each other, with no roads (in winter zimniki are used).</td>
</tr>
</tbody>
</table>

---

Chapter Four. Methodology

<table>
<thead>
<tr>
<th>Villages for this study (human population in 2010) (Census, 2010; KomiStat, 2017)</th>
<th>KR1</th>
<th>KR2</th>
<th>SR1</th>
<th>SR2</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Resource extraction and projects targeted for the analysis</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Resource extraction in the area</td>
<td>Oil (onshore) exploration and extraction</td>
<td>Oil and gas (onshore and offshore in the Kara Sea), coal (underground)</td>
<td>Oil and gas transportation, gold and coal (underground)</td>
<td>Oil (offshore) exploration</td>
</tr>
<tr>
<td>Focus of case study</td>
<td>Onshore oil exploration and extraction by Lukoil-Komi in oil fields Shelyaurskoe Makaryelskoe, and Uzhno-Sedmesskoe (Rosgeolond, 2018)</td>
<td>Onshore oil exploration by Shell NefteGas Development (since January 2017 by Syryaga NefteGas Development) in Severo-Vorkutinsky-1 (licence SYK02339NP, re-registered as SYK02602NP until May 2019) and Severo-Vorkutinsky-2 oil fields (licence SYK02474NP, re-registered as SYK16320NP until June 2021) (Rosgeolond, 2018)</td>
<td>Construction and exploitation of oil infrastructure ESPO-1 and ESPO-2 by Transneft-Vostok</td>
<td>Offshore oil exploration and extraction by Rosneft in Vostochno-Sibirsky-1 oil field (licence SHVS16342NR until 2043) (Rosgeolond, 2018)</td>
</tr>
<tr>
<td>Environmental and social impacts of resource extraction</td>
<td>Extensive pollution with oil and oil products (Walker, Crittenden, et al., 2006; Walker, Habeck, et al., 2006)</td>
<td>Tundra ecosystems are negatively affected by linear oil and gas infrastructure, movement of vehicles in</td>
<td>Cutting down the forest, land disturbance, the impact of river crossings on fish, noise pollution, impact on</td>
<td>-</td>
</tr>
</tbody>
</table>
documented in previous studies

<table>
<thead>
<tr>
<th>KR1</th>
<th>KR2</th>
<th>SR1</th>
<th>SR2</th>
</tr>
</thead>
<tbody>
<tr>
<td>tundra, dust and sand, workers. The impacts result in land cover change and have adverse implications for nomadic reindeer herding of the Nenets people (Forbes et al., 2009; Henry et al., 2014; Kumpula et al., 2010; Kumpula et al., 2011)</td>
<td>animal migration, poaching (Yakovleva, 2011, 2014)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Natural environment

| Biome and geography | Taiga, villages are located along the riverbanks | Tundra, proximity to the Kara Sea and the Ural Mountains | Taiga, fluvial spring flooding affected Khatystyr village in the past (Fujiwara, 2018) | Tundra, proximity to the sea. Villages are located along the riverbanks |
| Key climate change and other environmental impacts (now and projected) | Increase in temperature; Changing precipitation patterns; Increased river discharge and fluvial flooding (McClelland et al., 2004); Permafrost thaw (Mazhitova et al., 2004) | Increase in temperature; Permafrost thaw; Grasses replace shrubs (Kumpula et al., 2011); Sea ice retreat and thinning; Rain-on-snow events (Forbes et al., 2016) | A decrease in snow cover; An increase in the intensity and duration of large floods (Fujiwara, 2018) | Increase in temperature; Altered seasonality; Weather unpredictability; Altered ice conditions and freeze periods; Change of wind direction and strength Warmer waters; Low water levels; Impact on fisheries (changes in fish species and parasitic infections) Erosion (Ksenofontov et al., 2017) |

Source: table compiled by the author from multiple sources.
Specific concerns over the impacts of climate change for the area include trends of significant increase in the Pechora River discharge, most likely due to the increased new atmospheric moisture (McClelland et al., 2004). These dynamics can lead to dramatic changes in patterns of flooding, freezing and thawing (McClelland et al., 2004). Other anticipated impacts include permafrost thawing and erosion, creating premises for the failures in social and industrial infrastructure (Mazhitova et al., 2004).

*The Bolshezemelskaya tundra (KR2)*

The Bolshezemelskaya tundra is a vast low-land area (1,660 square kilometres) bounded by the Pechora River in the south-west, the Ural Mountains in the east and the Arctic Ocean in the north (see map 4-1). It forms a wetland ecosystem with no trees, and sporadic and discontinuous permafrost. This area has been supporting subsistence-oriented livelihoods of Nenets Indigenous peoples for centuries, if not millennia (Istomin & Habeck, 2016). Nenets people follow the reindeer across the tundra in communities of extended families, currently organised as *obschinas*, as a part of cooperatives or on their own (Forbes et al., 2016). Local subsistence practices strongly depend on the tundra for herding animals and the harvest of local resources, constituting a unique resilient body of cultural and traditional knowledge (Forbes, 2013). Traditional foods include reindeer, fish, and berries. Not only is the extremely harsh and unproductive physical environment supporting their livelihoods, but it has a significant spiritual meaning (Golovnev & Osherenko, 1999).

Underground coal mining has been prominent in the area since the 1930s. Adding to the industrial amenities of coal mining, a recent industrial development includes the construction and utilisation of the gas transmission system Bovanenkovo-Ukhta and Bovanenkovo-Ukhta II run by *Gazprom* (Kumpula et al., 2010). It delivers gas from the Yamal Peninsula into Russia’s Unified Gas supply system and then to European customers. Since 2013, exploration works for oil deposits were commenced by *Shell NefteGas Development*, an affiliate of *Shell*. The field *Severo-Vorkutinsky-1* (licence SYK02339NP, re-registered as SYK02602NP until May 2019) is included in this study (Rosgeolfond, 2018).
Adverse socio-environmental impacts related to resource extraction activities in the broader area of tundra have been reported. These include the fragmentation of the landscape by the linear infrastructures and degradation of tundra ecosystems because of vehicle movements, pollution with sand and dust (Kumpula et al., 2010). Resource development results in land cover change, and together with increased workers’ involvement in fishing and hunting result in negative impacts on the livelihoods of reindeer herders (Kumpula et al., 2011). Scientific research indicates that over the last 40 years, the Bolshezemelskaya tundra has been significantly reduced due to vegetation change resulting from warming temperatures (Guégan et al., 2016; Yakovleva et al., 2016). Other climate change concerns for the area include permafrost thawing, sea ice retreat and animalities of precipitation and temperatures, resulting in a phenomenon known as rain-on-snow events with adverse long-term impacts on nomadic reindeer herding (Forbes et al., 2016).

The Aldan plateau (SR1)

The Aldan plateau is a lowland area of altitude 800 to 1,000 metres with isolated groups of mountain ranges located in the south part of Yakutia (see map 4-1). It is composed mostly of gneiss and schist, and is known to be rich in minerals, including gold, copper, iron, and coal (Chevychelov & Kuznetsova, 2016). The Evenks people traditionally occupied vast areas of northern Asia and subsisted from hunting, trapping, fishing and forest reindeer herding (Fondahl, 1998; Leonard et al., 2002). These livelihood activities are still of socioeconomic and cultural importance for many of the groups, including in the southern Yakutia (Kulikova, 2015). Two villages in the southern Yakutia, Khatystyr and Iengra, were included in this case study.

This area traditionally hosted a range of gold and coal mining operations. Recently, large-scale hydrocarbon-related projects have been developed. The mega-project ESPO oil pipeline connecting Siberia with the Asia-Pacific market was completed in 2011 by Transneft. The development of the oil pipeline was followed by a gas pipeline Power of Siberia by Gazprom, which is currently in construction. Evenks reindeer herders were concerned about both projects because they traversed their pastures (Sidortsov et al., 2016; Yakovleva, 2011).
Geologists identified that there are numerous geological and geocryological processes that threaten pipelines and infrastructures in South Yakutia. They include erosion, swamping, karst, thermokarst, thermal erosion, bloating, screes and slope displacement caused by thawing of permafrost among other processes (Strokova et al., 2015). Increased intensity and duration of large floods were also noted in the broader area (Fujiwara, 2018).

*The Indigirka River delta (SR2)*

The Indigirka River basin is an intact river system that flows over 1,726 kilometres from the mountain areas of the south of Siberia to the Eastern-Siberian Sea, part of the Arctic Ocean and the shallowest shelf in the World Ocean (Zonn et al., 2016). It forms a large delta, consisting of plentiful streams that continuously migrate (Zonn et al., 2016). This case includes two villages in the Indigirka River delta, Russkoe Ust’e and Olenegorsk. These riverbank communities represent different cultures: *Russkoustintsy* (Russian settlers in Siberia) and Indigenous Evens (Vakhtin et al., 2004). Relatively isolated until the 1930s, their major subsistence livelihood is based on fishing. Evens are officially recognised as *KMNS* at the federal level, while at the republican level *Russkoustintsy* are legally incorporated for being culturally close to Indigenous peoples (Zadorin, 2013).

Licences for offshore oil exploration in the Eastern-Siberian Sea were granted to *Rosneft* in 2013. The *Vostochno-Sibirsky-1* oil field (licence until 2043) is included in this study (Rosgeolfond, 2018). It is not clear yet if this space will become an economically viable source of oil development, despite its probable high petroleum potential (Karpov et al., 2017). In addition to the scientific findings stated in the IPCC reports for the polar regions (Larsen et al., 2014), climate change impacts have been already observed in the broader area, including increase in air and water temperature, altered winds, ice conditions and seasonality with adverse impacts on fish resources (Ksenofontov et al., 2017).

In summary, the last two decades have seen an intensification in oil industry development in four local cases. This trend interacts with climate-change generated impacts, which have been increasingly predicted and observed in these localities. Therefore, these four local cases create the premises for double exposure to oil industry expansion and the impacts of climate change. However, large uncertainty remains on the future impacts due to a lack of data and scientific studies in the area.
4.4 Data collection and analytical strategies

This chapter has so far outlined the design for case studies and introduced local and regional cases. This section presents the details of data collection and analytical strategies for this thesis. First, it introduces planning and implementation of data collection during fieldwork in northern Russia and desktop research. Second, it explains the main methods of data collection and analysis in relation to each of the research questions. Finally, it covers the data presentation in this thesis.

4.4.1 Planning and implementation of data collection

The thesis has used mainly three methods for data collection: first, qualitative interviews (informal, semi-structured and focus groups) with community members, representatives of the government and industry, NGOs and media; second, direct observations of environmental change at key sites and observations of influential meetings; and third, documents from accessible sources, including reports by governments, companies and NGOs and archives. Table 4-5 presents the methods used to address specific research questions. Details of methods employed to address specific RQs are provided after the description of the fieldwork and desktop research.

<table>
<thead>
<tr>
<th>Research Question</th>
<th>Units of analysis</th>
<th>Data collection methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>RQ 1 Societal outcomes of double exposure</td>
<td>UA I</td>
<td>Interviews with community members Observations (built environment, livelihoods, industrial infrastructure and environment change, on-site and during expeditions) Documents</td>
</tr>
<tr>
<td>RQ 2 Historical adaptation</td>
<td>UA I</td>
<td>Interviews with representatives of key organisations Observations of meetings Documents</td>
</tr>
<tr>
<td>RQ 3 Subnational governance</td>
<td>UA II</td>
<td>Interviews with community members Interviews with representatives of organisations Observations of meetings Documents</td>
</tr>
<tr>
<td>RQ 4 Participation in oil projects</td>
<td>UA II</td>
<td>Interviews with representatives of community members and NGOs Documents Focus groups</td>
</tr>
<tr>
<td>RQ 5 Collective action and political capabilities</td>
<td>UA II</td>
<td>Interviews with representatives of community members and NGOs Documents Focus groups</td>
</tr>
</tbody>
</table>
Fieldwork was a critical part of data collection, since limited data were available from other sources. Geographically, it covered resource extraction areas in the Pechora river valley and the Bolshezemelskaya tundra in Komi, the Aldan plateau and Indigirka River delta in Yakutia as well as regional administrative centres (Syktyvkar in Komi and Yakutsk in Yakutia) and national capital Moscow (see tables 4-6, 4-7 and 4-8 for description of specific locations and timeline). Names of localities and landscapes formed are used in English, recognising Russian and the native languages operate in specific localities (Appendix C, table C–1).

Initial fieldwork plan was prepared during the first year of research in 2014. The feasibility of the plan, including themes for interviews (Appendix C, table C–2), were approved through ethical assessments as required by the University of Melbourne (N1443433.1). The fieldwork was planned for six months, however, due to delays with some of the interviews and opportunities for data collection, it lasted seven months. August was a difficult period for interviewing government officials, since many of them were on annual vacations. Among additional opportunities for data collection were a summer school on environmental violations carried out by Greenpeace Russia in July 2015 in Usinsk and field visits for the Clima East program of UNDP (United Nations Development Program). Getting in touch with organisers and researchers in these projects provided opportunities for interviews and clues for data collection.

Field trips took place in the warm season (May to October) when snow has melted. Several considerations led to this decision. First, this period is busy for local people’s engagement with nature and their livelihoods (fishing, hunting, gathering mushrooms and berries), providing opportunities for observations. Second, snowless period is the best time when oil extraction sites can be visited, and observations of operations and its

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impacts undertaken. Third, for practical reasons, since some of the areas are among the coldest places on the planet, winter was risky for travelling large distances without a clear idea of accommodations in remote settings.

During the field trips, I visited villages, governments, companies, NGOs and universities in Komi and Yakutia, as well as sites of oil extraction and related infrastructure. During these visits, I communicated with numerous people, from Indigenous people to high-level government officials, from independent consultants to managers and employers of oil companies, from researchers in universities to members of NGOs. The fieldwork included engagement with 134 people in total: 68 in Komi, 50 in Yakutia, 12 in federal and 4 in international organisations.

The fieldwork commenced in Russia’s capital city of Moscow. The most populated city in Russia is home to federal government and headquarters of resource firms. The first week in the field was spent in the Russian State Library in Moscow, the largest collection of readings materials in Europe after the British Library. The goal was to get acquainted with the findings of Russian climate science applicable to my case study regions and social science literature about industrial development in Komi and Yakutia. There are also policy documents and archives open to the public, for example about major Usinsk oil spill in Komi in 1994. Another field trip was made to Moscow in October, when the interviews with representatives of federal government and NGOs were conducted. Table 4-6 summarises the main research activities in Moscow.

Table 4-6. Research activities in Moscow

<table>
<thead>
<tr>
<th>Location</th>
<th>Activities (number of participants)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moscow, the federal capital</td>
<td>Desktop and archival research</td>
</tr>
<tr>
<td></td>
<td>Interviews: NGOs (1), Government (10), Academia (1),</td>
</tr>
<tr>
<td></td>
<td>International organisations (4)</td>
</tr>
</tbody>
</table>

The next fieldwork site was in Komi. The Sevarnaya [northern] Railway links Moscow to north-eastern regions of European Russia. This route crosses the Timan-Pechora oil and gas province from southwest to northeast branching away to the industrial towns of Usinsk, Inta and Vorkuta. The construction of the railway to Vorkuta was completed in 1950 by political prisoners from the Gulags, and since then has served primarily for the transportation of coal and timber as well as passengers — inhabitants of the region and
industrial shift-workers (Barenberg, 2014). There are also flights connecting Usinsk and Vorkuta to Moscow, but the railway allowed cost-effective access to villages. Remote communities (Shelyabozh) and industrial sites (Usinsk oil fields, Bolshezemelskaya tundra) required the use of cars on few existing roads, all-terrain vehicles and motor boats. During the cold months, zimniki (winter roads) are used; these are impassable unless frozen (bezdorozhe refers to deficiency or poor condition of roads, usually during spring and autumn).

Table 4-7 summarises the main research activities undertaken in Komi. Over two and half months in Komi, I spent time in Syktyvkar (the regional capital), in villages in the Izhma rayon and Usinsk town district, and in the Bolshezemelskaya tundra. Field observations were followed by interviews, observations of meetings and desktop research. The total number of participants in Komi included 20 villagers and 48 representatives of organisations.

Table 4-7. Research activities in Komi

<table>
<thead>
<tr>
<th>Location</th>
<th>Activities (number of participants)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Syktyvkar, the regional capital</td>
<td>Interviews: Civil society (6), Regional government (10), Academia/research (4), Media (2) Observations (meetings)</td>
</tr>
<tr>
<td>Case study – Pechora River valley (KR1)</td>
<td></td>
</tr>
<tr>
<td>Izhma, selo, administrative centre of the Izhma rayon</td>
<td>Interviews: Municipal government (3), Industry (1), Media (2), Civil society (2) Observations (meetings) Focus group</td>
</tr>
<tr>
<td>Shelyaur, poselok</td>
<td>Interviews: Community members (5), Municipal government (1), Civil society (1) Observations</td>
</tr>
<tr>
<td>Shelyabozh, selo</td>
<td>Interviews: Community members (5) Observations</td>
</tr>
<tr>
<td>Ust-Usa, selo</td>
<td>Interviews: Community members (3), Civil society (1) Observations</td>
</tr>
<tr>
<td>Kolva, selo</td>
<td>Interviews: Community members (2), Municipal government (1) Observations</td>
</tr>
<tr>
<td>Usinsk, the administrative centre of Usinsk town district</td>
<td>Interviews: Municipal government (2), Industry (3 local and 5 regional) Observations (meetings)</td>
</tr>
<tr>
<td>Case study – Bolshezemelskaya tundra (KR2)</td>
<td></td>
</tr>
<tr>
<td>Vorkuta, the administrative centre of Vorkuta town district</td>
<td>Interviews: Community members (5), Industry (2), Municipal government (2) Observations (meetings)</td>
</tr>
</tbody>
</table>
The next site of the field trip was in Yakutia. A six-hour flight connects Moscow to Yakutsk, the regional capital. Table 4-8 summarises the main research activities in Yakutia.

**Table 4-8. Research activities in Yakutia**

<table>
<thead>
<tr>
<th>Location</th>
<th>Activities (number)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yakutsk, the regional capital</td>
<td>Interviews: Civil society (4), Industry (1), Regional government (6), Academia (2), Media (3) &lt;br&gt;Observations (meetings)</td>
</tr>
<tr>
<td>Case study – Aldan plateau (SR1)</td>
<td></td>
</tr>
<tr>
<td>Aldan, administrative centre of Aldan municipal rayon</td>
<td>Interviews: Industry (2), Municipal government (1) &lt;br&gt;Observations (meetings) &lt;br&gt;Focus group</td>
</tr>
<tr>
<td>Khatystyr, selo</td>
<td>Interviews: Community members (5), Municipal government (1) &lt;br&gt;Observations</td>
</tr>
<tr>
<td>Nizhny Kuranakh, poselok</td>
<td>Interviews: Industry (1) &lt;br&gt;Observations</td>
</tr>
<tr>
<td>Iengra, selo</td>
<td>Interviews: Community members (5), Municipal government (1) &lt;br&gt;Observations</td>
</tr>
<tr>
<td>Nerungri, the administrative centre of Nerungri municipal rayon</td>
<td>Interviews: Industry (2), Municipal government (1) &lt;br&gt;Observations (meetings)</td>
</tr>
<tr>
<td>Case study – Indigirka River delta (SR2)</td>
<td></td>
</tr>
<tr>
<td>Chokurdakh, the administrative centre of the Allaikha ulus</td>
<td>Interviews: Municipal government (1), Industry (1) &lt;br&gt;Observations (meetings)</td>
</tr>
<tr>
<td>Russkoe Ust’e, selo</td>
<td>Interviews: Community members (5), Municipal government (1), Industry (1) &lt;br&gt;Observations</td>
</tr>
<tr>
<td>Olenegorsk, selo</td>
<td>Interviews: Community members (5), Municipal government (1) &lt;br&gt;Observations</td>
</tr>
</tbody>
</table>

Field trips were made to the Evenks’ villages and industrial facilities in the southern Yakutia, and to fishing villages in northern Yakutia. South Yakutia is connected with Yakutsk via roads as well as air. Localities in northern Yakutia are very remote and were accessible by air transport that operates two or three times a week and motorboats, both are weather permitting. Similar to Komi, field observations were accompanied by personal communications and interviews, and observations of meetings. In total, 20 villagers and 30 representatives of organisations were involved in the research activities in Yakutia.

Observations and interviews were complemented by open source materials and documents accessed before, during and after field trips. Documents from various sources
needed to be collected on-site since not all can be found in online sources. These included official laws and policies as well as public reports from archives, company annual reports, CSR reports and newspapers. Documents are considered a useful source of evidence to supplement information collected through other methods. Documents have broad coverage, they are stable and unobtrusive (Yin, 2014). However, one needs to keep in mind the possibility of the biased use of documents for the research purposes, that has been diminished using triangulation with other sources of data in this study.

The documents were collected and/or copied from national, regional and local libraries, offices of NGOs, media and companies, and archives of local and regional administrations. Public access was usually available. However, access to some of the documents and archives requires formal permission that means providing a document of identification and specifying a reason for the interest in the documents. The search for document sources followed the criteria of being authentic, having meaning, credibility and representation, at the same time being mindful of time limitations (Scott, 2014).

Official and quasi-official documents were of interest for the research because they could reveal biases as well as document the government actions in response to emergency situations or social actions in the regions of interest. Records from civil and private organisations, those that are not available online on their websites, have been collected from their offices or given to me during interviews, for example, agreements of cooperation between municipalities and oil companies. Local and regional newspapers and periodicals, not available online, were also gathered to supplement and validate the information collected through the interviews and observations in order to increase the depth of understanding of the specific localities and enrich research discussions. Specific interest was on the media highlighting meetings, events, or opinions relevant to the research.

The multiple sources of data in this study allowed triangulation, where results from different sources and perspectives corroborated findings and enhanced their reliability, challenging and cross-checking for potential personal assumptions (Bryman, 2015). This strategy was also useful to suggest topics in personal communications, to focus attention during field observations and to guide the analytical processes on key concerns. Data collection for the study, including desktop research, was completed in the year 2017.
4.4.2 Main methods of data collection: RQ 1. Societal outcomes of double exposure and RQ 2 Historical adaptation

The data sources to inform RQ 1 and RQ 2 include personal communications with members of rural communities and obschinas (n=40) and observations in villages and during expeditions outside the villages corroborated with document analysis (see table 4-9 for the data sources).

Observations of the built environment, livelihoods, industrial facilities and environmental change

The first step upon arrival in villages was to get acquainted with villages and to observe built environment and social infrastructure in communities. During fieldwork, I resided temporarily in the villages staying with families as other options were limited. Staying in villages enabled participation in hunting and fishing expeditions (KR1, SR1 and SR2) and food delivery expedition (KR2), which provided an opportunity to observe some of the livelihoods activities and to engage in dialogue about observed and experienced environmental changes.

There have been several opportunities to visit industrial sites, which are remote and sometimes guarded, and to observe infrastructures, operations and the state of the environment. Yet, my movement was limited by logistics options and the choices of people (community members, NGOs members, public authorities and industry’s representatives) who were willing to take their time to let me observe the industrial fields.
Table 4-9. Data sources across local cases

<table>
<thead>
<tr>
<th>Data sources</th>
<th>KR1</th>
<th>KR2</th>
<th>SR1</th>
<th>SR2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observations</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>· Built environment and social infrastructure in Shelyaur, Shelyabozh, Kolva and Ust’-Usa;</td>
<td>• Food delivery expedition to Nenets <em>obschinas</em> in the Bolshezemelskaya tundra (1);</td>
<td>• Built environment and social infrastructure in Khatystyr and lengra;</td>
<td>• Built environment and social infrastructure in Russkoe Ust’e and Olenegorsk;</td>
<td></td>
</tr>
<tr>
<td>· Hunting and fishing expeditions, Sebys zakaznik (2);</td>
<td>· Industrial infrastructure and operations in the Bolshezemelskaya tundra.</td>
<td>· Hunting expedition from Khatystyr (1);</td>
<td>· A fishing expedition in the Indigirka River (2).</td>
<td></td>
</tr>
<tr>
<td>· Industrial infrastructure and operations in the Usinsk town district and the Izhma <em>rayon</em>;</td>
<td></td>
<td>· Environmental monitoring expedition along the ESPO pipeline (1);</td>
<td></td>
<td></td>
</tr>
<tr>
<td>· Environmental monitoring expeditions in the Usinsk oil fields and the Izhma <em>rayon</em> (3).</td>
<td></td>
<td>· Industrial infrastructure and operations in the Aldan <em>rayon</em> and Nerungri <em>rayon</em>.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interviews (n=40)</td>
<td>15</td>
<td>5</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Women</td>
<td>4</td>
<td>1</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Men</td>
<td>11</td>
<td>4</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Indigenous*</td>
<td>12</td>
<td>5</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>Non-Indigenous*</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>

*as self-identified.

34 See Appendix C for details about conducted interviews.
These included oil fields, pipelines and tailings in the Izhma rayon and the Usinsk town district, coal mining and gas transportation facilities in the Bolsezemelskaya tundra, gold mining and oil transportation facilities in Aldan rayon. Helicopters, all-terrain vehicles, boats, cars and long walks were needed to reach these fields. Movement of people between their living spaces and these resource extraction areas provided additional insights for understanding their connection with the industry. Photographs and field notes were taken during each visit for inclusion in the analysis. Observations enabled greater engagement with the local context during the interviews.

Interviews with community members

During the field trips in the four local cases (KR1, KR2, SR1 and SR2), 40 local community members were interviewed. Participants were chosen using a snowball technique since the probability sampling method was not feasible for these hard-to-reach communities (Noy, 2008). I initially talked to a small group of people, usually community leaders who introduced me to the communities, who in return proposed other active participants relevant to the research. When possible, the choice of proposed participants was made in a strategic way: to seek a balance in gender, age and socio-economic status. Although such a sampling method does not allow generalizing among populations, it helps to understand a variety of perspectives. However, in all cases except SR3 men were more willing to share their insights than women, or sometimes women were directing me to men (who were part of their extended families) for conversations. In total, 14 women and 26 men between 18 to 60 years of age were interviewed: 35 of the participants self-identified themselves as Indigenous and 5 did not.

Interviews with community members included open-ended questions regarding experienced environmental change and vulnerability. Perspectives were sought on the general socio-ecological landscape and socio-economic development. Then, the emphasis was placed on the interviewees’ understandings and experiences of environmental change, as well as historical adaptations of their livelihoods and settlements. Interviews were conducted in Russian, and lasted between sixty and ninety minutes. Interviews often led to more informal discussions. It was impolite to excuse myself from these conversations, since most of the interviews were conducted in people’s homes. They also felt touched and inspired by discussions; there are not many strangers who are interested
in the local issues. However, doing a multiple case study research project, some structure was needed to seek cross-case comparability. An interview guide was used to check that all topics of interest were covered (see Appendix C, table C–2). The guide was modified as important new themes appeared: a focus on risks and opportunities arising from resource extraction and climate change. The interviews were recorded if consent was given, and hand-written notes were taken if was not.

*Information from documentary sources*

An extensive review was conducted on documents related to the oil industry and climate change in northern Russia. These include:

- Official reports, policies and strategic development and investment plans, principally from the federal and regional government: ministries of natural resources and the environment, ministries of industry and economies, energy sector bodies, environmental monitoring sector (such as Roshydromet);

- Reports and documents prepared by non-governmental organisations (such as Greenpeace Russia, the SPC and RAIPON);

- Documents related to the companies operating in the areas of case studies (such as Lukoil, Rosneft, Transneft and Shell).

These sources were helpful to understand a perspective on the awareness of different organisations on the impacts of oil extraction and the impacts of climate change. These sources have been compared with the inputs from the interviews with communities and the researcher’s observations.

**4.4.3 Main methods of data collection: RQ 3 Subnational governance**

Response to RQ 3 was informed by analysis of documents, interviews with representatives of organisations and observations of meetings.

*Documents*
A review of official policies and development plans was conducted to comprehend the historical evolution of resource governance and climate change policies. These include long-term strategies of socio-economic development, national and regional investment plans, energy policies and strategic plans, climate change policies, and other strategic development policies on the Arctic and the Far East.

**Interviewing representatives of government and private organisations, including elite**

Over the course of 94 interviews, I collected data by engaging with perspectives of top- and middle management representatives of the following types of institutions in Komi and Yakutia: subnational institutions (22), national institutions (10), oil extraction and transportation companies (14). The initial selection of participants in both regions was defined by the research situation (contacts, available participants, access) and the choice of representatives of organisations was guided by emergent data. The strategy was to gain a broad spectrum of input across various organisations, since the issues addressed in the research are of a cross-scale and cross-sector nature.

Interview questions were semi-structured and focused on their opinion of the opportunities and risks arising from resource development and climate change; and views on institutional arrangements and decision-making process. After receiving a general explanation of the project and research goals, interviewees were asked about the responsibilities and the role of the organisation they represent at the local level; the role of that information and access to it plays in their decision making; and the use of networks and informal institutions in the social learning process. The interview guide is provided in Appendix C, table C-2. Interviews were held in person, usually in the formal offices and workplaces of those being interviewed, and lasted about 60 minutes. The interviews were recorded when consent obtained (in approximately 50 per cent of cases) or handwritten notes were taken and transcribed in Russian for analysis if the recording was not an option.

The experience of gaining access to representatives of government and private organisations, effectively the elites, was diverse: from being open and willing to share information and personal views to being suspicious and cautious. When scheduling an appointment for an interview request to occur in the following week, interviewees often
said they do not plan so far ahead, and if I wish to talk to them they had free time that same day. Interpersonal connections were crucial in obtaining trust during an interview. The most difficult in terms of access were the representatives of resource extraction companies. They often did not reply to emails and phone calls, but were possible to approach during their meetings with local people and NGOs, as well as during cultural and sporting events where they acted as sponsors or guests.

In total, interaction occurred with 94 representatives of organisations with varying degrees of responsibilities across sectors (public, private, civil society, academia, media) and scales (local, subnational, federal, international) – key figures in decision-making over regional and rural development, environmental protection and natural resource management, emergency management, human and Indigenous rights and security issues.

Observations of meetings

Since the interest of this research lies in governance, a key process was to observe the interactions between communities, NGOs, different levels of government and companies. Attending relevant meetings happening at the local and regional levels was important for the observational work. In total, eight meetings in the two regions were attended and observed. Table 4-10 lists key events and meetings attended during the field trips (including the meetings minutes obtained).

Access to meetings was possible mostly after the interviews with representatives of NGOs or government officials when they informed the researcher of, or invited the researcher to, a particular event. On a couple of occasions, the meetings were changed from open to closed or ‘by invitation only’ just a few minutes before a meeting started, excluding the researcher from participation. This is an indication of the sensitivity of the topics at the local level. It was challenging to conduct non-participant observations in relatively small and isolated places. While staying silent would help to avoid altering power dynamics during the meetings and interviews, the mere presence of a researcher could potentially affect the answers and behaviour of the participants. Attending community and official meetings provided an opportunity to observe communication practices and information exchange mechanisms between various parties in order to gain insights into the actual workings of institutions.
Chapter Four. Methodology

Table 4-10. List of key meetings attended during fieldwork and meeting minutes consulted to inform RQ 3.

<table>
<thead>
<tr>
<th>#</th>
<th>Meeting</th>
<th>Time (2015)</th>
<th>Place</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Roundtable discussion about challenges and perspectives of development in the Izhma rayon (municipal government)</td>
<td>June</td>
<td>Izhma</td>
</tr>
<tr>
<td>2</td>
<td>Public consultation for an oil project (municipal administration, general public), (meeting minutes)</td>
<td>June</td>
<td>Izhma rayon</td>
</tr>
<tr>
<td>3</td>
<td>Roundtable discussion about main ecological challenges and possible solutions in the Komi Republic (Civil chamber of the KR, regional government)</td>
<td>July</td>
<td>Usinsk</td>
</tr>
<tr>
<td>4</td>
<td>Meeting about oil pollution and other environmental challenges (Greenpeace Russia, the SPC, Lukoil-Komi, municipal and regional government) (meeting minutes)</td>
<td>July</td>
<td>Usinsk</td>
</tr>
<tr>
<td>5</td>
<td>Roundtable discussion about Vorkuta strategic development and stakeholder engagement (municipal government) (meeting minutes)</td>
<td>July</td>
<td>Vorkuta</td>
</tr>
<tr>
<td>6</td>
<td>Meeting of the Evenks association of the Aldan rayon (meeting minutes)</td>
<td>August</td>
<td>Khatystyr</td>
</tr>
<tr>
<td>7</td>
<td>Meeting of the working group on fisheries of Yakutia (State Committee on the Arctic affairs of Yakutia), (meeting minutes)</td>
<td>October</td>
<td>Yakutsk</td>
</tr>
<tr>
<td>8</td>
<td>Seminar about climate change impacts and challenges for Indigenous peoples (the Centre for Support to Indigenous Peoples of the North, the State Committee for National Policy of Yakutia, the World Association of Reindeer Herders and the Association of Indigenous Peoples of the North of Yakutia), (meeting minutes)</td>
<td>October</td>
<td>Yakutsk</td>
</tr>
</tbody>
</table>

4.4.4 Main methods of data collection: RQ 4 Participation in oil projects

RQ 4 was largely informed by the interviews with community members and their representative organisations, as well as with key actors who participated in planning and decision-making about the oil projects (see section 4.4.2 and 4.4.3). Questions were asked about local participation in oil projects and adaptation planning, as stated in the interview guide (Appendix C). Additionally, documents were consulted for information about the participation of local communities in the oil projects. These included agreements of cooperation between the oil companies, municipal governments and/or NGOs, records of impact assessments provided as part of public consultations, and minutes of the meetings for public consultations about oil projects. See table 4-11 for the list of the documents consulted.
Table 4-11. Documents collected during fieldwork and consulted to inform RQ 4

<table>
<thead>
<tr>
<th>Document Type / Case study</th>
<th>KR1</th>
<th>KR2</th>
<th>SR1</th>
<th>SR2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impact assessments</td>
<td>N=2 1. Summary of the OVOS for Uzhno-Sedmesskoe oil well 2. Summary of the OVOS for Makaryelskoe pipeline</td>
<td>N=1 1. Summary of the OVOS for Severo-Vorkutinsky-1 oil field</td>
<td>N=1 1. Summary of the OVOS for a part of ESPO pipeline traversing south Yakutia</td>
<td>n/a</td>
</tr>
<tr>
<td>Reports on the results of public hearings and meetings</td>
<td>N=3 Reports on the results of the public hearing about: 1. the Shelyaurskoe oil field 2. the Uzhno-Sedmesskoe oil well Report on the results of the public meeting about: 3. the Makaryelskoe pipeline</td>
<td>N=1 1. Report on the results of the public hearing about the Severo-Vorkutinsky-1 oil field</td>
<td>N=1 1. Report on the results of the public meeting about the part of the ESPO pipeline (2006 and 2009 for the pipeline expansion)</td>
<td>N=1 1. Report on the results of the public hearing about the Vostochno-Sibirsry-1</td>
</tr>
</tbody>
</table>
4.4.5 Main methods of data collection: RQ 5 Collective action and political capabilities

**Interviews and focus group discussions**

Interviews were held with representatives of socioenvironmental movements, Indigenous peoples’ organisations and individual residents who take part in resistance around the oil industry in Komi (N=10) and Yakutia (N=4). Interviews with members and volunteers of the movements and civil society in both regions were followed by a focus group discussion. Additionally, protest resolutions from the years 2014–2015 (N=6) have been consulted for the agenda and main demands expressed during the protests.

The main goal of organising the focus groups discussion was to validate the results of the individual interviews and to unveil collective understanding of the issues. The strategy to organise and conduct the focus group was as follows (Secor, 2010): (1) identification of community members, who were invited because they are known to be involved in resistance around the oil industry; (2) contact made; (3) local administration called on individuals to gather for the meeting on the arranged time; (4) explanation of the research provided, followed by a description of points for discussion; (5) agreement sought from the participants; (6) opportunity was provided to ask questions or clarify discussion.

In Komi, the focus group discussion was organised in Izhma (in a government office as suggested by the participants) and included six participants. In Yakutia, the focus group was organised in Aldan (in the house of culture as suggested by participants), and included five participants. The participants were invited to take part in the focus groups during individual interviews. The focus groups were moderated by the researcher and lasted 60 minutes. The topics of discussions were centred on the access of the movements to institutions across different scales when responding to environmental change and events. The discussions were useful to uncover the ways how individuals discuss these issues as members of a group, how people respond to each other’s views and build up a common view out of interaction within the group (Bryman, 2015). Participants were able to interact with each other and provide a wider perspective than individual interviews did. The focus group discussions were conducted in Russian. The sessions were recorded and transcribed in the Russian language for analysis.
4.4.5 Data analysis

All personal communications were transcribed in order to facilitate the interpretive thinking (Lapadat & Lindsay, 1999). The primary data analysis method of this study was thematic coding. It is a systematic approach that enables looking for “themes and patterns of cultural meaning; coding and classifying data, usually textual, according to themes; and interpreting the resulting thematic structures by seeking commonalities, relationships, overarching patterns, theoretical constructs, or explanatory principles” (Lapadat & Lindsay, 1999, p. 65). The further analyses of data involved substantive coding using the qualitative data analysis computer software NVivo (Bryman, 2015; QSR, 2012). Substantive coding allowed for the identification of more narrow themes and categories that then became the basis for the review of the conceptual framework. Coding was conducted in Russian, given that it was used in personal communications. Translation to English occurred when working with the framework and writing the thesis to support the arguments with evidence.

Documents were analysed using static mapping, process tracing and process mapping when possible (Holland, 2007). Static mapping refers to the analysis of the context of the documents by illustrating their aims, resources and achieved or desired outcomes. Process tracing involved analysing the path of a document as a means of understanding its connections to particular events. Process mapping placed specific documents in the broader context of governance and policy implementation.

To inform RQ 1 and RQ 2, the experiences and perceptions of community members were supplemented by the researcher’s observations and the analysis of the reports from the regional governments and NGOs. The analysis of the interviews with community members enabled a categorical analysis of what is at risk from the intersecting impacts of resource extraction and climate change. The data analysis followed an inductive logic when the experiences discovered in the data were placed within the evaluative literature to identify categories of risk objects describing societal outcomes. The categorisation was derived from critical reflection on the applicability of the concepts to the selected cases: various categories employed in environmental change literature can be meaningless for the local groups in northern Russia who do not operate according to thinking and acting found in the Western literature (Forbes & Stammler, 2009, see section 4.5).
To inform RQ 3, the focus in the data analysis was on the narratives that oil companies and government officials use in relation to the oil industry expansion in the context of climate change. These inputs were analysed using thematic coding and enabled identification of five narratives entrenched in a pro-oil discourse. Additional empirical data to inform this RQ came from formal strategic documents and observations of meetings, that supplemented the inputs from the interviews.

To inform RQ 4, the inputs from communities’ members were sought regarding their experiences in participation in oil projects. These were triangulated with the inputs from the available planning documents and other documents concerning community-company relations in the specific settings. Thematic coding enabled identification of main patterns in these experiences, that centre on factors that explain inclusion and exclusion of communities from participation in the oil projects, including strategies employed by companies and governments, challenges of local and traditional institutions and representation structures and personified relations.

Inputs from socioenvironmental movements and NGOs were analysed to inform RQ 5. For the purposes of a comparative analysis, the following themes were identified through thematic coding to characterise political capabilities in the study regions to influence adaptation decisions: conflicting expertise and alliance with powerful stakeholders Holland (2017).

4.4.6 Data presentation

The results from local cases and regional cases are presented separately. In the chapters, several tables have been used to illustrate the data in a more detailed manner. Wherever interviewee quotations are included, the description of the interviewee is provided. The anonymity is maintained using codes (table 4-12). KR refers to the Komi Republic; SR refers to the Sakha Republic (Yakutia). The number at the end of the code refers to the sequence in the interview schedule (see Appendix C, table C–3). For example, KR1 C5 represents the fifth interviewee from a community in the Pechora River valley in the Komi Republic. FG refers to the result produced from focus group discussions.
### Table 4-12. Codes and meanings

<table>
<thead>
<tr>
<th>Code</th>
<th>Meaning</th>
<th>Code</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>KR1</td>
<td>Komi Republic, the Pechora River valley</td>
<td>C</td>
<td>Community representative</td>
</tr>
<tr>
<td>KR2</td>
<td>Komi Republic, the Bolshezemelskaya tundra</td>
<td>G</td>
<td>Government representative</td>
</tr>
<tr>
<td>SR1</td>
<td>Sakha Republic, the Aldan plateau</td>
<td>I</td>
<td>Industry representative</td>
</tr>
<tr>
<td>SR2</td>
<td>Sakha Republic, the Indigirka River delta</td>
<td>S</td>
<td>Civil society representative</td>
</tr>
<tr>
<td>FG</td>
<td>Focus group</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 4.5 Reflexivity and limitations

**Positionality**

Reflexivity is an important process of designing and implementing qualitative research, as it reveals those beliefs and values of the researcher that may have impacted the selection of research methodology and the research process.

