

**YAMAL ON THE EDGE: ARCTIC ENVIRONMENTAL
GOVERNANCE IN TIMES OF ACCELERATED INDUSTRIAL
DEVELOPMENT**

by

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Abstract

The changing landscape and economic relevance of the Arctic present a unique opportunity to monitor the change in interactions between people and the arctic nature as well as to shed light onto the top-down translation of the existing at different scales environmental governance regimes.

The Russian Arctic Zone occupies over a third of the total area of the Arctic, yet no Arctic-specific legislation or environmental protection authority exists to oversee the so-called 'resource base' of the Russian state. The growing competition for the influence in the Russian Arctic zone of various actors (international Arctic fora, foreign investors and suppliers, hydrocarbon companies, government institutions) already brings issues of ecological impact to the fore, render them visible, and provide space for renegotiating institutional, normative and other conditions. Yet, little is known about how these developments reflect on environmental governance or socioecological relations in the remote corners of the Russian Arctic affected by the new lap of industrialisation. The insight into environmental governance in the Russian Arctic with a case study of the area of Russia's flagman mega-project on Yamal peninsula, translated from Nenets as the 'edge of the land', may reveal the emerging mechanisms for environmental protection as well as ungovernable spaces in the ecologically and socioeconomically challenged area of the Far North.

The work done within the framework of Lefebvre's spatial trialectics superimposed onto the Russian Arctic attempted to understand and map the structure, scope and utility of environmental governance in the region and through socioecological lens to explore ground-scale interactions between human and non-human actants (individual and community-based behaviour that can impact the environment especially if

multiplied) in a case study conducted in Mys Kamenny, Yamal district, Russia in 2017. Yamal peninsula is an area of rapid socioeconomic development undergoing noticeable climatic and geomorphological shifts. Individual and community level relationship with the environment especially of non-indigenous descent is often overlooked in assessments of environmental integrity, yet it holds clues to the feedback loops between climate change, development and society.

The study found that using fieldwork-based research to analyse socioecological dynamics along with deep understanding of the Russian political, institutional and cultural context feeding into environmental governance of the Russian Arctic, can help better understand not only local but also generic governance issues of the present day Arctic and draw insights from a close-up view to the environmental governance on a larger scale. The insight from Yamal peninsula largely demonstrated how informal practices of non-indigenous locals and corporations tend to 'fill gaps' left by incomplete governance frameworks and capacities, while the outcome of such practices is ambivalent, it reflects that the Arctic industrialisation is predicated on the good will of actors to minimise the inevitable environmental impact.

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Chapter One: Introduction

1.1. Introduction

The Arctic region has been in the spotlight in the past decade due to ground-breaking publications on the polar amplification, Greenland Ice Sheet accelerated melt, Arctic 'greening' and sea ice loss (see Post et al., 2019; Bjorkman et al., 2018; Macias-Fauria et al., 2012). The science of climate change not only promoted the political discourse on regional risks but also prompted some countries, like Russia, to explore associated opportunities along its northern border. While Arctic environmental issues are being increasingly addressed at international fora, the workings and cross-scale translatability of environmental governance mechanisms remain *terra incognita* due to complexity and geographical diversity of socioecological relations of the region (e.g. DiMento, 2016).

Understanding the dynamic of these interactions could be especially informative for the North of West Siberian plain due to high positive climate feedback in the region, containing enormous amount of untapped gas deposits, and the accelerating and expanding industrialisation of the regional landscape with increasing numbers of immigrants from the non-Arctic provinces of Russia and other states. It is therefore important to understand whether the Russian Arctic is adequately and sufficiently safeguarded against the inevitable environmental damage of the new wave of extractive industrialisation in the context of climate change. Having set out to define and address this overarching question, one would need to look into how the emergent Russian Arctic regionalism has affected the Arctic environmental governance; how regional networks involved in the Russian Arctic development

reflect on prominence, interpretation of and interaction with the *ecological question* (see Mol, 1996) at different scales (village, district, Okrug, state) and in different groups of actors (i.e. work migrants, businesses, scientific and research opinion leaders, local and central government) in the Russian Arctic.

The Russian Arctic zone encompasses around one third of the total area of the Arctic. Recent developmental processes in the area, labeled a 'new industrialisation' (Karpov, 2015), rediscovery of the Far North (Leksin and Profiryev, 2015), and a megaproject, have been propagated as both nationally important (Ivanter et al., 2014; Selin and Ulchenko, 2012) and geopolitically determinant (Keil, 2014; Mikkola and Käpylä, 2014) and since 2008, the year of publication of the Russian Arctic policy foundations (2008) and later the Arctic Strategy (2013), stimulated an increasing number of discussions and analyses pertaining to the new political and economic role of the Russian North (e.g. Tatarkin et al., 2015; Carlsson and Granholm, 2013; Laruelle, 2014; Foxall, 2014). However, little attention has been paid to the government's attempts to regionalise the Russian Arctic in view of this development and assess how centre-periphery interaction and sovereignisation-globalisation nexus would affect a human-nature balance and circumpolar environmental governance within a particular place, the Russian High North or the Arctic macroregion as a whole, especially in view of the extreme fragility and likely irrecoverability of the northern ecosystems¹.

According to Bruce Forbes and colleagues who conducted an extensive fieldwork on Yamal peninsula, "unlike North American oilfields, where mitigation and rehabilitation

¹ According to Komarov (1994), to maintain ecological balance in the North, 98% of the tundra and forest tundra must be left untouched.

regulations are strictly enforced, disturbances on Yamal often expand with no legal consequence and most are left to regenerate naturally rather than actively revegetated” (Forbes et al., 2009). While the quote highlights the problems in the environmental governance system in Russia, simply asserting that Russia is not America, however, would not explain much in terms of environmental governance as a process and an assemblage of interactions between society and tundra.

The informal governance mechanisms that have emerged through socioecological interactions between local non-indigenous people, communities and businesses, and the natural environment, their usage and interpretation of nature, are key to understanding how institutional and normative governance ‘translates’ down and what barriers to monitoring and enforcement practices emerge on the ground level through socioecological interactions. In other words, socioecological research could help us uncover what factors are conducive to environmental stewardship in the context where normative and punitive ecological management is not always effective or sufficient.

Yamal peninsula presents an interesting case for many reasons: with hydrocarbon extraction put on hold in the 1990s and to late 2000s, its gas contribution has been increasing year-on-year, in 2017-2020 it has emerged a stronghold of the brand new Russia’s Arctic gas liquefaction, it is home to the largest herd of reindeer and Russia’s largest group of traditional nomads. It is one of the busiest site of the renewed industrialisation in the Russian Arctic (e.g. Matishov et al., 2013) which is also the most vulnerable of all the Russia’s northern territories and “possibly the most vulnerable parcel of land in the world” (Komarov, 1994, p.22). There are many potential points of socioecological tension in the region, some to be revealed and

some already in contention, like the decline of whitefish stocks in the Ob estuary following the deep seawater port construction. This place showcases how the Russian state is shaping 'contemporary socionatural relations' (Bridge, 2014) at present, and Arctic environmental governance epitomises how 'hydrocarbon culture', state investedness and informed and uninformed environmental discourses play out to affirm uncertainties of the Arctic futures. Past, recent and planned developments on Yamal peninsula indicate how socioecological relations *in situ* span beyond territorial and institutional formations through which the state organises and manages the exploration and conservation of natural resources in the Arctic.

The nexus of territoriality and ecology captured in research on Arctic communities has been predominantly indigenous and anthropological in the English language academic literature. Thus, while certain important sensitivities have been addressed, modernised and globalised contexts of the native populations' environmental practices as well as non-indigenous local demographic are generally omitted from such studies for various, often objective reasons (i.e. funding, design and methodology), but also possibly for presumed lack of 'value' of non-indigenous element to researchers seeking to improve outcomes of outside policy interventions in the Canadian and American contexts. The Russian Arctic is a demographically unique place in terms of the largest number of non-indigenous non-native residents across the whole of the circumpolar North, but very little is known about communities of small municipal villages of the major gas province that date back to the 1960s, when the Soviet Union government set up geological survey settlements in the north of Siberia. The role of non-indigenous inhabitants is often understated for reasons of temporality, minority, moral/cultural right, lack of traditional knowledge, but even in

the 1980s and 1990s in the Soviet North, environmental opposition to hydrocarbon exploration would come from the 'indigenolised' locals, suggesting connection between sense of place and environmentalism².

In order to explore the main environmental governance challenges faced by a national government seeking to exploit natural resources in a geographically remote area, using a case study of the new development of gas resources in the Russian Arctic, I had to answer the following research questions:

1. How does the socioecological perspective reflect and complement the traditional environmental management in the context of region-specific data deficiency and uncertainty about ecosystem and landscape dynamic?
2. How do these local experiences in Mys Kamenny sit across scales within the Russian environmental management system for the Russian Arctic and, conversely, how do the state-level institutional and legal mechanisms funnel down to the local level?
3. How do the non-indigenous locals in Mys Kamenny on the Yamal peninsula 'appropriate' the natural environment around them, make sense of it and what emotional connection do they make with the natural environment?

The response to the first sub-question is developed firstly in the 'Conceptual Framework' section (Chapter Two) and referred back to in the empirical chapters Three and Four. The second sub-question is addressed in Chapter Four: Scale and source of environmental governance in the Russian Arctic. The third sub-question is discussed in Chapter Five: Changing dynamic of socioecological interactions in the

²"Like my parents, I was also born in the North, and though we are Russians, we consider ourselves native inhabitants. In our view, the occupying forces of the oil kings have ruined everything" (quoted in Vitebsky, 1990).

Arctic development 'hotspot'. The Conclusion (Chapter Six) sums up the findings which lay a foundation for the overarching question of the research.

Empirical data was collected on several field trips conducted in 2017. While some interviews were recorded in Moscow and Reykjavik, the bulk of interviews were carried out in Salekhard in February-March 2017 and then in Mys Kamenny, Yamal district in May 2017. Salekhard is the capital of Yamal-Nenets Autonomous Okrug, it lies on the Arctic circle and is accessible by direct flight from Moscow. Mys Kamenny is a municipality that is located at 68.4421° N, 73.5854° E on the eastern coast of the Yamal peninsula, it requires a special permit from the Federal Security Bureau and in winter months is only accessible by helicopter (over 3 hours from Salekhard). The semi-structured interviews were carried out with state and regional top officials involved in the Russian Arctic policy making. Semi-structured interviews were conducted (N=14) with residents of the village with the purpose of observing and analysing the relations between locals and their natural environment in view of industrial and ecological changes taking place on the Yamal peninsula since early 2010s, specifically addressing fishing, hunting, waste generation, foraging, pet animals, environmental education. The first part of the dissertation addressed the political, legal and institutional framework, scientific data availability and research, non-governmental mechanisms of environmental protection, conservation, the role of environmental NGOs and public awareness as sources of environmental governance in the Russian Arctic context. The second part focused on the Yamal peninsula, northeastern district of the Yamal-Nenets Autonomous Okrug, its development, population and socioecological relations in Mys Kamenny community, which among

other district settlements has been affected by environmental degradation and the recent oil and gas development.

The environmental governance across scales is perceived as potentially complementary rather than oppositional, i.e. an individual acts as a source of EG inasmuch as the state especially in areas where interpretation of environmental procedures, environmental management and law enforcement are dominated by the geography. EG is interpreted mostly neutrally as a set of mechanisms and processes that govern socioecological interactions, while semantic equality between man and nature is assumed.

This research attempted to record the many ways and forms of environmental governance in the Russian Arctic through a place-based qualitative research and to expose and analyse the blind spots of the large-scale environmental governance literature on the one hand while highlighting historical, economic, lifestyle and demographic factors that all contribute to the EG praxis and SE interactions. While it is a case-specific inquiry, the observations will be highly relative as to the EG theoretical elaborations so to EG research across the Arctic.

Chapter Two: Conceptual Framework and Methodology

2.1. Conceptual framework

2.1.1. Bounding the Arctic region: definitions and theories

The Arctic, as Steinberg et al. (2015) have referred to it, is a space that defies territorialisation but instead produces multiple instrumental meanings detached from its material representativeness. A review of various interpretations and conceptualisations of regions and regionalism rests upon diverse disciplines (geopolitics, political geography, international relations, human geography, political ecology...) and conflates a wide range of ontological and epistemological perspectives. The present overview will look at the main milestones and ideas that have dominated the discourse, in particular, the ideas that can be transitioned and developed further in the study of emergent Arctic regionalisms.

Bhagwati distinguished two waves of modern regionalism - the former originating in the 1950s and the latter in the 1980s (1993)³. Regionalism has until recently been studied as a European phenomenon with all other forms of regional integration being considered in comparison with the European experience. Other forms of regionalism are often considered in terms of their proximity to the highly institutionalised regional organisation of the EU. For instance, international relations (IR) neofunctionalist school (Haas, Nye) focused mainly on Europe using a progressive teleological paradigm (idea of a progressive and desirable nature of integration) and for other

³ There are differences in opinion on the timeframe and distinctive features of the 'waves' (Cf. Schultz and Verschuuren, 2015).

non-European cases used such notions as “background conditions”, “functional equivalents” and “spillover” derived from the study of Europe. The third wave or regionalism was associated with the early 2000s (see Covarrubias and Domniguez, 2015, p. 13; Molchanov, 2015) and described as a result of changing roles of emergent economies brought together by common external risks (e.g. BRIC). Benson (2007) suggested that the third wave was not only marked by the increase in Asian and Eurasian integration but also by the trend-setting role of China. Since 1991 the tripolar regionalism underwent a fundamental transformation with the Second World represented by the Soviet Union disappearing off the map (Agnew, 2013), which changed the context and the points of reference for the regionalism theoretical framework. That and the rise of globalisation affected theorisation of a region as, among others, can be applied to the Arctic. Consequently, the regionalism and ‘new regionalism’ discourse began to quieten or diversify in scale and focus from traditional territorial schools of thought (e.g. Drier et al., 2001; Hettne and Soderbaum, 2000), which became especially apparent after the financial crisis of 2008-2009. The study of regional integration “was deserted in favour of wider and non-territorial logics and patterns of integration and interdependence” (Soderbaum, 2015, p. 22). As was noted by Addie and Keil (2015), the critical debate has also “hit a certain hiatus” (p. 407) (shifting noticeably towards urban regionalism (e.g. Soja, 2015)).

Traditionally, the concept of regionalism existed at least on two readily divisible spatial planes - macro-scale cross-national and micro subnational level with International relations and urban and regional studies concerned with the former and the latter respectively. Following the decline and reconceptualisation of region and

regional studies (Soja, 2015), there has been a revival of interest towards regions at scales other than civilisational blocs (Perkmann, 2007; Agnew, 2013; Soja, 2015; Garcia-Alvarez and Trillo-Santamaria, 2011) and attempts to merge conceptual frames and different scales (e.g. inter-state sub-national regionalism, global urbanism).

There are numerous co-present contested and complimentary definitions, usages and classifications of a region in the contemporary research (based on scale, un/boundedness, territoriality, temporality, purpose, social construct, region as context/frame of reference/container...) (e.g. Allen et al., 1998; Schmitt-Egner, 2002; Amin, 2004). According to political economist Hettne and New Regionalism scholar Soderbaum, there are no 'natural' or pre-given regions; regions are "created and recreated in the process of global transformation" (2000, p. 12). Similarly, the essentialist interpretations of a region have been criticised by other scholars (e.g. Keating, 1998; Painter, 2008; Allen et al., 1998), yet some academics continue using the term 'natural region' interchangeably with bio- or ecoregions, i.e. entities whose objective existence is not upheld by individuals or societies and that have been constructed through "social demand for a nature-based vision of the world" (Debarbieux, 2012, p. 121-122)⁴. Certain natural phenomena (e.g. monsoons) have been ascribed a constructive force in shaping regional arrangements (Taniguchi and Yasunari, 2013). Paasi (2010) analysed the 'passive' nature of regions asking who or what "constructs" them, whether 'construction' refers to the process or the product and how the "*fragmented* complexity of agency and the multitude of actors

⁴ REG study of natural areas, such as mountain ranges, river basins, etc., is ontologically different from the research that focuses on institutions, organisations and practices concerning an environmental issue (Debarbieux, 2012).

related to region building” (p. 2300) shapes the research as an empirical study of “mundane practices and networks” rather than the explicit construction. According to Paasi’s generalisation, a region is used as a spatial frame, as an academic construct, or a practice/ discourse and should, perhaps, be understood in Latour’s terms as “a region = a network = an actor” (2010, p. 2300). In that sense, the Arctic region would hardly be considered a region on a global scale; its existence on the map, in other words, does not make it a region in political terms. Diversification of a spatial frame allowed to converge Arctic political interests (if any) with its fixed territoriality.

Keskitalo differentiates between homogenous, united by sociocultural and behavioural traits, and functional, politically defined, regions (2004). Oxford Handbook of Comparative Regionalism (2016) defined ‘regions’ as inter-national entities, yet acknowledged that a state is not a proviso for an inter-regional relationship. Hettne and Soderbaum concurred that regions’ dimension and intentionality may vary, however territorial contiguity is a prerequisite construct of a region (2000). One of the most popular, general and implicit definitions of a region is that of “a homogeneous block of space that has a persisting distinctiveness due to its physical and cultural characteristics” (Agnew, 2013, p.7).

The Russian regional scholarship that developed independently in 1960-1970s, and subsequently the Russian political science interpreted a ‘region’ as a (pre-existing) territory characterised by social, ethnic, economic, spatial proximity and connectedness that represents either a part or a whole and is located at either subnational or international level (Mezhevich, 2006; Tsyrenov, 2012; Ganicheva, 2012). It is common to differentiate ‘international regionalism’ from regionalism *sui generis* (e.g. Barygin, 2009).

For almost a decade territorial perspectives onto the regionalism have been challenged through relational approaches (Massey, 2005) that to a certain extent override significance of territorial boundaries (e.g. Allen and Cochrane, 2007; Zimmerbauer, 2013; Zimmerbauer and Paasi, 2013; Goodwin, 2013; Jones and Paasi, 2013). According to Jones (2009), region is to be understood relationally as an “open-ended, mobile, networked, and actor-centred” entity (p. 487). Relationality seeks to overturn notions of space as static, closed and bounded (Massey, 1994) and implies prevalence of functional ties within a region over formal, territorially inscribed regionalism. Homogeneity within a region has also been challenged by the view that regions are often formally defined and no attention is paid to what actually binds and holds the region together (e.g. Hohejnberg and Lees, 1994; Agnew, 2013). Contrary to the idea of a pre-given region and spatial determinism, Amin (2004) argues that there is no “defined geographical territory out there over which local actor can have effective control and can manage as social and political space” (p. 36). Werlen (2005) proposed to focus not on the production of spaces but on the use of spatial and temporal dimensions for regionalisation (i.e. world-binding, ‘selective appropriation of the world’ (p.55)). According to him, regionalisation is an everyday process carried out by subjects through their actions. Relational approaches drew attention to ‘unusual regions’ (e.g. Zimmerbauer, 2013) that are based on supra-national collaboration but defy existing territorially bounded regions. Zimmerbauer came to a conclusion in his study of the Barents region that region-building in this area is constituted in networks and processes that may be territorially bounded in certain practices while unbounded in other contexts.

Relationality-territoriality 'non-debate' is far from being resolved and often serves as a point of bifurcation in empirical studies of regions and regionalism (see Varro and Lagendijk, 2013) with a combination of both - "space as a territorial anchorage" and "space as topological, fluid and relationally mobile" (Jones, 2009, p. 10) - being offered as a compromise (e.g. Hudson, 2007; Jones, 2009). One of such 'combinations' is the idea of 'phase space' (Jones, 2009) that explains a space (i.e. region) as a result of tensions between spatial fixity and flow.

These ideas helped incorporate established networks, e.g. North-South, centre-periphery, into the understanding of the Arctic and suggested that its regionality may be more geographically clustered than circumpolar (see French et al., 2016).

In terms of scale, contrary to territorial hierarchy from local to global, the relational framework interprets regions as hetero-scalar or non-scalar and hence analytically connected to and inseparable from other scales (Jonas, 2012). Spatial hierarchies and formal (i.e. legally recognised or institutionalised) regionalisms are transcended in favour of regions produced through sociospatial relations deriving from specialities of connectivity and flows. Balsiger (2012) proposed that "the idea of overlapping and socially constructed functional spaces can be captured by the term

"heterarchy" (Balsiger, 2012, p. 7-8). Heterarchic definition allows to approach a space as intrinsically multiple networks of interaction that defy territorial boundaries.

In the globalised world, the Arctic region, too, becomes an area of flows and connectivity only to highlight imbedded intraregional tensions (e.g. between South and North) as well as to access its nested geographical scales.

To deepen such interpretation of the region, Lefebvre's Triadectics (Lefebvre and Nicholson-Smith, D. 1991) can be applied to the Arctic space in the following fashion:

1. Espace perçu: 'objective' physical space of the region known as the Arctic, which, however, cannot be easily mapped or fixed in time, hence it is perceived as a combination of constants (northernmost rim, e.g. above 66° northern latitude, represented mostly by the ocean covered by the sea ice, habitat for certain endemic species (e.g. Niskanen et al., 2019). Ultimately, whichever property is stressed, the definition of the 'perceived space' is apolitical.
2. Espace conçu: this is the Arctic as constructed by various actors, including the scientific community (e.g. 'disappearing' Arctic) and governments as within so outside of the region. In the case of Russia's Yamal, we can pull out a number of such 'Arctics' depending on the applied scale (what is true for the whole of the Russian Arctic may not be so for its particular part and vice versa), level of engagement or responsibility (e.g. federal Parliament vs. regional Duma or oil company headquarters vs. operating unit), perspective (internal or domestic vision vs. external vision or representation), and other such projections. The conceived space may be based on the perceived space, however, it is politicised, charged with a certain agenda, goal or future vision. For instance, the Russian policy foundations of 2008 painted the region as the resource base, whose sole purpose is to lift the country's economy. Such representation sees the region as a non-place which acquires value through colonisation and capitalisation of its resources. What such imaginary depicts is as important as what it omits - in this case it is the intrinsic value of its environment and the impact of extracting socio-economic value from the Arctic for the benefit of other regions onto the Arctic itself.

3. Espace vécu: Arctic as seen from the Arctic, experienced as a lived space. This representation can easily be confused with that of the indigenous Arctic (e.g. Vannini et al., 2009; Mustonen and Lehtinen, 2013). In case of the Russian Arctic, where non-indigenous population prevails, non-native locals affect and are affected by the place at a significant scale. This space is where perceived and conceived are enacted, and thus present an opportunity of empirical insight into both of these interactions - as with the physical environment so with the political and ideological domains. In fact, Arctic immigrant workforce from early exploration settlers to present day Arctic boom, has had the power to influence the way the space is produced and the interactions within it. In case of Russia, local-scale observation of the Arctic as a lived space may be indicative of the socioecological processes, interactions (e.g. conflicts) between indigenous and non-indigenous population, businesses and the state, as well as possible trajectories of its colonisation (e.g. building-up, urbanisation, abandonment, ruination).