As a native Komi woman, having Russian citizenship and doing the thesis in Australia with sponsorship from the University of Melbourne, I was positioned at different times as an insider and as an outsider (Mullings, 1999), and this position had advantages and disadvantages. First, emphasising my Komi ethnicity was enhancing trust and openness during field trips to communities. In Komi villages, community members were often referring to our shared culture and language. In Yakutia, in the remote village of Russkoe Ust’e above the Arctic circle, my visit was warmly welcome after discovering my Komi routes because there was a collective memory of an expedition of a Komi explorer to Russkoe Ust’e (then Polyarnoe) in 1987.

Second, emphasising Russian identity and citizenship ensured better access to organisations and interviews. For example, a passport was needed to access numerous government office buildings, and the presence of security officers at the interviews could be avoided as would be the case with a researcher-foreigner, as advised by some of the interviewees. Additionally, interviewees often touched upon some themes and expressions that could be hard for comprehension for a person who did not grow up in...
Russia and/or does not have a good understanding of Russian culture, for example, the concept of *sistema*\(^{35}\) was mentioned in numerous interviews.

As a Russian and Komi (limited) speaker, I was capable of conducting fieldwork in both Republics of Komi and Yakutia, where official languages in addition to Komi and Sakha (Yakut) respectively include Russian. Moreover, Indigenous languages (the Nenets language in the Bolshezemelskaya tundra and the Evenk language in the Aldan area) as well as dialects (a Komi-Izhma dialect of Komi in Izhma) are spoken in regions studied. Nonetheless, all participants spoke Russian as a first or second language very well, and there was no need for interpreters. An attempt to greet local people in their native language was received positively and served as a first step of building trust. Also, cultural sensitivity was expressed by addressing people with their first and father’s names as it is customary in Russia, and paying respect to culture by attending local events when invited. Participation in ceremonies and rituals was an essential part of entering communities. In Olenegorsk, for example, the fumigation ritual, or rite of purification, with the use of smoke of the juniper and fat was performed for me by an Even elder woman with the assistance of her young granddaughter. Similarly, cultural festivals — such as *Lud* (celebration of haymaking) among the Komi-Izhma, *Yhyakh* (ancient New year) among the Sakha, *Evinek* (meeting of the sun) among the Evens — were attended if invited.

Third, the research was conducted during a turbulent time for Russian society and its economy: the Ukrainian crisis, the Russian financial crisis and the Syrian campaign. The fieldwork commenced a year after the annexation of Crimea and during the period of the enforcement of the Law on foreign agents and state pressure on NGOs\(^{36}\) (Bogdanova, 2017; Tulaeva et al., 2018). This period has been characterised by a rise of nationalism and anti-Western propaganda (Kuzio, 2016). The researcher had to find a balance between probing into sensitive areas and the security of communities, NGOs and the

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\(^{35}\) *Sistema* refers to informal practices and power networks in contemporary Russia. The phenomenon is discussed in details by Ledeneva (2013).

\(^{36}\) The law on foreign agents refers to the Law On Amendments to Legislative Acts of the RF regarding the Regulation of the Activities of Non-profit Organisations Performing the Functions of a Foreign Agent (2012). Under this law, NGOs are required to register and declare themselves as foreign agents if receiving foreign donations and engaging in political activity. The law has been enforced since the year 2014 through several amendments. Available at [http://docs.cntd.ru/document/902359005](http://docs.cntd.ru/document/902359005), accessed April 2, 2018.
researcher. With the absence of a long tradition of ‘free’ social science research, foreign researchers interested in environmental and Indigenous affairs are often assumed to be journalists or spies (Hønneland & Jørgensen, 2003). Association with a foreign institution was considered suspicious for some of the participants, especially those in power; while in many other cases it led to more genuine discussion. The participants’ will to share stories and be heard was apparent. Thus, in this research the boundary between an insider and an outsider was not clearly delineated. It generated a higher degree of social proximity in some cases but also created a greater division between the researcher and participants in other cases.

Because of the method of data collection, the type of data sources, the analysis may contain biases and raise important ethical concerns. Several steps have been undertaken to decrease risks of biases and any adverse outcomes for the researcher and the research participants. First, any research takes place in a field of complex power relations, and awareness of these is an important feature of the research process. The qualitative method of data collection can have a lopsided power distribution between the researcher and the participants (Anyan, 2013). The social distance between the researcher and most of the participants was reduced due to shared nationality (and ethnicity in one case), but also due to the researcher’s limited knowledge, which was made evident to them through the process of interview. Participants felt empowered because they knew more about the real world and were helping the researcher to understand. Moreover, familiarity with some culture and traditions enabled a more nuanced understanding of the participants’ experiences.

Second refers to informed consent. Though some of the research interviews were initiated during informal discussions with community members or representatives of organisations, each prospective research participant was given the information needed to make an informed decision about whether or not they wish to participate in the research. Third refers to confidentiality. Though it is difficult to present field notes and interview transcripts without people and places being identified, the choice was made not to reveal their identity. These steps were undertaken in compliance with research ethics protocol of the University of Melbourne (N1443433.1).
Limitations

This section discusses the limitations to the methodology and reflects upon how the researcher aimed to overcome them. First, a case study design may include several issues beyond human control (Yin, 2014). One limitation that is associated with multisitedness can be a lack of depth. There is less time to spend at one place to get acquainted with the people and phenomena. It increases the possibility of missing important details or to misinterpret the local situation. This limitation was addressed by careful prior investigation of the existing academic and grey literature to develop an understanding of local conditions. Another mitigation strategy was to balance the need to investigate several sites without losing important details, remain flexible in time and adaptive to local circumstances (Yin, 2014).

Second, many researchers question the uncritical application of Western scientific concepts and frameworks to traditional cultures in northern Russia that have developed over many centuries if not millennia on their own terms. Since the theoretical implications for this thesis were driven by Western scientific categories, it was necessary to place the research agenda in a local and regional context, and later bring the findings back to the theoretical framework. Engaging with Indigenous peoples makes this especially important. Forbes and Stammler (2009), for example, suggests that “best results are obtained by collaborating with herders on topics of weather, instead of climate change, herding skills, instead of wildlife management, and ways of engaging with tundra, instead of TEK (traditional ecological knowledge)” when conducting research in the Russia’s North (Forbes & Stammler, 2009, p. 38). Similarly, the research was careful in choosing more ‘grounded’ words when engaging with people on site, and attempting to connect the Western-designed concepts with prevailing local views. Some linguistic boundaries had to be addressed to ensure that certain meanings do not get ‘lost in translation’ or be misunderstood. Conducting the analysis of data in Russian was the safest way to avoid this, however, meaningful aspects could be missed without understanding locally-acquainted languages and ways of life.
Chapter Four. Methodology

4.6 Conclusion

The chapter outlined the methodology used in conducting this study. The research was addressed through a qualitative inquiry by using an embedded multi-site case study approach. The main reasons behind the choice of case studies and the process of designing the case studies were explained. Some limitations were identified, including those related to positionality, ethical and power issues. Addressing these required the researcher to seek ways to remove physical, language and political barriers and engage with the research in a culturally sensitive way.

Chapters five to nine present the findings guided by the conceptual framework ‘just adaptation at resource frontiers’ developed in chapter two.
5.1 Introduction

In May 2014, flooding occurred in the Pechora River valley due to spring flash floods. The Severo-Ipatskaya II oil well in the Alabushin oil field of the Timan-Pechora oil and gas province was flooded. Fishers from Shelyabožh village found toxic compounds and oil sludge spread around the operation site and floated down the Andrushkino river. This event points to the increasing significance of the present and future impacts of climate change on oil extraction regions and on communities and ecosystems that host oil projects. Previous research supported this relationship theoretically (see chapter two, section 2.2) and empirically (see chapter three, section 3.2); however, there is a lack of understanding of how specifically climate change is impacting host communities. This chapter addresses this gap by exploring: how do Indigenous and rural communities in Komi and Yakutia experience the impacts of oil exploitation in interaction with climate-related processes (RQ 1)? It was not the study’s goal to identify all actual and potential impacts, as this can be an endless endeavour (Kusugak, 2002). Instead, the chapter specifies empirical examples of how the global processes of extractive industry expansion and climate change can unfold locally through the intersecting impacts and their societal outcomes.

The experiences and perceptions of environmental impacts associated with oil extraction and climate change are explored using a relational approach to risk (Boholm & Corvellec, 2011). As explained in chapter two (section 2.4.1), this approach is useful to develop a more nuanced and context-specific understanding of perceptions of environmental risks with evaluation of what is considered as important and valued for specific communities. Identification of a broad range of risks based on communities’ experiences and perceptions is needed to orchestrate more equitable outcomes and processes of adaptation planning (the first strand of the framework ‘just adaptation at resource frontiers’).

The analysis is based on the study of four local cases: the Pechora River valley (KR1), the Bolshezemelskaya tundra (KR2), the Aldan plateau (SR1) and the Indigirka River delta (SR2). The data sources include interviews with community members (n=40), the
researcher’s observations and NGOs reports scrutinised against reports of the regional government. Data from the interviews were analysed based on the thematic coding that enabled a categorical analysis of what is at risk from the intersecting impacts (see chapter four for the detailed methodology and description of the cases).

Five categories of risk objects were identified as follows. The traditional livelihoods and land use category reflects concerns over the opportunity to practice subsistence-based activities on traditional lands. In the adaptation to climate change literature, livelihood stability is a relevant variable (Karlsson et al., 2015; Smit & Wandel, 2006) that can reflect the critical risk that resource exploitation poses to livelihoods and the land (Gilberthorpe & Hilson, 2014). Belonging to place category relates to material, symbolic and spiritual meanings, and include such aspects as valuing landscape, sacred sites, established social relations, and attachment to natural and built environment (Devine-Wright, 2013; Tschakert, Tutu, et al., 2013). Liveability of settlements category refers to the conditions of the built environment and the possibilities it affords, including economic opportunity (Cameron, 2012). Human and animal health category includes experienced and feared health issues, which can worsen around extraction sites and due to climate change (Durkalec et al., 2015; Schmidt, 2011). Development opportunities category relates to perceived changes in development trajectories, lost or gained as a result of resource extraction and climate change (Gudynas, 2013; Turner et al., 2008). These categories encompass a range of concerns and challenges perceived and experienced by host communities that can be classified as the societal outcomes of double exposure to extractive industries expansion and the impacts of climate change.

The following section describes the context in which the intersecting impacts of oil exploitation and climate change are perceived and experienced, indicating other, but not less important, concerns and challenges. Section 5.3 is the synthesis of the findings presented based on the five categories of risk objects. Section 5.4 is the discussion of the empirical and theoretical implications of the study, followed by conclusion in section 5.5.

5.2 Contextualising double exposure

“Do you know what is happening? Already villages get flooded, and last year the oil rigs were flooded. Something strange is happening” said a fisher from Shelyabozh
remembering the flooding in 2014 (KR1 C6). The interview indicates one of many changing environmental conditions witnessed by the northerners. Within a range of concerns and challenges, this section situates some of the salient experiences and perceptions of environmental change that suggest how the intersecting impacts of resource extraction and climate change can unfold locally. Findings are presented separately for each local case: KR1, KR2, SR1 and SR2.

5.2.1 Findings obtained from Komi-Izhma members in the Pechora River valley (KRI)

In the first local case, the Pechora River valley, the traditional rural economy of Komi-Izhma people, based on semi-nomadic reindeer herding, cattle breeding, fishing and hunting, co-exists with a frontier economy of crude oil extraction driven primarily by Lukoil-Komi. In interviews with residents of Shelyaur, Shelyabozh, Kolva and Ust’-Usa, they expressed concerns about rapid environmental changes in the area associated with oil extraction and transportation. They referred to past and current air pollution, extensive pollution of rivers, swamps and soils with oil and produced waters, dumping of waste and increased deforested areas (table 5-1). During the fieldwork in 2015, a range of these environmental changes was observed (figure 5-1 and table 5-1). Reports and other material by Greenpeace Russia and the SPC (the major regional socio-environmental movement) as well as previous scientific works (Walker et al., 2009; Walker, Crittenden, et al., 2006) have previously documented some of the impacts rising alarm about the state of the local environment.

Importantly, as table 5-1 demonstrates, many of these impacts have not been addressed in official reports that the Komi regional government produced since 2000 drawing attention to the environmental degradation in the area. For example, in addition to oil spills of various size and type, poor procedures for elimination of spills, including abandoning, ploughing with soils, burning and burying with sand were observed (figure 5-1). These are some of the ways how the industry (oil companies and its contractors) are attempting to ’clean up’ spills, according to the interviews (KR1 C2, C7,

Chapter Five. Societal outcomes of double exposure in Komi and Yakutia

C12, C14). Observations provided some evidence of clean-up activities and restoration works undertaken at the major spill sites (figure 5-1).

However, the official reports recognise that the scale of the remediation works is modest in comparison to the scale of the pollution (KomiEnvironmentReport, 2016). Furthermore, many of the spills remain unknown to communities and governments because they occur in remote locations or are concealed by the employees of the oil companies.

![Figure 5-1. Oil spill clean-up (left top), abandoned oil spill (right top), oil ploughed with soils (left centre), in situ burning of spilt oil (right centre), oil spill buried with sand (left and right bottom), the Pechora River valley (author: J. Loginova).]
Table 5-1. Environmental changes identified in the Pechora River valley (KR1)

<table>
<thead>
<tr>
<th>Environmental changes</th>
<th>Physical observations, interviews, NGOs reports and previous research</th>
<th>Government reports</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Air pollution</strong></td>
<td>Hydrogen sulphide ejection happens periodically, and the smell can be felt in the villages.</td>
<td>Gaseous emissions from gas venting and gas flaring. Carbon dioxide emissions in the Usinsk rayon contribute to more than a half of the whole Republic (KomiEnvironmentReport, 2016).</td>
</tr>
<tr>
<td><strong>Discharge of oil and produced water:</strong></td>
<td>Leakages and spills throughout the system of pipelines that cross rivers, soils and forests. The extensive system of pipelines has a poor initial design and has suffered high rates of corrosion and leakages, and deferred maintenance (Walker et al., 2009).</td>
<td></td>
</tr>
<tr>
<td>- in surface water and groundwater</td>
<td>An unknown quantity of oil-contained liquid spread over water sources. Hard to identify the source of leakages and when a spill has occurred. Hard to clean up, especially when mixed with ice. Usually visible seasonally (once the debacle begins). Can remain unknown and unreported.</td>
<td>Pollution of surface water and groundwater. Rivers Kolva and Pechora are classified as significantly polluted and Usa River as dirty (KomiEnvironmentReport, 2016).</td>
</tr>
<tr>
<td>- in swamps, wetlands</td>
<td>Presence of swamps covered with oil.</td>
<td>Not addressed</td>
</tr>
<tr>
<td>- in soils in forests</td>
<td>Presence of visible petroleum spills on soils in forests. The source of leakages is hard to identify and can remain unknown since pipelines are under the ground.</td>
<td></td>
</tr>
<tr>
<td><strong>Oily waste</strong></td>
<td>Once the spilt oil is collected, it is transported to processing plants or simply dumped in the forest.</td>
<td>Oily waste generated because of elimination of emergencies (KomiEnvironmentReport, 2016).</td>
</tr>
<tr>
<td><strong>Oil sludge collectors and tailings</strong></td>
<td>Majority of oil sludge collectors do not comply with the technical requirements, poorly designed and maintained.</td>
<td>Many oil sludge collectors (KomiEnvironmentReport, 2016).</td>
</tr>
<tr>
<td><strong>Abandoned oil wells</strong></td>
<td>Many of them are decades old with poor wooden, sometimes, concrete proofing. Can lead to major damages if not observed and re-proofed.</td>
<td>Objects of ecological risks, accumulated from past extraction activity (unallocated exhausted wells, outside licensed areas) (KomiEnvironmentReport, 2016).</td>
</tr>
<tr>
<td><strong>Use of technologies to control and recover spills, including:</strong></td>
<td>It appears that there is no efficient system to mitigate oil spills, contain them, to respond rapidly and to restore the areas affected by spills.</td>
<td></td>
</tr>
<tr>
<td>- manual recovery of crude with buckets and sacks</td>
<td>Employed personnel and volunteers use available sacks and buckets to collect spilt oil exposing themselves to health impacts.</td>
<td>Not addressed</td>
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<table>
<thead>
<tr>
<th>Environmental changes</th>
<th>Physical observations, interviews, NGOs reports and previous research</th>
<th>Government reports</th>
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<tbody>
<tr>
<td>- use of sacks as recovery containers</td>
<td>Use of sacks that are leaking.</td>
<td>Not addressed</td>
</tr>
<tr>
<td>- use of buoys</td>
<td>Inappropriate size and technique, often left without control.</td>
<td>Not addressed</td>
</tr>
<tr>
<td>- burning oil spills</td>
<td>The presence of areas with visible burnt oil.</td>
<td>Not addressed</td>
</tr>
<tr>
<td>- burying oil spills</td>
<td>Presence of extensive areas covered in the sand through which oil leaks.</td>
<td>Not addressed</td>
</tr>
<tr>
<td>- ploughing oil spills</td>
<td>Presence of areas where oil is ploughed with soil.</td>
<td>Not addressed</td>
</tr>
<tr>
<td>- planting grass on damaged soil</td>
<td>The lawn non-native grass gets planted on the oil spills sites as a mean of rapid remediation.</td>
<td>Not addressed</td>
</tr>
</tbody>
</table>

**Dumping of waste (unauthorised):**

| - dumping of drilling cuttings and muds   | Use of sludge pits that are leaking.                                                                                                                                                     | Not addressed               |
| - discharge of produced waters            | Produced waters are toxic and are discharged occasionally from holding ponds and facilities into watercourses. Has a bright orange colour. Kills vegetation. Poisonous to humans and animals. Almost impossible to clean up and to restore the area. | Not addressed               |
| - dumping of solid waste                  | All kinds of solid waste abandoned in situ that is sometimes taken by communities to their houses and gardens. The barrels can tell what kind of chemicals are used in the resource extraction processes and clean-up operations. | Not addressed               |

**Clearing forests for pipelines and roads**

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<tbody>
<tr>
<td>Destroy a large amount of forests (authorised and not) and leave logs behind. Villagers are not allowed to collect these logs by legislation, so they remain rotting, or being burnt.</td>
<td></td>
<td>Not addressed</td>
</tr>
</tbody>
</table>
Chapter Five. Societal outcomes of double exposure in Komi and Yakutia

Many of the spills of oil and produced waters are discovered by community members once the snow melts: “What happens is oil accumulates under ice during winter [November to May]. When spring comes, oil with ice and snow is flowing down the river and the creeks. Once oil is in water, it is nearly impossible to remove” (KR1 C12). This phenomenon is known in villages as ‘neftehod’, meaning that instead of ice (in case of ‘ledohod’) there is oil floating downriver (KR1 C12). Interviewees think oil flows to tributaries, then spreads over the soils and forests during spring floods and reaches the Arctic Ocean (KR1 C12, C15). Oil-polluted waters prevent timely freezing of the water bodies (November-December), constraining ice-fishing and movement of people and vehicles on the ice (KR1 C4, C5). Interviewees observed how oil accumulates on the riverbanks, potentially accelerating already intensifying riverbanks erosion (KR1 C4, C5). The mixture of oil with ice and snow is problematic for clean-up operations without access to specialised equipment and chemicals (KR1 C15).

Furthermore, interviewees stated that oil wells and pipelines become particularly problematic when located in proximity to rivers and creeks (KR1 C6, C10). For example, the oil infrastructure becomes increasingly exposed to spring flash floods (usually occurring in May). In 2014 and 2015, water levels in the Pechora River were significantly higher than average (KR1 C6, C10). A flood affected the Severo-Ipatskaya II oil well near Shelyabozh village (KR1 C6, C10). Apart from the well and the oil rig, the site contained two workers’ huts and an oil sludge collector (KR1 C10). Various equipment, construction materials, chemicals and fuels were washed out into nearby rivers and forests, raising major concerns among fishers about the pollution of the Andrushkino River and two lakes (KR1 C10).

According to the interviews, the various accidents in the first place are caused by the inadequate design of oil projects as well as a poor response of the operating companies (KR1 C6, C7, S1, N G8). They think that no oil well should have been drilled close to the rivers (KR1 C6). In the case of the Severo-Ipatskaya II oil well, Lukoil-Komi, its operating company, did not elevate the site sufficiently in relation to the water level (KR1 S2). Additionally, spring floods require quick action by an oil well operator to avoid a local environmental disaster, for example, by installing protective booming, even if the anticipation of spring floods is difficult due to unforeseeable snowmelt and ice jams (KR1
Chapter Five. Societal outcomes of double exposure in Komi and Yakutia

C6). In fact, the regional government reports recognise that the violations of environmental legislation by the oil companies are common in the region and include non-compliance with the conditions of the licence agreements (terms of work, terms of control and terms of reporting), and non-compliance with project documentation regarding the location and the volumes of the substance extracted (KomiEnvironmentReport, 2000-2017). One interviewee thought public hearings were needed during the environmental impact assessment process, where the company could have been warned about the risks of flooding by the residents (KR1 C6).

Fifteen interviewees expressed concerns about oil sludge collectors and tailings, and the impact of heavy rains, snow melt and floods on their integrity (KR1 C1-7, C9, C10, S3, S4). Some of them have already observed leaking collectors and tailings (KR1 C6). Five interviewees expressed concerns about abandoned oil wells, that can also be impacted by occasional heavy rains and floods (KR1 C3, C11, C14, S3, S4). The unusual precipitation events can cause conservation measures to fail, given the fact that many abandoned wells are neglected, and there is no responsibility for monitoring them (KomiEnvironmentReport, 2016).

The interview findings indicate that community members increasingly encounter pipelines, oil rigs and new roads as well as spills of oil and produced waters, oil sludge and other industrial waste while being ‘in forest’ or ‘on river’ when herding reindeer, fishing, hunting or berry and mushroom picking (KR1 C4, C6, C8). Oil extraction now takes place where it did not a decade ago, increasingly overlapping with the territory where subsistence-oriented activities traditionally take place. For example, an oil well was constructed in 2013 close to one interviewee’s uchastok. He said he would have to abandon it as he “cannot accept such close presence of the machine”, but there is nowhere else to go, as neighbouring areas are “traditionally occupied by someone” (KR1 C10). With growing industrial intervention, traditional activities are not equally accessible. Map 5-1 demonstrates how in the Pechora River valley the oil licences increasingly overlap with the reindeer herding pastures where hunting, fishing and gathering also being practised.

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Map 5.1. Traditional natural resource use and oil licences in the Pechora River valley in Komi (KRI)*

*see Appendix C, Table C–1 for names of localities in common and local languages.
Residents of the Pechora River valley have a strong attachment to the landscape and way of life. This was observed, for example, when we came close to the waters of Pechora River with a resident of Shelyaur, and he wet his hand to wash his face. He explained: “It is how we greet our ‘reka-kormilitsa’ [an association with a mother that feeds a child]” (KR1 C2). A woman emphasised: “Our land and waters are irreplaceable to us; animals and fish are what we live by” (KR1 C9). The emotional aspects involved in losing their land to the oil industry and pollution were emphasised by women more often than by men: “pain to the land...the land is bleeding” (KR1 C1); “We are ‘people of the forest’, and it is painful to see it suffering” (KR1 C3). Men rather referred to access to traditional foods, such as reindeer meat, game and fish, as an important aspect of living in the area (KR1 C5, C6, C11, C13). A man from Shelyaur said “Reindeer meat is why I still live here. We do not eat other kinds of meat” (KR1 C5). However, this way of life is under threat, as another man said: “I will never forget the fish I caught the other day. It was covered with oil and smelled so bad. Fishing is not the same now” (KR1 C14).

All interviewees indicated increasing negative impacts on health potentially through groundwater, water and air pollution, and through eating fish and meat of reindeer and wild animals (KR1 C1-C15). One man explained that an oil well on the Alabushin field was placed ten kilometres from Shelyabozh in 2006, and since then residents could smell a strong rotten-egg-like odour fearing increased risks to their respiratory and cardiovascular systems (KR1 C10). In May 2013, school children were forced to wear face masks during an examination to cope with the intense odour (KR1 C10). People were then informed that oil from this area contains a high level of hydrogen sulphide gas (KR1 C10). In 2014, Lukoil-Komi installed gas analysers on the school’s building, which according to an interviewee, who also volunteers for the SPC, were designed for indoor use, and therefore did not inform adequately about air pollution (KR1 S1). During the fieldwork, in 2015, the sulphur processing facility to cope with the excess was being installed.\(^{38}\)

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\(^{38}\) In April, the oil rig went on-fire which took one month to extinguish, and outcomes of this accident are yet to be studied (Lukoil-Komi, 2017a).
Numerous cases were mentioned in the interviews of people sipping waters from creeks and streams, as they always used to do, and having gastrointestinal disorders (KR1 C3, C6). They are not sure if they can safely drink water from the villages’ wells (KR1 C1-C6, C9-13). Health issues have also been attributed to animals: reindeer, cows and horses. For example, one man from the reindeer herders’ cooperative Izhemskyi olenevod i ko explained how in 2014 more than one hundred reindeer died fifteen kilometres away from the LyogKharyaga oil well (KR1 C2). The official investigation associated the cause of their death with poisoning by toxic oil spilt around the production site (TASS, 2014a).

With the arrival of the oil industry to the Izhma rayon, Lukoil-Komi has contributed to the improvements in social and transport infrastructure through the CSR programs and socio-economic partnership agreements with municipal authorities (Lukoil, 2016). For example, in 2010 Lukoil-Komi contributed RUB 4 million (USD 70 thousand) to the restoration of a kindergarten’s building in Shelyaur, and supported the village’s church annually (Lukoil-Komi, 2017b). The remote village of Shelyabozh has not received support for public infrastructure, finding the distribution of the benefits unfair. One interviewee said: “the bridge in Izhma does not influence the conditions in Shelyabozh” (KR1 C8). Additionally, Lukoil-Komi has sponsored sports competitions and socio-cultural projects in the villages (Lukoil-Komi, 2017b).

In summary, the findings from the interviews with community members in Shelyaur, Shelyabozh, Kolva and Ust’-Usa, the researcher’s observations and reports of the government and NGOs indicate that environmental degradation because of oil exploitation in the Pechora River valley continues today. Oil extraction licences and traditional land use have been increasingly overlapping. The community experiences suggest that climate-related processes will and already are having direct implications for the patterns of oil industry-related environmental impacts, aggravating the highly stressed environment. At the same time, it appears that the environmental impacts of oil exploitation could be attributed to exacerbating climate change impacts, which subsistence-oriented communities experience first. The societal outcomes of the intersecting impacts will be summarised in section 5.3 of this chapter.
5.2.2 Findings obtained from the Nenets in the Bolshezemelskaya tundra (KR2)

The second local case examines the Bolshezemelskaya tundra. The Nenets Indigenous people rely on the tundra for supporting nomadic reindeer grazing. Inputs from interviews with members of two reindeer herders’ obschinas, the researcher’s observations and the regional government reports indicate that the Bolshezemelskaya tundra is undergoing rapid environmental changes because of the oil and gas industry, including the Bovanenkovo-Ukhta and Bovanenkovo-Ukhta II gas transmission systems and oil explorations works by Shell. The cumulative environmental impacts on tundra and livelihoods are increasingly severe and permanent. As discussed below, reindeer herders highlighted fragmentation of the pastures and their poorer quality and environmental pollution as salient environmental impacts of these projects (KR2 C1-C5). The observations during fieldwork support the evidence of the ongoing environmental degradation in this remote area, still poorly addressed in Komi government environmental reports (figure 5-2 and table 5-2).

Figure 5-2. Fragmentation of tundra by permanent roads and construction camps (left top and bottom) and sand and stone mining (right top), the Bolshezemelskaya tundra. (author: J. Loginova)
Table 5-2. Environmental changes identified in the Bolshezemelskaya tundra (KR2)

<table>
<thead>
<tr>
<th>Environmental changes</th>
<th>Physical observations, interviews, NGOs reports and previous research</th>
<th>Government reports</th>
</tr>
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<tbody>
<tr>
<td><strong>Mechanical influence on the landscape</strong></td>
<td>The industrial infrastructure in the area has patchy and linear character, resulting in fragmentation of pastures. Any disturbance to the peat level leads to irreversible changes. The natural restoration is slow (Kumpula et al., 2011).</td>
<td></td>
</tr>
<tr>
<td>- construction of permanent roads</td>
<td>The access is limited administratively and physically – by putting stones and boulders on the road entrance.</td>
<td>Not addressed</td>
</tr>
<tr>
<td>- tracked vehicles</td>
<td>With the use of tracked vehicles comes complete removal of vegetation and disturbance of topsoil. The movement of vehicles was not restricted to the road, and various vehicles were traversing fragile tundra and leaving degraded ecosystems (Walker et al., 2010).</td>
<td></td>
</tr>
<tr>
<td>- digging pits</td>
<td>Transformation of micro-relief, burial and destruction of vegetation, soil and hydrological regime.</td>
<td>Not addressed</td>
</tr>
<tr>
<td><strong>Environmental pollution</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- atmospheric pollution</td>
<td>Dust primarily from coal mining and processing covers the ground.</td>
<td>Excess over the average acceptable concentration for Russia for benzo(a)pyrene (KomiEnvironmentReport, 2016).</td>
</tr>
<tr>
<td>- soils pollution</td>
<td>Contamination by dust and sand result in the peat layer that protects permafrost being degraded.</td>
<td>Not addressed</td>
</tr>
<tr>
<td>- river pollution</td>
<td>Localised pollution of soils, surface and underground waters, leads to the accumulation and concentration of oil. Requires land reclamation.</td>
<td>Vorkuta river classified as significantly polluted (KomiEnvironmentReport, 2016).</td>
</tr>
</tbody>
</table>
“Already here they started to look for something. They will put the tower here and it will take off. I know all this” told a Nenets reindeer herder while looking in the tundra (KR2 C1). At first sight, he was not particularly concerned with the expanding anthropogenic landscape in the area. However, further dialogue uncovered that there are significant and rapid changes. For example, a new road being built since 2009 for construction of the Bovanenkovo-Ukhta pipelines brought many changes to this herding space. Dust, noise, vehicles, workers – make the place stressful and busy. “It has got very busy here...once the road appeared” he said observing trucks crossing the tundra (KR2 C1). Another man said how the new road “separated tundra in two parts, there was so much noise, dust, many cars and trucks, pipelines, people. Reindeers were scared. It was hard to assemble them” (KR2 C2).

Herders worry that their herd do not get mixed with the herd following (KR2 C4). They do not simply move across the tundra, they follow the reindeer herds. The number of animals and how they move across the land influence the pasture conditions. Prolonged heavy grazing in one location negatively affects the whole system of collective herding (Forbes, 2013). Larger and denser infrastructure means that reindeer herders have altered their traditional routes when traversing tundra. This is despite some technological solutions by the companies to mitigate the negative effects of linear infrastructures on herding (for example, adjusting pipeline heights allowing reindeer to pass, or building bridges for animals to cross above the pipelines). The complex changes contributed to the conflicts among reindeer herders over the access to pastures. Violent conflicts took place between a reindeer herders’ cooperative and private reindeer herders in 2013 — a symbol, perhaps, of the major changes the area is undergoing.

Map 5-2 demonstrates the overlap of oil concessions and the oil and gas infrastructures with reindeer herding pastures. A female tent-worker explained that “many of the areas where our ancestors moved, are drilled and polluted now” (KR2 C4). Another herder explained that it is more difficult to herd reindeer for his obschina because of pollution. “It became more difficult to live here. Living here requires a lot of work. If you did not work, you have nothing to eat, nowhere to sleep. But how can you work, if there are coal and oil in the air you breathe, and in the water you and your animals drink” (KR2 C3).
Map 5-2. Traditional natural resource use and oil licences in the Bolshezemelskaya tundra in Komi (KR2), Russia*

*see Appendix C, table C–1 for names of localities in common and local languages.
Climate-related changes further aggravate opportunity to practice reindeer herding. When asked about climate change impacts, members of the obschinas explained that the southern border of the tundra had moved north by several kilometres, the indicators being the more intensive growth of trees and bushes under warmer temperatures (KR2 C4). There is an extended gullying in tundra and coastal erosion at the Kara sea (KR2 C4). Much more areas are watered by thermokarst lakes, linked to thawing of permafrost. Interviewees believe permafrost may also be impacted by the injection of produced waters, a by-product of oil extraction, into oil wells (KR2 C4).

There are no permanent settlements for these obschinas of reindeer herders. They move across the tundra, stopping by towns and villages on their way in the need for foodstuffs, medical assistance or bureaucratic procedures. The oil and gas companies have set the occasional delivery of basic foods to the tundra, and provided assistance in the organisation of traditional festivals and skills competitions. “It is convenient that we can buy products in tundra. We can also order snowmobiles, films, batteries, and other things” (KR2 C5). Companies also contribute to the traditional celebrations and competitions in skills, where the industrial workers also actively participate (KR2 C3).

At the same time, a Nenets woman explained that pipelines were crossing lakes sacred to their obschina (KR2 C4). Industrial workers had been seen fishing and swimming there, and such conduct is not appropriate, she said. However, it brings a large influx of people and transportation vehicles that “disturb the silence” (KR2 C4). This is seen not only as damage to subsistence activities but also to the essence of being. Many sacred sites have spiritual importance beyond one obschina, and any disturbance to them becomes a matter of societal concern for Nenets people.

In summary, the insights from the interviewees representing Nenets obschinas, the researcher’s observations tundra and the government reports provide evidence to a range of environmental changes in the Bolshezemelskaya that can be linked to the expanding extraction and transportation of oil, gas and coal, and increasingly intrusive impacts of climate change. The intersecting impacts of the oil industry and climate change appear to manifest in the fragmentation and degradation of tundra resulting in a reduction in the area available for pastures, critical for the socio-ecology of Nenets reindeer herding. The societal outcomes will be analysed below.
5.2.3 Findings obtained from the Evenks in the Aldan plateau (SRI)

The Aldan plateau is the third local case for this study representing a dynamic environment characterised by resource extraction-related drivers of change. Evenks Indigenous people have lived in the area relying on seasonal forest reindeer herding, fishing, hunting and animal-trapping for meat and fur (Kulikova, 2015). A century of mining (gold and coal) introduced certain features in the landscape navigated by the Evenks in the southern Yakutia (Yakovleva, 2014). Hidden in the forests, massive excavations were created by small cooperatives of gold diggers and large coal enterprises. They have left kilometres of tailings and towering piles of bleached mine waste throughout the landscape (figure 5-3). In the last decade, the landscape was traversed by massive installations of the ESPO oil pipeline run by Transneft, and there is ongoing construction of the Gazprom’s Power of Siberia gas pipeline.

The construction of these infrastructures involved numerous roads, excavation sites, working camps and power lines. In the interviews, residents of two Evenks villages Khatystyr and Iengra highlighted adverse environmental changes they experienced because of these developments, including landscape fragmentation and pollution with chemicals. During the fieldwork in August 2015, a range of environmental impacts has been identified through physical observations during site visits to the gold mining areas and pipelines installations. Additionally, the government reports about the state of the environment inform about the exposure to pollution with radiation and numerous heavy metals found across the plateau (table 5-3).

![Figure 5-3. Gold mining excavations on the Iengra River near Iengra village as seen in GoogleMaps (left) and on-site (right), the Aldan plateau. (author: Google Maps (left) and J. Loginova (right))](image-url)
## Environmental changes identified in the Aldan plateau (SRI)

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<thead>
<tr>
<th>Environmental changes</th>
<th>Physical observations, interviews and previous research</th>
<th>Government reports</th>
</tr>
</thead>
<tbody>
<tr>
<td>Landscape fragmentation</td>
<td>Due to access roads and pipelines (see also Yakovleva, 2011).</td>
<td>Not addressed</td>
</tr>
<tr>
<td>Pollution of rivers with toxic chemicals</td>
<td>The long legacy of mercury’s use in gold mining (amalgamation used until 1986).</td>
<td>Classification of Aldan river is “very polluted” by copper, iron, mercury, lead, arsenic, vanadium, molybdenum, zinc and other elements (SakhaEnvironmentReport, 2016).</td>
</tr>
<tr>
<td>Discharge of industrial waste and drainage water</td>
<td>Placement of a significant amount of waste material outside the pit. Lack of absence of remediation actions. The absence of stormwater drain: rainwater filters through the mounds, picking up heavy metals, cyanide and acids used in mining, resulting in acid mine drainage (SakhaEnvironmentReport, 2016).</td>
<td></td>
</tr>
<tr>
<td>Tailing dams</td>
<td>Tailings are established but poorly insulated and monitored.</td>
<td>The tailings contain uranium, lead, arsenic and other heavy metals. While these elements occur naturally, they have been brought to the surface and concentrated far faster than would occur through erosion (SakhaEnvironmentReport, 2016).</td>
</tr>
<tr>
<td>Exhausted mines</td>
<td>Miners continuously re-open mines and revisit the tailings, as the original extraction was not exhaustive.</td>
<td>Water pollution in areas of intensive gold mining. Intensive erosion of insufficiently remediated areas (SakhaEnvironmentReport, 2016).</td>
</tr>
<tr>
<td>Deforested areas</td>
<td>Cutting on the forests for access roads (see also Yakovleva, 2011), pipelines and power lines.</td>
<td>Not addressed</td>
</tr>
<tr>
<td>Noise pollution</td>
<td>Noise pollution during construction and from traffic (see also Yakovleva, 2011).</td>
<td>Not addressed</td>
</tr>
<tr>
<td>Pollution of land with oil and oil products</td>
<td>No evidence documented due to remote locations of the sites.</td>
<td>Not addressed</td>
</tr>
<tr>
<td>Radiation pollution</td>
<td>No observations.</td>
<td>Patchy pollution with gamma radiation from the extraction of thorium ores, uranium and gold. Sand from gold mining tailings was used to build houses and roads in Aldan and villages. Many areas are not inspected. The legacy of nuclear explosions from 1974-1987 with the purpose of intensification of oil and gas inflow (SakhaEnvironmentReport, 2016).</td>
</tr>
</tbody>
</table>
Community members of Khatystyr and Iengra expressed concerns about the loss of good quality pastures for reindeer herding, the increase in wild animals and pollution of water and land. Interviewees stressed that their reliance on reindeer herding, as well as fishing and hunting, is at risk with the development of large-scale oil and gas infrastructure systems: “We cannot follow traditional routes, nor find a substitution for them” (SR1 C6). They think that livelihood insecurity has increased for those obschinas where roads and pipelines have disturbed good quality pastures and migration routes. Map 5-3 demonstrates resource extraction activities and associated infrastructures as well as traditional land use in the Aldan plateau area.

*see Appendix C, table C–1 for names of localities in common and local languages.
Interviewees fear that fragmentation of the landscape leads to alterations in habitat and species of wildlife. They noted the occurrence of an unusually high number of animal species, especially wolves, and the immediate danger from the increased number of predators on reindeer herds. Some associated this issue with the large-scale oil and gas infrastructure. A male herder suggested that the construction of pipelines and roads required forest clearance (SR1 C2). Fragmentation of landscape together with the industrial noise made wolves and other wildlife move close to pastures and villages (SR1 C2). Other interviewees suggested an impact of climate dynamics on the wildlife (SR1 C1, C5). Wolves attack reindeer, and as a result there have been significant decreases in the herds of some obschina (for example, in 2014). An official representing the Agriculture Department of ulus administration confirmed the losses, stressing the possible impact of the ban on certain poisons used for the wildlife population control on the rising wolf’s population (SR1 G1). He explained that it is challenging to restore the size of a herd, and some obschinas chose not to, despite compensations provided by the municipality for the losses.

Interviews demonstrate that gold mining in the Aldan plateau is already being affected by the erosion processes and flooding (SR1 C4, C7). Interviewees perceived that gold mining modifies river flows and changes river channels, altering river regimes and riverbank erosion rates (SR1 C4). Communities observed how miners dedicate a substantial amount of their time to the strengthening of river banks to protect mines and tailings from overflow (SR1 C7, C10). Sometimes mining has been suspended due to failures in technology after excessive rains (SR1 C3). Community members worried that during rains rainwater filters through the mounds, accumulating heavy metals, cyanide and acids used in mining, and pollutes the creeks and rivers in the Aldan and Amga river basins, if tailings are not established or not properly secured (SR1 C4). “They get flooded often. And then all their mud and rocks get to the river” (SR1 C4).

There are strong connections between environmental change and livelihoods, with complex implications for peoples’ cultural, emotional and spiritual values embodied in

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39 Also discussed at a Seminar about climate change impacts and challenges for Indigenous peoples, October 2015, Yakutsk, meeting minutes.
identity. An Evenk woman from the affected obschina rhetorically asks, “I have a reindeer, I am Even. I have no reindeer, then I am not an Evenk?” (SR1 C1). The concerns were expressed over the needed search for good alternative lands, protected areas from harsh climate and wild animals with the access to rivers and creeks that were not polluted from gold mining (SR1 C1, C3, C6-C9). Others referred to the urgent need to develop alternative livelihoods that could provide greater livelihood security (SR1 C4, C5). There have been initiatives by Evenks to engage in the broader market economy and alter their primary activities (SR1 C4). For example, in 2014 an obschina was successful in winning a licence to take part in a gold mining conglomerate. Another obschina from Khatystyr has acquired a wood-cutting facility and generated profits from selling wood to surrounding villages (SR1 C5). Both initiatives relatively succeeded despite competition with more powerful actors from bigger towns.

In summary, perceptions and experiences of the Evenks community members, the researcher’s observations and the government reports suggest the intersecting impacts of gold mining and oil and gas infrastructures and climatic changes. They are manifold, but increasingly affecting Evenks people’s access to high-quality pastures and affecting the security of their livelihoods and cultures.

5.2.4 Findings obtained from fishers in the Indigirka delta (SR2)

The final local case, the Indigirka River delta in northern Yakutia, demonstrates how communities of Russkoe Ust’e and Olenegorsk are facing with rapid landscape transformations and fearing the impacts of offshore oil exploration by Rosneft on their fishing-based livelihoods. The interviews indicate a wide range of environmental changes, including coastal and riverbank erosions, gullying, changes in river depth and meandering, pollution of river and changes in vegetation, fish and wildlife (SR2 C1-C10). The physical observations and the regional and municipal government and environmental reports provide additional evidence of environmental changes (table 5-4 and figure 5-4).
Chapter Five. Societal outcomes of double exposure in Komi and Yakutia

<table>
<thead>
<tr>
<th>Environmental changes</th>
<th>Interviews, physical observations and previous scientific research</th>
<th>Government reports</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Landscape degradation</strong></td>
<td></td>
<td>Natural dynamics of the changing riverbed of the Indigirka River from the right arm to the left due to meandering and eastern winds (Socio-Economic Development Program of the Allaikha ulus, 2011; Investment Passport of the Allaikha ulus, 2015).</td>
</tr>
<tr>
<td><strong>Riverbank erosion</strong></td>
<td>Russkoe Ust’e village is highly exposed to a changing river meander. Shores are degraded and collapsed in some places. Wooden sticks and tyres are used to prevent maintain the integrity of the shores. Mining for mammoth bones occurs along rivers and streams, destroying river banks.</td>
<td></td>
</tr>
<tr>
<td><strong>Gullying</strong></td>
<td>There three major gullies in Russkoe Ust’e, affecting cemetery, community boiler and several houses. Numerous leakages of hot and cold water from buildings. Gullies are filled in with trash to prevent further gullying (SR2 C1).</td>
<td>Coupled influence of natural and anthropogenic forces. Anthropogenic influence includes numerous leaks of wastewater and the leakage of water due to the absence or sewerage systems. It results in the emergence of new and an increase in the intensity of existing gullies (Socio-Economic Development Program of the Allaikha ulus, 2011; Investment Passport of the Allaikha ulus, 2015).</td>
</tr>
<tr>
<td><strong>The depth of river for navigation</strong></td>
<td>The river is more shallow, difficult for boats to find enough depth on the whole way on fishing sites. Many cases of boats stuck in the middle of rivers, and cases of fatalities (SR2 C2-C4).</td>
<td>Not addressed</td>
</tr>
<tr>
<td><strong>Environmental pollution</strong></td>
<td></td>
<td>Recognised as a major challenge to drinking water and continuation of fishing in some areas close to villages. River classified as extremely polluted around the villages (Socio-Economic Development Program of the Allaikha ulus, 2011; Investment Passport of the Allaikha ulus, 2015).</td>
</tr>
<tr>
<td><strong>Pollution of the river with faecal and waste</strong></td>
<td>Due to the absence of a sewage system and landfills in villages, rivers are contaminated with human waste.</td>
<td></td>
</tr>
<tr>
<td><strong>Pollution of the river with fuel and lubricants</strong></td>
<td>Oil containing barrels are located close to the river in areas prone to flooding. Many are deformed, and some are leaking. Some are affected by erosion and gullying (spills in 2009, 2010 and 2016).</td>
<td>Recognised as a high risk, since fuel storage tanks are located at the river banks and there have been spills from deformed and flooded barrels and containers (Socio-Economic Development Program of the Allaikha ulus, 2011; Investment Passport of the Allaikha ulus, 2015).</td>
</tr>
</tbody>
</table>
Chapter Five. Societal outcomes of double exposure in Komi and Yakutia

<table>
<thead>
<tr>
<th>Environmental changes</th>
<th>Interviews, physical observations and previous scientific research</th>
<th>Government reports</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changes in vegetation, fish and wildlife</td>
<td>A significant decrease in the number of caught fish likely due to increasing water temperatures, changing migration routes and not adaptive fishing regulations (see also Ksenofontov et al., 2017).</td>
<td>Not addressed</td>
</tr>
</tbody>
</table>

Figure 5-4. River banks erosion affecting uchastok (left and centre), a gully affecting cemetery (right), Russkoe Ustie, the Indigirka River delta (author: J. Loginova).
Interviewees linked environmental change to the risks to livelihoods based on fishing. (see Map 5-4 for the location of land use for fishing and pastures and offshore oil licenses). “Our whole life depends on fish. If there is no fish, what else we will do. The seismic testing cannot be harmless for fish. Some of the best fishing places are in the river delta” (SR2 C4).

Map 5-4. Traditional natural resource use and offshore oil licenses near the Indigirka delta in Yakutia (SR2), Russia*

*see Appendix C, table C−1 for names of localities in common and local languages.
The perceived crisis in the area is in decreasing local fish populations and alterations to catch. For example, instead of valuable whitefish (chir and muksun), there is more spike that was usually used only for feeding dogs, but had to enter the human diet (SR2 C1). Also, fishers reported that their traditional sites, equipment and techniques are no longer always suitable to changing water depth and the fish species they catch (Ksenofontov et al. (2017) provided similar observations).

Another stressor for fishing activities in the area is the processes of riverbank erosion and gullying (SR2 C3-C6, C9). Erosion and gullies are formed naturally in local ecology due to the migration of river channels, ground ice melting and thermokarst lakes migration. However, these processes are intensified by anthropogenic influence due to vegetation cover damage, accumulation of snow, runoff, the formation of local sources of warmth on the surface. Indeed, people are strongly concerned about the speed of riverbank erosion and landslides along the Indigirka River and its tributaries: “Of course, banks were always being washed away, but this process is very rapid now. Every year, the distance from my fisher house to the river is dwindling” (SR2 C5). Another man worried: “Every year, the distance from my fisher house to the river is ‘melting on my eyes’” (SR2 C1). A number of fishing huts along the river are exposed to river bank erosion, with the loss to individual storage facilities for food and caught fish at uchastoks.

Many gullies being formed in villages have been observed. There are three big gullies that cross Russkoe Ust’e village. They affect built environment, communications and create a broken topography. Gullies have already compromised the structural integrity of several homes in Russkoe Ust’e, putting critical and community life-supporting infrastructure (community boiler, community bath, cemetery and school) at risk of collapse. Collective lednik of the size of 950 cubic metres with the constant temperature of minus 11 degrees in 1985 was at a distance of 300 metres from the shore to lednik, while now only 30 metres (SR2 C2). Without this collective storage facility, the community would not be able to store all the fish catch over the season that lasts three-four months before a barge arrives and collect the catch.

In sum, insights from the interviewees, observations and documents highlight the growing concerns over the opportunity to rely on fishing as a subsistence-livelihood in the face of climate change and offshore oil extraction the Indigirka River delta.
5.3 Societal outcomes

The insights from the interviews, the researcher’s observations and reports of the government and NGOs, presented in the previous section, appear to support the assumption that climate change does and will have implications for the communities that host resource extraction projects. When asked about environmental risks interviewees referred to a broad range of negative outcomes from the intersecting impacts of climate change and resource extraction (there have been positive too, for example through the contribution of the oil industries to social infrastructure). This section expands on the negative societal outcomes of the experienced and perceived environmental changes by identifying the valued objects at risk. In this analysis, the results are presented using five categories: (i) traditional livelihoods and land use, (ii) belonging to place, (iii) liveability of settlements, (iv) human and animal health, and (v) future development opportunities (see section 5.1 for the details on the categories). Table 5-5 provides a summary of the societal outcomes of double exposure to oil industry expansion and the impacts of climate change.

Table 5-5. Summary of the societal outcomes of double exposure across four local cases and five categories of valued objects

<table>
<thead>
<tr>
<th>Category of valued objects at risk</th>
<th>Outcome of the intersecting impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>traditional livelihoods and land use</td>
<td>Altered opportunity to practice traditional livelihoods on traditional lands and livelihood insecurity (KR1, KR2, SR1, SR2); traditional food insecurity (KR1; SR2)</td>
</tr>
<tr>
<td>belonging to place</td>
<td>Threats to sacred sites and cemeteries (KR2, SR2)</td>
</tr>
<tr>
<td>liveability of settlements</td>
<td>Risks to housing and critical infrastructure (KR1, SR1, SR2); improvements (however, unequal) in housing and critical infrastructure (KR1, SR1), access to clean water (KR1, SR2)</td>
</tr>
<tr>
<td>animal and human health</td>
<td>Increased risks to human and animal life and health (KR1, KR2, SR1, SR2)</td>
</tr>
<tr>
<td>development opportunities</td>
<td>Reduced opportunities to develop traditional livelihoods (KR1, KR2, SR1, SR2); increased development of alternative livelihoods (KR1, SR1)</td>
</tr>
</tbody>
</table>

Traditional livelihoods and land use

Livelihoods across four local cases continue to depend strongly on subsistence-oriented activities. Across the cases, interviewees emphasised the importance of reindeer herding, fishing, hunting and gathering for their consumption, sharing among community members and trade. Impacts of climate change and resource extraction were linked to
Chapter Five. Societal outcomes of double exposure in Komi and Yakutia

alterations in the opportunity to practice these activities. Traditional livelihoods and land use have ceased to take place in the way older generations were used to. Extractive operations, a process linked to globalisation and modernisation, have generated direct negative impacts on the socio-ecology of subsistence-oriented livelihoods at the local level through intensive infrastructure, additional pressure on the environment and its resources, and environmental pollution. These impacts were experienced in combination with other issues that restricted the access to pastures and natural resources, including introduced regulations on fisheries and pastures. Disrupted by environmental degradation, interviewees emphasised the importance of protecting their environment from environmental change, associated with anthropogenic impacts, so they can maintain their traditional subsistence activities, culture and identity. They think it will be hard for alternative pipeline routings that do not cross pastures. But at least, interviewees suggest, good care needs to be taken about the pipelines and wells, to minimise pollution. Also, interviews suggested that new projects should avoid sacred sites and risky areas for flooding or forest fires. The discussion is necessary with members of obschinas and villages who have knowledge of the local environment.

**Belonging to place**

In all cases, communities exhibited a strong degree of attachment to land, rivers and lakes, sacred sites and cultural and spiritual sensitivity to landscape, and threats to them are considered very serious. The opportunity for being self-reliant and live off the land is highly valued among the communities. Interviewees emphasised the risks to cultural and spiritual aspects involved in losing and damaging the environment because of new infrastructures or pollution. This was highlighted not only for communities residing close to resource extraction sites and its infrastructure, but for peoples as a whole since their own cultures are shaped and supported by the surrounding environment.

**Liveability of settlements**

Studied communities are remote with poor built and transportation infrastructure and limited services. Environmental degradation creates many challenges for villages. Riverbank erosion, gully ing and flooding have already affected riverside settlements. There is concern about the quality of river and well water, meaning bottled water needs
to be transported and drunk to avoid the polluted rivers. Communities close to oil extraction sites experience more improvements in housing and critical infrastructure in villages. In remote places, where there is a lack of economic opportunity, and the capacity of local municipalities is rather weak, company contributions are significant. Interviewees described, however, the unequal distributions of the benefits among individuals and communities. Therefore, collective living for the communities studied is facing cumulative impacts from the expanding extractive operations, combined with the impacts of climate change.

**Human and animal health**

Interviewees said their health and health of their animals were affected as a direct outcome of oil exploitation. In communities affected by environmental pollution, human and animal health were salient issues. Pollution of air, soil, freshwater and groundwater are present. The strongest concern is the lack of knowledge and information about the actual and potential effects of the oil activities on human and animal health. There is no relevant data available in relation to the risks of soil, water and air pollution and its effects on consumed fish and plants. Residents expressed the need to monitor air and water quality and conduct public health reviews.

**Development opportunities**

Interviewees described the current local development as slow. Development is envisioned as more housing, more reliable and affordable energy generation, more shops and roads. Obschinas want to see improvements in means of transportation (snowmobiles, motorboats, cross-country vehicles and energy generation). Several interviewees spoke of engaging in oil industry jobs. They explained that such opportunity was usually short-term employment for the construction of roads or pipelines, which is expected to last for three years or so. Some community members experienced issues with having to follow a strict working schedule and with receiving correct compensation for their work. The interviewees think that communities are now aware of the cyclical nature of extraction operations. Development brings convenience in terms of liveability of settlements affected, but interviewees recognise that extraction-based development comes at the expense of disturbance to other values. The pristine environment of the Arctic tundra and
virgin forests of Komi and Siberia are envisioned as an asset for regional tourism projects, but the conflict with extensive and visible degradation for resource extraction is already evident.

5.4 Discussion

In this chapter, the four local cases were considered for what they can tell us about how Indigenous and rural communities in Komi and Yakutia experience the impacts of oil exploitation in interaction with climate-related processes (RQ 1). Odell et al. (2018) highlighted the issue of the intersecting impacts of resource extraction and climate change on host communities, and this chapter offered a more nuanced understanding of the experiences of the environmental impacts and the societal outcomes of double exposure based on the perceptions of local communities, observations of the researcher and the reports of the government and NGOs.

The findings support previous studies in that the oil industry has had and will have profound disruptive environmental impacts on the livelihoods and territories of traditional natural resource use in Komi and Yakutia (spills of oil and produced waters, landscape fragmentation and poor waste handling among others) (Walker, Crittenden, et al., 2006; Yakovleva, 2011). Interviewees were also perceptive of changes in local climatic factors and its effects, including observing higher temperatures and precipitation extremes, floods, coastal and riverbank erosion, changing flora and fauna, as also observed in other emerging local studies (Forbes et al., 2016; Ksenofontov et al., 2017). Local observations of environmental changes associated with the global processes of climate change are not unique to these cases, and have been identified around the world (Petheram et al., 2010; Savo et al., 2016) and other sub-Arctic and Arctic regions (Crater, 2018; Henry et al., 2014; Herman-Mercer et al., 2011; Krupnik & Jolly, 2002; Wilson, 2014).

It is difficult to assert the intersecting environmental impacts of oil extraction and climate change definitively; communities see the totality of damage originating from industrial development and climate change, and do not always identify its specificities. However, the findings indicate that climate change appears to be exacerbating the patterns of environmental impacts resulting from oil extraction, and in turn, environmental impacts of oil extraction seem to increase the severity of climate change impacts. Additionally,
the spatial interactions of oil extraction and climate change manifest in altering the
dynamics of environmental degradation — more frequent and severe as well as new
challenges. The nature of the interactions depends on the contextual conditions, the stage
of operations and the methods of extraction and transportation, and it was beyond the
scale of this study to describe every actual or potential interaction. These local
experiences indicate the complexities of the interactions to be further researched and
confirmed in scientific studies.

The issue of the intersecting environmental impacts can be explained by the expanding
oil industry towards areas with vulnerable social and ecological systems as conventional
easy to exploit sites become exhausted. As a result, licences for the oil industry
increasingly overlap with territories used for traditional natural resource use.
Additionally, poor technological and managerial solutions for design and implementation
of the projects and responses to accidents — these can be traced to different companies
and poor government regulations — are evident. Design of wells, pipelines and tailing,
in the absence of strict regulations followed the cheapest solution and did not consider
increasingly challenging weather and climatic conditions. The risks can be higher if
mitigation measures, such as reinforcement and elevation of drilling sites, are not taken.
However, even if designed well, climate change related events may go beyond
foreseeable design parameters. Moreover, climate change has the potential to alter the
environment to the extent where it may pose unacceptable risks to extraction in a warming
climate, or be too technically complicated and economically costly.

Heterogenous community members consider that the impacts of oil extraction and climate
change, independently and together, have affected their livelihoods and their villages, and
their effects will be felt for a long time. They perceive their vulnerability to climate
change to be stronger because of the industrial development (see similar findings from
communities in Ecuador (Eisenstadt & West, 2016)). The study found that the
identification of the valued objects at risk depended on the interviewees’ experiences of
specific environmental changes in the broader area and other localities. For example,
fishers blamed pollution and climate change for the poor catch, while reindeer herders
were most concerned about access to pastures, their quality and animal health. Women
refer to spiritual values embedded in the landscapes and strong emotional and cultural
Chapter Five. Societal outcomes of double exposure in Komi and Yakutia

aspects at stake. The younger generation perceived a lack of development opportunities more keenly. Many changes result in outcomes that go beyond individual experiences and are seen to affect the collective functioning of communities through altered visions of future development. Oil exploitation and climate change appear among important drivers of livelihood insecurity, but they are experienced together with other not less important and even more pressing issues on livelihoods and villages (for example, enforcement of formal regulations on fisheries or lack of land tenure security). Therefore, the societal outcomes of the intersecting impacts are defined endogenously (Adger et al., 2009).

Communities are aware of the intensifying causal relationship between the local environmental changes and the broader processes beyond their control (for example, oil markets, licencing, government regulations, corporate decisions and weather patterns). These processes meet the interests of external to these communities’ organisations and individuals, and profit them, at the expense of the environment, livelihoods and cultures of the communities. In this way, applying double exposure to resource frontiers corresponds to ‘double losers’ (O’Brien & Leichenko, 2000) when facing the expanding oil industry and the impacts of climate change.

The processes of environmental change force the residents to confront an uncertain future. It is unclear what will happen to environmentally disturbed sites, once the extraction operations cease. The unpredictable nature of many events is aggravated by the lack of scientific and technical knowledge among community members, with few opportunities to gain contacts and experience. Local people were largely unaware of possible implications of oil exploration and extraction. There is an overall absence of reliable and transparent information on the nature of the impacts, both from resource extraction and climate change. Communities worried that many undocumented and unaddressed impacts appear. Thus, uncertainty (in line with Turner et al. (2008)) is a significant outcome of double exposure to extractive industry expansion and the impacts of climate change. Lack of scientific and technical information adds uncertainty to the lives of northern residents and limits the current options to inform responses needed for more equitable adaptation.

The relational approach to risk (Boholm & Corvellec, 2011) taken in this chapter enables identification of the societal outcomes of double exposure to resource extraction and climate change (Odell et al., 2018) based on the concerns what matter for people
Chapter Five. Societal outcomes of double exposure in Komi and Yakutia (Cameron, 2012). The awareness of the intersecting impacts can empower affected communities to engage in negotiation with decision-makers and planners involved in the implementation of resource extraction projects and climate change policies. The perspectives and experiences of locally affected communities need to be considered as part of adaptation responses that goes beyond alleviating environmental risks to an extraction site but assists in the development of more equitable outcomes.

5.5 Conclusion

Recalling the RQ 1, this chapter explored how Indigenous and rural communities in Komi and Yakutia experience the impacts of oil exploitation in interaction with climate-related processes. Four cases were examined. The findings show that oil extraction licences increasingly overlap with ecologically and culturally fragile regions and harms socio-ecological systems that have existed for many centuries, and which are now also affected by climate change. The intersecting impacts are associated with new types and more severe environmental pressures on fragile landscapes and northern peoples. A relational perspective to risk was used to comprehend the societal outcomes of double exposure to oil extraction expansion and the impacts of climate change. The following chapter six identifies community responses to double exposure and places them in the context of historical socio-economic and political transformations.
CHAPTER SIX Community responses to double exposure in Komi and Yakutia

6.1 Introduction

The previous chapter demonstrated how the exploitation of oil in Komi and Yakutia has had and will continue to have a profound impact on the case study communities. The impacts of climate change result in new and more severe environmental risks and adverse societal outcomes, rendering the framing of the intersecting impacts of double exposure (O'Brien & Leichenko, 2000) relevant for the settings. Earlier studies provided evidence that local communities throughout the world have been actively responding to environmental changes rather than passively accepting arising challenges (chapter two, section 2.3). A small but growing number of studies documented community responses in northern Russia (chapter three, section 3.4). However, few works considered responses of communities affected by oil exploitation in Komi and Yakutia. This chapter asks (RQ 2): How do Indigenous and rural communities in Komi and Yakutia respond to the impacts of oil exploitation and climate change?

The following section 6.2 provides an overview of community responses to a diversity of environmental changes associated with double exposure. During the interviews about their responses, community members consistently referred to historical events and trajectories that shaped current response space. Therefore, an improved understanding concerning the “how” of community responses to change requires consideration of the deep connections between local dynamics and broader political-economic and historical processes.

Using a political ecology approach to adaptation (Cameron, 2012; Karlsson & Bryceson, 2016; Taylor, 2015), the analysis in section 6.3 places community responses in the context of historical socio-economic and political transformations in the Soviet and the post-Soviet Russia (building on an overview of the northern frontier in chapter three, section 3.4). The findings demonstrate that current response space has been shaped by traditional orders and institutions of Indigenous communities, patterns prevalent in the Soviet period and modern economic structures. Section 6.4 discusses the implications of the findings for understanding and supporting future adaptation decisions in case study communities.
6.2 Community responses to environmental change

This section describes how communities in Komi and Yakutia have been able to respond to environmental changes, identified in chapter five. The examples of community responses are presented separately for each case: the Pechora River valley (KR1), the Bolshezemelskaya tundra (KR2), the Aldan plateau (SR1) and the Indigirka River delta (SR2). Table 6-1 provides a summary of the findings across four cases, noting the major environmental changes experienced by communities and illustrating how communities have been attempting (or not) to respond.

6.2.1 The Pechora River valley (KR1): learning to live with the oil industry and organising to protect the environment and livelihoods

With the intensifying development of the oil industry (exploration and extraction) in the Pechora River valley, Komi-Izhma community members have responded in various ways. Recognising the importance of sustaining traditional livelihoods of reindeer herding, hunting and fishing, communities have been seeking ways to enlarge reindeer herds, expand meat processing facilities and revitalise reindeer skin-making. Searching for support, they turned to the federal and regional agriculture assistance programs. The federal government programs through the allocation of grants and subsidies favoured small-scale farms (cows and horses), wood-working workshops and dairies over the traditional reindeer herding (federal funding for traditional livelihoods is not allocated to the communities due to the lack of status of Komi-Izhma people as KMNS). Regional government programs had only limited funds to support reindeer herding. Additionally, youth from Shelyaur and Shelyabozh (and other rural communities) who were seeking employment in the oil industry found opportunities for technical training in the Izhma rayon and Usinsk town district employment centres.

As environmental pollution intensified, community members have self-organised to collectively take part in oil spill clean-up operations along creeks and river banks, to demand air and water quality control, to perform community monitoring of environmental degradation and to contest the business-as-usual operations of the oil industry.
## Table 6-1. Responses to environmental change in Komi and Yakutia

<table>
<thead>
<tr>
<th>Changes</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased pressure on livelihoods because of expanding oil exploration and extraction overlapping traditional land use</td>
<td>- Cleaning voluntarily creeks and river banks</td>
</tr>
<tr>
<td>Intensifying environmental pollution: air pollution, discharge of oil and produced water, dumping of oily and other waste, oil sludge and tailings, abandoned oil wells, inadequate oil spill control and recover (table 5-1).</td>
<td>- Demanding air and water quality control</td>
</tr>
<tr>
<td>- Organising to contest environmental pollution</td>
<td></td>
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<tr>
<td>- Engaging in community monitoring of environmental degradation</td>
<td></td>
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<tr>
<td>Flooding affecting oil fields</td>
<td>- Participating in planning of oil projects and rigorous control of their implementation</td>
</tr>
<tr>
<td>Increased pressure on livelihoods because of expanding oil exploration and infrastructure, overlapping traditional land use</td>
<td>- Sustaining nomadic reindeer herding and traditional knowledge</td>
</tr>
<tr>
<td>Fragmentation and degradation of landscape related to mechanical influence, environmental pollution and climate change impacts, resulting in reduced areas available for pastures (table 5-2).</td>
<td>- Using industrial road and reaching out to oil camps, oil companies and governments for assistance</td>
</tr>
<tr>
<td>- Changing location for pastures and migration trails to avoid the oil fields</td>
<td></td>
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<tr>
<td>- Competing for pastures</td>
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<tr>
<td>Increased pressure on livelihoods because of expanding large-scale oil infrastructure overlapping traditional land use</td>
<td></td>
</tr>
<tr>
<td>Fragmentation and degradation of landscape resulting in reduced areas available for pastures because of mechanical influence, environmental pollution and climate change impacts (table 5-3)</td>
<td>- Changing location for pastures and migration trails to avoid the large-scale infrastructure</td>
</tr>
<tr>
<td>- Participating in public discussions about the projects</td>
<td></td>
</tr>
<tr>
<td>Flooding affecting settlements, roads and gold mining facilities</td>
<td>- Improved guarding of herds</td>
</tr>
<tr>
<td>- Participation in government programs on wolf population control</td>
<td></td>
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<tr>
<td>SR2. The Indigirka River delta. Russkoe Ust’e, Olenegorsk. Fishing.</td>
<td></td>
</tr>
<tr>
<td>Increased pressure on livelihoods because of climate change impacts</td>
<td>- Sustaining fishing by working more, extending sharing networks, competing with industrial fisheries</td>
</tr>
<tr>
<td>Landscape degradation (riverbank erosion, gullying, shallow rivers) (table 5-4)</td>
<td>- Enforcement of river banks with wooden poles and tyres</td>
</tr>
<tr>
<td>- Filling gullies with trash</td>
<td></td>
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<tr>
<td>- Sharing information about river depths</td>
<td></td>
</tr>
<tr>
<td>Environmental pollution</td>
<td>- No response was identified</td>
</tr>
<tr>
<td>Expanding offshore oil exploration</td>
<td>- No response was identified</td>
</tr>
</tbody>
</table>
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The flooding of oil wells in recent years has sparked an interest in more meaningful participation in planning and more rigorous control of the implementation of oil projects. Therefore, negative environmental impacts also involved seeking interaction with the governments across scales and the oil companies. The participation of Komi-Izhma communities in the oil projects, development of collective action and challenges faced by communities will be discussed in details in chapters eight (section 8.2.1) and nine (section 9.2.1).

6.2.2 The Bolshezemelskaya tundra (KR2): avoiding oil development sites and shifting pastures

Rapidly expanding oil and gas infrastructure across the Bolshezemelskaya tundra and oil exploration near Khamer-Yu, combined with climate change impacts, have greatly affected two nomadic obschinas of Nenets reindeer herders in this study through landscape fragmentation and reduction of good quality pastures (see chapter 5, section 5.2.2). The two obschinas adapted by using the technical road built by the oil company for herding and relying on the oil camps to access fuel, food and other goods.

As operations expanded, each of the two obschinas from this case study has been searching for the ways to sustain their reindeer herding practice despite the loss of traditional pastures. The ultimate response of one obschina was to avoid the oil fields to keep the herds away from the noise pollution, dust, polluted creeks and oil workers prone to drinking. Altering traditional migration trails made the obschina to herd on the pastures used by another obschina from a reindeer herders’ cooperative. The incident promptly escalated into a conflict culminating in burning some of the meat processing and storage facilities of the cooperative and a knife fight between the herders.

Lacking secured access to the pastures, the obschina was forced to shift the migration trail next year to much poorer quality pastures closer to the Ural Mountains risking lives and belongings to avalanches. As at the time of the fieldwork, the municipal government has been unhelpful in resolving the land use issues needed for effective adaptation for this obschina. Other challenges of participation in the oil project will be detailed in chapter 8, section 8.2.2.
6.2.3 The Aldan plateau (SR1): shifting livelihoods and moving to a new village

The Evenks communities in the Aldan plateau have experienced increased pressure on reindeer herding with the development of large-scale oil infrastructure and climate change. The *obschinas* affected by the infrastructure projects responded by altering traditional migration trails to avoid the industrial facilities and degraded pastures. Compare to KR1, the territory available for pastures is larger and the herds of forest reindeer are smaller than tundra herds, enabling finding land suitable for pastures without inter-*obschinas* conflicts. Despite pressures from expanding industrial infrastructure and emerging evidence of oil pollution, community members have done little to negotiate with polluters about their concerns (see chapter nine, section 9.2.2).

Rapidly growing wild wolf attacks on herds and people, a problem recognised as critical by members of the Evenks *obschinas*, required skilled and knowledgeable hunters to cooperate among each other and with the regional and local government to guard the herds and to control wild wolf population in the area. Members of *obschinas* that lost herds to wolves, turned to federal and regional agriculture assistance programs to diversify livelihoods. For example, three families in Khatystyr and Iengra opened woodworking facilities. The municipal administration also assisted a few reindeer herders and hunters in finding contract jobs for forest clearing needed for the construction of the oil pipelines.

In response to the growing risks of flooding, residents of Khatystyr village started building houses on the hill while seasonally residing in the downhill houses when they are not in the forest herding the reindeer or hunting. The establishment of the new village was encouraged by municipal authorities and regional government that, on the conditions of public-private partnership, initiated construction of a kindergarten and a cultural and sports centre on the hill.

6.2.4 The Indigirka River delta (SR2): networks of fishers

A rise in average temperature in recent years and human influences have caused drastic changes in the landscape operated by the fishers in the Indigirka River delta. Landscape change affecting their villages, *uchastok* and fishing-based livelihoods led community members in Russkoe Ust’e and Olenegorsk to search for solutions. They have used
wooden poles and tyres to protect degrading river banks and filled the gullies in the villages with trash to prevent further erosion. Community members who use motor boats for fishing and mobility have been increasingly sharing information about the river depths to prevent boats being grounded, equipment being damaged, catch being lost and to reduce the risk of drowning.

With an increased pressure on fisheries, due to shifting seasons and species, new government regulations and the growing direct competition from the larger scale fishing enterprises, local fishers used networks (within fishing cooperatives and kin-networks) to share catch to fulfil allocated quotas, to help each other with boat and *uchastok* maintenance and to provide families with food. The municipal government has assisted in supporting adaptation by fishers in the Indigirka River delta (reconstructing community boiler and providing a tractor for working on gullies). However, the challenges (river depth, erosion, fish processing and offshore oil exploration) largely exceed community and local government capacities given limited resources available for adaptation.

This section examined the four cases for what they can tell about community responses to environmental changes associated with the impacts of oil exploitation and climate change. However, understanding of community responses is incomplete without considering the interplay of local responses and the broader contextual factors. From a political ecology perspective, adaptation is shaped by socio-economic and political histories that legitimate current responses and explain a dichotomy between local needs and available resources.

**6.3 Historicising community responses**

This section explains how community responses listed above have unfolded in each case study. The emphasis is placed on the role of historical socio-economic and political transformations in the Soviet and the post-Soviet Russia in shaping the room for current responses.
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6.3.1 The Pechora River valley (KRI)

When asked about their responses to environmental change, recurrent themes in the interviews with Komi-Izhma community members were related to historical events whose effects continue to be felt today.

The first theme accounts for how livelihoods evolved from the formation of the Komi-Izhma ethnic group to the present. The formation of Komi-Izhma as an ethnic group can be traced from the second half of 16th century in the basin of the Pechora and Izhma rivers based on three cultures, including Indigenous settled Komi people (Zyryans), Indigenous Nenets nomadic reindeer herders and Russian settlers (Sharapov & Shabayev, 2011). The main livelihood of the group evolved into semi-nomadic reindeer herding, when small groups herded reindeer across the tundra to the Kara Sea coast during the summer months and for the winter time returned to the villages (Jin et al., 2015). In these villages, extended families of reindeer herders were engaged in small-scale farming (potato, cabbage and beetroot) and cattle breeding (cows and horses) introduced by Russians and intended for local consumption (Jin et al., 2015). Shelyaur as a riverbank settlement emerged in the 1760s, when the growing Komi families were searching for fertile lands.

Reindeer herding as a subsistence-based livelihood began to flourish in the area around the 1850s, and large herds were increasingly held by Komi-Izhma families (Istomin & Habeck, 2016). Reindeer herding evolved into a profitable activity and herders were actively developing trade of high quality processed reindeer skin on regional and global markets (Istomin & Habeck, 2016). State presence was exercised through taxation of rich herders. Several families who particularly profited from the trade contributed to the development of villages: built schools, churches and roads. Shelyabozh was established in the 1860s by successful reindeer herders, attracting small-scale farmers and woodworkers, and a church was built in the 1890s indicating prosperity of the village. An interviewee stressed that “without rich reindeer herders our villages would not exist” (KR1 C6).

In the local historical narrative, this way of life was disrupted by a range of socio-political events, including the Revolution of 1917 that led to the rise of the Soviet Union, subsequent nationalisation in the 1920s, dekulakisation in 1920s-30s and the Second
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World War (1939–1945). Tribal councils were formed, however, Komi-Izhma people were excluded due to their economic rationale oriented on trade and profits (KR1 S2). The well-off herders were deported from the villages, and their property was nationalised.

Families’ herds were organised into large collective farms (kolkhozes) in the 1930s, replaced by state farms (sovkhозes) in the 1970s, and again by kolkhozes a decade later. For example, a major regional kolkhoz Novyi Sever was established in the area in 1931, and transformed into sovkhoz Severnyi. The Soviets placed new housing, social and transport infrastructure to support the collective and state farms. A school opened in Shelyabozh in 1930, and in 1962 the village received a status of a working settlement for forestry workers. The churches in Shelyaur and Shelyabozh were converted into clubs for mass cultural and sports events. This period, according to an interviewee, provided villagers with jobs, resulted in improved social and transport infrastructure, however, “disconnected Komi-Izhma with their identity, culture and traditions” (KR1 S2).

This model was sustained until 1991, when another socio-political transformation profoundly affected the rural social and economic life. The Soviet Union was dissolved, and collective and state farms were expected to be re-organised into private entities. The system of productive collective and state agriculture collapsed, leaving “some families and villages stranded, with little support and insecure access to land” (KR1 S2). Critical infrastructure degraded, disrupting life-supporting social services and connectivity of villages. For example, KR1 C8 highlighted the issues with the bridge across the Izhma River connecting villages to Izhma, the administrative centre, that remains unresolved since the 1990s. There was a need to find new ways of living by a new generation of Komi-Izhma people.

The relative socio-economic hardship coincided with the arrival of the oil industry to the Izhma rayon in the early 2000s (Habeck, 2002). The industry has first progressed slowly, but the expected accompanying support from the industry to villages became significant given the degrading infrastructures and the limited state support (the relations between the oil industry and local communities will be explored in detail in chapter eight). Regarded as a historical marker (KR1 S2), this period defined the next decade of the co-existence of the oil industry and rural livelihoods.
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At the time of the fieldwork in 2015, the livelihoods of Komi-Izhma people in the area have been tied to few practices. Reindeer herding in the broader region has been practised by approximately 300 people occurring by groups of about 5 to 10 people composed of extended families or wage workers. Groups form a ‘brigade’ and include a leader, several male herders, and one or two female herders who are referred to as ‘tent workers’ (*chum-rabotnitsy*). Family members reside in villages, and reindeer herders spend several months in the tundra herding animals. In addition to cultural elements, reindeer herding has provided villagers with meat, shared among community members, and incomes when the meat is sold to nearby villages, cooperatives and larger towns.

Given the decline in reindeer herding and the rapid development of the oil industry in the 2010s, community members have been increasingly seeking alternative livelihood opportunities, including farming, forestry and the oil industry (KR1 C1-10). One woman from Shelyaur explained that the future of the Pechora River valley was hard to imagine without developed agriculture, with an inevitable decline in reindeer herding and fishing if the oil industry would continue to advance into remote lands (KR1 C3). Other interviewees considered that the situation with employment improved when the federal and regional governments started to provide grants, subsidies and training for the establishment of small farms, dairies and wood workshops (KR1 C3, C10).

New jobs emerged with the expansion of the oil industry. Attracted by higher salaries than in agriculture, and given the lack of other employment opportunities in villages, some community members turned to the industrial jobs (KR1 C11). For example, in 2015, 170 out of 570 residents of Shelyabozh were working for Lukoil-Komi, its contractors and other oil companies. However, getting a job in the highly-technological oil industry is challenging for rural people without specific skills and experience. To gain them, people pursued technical training in Usinsk organised by the employment authorities. According to one interviewee, working for the industry has provided him and his family greater income security and hope for the future (KR1 C6).

In the last decade, the land, water and air pollution became common in the Pechora River basin. Villagers have repeatedly been involved in oil spill clean-up operations as the responses from companies and governments were slow and inadequate. One man summed up his experience: “I hope I could feed my family. But no, I must spend most of my
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*summertime, which is a very busy time, for cleaning the river and creeks. Why it is so that someone exploits our lands, but we have to clean up their mess”* (KR1 C10). Community members use their own motor boats, shovels, boots and other equipment to tackle pollution. These get covered in oil and are not suitable for other uses anymore (KR1 C15). They rarely receive adequate compensations from the industry (KR1 C15). After a series of protests and meetings (see chapter nine, section 9.2.1), Lukoil-Komi established a set of reserve equipment needed for oil spill response in 2015. The oil booms, special wipers, tanks and skimmers have been donated by the company to Komi Ministry of Natural Resources and Environment Protection to be used in the emergency prevention and response. This initiative was received positively by residents of Shelyabozh; however, no clear mechanism of the access to the equipment for local people was set (KR1 C10).

Another major challenge remains in the region — abandoned oil wells. Neither operating companies nor regional authorities are willing to take over the responsibility for these assets, as it will imply significant costs for them. The responsibility is seen as collective; however, it is not clear how this can be operationalised, and positive outcomes achieved, at least to ensure that the abandoned oil wells will not result in major disasters. They are not located in leased areas, and thus require innovative responses on behalf of regional governments, companies, communities and civil society that still have to be developed (KR1 S1).

6.3.2 *The Bolshezemelskaya tundra (KR2)*

The historical transformations have been articulated in the interviews with the representatives of Nenets *obschinas*. Yet, “big changes are very recent and fast” began an interview a reindeer herder (KR2 C1).

In the remote settings of the Bolshezemelskaya tundra, Nenets reindeer herders were relatively untouched by the Christianisation between the 1380s to the end of 16th century that profoundly affected other Indigenous groups in northern Russia (Golovnev & Osherenko, 1999). Nenets families have secured their nomadic way of life, Nenets language and animism in harmony with the tundra ecosystem (Golovnev & Osherenko, 1999). At the beginning of the 20th century, Soviet scientists explored the area and geologists found rich reserves of high-quality black coal on the area over 90 thousand
square kilometres in the southern part of the tundra, named then the Pechora coal basin (Negretov, 1977). “If not coal, no one would come here” suggested a herder (KR2 C5).

With the industrial development of the Bolshezemelskaya tundra, there was a growing influence of the Soviet state on the Nenets people (these are discussed in ethnographic studies elsewhere, for example, Golovnev and Osherenko (1999)). In the 1920s–1930s, first soviets and agriculture kolkhozes were established in the tundra. Underground coal mining started in the 1930s. The town of Vorkuta was established in 1936 as one of the major GULAGs of the Soviet Union (hosting 70,000 prisoners in 1950s), remaining a place of exile for ‘the enemies of the people’ from around the world until the 1960s and notorious for numerous violent uprisings (Negretov, 1977).

Coal is why the railroad was constructed so far north, to link this resource-rich periphery with central parts of Russia (Barenberg, 2014). Since the 1960s, Vorkuta has been a major coal base for the Soviet Union and later Russia, also hosting a military base. Workers migrated to the Arctic from mining regions in Russia and Ukraine, attracted by high salaries and mysteries of the north (Barenberg, 2014). Since the 1980s, children of the Nenets nomadic families have been taken to the boarding school in Karataika for the winter season.

Despite profound changes in the 20th century, the socioecological and cultural systems of the Nenets proved to be resilient; they are the largest group of Indigenous peoples in the Russian north with most of them speaking the native language and engaging in nomadic reindeer herding (Forbes et al., 2009). The Nenets adapted to the efforts of the state to restructure reindeer herding towards a production-oriented model of kolkhozes that provided livelihoods security through, for example, control of diseases (such as Siberian anthrax).

In the 1990s, during the socio-political and economic crises in the post-Soviet Russia, nomadic reindeer herding was less impacted due to its self-sufficiency and centuries-old knowledge. However, cooperatives of reindeer herders were established for the livestock management. For example, the cooperative Olenevod was established in 1996 based on the facilities of the coal mine company Vorkutaugol. At that time, it united seven brigades of herders, and the herds exceeded 16 thousand animals, producing 180 tonnes of meat.
annually. The organisation based on the brigades partially undermined the traditional informal institutions, for example, migratory practices by reorienting the routes towards the established slaughtering houses. Since the 2000s, the cooperative constructed fifteen meat processing modules in the tundra.