While this trialectics gives a useful layer to the geographical discourse, it allows for certain flexibility in methodology and its subsequent application. The issues it addresses include: a) lack of regionalism theory that could embrace the complexity of the Arctic region as simultaneously a multicultural and political space, a place of action and interaction, as well as a vector of projected development and change, a space of visible geomorphological change; b) the difference in scale does not explain the differences in definition, problematisation and governance of the Arctic region; c) local does not always imply 'small', for instance, the impact of the localised development in the Arctic may and is likely to have a global impact.

Table 1. Practices and spaces (Werlen, 2005, p. 53).

Type of practice	Type of space
Spatial practice	Perceived space
Representation of space	Conceived space
Space of representation	Lived space

Regionalism of the Russian academic literature, largely disjointed from the theoretical discourse of the European scholarship, on empirical level is chiefly concerned with issues of centralisation/ regionalisation and centre-periphery relations (e.g. Libman, 2011), subnational integration (e.g. federalisation) (Kolobov and Makarychev, 1999; Plotnikova, 2012), post-Soviet and current integration projects (e.g. Mikhaylenko, 2015 on failed post-Soviet CIS integration project; Siniauskas, 2013 on transboundary regionalism), and more recently with the issues of strategic regional planning (e.g. Volkova, 2013). In the regional development literature, Russian scholarly lexicon of “regional modernisation or regional development” has been succeeded by “spatial development” to reflect an integrated approach towards peripheral economic growth and a new strategy of territorial integration (on paradigm shift see e.g. Kotlyakov, 2013). “Space serves as a singular integral resource, which is at the same time a limiting condition for the country’s integrity and development” (Kotlyakov, 2013, p. 119). The eastern and northern vector of the new regional policy, interpreted within geopolitical (as a stake out) or regional development (counteraction to regionalism) frameworks, brought about new kind of spatial development projects (e.g. Zamyatin, 2004; Vonkurov and Libman, 2013), such as the one undertaken in the Russian Arctic zone. While ‘spatial’ study allowed to overcome limitations of disjointed socioeconomic and later added cultural aspects

of territorial development and recognised environmental disparity, it has yet to provide a means of incorporating ecological question into issues of socioeconomic modernisation and question the existing basis of human-nature interaction.

The review of regionalism scholarship 'evolution' revealed the absence of universalism and unity relative to the definition of a 'region', to its scale in terms of its relation to reality (ontology) and in its epistemic usages. A lack of comparative regionalism studies, on the one hand, and the conceptual negligence for territoriality⁵ and underuse of temporality, on the other, may have contributed to the theoretical heterogeneity between various disciplines that use the term. At the same time, various theoretical aspects, e.g. relationality, non-state actors, eco-region, can help deepen understanding of the complex Arctic regionality.

The idea of a region produced through relationality is a useful and productive concept for explaining how 'regions' are made, sustained and developed, yet such processes take place and are operated through a bounded space such as a state or a supra-/subnational entity and hence may only to a certain degree be considered 'unbounded'. Generally, theories of regionalism and new regionalism have been criticised for being fragmented, parochial and eurocentric (e.g. Soderbaum, 2013) It may as well be that relationality with its empirical focus on Europe has inherited some of these flaws - it is yet to be comparatively tested in other regional contexts. At the same time, the move from international relations rigid definition has allowed to reinterpret the Arctic as an idiosyncratic space as opposed to a contested rimland of the Cold War powers.

⁵Delaney (2009) gave an overview of conceptual complexity of the terms territory and territoriality in the context of human geography.

2.1.2. Russian Arctic: territorial, normative and discursive definitions

Despite the conventional representation of the Arctic as an area located above the Arctic Circle, its legal definition and border delimitation has been problematic due to the difficulties in determining common features throughout the landscape (Tatarkin, 2014). The Russian Arctic zone as a whole was designated a macro-region in 2014 (Federal Law on State Strategic Planning of June 18, 2014⁶), a special area of state governance that implies similarity of economic and political interests (and naturally that of geographical conditions). Yet, little affinity and lateral interactions between Arctic territorial units have been identified (Emelyantsev, 2014) while most of the resources required for the regional development are being outsourced from outside of the Arctic region (Minakir and Goryunov, 2015). The Arctic region-building is a top-down process (Keskitalo, 2004) and presupposes a central mechanism of macro regional governance (similarly to the Ministry of the Far East Development created in 2012 for the respective macro-region), which in the case of the Russian Arctic has been realised in the form of a State Arctic Committee that was established in March 2015. According to Emelyantsev, the fact that Russia has territorial ministries suggests that an effective federal system failed to properly materialise (2014, p. 25). Consequently, the Arctic macro-region is not a result of bottom-up political evolution or regional cooperation but a function of a central state geopolitical and geoeconomic ambition. As was emphasised by Slipenchuk in his magna opus '*Arctic: economic dimension*', the Soviet model of geographical exploitation is now out of date and that the regional governance model should reflect the shift in the paradigm from technical-economic exploration to sustainable development (2013, p.17), but so far there has

⁶ http://www.consultant.ru/document/cons_doc_LAW_164841/

been little evidence of this. This phenomenological definition of the Russian Arctic - that is what it should be - is a common denominator in the Russian language academic literature.

In addition to functional descriptions, social and cultural scholars refer to the Arctic as “a condition” of northerness (Griffiths, 1991, p.86), a geocultural non-place (e.g. Shabayev et al., 2012) expressed linguistically through the concept of *Russkiy Sever* (the Russian North), or a sociocultural entity defined as a vernacular mental cultural region (e.g. Kalutskov, 2013). A number of cultural as well as political imaginaries of the Arctic as a whole has been acknowledged to exist in the international environmental and geopolitical discourse as well (e.g. Steinberg et al., 2015; Huebert et al., 2012). Horensma (1991) put forward the concept of the North as an identity. He demonstrated the workings of the idea of the Arctic’s ‘glorious past’ in the Soviet Union that, according to him, had been steadily narrated and promoted since 1928 and became strongly linked to the ‘national pride’ (such de-mythologisation of the Arctic exploration and research was referred to as ‘destalinisation’ (p. 174)). Hence divergence from the romanticised versions of the past polar exploration would require deconstruction of a national identity based on sociopolitical, technological and spiritual superiority of the Soviet (Russian) people that the “conquer” of the North fed into.

Building on similar notions of place-based identities, Griffiths (1991) explored ‘man-milieu’ relationship in the Soviet North. The process of *osvoenie* (exploration, mastery) of the Arctic was, according to the author, not only economic but also psychological as in the attempt to “denorthify” the North it was also the Russian people that underwent transformation while the natural aversion to living in harsh

conditions was suppressed (p. 88). The identification with the Arctic, Griffiths concluded, was more derivative and generic than intrinsic and specific (1991, p. 94). Griffiths ended his historical recount at the start of *perestroika*, that he optimistically associated with a preservationist ideology.

Nazukina (2013) argued that the history of Arctic exploration, economic specialisation and similar environmental and weather conditions (and hence lifestyle) are a sufficient basis for a macro-regional sociocultural identity (cf. Hettne's regionness). The notion of Northern identity has also been explored by Popkov and Tyugashev (2013) and Shachin (2015) who see the Arctic as an ultimate frontier of human oecumene, yet undisciplined and unobjectified, and propose the metaphysics of the North as a method for thinking up a different type of relationship between man and nature realised through *poiesis* (non-exploitative productive behaviour) and preservation rather than technological exploitation.

The question of historical continuity and path-dependent trajectory of the renewed exploration in the Arctic reveals differences in academic opinions and generally reflects the polarity of exogenous and endogenous views on Russia and its politics. Seliverstov (in Tatarkin, 2014, p. 190), for instance, draws on differences between the exploitative and aggressive Soviet approach towards its northern territories versus liberal and democratic conditions that exist nowadays and concludes that 1990s was a turning point for historical and strategic continuity and year "zero" of the Russian policy in the North and the Arctic. Thompson (2008) who looked at regional behaviour of the Soviet and Russian states in respect of the 'indigenalisation' of the European settlers in Chukotka found that 'regime change' did not affect the hegemonic neo-colonial structure of social relations (p. 9). Josephson (2014) stressed the similarity in

approaches to the Russian Arctic across the two epochs comparing Putin's re-industrialisation vision to Stalin's modernisation agenda as in placing strategic importance on the Arctic resources, so in disregard for the fragile Arctic ecosystems (p. 3).

Framing the Russian Arctic as a biophysical region has been inseparable from discussing political shifts from the Soviet Union to Perestroika to Putin's regime. Pier Horensma (1991) who gave a comprehensive historical account of the main periods of the Arctic development from the late 19th century exploration to the end of the Cold War, stressed the role of technological advances as well as reactive measures that facilitated the changes in ideological interpretations of the region. Ecological strand of the research conducted in the Arctic had not been developed in the Soviet era, according to the author, because of its ideological incompatibility with the 'Promethean' materialist philosophy. Conversely, Griffiths interpreted the 'shelving' of large industrialisation projects in the North in the 1980s as evidence of growing environmentalism in the Soviet Union. A Soviet ecologist Ze'ev Wolfson (Boris Komarov) brought to the fore the instrumental role of 'vastness' of the Soviet landscape in shaping the psychology of the population and its attitude towards their environment as a bottomless waste sink (Komarov, 1994, p. 15). He wrote that the rate at which the Soviet Union wasted resources was more significant than the rate at which it extracted them; and the area that bore the heaviest brunt was Siberia and the North⁷ (Komarov, 1994, p. 18). The 1980's treatise *The Destruction of nature in the Soviet Union* by Komarov (in Nelissen and Klinkers Classics in Environmental Studies 1997, pp. 163-172) pointed at the society as a whole as being a source of

2 million square kilometres of disaster area in Siberia and the North (Komarov, 1994, p. 19).

the ecological demise: “a society’s attitudes toward nature bear the mark of all the relations and attitudes that have evolved within society” (p.164). Hence, ecological problems, according to Komarov, can be solved by simultaneous changes in the economy and in the social and moral foundation of the society (p. 165). The author also noted that environmental criticism was censored since no contradictions could have been allowed to basic superiority of socialism in everything including the ecology (any critique would have been labelled “Sakharovism”) (Komarov, 1997 (1980)). Hence not only the society projected the ‘depraved relations’ onto the environment, it was largely unaware and unconcerned of doing so. “The more thoroughly ecological policy is kneaded with the yeast of ideology, the less room remains for flexible economic decisions, for the exchange of valuable experience accumulated throughout the world” (Komarov, 1980, p. 169).

Roginko (in Brigham, 1991) analysed Soviet ecological legislation in relation to the Arctic, in particular the ground-breaking 1984 decree on nature protection in the regions of the Far North and the sea areas adjacent to the northern coastline of the USSR and academic practices in place at the time that had been interrupted by the events that ensued in 1991-1993. Although the Russian environmental legislation is based on the work of the Soviet scholars (Batycho, 2009) and while its development has been influenced by the international institutions (e.g. Chistyukhina, 2008; Ivanova, 2011), the continuity of the legal system is debatable and deserves a separate enquiry.

According to the Russian scholars, the Russian Arctic zone requires a special legal regime that would take into account its climatic, ecological, socioeconomic, cultural and historical conditions (Khabrieva and Kapustin, 2015) in order to withstand the

challenges of the new industrialisation. The Arctic policy in present regulatory circumstances shall be seen as an “instrument of a struggle” against the uncertainty of the natural and social dynamics in the region (Pilyasov et al., 2015, p. 11). The scholars proposed that a new ‘system-forming federal law ‘On the Russian Arctic’ was adopted (Khabrieva and Kapustin, 2015, p. 264) in order to ‘update’ the regulatory approaches in terms of applicable concepts and definitions (Khabrieva, 2014). Back in the early 1990s, the normative approaches towards environmental protection were recognised as inadequate while the self-organisation approach was proposed as a solution to the one-fits-all regulatory model (Volkova, 1993). The dominant view in the Russian scholarship, however, has remained that of supporting central mechanisms, national and supranational, of environmental regulation and enforcement over local and regional governance and the only viable attempt to use local knowledge and practices in creating and preserving areas of indigenous habitat (so called Territories of Traditional Natural Resource Use) has been widely critiqued as unaccomplished and unenforceable (Solovyanov, 2011).

The discussion on political, legal and environmental discourse continuity in the views of and approaches to the Russian Arctic is still ongoing in the Russian as well as Anglophone scholarship with similarities between the past and the present attitudes and approaches often being (mis)interpreted as legacy and continuity, hence analogies between the Russian and the Soviet development agendas, approaches and objectives are to be treated with a certain amount of caution.

2.1.3. Arctic region: a whole or a sum of its parts?

The Arctic has long been seen as a political entity especially inasmuch as the 'Arctic waters' were concerned (e.g. Young, 1987; Harders, 1987; Griffiths, 1988; Keskitalo, 2007; Knecht, 2013). The discourse around regionalism in the Arctic developed in tune with the politics *du jour* reflecting (with a certain degree of optimism) on the transition from militarism to civility, from local agreements to regional institutionalisation (e.g. Young, 2005). At present the Arctic is increasingly seen as a region of growing global ecological concern (e.g. Nord, 2015).

Knecht has argued that IR 'new regionalism' perspective provides a bad fit for the Arctic region due to its geographical features: low population density, vast area, clustered development zones and other socioecological traits that limit socioeconomic interactions between Arctic states and prevent cultural homogenisation. The regionalism in the Arctic, he argues, is "more reactive and output-oriented towards a restricted set of collective problems" (2013, p. 4). With an expanding and blurring definition of 'Arctic stakeholders' (Ikonen, 2016), the regional boundaries are becoming more porous and insignificant as non-Arctic actors draw nigher to staking claim in the regional governance.

The Arctic has become a region of international cooperation only a few decades ago and the circumpolar regionalism has been strongly linked to and associated with the Arctic Council, an advisory international organisation with eight Arctic state-members and non-Arctic observers which was founded in 1996 (e.g. Oak, 2014; Keskitalo, 2007). Nicol and Heininen (2009) studied the Arctic as a new forum for 'east-west connectivity' (p. 11). The Arctic Council, according to the authors, was effectively made possible in the aftermath of the collapse of the Soviet Union while science and

environmental cooperation was seen as an 'entry-level' cooperation framework (Nicol and Heininen, 2009). Nicol and Heininen also remarked that the geopolitical imperatives that characterised the early circumpolar integration process in the late 1980s to mid 1990s have by the late 2000s undergone a significant transformation. The Arctic Council expanded areas of its concern to the point of speculation of initiating a broader debate on issues of economic development in the North, however the rise of security rhetoric in Russia, USA, and Canada put the international social and environmental agenda on the back burner.

The limited functionality of the Arctic Council as well as a recommendatory character of its work have attracted criticism from various sources (e.g. Graczyk and Koivurova, 2015), however the organisation generally has not been criticised in principle or compared to other forms of international or interregional interaction (including non-institutionalised or informal). On the contrary, it is lauded⁸, despite acknowledgement of its shortcomings, for its ultimate beneficence for the causes of regional discursive awareness, region-building and political mobilisation (Koivurova and Vanderzwaag, 2007; Kankaanpaa and Young, 2012; Stokke, 2007; Griffiths, 2012). Certain other kinds of relations (e.g. associated with industrial, transport or military sectors) that are being produced and fostered in the region, national interests and direct pressure of extra-regional powers onto the Arctic Council are considered externally threatening to the integrity and efficacy of the indigenous, environmental and consensual framework of the Arctic Council, which is perceived as synonymous with the Arctic region *par excellence* (e.g. Oak, 2014; Keskitalo, 2007).

⁸ The Arctic Council has been recognised as one of the most progressive regional organisations in the world (Dodds, 2013).

Alluding to Braudel's 'Monde Mediterranean' and the 'Arctic Mediterranean' discourse of the 1940s, the Arctic ocean has been reinstated as a new geographical pivot thanks to the changing environmental conditions and potential for peaceful resource exploration (however, studies allude to the region in a metaphorical sense) (Antrim, 2010; Dodds, 2010). Pilyasov (2010) used this simile to strengthen his argument for regional cooperation over regional confrontation. Contrary to this view, Young (2005, p. 9) saw the Arctic as fundamentally different to other territorial unities describing it as a "region of peripheries" of the seven Arctic states, thus transposing the political power to the southward metropolises. Scholars that focus on the Russian Arctic development often cite the proverbial idea of the Russian Arctic as a strategic resource base (e.g. Chilingarov and Lizun, 2012; Treskin and Bormotov, 2012) evoking a notion of quasi-colonialism (see also Nuttall, 2005, pp 407-408; Hough, 2013, pp. 87-92; Lajus, 2011). Soviet exploration of the Arctic has been described as domestic colonialism⁹ by Wråkberg (2013, p. 195) and 'internal colonialism' by Lajus (2011, p. 164).

The physical delimitation of the Arctic or the indeterminacy thereof (Knecht, 2013) has not been an obstacle to regionalisation of the Arctic, in fact multiple borders exist depending on the functional framework of a project that defines them (e.g. Arctic Council working groups). The transboundary and transitive nature of oceanic and atmospheric flows in the High North cause interdependencies between Arctic states and peoples even though economic, cultural or political ties may not exist between them (Knecht, 2013). Hence physical boundedness of a socially unbounded region

⁹ More on postcolonial Arctic and Arctic colonialism in Western Europe can be found in Huggan (2015).

may only be perceived dialectically through a combination of relational and territorial conceptions.

The universal value of the Arctic has been underlined through such definitions as 'Arctic exceptionalism', which categorises the region as one-of-a-kind and hence universally important (Kapyla and Mikkola, 2015), 'Arctic globalism', which has been referred to as a spatially-oriented interest of all non-Arctic stakeholders (e.g. China) (Knecht, 2013) and the 'Common Arctic' underlining the commonality of interests, concerns and resources in the Arctic perceived as a global commons (Bartenstein, 2015). The concept of common heritage of mankind that is applied to the High North (Bovenberg, 2006) is thought to be undergoing deconstruction through nationalisation of the continental shelf. This Grotian tendency of appropriation and territorialisation of the commons (i.e. deep ocean seabed) by the states individually or in concert (acting through A5 or another forum of the Arctic states) might have significant consequences for the legal regime (Rossi, 2015) as well as the capacity for regional environmental governance.

Russian contemporary regionalism has been studied by Russian and international scholars synchronously with the events that unravelled in the early 1990s and progressed through to the 2000s, and has been mainly understood as the regional politics of the Russian state. There are two contradictory yet non-conflicting views on the formative stages and processes that took place from the collapse of the Soviet Union and the adoption of the current Russian Constitution to the 'puzzling decline' in regionalism from 2005 onwards (Goode, 2008). Some scholars (Sulakshin et al., 2007; Kotlyakov, 2013) argued that it was the regional differentiation and economic disparity with haphazard federalisation that resulted in further economic deterioration,

interregional competition and political tensions that required a new source of political organisation that was ultimately found in centralisation of power during Vladimir Putin's first two terms as president (2000-2008). Other researchers (Goode, 2008; Aldis and Herd, 2003) explored a strength-weakness balance between regions and the central government (manipulating elites vs. leveraging resources). Richard Sakwa (2008) offered a notion of segmented regionalism to denote the disparity in the canvas of Russian federalism during Eltsin's presidency that has become a bone of contention of Putin's policy of centralisation. Ostroumov and Ostroumova (2015) noted a mixed redistributive and stimulative character of the Russian regional policy that interchanged depending on the situation of relative stability or crisis.

The territorial policies and interstate regionalisation may offer a useful insight for studying cross-border regionalism, however conventional disciplinary scales (e.g. multinational in IR, subnational in political studies) have prevented scholars from integrating the two problematic fields. Understanding subnational territorial arrangement may be especially relevant for hinterland as it is where issues of sovereignty and centre-periphery relations are at its most pressing.

Generally, regional research in Russia has been mainly fragmentary and mono-disciplinary (Kotlyakov, 2013); the Russian Academy of Sciences attempted to systematise the existing knowledge and trends in regional scholarship in Russia. A multidisciplinary programme of research "Role of Spatial Development in the Modernization of Russia: The Natural and Socioeconomic Potential" was conducted from 2012 to 2014 by more than two dozens of Russian Academy of Sciences institutes. The timeliness and urgency of an integrated approach is supported by the fact that the government largely relies on "the theoretical constructs, research

outcomes, and practical applications that were mostly obtained in the Soviet period” (p. 119). This and the ‘short-sighted attitude’ that prevailed in the 1990s can result in magnification of risks of decision-making related to the current and future development, including the Arctic mega-project. Energy sector was studied from the point of view of its spatial organisation and disparity between supplier and consumer regions while issues related to macro regions (including the North) coalesced mainly around problems of borders (cross-border integration and exclusion). Minakir and Goryunov (2015) distinguished three target areas of the Arctic project: resources, security and defence in the Russian High North, and a new transport corridor, and stressed that such an endeavour will put a strain on the whole Russian economy, especially given the long-term economic stagnation, hence the term ‘Arctic’ is ill-suited as for projected benefactors so for the areas-donors of human, scientific, technological, and financial resources. This definition would support the relational definition of the Russian Arctic.

Described in a polysemous and hybrid manner, as a place of action as well as inaction, presence and absence, the Russian Arctic would fit better in Jones’ (2009) and Amin’s (2004; see also Massey et al., 2003) spatial logic of flows, connectivity and networks than that of a territorial unity. This abstraction would also reflect the geophysical changeability of the arctic land and sea landscapes.

Although Arctic regionalism has been studied in terms of European and American cooperation, there is a lack in analysis of intersections between the AC functionality and agenda of other extra-regional political and economic networks that the Arctic

territory (e.g. resources, infrastructure and so on) form a part of¹⁰ (e.g. Stokke, 2013) (the impacts of renewed military security activities that have a potential of “drowning out” concerns over the climate change, indigenous peoples and other and bear risk of changing the landscape for cooperation in the North are an exception (e.g. Nicol and Heininen, 2009)). For the Russian Arctic, such networks include partnerships and cooperation with Asian states that treat Arctic resources as leverage for political or economic gains (since most projects require substantial external investment, e.g. NSR, Yamal LNG).

The notion of an ‘Arctic state’ is misleading as most of the Arctic states are not confined to the High North. Functional cooperation between countries with Arctic territories and non-Arctic states and south-north relations within Arctic states including trans-border and south-north flows of investment capital, technology and human resources are generally not factored in by scholars in the Arctic region-building process, yet they are the most transformative on the political as well as on the environmental level in Russia and other Arctic states (e.g. Arhipova, 2016). While some (Knecht, 2013; Galkina, 2013) consider them a part of globalisation, others associate such flows and the respective region with geopolitical statements and shifts (in the case of Russia it is a shift towards pan-Asian cooperation (Kokarev et al., 2014; Makarov, 2016; French et al., 2016 on sociopolitical and historical differences between Canadian and Russian Arctics). Although the particular nature of the Arctic-based interactions are mentioned, the relational approach has not been applied and

¹⁰ There are, however, studies on political and economic interests of states such as China, Japan and South Korea in the Arctic resources and their role in the Arctic Council (Alexeeva and Lasserre, 2012; Stokke, 2013). China, Japan and South Korea agreed to cooperate in the Arctic affairs in April 2016, hence it is likely that their involvement in the Arctic region-building process will strengthen (see Lanteigne, 2016).

tested in this geographical area. Moreover, the physicality and agency of the environment in the Arctic is more prominent than in other regionalism foci and hence theorems of space construction through social interactions can only be considered productive at macro-scales and in sociopolitical contexts.