With the socio-economic crisis in the 1990s and the increasing exhaustion of major coal mines, the socio-economic situation of the town of Vorkuta was in critical condition. A responsible manager for one of the mines explained that privatisation of the VorkutaUgol (the major coal mining company, since 2003 part of the Severstal’ group) and numerous re-organisations resulted in stabilisation and efficiency of the industry during the 2000s (KR2 I2). However, the modernisation and the automation of the industry led to further unemployment and depopulation with prevailed pessimism (KR2 I2). The population of Vorkuta decreased from a population of 117 thousand people in 1991 to 70 thousand people in 2010 (Census, 2010) (estimation for 2017 is 58 thousand people (KomiStat, 2017)).

That is why optimism about regional development appeared following massive oil and gas discoveries in the Yamal peninsula in the later 2000s. Since then, the area has experienced the flow of new investments in oil and gas infrastructure. These include construction of a system of gas pipelines Bovanenkovo-Ukhta and development of numerous oil fields. These changes led to the intensive and rapid changes in the Bolshezemelskaya tundra. More than 10,000 workers associated with the projects came for work. As previous chapter five demonstrated, the new oil concessions increasingly overlap traditional natural resource use by Nenets reindeer herders; a cumulative degradation in the area is increasingly severe and permanent.

In 2015, the two reindeer herding cooperatives Krasnyi Octyabr and Olenevod were bringing together the majority of reindeer herders traversing the Bolshezemelskaya tundra north of the town of Vorkuta. Krasnyi Octyabr, managed by a highly respected reindeer herder, employed 46 people herding approximately 7,500 animals and producing 66 tonnes of meat annually. Cooperative Olenevod, headed by his son, combined many stages of the industry, from reindeer herding to production and distribution of reindeer meat. They also buy meat from other reindeer herders and process it. In 2015, there were about 120 workers, and 65 of them are nomadic reindeer herders. Being part of a
cooperative brings benefits to reindeer herders, including secure access to pastures leased by the cooperatives from the regional authorities, access to vaccination for animals, to credits and facilities for processing meat. Meat remains to be the major commercial product of reindeer pastoralism today, and to a lesser degree, antlers. Another issue relates to alcohol consumption and religious influence, however, herders develop certain adaptation strategies, including alterations of migrating routes to avoid local villages where alcohol is sold (Istomin, 2015).

The head of the cooperative explained that in principle anyone could join the cooperative, however, there are requirements for work ethics and discipline (KR2 II). The main contemporary challenges for reindeer herders are securing sufficient access to pastures during all seasons and the preservation of soil fertility amidst overgrazing. The growth of herds can be substantial, and the need for pastures is big. There is a need to control the size of the herd, its health, and take care of slaughtering.

The cooperative organisation of reindeer herding in the area left obschinas not willing to join the cooperatives excluded from the benefits that reindeer herders in the cooperative enjoy. This type of reindeer herding is called private, or ‘chastnoe olenevodstvo’, and herders ‘chastniki’. The private obschina has been only recently registered in the Vorkuta municipality but does not lease the land for pastures. The private obschina ‘adapted’ from despair by violating land use designations. This resulted in serious disputes between the private obschina and cooperative Olenevod over the land use starting from 2011. The conflict escalated into violent actions in 2014, when some of the cooperative’s facilities were burned, and there was a knife fight.

Access to pastures is critical for adaptation to environmental change in the Bolshezemelskaya tundra (Istomin & Habeck, 2016). The conflicts among the obschina and the cooperatives signal about the inadequate land use planning and a lack of recognition of Indigenous peoples’ rights to the land. The rapidly expanding oil and gas infrastructure in the region since the late 2000s constrain resources available for sustainable adaptation. In 2016, another 0.6 thousand hectares were transferred from the lands under lease by Olenevod to a Vorkuta energy company for exploration and extraction of natural resources (KomiEnvironmentReport, 2016), while the access to pastures for the private obschinas remain unregulated.
6.3.3 Evenks reindeer herders in the Aldan plateau (SR1)

Historically the Evenks of the Aldan plateau lived in nomadic or semi-nomadic kinship-based groups moving around extensive territory depending on the season. Their kinship territories, called ancestral lands, or *rodovye ugodia*, have been part of Evenks society since early times. Their economic activities related to the fur trade had a limited impact on the landscape: movement was done by dog or reindeer sledges.

By the early 1920s, the gold rush significantly transformed the landscape as miners were establishing their settlements and the growth of their activities created road infrastructure (Yakovleva, 2011). The roads, and deeper geological knowledge of the region, are why the new mining projects emerged. The modest production of gold in the 1950s and 1960s reached its peak between 1973 to 1991, and since then has been steadily declining due to the exhaustion of the deposits and the decline in grade. With gold mining, the Aldan plateau has also become home to an unequally large non-Indigenous, mostly Russian, ethnic population. The gold industry has evolved since the Soviet times, from a large-scale production cooperative, and since the 1990s has been open to small-scale miners through licensing. In 2015, there were 6 and 11 enterprises operating gold mining in the Nerungry rayon and Aldan rayon respectively (SakhaEnvironmentReport, 2016).

At the same time, the system of traditional subsistence activities was partially transformed during the Soviet collectivisation into production-based cooperatives of reindeer herding, hunting and horse breeding. Villages of Iengra and Khatystyr were established as the basis for those cooperatives in 1926 and 1937 respectively, and during the following decades Evenks from smaller villages in the broader regions were resettled to these administrative ethnic centres (Kulikova, 2015). Indigenous peoples were adapting to life in villages based on ethnocultural characteristics and traditional resource use.

Formal institutions and the Soviets were established, and roads have connected the villages to broader regions and economies. At the beginning of 2000s, *natsionalnye naslegs* were formally established with the purpose to protect and preserve traditional natural resource use and its management, to revive culture and languages of Indigenous peoples in places of their compact living (Kulikova, 2015). This provided opportunities for self-governance, however, with limited resources available. The Evenks became
increasingly involved in wage labour and created a greater dependency on formal institutions.

Evenks communities continue their subsistence-oriented activities (Kulikova, 2015). In 2015, there were 50 obschinas on the territory of the Aldan and Nerungri rayons, with most of them involved in reindeer herding, hunting and fishing. During fieldwork, community members pointed out that despite decades of natural resource extraction in the Aldan plateau, the land use issues are still not properly addressed (SR1 C3). Gold mining activities disturbed clans’ lands, restricted routes of nomadic reindeer herding and wild animals, negatively impacting hunting and fishing, and caused pollution to waters and lands (SR1 C3). With the development of the ESPO pipeline and associated infrastructure, the impacts amplified. The construction of the Power of Siberia is on the way.

The region now has status as a ‘priority development area’ based on the creation of industrial parks, logistical complexes and new energy infrastructure. The aspirations are to become the centre of the coal production industry in Russia with the goal to fill in the market niche of coal export to Japan, as well as to host oil and gas transportation infrastructure and advance extraction of gold and other valuable stones (SR G3). The development plans promulgated by federal and regional governments and implemented by companies support the resource-dependent regional economy that limits access to resources needed for adaptation.

Other communities’ concerns are about ‘land grabs’ (SR1 C3; SR1 C5; SR1 C6). These concerns refer to the recent federal regional planning initiative to attract people and industries to the Russian Far East via provisioning land plots to citizens at no cost, namely the “Far Eastern Hectare” program (dalnevostochnyi gektar). Evenks were worried that the lands used for pastures would be allocated for the program.

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6.3.4 The Indigirka delta (SR2)

People in Olenegorsk and Russkoе Ust’e villages are representative of two cultural communities of Evens and Russkoustintsy. The strong memory of historical events impacts the way communities respond to present environmental changes.

Ethnic Russians from the European part of Russia travelled north between the end of 16th century and the second half of 17th century following mass repressions and political unrest; some settled on the banks of the Indigirka River close to its delta (Vakhtin et al., 2004). As agriculture was not an option for a liveable livelihood due to climate and permafrost, they developed livelihoods based on hunting, trapping and fishing (Schweitzer et al., 2005). They spoke the Russian language and practised orthodox religion, and peacefully co-existed and increasingly mixed with Indigenous populations Yukagirs and Evens. The term ‘Russkie starozhily Sibiri’ (Russian Old Settlers in Siberia) is used to refer to this one of the oldest groups of Russians in Siberia. They identify themselves as Russians, or RusskoUst’entsy (Vakhtin et al., 2004). The analogies in other parts of the world might be ‘Metis’ in northern Canada, ‘Settlers’ in Labrador, ‘Creoles’ in the areas with colonial history (Vakhtin et al., 2004).

Russkoe Ust’e settlement was first recorded in 1638, and until the beginning of the 20th century the families were spread out over tens of kilometres along the shores (Vakhtin et al., 2004). A school was built in 1928 under the Soviet regime, and the major changes followed. The first period is collectivisation and anti-religious campaigns in the 1930s. One of the men introduced me to a common village’s narrative: “Bolsheviks42 came here in 1931 and cut the cross on our church. Since then the river has been changing its riverbed wildly. Every year, by about three metres” (SR2 C5). In 1942 the settlement was relocated and renamed as Polyarnoe. The narrative was repeated by a woman in relation to village relocation: “They relocated us because the river bank was strongly eroded. It was eroded because they destroyed our church, in 1931. The bank collapsed as the

42 Members of the Russian Social-Democratic Worker’s Party which seized control of the government in Russia led by Lenin.
punishment” (SR2 C4). Another man suggested that the village was resettled by the Soviet government to “break the roots with the past” (SR2 C3).

Helicopter flights connected the settlement to the regional centre Yakutsk in the 1960s. A collective farm for trapping and fishing, kolkhoz, was established, and new housing and social infrastructure were developed. With the decline of the demand for fur from the state, people converted to fishing (Schweitzer et al., 2005). In 1961, kolkhozes were restructured into one large sovkhoz. Annually it produced 500 tonnes of meat, 500 tonnes of fish and had 23 thousand reindeer.

Livelihoods were centred around the state farm that organised logistics and distribution and actively participated in developing housing and social infrastructure. In 1971, forty-eight families of the Evens people, then nomadic reindeer herders, fishers and hunters, were settled down in Olenegorsk (200 kilometres from Russkoe Ust’e downstream) as a part of the general policy of the Soviet government to increase the productivity of traditional livelihoods and educate children of Indigenous people (Vakhtin et al., 2004). Villages were sufficiently supplied by the government, including a diversity of vegetables and fruits from throughout the Soviet Union (SR2 C5). This time is remembered as positive and full of hopes, and the “river received good care” (SR2 C5).

The dissolution of the Soviet Union in 1991 left the villages without clear mechanisms for maintaining social infrastructure and housing in the villages. Over the last two decades, the villages have not evolved. There is a permanent shortage of funds for the restoration of housing and social infrastructure as funds are limited and the paying capacity of the local population is low.

There is a seasonal shortage of fuel. Gathering rare wood floating down the river became a life-supporting activity. However, wooden poles have been increasingly needed to support eroded river banks, leaving few for burning and heating houses. The heating largely depends on burning diesel and oil in degrading community boilers, damaged by gullies. In response to the immediate risks of the collapse of a centralised heating system, which provides and distributes heating in Russkoe Ust’e village, the government of Yakutia provided some funds to eliminate gullies in order to prevent an emergency
situation. However, as one interviewee, demonstrated the reasons why the funds were given was the 375-anniversary of the village when the village had to look good for visits of politicians. The municipal Investment plan considers new diesel or coal-based module stations for the remote settlement. However, it again creates a dependency on the delivery of fuel. There have been attempts to use wind energy in the north (in Tiksi), however, due to strong winds the equipment did not last.

Gullying in the village has been responded by placing community trash in the gullies. However, despite being frozen for a long time of the year, in summer trash poses health risks. It discharges into the river, where water is taken for drinking. Moreover, trash contributes to further gullying, indicating maladaptation. The local administration hopes to acquire a tractor for the next village anniversary, to address the problem. Without planned interventions, it is likely the village will have to be resettled in the near future.

The population in the Indigirka River delta is predominantly fishers, organised in several obschinas. The two largest are obschina Russkoe Ust’e and obschina Allaikha, both registered as a productive cooperative and a nomadic rodovaya obschina. Others include Nerod (a nomadic tribal family community), Indi (a nomadic tribal community), Eyivni (a productive cooperative and tribal community) and the union of family-tribal units of Oyotunskyi nasleg. The fishing cooperative was established in 1989 based on the Russkoe Ust’e branch of Allaikha sovkhoz by two entrepreneurs (SR2 II). In 2015, it consisted of 35 people, among whom 31 were fishers (SR2 II). Fishing follows seasonal patterns, occupying primarily men but also a few women. Fishers share fishing equipment, fishing gears and motors for boats, and work together, helping each other (SR2 II). Fishers retain a little cash to pay for fuel for motorboats or snowmobiles, as many of this is provided by the obschina (SR2 II). It is important to have good fishers, as said by a member of a sovkhoz: “We need many ‘oyavi’. In every family, there is an oyavi” (SR2 II). The main concern for the cooperative is to secure fish catch according to the quotas, to ensure long-term storage for fish and its delivery to Yakutsk for trade.

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44 Oyavi refers to the soul of a dead person, very skilled and of good character, that can be exist in a living man.
While families have houses in villages of Russkoe Ust’e and Olenegorsk, people spend most of the time in their zaimka, also uchastok, or peski in the area spread over several hundred kilometres for supporting their livelihoods of fishing and hunting. There will be a small wooden hut with one-two rooms and a heater, a lednik, a fish-smoking place, a fish-drying place, sledges, and other equipment needed for fishing and hunting and storage of the catch. These places are self-built and self-maintained with the limited locally-available material. Some people reside in these areas while visiting villages or the administrative centre Chokurdakh several times per year for medical or bureaucratic reasons. Others have family members residing in the villages and spend more time there when the fishing season is over.

To reach the villages, community members travel up to two hundred kilometres. There is no all-season road access to and between the villages. Snowmobiles are used during winter months (October-April), while motorboats are the major transportation means in summer (May-August). Mobility is problematic in autumn, when there is already ice on the river, however, not strong enough to support vehicles, and in spring, when ice melts. The period of limited mobility refers to bezdorozhe, that has been worsen as climate warms. Longer periods of bezdorozhe resulted in failures to deliver life-supporting food and fuel to the village from Yakutsk via waterways and land routes.

The increasingly challenging conditions for river navigation, river banks erosion, access to long-term fish storage together with the perceived decrease in fish stocks, obschinas have not always satisfied the annual plans for catch established by the cooperatives, and therefore, receive fewer subsidies and distributed quotas for the following years (SR2 I2). The ecosystem changes with a potential effect on fish species are yet unknown, but changing fishing patterns are problematic because the access to fish resources is regulated through the creation of nature protected areas and setting quotas for fishing (SR2 I2). For example, the reservat Katylyk restricts not only livelihoods activity, but even entrance to the land previously used for fishing and hunting (SR2 I2). The unique area that birds (Siberian crane) nest was protected first in 1996 when the reservat was established. The status was later changed in 2014 to zakaznik, constraining fishing and movement for non-scientific purposes.
Primary fish processing is another challenge for the cooperative (SR2 I2). However, resources of the cooperative are limited for development of fish processing facilities. This requires large investments from the government or private actors (SR2 I2). In 2011, using the funds of the Future Generations Fund of Yakutia, a fish-processing plant was built in Chokurdakh (SR2 I2). It was pompously launched with the promises to process fifteen tonnes of fish per day and to export the products as far as to northern America (SR2 I2). However, the plant has never reached the capacity and closed soon after (in 2017, it got on fire and all expensive equipment was burnt). This is because, after several attempts, local fishermen were not interested in providing their catch to the plant anymore (SR2 I2). They thought that the plant was built by some ‘businessmen’ without any considerations of the obschinas, and they felt they were poorly compensated (SR2 I2).

In 2013, it was announced in the village that over the next five years there would be seismic testing activities on the shelf in the Easter-Siberian sea, 22 kilometres from the coastline. It is not clear yet if this space will become an economically viable source of petroleum development. However, this region is considered as having probably high petroleum potential (Karpov et al., 2017). The head of the municipality has been clear that in strategic planning they consider this option, but are also aware of potential threats, first of all to fish resources so crucial for livelihoods, and the potential for disaster, such as oil spills from platform or tankers (SR2 G2). Some of the best fishing places are in the river delta; certain species of fresh-water fish feed in the ocean. The plans at the strategic levels of the Arctic Zone are associated with increasing the output of fish and fish processing with the export45. Fishers in Russkoe Ust’e are more obstinate – they said that their “future is only fish and cannot be oil. Fish fed us three hundred years ago, and will do so three hundred years into the future” (SR1 C5).

6.4 Discussion

This chapter considered the four case studies to identify how Indigenous and rural communities in Komi and Yakutia respond to the impacts of oil exploitation and climate change (RQ 2)? In line with previous studies on community responses to environmental

45 Meeting of the working group on fisheries of Yakutia (State Committee on the Arctic affairs of Yakutia), meeting minutes.
Chapter Six. Community responses to double exposure in Komi and Yakutia

change worldwide (Huntington et al., 2017) and in northern Russia (Fujiwara, 2018; Stammler-Gossmann, 2012), the communities in the four case studies have been actively responding to environmental changes rather than passively accepting the impacts. Discussion in this section considers patterns in how communities are able to respond within their response space and provides the implications of the findings for the role of adaptation planning in rural and Indigenous communities bearing the impacts of resource extraction and climate change.

The study identified a variety of responses to salient environmental changes, including sustaining traditional livelihoods and knowledge (KR1, KR2, SR1, SR2), livelihoods diversification (KR1, SR1), changing locations for pastures (KR2, SR1) and settlements (SR1), cleaning rivers (KR1) and fixing riverbanks and gullies (SR2), participating in planning of resource projects (KR1, SR1), organising to contest environmental degradation (KR1), sharing resources and knowledge (SR1, SR2) and not responding (SR2).

The examples of responses in the case studies stemmed from changes related to the combination of impacts associated with the impacts of the oil industry and climate change, conceptualised as double exposure (O'Brien & Leichenko, 2000). In each case, environmental changes have altered or reduced opportunities to practice traditional livelihoods, certain impacts have been more salient than the others and communities have developed initial responses to changes that were most prominent in the areas they inhabit and navigate. For example, Komi-Izhma communities (KR1) have largely responded to the environmental degradation generated by the oil industry, while fishers in the Indigirka delta (SR2) have been dealing predominantly with the impacts of climate change on landscape and have done nothing in relation to the offshore oil industry. Responses of the Nenets (KR2) and Evenks (SR1) reindeer herders have been related to the impacts of both climate change and the oil industry; the intersecting impacts escalated pressures on the access to quality pastures.

Setting priorities for certain responses is necessary when there are immediate threats to health, livelihoods or the environment, which can be abrupt, seasonal or persistent, and resources available to communities within their response space are limited. For example, oil pollution in the Pechora River valley (KR1) requires urgent actions by the community
once an oil spill is discovered (commonly in spring between March and June) as the company and government responses are lacking. Protecting reindeer herds from wild animal attacks has become a seasonal priority for the Evenks herders (SR1); losing reindeer to wolves has already undermined herding as a source of subsistence for a few families with small herds. Trash has been used in Russkoe Ust’e (SR2) as an easy immediate solution to the accelerating gullying in the village, as fishers spending longer hours fishing and restoring river banks on their *uchastok* with wooden poles they catch floating down the river.

It was important to emphasise the broader political economic and historical processes of change that have persistently shaped the current response space in northern communities. The historical analysis illustrated how over the past 100 years studied communities have been affected by a range of processes related to expanding rule of the Russian state on its northern territories. From the early period of colonisation to the present, Indigenous peoples have been the object of state-driven projects of education, sedentarisation and industrialisation oriented at the assimilation or the efficiency in the traditional land use. Since the 1990s, the responses were shaped through the specific historical experiences of de-collectivisation and the subsequent shift towards a market-oriented economy. These historical transformations explain why current responses centre on the ongoing search for livelihoods security and liveability of settlements rather than specific impacts of climate change or the oil industry.

In these dynamics, the processes governing Russia’s trajectory of natural resource extraction are visible in the past and present responses. Two recent decades have deepened connections between localities and broader political-economic processes which favour the oil exploitation, which has been progressively overlapping with the territories of traditional natural resource use. As a result, state and market interests increasingly influence resources available for local adaptation. Beyond these findings, critical for understanding the current responses are the growing importance of state’s enforcement of regulations over the access to natural resources (see also Ksenofontov et al. (2017)).

These processes bring new actors and formal rules to the remote regions where traditional institutions continue to determine the access to and allocation of resources. The clash between the rules of the state and private entities with informal networks and social
relations within obschinas and secluded living in their uchastok results in uneven control over resources available for adaptation. This re-articulates how benefits and who loses from environmental change and community responses in short and longer terms.

The findings suggest that often challenges exceed autonomous capacity to respond given limited available resources within community response space and the dichotomy between local needs and the powerful interests of the state and private actors. For some matters, communities have been dealing with environmental changes with little to no support provided to them. For example, in case SR2 fishers are to protect their uchastok from the river bank erosion on their own. In other matters, communities turned to the governments across scales and the oil companies to seek support for sustaining traditional livelihoods or developing alternative livelihoods (woodworking, dairies) (KR1, SR1), responding to environmental pollution (KR1) or solving land use conflicts (KR2).

Notably, when the government support was insufficient or lacking, communities responded by some forms of self-organization and networking shaping the cooperative response space. For example, oil spill clean-up and community monitoring of environmental pollution needed coordination and capacity building among Komi-Izhma community members (KR1) willing to participate. Pressure on fisheries and increasingly shallow waters in the Indigirka River delta (SR2) extended knowledge exchange and sharing networks among families and fishing cooperatives. Some of these cooperative initiatives reproduce the socio-economic patterns developed during the Soviet period and adapted to the modern economy, while incorporating traditional institutions and indigenous orders (Vladimirova, 2017).

The findings indicate that there is a need to assist remote northern communities in adaptation to environmental changes. Understanding how communities respond to environmental change grounded in the context of broader historical socio-economic and political changes can inform practices and policies to support community responses in a broad range of cultural contexts across northern Russia that can potentially negate the environmental injustices of oil exploitation and climate change. To achieve this, adaptation initiatives should consider ways to expand the autonomous and collaborative responses that have more than economic functioning and to support communities rather than impose limitations.
Chapter Six. Community responses to double exposure in Komi and Yakutia

6.5 Conclusion

To answer RQ 2, this chapter showed that Indigenous and rural communities in Komi and Yakutia developed responses to the intersecting impacts of oil exploitation and climate change. Autonomous community responses in the case studies included sustaining traditional livelihoods and knowledge (KR1, KR2, SR1, SR2), livelihoods diversification (KR1, SR1), changing locations for pastures (KR2, SR1) and settlements (SR1), cleaning rivers (KR1) and fixing riverbanks and gullies (SR2), participating in planning of resource projects (KR1, SR1), organising to contest environmental degradation (KR1), sharing resources and knowledge (SR1, SR2) and not responding (SR2).

In all cases, communities were seeking coordination with governments across scales and the oil companies to support them in adaptation to environmental change. Therefore, it is argued that in communities affected by the impacts of double exposure, adaptation cannot be reduced to the analysis of risks to the industrial operations but should include ways to expand the autonomous adaptation, based on the concerns identified by communities, while also allowing space for more cooperative responses as a foundation for adaptation planning for more equitable outcomes.

Moreover, the findings suggest that community responses are interlaced with the deepening connections between the localities and cross-scale processes which favour exploitation of natural resources. Next chapter explores the factors that legitimise expansion of the oil industry in Komi and Yakutia.
7.1 Introduction

There has been a growing recognition that development context and cross-scale political economic forces shape the prospects of realising climate change responses (Naess et al., 2015, see chapter two). Despite the growth in work on climate-motivated initiatives in resource extraction regions, there has been limited attention to regional development agenda, governance and political economy that can explain why oil exploitation persists in Komi and Yakutia despite strong local impacts and climate change imperatives. This chapter asks: Is the expansion of the oil industry supported at the subnational level in Komi and Yakutia, and why (RQ 3)?

To answer this question, section 7.2 explains the evolution of subnational governance in Komi and Yakutia, and provides a historical and political economic background to the oil industry and climate change governance. The analysis in section 7.3 builds on this background by drawing on inputs from the empirical data to identify factors that legitimise the expansion of the oil industry in Komi and Yakutia. The empirical data to inform the analysis come from a set of interviews with the representatives of governments across scales and oil companies, supplemented with a range of formal documents and observations of meetings (see chapter four, section 4.4.3 for the detailed methodology). A comparative thematic analysis was performed to identify how they frame and discuss the importance of the oil industry for strategic regional development.

The analysis identified five key determinants of the power of oil (pro-oil discourse): (i) the geographical advantage and longevity; (ii) a driver for development; (iii) autonomy; (iv) integration into the global economy; (v) sustainable and climate-conscious development. Section 7.4 links these determinants to the literature on resource governance and the politics of oil and explains that the legacies of the past, imaginative geographies of hydrocarbon resources, struggles for resource rents and the cultural politics at various scales are all entrenched in the support given to the expansion of the oil industry in Komi and Yakutia.
Chapter Seven. Oil industry expansion in Komi and Yakutia

At the end of this chapter, the discussion focuses on how these aspects combine to potentially influence regional climate change responses, both mitigation and adaptation based, in light of the emerging observation that climate change responses are political in nature (Eriksen et al., 2015; Nightingale, 2017).

7.2 The evolution of regional governance

This section provides an overview of subnational governance in Komi and Yakutia mindful of the linkages to other scales (global, national and local). After introducing the Soviet and post-Soviet regional political histories, the section explains the evolution of the oil industry, regional resource governance and climate change initiatives. This overview brings out key determinants of the power of oil in the political economic context of the two regions, explained in the next section.

7.2.1 The making of the Republic of Komi people

The present territory of the Komi Republic was established as an autonomous region of Komi people within the Russian Soviet Federative Socialist Republic in 1921 (Komi Autonomous Soviet Socialist Republic since 1936). According to the first national population Census held in 1926, about 92 per cent of 200 thousand people in the region identified themselves as of Komi ethnicity (figure 7-1).

The territorial boundaries, however, excluded Komi groups residing elsewhere (in the Komi-Perm Autonomous region and the Nenets Autonomous region). The boundaries instead reflected centralised economic planning based on the railroad connecting the regional capital Syktyvkar to the northern territories that hosted coal mines and Soviet-era GULAGs (1938–1960) housing political prisoners between 1948 and 1954. The placement of prisoners, miners and other workers from Russia and other Soviet republics to the Komi Republic resulted in regional population growth and altered the ethnic structure of the population. In the 1959 Census, only 30 per cent of the total population (about 800 thousand people) identified themselves as Komi.
Chapter Seven. Oil industry expansion in Komi and Yakutia

Accelerated industrialisation (forestry and energy sector) in the 1980s led to a peak in the population (1.2 million people in 1989). Since the dissolution of the Soviet Union in 1991, the population has been steadily declining (estimated 850 thousand people in 2017), with 22 per cent identifying themselves as Komi.

Following the dissolution of the Soviet Union, the name was changed from the Komi Autonomous Soviet Socialist Republic to the Komi Republic. The Komi Constitution\textsuperscript{46} was adopted in 1994 as a symbol of statehood. According to Article 3 of the Komi Constitution, the Republic guarantees preservation and development of Komi language, traditional cultures and ways of life.

The representation of Komi people in the Republic’s government was ensured by the active participation of the Committee of Revival of Komi People in drafting the Constitution. Established in 1989, the movement of Komi people held its first Congress

in 1991. Since then, ten congresses were held on important cultural and political matters (the movement changed the name to Komi Voityr in 2002). Based in Syktyvkar, the movement has established representation in all municipal rayons across the republic and has secured the constitutional right of a legislative initiative through delegates to the State Council.

The State Council, according to the Constitution, exercises the state power in the KR together with the Head of the Republic, the Government and other executive authorities, the Constitutional Court and magistrates (see appendix A for the state power and administrative structure in the KR). After the adoption of the Constitution, the political culture in the republic has evolved from a strong Komi regional leadership in the 1990s to the challenging socio-political environment in the recent years, ironically characterised in mainstream national and regional media as “Komi is in coma” (Vesti, 2016).

Alexander (1999, p. 371) wrote about the first Republic’s Head Y. Spiridonov (1994–2002): “the Komi Republic is one of the more intransigent of the regions, having consistently resisted Kremlin efforts to break the lock of republic head Yuri Spiridonov and his political and economic allies”. Spiridonov established vertical control of the region with a strong presence of corporations in the energy and forestry sector, with the State Council having a minor impact on the regional governance. Under his leadership, the Republic signed a power-sharing agreement\(^\text{47}\) with the Federal Government in 1996.

The agreement concerned with the mutual responsibilities of the two levels of state government (national and subnational) regarding development. The ownership of land, subsoil and other natural resources were set under the joint management by the national and subnational governments. The republic was in charge of the management of natural resources (establishing the order of their use, their protection, quotas, licencing and rents). The subnational government acquired greater responsibilities for the regional economic development. However, the federal authorities were not always in agreement about the exercising of these competencies. For example, the international relations and trade were

Chapter Seven. Oil industry expansion in Komi and Yakutia

de facto independent, however, they were integrated into the central trade policies, for example via the direction of international investors towards the Komi energy sector.

The power-sharing agreement remained fundamental to the regional development until 2002, when it was terminated by Russia’s President V. Putin (2000–2008, 2012–acting now) in an agreement with a newly elected republic’s Head V. Torlopov (2002–2010). Since then, the subnational and national responsibilities have been regulated by a range of federal laws. During his term, V. Torlopov concentrated on the close cooperation with the Komi peoples’ political movement Komi-Voityr and shared power with the State Council.

In 2010, Torlopov was replaced by V. Gaizer, appointed by the Republic’s government by then President D. Medvedev (between the years of 2005 and 2011 the regional governors were appointed by the President, while before 2005 and after 2011 the regional heads have been elected). In an interview with a representative of the Komi-Voityr leadership, Gaizer was characterised as supportive of the Komi people, however, there have been minimum contacts between his office and the Komi-Voityr (KR S3). During the time of the fieldwork (in summer 2015), Gaizer together with numerous politicians and people in business were convicted for organisation and involvement of crime and high scale corruption (Bush, 2015). President V. Putin appointed S. Gaplikov as the Head of the Republic, a former director of the Sochi 2014 Winter Olympics Construction Firm “Olynpstroy”.

This brief introduction to the Komi political history sets the background for understanding the development of the oil industry and the evolution of regional resource governance.

Seeding the republic of ‘black gold’

As far back as 1692 Dutch explorer Nicolaas Witsen in his book “Northern and Eastern Tartaria” mentioned a shallow place in the Ukhta River in the Pechora River basin where an oily substance floated on water (Witsen, 2010). Half a century later, in 1746, the first, primitive, oil-producing factory in Russia was established in the town of Ukhta. After geological explorations in the 1920s, run by the Soviet government, a broader area came
to be called the Timan-Pechora oil and gas province. Industrial oil production began in 1930.

The rapid industrialisation of the Soviet Union in the 1950s and the 1960s resulted in thousand hectares being exploited, and Komi from a backward frontier was transformed into an industrial state driven by the primary industries. Major infrastructure networks were built to connect the Timan-Pechora province to the western parts of Russia, fuelling the domestic consumption and export needs of the Soviet Union. Town of Usinsk was established in 1966, a contemporary oil industrial centre and oil capital of the region (Borozinets et al., 2004).

Over the century of oil exploitation in Komi, there have been boom-bust cycles (figure 7-2). The early development (1930–2000) was primarily led by the state oil company Komineft, part of the Ministry of Oil Industry of the Soviet Union. The first important boom was in the 1980s. In the 1990s, during the period of economic transition and privatisation, the industry was in decline. The extensive industrial facilities, built and previously operated by the state, were divided into smaller entities and private companies were established (for example, NobelOil).

![Figure 7-2. Dynamics of oil extraction in Komi.](source: KomiStat (2017).)
Many facilities closed and degraded, leaving people jobless and unpaid. The period of poor or non-existent governance was symbolised by a significant environmental disaster, known as the Usinsk oil spill. In October 1994, hundreds of tonnes of oil leaked into the Kolva River, and international assistance was needed for clean-up operations, streamed to the Soviet Union through the World Bank and the European Bank for Reconstruction and Development.

Since the end of the 1990s, the production declined and continuous technological failures in the Usinsk oil fields urgently required investments in infrastructure and exploration of new deposits. Despite the presence of a few private oil companies in the area, there was a need for large players. The regional government opened the doors to a major Russia’s private oil company Lukoil. An agreement was signed between the Government of the Komi Republic, Lukoil and a regional oil company KomiTek in 1998. The agreement implied the transfer of the existing extensive industrial infrastructure to the newly formed company Lukoil-Komi. After acquiring the assets, Lukoil-Komi invested in exploration works and modernisation of infrastructure. This development attracted other companies to the region. Among others, Rosneft, the major Russian state oil company, established in the region in 2003. Noticeable changes followed the enhancement of the industry, and the oil sector has been showing a growing output over the last decade.

In 2015, there were 82 operating oil fields producing 15 million tons of oil, and 21 organisations owned 215 licences for exploration and extraction of oil (across 31.8 per cent of the surface area of the region). Lukoil-Komi remains to be the dominant actor, operating 80 per cent of regional oil extraction with numerous contractors and subcontractors. The remaining is divided among many smaller companies. The oil fields in Komi are connected to the pipeline system operated by Transneft, which deliver oil to Yaroslavl, where oils from various Russia’s oil provinces are mixed and delivered to the Russian and the European markets. Another logistics solution includes the delivery of oil by railroad to Archangelsk and following delivery by sea to the European markets. Various logistics solutions are necessary to ensure the reliable supply of oil.

In the recent years, there has been an increased interest in the resources tapped in the Arctic. In Komi, this interest translated into the industrial development of the Bolshezemelskaya tundra on the territory of the town of Vorkuta. After prolonged lobbying in the Russian State Duma by a former mayor of Vorkuta, the town of Vorkuta was included in the Arctic Zone of the RF\textsuperscript{49}, enabling the access to federal funds.

The declining coal mining in Vorkuta, accompanied by numerous technological failures and deadly accidents, required measures to diversify its economy. Apart from accommodating a military polygon, the regional economy benefited from the construction of the Bovanenkovo-Ukhta gas transmission system, connecting new Arctic gas fields in the Yamal peninsula with the European gas networks via Nord Stream and Northern Lights, operated by \textit{Gazprom}, a large Russian gas company. The construction of the Bovanenkovo-Ukhta-1 line was completed in 2012, and the Bovanenkovo-Ukhta-2 line was being built during the time of the fieldwork (it was launched by President V. Putin in January 2017).

The construction of the gas infrastructure required a new road to be built, opening access to remote parts of the Bolshezemelskaya tundra with prospective oil fields (KR2 G1). Estimations for oil were developed by the Timan-Pechora science and research centre with the support of the regional Fund of Investment Project Support and were included in the strategic development plans at the regional and municipal levels. In 2013, the licences for oil exploration of this strategic area were acquired by the \textit{Shell Neftegas Development}, an affiliate of \textit{Shell}.

Table 7-1 provides an overview of the evolution of the oil industry and subnational governance in Komi since the first oil found in the 1740s.

Chapter Seven. Oil industry expansion in Komi and Yakutia

Table 7-1. The evolution of the oil industry and resource governance in Komi

<table>
<thead>
<tr>
<th>Year</th>
<th>Governance benchmarks and evolution of the oil industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>1746</td>
<td>The first oil-producing factory in Ukhta town</td>
</tr>
<tr>
<td>1921</td>
<td>The autonomous region of Komi people within the Russian Soviet Federative Socialist Republic in 1921 formed (Komi Autonomous Soviet Socialist Republic since 1936)</td>
</tr>
<tr>
<td>the 1930s</td>
<td>Beginning of the industrial scale of oil extraction. State company Komineft formed</td>
</tr>
<tr>
<td>the 1960s</td>
<td>Development of the oil complex with the centre in the town of Usinsk</td>
</tr>
<tr>
<td>1989</td>
<td>Committee of Revival of Komi People formed (political movement of Komi people Komi-Voityr since 2002)</td>
</tr>
<tr>
<td>1990</td>
<td>Declaration of the state sovereignty of Komi within the RF (in effect until 2001)</td>
</tr>
<tr>
<td>1991</td>
<td>Establishment of numerous private oil companies</td>
</tr>
<tr>
<td>1994</td>
<td>Constitution of the KR adopted</td>
</tr>
<tr>
<td>1994–2002</td>
<td>Rule of Y. Spiridonov</td>
</tr>
<tr>
<td>1994–...</td>
<td>Usinsk oil spill and the subsequent ongoing oil spills/other environmental pollution</td>
</tr>
<tr>
<td>1995</td>
<td>The Komi State Council formed</td>
</tr>
<tr>
<td>1996</td>
<td>Power sharing agreement between the RF and the KR (in effect until 2002)</td>
</tr>
<tr>
<td>1998</td>
<td>Lukoil enters the region, Lukoil-Komi formed by purchasing assets of Komineft</td>
</tr>
<tr>
<td>2001</td>
<td>First crude oil extraction in Izhma rayon and conflict over oil exploration in Sebys – the protected territory of traditional land use by Komi-Izhma people</td>
</tr>
<tr>
<td>2002–2010</td>
<td>Rule of V. Torlopov</td>
</tr>
<tr>
<td>2003</td>
<td>Rosneft purchased RN-Severnaya Neft and entered the region</td>
</tr>
<tr>
<td>2013</td>
<td>Shell acquires licences in the Bolshezemelskaya tundra</td>
</tr>
<tr>
<td>Since August 2015</td>
<td>Rule of S. Gaplikov</td>
</tr>
</tbody>
</table>

Source: timeline compiled by the author from multiple sources (Alexander, 1999; Alexander & Grävingholt, 2002; Borozinets et al., 2004; Kovalev, 2017), documents and fieldnotes.

Since 2015, after a scandalous arrest of the head of Republic, the institutional and socio-political landscape has been increasingly weakening (Kovalev, 2017). It is characterised by the controversial rule of an externally appointed head S. Gaplikov and the complex geopolitical and economic situation in Russia that followed the annexation of Crimea, economic sanctions enacted by the United States and the European Union, and other global and federal political moments. Adverse tendencies affecting natural resource governance have been increasingly pictured in the media and public debates. The controversial reforms of the regional government initiated by the new head resulted in the abolition of the regional Ministry of Natural Resources and Environment Protection,
however, soon after repealed after public protest and negotiations with the movements of Komi people *Komi-Voityr* and Komi-Izhma people *Izvatas*.

**Regional climate change planning**

As at the time of the fieldwork in 2015, there was no formal regional climate change policy in the Komi Republic, with no actor coordinating climate-related activities. The Komi Ministry of Natural Resources and Environment Protection and Komi regional scientific institutions have been involved in several initiatives, largely within the frames of international cooperation.

One project of regional importance was oriented at the protection and restoration of forest and peatland carbon pools in northern Russia to reduce greenhouse gas emissions and improve climate change mitigation measures. The project run from 2013 until 2017 with the participation of the Institute of Biology, the Komi Science Center, the Russian Academy of Science, as part of the Climate Adaptation (Clima East program) of the United Nations Development Program. It was a capacity-building initiative oriented at the staff of the national park Yugyd-Va and the regional protected area management authorities in implementing conservation and patrol activities, including prevention of fires and illegal logging with the participation of Indigenous communities.

Another project of international cooperation involving the Komi government is the Action Plan on Climate Change for the Barents Co-operation. The plan was developed based on the Clima East program and included a range of educational activities for the regional government. For example, representatives of the Komi environment authorities took part in the project “Climate Smart Regional Planning — from strategies to practice”. Both projects highlighted the importance of developing formal regional climate policies and the need for capacity building at the subnational level in adaptation and mitigation planning.

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In summary, Komi has a long and important history of oil extraction, entrenched in cultural and socio-political life and connected to global and national processes. As during the time of the fieldwork, there has been no formal climate change policy at the subnational level in Komi, however, regional environmental authorities participated in international initiatives oriented at capacity building to design and implement climate change responses.

The next sub-section describes the political histories, the evolution of the oil industry and regional climate-related initiatives in Yakutia.

### 7.2.2 The making of Yakutia

The present territory of the Sakha Republic was integrated into the Russian state in the 17th century, with primarily Tungusic (Evenks and Evens) and Yukhagir population, but the rapidly growing number of the Sakha. The arrival of Russians between the 17th and 20th centuries for the fur trade, gold mining and exile altered the ethnic composition of the regional population. Russians and Sakha people expanded and colonised large areas occupied by the Tungusic and Yukhagir tribes. The Autonomous Soviet Socialist Republic of Yakutia was established in 1922, with Sakha comprising then around 85 per cent of the population (figure 7-3).

![Figure 7-3. Population trend in Yakutia and its ethnic composition.](source: SakhaStat (2017) with total estimated population for 2017.)
During the second part of the 20th century, the Soviet government forced industrialisation of Siberia, and substantial migration of Russians for exile and work to Yakutia resulted that by the 1970s Russians outnumbered Sakha and Indigenous peoples. Similar to the Komi Republic, the population peaked in the late 1980s, followed by a decline in the 2000s.

Responding to the radical national political and economic changes in the late 1980s, the leadership of the republic enacted a nation-building process, declared its sovereignty in 1990 and adopted the Constitution in 1992. The State Assembly (Il Tumen) was elected for the first time in 1993, and since then has been developing and promulgating republican laws (see appendix A for the state power and administrative structure in the SR). Behind these reformist initiatives was the first President of the Republic M. Nikolaev.

In the 1990s, with the development of statehood of the republic, the Yakutian government nationalised natural resources, including subsoil resources, and declared them as belonging to the Sakha Republic’s people. The autonomy was further strengthened in 1995 by a power-sharing agreement between the SR and the RF, which guaranteed the republic the privileges over natural resources and taxes. The republic created the first subnational institutions to govern natural resources. For example, the Future Generations Fund was established as early as in 1992, designed to meet the short and long-term needs of the region through support to social, cultural and infrastructure development sourced from the mining industry.

The growing power of the federal centre and the increasingly strategic role of the natural resources for Russia resulted in several major changes in the republic’s institutions since the 2000s. In 2009, following the requirements of the Russian Constitutional Court, the principle of sovereignty and citizenship was suspended from the Sakha Constitution.

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changes in the Constitution also divided the ownership of natural resources to be shared between the subnational and the federal governments.

Economic and political elites based in Moscow promoted centralisation of revenues, privatisation of mining companies and the entry of big state companies on the territory of the republic. These changes accompanied the governing period of V. Shtyrov appointed by the Kremlin in 2002. E. Borisov was voted in the II Tumen in 2010, democratically re-elected in 2014 and had served until resigning in May 2018. Popular efforts to maintain autonomy in Yakutia have largely developed in line with a diamond, gold and coal mining, however, the effect of the oil industry on the regional development is more recent.

**Seeding the oil extractive nation**

First oil was discovered on the territory of Yakutia in 1794. At that time, it was not economically viable to extract oil in such a remote region with harsh climate conditions. A scientific geological expedition of the USSR proved the industrial scale of the oil reserves in the 1920s. First oil was produced in 1937, later in 1956 the Ust’-Vilyu oil field was discovered, signalling of the beginning of the oil industry in Yakutia. During the Soviet period, 30 oil fields were explored. Oil was exploited largely to satisfy the growing needs of Yakutia in energy sources.

After the dissolution of the Soviet Union, and the following lack of investment, the exploration works were suspended. For a decade, the Sakha state oil company *Tuymada-neft* was unprofitably operating limited existing infrastructure towards satisfying energy security needs of the region and provision of farmers and rural people and mining companies with oil products, particularly in remote regions.

The situation changed in the 2000s. The increasing exhaustion of oil reserves in traditional oil extraction regions (Western Siberia) and high oil prices, resulted in the acceleration of development of the oil industry in Yakutia. The republic’s assets were transferred to a newly formed private company *Tuymada-neft* in 2004. Since the late 2000s, the Russian government has been increasingly converting its economic and political interests to Asia (Bradshaw, 2013). Yakutia was designated as a strategic
resource base and a part of the Eastern Asian integrated energy transport system\textsuperscript{55}. Oil fields have been rapidly developing in \textit{Lenskyi rayon}.

From 2008 to 2011, the volume of oil extracted increased tenfold, with the 10 per cent average growth in the following years (figure 7-4). This rapid growth is related to the development of mega-projects by Russia’s state companies. In 2006, the ESPO, a 4,785-km long oil pipeline, was commissioned by \textit{Transneft} to connect remote resource-rich regions in Eastern Siberia to China, with the capacity to transport 1,600,000 barrels of crude oil per day for export. The construction began on the territory of Yakutia in 2007. Since 2014, the gas transmission system Power of Siberia is being constructed parallel to the ESPO by \textit{Gazprom}.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure74.png}
\caption{Dynamics of oil production in Yakutia. \textit{Source: SakhaStat (2017).}}
\end{figure}

The expanding oil activities have been concentrated in the Arctic zone of Yakutia, including the continental shelf off the regional coast. In 2015, the offshore oil exploration began in the Eastern-Siberian and Laptev seas of the Arctic Ocean by \textit{Rosneft}.

Chapter Seven. Oil industry expansion in Komi and Yakutia

Table 7-2 summarises the evolution of the oil industry and subnational governance in Yakutia.

Table 7-2. The evolution of the oil industry and resource governance in Yakutia

<table>
<thead>
<tr>
<th>Year</th>
<th>Governance benchmarks and evolution of the oil industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>1922</td>
<td>The Autonomous Soviet Socialist Republic of Yakutia formed</td>
</tr>
<tr>
<td>1937</td>
<td>First industrial oil in Chayandinskoe field in South Yakutia</td>
</tr>
<tr>
<td>1990</td>
<td>Declaration of state sovereignty of Republic within the RF (in effect until 2009)</td>
</tr>
<tr>
<td>1991–2002</td>
<td>Rule of M. Nikolaev</td>
</tr>
<tr>
<td>1992</td>
<td>Adoption of the Sakha Constitution</td>
</tr>
<tr>
<td>1992</td>
<td>Future Generations Fund formed (in effect until now)</td>
</tr>
<tr>
<td>1993</td>
<td>The State Assembly (Il Tumen) formed</td>
</tr>
<tr>
<td>1995</td>
<td>Power sharing agreement between the RF and the SR (revised in 2002)</td>
</tr>
<tr>
<td>2002–2010</td>
<td>Rule of V. Shtyrov</td>
</tr>
<tr>
<td>2004</td>
<td>Private company Tuymaada-neft formed as a successor of the Sakha state company Tuymaada-neft</td>
</tr>
<tr>
<td>2009</td>
<td>Exclusion of sovereignty principle from the Sakha Constitution</td>
</tr>
<tr>
<td>2007</td>
<td>Construction of the mega-project ESPO oil pipeline commenced on the territory of Yakutia</td>
</tr>
<tr>
<td>2010–2018</td>
<td>Rule of E. Borisov</td>
</tr>
<tr>
<td>2015</td>
<td>Construction of the mega-project Power of Siberia gas pipeline commenced on the territory of Yakutia</td>
</tr>
<tr>
<td>2015</td>
<td>Offshore oil exploration begins in the Arctic seas</td>
</tr>
<tr>
<td>2018</td>
<td>Acting governor A. Nikolaev</td>
</tr>
</tbody>
</table>

Source: timeline compiled by the author from multiple sources (Fondahl et al., 2000; Sidortsov et al., 2016; Yakovleva, 2011), documents and fieldnotes.

In May 2018, E. Borisov resigned from the Governor post, and it needs to be seen whether the next Republic leadership (currently under the rule of acting Head A. Nikolaev, a former mayor of Yakutsk) will deepen or challenge the resource extraction-based development in Yakutia.

Regional climate change planning

The formal climate change policy in Yakutia has been developing in response to the international and federal initiatives as well as growing evidence of local impacts of climate change. The regional Ecological Doctrine recognises that the territory of Yakutia forms one of the largest of Earth’s biosphere reserves, global ecological reserve and climatic regulator of the planet. The vulnerability of permafrost in the face of climate change is...
change and industrial development and the need for responses are acknowledged in a law on “Protection and Use of Permafrost” drafted by regional scientists at the time of the fieldwork and adopted by Il Tumen in May 2018. As stated in the interview with a representative of the Il Tumen and one of the promoters of the law, the law would have been designed not only for the regulation over the land use but to accommodate the interests of the future generations and the planet as a whole (SR G1). The law proposes that the regional authorities in the field of environment protection should be entrusted to design and implement policy in matters to do with the use of land and the preservation of permafrost. The functions include monitoring the state of permafrost, regulating economic activities (including extractive industries) that affect permafrost and protecting population from changes in permafrost.

Climate change mitigation in Yakutia is centred on achieving energy efficiency in urban and industrial areas and securing the energy supply in remote villages. There have been several efforts to promote renewable energy projects, such as solar energy and wind energy production in remote regions (e.g. in Tiksi); these were driven by the high costs of the conventional diesel-based stations and initiated within the projects of international cooperation at the government level (e.g., Working Group on Regional Adaptation to Climate Change of the Northern Forum) and the community level (e.g., SnowChange Cooperative).

In summary, during the 20th century, gold, coal and diamond mining transformed Yakutia from a subsistence-oriented of Indigenous groups to an industrial nation with strong leadership. With the opening of the 21st century, exploitation of oil has entered regional developmental and political landscape of the region. Like Komi, Yakutia is in the midst of balancing local needs and regional priorities with geopolitical aspirations and projects.

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58 The Northern Forum brings together 24 subnational units of government from 10 northern and Asian countries to focus on issues of economic development and sustainability, to exchange knowledge and experiences at the regional government level and to advance the interests of northern regions. Available at [https://www.northernforum.org/ru](https://www.northernforum.org/ru) (in Russian) and [https://www.northernforum.org/en](https://www.northernforum.org/en) (in English), accessed August 20, 2018.

of the Russian state. Regional climate change planning targeted protection of permafrost and development of renewable energy projects; their effects on the oil industry remain to be seen.

7.3 Pro-oil discourse

This section builds on the above introduction to the Soviet and post-Soviet political economic situation in Komi and Yakutia to comparatively introduce determinants of power that surrounds the oil industry. Findings are presented against five major determinants of a pro-oil discourse, emerged during the thematic analysis of interview inputs from the representatives of governments and oil companies: (i) the geographical advantage and longevity; (ii) a driver for development; (iii) autonomy; (iv) integration into the global economy; and (v) sustainable and climate-conscious development. These discourses explain how oil represents a cultural, political and economic force in the contemporary governance of the two subnational units of Russia.

The geographical advantage and longevity

The first determinant that explains the support given to the oil industry in Komi and Yakutia is the natural predisposition for natural resource extraction and its historical persistence. Indeed, the territories of both regions contain rich oil reserves that can be exploited (670 and 436 million tonnes in Komi and Yakutia respectively, without offshore oil reserves) (N G4).

The power of oil in Komi is explained by its long-standing history since the initial industrial production in the 1930s. Today, oil continues to influence regional economic and political life. In interviews, regional authorities expressed a sense of pride in the oil sector. A representative of Komi Ministry for Economy explained: “We have created a large oil production centre in the region, despite all economic challenges. We are very proud to work together with Lukoil-Komi, and we hope the partnership will continue into the future” (KR G3). This quote highlights the importance of a long-term partnership with the major operating company Lukoil-Komi and indicates a sense of close involvement of regional government in the industry’s development, despite the overall industry in the region being steered by the private firm.
Interviews with representatives of the industry and Komi Ministry for industrial development complicated the longevity narrative by stressing that oil reserves in the region are of decreasing quality, with many active reserves being exhausted (KR G4; KR I3). Sixty per cent of regional oil reserves are classified as hard-to-extract (KomiEnvironmentReport, 2016). KR I3 clarified that oils in the existing fields are heavy with a high concentration of paraffin and sulphur, or highly watered. Unconventional oil extraction methods are required to compensate for the deteriorating reserves (KR G4).

Recent industry’s efforts focused on the intensification of oil development through tertiary, or enhanced oil recovery, using pumping and water injection, allowing to gain from 30 to 60 per cent more of the reservoir’s original oil (KR G4). Another method includes oil mining; it has been rapidly developing in the Yarega oil field near Ukhta (KR G4). Unconventional methods require specific facilities and technologies for processing, indicating an increased need for investments and, as a result, lower profits. Nevertheless, unconventional methods remain profitable due to preferential taxation for the production of high-viscosity oils and compensations of costs related to operationalising previously developed oil wells, both provided by the regional government (KR G4).

Resilient oil extraction and production is the main factor of macroeconomic stability of the Komi Republic. The resilience of the oil industry demands the continuation of oil exploration in underexplored remote areas such as Vorkuta, an increase in production outputs from existing wells and greater oil processing (KR G4). However, a member of the regional parliament feared that the decline in oil price that began in 2014 would negatively affect the oil extraction activity (KR G2). A responsible for an oil field, an employee of Lukoil-Komi, however, explained that: “the crisis does not affect exploration activities since the companies need to constantly explore more and more. However, extraction can be indeed temporarily hindered” (KR I4). Nevertheless, the plans of the Shell in Vorkuta oil fields was held back during the time of Western economic sanctions. To avoid economic risks, the cooperation was established between the Shell Neftegas

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*Development* and a regional oil company *Timan-Pechora gas company*. In 2017, the licences were entirely transferred to the later (Rosgeolfond, 2018).

Unlike in Komi, extraction of oil in Yakutia is more recent. Its development was constrained until the late 2000s given harsh climate conditions, remoteness and lack of infrastructure (SR G2). However, hopes are high for new oil discoveries in Yakutia (N G6). Proven oil reserves on the territory of Yakutia are estimated at 436.2 million tonnes; however, this estimation constitutes only 18 per cent of oil resources that have been proved (2.4 billion of tonnes of oil); it is expected that another 695 million tonnes of oil will be brought into the extractable deposits by 2020\(^{61}\). There are estimates of large oil discoveries on the shelf of the Arctic Ocean, and the federal officials in interviews assigned the strategic importance to oil reserves off the Yakutia coast, providing the development of the Northern Sea Route permitted by an increasingly warmer climate (N G2; N G6). At the subnational level, however, the perspectives of the industry are uncertain. The long-term socio-economic strategy of Yakutia until 2035 considers two alternatives: the decline to 7.4 million tonnes per year, or the growth to 16 million tonnes per year (in 2015 production was 10 million tonnes)\(^{62}\).

**A driver for development**

The second determinant revolves around the oil industry as a driver of national and regional socio-economic development. In Yakutia, the recent rapid expansion of the oil industry resulted in the 16 per cent of the annual growth of the regional product, contributing to 45 per cent of the regional product in 2015 (SakhaStat, 2017). In these numbers is the ideological construction of the fossil fuel industry as an impetus for economic growth. Yet, the regional product generated by other industries and agriculture has decreased by 14 per cent over the last decade (SakhaStat, 2017). This trend demonstrates the intensification of regional dependence on the oil industry.


As indicated by a Komi State Council’s deputy: “There is no alternative for earning in the north, except the rent, that comes from subsurface” (KR G2). A representative of Yakutia’s II Tumen shared a similar vision: “Development of alternative industries, as processing, tourism and agriculture are necessary but extremely difficult in the severe climate and such remoteness from everything. Indeed, we do not satisfy our demands for food and many commodities” (SR G1). In these quotes is the apparent rationale for resource extraction in the north, when the rent from resources, from an economic perspective, is placed within the ultimate source of development.

However, the industry is diverse, and not every operation benefits the regional economy. In Yakutia, the government has prioritised projects driven by regional and local companies rather than large state and private corporations (SR G1). The former contribute to ensuring energy security for urban and remote communities living in extreme climates, while the latter strategise on export and concentrate profits in Moscow (SR G1).

Moreover, the oil industry is an easy solution to secure employment in northern regions. In Komi, 30 thousand direct jobs were created over the years of the oil exploitation (KomiStat, 2017); the oil industry was behind the establishment of towns of Ukhta and Usinsk that currently house 140 thousand and 70 thousand people respectively, numerous educational institutions and other advantages of town life not available to rural residents. In Yakutia, resource extraction employs 11 per cent of the regional population (a half in mineral mining and a half in hydrocarbons extraction) (SakhaStat, 2017).

In both regions, the residents that used an opportunity to work for the oil industry gained higher incomes in comparison to the workers in other sectors. In Yakutia, for example, the oil salaries are two times higher than the regional average and four times higher than in agriculture (SakhaStat, 2017). This gap explains large territorial income inequality between population based in urban industrial centres and other urban and rural areas (KR A1). This observation indicates that social inclusion is problematic.

The experience of the town of Vorkuta in Komi indicates further challenges of this development model. A Professor of Regional Development and Sustainability who was involved in regional planning in Vorkuta explained that the hopes for economic development based on oil and gas have been particularly pronounced because of declining
coal mining (KR A3). The construction of the gas pipeline Bovanenkovo-Ukhta created numerous jobs given to local residents as well as to temporary workers from throughout Russia. This stimulated local economy through booming local trade and increased municipal taxes, however, the large-scale project brought many other challenges for which the town was unprepared. The rapid and poorly controlled influx of workers resulted in growth in crime rates, drugs consumption and an increase in sexually-transmitted diseases. The near completion of the construction of the major infrastructure means that the number of employed people is expected to decrease dramatically. The gas pipeline was designed with a high level of automatization, that does not require the same number of jobs for its service as at the construction stage. As a result, the prospective oil industry was seen by the Vorkuta administration as a strategic asset for the region 63.

The government in Yakutia has been trying to secure local employment, by establishing quotas for external labour and ensuring that the agreements between companies and representatives of the republic or municipal government specify the number of jobs created for the regional population (SR A1; G6). The region has also established a professional educational institution to ensure that the skilled workforce comes not only from central Russia, but also more people from Indigenous and local communities are employed. It is an indicator of inclusive economic growth and poverty reduction (SR A2). Yet, a representative of the Association of Indigenous people of the North stressed that jobs are often superfluous, serving little beyond meeting demands for wage-work, and contributing to risks to life, health, culture and livelihoods (SR S3).

Integration into the global economy

The dissolution of the Soviet Union and the export-driven orientation of the resource extraction industry created opportunities for both regions to become active participants in the global economy. Power sharing agreements between the republics and the federal authorities set the freedom of the regions to lead international relations if they do not compromise the integrity and security of Russia. Regional political elite has often paid visits to or invited foreign delegations to establish economic relations and sell their

63 Round table discussion about Vorkuta strategic development and stakeholder engagement, meeting minutes.
investment projects. Development corporations and funds (Investment Fund of the Komi Republic, the South Yakutia Development Corporation) were established during the last decade to attract foreign capital. Oil projects have been given importance in the pursuit of foreign investment (SR G3; KR G9).

Oil fields in Komi were integrated into the nation-wide transportation system from the early period of the industry’s development. Continuous modernisation of the infrastructure was required to maintain the supply. In the 1990s, there were attempts to establish a consortium for the development of the Timan-Pechora oil and gas province, uniting Texaco, Exxon, Amoco and Norsk Hydro companies. However, the implementation of the initiatives was halted by the insecurity of production sharing agreements because of unclear and unstable legislation (KR G2).

Lukoil-Komi and other companies established in the region contributed to the export of regional oil to Western Europe. Increasingly, foreign capital has been invested in regional facilities and projects. In 2009, company NobelOil was acquired by China Investment Corporation and Oriental Patron. Rusvietptro headquartered in Usinsk following the 2008 agreement between Russia and Vietnam for cooperation in the oil industry. A new actor is Shell, which received exploration licences north of Vorkuta in 2012. Yet, “Given many external factors, the company is very careful with entering the republic” (KR G10). This is linked to the economic and political instabilities related to the Crimea conflict, low oil prices and Western sanctions on Russia.

For Yakutia, “integration into the global market is natural due to a favourable position in Asia and historical connections” (SR G1). The ESPO pipeline developed as a geopolitical project, and Rosneft and other major companies have secured licences for oil exploration and extraction in the east part of the republic. “Yakutia must ensure that their benefit from all the activities concentrated around the ESPO pipeline. Major actors already secured licences, Yakutian oil companies should hurry up” (SR G1). This became especially urgent as existing oil fields, that previously was of little interest due to their remoteness and high costs, became of high strategic importance with the ESPO’s development. An interview with an industry representative highlights this: “It is a good time for Yakutia to embrace all opportunities that arise in relation to the emerging interest of countries in Asia. We are well-positioned and are ready to invest in projects”
However, the expansion requires the development of infrastructure often in competition with other regions, with difficulties for the access to oil-transporting and oil-processing infrastructure. The access to facilities necessitates coordination of activities and bargaining with large-scale players, such as Transneft.

**Tuymaada-Neft**, a regional oil company, has partnered with foreign companies from China, India and the USA to ensure their competitiveness for the popular oil fields. However, integration into the ESPO pipeline was challenging for them, as “the contracts for the full pipeline potential have been already assigned for the next decade” (SR I1). Smaller companies have weak negotiating power. The control of the EPSO pipeline by Transneft and its long-term agreements with large oil companies limit the opportunity for smaller independent companies to use the infrastructure for selling oil. Considering the lack of oil processing facilities, small companies remain poorly developed. The international partnerships are favoured in Yakutia as they bring technologies, have higher environmental standards and attract highly-qualified labour and management. There have been negotiations with an Australian company Skyline Limited in charge of Silk Road China’s development strategy “One Belt One Road”. Today, integration of Yakutia’s territory through oil activities generates 30 per cent of oil export earnings for the federal budget (SR G1). However, the regional long-term socio-economic development strategy 64 emphasises the risks of growing resource dependence. The volatility of prices on the global markets, development of renewable energy, discoveries of resources overseas with easier and less costly access and the geopolitical situation may have a strong influence on oil-extraction based development.

**Autonomy**

The interest in the integration into the global economy explains the attempts of the republics to maintain relative autonomy from the central state power, concentrated in Moscow. The centralisation of the power during the presidency of Vladimir Putin resulted in the redistribution of resource rents gained in regions to the federal capital. Despite that both Komi and Yakutia are rich in resources, they are not profiting from resource rent as

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they could (NG1). This is explained by the fact that many resource firms registered their headquarters in Moscow, where they pay taxes, leaving the regions with the contribution to socio-economic development through the programs of CSR and social partnership agreements (NG1).

In 1990 the Declaration of State Sovereignty was adopted in Russia promoting federalism, and some regions, including the northern republics of Komi and Yakutia, established their relative autonomy from Moscow in the process commonly named ‘the parade of sovereignties’ (Hale, 2000). It stimulated rent-seeking behaviour and generated distrust between the central government and regions. Many regions have evolved into subnational authoritarianism (Orttung et al., 2000). The mix of liberalisation, privatisation and globalisation that characterised the 1990s and growing centralisation of power and resource nationalism in the 2000s made their impacts felt in most areas of regional importance, and the last decade saw both Komi and Yakutia balancing the aspects of nation-building together with a neoliberal approach to resource governance. Each region sets their development strategies that determine to what extent the crude oil industry pertains to the development. In 2015, the Russian state oil company Rosneft entered the political landscape. “This will create a healthy economic competition to Lukoil-Komi and smaller oil producers” (KR G8). To achieve this, Rosneft’s former Director for Customer Services was appointed as regional minister of industry (who has been already in this role between 2003–2009).

In Yakutia, a representative of Il Tumen emphasised the importance the resource extraction industry has had in supporting the relative autonomy of the Republic from the state since the Declaration of State Sovereignty was achieved in 1990 (SR G1). Yakutia has a long history of confronting the federal government. The establishment of the Future Generations Fund was particularly important during the period of recession that accompanied the transition period (SR G1). The government and its supporters promoted a vision of the republic as a national state, in which the republic government control mining activities, in particular revenues. It explains a belief that the regions’ political and economic aspirations lie in its potential to manage natural resources with the positive outcomes for the republic.
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The anxiety over the contemporary ‘proper’ governance of the nascent oil industry is leading the republic’s government to attract investors by all available means. Currently, the Yakutian government encourages oil extraction projects. It is evident in the tax and profit incentives, such as offering zero tax on resource extraction provided the Yakutian government and supported by the Federal Ministry of Energy (since 2006, prolonged in 2014 and 2017). For example, the Yakutian government provided incentives on corporate tax for the Taas-Yuryakh company for five years under conditions that company maintain its investment into the region exceeding RUB10 billion a year (USD170 million). However, this initiative caused conflict in the parliament in Yakutia, as they incentives were only offered for one company, a subsidiary of Rosneft (SR G1).

Fondahl et al. (2000) argued that the leadership of Yakutia in the creation and implementation of republican laws linked to the Indigenous rights in the 1990s is partly a strategy for affirming republican sovereignty. This leadership continues and enters the domain of the resource nationalism, shaping the struggles for the right and opportunity to extract and trade oil from the territory of the republic.

**Sustainable and climate-conscious development**

The oil industry in Russia has been increasingly framed as socially responsible, environmentally sustainable and climate-conscious. These three framings add legitimacy for the oil industry to continue expanding its operations in both Komi and Yakutia.

First, the oil industry in Russia has been increasingly oriented at social responsibility. The industry exhibits its commitment to social sustainability through the programs of CSR, streamed through charity projects, provision of social infrastructure and socio-economic partnership agreements with regional and municipal authorities. In particular, the company and regional government highlight the industry’s contribution to the traditional livelihoods of Indigenous peoples. A representative of the company’s management explained: “In the Komi Republic, there are few movements whose activities aim to increase the spiritual and cultural heritage of Komi-Izhma and Nenets people. We understand this and provide moral and financial support to them” (KR I2).

Second, environmental sustainability of the oil industry has been a growing concern not only among the affected population but also planners and policymakers. In Komi, the
environmental sustainability of *Lukoil-Komi* is centred on its commitment to modernise degrading oil infrastructure inherited from the 1990s and to remediate pollution of lands and waters with spilt oil and produced waters. The company’s responsible for the environmental program highlighted: “This is the legacy of the large network of degrading oil pipelines that we, as a private company, inherited from KomiNeft. We already cleaned up the soil after the Usinsk disaster of 1994, and we are working on the continuous replacement of pipelines” (KR I1). The company currently “follows the highest standards of industrial safety and ecology” (KR I3). The positive environmental image is promoted by the regional government, which highlights the company’s achievements in environmental management.

Sustainable development is one aspect where Yakutia has performed laudably in recent years. In Yakutia, the regional government is critical in its approach to the environmental and social performance of the growing oil industry (N G2). A representative of the Yakutia’s Il tumen explained that “recently, the requirements were enhanced towards the social and cultural responsibility of any potentially damaging activities on our territory. We require advanced measures for developers who got plans for working in our region” (SR G1). This refers, for example, to a legal initiative to conduct an ethnological expert review for all projects to be implemented on the territory of the Sakha Republic. This approach has received Russia-wide attention for the potential application (SR S2).

And finally, the Russian oil industry has been developing its agenda to address climate change. Lukoil, the major oil operator in Komi, formulated its voluntary climate program in 2005 considering that its productive activity of extraction and processing of oil significantly contributed to GHG emissions. The climate program advanced with the development of federal legislative base for the reduction of GHG emissions. As stated in the position of Lukoil on climate change, the company has been supporting climate

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65 The Federal Agency for Nationalities has begun development of a federal law on ethnological expert review (*etnologisheskaya ekspertiza*) in February 2018.

change mitigation, including the participation of Russia in the global efforts to reduce GHG emissions\textsuperscript{67}.

Flaring of APG during extraction and processing of oil is a significant contributor to GHG emissions. The APG flaring emits methane and black carbon which are powerful precursors of climate change. Therefore, achieving higher rates of APG utilisation (lower rates of APG flaring) became the priority for the climate programme of \textit{Lukoil} in Komi (and other regions). During the time of the fieldwork, Komi Ministry of Natural Resources and Environment Protection and \textit{Lukoil-Komi} expressed pride in achieving 80 per cent in APG utilisation rates (KR G1; KR I2) (this result is still far from 95 per cent policy target\textsuperscript{68} (as in 2017)). Higher rates of APG utilisation results in reduced payments by the company to federal and regional budgets to offset the impact on air pollution and the potential to re-orient the funds to the development of projects that contribute to energy efficiency. \textit{Lukoil-Komi} has begun to implement small energy projects on the oil fields, and there is a potential to stream the energy they produce to host communities (KR I2).

In Yakutia, the problem of APG utilisation has not been prominent, as the oil fields only begin to be developed (SR G4), and the company planned to inject APG into the oil wells (SR I5). The interviewees from Yakutia emphasise the importance of climate change adaptation on the territory of Yakutia as climate conditions play a significant role in the operation of its critical infrastructure. “Climate change problem is very acute in Yakutia, and there is growing evidence that does not even require scientific proof. In the republic, our ministry together with other ministries and scientists have been working on the strategic documents for mitigation of the negative impacts and adaptation to emerging challenges” (SR G4). Representatives of a pipeline construction firm stressed that climate change factors are taken into account when designing any kind of infrastructure. This is achieved through engineering-geodesic and geological surveys, reviewed and approved


according to the standard procedures (SR I5; SR I6). The severity of the regional climate and the fragility of the regional ecosystems were central to the argument.

7.4 Discussion

The chapter enquired: Is the expansion of the oil industry supported at the subnational level in Komi and Yakutia, and why (RQ 3)? The historical and political economic contextualisation of the evolution of subnational governance in Komi and Yakutia was supplemented by the insights from strategic national and regional development plans and interviews with representatives of the subnational governments and the oil companies. The findings explicate the pro-oil discourses that centre around five key determinants: (i) longevity and geographical advantage; (ii) development driver; (iii) autonomy; (iv) integration into the global economy; and (v) sustainable and climate-conscious development. These aspects work together to promote the vitality of the oil industry in Komi and Yakutia, in which the oil projects are taken as a blessing by the subnational governments.

In the comparative analysis of the pro-oil discourses, Yakutia has outperformed Komi based on consistent political will and vision in governing subsoil resources for the regional good. Komi exhibits inconsistent management by its political leaders that bargain oil revenues and loyalty of the oil companies for strong environmental impacts. It has reduced the extent to which the republic, as a representative of Komi and other peoples, is capable of forming and implementing an inclusive and long-term vision for development. Findings illustrate the continuous symptoms of authoritarianism and corrupted government, that is consistent with previous research on Komi political life (e.g., Alexander and Grävingholt (2002)). In Yakutia, the pro-oil discourse serves as a reminder of the power imbalances between subnational sovereignty, geopolitical aspirations of the state and profit-oriented agenda of oil corporations. However, the spaces for the state companies to enter the region are tighter (strong requirements for environmental and socio-cultural responsibility), while foreign investments and partnerships are encouraged in the region, seeking to maintain a stronger sense of regional identity and autonomy.
The pro-oil discourse is affected by the relations of power and politics cutting across several themes: the legacies of the past, imaginative geographies of hydrocarbon resources, struggles over resource rents and ownership, and struggles over authority and recognition. First, regional strategies that share the conventional development agenda of sustaining resource extraction are conditioned by the legacies of the past. The historical resource extraction explains the reference to existing well-established physical and institutional infrastructure for the resource extraction industry. Over the decades, resource extraction has become the backbone of both regional economies, even if crowding out other industries. The environmental degradation in oil producing fields is also acknowledged as a historical legacy, with the belief that contemporary and future projects are bound by the strict environmental regulations. These histories explain how the nexus of resources and state entities underpin and influence environmental politics (Bridge, 2014), which includes how climate change policy is developed.

Second, the pro-oil discourse is entrenched in the production of imaginative geographies of a state and its hydrocarbon resources (Perreault & Valdivia, 2010). The imagination of Russia as a hydrocarbon superpower (Bouzarovski & Bassin, 2011), the location of significant reserves in the eastern part of Russia (Bradshaw, 2013) and the increased access to the exploitation of the Arctic resources (Dittmer et al., 2011) justified the prolongation and expansion of the oil industry in Russia. Yakutia has explicitly positioned itself within Russia’s politics of resource nationalism by active integration into hydrocarbon rush, while introducing new mechanisms for “good’ resource governance and social inclusion. The insertion of “not-quite Arctic” Komi into the global political economy via the hydrocarbon resources has been refracted by stricter state control and the Western sanctions following the 2014–2015 Ukraine crisis.

The two regions indicate that resource nationalism in Russia is rather hybrid, state-led companies continue to exercise control over the critical infrastructure, regions are situated politically in the midst of a geopolitical situation that determines their identity, sovereignty and autonomy within the existing state, balancing their subnational interests with local struggles for development and environmental impacts that oil extraction has or expected to produce. Historical accounts identify that subnational scale sovereignty emerged in Russia out of the centralised state domination of all aspects of political,
economic and social life. Later on, global capital becomes constitutive of the process of constructing sovereignty, particularly in Yakutia, that demonstrates their capacity to control resources in isolation from the state government. However, the recent practices of the Russian government of rotation of subnational government can ensure that the union is not established in favour of oil corporates.

Third, the expansion of the oil industry involves struggles for the rent at the subnational level, which are evident in the two regions competing with other regions and the federal government over the rent that stays in the region. Being rich in resources, subnational governments do not feel fully satisfied with the system of distribution of benefits and rents through taxation regimes. They negotiate additional benefits through agreements of socio-economic development, additionally to municipalities and local communities. In both regions, neoliberal political and economic ideas, albeit in different forms and magnitudes, have worked to resist the overwhelming power of the Russian state to concentrate the wealth from oil exploitation in the federal centre. Additionally, struggles over ownership and control over subsoil resources are territorialised within the national space (Perreault & Valdivia, 2010).

And finally, struggles over authority and recognition play out in subnational governance. Similar to other countries, articulations of resources, nation and identity are observed in contemporary Russia. It is a common case around the world when pressures for natural resource development result in the acceleration of territorialisation of Indigenous groups and facilitation of Indigenous rights (Bebbington & Bury, 2013). These dynamics will be addressed in more details in the following chapters.

The findings from Komi and Yakutia support the argument that attention to cross-scale relations of power and politics acting in resource frontiers, although it is too complex to be fully examined in one chapter, can enrich the conceptualisation of more equitable climate change responses by understanding the ‘real’ institutions (Cleaver & Franks, 2005) to be navigated when developing and implementing climate change policies (Nightingale, 2017) influenced by regional development strategies (Naess et al., 2015). Understanding the historical embeddedness of the oil industry, and its current role in regional development agendas, are vital in engaging existing power and politics in place in climate-motivated responses. For example, the dichotomy between expanding oil
exploitation and the low carbon economy promoted by the Climate Doctrine of the RF leads to a situation in Komi and Yakutia when climate-motivated initiatives tend to co-opt established extractive-based development. Climate-motivated initiatives can produce realignments of power (Naess et al., 2015), and therefore the current efforts to promote phasing out fossil fuels are rendered as misplaced in Komi and Yakutia, and emerging climate-motivated initiatives focus on air pollution, environmental management and APG utilisation.

7.5 Conclusion

This chapter addressed RQ 3: Is the expansion of the oil industry supported at the subnational level in Komi and Yakutia, and why? The support given to the expansion of the oil industry in Komi and Yakutia was explained by five determinants of the power of oil: (i) longevity and geographical advantage; (ii) development driver; (iii) autonomy; (iv) integration into the global economy; and (v) sustainable and climate-conscious development. The findings demonstrated the value of understanding regional development contexts and the embeddedness of the oil industry in existing regional politics. The pro-oil discourse is mediated by the relations of power and politics cutting across the legacies of the past, imaginative geographies of hydrocarbon resources, struggles over resource rents and ownership, and struggles over authority and recognition.

The focus on power and politics is critically important when regional development agendas encounter climate-motivated initiatives. Understanding these can inform ‘real institutions’ to be navigated in order to address climate change and development goals in a more equitable way. The next chapter explores the relational dynamics of community-company relations in Komi and Yakutia, and their implications for just adaptation.
8.1 Introduction

The previous chapter demonstrated the relations of power and politics entrenched in the expansion of the oil industry in Komi and Yakutia, and their critical importance in integrating climate-motivated initiatives and regional development agendas. Linked to this are political ecology concerns about who benefits and who is expected to lose in the name of oil exploitation. This chapter addresses RQ 4: How do Indigenous and rural communities in Komi and Yakutia participate in oil projects? Answering this question, the study provides examples of community inclusion in and exclusion from participation in the oil projects demonstrating factors that affect fairness.

The analysis employs the relational justice approach (Gavidia & Kemp, 2017; Kemp et al., 2011; Whiteman, 2009), which is understood as the way the interactions between companies and locally affected communities are formed and managed throughout time, “both in terms of how parties communicate their interests and the processes through which decisions are made” (Gavidia & Kemp, 2017, p. 79). The chapter covers the evolution of community-company relations around specific oil projects in four local cases: the Pechora River valley (KR1), the Bolshezemelskaya tundra (KR2), the Aldan plateau (SR1) and the Indigirka River delta (SR2) (see chapter four, section 4.3.2 for the selection of the projects).

The analysis is informed by the interviews with community members and their representative organisations about the space for participation in the oil projects or lack thereof, and the interviews with a wide range of stakeholders implicated in the projects. These insights were supplemented with information about the projects found in a range of available documents, including minutes of public meetings and agreements of cooperation. The detailed explanation of the methodology and specific details about the interviews and documents consulted are provided in chapter four (section 4.4.4) and Appendix C.
The following section 8.2 describes how community-company relations have unfolded in the four cases. In section 8.3, the analysis identifies strategies that have influenced the inclusion of Indigenous and rural people in, and the exclusion from, the oil projects. Section 8.4 draws these strategies into the discussion about relational justice and considers the implications for just adaptation.

8.2 Participation in oil projects

This section describes the evolution of community-company relations in four oil projects drawing on the recent experiences of affected communities. The experiences are framed in the context of federal and regional laws as well as international norms and guidelines in relation to prior consultations, the public consultations about the EIA, the negotiation of benefits’ distribution as part of the CSR programs and the provision of compensations for the land loss and environmental pollution (see chapter three, section 3.4 for the relevant regulatory norms and practice in northern Russia).

8.2.1 Komi-Izhma communities in the Pechora River valley (KR1)

The previous chapters explained how since the early 2000s, oil exploitation has expanded from the high-density Usinsk oil fields, known for extensive environmental pollution (Walker, Crittenden, et al., 2006), to the territory of the Izhma rayon, where the relatively untouched environment has been used for subsistence-oriented livelihoods by Komi-Izhma and Komi people. The first oil exploration well in the Izhma rayon was drilled in 2000 on the territory of the zakaznik Sebys by the private Russian-Cypriot-British-American company Pechoraneftega supported by an order of the regional Ministry of Natural Resources.

This operation was met with strong contestation from local people, who were not informed about the project (Fryer & Lehtinen, 2013; Habeck, 2002). They did not agree that industrial operations should take place in the area that had been used for many

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69 Zakaznik is a type of protected area in Russia that corresponds to categories IV (Habitat/Species management area) or VI (Protected Area with sustainable use of natural resources) in the categorisation by the International Union for the Conservation of Nature (IUCN, 2017). Zakaznik Sebys was established in 1991 to preserve an undisturbed landscape on the territory of 175 thousand hectares.
generations for subsistence practices, including reindeer herding, hunting, fishing, gathering berries and mushrooms, and had a landscape and culture conservation designation. To support the industry, the Republic’s Head issued a decree that changed the status of the zakaznik permitting oil exploration and extraction works on its territory. However, a year later the community defended the territory in the Supreme Court of the Komi Republic that recognised the degree invalid (Mezak, 2001). Subsequently, the oil exploration works in Sebys were terminated (KR1 S5).

This was the context when Lukoil-Komi commenced its operations in the Izhma rayon in 2003 (KR S5). Since then, the company has been developing five oil fields, among them were Shelyaurskoe, Makaryelskoe and Uzhno-Sedmesskoe (Rosgeolfond, 2018). Development of these fields involved the construction of associated infrastructure (oil rigs, inter-field and transportation pipelines, work camps, processing facilities and oil tailings) and drilling operations on numerous sites70.

A man from Shelyaur described recent experiences of how villagers found out about the preparation for drilling activities on four sites on the Shelyaurskoe oil field in February 2014: “One day, we discovered machinery passing by the village. We had no idea what was going to happen. We followed them and found river crossings and creeks covered with logs and branches, and much wood was cut. There was a drilling site under construction, 180 metres from the village” (KR1 C5). He explained that people were furiously angry with another intervention into their territory, without provisioning information and consultations. He continued: “It seems to be possible that one day we will wake up, and there will be an oil well in the centre of the village. Already, in places where we hunted and used to gather berries and mushrooms, there are tractors, smashing everything around. And, it is even legal” (KR1 C5).

This incident escalated long lasting misunderstandings between residents of the Izhma rayon and Lukoil-Komi. A month later, in March 2014, more than 150 residents from Izhma, Shelyaur and another eleven villages gathered in the House of Culture in Krasnobar. The representatives of the prosecutor’s office, head of the Izhma

70 Summary of the OVOS for Uzhno-Sedmesskoe oil well; Summary of the OVOS for Makaryelskoe pipeline.
administration, deputes of rayon and rural councils, leaders of Izvatus movement and the SPC attended the meeting. The outcome of the meeting was an announcement to cease activities of Lukoil-Komi in the Izhma rayon, given “the continuous violation of environmental legislation by Lukoil-Komi and its contractors, as well as the connivance to these violations by the municipal government”\(^71\). People declared that their Indigenous rights must be respected\(^72\). In their demands to the company, people expressed their anger with the record of the company’s activities: construction of oil wells without any public consultations; hiding oil spills and eventually burying or burning them. According to their demands, any operations could proceed only when the requirements for the legitimate public hearing will be met and only in compliance with the project design and approved EIA (the OVOS for Makaryelskoe pipeline).

The public hearing for two of these sites was promptly scheduled soon after and was well-attended (about 100 people took part) (KR1 G3). After heated debates, the public hearing was declared as invalid by the majority of votes\(^73\). A participant explained that “the project material provided did not contain any signatures or stamps. We demanded detailed information about how drilling would affect the drinking water of the village, which the companies failed to provide” (KR1 C2). Similar experiences were shared by villagers who took part in public discussions about the development of the Uzhno-Sedmesskoe oil field in December 2014 (KR1 C3, C5). The project design presented by Lukoil-Komi to attendees generated many questions about the technological solutions chosen by the company\(^74\). The questions remained poorly addressed or unanswered, and the decision was made to declare the public hearing as invalid (voted by 25 people from 40 participated) (KR1 C3).