2.1.4. Environmental regionalism and the Arctic environmental governance

The “never again” principle has been at the core of global governance impetus from the Westphalian peace to the present day (Elliott and Breslin, 2011, p. 17). A growing prominence of the environmental crisis in the post-Stockholm international discourse has been reflected at the regional scales of environmental governance and cooperation¹¹. The perceived bipartisan nature of the environment - as a resource and as a sink - commended the research in global environmental politics to focus on issues of sustainability and rational use of environmental utility (Cass, 2012). Hettne (2005) and other scholars “alluded to the potential efficacy of regional level solutions to transnational environmental issues” (Elliott and Breslin, 2011, p.2) while Young (2002) argued that multiple sites of authority co-exist within a region depending on the function in question and hence the most effective scale for each problem (right ‘fit’) will naturally vary.

Environmental regionalism has been conceptualised as a focus of enquiry, reflecting the demand for appropriate scale of response to cross-boundary environmental

¹¹ Gorbachev’s speech of 1987 is generally quoted as the turning point in the circumpolar relationships (e.g. Atland, 2008; Knecht, 2013), however collaborative agreements between neighbouring Arctic states existed prior to that point (e.g. 1973 Agreement on the Conservation of Polar Bears).

degradation (Conca, 2012). Environmental regions, such as river basins, mountain ranges, regional marine environments¹², rarely correspond with national jurisdictions and transcend existing functional differentiation, hence their management requires some form of interregional cooperation (Balsiger and VanDeveer, 2010; Balsiger, 2012). Regional governance arrangements can be categorised as an intersection of coordinating agency-territoriality-sectorality criteria (Balsiger and VanDeveer, 2010; Balsiger and Debarbieux, 2015) where agency can vary from intergovernmental to multi-actor; territoriality - from jurisdictional to

Table 2. Conceptual definition of a region.

Criteria of Region/ Regionality/ Regionalism:						
Agency*	Agents	state-led	non state-led (multi-actor)			
Sectorality*	Dimension (purpose)	security	economic cooperation/ regulation	environmental (pollution,)	developmental	identity project (e.g. Molchanov, 2014 on Russia)
	Scope	single-issue	cross-sectoral			
Territoriality*	Scale	global	continental (EU, Eurasia, South America...)	cross-national	subnational	embedded (e.g. Cebon and Risbey, 2000)/ hybrid (Katzenstein, 2006)/ heterarchic (Debarbieux, 2012)
	Boundedness	bounded	open/ unbounded			
	Space/ action nexus	container	frame of reference (Werlen, 2005)	context		

¹² Some established cases include the Danube River Basin, the Baltic Sea Region, the Alpine macro-region, the Great Lakes in North America, Southeast Asia, ...

Temporality	Temporality	fixed or static	dynamic and fluid			
Knowledge production	Epistemology	institutions/ organisations (Young)	discourse (e.g. Neumann, 1994)	practices (e.g. Werlen)	policies	
	Ontology	academically (e.g. Paasi, 2010)/ socially constructed	natural/ naturally constructed (Taniguchi and Shiraiwa, 2012)			
*Agency-territoriality-sectorality criteria were used by Balsiger and VanDeveer (2010). Other categories have been added to demonstrate the complexity of the field.						

ecoregional application areas; and sectorality - from single-issue to cross-sectoral focus (see also Table 2).

Interdisciplinary Regional environmental governance (REG) research greatly varies in scope and in focus: Debarbieux (2012) offered a breakdown of selected works in terms of their ontological and epistemological standpoints. He argued that it was important to discriminate between the regional scope (used to delimitate the area of analysis) and the scope of regionality that is based on a socio-political rather than academic construct.

REG researchers, according to Debarbieux (2012), either follow “taken-for-granted ontologies” (of social, political or cultural entities) or study interplay of various ontologies that underpin environmental governance in question. The conflation of scientific and social ontologies leads to a conception of “imagined nature as a driving force for shaping policies” (p.123). Environmental governance is, according to Balsiger and Debarbieux (2015), not a special kind of governance, but a manifestation of a generic governance process, regardless of its area of application. Regions are political objects supported by socially constructed “claims of regional

specificity” (Balsiger and Debarbieux, 2015, p.3). To resolve the problem of multiple region and regionality interpretations, Debarbieux (2012) suggested that REG analysis should focus on “how social actors and organisations make use of it [region]” (p. 124), instead of trying to determine what a region is or should be. Similarly, Werlen reminds us the geographical discipline is rooted in the physical world that should be understood as a form of reference that actors relate to and order. He wrote: “Consequently, geographers should rather be interested in the regionalizing implications of activities, and not so much in the analysis and description of regions in the traditional sense” (Werlen, 2005, p. 47). Thus, the Arctic region would be to an extent a sum of its national and subnational networks as well as a natural whole expressed through physical and biological characteristics and flows.

The convergence of social and natural specialities also found an expression in the socioecological framework that was developed by Elinor Ostrom (2009) (on coupled human and natural systems see Kotchen and Young, 2007; Liu et al., 2007). Young (2012) stressed that there is a need to maximise “the fit between the socioecological features of the Arctic and the character of the governance arrangements needed to steer the Arctic toward a sustainable future” (p. 75). The Arctic is understood holistically as a large and dynamic socioecological system, whose natural functions and processes should be incorporated in the political decision making (Young, 2012). Functional fragmentation of the Arctic may lead to unwanted ecological and socioeconomic consequences (Crowder et al., 2006; Young, 2012). Young recognised both high geoecological and socioeconomic volatility and certain unpredictability of natural processes in the Arctic and observed that governance

arrangements in such areas should be “nimble in the sense of having the capacity to respond promptly to changing conditions and to make significant adjustments if they are to be effective over time” (Young, 2012, p. 78). Contrary to Balsiger and Debarbieux, who argue that specificity of a region is dictated by the society and does not affect the governance arrangements, Young claims that governance in the changing socioecological region needs to be aligned with if not stem from its biophysical processes (Young, 2012, p. 79).

Heininen et al. (2015) defined governance as “numerous principles, objectives and meanings that create the space in which actors will implement ideas, policies and institutions and/ or institutional arrangements in a way to achieve collectively decided objectives” (p.14) whilst governing is understood as actors and their practices engaged in the process of governance. The compendium *Comparative Environmental Regionalism* (2011) focused on the region as the ‘locus of environmental governance’ in the contemporary studies and generalised a range of terms and definitions. Governance is interpreted as “structures of authority that manage collective environmental problems and resolve conflicts between stakeholders” (Elliott and Breslin, 2011, p.3). That is in addition to formal institutional cooperation, such definitions account for other processes, mechanisms and actors that constitute regional environmental governance arrangements, i.e. vertical and horizontal modes of cooperation. Yet, it is the former that is generally studied, while ‘non-formal’ problem-solving arrangements and networks are seen as more challenging for generalisation and hence for comparative analysis. Schreurs (2013) associated efficiency and maturity of an environmental protection policy of a region with higher definition and diffusion of environmental norms and institutionalisation. In

contrast, Balsiger and Debarbieux (2015) determined governance trajectory variation with either institution-building taking precedence over intersectorality or problem-oriented actions outpacing the institutionalisation of regional arrangements. These conceptions would naturally determine the research trajectory in the Arctic region as major institutions and normative structures failing to recognise local practices as potentially safeguarding.

Other comparative fora, such as a “Comparing regional environmental governance in East Asia and Europe (EE-REG)” workshop, helped draw parallels and differences between European and Asian interpretations and implementations of concerted regional environmental actions (Balsiger and Uyar, 2013), finding that the ‘Asian way’ of regionalisation favours more informal and less institutionalised and centralised approach. For instance, Elliott (2012) emphasised that in the entirety of regional interactions in South East Asia environmental concerns have received relatively little political and academic attention. In his analysis of regional scale environmental structures in Association of Southeastern Asian Nations (ASEAN) he concluded that South-East Asian regionalism is built upon principles of non-interference and soft institutionalism and does not follow the EU model of integration. Elliott concurred that regionalism in South-East Asia is not entirely an indigenous process as it is fostered and sponsored by global institutions (e.g. UNEP, UNESCAP, Asian Development Bank). Even some most influential regional NGOs represented global organisations such as WWF, Greenpeace, IUCN, TRAFFIC and others. Thus, South-East Asia is a complex playing field for various vested networks catalysed by its relevant political permeability and openness. Lidow (2015) pondered if ASEAN could serve as an analytical model for the future Arctic governance architecture that in his view

supersedes the Antarctic model (see Duyck, 2011) and may be more suitable for the Arctic in view of its political and normative heterogeneity.

Similarly, intersections between socio-environmental ramifications and resource-driven region-building in South America have been studied by Marcelo Saguier (2012). Post-hegemonic regionalism dynamics, according to Saguier, implies a redefinition of priorities and adoption of environmental commitments by the state, on the one hand, and resource-driven integration, on the other. Socio-environmental conflicts that stem from this double-vector regionalism demonstrate its contradictory nature. The dependence on extraction of natural resources in South America has created a tendency of externalisation of socio-environmental costs which became “part of the ingrained logic of regionalism” (p. 128) and a cause of perpetual socio-environmental conflicts. The concept of inherently ‘conflicted’ regionalism may be useful for studying Russia’s policy in the Arctic that proclaimed environmental protection and resource exploitation as its goals (Strategy, 2013).

While a comprehensive range of environmental regions across Europe, Asia, Africa and the Americas have been conceptualised as milieux of environmental cooperation and governance (Haas, 1990; Gaberell, 2013; Graefe, 2011; Elliott, Klinke, Matthew; Balsiger and Debrabieux, 2015), the Arctic region¹³ remains politically and conceptually a contested terrain. Even though some intraregional associations for environmental cooperation that include Russian northern territories have been analysed from the regional governance perspective (e.g. the Barents Sea region - Vidal, 2018; the Baltic Sea region - Joas et al., 2012; Amur-Okhotsk Consortium -

¹³ The studies on first-third world political interactions in the environmental domain are generally more prolific than that related to the second world (see Soderbaum, 2015).

Shiraiwa, 2010), environment remains one of the many dimensions of potential regional discursive and normative alignment to be created.

Early research on global environmental politics focused primarily on the effects of organisations and regimes onto the environmental politics and behaviour of the actors. This approach is still influential (e.g. Young, 2008; Park et al., 2008; Busby, 2010). The constructivist approach has been used as an alternative to the neoliberal model by shifting the focus from regimes and institutions to discourses and their role in shaping the environmental politics (e.g. Haas, 2004).

North Polar environmental governance formulated as a natural resource or environmental regime, i.e. “agreed-upon principles, norms, rules, and decision-making procedures that govern the interactions of actors in specific issue areas” (Osherenko and Young, 1993, p. 1), was studied in the early 1990s with the view to determine the parameters of success or failure of regime institutional bargaining process. Geographic delimitation of the focus area was academically constructed in line with the specific issue rather than geographical spread of the state-actors involved or affected¹⁴. Such approach (see also Young, 1998) builds on the notion of formal (legal and institutional) primacy in natural resource and environmental protection cooperation, that is a notion that social institutions (e.g. regimes) are “significant drivers of collective outcomes” (Young, 1998, p.7), and focuses on pre-framed issues (e.g. climate change, ozone layer depletion).