Another participant, a member of the SPC, clarified that declaring public hearings as invalid is a strategic response of the public to poor design of the projects and lack of prior consultations. The choice for this decision rather than rejecting a project is explained by

\(^71\) Report on the results of the public hearing about the Makaryelskoe pipeline.
\(^73\) Report on the results of the public hearing about the Shelyaurskoe oil field.
\(^74\) Report on the results of the public hearing about the Uzhno-Sedmesskoe oil well.
the fact that the outcomes of public hearings are advisory, and a rejection of specific projects would not prevent the state ecological commission from approving the OVOS process, and the projects would proceed in any way (KR1 S3). Rather, communities want to ensure that the company employs the best possible technological solutions that can be publicly controlled, so the environmental impact and potential pollution could be minimised (KR1 S3). Yet, this strategy has been disputed among communities’ members, sometimes preventing a consensus among all attendees of public hearings and achieving the majority of votes.

Some community members are employed as civil servants, in public services, extraction companies or their contractors. One interviewee suggested that “they [company and municipal government] would make sure the villagers who are employed with them come to the consultation. And many of them. There would be more of them than others. And when we vote, of course, there are many people who approve [the project]” (KR1 C9). Another interviewee, working as a truck driver for a contractor of Lukoil-Komi, who participated in several public discussions, expressed a fear of losing position and, thus, the income needed to support the family, if he would not vote for approval of public hearings (KR1 C13).

Several months later, public hearings for the Yuzhno-Sedmesskoe and the Shelyaurskoe oil fields were re-announced in Izhma, Krasnobo and Shelyaour. As one of the participants remembered: “Public discussions were planned by the Izhma administration for 10 January [date changed]. On the day, when people all gathered, it was announced that the public hearing is cancelled because the project documentation is not yet ready. We did not agree with such a manner. We all gathered in the administration building and debated” (KR1 C2). In the meeting, it was announced that the day before the public hearing another meeting was held between the leadership of the SPC, Lukoil-Komi and its contractors, Rosprirodnadzor and the Komi Forest Committee where it was revealed that some companies operated beyond the terms and conditions of the licences given for the fields (KR S1). For example, the licence for a field was granted for the period of 2005 to 2020, with a restriction on exploration activities until 2009. However, the exploration operations continued into 2015 together with extraction activities without the OVOS being approved and the population being informed and consulted (KR S1).
Another concern was expressed that a large project can be divided into many smaller parts, many of which do not require impact assessment in isolation, like building of a hut, road, or a pipeline (KR S1). The issues of non-compliance with the licences and initial design of the projects are acknowledged by the Republican government (KomiEnvironmentReport, 2016). The company responded that “there is not much oil here and they do not plan major operations here for a long time anyway” (KR1 S3).

Repeated spills of oil and other incidents have been central to the worsening of the community-company relations (KR1 S2). In retrospect, the Komi-Izhma population perceived that they should expect to deal with environmental pollution, but they did not expect it to come in such a variety of forms (KR1 S2) (see chapter five, section 5.2). Also, they did not expect to deal with consequences of poor governance, the company failures, hiding data and disinformation (KR1 S2). A community member explained: “What is the most difficult to deal with, is the lack of any environmental data we can operate with. We experience pollution, but it is hard to know at what scale and what are the concrete impacts on the land, water, or our health. There is minimal monitoring, organised by the government, but operated by companies. And we cannot have the data. They just say that everything is according to norms” (KR1 C15). Trust in information and its legitimacy is minimal among communities’ members (KR1 C1, C8, C10).

Communities perceived it is unfair that they do not receive any compensations for loss and damage to land and waters (KR1 S4, C2, C8-10). The territories used for reindeer herding and other subsistence-supporting activities have not been registered as TTP because of the absence of a regional regulatory framework and the lack of status of Komi-Izhma as KMNS. Additionally, as explained by a representative of the Izhma nature protection office, lack of environmental data prevents government agencies estimating the scope of environmental damage and calculate compensations (KR1 G2). Nevertheless, some government offices have developed methodologies for evaluating the damage to the environment (KR G1). The operating oil companies in the area have been increasingly penalised for damage to forest resources or soils (KR G1). The fines are directed to the regional and federal budgets (depending on the designation of the resources being damaged) (KR G1). The sums are minimal and do not encourage companies to
enhance their standards and investments into the project design and performance (KR G1).

To deal with environmental impacts and to improve the relations with communities in the Pechora River valley, Lukoil-Komi has developed an oil tailings project (4.5 square hectares). It was designed to store and eventually process oil and oil sludge collected from polluted sites in the broader area. The project, planned for construction in 201775, was presented to the regional and municipal government and the public in 2015 as a modern ecologically friendly collector for the processing of solid and liquid oil sludge. During a public meeting about the project in 2015, many concerns were raised about the location for the tailings (in the area of swamps between three villages) and quality of its construction, its maintenance and the long-term impacts, naming the initiative as a “poisonous oil waste swamp”76. The residents of Shelyaur were particularly concerned during the public hearing, as the planned location is two kilometres away from the village and it overlaps with reindeer herding pastures, areas used for hunting and mushrooms and berries gathering.

In the face of the material visibility of environmental degradation, its media coverage and risks to the social licence to operate, Lukoil-Komi has spent resources to dispel growing concerns about its projects. In villages in the Izhma rayon, Lukoil-Komi installed banners on roads and continuously held media and outreach campaigns through its newspaper “Severnye Vedomosti”, on TV, at public events, information centres, schools and universities. Additionally, a Vkontakte (a popular social network in Russia) group77 was created where the company’s positive image has been promoted. Villagers have been invited to visit oil production facilities (for example, in Krasnobor), where the processes of oil extraction and mitigation of its impacts are presented and explained. Various activities have been widely advertised on the republic news channels (for example, bnkomi.ru). In the interviews, the company stated that they had been increasingly employing local people from the rayon. However, in June 2015, the municipal employment centre had zero job openings related to the industry. It was explained that

75 The project has been put on hold in March 2017 after several protest rallies in the Izhma rayon.
76 Meeting minutes, Usinsk, July 2015.
many jobs are seasonal and shift-based (KR1 G3). These strategies support the company’s efforts to reach target audiences in villages, promoting positive images and ensuring a positive public opinion to maintain the continuity of its operations.

The contribution of Lukoil-Komi to socio-economic development in the Izhma rayon under the banner of CSR has also been important given relational poverty in rural areas (KR G1). In the Izhma rayon, the negotiated social responsibility has been streamed through three channels:

– Agreements of cooperation and social partnership with Izhma rayon and Usinsk administrations. These agreements are renewed on an annual basis and mean to contribute to the goals set by the municipal plans and strategies of socio-economic development in rural areas (KR1 G1). Four agreements of cooperation were obtained during the fieldwork. The analysis of these agreements demonstrates that the CSR program contributed to the construction and renovation of social facilities in villages of the rayon, including schools, hospitals, cultural houses, sports infrastructure and churches\(^{78}\). The objects of funding are defined by the municipal administration, and the company approves or not the contribution. The agreements also establish the procedure for obtaining funding, and define conditions of spending and reporting (KR1 G1);

– Charity projects. This category included grants for ‘social projects’ (under categories of ‘Ecology’, ‘Sport’ and ‘Spirituality and Culture’), administrated by the company and allocated to local initiatives through a competition. Charities were also directed to the sponsorship of Komi-Izhma symbolic summer celebration of haymaking Lud, a spring reindeer herder Day, traditional sports events (skiing competitions, horse racing, reindeer racing, skill games, including tynzey-throwing (lassoing), sledge jumping). Social relations in this domain are oriented at preservation and development of culture, livelihoods and the traditions of Komi-Izhma people (KR I2);

\(^{78}\) Agreements on socio-economic cooperation between Lukoil-Komi and: (1, 2) the Izhma rayon administration (2010, 2015); (3) ethnic movement Izvatas (2015); and (4) the Usinsk town administration (2015).
Targeted assistance to individuals and groups, including cooperation agreements of the company the with Izvatas movement, the Komi-Voityr movement and the Izhemskyi Olenevod I Ko reindeer herder’s cooperative. These are negotiated between the leaders of these groups and company representatives. They establish a framework for possible cooperation mechanisms between the actors.

During the fieldwork, a negotiation was underway about the benefits agreement developed by the Izvatas and Lukoil-Komi. The Izvatas is an ethnic movement of Komi-Izhma people that actively engages with the oil company. The movement, as explained by its representative, represents the development aspirations of Komi-Izhma people, including the development of traditional livelihoods and the revival of culture and language (KR1 S2). The movement has extensive engagement with Komi-Izhma people beyond the boundaries of the Izhma rayon (in Murmansk region and Khanty-Mansi autonomous region).

The movement supports the cooperation with the oil industry to fulfil its potential to contribute to regional and local development. “The industry has already entered the region. Of course, we are not going to tolerate if they do not work according to our requirements. It took a few years to develop a common language. It is a significant help to the region; we need to ensure it is spent properly for our future” (KR1 S2). This is why in negotiating the content of the agreement, the movement was motivated to set the agenda needed for the benefits of the Komi-Izhma people (KR S2). The agreement centred on the support towards higher education of rural youth (KR S2). The company accepted the request and provided the needed sum as a charitable donation, with no reporting requirements (KR S2).

The movement, as a representative of Komi-Izhma people, then gained the chance to decide what kind of knowledge and skills are required, but the leader grew to be perceived as more focused on attaining political capital (KR1 S2). Community members who are not part of the leadership in the movement felt excluded from this important decision and questioned how the benefits would be distributed among people and who would benefit (KR1 C1). Those who did not agree with the approach supported alternative representatives of Komi-Izhma people instead, based in the Nenets-Autonomous okrug or Syktyvkar (KR1 M2). Moreover, negotiation of the benefits has raised
misunderstandings with environmentalists, who have been contesting oil extraction and its impacts (will be discussed further in chapter nine) (KR1 S3).

In addition to the movement Izvatas, Komi-Izhma communities have a functional political organisation. The rural council is respected in villages and has an authority of making important decisions. The municipal administration is in charge of the implementation of these decisions. However, trust in municipal authorities was minimal during the field trip in 2015, because the head of the administration was appointed externally (KR1 M1).

8.2.2 The Nenets obschina in the Bolshezemelskaya tundra (KR2)

The Bolshezemelskaya tundra represents an Arctic frontier for oil and gas projects. Oil exploration licences have been granted by the Rosnedra to the Shell Neftegas Development (II), an affiliate of Shell, in 2012 (Syryaga NefteGas Development since January 2017). The licences involved geological exploration of the fields Severo-Vorkutinskyi-1 and Severo-Vorkutinskyi-2 (Rosgeolfond, 2018). The two fields are located 50 kilometres north of Vorkuta town in the area of Khalmer-Yu (see map 5-2). It is a former coal mining settlement (1957-1993), currently abandoned but used as a military aviation training base (since the 1960s, restored in the early 2000s) (KR2 G1).

The name Khalmer-Yu is translated from the Nenets Indigenous peoples’ language as ‘River in the Death Valley’ (Pyriev, 1983), indicating that the place was used as a burial ground prior to its exploitation for industrial and military activities (the 1950s). The area under licences is used for autumn (September–October) and spring (May–June) pastures by one private obschina and reindeer herders of the cooperative Olenevod. Fishing and hunting have been practised in the rivers within the licences not only by the herders but also residents of the Vorkuta town, industrial workers, and military personnel temporary residing in the area. The preliminary field seismic works and 2D surveys, conducted in 2013–2014 by Georesurs (a contractor of Shell Neftegas Development (II)), demonstrated the potential for oil. During the fieldwork time in July 2015, the company had not commenced extraction works and was planning to acquire a new exploration licence for the Syryaginskyi field.
The public hearing about the \textit{OVOS} of the project \textit{Severo-Vorkutinskyi-1} was conducted in Vorkuta on March 15, 2013 [date changed]. The meeting was organised by the Vorkuta administration following the request of \textit{Shell}. It took place in the building of the town’s administration and was attended by about 20 people, representing the company, its contractors, municipal administration and the environment protection office of the town\textsuperscript{79}. It was presented that no harm to animals, nature protected areas, and traditional land use would occur as a result of seismic testing. Formally, the materials of the \textit{OVOS} for the seismic works on the \textit{Severo-Vorkutinskyi-1} field contain minimal information about the impacts of the seismic works on the Nenets culture and way of life\textsuperscript{80}. The document states that the environmental impacts will have short and local character. At the meeting, concerns were raised about the close location to the military polygon, but no social and cultural impacts were discussed. Additionally, the public discussion of the proposed project included the provision of information and registration of the public opinion in a written form in the company’s offices in Vorkuta and Moscow for one month.

It was concluded that activities could proceed, and the vice-head of the Vorkuta administration expressed that he was pleased to welcome a company with a worldwide name to its territory, hoping for a productive partnership\textsuperscript{81}. The administration of Vorkuta had big hopes that the company would establish itself in the region: \textit{“Oil extraction is of course needed here. And the operations of the company with such international reputation and responsibility (social and ecological) would be welcomed in Vorkuta. For now, we wait for the results of exploration and estimation. The exploration licence is given until 2019”} (KR G2). Already in 2013, \textit{Shell} made an agreement with the Vorkuta town administration to contribute towards the socio-economic development and environmental sustainability in the Vorkuta town. The agreement included the provision of equipment to the Vorkuta boarding school and the House of Culture, the purchase of a bus for people with disabilities in 2013 and extended to snow-removal machines and traffic lights in 2015\textsuperscript{82}.

\textsuperscript{79} Report on the results of the public hearing about the \textit{Severo-Vorkutinsky-1} oil field, Vorkuta, 2013.
\textsuperscript{80} Summary of the \textit{OVOS} for \textit{Severo-Vorkutinsky-1} oil field.
\textsuperscript{81} Ibid.
\textsuperscript{82} Agreement between \textit{Shell} and Vorkuta town administration (2013, extended in 2015).
In an interview, a Nenets reindeer herder from an obschina explained that they have never heard about the public hearing (KR2 C1). The information coverage in the tundra is limited, and herders rarely venture into the town, which is expensive, stressful and unwelcoming (KR2 C2). Also, they have much work to do on the pastures. “it is another world there, with all their offices and papers. I have reindeer here, should I bring them with me or what?” (KR2 C2). He saw some vehicles and a tent with geologists in the Khalmer-Yu area, and he was not surprised by the works undertaken as there are numerous wells and pipelines across the tundra (KR2 C2). However, he was concerned that the commencement of the oil extraction works in the area, if proceed, will further diminish the already limited land available for pastures. It was only in 2012 that they have been granted an official status of an obschina of KMNS by the Vorkuta administration, and the access to land for the pastures was partially secured in 2014 (see chapter six, section 6.2.2).

In the Vorkuta municipality, there are no organisations that formally represent interests of Indigenous nomadic people (KR2 G1). There is no reliable record on their number and activities. The cooperative Olenevod unites around 110 workers involved in reindeer herding. The cooperative is inclusive for reindeer herders representing various Indigenous groups (Komi-Izhma, Nenets, Khanty and Mansi). The cooperative secured the access to pastures for its members during the construction of the gas pipeline Bovanenkovo–Ukhta, entitling the cooperative to compensations (KR2 I1). Other herders are registered in cooperatives in the neighbouring regions or herd their animals privately.

### 8.2.3 The Evenks obschinas in the Aldan plateau (SRI)

The Aldan plateau has been exploited extensively for gold and coal mining. During the last decade, the regional area actively used for traditional subsistence activities by more than 2,000 Evenks in the Aldan rayon and about 900 Evenks in the Nerungri rayon was traversed by the ESPO oil pipeline, the Power of Siberia gas pipeline and accompanying infrastructure. In the following sub-section, the chapter explains how the Evenks communities participated in the development of these projects, placing their experiences within the requirements of international norms for FPIC and the federal and regional laws for public consultations.
A representative of a regional Evenk association explained that during the planning and construction of the ESPO pipeline on the territory of the Aldan and Nerungri rayons, the relations between obschinas and the companies were poor (SR1 C3). First, the construction began without consultations with the obschinas whose lands the infrastructure was planned to cross (SR1 C3). In response, the association and regional environmental organisations filed a court case, demanding the cessation of the approved OVOS\textsuperscript{83}. The city court supported the request, yet later the High Court of the Republic denied it (SR1 C3). A federal government representative explained: “The ESPO project is federal, geopolitical if you want” (N G6). It was explained that the pipeline crossed land of numerous Indigenous groups not only in Yakutia, but also other regions, and it was not viable consulting each community, considering how rapid the project was developing and materialising (SR G4).

The contractors of Transneft, the ESPO operating company, did not sign an agreement with the local associations of Evenks. Instead, the companies negotiated and paid compensations for land affected by the pipeline construction directly to obschinas: four obschinas from the Aldan rayon have received compensations after individual negotiations\textsuperscript{84}. A company representative explained this model: “Sometimes there are problems with the obschinas. Then our role is to explain to them that these are important large-scale projects and one way or another they will proceed. Some resist, but in general, we succeed to negotiate and agree. But it is better to do it beyond the public discussions. Why bring all these complications to the front if we can negotiate one to one?” (SR I1).

Obschinas were interested in having the land use compensation, although the process of calculating and negotiating the compensations was not transparent and fair for them\textsuperscript{85}. An Evenk woman, a member of one obschina in the Aldan rayon, described her experience (SR1 C3). Her obschina had to negotiate compensation with three companies: one for the oil pipeline, one for the gas pipeline and one for a power line. The companies in charge

\textsuperscript{83} Summary of the OVOS for a part of ESPO pipeline traversing south Yakutia; Report on the results of the public meeting about the part of ESPO pipeline (2006 and 2009 for the pipeline expansion).
\textsuperscript{84} For example, an Agreement between Transneft Vostok and an obschina.
\textsuperscript{85} Meeting of the Evenks association of the Aldan rayon, meeting minutes.
had different approaches to the estimation of expected impacts and proposed compensations. These were one-time agreements, while the impacts will be felt over many years of the operation of the pipelines. The practice of one-time agreements was among the problems highlighted by representatives of other obschinas as well (SR1 C3; SR1 C5; SR1 C8). They also felt frustrated by the absence of any agreements in case of the damage of the pipelines and environmental pollution with spilt oil (SR1 C4; SR1 C6).

A former leader of the regional Evenks association explained that being in taiga forest with their animals, people do not develop the necessary knowledge and communication skills to be able to defend their lands and obschinas, or to negotiate fair compensations (SR1 C4). As a result, some obschinas received more and some others less, resulting in conflicts between obschinas and individuals in villages (SR1 C4). Interviewees felt that the companies must contribute to the development of villages, where many members of obschinas reside permanently or temporarily between periods of migrating with reindeer (SR1 C6; SR1 C10).

There has been an initiative of the South Yakutia Development Corporation to establish a council for co-management and grievance procedures for communities affected by resource extraction projects. However, this initiative has not received continuous development, as local people were perceived as being not prepared for such work, according to the corporation’s representative (SR G3).

The interests of the obschinas of Evenk people in the Aldan rayon and Nerungri rayons are represented by several distinct organisations. The Association of the Evenks of Aldan rayon Sigion has a functional role in representing its members in decision-making at the republic level. The members of the Association found negotiation with big companies over compensation to be challenging due to the inequalities in knowledge and limited experience (SR1 C3). The reindeer herders’ union of Nerungry rayon Oron shared these difficulties (SR1 C7). To compensate for their limited negotiation power, both organisations have had extensive engagement with the Association of Indigenous peoples of Yakutia and government bodies, such as Ministry of civil society and the Department of nationalities (ethnic) policy. These relations enabled the organisations and some members of the Evenk obschinas to receive access to knowledge and basic training on the relationships with the industry (SR1 C3).
Based on the experience with the ESPO pipeline, the administration of the Iengra village felt prepared for active participation of Evenks registered in Iengra in the development of the Power of Siberia gas pipeline (SR1 G3). Several hundred workers from the south of Russia were expected to arrive and live in the working camp 10 kilometres from the village in 2017. The municipal administration was aware of the need to ensure that members of Iengra community have some training skills so that they could get jobs, at least during the construction stage of the pipeline. Earlier, some had been employed in cutting the forest for the road and pipeline construction. One Evenk woman described the experiences of her son: “Our men are very knowledgeable about the surviving in the forest in a cold climate. They know how to handle wild animals, and will not get lost. But it was challenging for them to follow the working schedule set by the company, from 8 am to 7 pm, every day. They need to go and see their herds, or hunt and fish food for their family. In the end, he was not paid fully” (SR1 C8). However, the municipal administration was hoping that a member of the community (who was teacher at the boarding school, former head of Iengra village and deputy on the village council) could be appointed as the site manager of the gas pipeline, to avoid complications and misunderstandings with the local population. (indeed, he was appointed by the construction company in 2017).

8.2.4 Experiences of fishers in the Indigirka delta with offshore oil exploration (SR2)

The Eastern-Siberian Sea is the least explored sea in the Russian Arctic for potential hydrocarbon resources. In 2013, several licences were granted to Rosneft to prospect for hydrocarbon deposits on the shelf of the sea within the territorial waters of Russia. One of the fields is Vostochno-Sibirsky-1, it has the size of 187.4 square kilometres and 7 to 60 metres in depth. The exploration works using seismic testing 2D and aerogeophysical research was scheduled for five years (2014–2019), and during a short time opened for navigation in the Arctic Ocean. The seismic testing was performed on the territory of 2 thousand running metres in 2014 and 6.5 thousand running metres in 2015. During the fieldwork in the Indigirka River delta in 2015, the fishers expressed strong concerns about the impact of seismic activities on the local environment and traditional livelihoods (see chapter five, section 5.2.4). In the following, I explain how community-company relations have developed in these settings.
Public discussion about the exploration works in the Vostochno-Sibirsksy-1 concession site by Rosneft was organised in 2014 in the town of Anadyr in the Chukotka Autonomous Okrug. Anadyr is 1,300 kilometres away from the villages Russkoe Ust’e, Chokurdakh and Olenegorsk in the Indigirka River delta, who are among the closest villages to the oil field. The communities were not informed about the seismic testing. It was only during exploration works in 2014 that the head of the municipality received the information from the regional authorities and subsequently spread this among community members.

Seismic testing generated concerns in villages about the impact of operations on fish and plankton. One fisher shared the concerns of his obschina: “There has been already fish decline, we do not keep up with plans to satisfy quota requirements. Oil is not going to bring any good to us. There could be accidents on ships. Then, there will be fuel everywhere” (SR2 C2). A representative of the municipal administration suggested: “If the companies were allowed to conduct exploration so far away north, that probably means there is no much more oil left in the country. I was always scared of this moment [oil extraction in the area]. I am not sure what we can do [about the new developments]” (SR2 G2).

The report on the results of the public discussion demonstrates that the meeting was concluded without contestation: “Public discussion to be considered as valid. Objections to the implementation of the object are absent. The adopted technological and environmental solutions comply with the requirements of the current legislation”\(^{86}\). Rural residents from fishing villages questioned why the information for the environmental impact assessment was compiled using data on the condition of marine biodiversity that is 30 years old. The explanation provided by the company was that new research was costly and challenging given the difficult conditions of the Eastern-Siberian sea. The report on the results of the public hearing also contained a few general recommendations raised by fishing communities, for example, the need to conduct additional environmental and fishery research in the coastal zone adjacent to the licence areas\(^ {87}\). However, according to an interview with one of the participants of the public discussion, the next

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\(^{87}\) Ibid.
meeting will be probably organised when the extraction stage begins, that “of course will
be approved again”, and there is no way to keep companies accountable for such
recommendations (SR S4).

The demands for the ethnological expert review, as required by the legislation of
Yakutia88, were refused by the companies’ representatives. The company followed the
federal requirements for conducting such assessment but not the regional guidelines since
the licences are located in the territorial waters within the Russian Exclusive Economic
Zone.

8.3 Strategies of inclusion and exclusion

Four cases of community-company relations introduced above clearly illustrate the
challenges that communities have experienced in meaningfully participating in the oil
projects. The analysis in this section identifies strategies of inclusion of community
members in and exclusion from participation in the oil development and provides
implications for relational justice, which are further discussed in the following section.

Overall, the evolution of community-company relationships can be explained by the
context-specific cultural and political practices in which the relationships between
communities and the oil companies have been shaped and are continuously evolving. The
legacy of the Soviet system, when resource extraction projects were developed in a fast
and low-cost way without impact assessments and consultations, created the rules and
norms in which dissent is not expected. The operations now expanding into the new
territories retain the prevailing practices irrespective of Indigenous peoples’ rights, and
more responsible operations and greater community participation are increasingly
demanded ‘from below’, whether desperately or strategically.

Given these demands, the act of developing new projects is achieved through different
strategies to gain legitimacy for an oil project employed by companies and governments
(conceptualised as strategies ‘from above’ by Geenen and Verweijen (2017)). Their

88 The law of the SR on Ethnological Expertise in Places of Traditional Residence and Traditional
Economic Activities of Indigenous Small-Numbered Peoples of the North of the SR (2010). Available at
efforts to formalise and legitmise access to land and water needed for operations and to secure a social licence to operate involve strategic ways to include and exclude communities and community members from participation, planning and decision-making around the oil projects.

An analysis of how community-company relations have unfolded in four oil projects examined in this chapter reveals several strategies of inclusion and exclusion: (i) discursive strategies; (ii) market mechanisms; (iii) legal and bureaucratic strategies; and (iv) strategies of uncertainty. As will be explained later, these are mediated through the formal and informal institutions that define representational structures and personified relations.

**Discursive strategies.** The experiences of communities in Komi and Yakutia indicate that the oil projects are imagined and governed as related to geopolitical processes. Companies and governments strategically rely on the idea of Russia as a great hydrocarbon superpower (Bouzarovski & Bassin, 2011) to legitimise commencement and continuity of the oil projects and to influence consent among local populations. For example, the geopolitical importance of the Russia-Asia relations has been in the centre of public discussions about the ESPO pipeline in the Aldan plateau (SR1). In the Bolshezemelskaya tundra (KR2) and the Indigirka delta (SR2), the contest of the Arctic has been a powerful narrative to justify development of oil exploration projects.

Subnational governments are often in charge of these strategic projects, with implications for their positions if certain objectives are not achieved. In the Pechora River valley (KR1), a representative of the Komi regional administration expressed well their position towards the exclusion of the dissenting community members: “We create all conditions for effective industrial operations in our regions, even if we cannot help, we make sure that nothing constrains these activities” (KR G2). These relations of power have a critical effect on relational injustice for local communities as they are expected to offer sacrifices in the name of Russia as an oil superpower.

**Market mechanisms.** Companies, seeking to gain legitimacy for the oil projects and authority on the territories of traditional land use in Komi and Yakutia, have increasingly been directing finances to projects and strategies that address socio-economic and
environmental impacts within the CSR agenda. In the case studies (except SR2), the payments included contributions to social infrastructure (KR1, KR2), culture and sports (KR1, KR2), compensations for lost land and livelihoods (KR2, SR1), restoration of biological resources (KR1), and other modes of relationships with affected communities common in Russia (see, e.g., Tulaeva & Tysiachniouk, 2017). The financial support is often streamed through the regional and local authorities (KR1, KR2), the obschinas directly (SR1) or their representatives (KR1).

Despite some mutually beneficial contributions, the relational instruments of CSR can be characterised by unfairness. In a situation where other sources of income are limited, and any contribution is seen as significant, various economic benefits place municipalities and communities a situation of marginal negotiation power, thus jeopardising consent amongst the population. In Komi, rural municipalities with tight budgets have obligations to provide services and maintain infrastructures and offer oil companies land allocation and beneficial conditions for entering the regions expecting economic support in return (KR2). Community members who are employed by the oil industry and its contractors, or benefit from cultural projects, tend to restrain their dissent (KR1).

In Yakutia, compensations for loss of land and livelihoods were provided only to a few obschinas which were directly-affected by the oil transportation projects. Compensations were individually-negotiated, resulting in social conflicts within the communities over the amount of the compensations, as well as with neighbouring communities which were affected by the projects only indirectly (e.g., a road was built to support the pipeline construction). Additionally, nasleg administration did not benefit from the projects, as the company’s strategy was to target individual obschinas (to achieve a social license to operate) (SR1), however, negotiations between nasleg administration and the companies had been planned for the future.

The exclusion created by the market mechanisms is closely linked to the formal and informal practices and procedures discussed next.

**Legal and bureaucratic strategies.** The present legislation regulating the participation of affected communities in the decision-making about the projects does not sufficiently require proponents to take into consideration the local interests and concerns.
Communities are excluded from decision-making over the placement of the licences. The public discussions as a part of the impact assessment are perceived as being a formality, with not everyone invited, and little opportunity to affect the design and implementation of the projects (KR1, KR2, SR1, SR2). Moreover, communities highlighted that projects have often begun even before the impact assessment’s approval was granted, and do not necessarily follow the project design (KR1, SR1). Public discussions can be limited by the government attempts to steer public discussions of the project towards the support of the projects, through blocking dissent and avoiding conflicts (KR1).

Formal regulations and corporate standards tend to exclude some communities and community members from community-company relationships. This is evident, for example, in the provision of compensation for the loss of livelihoods and culture that are critical for the obschinas whose livelihoods were affected by oil projects. The formal instruments and procedures for the assessment of the loss, and procedures for the provision of compensations, have been obscure and non-transparent for community members. Given the lack of formal regulations about this issue, companies have developed mechanisms tailored to their standards and individual obschinas (usually, only the most affected). For example, in SR1 only obschinas with land rights have been entitled to compensations for traditional land and livelihoods loss (in agreement with Yakovleva (2011)). It is noteworthy that the rights to land are usufruct, and are problematic for obschinas to gain. The lack of recognition of ethnic groups as Indigenous prevent affected communities from receiving fair compensation. The Komi-Izha people, for example, were excluded from these benefits, as they are not legally recognised as KMNS, and lack rights to the land (KR1).

**Strategies of uncertainty.** Communities expressed concerns about information and language used in communication with them by the representatives of the companies and authorities regarding oil projects. Communities did not have sufficient understanding of the procedures for consent, compensation and benefits (KR1, KR2, SR2). Although community-company relations evolve differently in each locality, an illusory consensus owes more to lack of community experience and the specific culture of non-transparent top-down decision-making in Russia. In all case studies, there were instances when local people struggled to understand what the projects were intending to do and where, given
a lack of accurate, timely and accessible information about projects and impacts (KR1, KR2, SR1, SR2).

Particularly, communities find engagement with the representatives of the companies on the topic of environmental pollution particularly problematic. It was said that a “*common language could be found regarding social impacts and cultural projects*”, however, “*when we talk about environmental impacts, everything is useless*” (KR1 C10). Communities experienced disinformation and violations of practices and processes established by laws and regulations (KR1). These experiences resulted in distrust between the actors. In this context, opportunities for people to participate in decision-making processes meaningfully are compromised and the space to make an informed decision about the projects is minimised (Dannevig & Dale, 2018).

In sum, the combination of discursive strategies, the use of market mechanisms, legislative strategies and strategies of uncertainty, identified previously elsewhere (e.g., Bebbington & Bury, 2013; Schilling-Vacaflor, 2017), were powerful in making oil projects socially feasible, as the Russian government and companies work to ensure development of the oil projects for geopolitical and economic goals. These areas exhibit some features of industrial enclaves, where companies, with the support of state and subnational governments, exert authority over land, water and people, excluding local populations and local governments from authority over their territories.

Beyond these findings, the strategies of inclusion and exclusion are mediated through the particularities of local community representation structures and personified relations with representatives of oil companies and the governments across scales.

**Challenges of local and traditional representation structures.** The ways communities are organised internally influence how they are represented in formal and informal community-company relations. Levels of knowledge, experience and recognition vary among community members, as does time and the opportunity to attend meetings and participate in negotiations. Four cases illustrate different ways in which community interests were represented in community-company relations.

In case of KR1, an ethnic movement represented rural and Indigenous communities in the negotiation of benefits. The extent to which the interests of communities were taken into
account depended on the visions of these associations and movements, particularly their leaders. For example, the leadership of a movement tended to make decisions about the distribution of benefits negotiated with an oil company on behalf of communities without having to consult the communities themselves. In case of SR1, it was leaders of obschinas who represented their communities in the negotiation of the benefits and compensations for traditional land and culture loss. However, some of them have been worse off due to unequal negotiation skills and knowledge about their rights. As a result, in all cases, conflicts emerge within and between communities over the uneven distribution of benefits, hindering relational justice.

**Personified relations.** Many of those who have a stake in projects and their impacts personify institutions and representatives of companies and do not consider them as abstract. Significant attention is given to who is in charge — the personalities of the oil companies and the governments — and do they have any relation to the communities and their representatives. In case of SR1, members of the obschinas working in the local administration have stimulated greater trust and knowledge exchange between obschinas and the local government. Appointment of a community member as site manager for the oil infrastructure project similarly enhanced knowledge about the project and generated trust.

The importance of personified relations also explains why in Komi the legitimacy of externally appointed government officials and community-company mediators is challenged in the eyes of rural people. For the Komi-Izhma ethnic movement, changes in the leadership of the companies and governments imply “starting from the very beginning” and “teaching how to behave” (KR1 S2). “It is already the third governor who comes to me and tells what to do. They do not realise I am the one who has all the knowledge and they need to learn from me” (KR1 S2).

**8.4 Discussion**

Answering RQ 4: How do Indigenous and rural communities in Komi and Yakutia participate in oil projects, the four cases examined in this chapter provide evidence of numerous challenges that communities experience when they engage in community-company relationships prior to, and during, the development of oil projects. The analysis
identified strategies of inclusion and exclusion of communities and community members from participation in oil development. Findings suggest that relational dynamics between affected communities and companies is a significant determinant of injustice (in agreement with Gavidia and Kemp (2017) and Whiteman (2009)). Discussion in this section focuses on the implications of the findings for relational justice, and explains the potential of just adaptation to address some of the challenges.

The way relational justice is experienced in the context of expanding resource extraction can be explained by the dynamics of community-company relations (Whiteman & Mamen, 2002). As was demonstrated in chapter three (section 3.4), the development of the projects studied in this chapter requires the FPIC from the affected communities to be obtained (according to the international norms). The Russian legislation demands consultation with the affected population during the EIA process (and ethnological expert review is required in Yakutia).

However, the on-the-ground experiences of communities in Komi and Yakutia affected by the oil projects provide reasons to doubt that a genuine FPIC from the local population was received, and public consultations were efficiently organised before the development of the projects (in agreement with Fondahl and Sirina (2006)). Rather, companies and governments have been taking the consent of affected Indigenous and rural communities for granted in consultation processes. In all cases, communities felt that their rights over land, recognised or not by the state, are viewed as less important than those given to the extraction companies. They feel that with or without their consent, operations will continue to be developed. As the projects evolved, companies have begun to invest in strategies to address the socio-economic, cultural and environmental impacts of the projects (through the CSR programs and compensations). However, lack of effective participation of communities in planning, non-transparent decision-making, and contentious benefits distribution in four local cases resulted in mistrust and created premises for conflicts.

These challenges of participation exist because of the various strategies of inclusion and exclusion that have worked together powerfully to trim consent and participation. The strategies of inclusion and exclusion include discursive strategies, market strategies, legal and bureaucratic strategies and strategies of uncertainty (Bebbington & Bury, 2013).
These strategies ‘from above’ are conceptualised as an element of ‘the power of exclusion’ (Hall et al., 2011), often assigned to resource frontiers, where there is a clash of cultural norms and values, and imaginaries are powerful elements of governmentality, as evident in the making of Arctic frontier (Brightman et al., 2006; Nuttall, 2012). Russia’s government and extraction companies have strategically relied on the idea of a hydrocarbon and extractive state to hinder the participation of host communities. The need of the oil companies to satisfy the demand for oil export to the West and the East have created a rush for projects to be developed, and the common trend is the exclusion of Indigenous and rural people. As a result, relational injustice affects the ability of affected groups and individuals to exercise their voice, to articulate their interests and to make informed decisions.

Beyond these findings, I argue that relational injustice is mediated through the structures of community representation and personified relationship with representatives of companies and governments. The representative structures of nomadic and settled communities, that evolved from the Soviet period into hybrid arrangements, have been influential in mitigating some of the power asymmetries and finding ways of expressing dissent. For example, Komi-Izhma communities (KR1) developed a practice of declaring public consultations as invalid in order to demand more equitable outcomes. In case KR1 and SR1, personified relationships enabled some community members to seize opportunities through strategic and pragmatic engagement in the oil projects (strategies ‘from below’) (Wanvik & Caine, 2017). However, they have negotiated benefits which do not always lead to equitable outcomes for everyone.

Experienced relational injustice has implications for understanding and planning for adaptation to environmental change in resource extraction regions. In resource frontiers, the voice of affected communities might be compromised, and the interests of powerful actors might be prioritised in climate-related initiatives. Who has control over the process and decisions of whether projects can proceed or not, and modes of interaction, influence how equitable adaptation can be. Just adaptation should focus on finding ways to minimise relational injustice in the context of resource development. In order to foster relational justice, adaptation needs to enhance opportunities for meaningful community participation in planning and decision-making on their lands. This can be achieved by
increasing the accessibility and quality of information of the projects and potential impacts, trust-building, ensuring transparency, and building knowledge and capabilities to make informed decisions. In this way, the opportunities for correcting injustices presented by adaptation to climate change (Holland, 2017; Schlosberg, 2012) might be realised.

8.5 Conclusion

This chapter addressed RQ 4: How do Indigenous and rural communities in Komi and Yakutia participate in oil projects? It explored the evolution of community-company relations during planning and implementation of four oil projects placing them within the formal requirements for public participation in decision-making and achieving FPIC of Indigenous communities. The findings provided evidence to the challenges experienced by communities in participation in the development of the oil projects, conceptualised as relational injustice. The analysis identified strategies of inclusion and exclusion employed by the oil companies and government to achieve a social license to operate. They include discursive strategies, market strategies, legal and bureaucratic strategies and strategies of uncertainty, all hindering relational justice.

Relational injustice is further mediated through community representative structures and personified relationships with the representatives of the oil companies and authorities involved in the planning and implementation of the oil projects. In order to minimise these relational injustices in resource extraction regions more attention must be given to adaptation initiatives that aim to enhance knowledge and capabilities of affected communities to make informed decisions and participate meaningful in decisions about developments on their lands.

The next chapter focuses on collective action around the oil industry as a way to achieve greater justice in Komi and Yakutia.
CHAPTER NINE Extracting justice in Komi and Yakutia

9.1 Introduction

The preceding chapters identified environmental and political-economic challenges related to the oil exploitation in Komi and Yakutia. The absence of adequate political responses to apparent evidence of environmental degradation in remote settings, growing climate change concerns, and a prevailing logic that oil projects are inevitable, have triggered collective action. This chapter explores the role that collective action has played (if any) in adaptation politics. Specifically, the chapter asks: What collective strategies have been used to influence government and companies and to support Indigenous and rural communities in Komi and Yakutia in shaping adaptation decisions (RQ 5)?

The chapter draws on the literature on social mobilisation around the fossil fuel supply (Ordner, 2017; Piggot, 2017), Indigenous resistance to the oil industry (Eisenstadt & West, 2016; Nuttall, 2005; Orta-Martínez & Finer, 2010; Pierk & Tysiachniouk, 2016), adaptation politics and political capabilities (Holland, 2017; Schlosberg, 2012) to explain the evolution of collective action in Komi and Yakutia over the last two decades and its influence on adaptation. The data sources include the inputs from interviews with representatives of socioenvironmental movements, Indigenous peoples’ organisations and individual residents (including two focus groups) who participated in collective action around the oil industry in Komi and Yakutia as well as interviews with representatives of government and industry (see chapter four for detailed methodology).

The findings presented in section 9.2 show forms of collective action (protest, outreach, legal actions and monitoring of liabilities) that were employed by socioenvironmental movements, Indigenous organisations and individual residents across the two regions. The analysis in section 9.3: (1) explains fragmentation and fluidity of collective action in the broader socio-political context; and (2) evaluates the political capabilities of the communities to influence government and companies. Discussion focuses on the varied role that collective action has played in contesting dominant paradigms of development based on resource extraction as part of a longer trajectory of transformational adaptation and achieving justice in Russia’s resource frontiers.
9.2 Collective action around the oil industry

This section describes the different ways in which collective action evolved in Komi and Yakutia over the last two decades. Indigenous and rural people in Komi have resisted the adverse environmental impacts of the oil industry, contested participation in the planning of the projects and distribution of the benefits, and protested the lack of adequate political and corporate responses. In Yakutia, collective action has centred on threats to Indigenous rights stemming from the rapid development of the oil infrastructure and poor opportunities for meaningful participation in the projects. The findings are presented in chronological order, providing evidence of whether the collective action in the two regions addressed climate change and adaptation at the end of the sub-sections.

9.2.1 Collective action in Komi

In the early 1990s, while Russia had been going through a process of economic and political transformation, there “was no need for protests” (KR S1) despite the proliferating incidents of oil spills, including the major 1994 Usinsk oil spill. The oil industry was concentrated in a limited area in the Usinsk oil fields, and there was social acceptance of the industry as a legacy of the Soviet industrial operations (KR S1).

Since the late 1990s, the oil industry has been expanding rapidly closer to villages and into remote areas, where the pastures are. Having a memory of the 1994 Usinsk oil spill, rural people realised that it was in their hands to prevent adverse impacts on the socioecology of the Pechora River basin. The awareness of environmental degradation led to a range of actions to demand meaningful responses from the main operating company Lukoil-Komi and the Komi regional government, along with other scales of government. Over the last two decades, socioenvironmental movements adopted protests, outreach campaigns, legal actions, and the monitoring of liabilities as a means of collective action (see table 9-1 for an overview).

The first significant resistance in the Pechora River valley developed in the early 2000s. At that time, instances of social protest occurred following the sudden discovery of oil exploration operations in the Sebys nature reserve without prior public consultations and notice (see chapter eight, section 8.2.1). The protests were ignored by the regional government, and the demands for a popular environmental referendum were unsatisfied.
Chapter Nine. Extracting justice in Komi and Yakutia

Table 9-1. Overview of collective action around the oil industry in Komi

<table>
<thead>
<tr>
<th>Type of action</th>
<th>Activities</th>
<th>Involved actors</th>
<th>Intermediate outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open resistance</td>
<td>· Protest rallies (2002–2004; since 2013)</td>
<td>· Individual residents · The SPC</td>
<td>· Petitions · Achieving public and government attention</td>
</tr>
<tr>
<td>Legal and political actions</td>
<td>· A court case against the regional government contesting the oil exploration plans in the Sebys natural reserve (2001–2003)</td>
<td>· Individual residents · The SPC · Izvatas · Silver Taiga Foundation · Lawyers · Rights defenders · Scientists</td>
<td>· The Sebys nature reserve was protected from the oil exploration</td>
</tr>
<tr>
<td></td>
<td>· Demands for a popular environmental referendum (2001, 2017)</td>
<td>· The SPC</td>
<td>· Requests have not been approved</td>
</tr>
<tr>
<td>Outreach</td>
<td>· Media campaigns · Use of social networks and website · Participation in international events and forums (since 2013) · Public events</td>
<td>· Individual residents · Greenpeace · The SPC · Izvatas · 7x7 · Volunteers</td>
<td>· Achieving domestic and international public awareness and government attention</td>
</tr>
<tr>
<td>Monitoring of liabilities</td>
<td>· Community monitoring of environmental violations and evaluation of environmental damage (since 2013)</td>
<td>· Greenpeace · The SPC · Individual residents · Volunteers (local, national and international) · Research institutions (international)</td>
<td>· Map of environmental violations · Compensations for environmental degradation · An equipment fund</td>
</tr>
</tbody>
</table>

Source: table compiled by the author based on the focus group discussion (KR FG).

Not willing to give up, people were left with little choice but to go to court in the search for justice. With the assistance of human rights defenders and legal experts based in Syktyvkar and Moscow, ninety residents of the Izhma rayon, together with six scientists representing the Komi Science Centre, two members of the SPC, and two members of a civil rights NGO Memorial, filed a court case against the regional government’s decision to change the status of the Sebys allowing oil exploration. In 2003, the court recognised the activities of the regional government as unlawful, and the oil exploration was terminated (Habeck, 2002).

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In the early 2010s, the instances of pollution and the unauthorised construction of oil extraction and transportation infrastructure proliferated. In response, the number of protest rallies in the Izhma rayon has significantly increased since 2013. The protests have occurred in the administrative centre (Izhma) and the closer and more remote villages in the Izhma rayon (Izhma, Shelyaur, Krasnobor, Lasta and other) and the Usinsk town district (Ust-Usa, Novikbozh, Mytnii Materik) (figure 9-1). In 2015, when fieldwork was conducted, an interviewee explained of the urgent need for resistance to the ‘dirty’ work of the oil companies and the negligence of the problem at all levels of the government. “Everything happens very rapidly; if we do not act now, it will be late afterwards” (KR S1).

The protests were well-attended; in small villages “everyone who could walk and stand attended protest rallies” (KR1 S1). Protests were largely reactive to a particular accident (for example, an oil spill), an event (for example, the construction of infrastructure without communities being prior informed), or a political action/inaction (for example, the abolition of the Ministry of Natural Resources and Environment Protection). The arguments used in the protests questioned the oil industry technologies and the prevailing managerial approaches. They called for the rejection of the oil activities if certain steps would not be taken, and if there would be no proper communication and dialogue. A community member who also volunteered for the SPC explained: “We do not need such

Figure 9-1. “We expect you at a protest rally on July, 6th at 5 pm here!!!” Izhma.

(author: J. Loginova)
operations anymore. They have to clean after themselves, or they should leave our land” (KR1 S4).

The prevailing messages in six protests resolutions, given to the author during the course of fieldwork, all demanded broader responsibility for the natural environment, the socioecology of the Pechora River basin, the traditional way of life of Komi and Komi-Izhma people, and ‘being human’ in general. The demands of local populations also concerned the need to support development in villages, oriented at maintaining the baking of bread, developing solutions to waste utilisation, financing bridge repair, solving transport issues and providing hospital equipment. The messages highlighted the importance of a proper dialogue with the oil companies and governments; they demanded legitimate actions that follow the law and the Constitution rather than the interests of people in power.

People also demanded transfer of some of the governance functions from the regional level to the self-government at the municipal level, so that the urgent issues could be managed more efficiently and in agreement with local needs. Additionally, arguments given in the protest resolutions evoked justice claims by reiterating that development of the industry and its impacts are unjust and come at the expense of a few villages, unique culture and way of life in the Pechora River basin.

The protest rallies were organised by the members and the volunteers of the SPC. The SPC was established in 1989, and is one of the first of the civil society groups that developed in reaction to the liberalisation of the Russian economy. The SPC remains the most active movement in the Komi Republic in terms of environmental protection. In the early 1990s, the movement demanded a referendum against building a nuclear power plant in the Inta rayon. When the big Usinsk oil spill occurred in 1994, the SPC turned their attention to the issues of oil pollution. Apart from the oil industry, the SPC has been in frontline defending the region’s environment from gold mining, threats from space launch programs, and the legacy of nuclear testing.

In an interview, the movement was described as not purely environmental; they consider the environment being at the core of life in the Pechora River basin. Therefore, they
protect traditional land use, livelihood and culture (KR S2) (see also the SPC website\textsuperscript{89}), as they are inhabitants of the Pechora River valley and they speak for the people (KR S2).

Mainstream republican media have not covered the protests. Regional and local newspapers are subsidised from the regional budget and reflect the positions of the authorities in their materials (KR M1). The exception is an internet-portal \textit{7x7}\textsuperscript{90} that provides a platform for the participants of the protests and independent journalists to disseminate information about the resistance. To achieve broader coverage of the situation, the SPC also approached external media and organisations and employed various methods of outreach (KR S1). They have received media support from several federal independent media channels and international institutions (for example, \textit{Novaya Gazeta}).

The outreach resulted in greater awareness of the regional environmental issues among the government and general public. However, the outreach was seen as unnecessary by public authorities: \textit{“Why do they make an elephant out of normal everyday situations?”} said a senior administrator in a rayon administration in an interview when commenting on the environmentalists’ media campaigns (KR1 G3). Access to technologies has enabled villagers to be involved in ‘keyboard activism’. It has been perceived as attractive to younger people from the village. However, fear of repression by government and corporations has been expressed. Those who are engaged say \textit{“that they have nothing to lose”} (KR1 S4).

The SPC cooperated episodically with Greenpeace Russia in the past (during the Usinsk oil spills in 1994), and the cooperation has flourished again since 2014 after a man from the region who had volunteered for the SPC joined the Greenpeace Energy Program. Since then, Greenpeace Russia has organised a range of roundtables, press tours, workshops, blogger tours and expeditions on the issue of environmental pollution in the region. The SPC together with Greenpeace Russia reached out to the Russian President, presidents and directors of oil companies, national government agencies, national and

\textsuperscript{89} Available at \url{http://savepechora.ru/} (in Russian) and \url{http://savepechora.ru/new_eng.php} (in English, limited range of themes), accessed 20 August, 2018.

\textsuperscript{90} Available at \url{https://7x7-journal.ru/} (in Russian) and \url{https://7x7-journal.ru/en/} (in English, limited range of themes), accessed April 2, 2018.
international media. Their media messages conveyed powerful images of environmental degradation and discourses of land and identity, but also disastrous scenarios for the whole Pechora river system and the pollution of the Arctic Ocean, connecting the local impacts to the processes of global concern.

The experience of the SPC in negotiating within and between organisations and institutions had been pivotal for engagement with local and regional institutions and corporations. However, reliance on their assistance was also seen as building ‘walls’, as other groups have interests and claims different from those of the SPC. For example, the Izvatas, the movement of Komi-Izhma people, despite being involved in collective resistance to the environmental pollution, considers the SPC as inhibiting cooperation with the oil industry, prioritised by the Izvatas to fulfil its potential to contribute to local development and the revival of culture and livelihood of Komi-Izhma people (see chapter eight, section 8.2.1) (KR1 S2).

Komi-Voityr, the movement of Komi people that has a formal representation in the regional parliament, remained at a distance from the protests around the oil industry, and the SPC in particular, finding the resistance methods unnecessarily provocative (KR S4). In a few cases, representatives of the local and regional government and the oil companies did not attend meetings when invited, or refused to discuss particular topics. A representative of an oil company perceived the SPC as influencing the corporate practice and teaching them how to behave (KR I1).

At the same time, the members and volunteers of the SPC reported various practices of local and regional government and the oil companies that foster a climate of intimidation and manipulation. Some of the protests were sanctioned, while in many cases they were opposed by local authorities. As a member of the SPC explains: “These were largely friendly protest rallies, to express constitutional rights to free assembly. However, there were many bureaucratic and political traps imposed on us. For many protests we organised, there were many we could not” (KR1 S3).

Another member of the SPC explained the position of local authorities: “They are smart. When they receive notification about a protest rally, they try to find any reasons for them being unrealised. They organise random concerts at the place and the time proposed for
a protest. Or they are unsatisfied with some words or signatures in the notification form. If they permit one, then they closely control that not any theme which was not included in the notification form was expressed during a protest. We had a protest around the Uzhno-Ipatskaya well. They do not want to organise any public hearing about it. But what was bad is they did not let us bring up the issues of oil spills saying that it was not in our program of the protest that they approved. The police closely monitor and take video and audio records” (KR1 S1).

During the fieldwork, a new environmental organisation has been formed, called Zelenaya Respublika (Green Republic in English). It assertively promoted the image of a sustainable oil industry of the republic on official channels and the internet. During an interview with a representative of a government, it was explained that this organisation received governmental support for promoting the positive image of the region to cover up with the ‘dirty’ side exposed by other environmental movements, who might be acting as foreign agents (referring to the SPC) (KR G2). However, the activity and messages of the new urgently formed environmental NGO were questioned not only by the members of the SPC, but by several public institutions, including the regional Civil Chamber (KR G6).

Aside from protests and outreach, the SPC realised long ago that public environmental monitoring is required to hold companies accountable for their impacts (KR S1). Monitoring of liabilities centres on the development of knowledge by local people in understanding the totality of impacts to their lands, but also has the ability to influence ‘business-as-usual’ practices.

“There is again smoke there. They burn something again,” a resident of Shelyabozh, volunteering for the SPC, told of his concerns about potential oil spills or pipeline leakages in the area, but also about the methods of clean-up operations. His concerns echoed the worries of many rural residents in the Pechora River valley. “Apart from burning, they also cover oil spills with grass, trees, sometimes fabric and sand. But we know all their tricks. Sometimes they are very unusual” (KR1 C11).

He knew the name of the extraction site and the pipeline that goes to it. He shared his concerns with another man, and they decided to check on the area. They also called other
concerned residents from neighbouring regions to check if anyone had already gone for an ‘inspection’ or had heard anything. Equipped with GPS-navigators and photo cameras, they went to the site. Volunteers aimed to locate the place where a spill had occurred, to get GPS-coordinates, to take a photo or a video, and to report the information back to the SPC, the oil company under suspicion, the Ministry of Natural Resources and Environment Protection and the Environmental Prosecutor (IN S1).

In the absence of desirable government and corporate responses, the system of voluntary monitoring of environmental violations of the oil extraction industry was implemented as an initiative of the SPC and Greenpeace Russia starting in 2014 (IN S2). Satellite investigation helped to uncover the scale of the oil spills (IN S2). Local monitoring was established based on the application of GIS, mapping, photo and videos. The system has been used to discover new sites of oil spills and to track the process of spill responses on the other sites.

The objective of the initiative was to empower local community members through new technologies. It was said that such an approach reinforces the perceptions of the impacts (KR S1). During the monitoring, community members expose the poor practice of industrial waste management, poor quality of installations and infrastructure, and numerous spills from different time periods. Such a strategy was focused on keeping the company on alert, checking carefully what is being built and how, and to further the demand for information about the technology, processes and potential risks. Some of the villagers are employed on the oilfields, and thus could witness the failure of infrastructure and inform villagers.

The information has been said to be very useful to influence policy and decision-making and to force the government officials and the oil companies to acknowledge the damage and to respond (KR S2). “We need to control what they do there as often as possible, now we have some spills on the control, for some we have resources only to check once a year, usually in the summer time. However, you understand that everything depends on the distance, the people who wish to go, transport and existing money. But we find this to be the most effective strategy” (KR1 C1).
The leadership of the SPC highlighted the encouraging support the movement received from the Komi Ministry of Natural Resources and Environment Protection for this initiative (KR S1). The Ministry has been developing an official oil spill database and map. However, the information contained in this database cannot be exposed to the public because it contains sensitive information about regional industrial facilities (KR G1).

When performing monitoring, communities have taken the functions of the government on themselves. “The regional government has neither money nor capacity to find every single oil spill. They trust us. But our information needs to be coherent with proper coordinates and the description of the situation” (KR C4). Companies also wait for updated lists of newly uncovered oil spills and the process of the clean-up operations that they sub-contract to other organisations for clean-up (KR I1). Graphic photos and videos led government authorities and oil companies to speak ‘seriously’ during the meetings (KR S1). “They keep us on alert”, was said by a company manager (KR I2). However, apart from locating and monitoring a pollution site, more precise methodologies are not available for community members. “We need to know the exact impacts of oil spills on the land and forests” (KR C5). “It would be so helpful to know actual fishing resources and its potential in the river” (KR C9).

There are still issues that remain of how such monitoring can be ‘bureaucratised’ (IN S2). Making socioenvironmental monitoring formal and legitimate was said to be challenging due to the risks to the health and life of the ‘inspectors’ (people who volunteer to document and monitor the environmental violations) (KR G1). This argument drawing on threats to life played a pronounced role in the lack of application of the national legislation on public environmental control in the region (KR G1).

Nevertheless, the number of reported environmental impacts in the Pechora River valley has been growing over the recent years. It is acknowledged by the regional environmental prosecutor’s office: “We observe an increasing number of reported incidents that involve spills of oil and oil products. This [increase] can be attributed to the increased attention to the problem from local populations, environmentalists and oversight authorities. It is a positive tendency” (KR G7). In the absence of reliable open official statistics, however, the reason for this increase was not clear to KR G7 — the number of spills could have
increased as well. Nevertheless, the estimation provided by volunteers can be used for calculation of the compensations for the environmental degradation (KR G7).

Since the primary fieldwork conducted in 2015, there have been important events in the socio-political life of the Pechora River valley, and the Komi Republic in general (see chapter seven, section 7.2.1). In response to unpopular reforms by a new governor, the SPC and other environmental groups have demanded a popular referendum. Amongst other issues, for example those related to illegal gold extraction in a national park, the demand was to terminate exploitation of oil pipelines brought into the operation prior to 2000. The initiative for the referendum has been registered in the government office for elections; however, has not been given approval. Nevertheless, the Ministry of Natural Resources and Environment Protection was returned back to political life.

Over the last few years, global climate change discourses have come to challenge the logic that oil extraction must continue in the ‘business-as-usual’ manner in the Timan-Pechora oil and gas province because of its contribution to unsustainability globally and specifically in the Arctic. Federal climate policy has slowly influenced the regional oil industry (e.g., requirements for greater APG utilisation). Nevertheless, given the absence of regional political action on climate change, the SPC has been readily adopting climate change narrative in their agendas, as was discussed in the interviews and during the focus-group discussion (KR1 S1, IN1 S1-S2, KR FG).

The SPC first has explicitly expressed solidarity with global climate change actions by joining the global climate movement to Break Free from Fossil Fuels (350.org, 2016). In 2016 and 2017, the SPC organised a number of actions and workshops for regional, national and international volunteers. The networks established within the movement Break Free transformed into an idea for an all-Russia movement of volunteers to assist the SPC and indigenous and rural people in Komi, and in Russia in general, to resist pollution from the oil industry.

This is how the movement “Ne Zalivay Mne Tut!” (‘Do Not Spill Me Here’ in English) was established in 2016. Its name captures the issue of spilt oil, but also the common practice of concealment of the spills (Zalivay in colloquial Russian means ‘to tell lies’). A recent initiative of the movement “Ne Zalivay Mne Tut!” was a ski race demanding to
Break Free from oil. It was organised in the Izhma rayon, attracting rural residents and international volunteers, but not the regional media.

Finally, SPC members have been representing Komi people in the international climate actions by Indigenous peoples. For example, in October 2016, an active member of the SPC took part in collective action against developing new oil fields on the Arctic shelf, where licences to Lukoil have been granted by the Norwegian government. Together with the representatives of the Indigenous groups from Norway, Australia and North America, they gathered outside the Norwegian Parliament in Oslo and demanded that oil companies and governments of the Arctic states terminated newly given licences for oil exploration and extraction in the North Sea, in order to comply with the Paris Agreement. The same month a legal case against the Norwegian Government was filled to demand climate justice and suspend oil drilling in the Arctic (Neslen, 2016).

9.2.2 Collective action in Yakutia

This section describes the evolution of resistance around the oil industry in Yakutia, which unfolded differently to that in Komi (see table 9-2 for an overview).

Since 2007, the ESPO oil pipeline, a project of national and geopolitical importance, has been built on Yakutia territory. Importantly, the original route of the pipeline was changed from traversing the ecologically valuable Baikal Lake, a UNESCO (the United Nations Educational, Scientific and Cultural Organisation) World Heritage Site, to the undeveloped area of the southern Yakutia (IN S3, S4). When the required alteration to the project was announced at the highest level of state government, it was the turn for the environmental movements of Yakutia to question the project design and route orientation (IN S3, S4).

When in 2009 the ESPO pipeline was laid on the bottom of the Lena River, the socioenvironmental movement Save the Lena was already formed with a goal of minimising the environmental risks from the proposed pipeline design. One of the leaders of the movement remembered: “Our main goal was to make the company change the method of pipe-laying. They started to build the pipeline using a trench on the bottom of the river. This is the cheapest solution, which, however, may have very high ecological risks. There are much more advanced methods suitable for our climate and environment.”
Another participant of the movement explained that “everything happened so fast. We just were informed about the project, and the pipeline was already being built crossing the river. Our actions could be more effective if we had more time” (SR S1).

Table 9-2. Overview of collective action around the oil industry in Yakutia

<table>
<thead>
<tr>
<th>Type of action</th>
<th>Activities</th>
<th>Involved actors</th>
<th>Incremental outcomes</th>
</tr>
</thead>
</table>
| Outreach       | - Publications in media (since 2007)  
- International events and forums | - Socioenvironmental movement Save the Lena  
- Coalition Our Home Yakutia  
- Scientists  
- The Association of Indigenous peoples of Yakutia | - Achieving public and government awareness  
- Attention and support domestically and internationally |
| Resistance     | - Protests around the construction of the ESPO pipeline across the Lena River (2009) | - Socioenvironmental movement Save the Lena  
- Coalition Our Home Yakutia  
- Residents of Yakutsk and rural areas (about 1 thousand people) | Government ignorance and later oppression as sources of funding have been associated with international organisations and funds |
| Legal and political actions | - Taking OVOS to court (2008) | - Socioenvironmental movement Save the Lena  
- Coalition Our Home Yakutia  
- Scientists | The action was ignored |
|                | - Lobbying for considerations of the interests of Indigenous groups in development strategies and projects | - The Association of Indigenous peoples of Yakutia  
- The Association of the Evenks of the Aldan rayon | - The partnership between Indigenous organisations and environmentalists  
- Adoption of regional legislation that secures land use and rights of Indigenous communities for compensations  
- Promotion of laws at the federal level |
| Monitoring of liabilities | - Environmental community monitoring network (since 2007) | - Individual residents  
- Socioenvironmental movement Save the Lena  
- Coalition Our Home Yakutia | Empowerment of community members |

Source: table compiled by the author based on the focus group discussion (SR FG).
As was explained in chapter 8, the project’s design was changed by the company without public consultations to ensure its timely construction. The technology for oil and gas pipelines crossing rivers were questioned by the movements due to the high risks of seismic activities and ice dams (ice jams), as well as a projected increase of Siberian river discharge (SR S1). Pipelines need to be designed considering the previous accidents (for example, gas pipeline damage at the bottom of Lena River in 2006). Underwater tunnelling or surface pipelines were proposed as a solution (N G3). During the action by the movement, they received more than 20,000 signatures and directed them to President D. Medvedev, however, without any outcomes. In the following two years (2009 and 2010), similar actions were taken to ensure more resilient construction methods for a backup line of the ESPO.

From the beginning, resistance included several disparate groups. However, they were well-coordinated and formulated similar claims. In 2007, several movements — the Public Ecological Centre of the Sakha Republic, movement Green Russia, the Yakutian branch of the United Civil Front and the Initiative network of Regional Activists — united into a coalition under the name of Our home Yakutia. This strategy was adopted in response to the President’s decision to change the route of the ESPO pipeline to southern Yakutia and the weak position of the regional Governor in responding to this change. A year later, specifically opposing the Lena River crossing strategy of the pipeline construction company, environmental movements united again and established a coalition Save the Lena. The coalition included the Eyge Centre for Environmental Awareness, the Public Ecological Centre of the Sakha Republic and the Network for Ecological Monitoring of the Sakha Republic. Through outreach, the coalition has risen awareness among the regional government offices, and the concerns about the project’s design entered the regional politics.

In 2009, the coalition organised a protest to further attract the attention of a broader public to the ESPO. The idea to hold a protest belonged to users of an internet forum, who later partnered with the Save the Lena movement. The protest was directed to the federal and republic’s governments, the companies, the State Duma, and Il Tumen. Without receiving any responses, protests continued in the region. In 2010, the environmental agenda of the public resistance extended to financial issues of the project realisation exposed by the
famous Russian blogger A. Navalny. After a press conference was held, another letter, on behalf of the coalition Our Home Yakutia, was directed to the Russian President with the demands to investigate the development of the project; however, it response from the President’s department is still forthcoming.

Interviewees described various challenges they have experienced during the planning and implementation of these activities. They have been under pressure from various government institutions not to intervene in projects significant for the country. This was particularly problematic as the activities of the coalition were associated with foreign funds, such as the World Wide Fund for Nature and the United States Agency for International Development (SR S1). The activists suspended an open protest and beyond this point, no protests or other social mobilisation action took place (SR S1). Nevertheless, work has not stopped, but was re-oriented at political lobbying around legal issues and empowering the local Indigenous population (SR S1). As an alternative form of resistance, the socioenvironmental movement has engaged with Indigenous communities whose land the ESPO crosses. The Association of the Evenks of the Aldan rayon was actively involved in these initiatives. The partnership extended as far as to Alaska, when the Inupiat Community of the Arctic Slope supported the socioenvironmental movement and directed a letter of concern about the implementation of the ESPO project to the Russian President in 2011.

The politics of the Indigenous peoples’ movement in Yakutia has focused on the recognition of their rights on the territories of traditional natural resource use. The enhanced institutionalisation of obschina and TTP has been seen as the way to address the escalating complaints. They are demanding support for traditional livelihoods of Evenks, Evens, and others, and the ability to ensure their right to the land needed for herding in the face of the rapidly developing resource extraction sector. In response, the regional government has cooperated with the Association of Indigenous Peoples of Yakutia to stimulate obschinas to go through an assessment of their pastures and officially register them as TTP, so they can qualify for compensation when pipelines appear on their lands. Monitoring of impacts and liabilities and community control have also been suggested as an important alternative collective action. However, the monitoring has been episodic, only occurring in response to specific incidents.
In recent years, climate change impacts and adaptation needs have been adopted in the agenda of the regional Association of Indigenous Peoples. For example, the author attended a roundtable discussion on the urgent issues of climate change organised by the Association in cooperation with the Support Centre for Indigenous peoples based in Moscow. The meeting was attended by more than fifty representatives of Indigenous peoples’ movements, organisations and obschinas from Yakutia and throughout the Russian Far East. The participants discussed vulnerabilities that exist in northern communities and set a plan for educational, research and policy initiatives to enhance the understanding of the vulnerabilities and to support Indigenous communities in shaping adaptation responses.

The Eyge Centre for Environmental Awareness implemented the first project in Russia on adaptation to climate change by Indigenous people, operated by the Association of Indigenous peoples of the North, Siberia and the Far East (2010–2013). The project found that the impacts of resource extraction are more acute and urgent than the impacts of climate change (SR S4). Additionally, the Association of Indigenous Peoples of Yakutia has represented Indigenous peoples of Russia at the UN climate change conferences, including the 2015 UNFCCC in Paris. Attending global climate policy events created an opportunity for the representatives of remote populations to express their concerns to a global audience. One of the participants of the event explained that such events create a platform for expressing pressing issues experienced by Indigenous peoples, including the overwhelming power of resource extraction projects (SR S2).

In summary, during the last two decades, collective action around the oil industry in Komi and Yakutia has evolved in various ways. Essentially, collective action around the oil industry targeted environmental degradation and the lack of adequate responses in Komi and insecure Indigenous land rights in Yakutia. There is evidence that reflects a growing appreciation of the framing of climate change in collective action. To understand the role of collective action has played (if any) in adaptation politics, critical examination of the broader socio-political context and political capabilities is necessary.
9.3 Collective action and political capabilities

The analysis in the following sub-section places the evolution of collective action into the broader context of socio-economic and political transformations, explaining their fragmentation and fluidity and a growing focus on climate change responses. A further enquiry, presented in sub-section 9.3.2, explains why the variations exist in the political capability of communities in the two regions to influence policies and practices.

9.3.1 Fragmentation and fluidity of collective action in Komi and Yakutia

Evolution of collective action should be understood in the broader socio-political context (Geenen & Verweijen, 2017). Some conflicts between remote Indigenous populations and the national society of Russia can be traced back to pre-Soviet and the Soviet times in the efforts of the state to establish an economic and political rule. In post-Soviet Russia, the forms of resistance evolved into social mobilisation and resistance in parallel to the liberalisation of the economy and freedom of assembly, as well as a lack of institutional capacity to address environmental challenges (Henry, 2010). The expanding integration of the Russian economy into global markets and the increasingly tense geopolitical situation have stimulated the forms of state and corporate power that favour capital at the expense of environmental sustainability and restrict social mobilisation, provoking a need for alternative forms of collective action.

The influence of the broader socio-political context in the evolution of collective action can be traced in the two regions. In Komi, the continuous expansion of the oil industry over the last two decades and the accumulated environmental degradation have provoked community-level resistance to the prevailing practices of the oil industry and government. Over time, popular protest has become consistent rather than episodic. Yet, a pre-existing division between different groups — the socioenvironmental movement and the ethnic movements of Komi-Izhma and Komi people — has continued, driven by varied views on cooperation with the oil companies. There has been the lack of adequate responses on behalf of the industry and government. Additionally, actions ‘from above’ have emerged to restrict open resistance around the oil industry. Monitoring of the environmental violations by the SPC and volunteers has emerged as an alternative strategy to contest
these existing practices. Legal actions, including demands for a popular referendum, and outreach were also critical as alternative strategies.

The alternative strategies required ‘fluidity’ and progressive networking and self-organisation from the movement and rural people residing in remote villages. The interconnections of remote communities among each other, and with national and international actors, have been necessary (Pierk & Tysiachniouk, 2016), but have not yet resulted in significant positive outcomes. Many efforts have been short-term and project- or problem-oriented, avoiding complex issues of Indigeneity, land use, rights to land and access to resources. Nevertheless, the common sense of resistance around the oil industry is directed by a desire of rural residents to have a central stake in shaping the future of the Pechora River valley.

In Yakutia, collective action around the oil industry has been marked by the fragmented activities of well-coordinated groups that shared similar demands. Contestations involved networks of environmental movements and activists directing their claims to the federal government, given the absence of expected reactions from the regional government. The scale of the project they have confronted, the ESPO pipeline, is transnational, and the resistance has evolved into a globalised network with the support from international environmental and Indigenous organisations. Close work with academia and government institutions have been critical for this grassroots advocacy.

Once opportunities for popular protests were restricted by the government, the resistance largely concentrated on securing land titles and ensuring adequate compensations for land losses as well as meeting the long-term challenges of development that will be inclusive of Indigenous values. Indigenous groups have distinguished themselves by the constructive agenda of their actions and their self-transformation in the face of the increased industrialisation and the future uncertainties that environmental changes bring. They continue searching for ways to exercise their power arising from their legacy and their practices of self-determination.

The broader socio-political context has resulted in a ‘fragmentation’ of collective action in Komi and Yakutia. Actions ‘from above’ (Geenen & Verweijen, 2017) have affected the relative degree of freedom of expression and assembly in both regions. While political
repression has not been absolute in the two regions, there has not been an open environment for the movements and for civil society to operate.

‘Fluidity’ in collective action has been necessary to open alternative forms of collective action (e.g., environmental monitoring and legal actions). The impacts of globalisation and transnational ideas on collective action are evidenced in international networks, partnerships and creative ideas employed by the movements and rural and Indigenous peoples in Komi and Yakutia.

‘Fragmentation’ and ‘fluidity’ of collective action created the need and space for climate change to be incorporated into the agenda of socioenvironmental movements in Komi and Yakutia. Firstly, collective action in both regions has been ‘fragmented’ by the actions ‘from above’ meaning there is a constant need to search new strategies that would fit the window left by the government and the oil companies for collective strategies. Secondly, ‘fluidity’ emphasises the capabilities of the movements in Komi and Yakutia to draw on existing knowledge and resources to pursue varied alternative strategies, including climate-motivated actions.

The next section is concerned with the influence that collective action has exerted/may exert on the shaping adaptation responses in Komi and Yakutia.

**9.3.2 Political capabilities to influence adaptation decisions**

As introduced in chapter two (section 2.4.4), Holland (2017) established the value of examining the political power of vulnerable communities to influence adaptation decisions, if adaptation is to become a forum for transformational adaptation (Pelling, 2011). Participatory processes (described in chapter eight) and collective action (described above in this chapter) in Komi and Yakutia exemplify the conditions under which Indigenous and rural communities are more or less capable of exerting some control and influencing decisions that have implications for their adaptation to environmental change. The following analysis is an evaluation of their political capabilities based on two features of adaptation politics identified by Holland (2017): conflicting expertise and stakeholder alliances.
**Conflicting expertise**

The success of communities seeking some level of control over adaptation decisions hinges on their ability to demonstrate their experience of specific harm or impact to government officials, in order to seek response and redress (Holland, 2017).

In Komi, the SPC and communities have directly challenged the data about the state of the environment in the oil fields and around them provided by industry. Villagers turned to environmental monitoring as a measure to produce and present independently collected data. The political and legal success of this initiative depended on them competently demonstrating evidence of oil spills through numbers, maps and photos. The government officials and the oil company have valued the monitoring undertaken by these communities in relation to the precise location and the size of oil spills. However, the data provided by the SPC and volunteers were seen as exaggerating harm in order to contest the government and the industry’s inaction. Moreover, the community-produced data have not been sufficient in bringing about compensation for disturbed land use and environmental degradation.

In Yakutia, a coalition of movements have questioned the planning and design of the infrastructure for the ESPO pipeline system on the territory of Yakutia. For example, the coalition has provided numerous scientific justifications for the measures needed to adjust the infrastructure to the challenging and changing local environmental and climate conditions (e.g., crossing of the Lena River). The initiative has remained steadfastly ignored by the operating companies and the governments across different levels. Additionally, the regional Association of Indigenous peoples has proposed methodologies to justify damage to traditional livelihoods and culture and to seek compensations in a more equitable way. However, the company has opted to negotiate compensations with the obshchinas directly.

In both cases, collective action exemplifies existing expert-lay conflicts. Communities did not trust the data provided by the government; they questioned why impacts of resource projects and climate change remain ignored or are evaluated by the industry that produces the impacts (but not independent experts). At the same time, representatives of
government and industry questioned the data collected and delivered by community members since they lack verification through rigorous study.

**Alliance with powerful stakeholders**

Limitations shaped by the broader socio-political context drive movements and individual residents to seize opportunities they have and stakeholders they are connected to, in their quest for exerting an influence on adaptation decisions. In response to the actions ‘from above’, alternative forms of resistance emerged, in which various networks and alliances developed.

In the adaptation politics in Komi, where environmental pollution by the oil industry has been an ongoing issue making communities more vulnerable to changes brought by climate change, networking and alliances yielded greater public awareness and government responses to the problem at different scales. Although access to decision-making arenas was limited, the SPC and communities have been empowered by building an alliance with Greenpeace. After establishing an alliance with this powerful stakeholder, networks were established with international and regional NGOs, universities, media channels, artists and bloggers. These networks were used first to demand responses to the oil pollution from the local and regional government and the oil companies established regionally.

However, in the regional political context, externally appointed officials and managers were unlikely to respond to claims made by the rural Komi population in a way that created trust and cooperation. Therefore, thanks to the alliances, demands were set to traverse scales and reach higher levels of decision-making (federal government and the headquarters of the oil companies).

In Yakutia, alliance building differs from Komi in a way that the socioenvironmental movements, also connected to transnational networks, closely partnered with Indigenous groups and associations. With the development of the strategically important large-scale oil infrastructure project, the ESPO pipeline, protests from a coalition of environmental movements took place. However, the actions of the coalition, despite attracting broader public attention, have not generated desired outcomes (a change of technology used in ecologically-sensitive areas). The resistance evolved into cooperation with Indigenous
organisations that through lobbying and other legal actions partially secured land use and compensation for its loss. The regional Association of Indigenous Peoples has been a powerful actor in political lobbying in the Il Tumen for decisions about oil projects critical for the land use and the livelihoods of Indigenous communities.

In this context, vulnerable communities and their representatives seeking decisions about climate change adaptation have directed their claims to the Association, building on existing connections with environmental movements and international institutions. This was evidenced in the climate change adaptation project implemented by the Eyge Centre for Environmental Awareness, renewable energy projects and permafrost protection initiatives facilitated by the regional Association of Indigenous peoples, and representation of Indigenous groups in the UN’s climate conferences.

9.4 Discussion

This chapter asked what collective strategies have been used to influence government and companies and to support Indigenous and rural communities in Komi and Yakutia in shaping adaptation decisions (RQ 5). To answer the research question, the chapter documented various ways in which socioenvironmental movements, Indigenous and rural organisations and their representatives through collective action have demanded more equitable processes and outcomes. Shaped by the broader socio-political context, collective action has been characterised as fluid and fragmented, enabling growing appreciation of the framing of climate change. Political capabilities of communities to influence government and companies have been shaped by conflicting expertise and alliances with powerful stakeholders. This section discusses the implications of the findings for understanding the role of collective action in transformational adaptation.

The study found major differences in the ways in which collective action has evolved in the two regions over the last two decades. In Komi, the intensity of environmental pollution from the oil industry has increased in recent years, rendering the ignorance of the problem by the government intolerable. Open resistance has sparked among rural communities. However, direct protests have not been effective without outreach, legal actions and subsequent socioenvironmental monitoring. Collective action in Komi through global connections has tended to focus on demanding greater social and
environmental responsibility, but also on using new technologies and on restricting the development of new oil projects to demand greater justice.

In Yakutia, collective action has evolved into thorough steps oriented at the implementation of Indigenous rights to co-exist with the oil projects that were developed rapidly and extensively in recent years. Efforts to resist openly, initiated by a coalition of the environmental movements in the regional capital, have attracted broader attention, however, it was legal actions that could make a change for Indigenous communities, lacking secured access to land to support traditional livelihoods.

In both Komi and Yakutia, there is evidence to growing appreciation of the framing of climate change in collective action at multiple scales (in agreement with Caniglia et al. (2015) and Ordner (2017)). In Komi, with time, collective action has increasingly been engaging with actors at the broader scales (national and international), whereby the global ideas of climate change and required responses have been adopted at the local level. For example, the SPC and the movement “Ne Zalivay Mne Tut!” linked global and local climate action through the Break Free campaign, raising awareness about global climate change in the Pechora River basin and informing about the local oil pollution at the global scale. In Yakutia, regional and international climate-related events have become pivotal platforms to express the insecurity of Indigenous land rights in the face of large-scale oil and gas projects at the higher levels.

Climate change has been framed in Komi and Yakutia to resonate with their local audiences. In Komi, groups enacted action by framing climate change in relation to leaving Arctic oil in the ground and joining the global social mobilisation to restrict fossil fuel supply (Piggot, 2017). This framing is a way to advocate against inequitable environmental degradation and challenge development of oil projects on traditional lands, two issues relevant to local actors In Yakutia, framing climate change as contributing to vulnerability of Indigenous livelihoods is a way to advocate for the protection of traditional livelihoods and enhancement of Indigenous land rights as necessary for successful adaptation (Eisenstadt & West, 2016).

Apart from framing, the extent to which collective strategies can influence governments and companies and assist remote communities in shaping adaptation decisions can be
explained by political capabilities in remote communities (Holland, 2017). The two cases presented in the chapter exemplify the varied political capabilities of movements and communities in adaptation politics. In both Komi and Yakutia, communities aimed to influence decision-making by providing knowledge that would reflect the harm they experience as a result of the oil industry.

Because of the growing challenges to protest openly in Russia, and a lack of effectiveness in dealings with the negligence of companies and governments, communities grasped the opportunities given by globalisation, connecting with distant and transnational environmental, Indigenous and rights-defending organisations and movements (see also Pierk & Tysiachniouk, 2016). As a result, in Komi, socioenvironmental monitoring emerged as a strategy to exert some influence on the decision-making that has implications for adaptation to environmental change (Benyei et al., 2017; Orta-Martínez & Finer, 2010). While in Yakutia, it was partnerships and empowerment of Indigenous communities and organisations that enabled communities to secure their voice in decisions affecting their lives. In both regions, the expertise of scientists and experts from regional, national and international institutions was leveraged to serve the interests of vulnerable communities.

Despite the empowerment of climate, the dominant power of political and economic interests remains in place, and these take an evidently defensive position towards the oil projects. Oil companies ally with the regional and local government officials to ensure the timely implementation of projects with the minimum of unnecessary design expenditure. The relative success of communities in participation processes and collective action around the oil projects directly affects their implementation (in terms of time and design) that impacts private profits, but also higher political and economic goals. In this process, the influence of the movements in northern Russia on constraining the development of oil projects has been minimal (Piggot, 2017). However, acknowledging the aspirations of local communities for shaping their future, there is a need to assist rural communities in creating awareness of the resource extraction and climate change impacts as well as in claiming their rights in the face of powerful stakeholders.
9.5 Conclusion

This chapter addressed RQ 5: What collective strategies have been used to influence government and companies and to support Indigenous and rural communities in Komi and Yakutia in shaping adaptation decisions? To respond to the question, this chapter provided an overview of collective action in Komi and Yakutia over the last two decades. Following an introduction to how collective action unfolded in the two regions, the comparative analysis centred on explaining the evolution of collective action within the broader socio-political context and evaluating political capabilities of communities to shape adaptation decisions. This focus has helped to reveal the conflicting expertise and stakeholder alliances that have shaped the political capabilities of communities in adaptation politics. However, many questions remain regarding the extent to which the emerging collective action will be able to address the underlying power imbalances that restrict transformational adaptation in resource frontiers.

This is the final empirical chapter in this thesis, and the next chapter provides the summary of the findings situating them within the existing literature. In addition, I will explain the limitations of the study, state major implications of the findings and provide recommendations for further research.
CHAPTER TEN Discussion and conclusions

10.1 Introduction

As introduced in chapter one, there has been a growing imperative to address climate change impacts and to develop climate change responses (adaptation- and mitigation-oriented) in resource extraction regions. The literature review demonstrated that to date most studies on climate change impacts and responses have centred on the extractive industries rather than communities and ecosystems that host resource extraction projects. While the extractive industries do play an important role, it is host communities who bear the environmental impacts of double exposure to resource extraction and climate change. In addition, only a limited critical enquiry has been produced in the academic literature into the institutional and political environment of resource extraction regions that shape environmental and societal outcomes and mediates the planning and implementation of climate change responses.