Young and Osherenko (1993) argued that analysis of how regimes are negotiated and formed requires more complex than existing at the time single-factored (e.g. interest, power, knowledge and context-based) approaches. The authors looked at

¹⁴ e.g. Russia was excluded from negotiations and regime formation in Svalbard.

the polar politics (in a number of case studies) as a process of negotiations and regime formation as a deliverable. This institutional and regulatory framework did not set itself to measure efficiency of such regimes in practice, nor it allowed for informal regimes to become a focus of inquiry. In 2005, Young wrote that cooperation in the Arctic does not constitute a regime but a “mosaic of issue-specific arrangements” (p. 10), at the same time a legally-binding regime with a strong organisational structure was presented as superior to the dominant partial solutions.

West-East bipolarity (Soroos, 1993, p. 186; Pilyasov, 2010, p. 55) and strategic sensitivity of the Arctic region have been seen as a factor impeding political (e.g. on Arctic haze) and scientific cooperation in the Arctic. The late Soviet Union (and Russia as its successor) has been seen as a facilitator in developing a cooperative political framework for the regional environmental governance (e.g. Dodds, 2013), while it is also believed that environmental concerns were used by the USSR and Russia to conduct foreign policy (e.g. Honneland and Jorgensen, 2005; Korppoo, 2008). Pilyasov (2010) remarked that the extent of institution building and partnerships created in the Arctic after the Cold War barriers were lifted indicates intrinsic propensity for cooperation among the northern peoples.

Some scholars suggest that it is precisely the nature, “transformative Arctic ocean environment” (Knecht, 2013, p. 7) that should urge the Arctic states to join their forces and merge into a cross-national region, while recognising that the environment may be the only feasible dimension for the regional cooperation (Knecht, 2013; Exner-Pirot, 2013). While diplomatic and geopolitical means are being employed in addressing certain environmental issues, the latter, according to Bennett (2013), may be also used to pursue geopolitical goals. Arctic natural parks, for instance, can be

used “as geo-political tools” (Bennett, 2013, p.100), which means that conservation decisions are based on non-environmental values, while the areas, according to the author, are reserved not for conservation but to keep unwarranted foreign interests out and to enact sovereignty in contested “densely layered spaces” (p. 85), too. Although the role of science and epistemic community has always been stressed as prominent in the environmental governance (Debarbieux and Balsiger, 2015) and specifically in the Arctic region (e.g. Shadian and Tennberg, 2013), the theoretical conflation of scientific and social ontologies may not reflect the situation that exists in the Arctic states and regions on the empirical level¹⁵. After all, the science is used for both exploitation and conservation of the Arctic environments.

Similar dichotomy can be found in factors that drive regional environmental governance arrangements. As Elliott and Breslin remarked (2011), drivers of regional environmental governance are “rarely entirely local or endogenous” while being affected by local or place-specific factors in form or structure (p.5). However, ‘external drivers’ rarely succeed in creating a solid basis for regionalisation framework (Elliott and Breslin, 2011, p. 7; see also White, 2013).

There seems to be a strong tendency or bias towards preferential, quasi-habitual vision of the Arctic *ex vi termini* as a unity rather than a disparate sum of its parts, hence it is problematic to imagine a part of the Arctic being co-opted by another regional arrangement (e.g. Eurasian region, see e.g. Molchanov, 2015). The different forms of regional dimension of the environmental governance - from fragmented to cohesive, specific or non-specific (a single dimension of a wider cooperation

¹⁵ It was noted that the relations between policy-makers and scientific agents vary in their effects if manage to materialise at all (Debarbieux et al., 2014).

framework), institutionalised or informal - are yet to be fully explored as is the environmental aspect of various forms of regionalism (e.g. Elliott and Breslin, 2011).

2.1.5. Community-based research on environmental governance

The environmental governance framework produced a variety of approaches addressing particular uncertainties and lacunae in its methodology. This section overviews analytical approaches as can be applied to the Arctic environmental governance and the case study. It discusses issues of bottom-up environmental governance studies in the Arctic, representation of indigenous and non-indigenous voices, and approaches to duality of protected and exploited Arctic resources in high resolution studies.

Adaptive governance “has evolved as an analytical approach for understanding natural resource governance that takes as its foundation the interdependence of social and ecological systems” (Karpouzoglou et al., 2015). Its proponents (Dietz et al., 2003; Folke, 2007; Armitage et al., 2010; Brunner, 2005; Folke et al., 2005; Folke 2019; Chaffin and Gunderson, 2016) attempted to tackle the looming issue of uncertainty pertaining to complex open socioecological systems in the era of global climate change. Other approaches inherently addressed ontological, epistemological or phenomenological foundations of the EG theoretical framework. Some of them are listed below:

- collaborative environmental governance (Gunningham, 2009),
- resilient environmental governance (Brenson and Craig, 2017),
- multi-level governance (Paavola, 2016),
- grassroots global governance (Kauffman, 2016),

- common-pool resource governance (Agrawal, 2003; Ostrom, 1999),
- anticipatory governance (Boyd et al., , 2015),
- institutional governance (Adger, Brown, & Tompkins, 2005; Paavola, 2007),
- good governance (Graham, Amos, & Plumtree, 2003; Lockwood et al., 2010),
- global environmental governance (O'Neill, 2009; Young, 1997),
- polycentric governance (Termeer et al., 2013; Morrison et al., 2019).

The static view of the natural environment evolved in the adaptive governance theorisation which took into account as constantly changing conditions so the uncertainty of environmental feedbacks and abrupt events (Karpouzoglou et al., 2015; Chaffin and Gunderson, 2016). The adaptive governance framework turned its attention to collaborative arrangements and networks thus extending the EG authority to non-governmental actors and incorporating historical and political contexts.

“Environmental governance structures have broadened in response to such complexity and interdependency, from top-down centralised approaches to decentralised, community-based, or polycentric arrangements, incorporating not just principles of efficiency but also those of equity, legitimacy, and accountability” (Morrison et al., 2019).

At the same time, the objective-laden cause was ascribed to the EG definition: “governance is the process of resolving trade-offs and charting a course for sustainability” (Boyle et al. 2001, p. 28). While sustainability itself has evaded practical definitions and is yet to properly sink into the legislation and policy

documents of the state in question¹⁶, its infusion into the EG framework (e.g. Young, 2016; Park et al., 2008; Dawson, 2019) helped to epistemologically (mis)guide analytical narratives of the transition from the unsustainable present to the sustainable futures.

“While there is general agreement that averting unsustainable change is desirable, social and policy responses are often constrained by limited capacity and the fact that single actors or singular approaches—whether top down or bottom up—cannot effectively tackle such problems. Social and policy solutions need to be experimental, adaptive, distributed, and multi-scale” (Morrison et al., 2019).

Chaffin and Gunderson (2016) picked up on the common critique of the EG literature, including descriptive (structure, characteristics) and more recently prescriptive nature of most works in this field as well as a lack of consideration for complexity and multitude of factors (authors quote history, culture, power, and human agency). Despite continuous analytical envelopment of EG complexity, the research field remained characterised by “a relative paucity of comprehensive and practicable guidance that can be used to frame the evaluation, design, and analysis of systems of environmental governance” (Bennett and Satterfield, 2018). So much so that even societal, constructed nature of EG has been debated and instead described as something emerging from ‘non-linear dynamics and cross-scale interactions’, which can then be institutionalised in pursuit of sustainability outcomes (Chaffin and Gunderson, 2016). ‘Reconstructive approach’ (i.e. alternative futures as opposed to

¹⁶ It features in the Russian normative and political documents as well as academic literature as ‘rational use of the natural resources’, thus it has only been partially translated.

critical analysis of the present, in Avelino and Grin, 2016) was offered as a source of inspiration for an epistemological grounding for transition governance and even suggesting phronetic social science as a possible means of engaging with a complex multi-agent query of environmental governance and goals of sustainability (Healy, 2008; Hemmestad, 2010; Clegg, 2014; Avelino and Grin, 2016). Yet, as Sharma-Wallace et al. (2018) rightly observed, the body of adaptive EG literature seems to “lack much comprehensive direction for the messy, on-the-ground work of governance application”.

The end-goal imaginary of the desired sustainability to which EG should be adapting to has not remained unchallenged either:

“From a policy perspective, we must face the impossibility of even defining—let alone pursuing—a goal of “sustainability” in a world characterized by extreme complexity, radical uncertainty, and unprecedented change. (Benson and Craig, 2014; see also Benson and Craig, 2017; Foster, 2018; Griggs et al. 2013; Liu et al. 2007).

While Benson and Craig argued that ‘sustainability’ should be substituted with ‘resilience’ as a new narrative for the Anthropocene, other scholars (Bene et al., 2014; Berkes, 2017) recognised the ambiguous nature of some resilient systems and its heuristic limitations.

EG has been continuously reimagined in order to better grasp the shifting subject of socioecological interactions, in doing so it provided a space for experimental empirical research. The Arctic region has attracted scholars of adaptive governance and community resilience research (e.g. Fox et al., 2020; Landauer and Komendantova, 2018) as well as traditional institutional and corporate management

studies at various scales and level of interaction (Young, 2019; Humrich, 2017; Rowe et al., 2019; DiMento et al., 2019; DiMento, 2016; Tennberg, 2009).

Resilience framework in the Arctic context tested community or institutional adaptation capacity to climate-induced risks in some places. The caveat in this approach has been that it cannot be applied to all of the population and account for complex socioecological dynamic of the Arctic due to variable impacts and diversity of the named above interactions. In addition, while there is evidence of loss and damage from the changing environment in the Arctic, it may be deemed not disastrous enough to activate governance response or even an empirical inquiry. Thus the selection of such places, communities (or their features, e.g. decline in subsistence stocks) and research rationales are fairly limited.

Main themes by spatial context are shown in the non-exhaustive table of articles below, along with questions on what prompted the inquiry in a particular place (e.g. climate change related damage), what are the overarching theories (resilience, adaptive governance, sustainability).

Table 3. Community based research in the Arctic.

Country	Rationale	Theme/ Object	Framework
Norway (Broderstad and Eythorsson, 2014); Svalbard (Kaltenborn et al., 2020)	collapse of subsistence food stocks/ increased economic activity as a result of climate change	Sami community response to change/ environmental management challenges	community resilience, adaptation/ IR
Canada (Galappaththi et al., 2019; Armitage et al., 2011)	impacts of climate change bringing both risks and opportunities/ risk and uncertainty of the environmental change	Inuit community, individual and community response to change in local fishery/ Inuit and Inuvialuit	resilience framework, community adaptation / adaptive governance, knowledge co-production

Alaska (Landauer and Juhola, 2019; Blair, 2017; Curry, 2019)	loss and damage from climate change/ Alaska earthquake and Exxon Valdez oil spill	Alaska coastal communities threatened by climate change (e.g. coastal erosion)	resilience/ disaster response measured as normative adaptation and learning/ sustainability and bottom-up knowledge transmission
Finland (Jokinen et al., 2016; Landauer and Komendantova, 2018)	threat of land use change and tourism infrastructure development onto the community/ present and future industrial impacts onto traditional practices	Kilpisjärvi Sami community; communication between various stakeholders and funnelling of international and national policies onto the local level/ reindeer husbandry and industrial and energy generation development in 3 case studies	sustainability of localised multi-level governance, good governance/ participatory governance
Russia (Forbes et al., 2009)	climate change and oil and gas development	Yamal peninsula nomadic nenets' knowledge of and response to climate events and gas field development	resilience against natural and anthropogenic pressure measured as availability of biomass and herding flexibility

In the 2019 dissertation “Learning from the Local Scale: Identifying and Addressing Local Blind Spots in Arctic Environmental Governance” by T. Curry built on the proposition that local needs of Inupiat communities were often mismatched with those of other decision-making stakeholders and affected by the western science supremacy bias based on a case study of Native Village of Wainwright, Alaska. The important conclusion that the author arrived to was that traditional knowledge and practices were not accounted for in environmental governance as a result of low resolution adaptation initiatives, reliance on quantifiable information and cultural communication barrier between the natives and the outside decision-makers. What it demonstrated is that bottom-up information feedback may have data and cultural filters that complicate or even hinder the adaptation process. The research

addressed cultural tensions between non-indigenous “outside interventions” and indigenous communities in their vision of the natural environment as far as knowledge transmission is concerned, but while admitting that the village was a modern settlement and that opinions of c. 500 residents often differed, it focused rather on the opposition than on the synergy of information fluxes.

As Forbes et al. (2009) positively assessed the resilience of the Yamal peninsula SES, they did not deliberate on the modernisation of nomadic practices in the past few decades, the authors focused on the indigenous nomads of the peninsula while downplaying the impact of socioecological interactions of settled nenets, non-native residents and oil and gas shift workers. The authors did allow for an unfavourable outcome for the nenets herders of Yamal, but unfortunately no follow-up study was done after more hydrocarbon and infrastructure projects were completed.

While translatability of institutional environmental governance vocabulary into the traditional/ local ethos has been the point of departure for much of the community-based research, the direct environmental governance (i.e. self-governance or self-organisation) of a community would not be widely examined (for exception of Reed et al., 2020). There are few studies exploring the interactions between people's sense of place and community and the environmental policy-making. This perspective has been underrepresented due to complexity and scalability of fieldwork research while correlations were made between people's environmental perceptions and policy compliance (Moran and Rau, 2014 on Ireland; Kaján, 2014 on Finland) as well as demographic responses (Huntington et al., 2014 on Alaska). And as the Arctic is a home to many indigenous peoples, non-native residents' perspectives would generally be left out from the EG studies, especially those concerning environmental

knowledge. But places like Russia or the State of Alaska, USA where native and non-native populations are socioeconomically and to an extent culturally intertwined, produce complex socioecological realities¹⁷. For instance, a relative lack of demographic or migratory response to rapid environmental changes (Huntington et al., 2014) observed in the Arctic Alaska's indigenous communities could also pose questions to a) whether place attachment is as strong a socioecological factor for non-indigenous people; b) what are the effects of cognitive geography onto the Arctic residents' socioecological behaviour patterns. In addition, the association between "environmental protection" and indigeneity would rarely if at all get scrutinised but studies like Tysiachniouk et al. (2018) suggested that even environmental damage compensation that the indigenous peoples received from the oil companies in the Russian Arctic would not be spent on ecological restoration but rather on economic and social infrastructure (see also Wilson, 2006).

Loe and Kelman (2016) studied the environmental response to the construction of the LNG plant in Hammerfest, Norway of the local community, showing that local environmental concerns were weak as neither Sami herders nor environmental NGOs were integrated in the Hammerfest community. While this inductive work that adopted bottom-up approach, was only addressing corporate social responsibility and not the environmental governance as a whole, it did bring up issues of scientific knowledge generation and access, the impact of economic optimism onto the environmental stance, potential differences in perception and feedback between non-indigenous locals and Sami. It also revealed that the local non-indigenous population

¹⁷ The criticism of going beyond a 'homogenous description' of the studied 'communities' has not only been relevant to the research in the Arctic (*Sharma-Wallace et al. 2018; see also Paschen and Beilin, 2015*).

did not conceptualise the place as Arctic (i.e. pristine ‘wilderness’) unlike the external pro-environmental opposition, showing the variability of place concepts across scale and insider/ outsider perspective.

The community level research in the Canadian Arctic sector (Coates, 2014) which has recently begun to address community benefits from natural resource exploitation found that over its history southern-focused scholarship shaped the collective understanding of the Arctic problems. This points to the fact that nuances of local socioecological relations were overshadowed by south-north influence concerns; the North was presented as a passive recipient of northward expansion of governance and economic development. At the same time, the scholarship transition of 2010s to a more north-oriented view of the Canadian Arctic was mostly associated with indigenous experiences (Coates, 2014). The pendulum-like shift to the opposite discourse might have resulted in obscuring the role and impact of other actants as well as modernisation and engagement of aboriginal communities in the oil and gas exploration in the nature-society relations in the North.

The dominating indigenous discourse in the Arctic environmental governance literature (see e.g. Nuttal, 2018; Reed et al., 2020; Poto and Fornabaio, 2017) narrowed the socioecological approach to ethno-ecological relations, whereas the society’s interactions with the Arctic unravel on different scales and governance levels and through indigenous, non-indigenous residents, economic migrants, shift workers, corporations, NGOs and governments, some of which remain invisible, often by choice, to the academic scrutiny. According to Coates (2014), who wrote historiography of natural resource development in the Canadian Arctic, “Across the

North, however, there is surprisingly limited attention to the experience of newcomers, both in the pre and post-World War II era” (p. 11).

All in all, the relevant literature on the community-based EG or SES is limited and shares a number of analytical shortcomings: a) deals with ‘established’ (static), seemingly uniform systems (e.g. Sami reindeer herders) or its parts whilst attempting to reimagine their future through resilience or sustainability paradigms in the context of non-linear change; b) assumes that traditional is pro-environmental thus equating eco-activism *in situ* with a community response; c) de-contextualises EG processes for analytical purposes; d) is prompted by disasters, large hydrocarbon projects or similar events; e) relies on variable proxies (e.g. policies, interviews with indigenous elders, measurement of biomass, corporate social responsibility, ecological education) which may point at the capacity for EG but only provide a keyhole view of the SE interactions. In addition, the paper on Svalbard response to future environmental challenges brought about by increased economic activity and traffic in the area (Kaltenborn et al., 2020) framed the archipelago as nested within the greater Arctic region and epitomising pan-Arctic challenges due to its geopolitical connectivity and history which goes to show that some locales within the region are considered more imbedded in the ‘Arctic’ than others (e.g. a land-bound Siberian municipality) regardless of the size, scale or connectedness.

For the above limitations, inductive and empirical studies are essential, it is especially true for the Arctic region, where regional history, political processes, evolution of societal values, individual and community identity, environmental practices and business localisation all contribute to the forging of a particular governance relations and outputs. Having said that, all the aforementioned studies open up the scope for

new insights into the environmental governance processes that inductive community or place-based research can offer.

2.1.6. Socioecological approach: conceptual issues

The project sought to understand human-nature interactions in the Arctic and their reflection of the national and international sources of environmental governance and implications for the larger scale environmental governance, or in other words, to what extent people's uses of the landscape were governed or governable at a local scale in the Arctic and whether these were of significance. The following section outlines the analytical conceptualisation of the case study, following the socioecological systems (also referred to as interactions): it discusses conceptual hurdles in the context of the case study characteristics, including that of the non-indigenous population, justifies the use of qualitative method to study environmental impact and a case study approach.

While social-ecological system (SES) approaches view people as both dependent on/ rooted in and shaping the landscape (e.g. Folke, 2006; Folke et al., 2016; Norström et al., 2017), the fact that Yamal-Nenets Autonomous Okrug inhabits mostly non-indigenous first-generation work-migrant population with a second home elsewhere posed a number of conceptual issues.

1. Defining a socioecological unit. In studying coupled human-environment systems ecosystem-based approach emerged as a popular choice in academia (e.g. Berkes et al., 2000) and in governance institutions (e.g. Arctic Council). Yet, ecosystem is generally interpreted differently for the purposes of either natural or social study (depending on anthropocentric or nature-centric perspectives). Ecosystem approach

was most successfully applied in anthropological studies (e.g. Rappoport, 1990) where direct interactions could actually be observed, but technologically advanced modern societies are distanced from the natural environment through both institutions and technologies, hence the focus of study in society-nature interactions and environmental management shifted to mediated norm-oriented processes and practices. Ecosystem approach was argued not to work as well in such contexts, since direct human-environment stimuli-response dynamic is to an extent substituted with internal decision-making processes within such institutions or networked practices (Moran, 2010). The Arctic region presents a platform for both ecosystem and institution-oriented studies depending on the object of study - indigenous communities' lifestyles, or intensive industrial development, or region-wide governance, the challenge lies in integrating the planes of inquiry.

One of the obstacles in this regard is the issue of scalability of an ecosystem, the term, which can be equally applied to a small patch of vegetation as to the whole world but cannot be scaled up or down due to irreducible properties observed at a higher level of analysis, that is the ecosystem is not a sum of its subsystems. Another critique of the ecosystem approach lies in the assumption of ecosystem steady-state equilibrium (homeostasis), which has been criticised from as early as 1980s in natural sciences, but the new paradigm of disequilibria and flows has turned the concept of ecosystem into an equivocal term, which has been co-opted by social scientists without the baggage of its dialectics. Another issue of ecosystem approach is its prevalence for addressing collective (e.g. institutional) responses at expense of individual actor strategies.

In some studies ecosystem concept is used as a setting for both human and natural processes, rather than as a structuring and explanatory layer for those processes. And in that sense, an ecosystem is interchangeable with a geographic region. Dov Nir (1990; 2012) explored a region as a socio-environmental system in the book of the same title arguing that the complexity of the field of knowledge of regional geography is better addressed through the systemic framework which can accommodate contradictions between “the nomothetic and the ideographic, the general and the particular, the totality of the globe and the local individuum” (Nir, 1990, p. 82). According to the author, the systemic region was a precursor of assimilation of a region to a system.

The system approach in the case of the Yamal peninsula can deal with the interplay of factors that allow for and facilitate changes in the human-environment interactions and include distribution of mining resources and licenses, geopolitical situation and the Russia’s Arctic strategy, climate change, foreign investment and technologies, etc. (i.e. political will, human resources, economic interest, historical predisposition, technological and financial capacity), components that constitute and shape such interactions (e.g. actors, regulations, traditions, habits, local attitudes) and modes in which these interactions develop. While the notion of a ‘system’ is a convenient epistemological instrument to approach a region (see e.g. Nir, 1990), the study only adopts its ontological component: a system hereto applied to environmental governance implies a set of parts, inputs, outputs and flows or interactions between them. The project looks at the interactions between some parts of a system, assuming that reconstructing the system of interactions even within one area holistically would either not be possible or require far more energy and effort than has

been available for the current project. All in all, the research uses the system approach as a strategy rather than a hypothetical framework in that it does not seek out components of a system to establish the relations but looks at the interactions to understand the dynamics and translatability of the higher order vertical ties into horizontal human-environment relations.

2. Evaluating socioecological interactions. The human-nature dichotomy has defined geography since its inception as the 'opposition within a fundamental unity' (Olwig, 1980, p. 36 quoted in Turner, 2002) and has found its expression in the dual chorologic and human-oriented approaches within the field of geography (see e.g. Zimmerer, 1996; Turner, 2002). The recognition of environmental crisis has created a new paradigm and called for interdisciplinary social-environmental research (see e.g. Jahn et al., 2009; Glaser et al., 2012; Young et al., 2006). While the demand for the human dimension and policy-relevant environmental studies has been voiced by both academia and policy fora, the practical realisation of interdisciplinary projects has been a harder task to accomplish.

The economic development and climate change in the Arctic bring home the dualistic nature of society in relation to the environment - in transforming the nature people place themselves outside of it while being engraved in it and dependent on it. The Arctic region is not an easy object to study precisely because it transcends any single line of inquiry and defies reductionism demanding from a researcher of practically any discipline to seek expertise from fields of biology, climate science, cultural anthropology, geopolitics. It is crucial that contemporary approach to the Arctic as a region of study incorporated not only the latest available data about the region but

also the multidisciplinary methods of inquiry to obtain a more rounded output. The study used methods derived from social science, geography, social ecology, and regional studies and can be considered multidisciplinary in the scope of its methodology as well as the kind of sources of data it has used.