In response to this research lacuna, the thesis has addressed the research problem of understanding and conceptualising adaptation to climate change in regions exploited for the extraction of natural resources in a more holistic way. The aim of this study was to explore the potential of climate change adaptation to assist the development of more equitable processes and outcomes for communities that host resource extraction projects based on the empirical cases in northern Russia.

The thesis summary in the next section is followed by a discussion that centres on responses to the research questions. The chapter then reviews the main strands of the conceptual framework ‘just adaptation at resource frontiers’ with reference to the empirical findings and existing scholarly work. The summary of the contribution and limitations of the study are provided next. The thesis concludes with implications for future research and practice.
10.2 Thesis summary

The thesis has argued that there is a need to conceptualise and develop adaptation pathways (and developmental pathways) that can avoid failures of resource frontiers, and this can be achieved by a more nuanced understanding of power dynamics and justice as a starting point. Central to this argument were observations repeated in previous studies that the socio-environmental impacts and benefits of resource extraction were distributed disproportionately among communities and ecosystems; participation of communities in resource projects is contested; and there is the lack of adequate recognition of certain groups, their rights and complaints (Bebbington & Bury, 2013; Keeling & Sandlos, 2009; O'Rourke & Connolly, 2003; Onuoha, 2009; Orta-Martínez et al., 2007; White, 2013).

In this context, climate change initiatives should focus on ameliorating procedures for, and recognition of affected communities by distributing costs and benefits more fairly and enhancing their access to resources and political equality needed to sustain their well-being, livelihood and distinct cultures (Paavola & Adger, 2006; Schlosberg, 2012; Thomas & Twyman, 2005). Importantly, past studies emphasised that climate change initiatives can undermine vulnerabilities and inequalities if the broader political economy is ignored (Nightingale, 2017; Sovacool, 2018; Taylor, 2015). Whether climate change initiatives have the potential to serve justice in resource extraction regions is a significant research gap in the current literature. To contribute to the understanding of this potential, yet being mindful of the political economy of resource extraction regions, the thesis developed a conceptual cross-scale framework called ‘just adaptation at resource frontiers’, presented in chapter two. It constitutes four strands: 1) an inclusive debate about risks; 2) power and politics in climate change adaptation efforts; 3) participation in resource projects and adaptation planning; 4) collective action and communities’ political capabilities.

The framework was applied in the empirical context of northern Russia, where double exposure to oil industry expansion and the impacts of climate change has been noted (Bridge, 2014, Chapter Three). Data were collected from four under-studied cases within two administrative regions: the Pechora River valley and the Bolshezemelskaya tundra in the Komi Republic, and the Aldan plateau and the Indigirka River delta in the Sakha Republic (research background was detailed in chapters three and four). An embedded
multiple-unit case study design enabled the examination of on-the-ground experiences of environmental change and adaptation among Indigenous and rural communities followed by a comparative enquiry of subnational resource politics in the face of climate change and a changing global economy. A qualitative method comprised interviews (informal, semi-structured and focus groups) and purposive observations which were triangulated with document analysis and published research (the detailed methodology was explained in chapter four).

The study first explored the experiences of environmental change in relation to double exposure to the oil industry and the impacts of climate change among subsistence-oriented communities in four areas, theoretically engaging with relational theories of risk and methodologically drawing on perceptions of communities’ members, the researcher’s own observations and insights from the documents of the government and NGOs (chapter five). It then identified responses of communities to the environmental changes and placed these responses in the historical context of socio-political transformations in northern Russia, identifying how these shaped strategies and resources available for adaptation (chapter six). Communities’ experiences are currently mediated through institutions that continue to prioritise a fossil-fuel oriented economy, intertwined in the current political instability and the struggles over authority and recognition, with an impact on climate change planning and policy (chapter seven). Additionally, communities reported the challenges of gaining equal participation in oil projects and decision-making about them, creating contested dynamics around the projects (chapter eight). Finally, resistance to the existing practice of oil extraction and transportation and to new projects has been growing, but the political influence of Indigenous communities on the design and implementation of the projects, and extraction-based regional development in general, remains limited (chapter nine).

Apart from important differences across the four local and two regional cases, which are explained below, the empirical findings indicate a very real environmental change in northern Russia; yet climate change initiatives are not focused on restricting fossil-fuel extraction because oil projects are bound up in the current political instability and regional identity politics. The study indicated that addressing climate change in a way that can address inequalities found in northern Russia is intertwined with the complex
relationships of power. At stake are the interests of many stakeholders — *obschinas*, civil society groups, rural communities, local municipalities, regional and state authorities, domestic and foreign companies, and domestic and foreign oil consumers. Given competing interests, adaptation to climate change might never be optimal for all the actors acting in resource frontiers, but the potential for more equitable outcomes and processes exists in realising political capabilities in adaptation politics. To elaborate on these findings, the next section centres on the responses to the research questions posed in this thesis.

### 10.3 Response to research questions

The thesis addressed four related research questions. The first question asked: How do Indigenous and rural communities in Komi and Yakutia experience the impacts of oil exploitation in interaction with climate-related processes? Across the four local cases, the oil industry has generated or is expected to generate profound environmental impacts, and climate change impacts are already being felt. Findings suggest that the intersecting impacts of oil extraction and climate change manifest in altering the dynamics of environmental degradation, including more frequent and severe as well as new types of environmental impacts. An example includes oil extraction polluted land, water and air in the Pechora River valley, with extreme rainfall and flooding leading to more frequent and severe incidents at the oil rigs and tailings. Another example is that the vulnerability of fishing villages and livelihoods in the Indigirka River delta to climate change impacts (through increased gullying, river banks erosion and alterations in fish stock) is expected to increase if oil extraction proceeds following the current oil exploration activities.

These experiences indicate how local and global processes of change converge resulting in double exposure to extractive industries expansion and climate change in relation to environmental impacts. Double exposure unfolds in diverse ways, depending on the type of the environment and nature of resource extraction related operations. However, the underlying reasons can be traced to poor technological and managerial solutions for project design, and a lack of effective mitigation and response measures. Importantly, double exposure is not a fixed phenomenon and changes with time as the impacts of global warming accelerate and oil projects evolve.
The societal outcomes of double exposure include risks to traditional livelihoods and land use, belonging to the place, liveability of settlements, human and animal health, and future development opportunities. They are largely negative, with some contributions from the industry to improvements in social infrastructure and development, but even they are distributed disproportionately among communities and villages, and do not compensate for the environmental losses. There may be many other effects too, not perceived by interviewees in case studies as salient. These findings call for the identification of risks based on the concerns of what matters for communities as a prerequisite for more equitable adaptation.

The findings indicate the causal relationships between the local environmental changes, experienced and perceived by Indigenous and rural communities, and the global processes of globalisation and climate change beyond their control. These processes are the result of the interests of external state and private actors, but have long-term impacts on the environment, livelihoods and cultures at localities. Applying double exposure to resource frontiers corresponds to ‘double losers’ (O’Brien & Leichenko, 2000) when facing the expanding extractive industries and the impacts of climate change.

The second question asked: How do Indigenous and rural communities in Komi and Yakutia respond to the impacts of oil exploitation and climate change? The study identified a variety of responses to salient environmental changes, including from sustaining traditional livelihoods and knowledge (KR1, KR2, SR1, SR2), livelihoods diversification (KR1, SR1), changing locations for pastures (KR2, SR1) and settlements (SR1), cleaning rivers (KR1) and fixing riverbanks and gullies (SR2), participating in planning of resource projects (KR1, SR1), organising to contest environmental degradation (KR1), sharing resources and knowledge (SR1, SR2) and not responding (SR2).

Applying a political ecology lens to the response space available to communities, the study placed community responses in the context of historical transformations in Russia’s socio-economic and political regime. The findings indicate that there have been deepening connections between localities and political economic processes that favour exploitation of natural resources. With these dynamics, formal rules and the processes governing the state and private interests appear to be increasingly influential in present
adaptation to environmental change. Meeting with traditional social relations and informal networks, they affect resources available for adaptation and re-articulate how benefits and loses from environmental change. As a response to double exposure, autonomous responses might be limited, and even maladaptive, and, therefore, planned adaptation should focus on responses that are cooperative and inclusive of local social relations and networks.

In the context of climate change, oil extraction is problematic locally and globally. Yet, oil projects are celebrated in Russia. Hence, the third research question was: Is the expansion of the oil industry supported at the subnational level in Komi and Yakutia, and why? The political economic contextualisation, followed by insights from semi-structured interviews and strategic documents, indicated that oil projects had been supported by the government in both Komi and Yakutia, and this support was explained by the pro-oil discourse: (i) the geographical advantage and longevity; (ii) a driver of development; (iii) autonomy; (iv) integration into the global economy; (v) sustainable and climate-conscious development.

The study found that in the context of climate change the extent to which governments of Komi and Yakutia, as representatives of their peoples, are capable of influencing development of oil projects is mediated by power and politics cutting across the legacies of the past, imaginative geographies of hydrocarbon resources, struggles for resource rents and struggles over authority and recognition. As a result, these contested dynamics have consequences for whether new climate change-oriented policies and programs can in fact be developed and implemented, given a vacuum in responsibility and capacities to champion a climate change agenda.

The fourth question in this research was: How do Indigenous and rural communities in Komi and Yakutia participate in oil projects? The analysis of the evolution of community-company relations in four oil extraction-related projects demonstrated that the operations expand into the new territories where norms for Indigenous peoples’ rights, greater community participation and more responsible operations are demanded, challenging the prevailing norms and rules from the Soviet and the transition period (the 1990s–2000s). In these conditions, companies and governments employ different strategies to gain legitimacy for the oil projects, including discursive, market and legal strategies and
strategies of uncertainty. At the same time, affected communities engaged strategically in the projects, seizing the opportunities for benefits. Both ways, the strategies ‘from above’ and ‘from below’, appear to be mediated through structures of community representation and their personified relations with the representatives of the private and state actors. These dynamics have implications for how relational injustice is experienced, affecting the ability of affected communities to exercise their voice, to articulate their interests and to make informed decisions. If adaptation to climate change is to provide an opportunity to address injustices in resource extraction regions, the relational dynamics cannot be ignored.

The fifth question asked: What collective strategies have been used to influence government and companies and to support Indigenous and rural communities in Komi and Yakutia in shaping adaptation decisions? The study found several forms of collective action employed in Komi and Yakutia by socio-environmental movements, Indigenous organisations and individual residents (protest, outreach, legal actions and monitoring of liabilities). Given the broader socio-political context, collective action can be characterised as fragmented and fluid, permitting cross-scale relationships with the global movement. The analysis found the varied political capabilities in Komi and Yakutia to contest and to influence the development paradigms centred on resource extraction and demand adaptation decisions from government and oil companies. The action in Komi centred on open resistance to oil extraction projects and socioenvironmental monitoring. In Yakutia, given the limited space for open resistance, legal actions and political lobbying were more influential in determining adaptations on the territories of traditional natural resource use by Indigenous peoples. In both regions, collective action has increasingly used the framing of climate change and needed responses to resist inequitable processes and outcomes.

It is useful to categorise adaptation in the four case studies according to Pelling’s (2011) adaptation pathways (resilience, transition or transformation) distinguishing responses aimed at proximate causes of vulnerability from those seeking broader systemic change in social and political regimes. The resilience-oriented pathway can be identified in all cases. In KR1, community members have engaged in cleaning rivers, creeks and land polluted with spilt oil. In KR2, reindeer herders have been avoiding oil development sites
and infrastructures. In SR1, community members have altered migration routes and protect their herds from the wildlife. In SR2, villagers have used available materials to cope with river bank erosion and gullying in the villages. These responses are oriented at coping with environmental changes to maintain the function of livelihoods and settlements. The transition-oriented pathway explains some of the community responses in KR1, KR2 and SR1. In all three cases, community members have tried to engage in negotiation of the impacts and benefits of oil development projects on the territories they use for livelihoods. These responses explain how communities attempt to realise their rights within the established political economic regime. Finally, the transformation-oriented pathway is useful to understand recent responses in KR1. Villagers have been increasingly questioning the oil-oriented development paradigm.

Additionally, the empirical study demonstrated that the elements of the political economy of resource frontiers act at multiple scales. At the local scale, individual residents and communities cope with environmental changes, including the combined effects of resource extraction and climate change. They draw on the resources access to which was historically shaped in the settings, but being increasingly influenced by formal rules that govern the state and private interests in remote regions. At the regional scale, subnational governments and companies are seeking for new oil projects to ensure rents, employment and development, bound by the relationship with the state and identity politics. At the national scale, state and corporations are orienting efforts to fuel budgets with resource revenues and connect resources to global markets to achieve higher economic and political goals (Rutland, 2015). At the global scale, Russia argues its emissions are low (Poberezhskaya, 2015), while the climate change imperative has implications for resource extraction and its governance. Emphasising one scale in understanding and planning for climate change in resource extraction regions ignores and may obscure the complex interaction of local with regional and global trends.

10.4 Towards just adaptation at resource frontiers

The empirical study of cases in northern Russia supports the call from scholars and practitioners for adaptation to climate change in resource extraction regions (Bebbington et al., 2015; Carkovic et al., 2016; Damigos, 2012; ICMM, 2014; Loechel et al., 2013; Martinez-Alier & Temper, 2007; Phillips, 2016; Sharma & Franks, 2013). The urgency
of climate change demands immediate policies and plans in northern Russia, as in the regions worldwide from the studies mentioned above.

However, in vulnerable contexts, any intervention can result in reconfiguration of power relations and potentially aggravate existing vulnerabilities and inequalities (Hirons et al., 2014; Nightingale, 2017; Sovacool, 2018). Therefore, if society is to achieve adaptation on equal terms, then the historical and current political economy and resource politics need to be taken into account when designing and implementing adaptation plans in regions affected by extraction of resources (Cameron, 2012). The framework ‘just adaptation at resource frontiers’ is a way to broaden the basis from adaptation as resilience to transformational adaptation (Pelling, 2011) by connecting it to justice implications and resource politics. In the following section, the four main strands of the framework are discussed with reference to the empirical findings in this thesis and the scholarly work to identify its potential to inform more equitable climate change adaptation efforts.

1) Ensuring an inclusive debate about risks

The empirical work in northern Russia demonstrated the heterogeneity of risks experienced at the local level and associated with environmental change, including emerging challenges of the combined effects of resource extraction and climate change. In seeking to account for justice in climate change adaptation planning, it is important to address precisely the issues that have been identified and prioritised by communities affected by resource extraction projects (Cameron, 2012). A relational approach to risk (Boholm & Corvellec, 2011) is one way to examine closely what people consider at stake and as in need of addressing in the context of changing land uses and livelihoods (Tschakert et al., 2017). The identification of diverse values given to environmental impacts by affected people contributes to adaptation that does not overlook peoples’ concerns or make the problems worse. This corresponds to the calls for a reassessment of debates about justice based upon distributional and predefined risks more towards more Sen’s (2009) understanding of justice as an inclusive debate about risks (Forsyth, 2014). Therefore, ensuring an inclusive debate about risks is a first critical criterion for more equitable adaptation in regions exploited for resource extraction.
2) Capturing power and politics acting in resource frontiers

The empirical study demonstrated that the dynamics of environmental change and adaptation are deeply influenced by the regional political economies. Hence, attention to power and politics improves the understanding of where and how climate change responses will or will not be developed (Eriksen et al., 2015), mindful of the development context and regional socio-political aspirations (Haddad, 2005; Naess et al., 2015; Thornton & Comberti, 2017). In resource frontiers, struggles over who will develop and implement responses to environmental change, and how, are mediated through struggles over authority and recognition (Nightingale, 2017). A contentious resource governance context includes the tensions between the state and its subnational entities over the control of natural resources and identity politics, as was the case in Komi and Yakutia. This confirms the critical need to focus on questions of capturing power and politics in climate change adaptation efforts, if adaptation is not to worsen existing vulnerabilities and inequalities (Nightingale, 2017).

3) Broadening participation in resource projects and adaptation planning

From an institutional design perspective, climate change adaptation in resource extraction regions requires an integrated approach, focusing on social and institutional processes rather than purely technical adjustments, and engaging diverse actors. Yet, the participation of host communities in planning for resource projects has been problematic in northern Russia (as this study found), and other parts of the world (e.g., Schilling-Vacaflor, 2017), contingent on the community-company-government relations, broader political economic processes and the structures of community representation (Gavidia & Kemp, 2017). The lack of opportunities for meaningful participation by host communities indicates the procedural and recognitional injustices. This suggests that planning may not be adequately accounting for their needs, which are critical for maintaining and developing their well-being, livelihoods and distinct cultures. Therefore, broadening community participation in resource projects and adaptation planning will likely enhance the potential of climate change adaptation to contribute to more equitable outcomes.
4) Understanding collective action and political capabilities.

In seeking to account for the ways in which climate change adaptation comes to matter in resource extraction regions, it was found beneficial to complement the view of justice as concerned with distributions, procedures and recognition as articulated in the environmental justice literature, to engage with the emerging work on political capabilities in adaptation politics (Holland, 2017; Schlosberg, 2012). In resource frontiers, where host communities have weak political power over environment given powerful interests, determining vulnerable populations’ political capabilities can inform the development of collective action that can produce transformational change that addresses the root causes of their vulnerability. In host communities with weak political capabilities, climate change adaptation is likely to reproduce vulnerabilities and inequalities that a focus on justice seeks to remedy.

In summary, the conceptual framework ‘just adaptation at resource frontiers’ (figure 10-1) provided a means through which to analyse the ways climate change adaptation should be articulated, practised and contested in resource frontier regions if climate change adaptation is to correct the failures that produce vulnerabilities and injustices in resource extraction regions. It can inform the development of pathways guiding climate change adaptation in a more transformational direction.
Chapter Ten. Discussion and conclusions

Figure 10-1. Approach for just adaptation at resource frontiers

10.5 Research contribution and limitations

The present study makes several noteworthy contributions to current knowledge. First, using cases from northern Russia, this study has identified a research problem of understanding the impact of the oil industry (past, present and planned) on experiences of climate change and adaptation by subsistence-oriented communities. Communities’ experiences from the villages of Shelyaur, Shelyabozh, reindeer herders obschinas in the Komi Republic and Khatystyr, Iengra, Russkoe Ust’e and Olenegorsk in the Sakha Republic were brought into the conceptualisation of the societal outcomes of double exposure to expanding oil extraction and the impacts of climate change for the first time. Their observations and experiences provided additional evidence with respect to relationships between climate change and resource extraction, as suggested in past studies (Odell et al., 2018; Phillips, 2016) and observed across northern Russia (Henry et al., 2014).

Second, the findings contribute to the understanding of relations of power and politics surrounding the oil industry in two northern regions, the Komi Republic and the Sakha Republic (brought into a comparison). Hence, this study is among pioneering attempts to place responses, or lack of responses, to climate change in resource extraction regions.
under the critical scrutiny that incorporates their political economic context (see Bebbington et al. (2015), Hirons et al. (2014) and Kronenberg (2013) for other attempts). Different from the previous work, the focus of this study was on Russia’s oil industry and the subnational government units. This chapter contributes to a comparative understanding of regional development strategies by demonstrating the critical importance of power and interests when examining how climate-oriented initiatives encounter wider development contexts (Naess et al., 2015), which in Russia is strongly influenced by exploitation of subsoil resources, particularly crude oil.

Third, it is the first study to centre experiences of environmental change in resource extraction regions in Komi and Yakutia on considerations of justice. In doing so, this study developed a conceptual framework, called ‘just adaptation at resource frontiers’. Through the lens of justice, the framework linked advancements in two bodies of literature: the literature that investigates the environmental and socio-political processes acting resource frontiers; and the literature that critically examines climate change adaptation. Despite lack of empirical data in this thesis on climate change, this framework can serve as a base for future studies guiding the empirical analysis of how climate change responses come to be developed and implemented in resource extraction regions. It can also inform the actual design and implementation of climate change adaptation plans with an aim to contribute to more equitable processes and outcomes for communities disproportionally affected by climate change and resource extraction impacts, and lacking access to resources and decision-making needed for transformational adaptation.

Finally, the thesis has used an embedded case study design which allows for an analysis of multiple units of analysis across several cases. In this way, the thesis has examined experiences of environmental change and adaptation by community members, and their interactions with the representatives of the state and oil companies. This thorough investigation not only provided diverse experiences of environmental change in different settings, but also provided an in-depth understanding of the socio-political processes surrounding the design and implementation of oil projects in northern Russia from the perspectives of various stakeholders involved.

There are several important limitations of the study (in addition to limitations of the methodology explained in chapter four, section 5.4) that need to be considered. First,
answering research questions fully was not possible due to the limited empirical data on the climate change dimension of the thesis. This can be partly explained by lack of attention to climate change in regional planning and policy in Komi and in Yakutia (in agreement with Johansen and Skryzhevskaja (2013)). Moreover, community members have not assigned the label of climate change to environmental changes they observe and experience, for example to increased gullyng and river bank erosion, or changed patterns of flooding and vegetation, or to altered season’s length and temperatures (in agreement with Stammler-Gossmann (2010)). Similarly, the future research needs to be careful in attributing these changes to climate change.

Second, the current study used perceptions and experiences of members of Indigenous and rural communities and representatives of key organisations as the primarily sources of data, which were interpreted by the researcher. Qualitative data provided a more holistic understanding of the phenomena of interest than a survey-based approach, recognising that a larger number of participants could result in additional challenges. And finally, the analysis may contain biases as the study did not evaluate observed environmental changes in relation to scientific findings, given lack of such data in the settings of the case studies and that was outside the scope of the study. However, an embedded case study design involving four local cases and four regional cases increases the credibility of the findings despite the incomplete representation of the available data given the constraints of a PhD project.

10.6 Recommendations for future research and practical implications

This study has presented the beginning of a critical understanding of climate change responses in regions exploited for the extraction of natural resources (and crude oil in particular). This section presents the areas identified for future research based on research gaps, which the literature review and the empirical study revealed. First, significant research is required to measure better and evaluate the impacts of resource extraction and climate change in remote settings. There is a need for more and better data from scientific and local perspectives, on past and present impacts. Data on air, water and land pollution and degradation as well as monitoring of the sources of pollution and accidents are needed in addition to emerging practices in Komi. Epidemiological and toxicological data on communities exposed to resource extraction are lacking, particularly in Russia.
Second, the evaluation of critical issues influencing the distribution of these impacts is required. This includes understanding systems of control of the industry in relation to who makes decisions over specific projects, and who benefits from the decisions. Similarly, the effectiveness of government regulations of the industry and government strategic development plans need to be evaluated for their contribution to climate change adaptation. Furthermore, the role of community participation in the projects and the influence of socioenvironmental and ethnic movements on the projects’ design and implementation should be further studied.

Third, this study concentrated on oil extraction and transportation regions. Others are encouraged to carry out further research in regions affected by different methods of extraction (including fracking, offshore, oil mining), different commodities (minerals, coal) and scales of extraction (artisanal and small-scale mining, multinational corporations). Additionally, a focus on in-depth case studies from other geographic regions, and a comparative study in particular, could enhance the generalisability of the framework and advance it.

In the context of Russia, placing justice at the focus of climate change initiatives points to the opportunities for empowerment of remote communities. Based on the research findings, more attention should be given to initiatives to maximise relational and recognitional justice in resource extraction context in Russia, and to advance the application of international conventions on Indigenous and human rights. However, there are few examples of meaningful consultation across the world regardless of whether a regulatory framework is in place (Whiteman, 2009). Future work is required on understanding the potential — as well as the barriers — for the empowerment of communities in tackling the consequences of environmental changes. Participatory monitoring can provide communities with information needed to advocate against the inequitable distribution of the impacts (e.g., Benyei et al., 2017). Additionally, future work is needed to understand under what conditions there can be an interest in climate change responses in Russia.

Finally, this study indicates the need to continue to identify opportunities for inclusive solutions to benefit communities disproportionately affected by resource extraction and climate change impacts, given the contested nature of resource frontiers. In-depth studies
of successful and unsuccessful climate change planning and policy initiatives will improve understanding under what conditions adaptation plans can benefit disadvantaged communities. Additionally, identifying non-traditional partnerships, coalitions and strategies that facilitate capacity building and empowerment, particularly in cooperation with scholars and researchers, might help to reorient the adaptation from technical adjustments to broader social and institutional changes that assist in creating a more just society.

While climate change initiatives will have to be designed into and practised through in a range of resource frontiers, the thesis suggests that political economy and facets of justice cannot be ignored in responses to climate change. Efforts to address climate change may serve to reconfigure the workings of resource frontiers, creating new sites of struggle and contestation over resources. Therefore, there is considerable scope for stakeholders that are involved in the design and implementation of climate change responses to adopt the issues of power and justice as a starting point. This research suggests that we can no longer ignore the broader social and political environment of the resource frontiers.
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Appendices

Appendix A. Governance structure in Russia

*Table A–1. State power and administrative structure in Russia, the Komi Republic and the Sakha Republic (Yakutia)*

<table>
<thead>
<tr>
<th>Federal level</th>
<th>President of the Russian Federation</th>
<th>Legislative: Federal Assembly (Federation Council and State Duma)</th>
<th>Executive: Government of the Russian Federation</th>
<th>Judicial: Constitutional Court, Supreme Court, Superior Court of Arbitration</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Russian Federation (RF)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Regional level</th>
<th>85** federal subjects, including republics (22), krais (9), oblasts (46), cities of federal importance (3), autonomous okrugs (4) and an autonomous oblast</th>
</tr>
</thead>
<tbody>
<tr>
<td>Komi Republic is a state within the RF</td>
<td>Legislative: State Council of the Komi Republic</td>
</tr>
<tr>
<td>Administrative structure</td>
<td>184 municipalities, including 6 town districts, 14 rayons, 14 urban settlements and 151 rural settlements</td>
</tr>
<tr>
<td>Sakha Republic (Yakutia) is a state within the RF</td>
<td>Legislative: State Assembly (Il Tumen) of the Sakha Republic</td>
</tr>
<tr>
<td>Administrative structure</td>
<td>445 municipalities, including 2 urban districts, 34 uluses (4 are ethnic), 48 urban settlements and 361 rural settlements</td>
</tr>
</tbody>
</table>


** two of regions (Sevastopol and Crimea), included by the Russian Federation in 2014, are recognised by most countries as part of Ukraine.
Appendix B. Stages of oil project development and Russia’s oil fields

*Figure B–1. The typical stages of development of an oil project*

*These four stages of oil development often co-exist. There is ongoing geological and seismic exploration. Additionally, there is the phased development of explored deposits and layers and involvement of off-balance reserves in operation. Abandoned wells and fields are re-opened or new facilities are being built near them. Emergencies may arise at each state in the oil development, especially at the pipeline operation processes.*
Map B–2. Russia’s oil fields and major pipeline and port infrastructure for export, 2015.

## Appendix C. Field report and supporting material

### Table C–1. Names of localities in common and regional languages

<table>
<thead>
<tr>
<th>English language</th>
<th>Russian language</th>
<th>Komi language</th>
</tr>
</thead>
<tbody>
<tr>
<td>Komi Republic</td>
<td>Республика Коми</td>
<td>Коми Республика</td>
</tr>
<tr>
<td>Syktyvkar</td>
<td>Сыктывкар</td>
<td></td>
</tr>
<tr>
<td>Pechora River</td>
<td>Река Печора</td>
<td>Печо́ра ю</td>
</tr>
<tr>
<td>Izhma River</td>
<td>Река Ижма</td>
<td>Изы́ва ю</td>
</tr>
<tr>
<td>Usa River</td>
<td>Река Уса</td>
<td>Усва ю</td>
</tr>
<tr>
<td>Kolva River</td>
<td>Река Колва</td>
<td>Колва ю</td>
</tr>
<tr>
<td>Izhma rayon</td>
<td>Ижемский район</td>
<td>Изы́ва район</td>
</tr>
<tr>
<td>Usinsk town district</td>
<td>Городской округ Усинск</td>
<td>Ускар каркытыш</td>
</tr>
<tr>
<td>Usinsk</td>
<td>Усинск</td>
<td>Ускар</td>
</tr>
<tr>
<td>Izhma</td>
<td>Ижма</td>
<td>Изы́ва</td>
</tr>
<tr>
<td>Shelyaur</td>
<td>Щельяюр</td>
<td>Щельяйор</td>
</tr>
<tr>
<td>Shelyabozh</td>
<td>Щельябож</td>
<td>Щельяйбож</td>
</tr>
<tr>
<td>Ust’–Usa</td>
<td>Усть–Уса</td>
<td>Усвавом</td>
</tr>
<tr>
<td>Mutnyi Materik</td>
<td>Мутный Материк</td>
<td>Семёйдрей</td>
</tr>
<tr>
<td>Sebys Sanctuary</td>
<td>Заказник Себысь</td>
<td></td>
</tr>
<tr>
<td>Usinsk Sanctuary</td>
<td>Заказник Усинск</td>
<td></td>
</tr>
<tr>
<td>The Ural Mountains</td>
<td>Уральские горы</td>
<td>Урализ</td>
</tr>
<tr>
<td>Usa River</td>
<td>Река Уса</td>
<td>Усва ю</td>
</tr>
<tr>
<td>Vorkuta River</td>
<td>Река Воркута</td>
<td>Вёркута ю</td>
</tr>
<tr>
<td>Vorkuta town district</td>
<td>Городской округ Воркута</td>
<td>Вёркута каркытыш</td>
</tr>
<tr>
<td>Inta town district</td>
<td>Городской округ Инта</td>
<td>Инта каркытыш</td>
</tr>
<tr>
<td>Nenets Autonomous Okrug</td>
<td>Ненецкий Автономный округ</td>
<td></td>
</tr>
<tr>
<td>Yamal–Nenets Autonomous Okrug</td>
<td>Ямало–Ненецкий Автономный округ</td>
<td></td>
</tr>
<tr>
<td>Vorkuta</td>
<td>Воркута</td>
<td>Вёркута</td>
</tr>
<tr>
<td>Inta</td>
<td>Инта</td>
<td></td>
</tr>
<tr>
<td>Salekhard</td>
<td>Салехард</td>
<td></td>
</tr>
<tr>
<td>Ust–Kara</td>
<td>Усть–Кара</td>
<td></td>
</tr>
<tr>
<td>Barents Sea</td>
<td>Баренцево море</td>
<td>Баренц сарыцд</td>
</tr>
<tr>
<td>Kara Sea</td>
<td>Карское море</td>
<td>Кар сарыцд</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>English language</th>
<th>Russian language</th>
<th>Sakha language</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sakha Republic (Yakutia)</td>
<td>Республика Саха (Якутия)</td>
<td>Саха бросзбуулукэз</td>
</tr>
<tr>
<td>Lena River</td>
<td>Река Лена</td>
<td>Олунэ</td>
</tr>
<tr>
<td>Aldan River</td>
<td>Река Алдан</td>
<td>Алдан</td>
</tr>
<tr>
<td>Amga River</td>
<td>Река Амга</td>
<td>Амма</td>
</tr>
<tr>
<td>Yakutsk</td>
<td>Якутск</td>
<td>Дьокускай</td>
</tr>
<tr>
<td>Aldan rayon</td>
<td>Алданский район</td>
<td>Алдан улууна</td>
</tr>
<tr>
<td>Nerungri rayon</td>
<td>Нерюнгринский район</td>
<td>Нуорунгтуру улууна</td>
</tr>
<tr>
<td>Aldan</td>
<td>Алдан</td>
<td>Алдан</td>
</tr>
<tr>
<td>Khatystyr</td>
<td>Хатышыр</td>
<td>Хатышыстыр</td>
</tr>
<tr>
<td>Nerungri</td>
<td>Нерюнгри</td>
<td>Нуорунгтуру</td>
</tr>
</tbody>
</table>

*Local Indigenous languages are spoken in both regions. In the Komi Republic, Komi–Izhma dialogue is spoken in the Izhma rayon, and Nenets language is spoken by Nenets people. Across the Sakha Republic, Evenks language is spoken by few Evenks in the Aldan plateau, and Evenk language is spoken by few Evenk throughout northern Yakutia, including Olenegorsk. Toponyms in local Indigenous languages can be found in the areas they have inhabited.*

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91 The local indigenous languages are spoken in both regions. In the Komi Republic, Komi–Izhma dialogue is spoken in the Izhma rayon, and Nenets language is spoken by Nenets people. Across the Sakha Republic, Evenks language is spoken by few Evenks in the Aldan plateau, and Evenk language is spoken by few Evenk throughout northern Yakutia, including Olenegorsk. Toponyms in local Indigenous languages can be found in the areas they have inhabited.
<table>
<thead>
<tr>
<th>English language</th>
<th>Russian language</th>
<th>Sakha language</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iengra</td>
<td>Иенгра</td>
<td>Иенгра</td>
</tr>
<tr>
<td>Indigirka River</td>
<td>Река Индигирка</td>
<td>Индигир</td>
</tr>
<tr>
<td>Russkoe Ust’e</td>
<td>Русское Устье</td>
<td>Русскай Устье</td>
</tr>
<tr>
<td>Chokurdakh</td>
<td>Чокурдах</td>
<td>Чокуурдаах</td>
</tr>
<tr>
<td>Olenegorsk</td>
<td>Оленегорск</td>
<td>Оленегорский</td>
</tr>
<tr>
<td>Eastern Siberian Sea</td>
<td>Восточно–Сибирское море</td>
<td>Илин Сибирдээҕи байҕал</td>
</tr>
<tr>
<td>Allaikha Ulus</td>
<td>Аллаиховский Улус</td>
<td>Аллайыаха улууha</td>
</tr>
</tbody>
</table>
**Table C–2. Interview guide and planned outline of questions.**

<table>
<thead>
<tr>
<th>Group of interviewees</th>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GROUP A. LOCAL LEVEL</strong></td>
<td>Perceived vulnerability and adaptive capacity (Where you affected by environmental change? Can you describe your experience? Do you think that people from your community are at risk? Why? How did your community react? Which means did you use to cope with/adapt to?) Uncertainty and access to information and participation (To what extent did you have the access to information about environmental change and risks?) Institutions, interplay and drivers of change (What institutions and organisations are present, and how do they interact with each other? Do you think the practice changed?)</td>
</tr>
<tr>
<td>Leaders and members from communities who have been affected by the oil industry in Komi and Yakutia; Representatives of municipal governments, industry, civil society and media acting at the local level</td>
<td></td>
</tr>
<tr>
<td><strong>GROUP B. REGIONAL LEVEL</strong></td>
<td>What institutions and organisations are involved in responses to environmental change? Have institutional responses changed over time?</td>
</tr>
<tr>
<td>Regional government representatives, representatives of private sector, academics and civil society organisations acting at the regional level</td>
<td></td>
</tr>
<tr>
<td><strong>GROUP C. STATE LEVEL</strong></td>
<td>Has policy changed on the state level in response to environmental changes? What has stimulated/prevented institutions to change? Why? How?</td>
</tr>
<tr>
<td>Policymakers, government officials, representatives of private sector, academics and national and international civil society organisations acting at the federal level</td>
<td></td>
</tr>
</tbody>
</table>

*Note:* 1. Questions listed under “Topics” were opening issues to be discussed with interviewees and were followed by detailed questions in specific interviews about the local processes of environmental change.

2. As the interviews proceeded, and concerns and responses emerged, the specific focus of the interviews developed over time around resource extraction and climate change impacts and responses.
<table>
<thead>
<tr>
<th>#</th>
<th>Code</th>
<th>Place</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>GROUP A LOCAL LEVEL</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>KR1 – Komi Republic, the Pechora River valley (N=32)</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>C (N=15) – community members</strong></td>
</tr>
<tr>
<td>1</td>
<td>KR1 C1</td>
<td>Shelyaur</td>
<td>Reindeer herder, female, Komi-Izhma</td>
</tr>
<tr>
<td>2</td>
<td>KR1 C2</td>
<td>Shelyaur</td>
<td>Reindeer herder, male, Komi-Izhma</td>
</tr>
<tr>
<td>3</td>
<td>KR1 C3</td>
<td>Shelyaur</td>
<td>Employee in a diary unit, female, Komi-Izhma</td>
</tr>
<tr>
<td>4</td>
<td>KR1 C4</td>
<td>Shelyaur</td>
<td>Reindeer herder, male, Komi-Izhma</td>
</tr>
<tr>
<td>5</td>
<td>KR1 C5</td>
<td>Shelyaur</td>
<td>Employee of an agricultural education institution, hunter, male, Komi-Russian</td>
</tr>
<tr>
<td>6</td>
<td>KR1 C6</td>
<td>Shelyabozh</td>
<td>Fisher, driver, male, Komi</td>
</tr>
<tr>
<td>7</td>
<td>KR1 C7</td>
<td>Shelyabozh</td>
<td>Reindeer herder, male, Komi-Izhma</td>
</tr>
<tr>
<td>8</td>
<td>KR1 C8</td>
<td>Shelyabozh</td>
<td>Employee of a school, female, Russian</td>
</tr>
<tr>
<td>9</td>
<td>KR1 C9</td>
<td>Shelyabozh</td>
<td>Reindeer herder, female, Komi-Izhma</td>
</tr>
<tr>
<td>10</td>
<td>KR1 C10</td>
<td>Shelyabozh</td>
<td>Fisher, hunter, male, Komi-Izhma</td>
</tr>
<tr>
<td>11</td>
<td>KR1 C11</td>
<td>Ust’–Usa</td>
<td>Employee in an oil company, hunter, male, Komi-Izhma</td>
</tr>
<tr>
<td>12</td>
<td>KR1 C12</td>
<td>Ust’–Usa</td>
<td>Hunter, construction worker, male, Komi-Izhma</td>
</tr>
<tr>
<td>13</td>
<td>KR1 C13</td>
<td>Ust’–Usa</td>
<td>Driver, male, Komi</td>
</tr>
<tr>
<td>14</td>
<td>KR1 C14</td>
<td>Kolva</td>
<td>Construction worker, male, Russian</td>
</tr>
<tr>
<td>15</td>
<td>KR1 C15</td>
<td>Kolva</td>
<td>Unemployed, hunter, fisher, male, Komi</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>S (N=4) – civil society</strong></td>
</tr>
<tr>
<td>16</td>
<td>KR1 S1</td>
<td>Izhma</td>
<td>Member of a socioenvironmental movement</td>
</tr>
<tr>
<td>17</td>
<td>KR1 S2</td>
<td>Izhma</td>
<td>Member of ethnic movement leadership</td>
</tr>
<tr>
<td>18</td>
<td>KR1 S3</td>
<td>Shelyaur</td>
<td>Member of a socioenvironmental movement</td>
</tr>
<tr>
<td>19</td>
<td>KR1 S4</td>
<td>Shelyaur</td>
<td>Volunteer of a socioenvironmental movement</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>G (N=7) – municipal government</strong></td>
</tr>
<tr>
<td>20</td>
<td>KR1 G1</td>
<td>Izhma</td>
<td>Senior administrator, Izhma rayon administration and rural council</td>
</tr>
<tr>
<td>21</td>
<td>KR1 G2</td>
<td>Izhma</td>
<td>Senior administrator, Izhma nature protection office</td>
</tr>
<tr>
<td>22</td>
<td>KR1 G3</td>
<td>Izhma</td>
<td>Senior administrator, Izhma rayon administration</td>
</tr>
<tr>
<td>23</td>
<td>KR1 G4</td>
<td>Shelyaur</td>
<td>Senior administrator, Shelyaur administration</td>
</tr>
<tr>
<td>24</td>
<td>KR1 G5</td>
<td>Kolva</td>
<td>Senior administrator, Kolva administration</td>
</tr>
<tr>
<td>25</td>
<td>KR1 G6</td>
<td>Usinsk</td>
<td>Senior administrator, Usinsk town administration</td>
</tr>
<tr>
<td>26</td>
<td>KR1 G7</td>
<td>Usinsk</td>
<td>Senior administrator, Usinsk town administration</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>I (N=4) – industry</strong></td>
</tr>
<tr>
<td>27</td>
<td>KR1 I1</td>
<td>Izhma</td>
<td>Senior administrator, a reindeer herders’ cooperative</td>
</tr>
<tr>
<td>28</td>
<td>KR1 I2</td>
<td>Usinsk</td>
<td>Employee, an oil company (environmental monitoring)</td>
</tr>
<tr>
<td>29</td>
<td>KR1 I3</td>
<td>Usinsk</td>
<td>Employee, an oil spills response company</td>
</tr>
<tr>
<td>30</td>
<td>KR1 I4</td>
<td>Usinsk</td>
<td>Employee, an oil spills response company</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>M (N=2) – media</strong></td>
</tr>
<tr>
<td>31</td>
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*Table C–3. Record of key interviews and personal communications*
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**Note:** 1. KR refers to the Komi Republic; SR refers to the Sakha Republic (Yakutia). The number at the end of the code refers to the sequence in the interview schedule. For example, KR1 C5 represents the fifth interviewee from community in the Pechora River valley in the Komi Republic.

2. Specific dates and places are not given due to ethical considerations.
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Author/s:
Loginova, Julia

Title:
Just adaptation at resource frontiers: climate and empowerment in post-Soviet northern Russia

Date:
2018

Persistent Link:
http://hdl.handle.net/11343/217795

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