One of the fundamental questions of the study was how the shift in the socioecological or human-environment interactions is affecting the latter, and in order to answer it, the available concepts of quantifying human impact onto the environment were explored. A research into human-environment interactions (HEI) was a product of the modern environmental movement dating back to the 1970s (Barry Commoner, Paul Ehrlich and John Holdren) and attracted some attention at the turn of the century with the growth of the globalisation discourse (more in Brondizio and Moran, 2012).

For decades the attempts to represent the impact of the humanity onto the environment have been focusing on the one-way human-to-nature relation generally understood and expressed as the amount of pollution/ emissions/ disturbance/ environmental cost and assumed that minimisation of such relations (impacts) would be beneficial to the environment while the forecasted population and consumption (affluence) growth would increase the impact and the load. Technology was the variable that could have been interpreted as both beneficial and detrimental depending on the impact it produced at the end of its life cycle and hence was perceived as the most pragmatic and convenient tool for turning the trend in the society impact onto the natural environment in the long-term perspective (Chertow, 2001).

Affluence and population have long been considered primary drivers of anthropogenic environmental degradation (e.g. Dietz et al., 2007), however there is little understanding on how the drivers and impacts relate to each other, and hence how the knowledge can be translated into policies and how to assess the usefulness of the political interferences based on the recommendations derived from such interpretations. Dietz et al. (2007) in the analysis of human-sourced environmental stressors accounted for population size, affluence, urbanisation, economic structure, age distribution but failed to factor in such categories as ecosystem sensitivity, geographic distribution or political and other non-economic drivers affecting the nature-society exchange.

Such simplification was a useful frame for thinking about the macro-scale joint human impact onto the planet and was a product of the global environmental change paradigm, yet it failed to take into account the diversity of relations, the multiplicity of scales and complexity of interactions between nature and society, the heterogeneity of environments and societies. As ultimately, few means have been created to evoke change in circumvention of those very societies that engage in material exchange with the environment. The translation of such abstractions into the governance safeguarding mechanisms has unsurprisingly been complicated.

In attempts to generalise the interpretation of the factors of human impact onto the environment (i.e. affluence, population, technology) and with the assumption of the singular environmental impact, quantification of those factors relatively to scale, social dynamics and uncertainty became the stumbling block of a promising and long-needed method, which gradually lost its instrumental capacity but retained its

conceptual utility (see Deitz and Rosa, 1997) and, for example, was used for the formulation of carbon emissions by IPCC.

While the impact of the demographic transition (rapid population growth and lower mortality) had been for a long time discussed in connection with the environmental degradation (Vörösmarty et al., 2000), the research into effects of other demographic processes and human behaviours onto the environmental quality has only recently begun to gain in detail and geographical scope (e.g. Moran, 2016). For instance, it was observed in the Ecuadorian Amazon that work migration can change the environment by “bringing people with a different pattern of land use to a new area, thereby transforming its land cover, biogeochemical cycles, and precipitation patterns” (Moran, 2010, p. 1950; see also Bilsborrow et al. 2004; Barbieri et al., 2009).

For the Arctic region, such generalisation cannot provide a region-wide insight as there is no uniformity in either affluence, population or technology on international or subnational level. Thus, qualitative analysis would be essential to pick up on the environmental effects of socioecological variations. In case of the Arctic, such variations could be expected in labour intensive construction projects, subsistence and recreational practices, consumerism, transportation, accommodation as well as services needs and expectations.

3. Sense of place as a means to capture environmental attitude. The study set out to engage with the migrants' insight and experience, yet it had no blueprint for the research design and interview fieldwork derived from the socioecological systems framework (that traditionally dealt with the historically established practices, e.g.

farming). In case of the Russian Arctic, labour migration and colonisation of the High North has been a state-led event with South-North import of resources, technology and labour.

The study assumed that non-indigenous residents of the settlement on the Yamal peninsula would have some form of connection or response to the landscape correlating with their length of stay and integration. The sense of place concept seemed useful to identify landscape objects and relations significant to local residents' of non-indigenous descent connection to place.

The concept was interpreted as a qualitative, humanistic and dynamic vision of an individual's perception of their whereabouts, anchors of attachment and emotional response in tune with other works that ascribed three affective dimensions to the sense of place: 'place identity' referring to place perceptions, 'place dependence' referring to direct interactions, and 'place attachment' referring to emotional bond with the place (Jorgensen and Stedman, 2006). Previous studies addressed environmental, urban and sociocultural aspects of the 'sense of place' concept (see e.g. Bewilder and Morrisson, 2016). In this particular case study, where the small settlement of work migrants is surrounded and dominated by the harsh, isolating elements most of the year, less attention was paid to built environment (even though some structures, e.g. boat houses, garages would act as communication facilities) and cultural sites (as there were only an indoor gym and a canteen) and more to human-nature interactions or the lack of thereof.

A few studies used the concept to interrogate environmental concern and found that sense of place plays "an important role in people's motivation to act on behalf of local environments" (Masterson et al., 2019, p. 555; see also Chapin and Knapp, 2015;

Walker and Chapman, 2003; Masterson et al. 2017; Zia et al., 2014). The contemporary academic literature on this intersection has been generally biased towards global North (Masterson et al., 2019), which, however, did not stretch as far as the Russian Arctic. In the Russian context where the sustainability and pro-environmental vocabulary and awareness are underdeveloped, direct inquiry into people's environmental values was not considered as productive as, for instance, asking about their observation of change in the landscape and fauna. At the same time, this research shares wider conceptual assumptions (conceptualised by Masterson et al., 2019, p. 556): 1) a sense of place emerges from human interactions/ experience with the environment, 2) sense of place is subjective, but its components vary systematically, 3) types of behaviour may be predicted by patterned relationships with place.

4. The problem of scale and complexity: how and why focus on one territorial unit?

The problem of scale arises from a necessity to choose between the depth and extension of the study. In particular, while there is a need to understand the state of circumpolar environmental governance, there is no sufficient data or analytical capacity to do so. A high resolution study may lack scalability while low resolution may be irrelevant nationally or locally. Here I address how a case study can still be relevant for a wider Arctic research.

There is no single theory of scale and concerns have been raised that the scale might not exist at all (Manson, 2008). Or if a region is considered an open system, the area under investigation then holds within it a multiplicity of scales consistent with the logic of fractal geometry, where the pattern is repeated on multiple scales, as well

as contemporary socioeconomic and political arrangements, that prioritise connectivity over self-sufficiency thus allowing us to choose a territorial unit based on certain area embodiment/ characteristics and limitations of the study scope rather than scale.

The epistemological scale continuum ranges from constructivist to realist ontological premises, from perception of the world as readily accessible to observers to that of the world as a social construct (see Manson, 2008). The issue with the constructivist perspective is that the natural environment is perceived through the prism of human realm as a socially mediated physical and mental entity regardless of whether it is physically altered and distanced from the natural world (urban environment) or practically devoid of human inhabitants (uninhabited natural systems). Manson (2008) emphasised just that: the exploration into a matter of scale needs to factor in the extent to which a system in question is natural or human (p. 777). Complexity theory offers a complexity scale, specifically aggregate complexity that “focuses on how individual elements working in concert through local interactions can create complex systems” (Manson, 2008, p. 777).

Similarly, Moran (2010) concurred that “there is nothing inherent about any scale, and even local scale is profoundly influenced and dependent on higher scales” (p. 2004). It is therefore important to view each scale as inseparable from other scales, moreover, it is the interaction between the scales that shows the dynamics of a spatial process (Brown and Purcell, 2005).

One of the solutions to the global problem - local impact dilemma was Cash's ‘distributed assessment systems’ characterised by cross-scale assessments that bridge local, regional, and national levels in the co-production of knowledge about the

cause-effect distribution across scales (Cash, 2000). One of the drivers behind scale re-evaluation was the holistic nature of the ecosystem approach and the need to match environmental governance or management scale with that of the ecosystem (e.g. Folke, 2002), which is not always practicable or effective, nor does it allow for dispersed cross-scale governance. The Arctic is connected to the South through biophysical and socioeconomic flows, hence a local case study of such spatial processes will still be relevant at a macro scale.

2.1.7. Conclusion

The review has focused on the literature discussing issues pertaining to cross-historical definition and delimitation of the Arctic, interpretations of regionalism and spatial development in relation to the Russian Arctic and its effects onto the nature-society arrangements in the near future. It has been revealed that explanatory frameworks pivot either around normative or economic factors leaving such externalities as environmental governance and respective environmental structures out of the equation. In terms of trans-state networks operating in the region, the attention is generally paid to individual structures (e.g. Arctic Council) rather than network-network interactions. Place-based environmental governance research is sparse and irregular with very few papers available on the Russian Arctic. Those that address environmental issues, i.e. impending climate change, tend to focus on traditional indigenous adaptability and/or attempt to resolve divergences in state/local environmental governance agendas. Thus the absence of so perceived nature-society conflict or tensions between Arctic communities and the state (e.g. climate

related relocation, moratoria on hunting) would not generally generate an academic inquiry in the field of environmental governance.

At the same time, when it comes to urban spaces, it is the multiplicity and assemblages of everyday flows that are being objectified and studied (e.g. Addie and Keil, 2015), the ontological assumption here is that of a region (sic. urban region) having no point of departure and it being ever-emerging and self-propelling, hence this approach avoids a problem of defining what constitutes a region or when a place becomes or in fact stops being a region. Although the Arctic is a geomorphologically dynamic space, it can hardly be described as a region through social and cultural flows alone as it largely remains nature-dominated.

While the Arctic is often perceived as a regional unity (Steinberg, 2014), it can only be defined so in terms of geographic, climatic, resource conditions and perhaps imaginary 'emptiness' as across the Arctic states so within Russia (Emmerson, 2011). Yet, the Arctic region as a whole, or its largest constituent the Soviet and now the Russian Arctic zone has been politically constructed and defined as a seamless unifiable region. Neither concepts of regionness (Hettne and Soderbaum, 2000), nor of real existing regionalism (Addie and Keil, 2015) allow us to gain insight into emerging unbounded and loosely structured centre-periphery relations and multimodal international cooperation in the North that affect its socioecological interactions and ecological management outcomes.

Centralisation of power over the Russian Arctic zone and a dominant strategy of resource exploitation and coastal development in Yamal and other adjacent areas may prove to serve as premises for epistemic de-regionalisation of the Arctic in respect of environmental governance and to an extent reveal inherent shortcomings

in the Russia's existing safeguarding mechanisms. Yet, in turn, if the Arctic cannot be defined and studied as a region, then establishing the appropriate scale of environmental governance would become problematic. The literature analysis above would suggest that in order to understand environmental governance in a particular place (e.g. Yamal peninsula) one would need to analyse the place connectivities (economic and demographic flows) before analysing environmental governance mechanisms and assessing their functionality.

While normative and institutional governance of nature feeds into the "hygienic mode of regulation" (see Marsden, 2018) narrative when nature is distanced from people through sanitation, manipulation and containment, the reality of people's existence in the landscape generally tells a more complicated story - that of socioecological relations forming over time in specific natural, cultural, political and historical contexts. Hence, the analysis of traditional environmental management mechanisms could inform of the intentions, the socioecological analysis would provide details of the implementation field for such intentions as well as feedback to existing environmental governance measures.

Imagining the Arctic as an arena of complex network connectivity rather than segregated as the Arctic Council areas of concern (environment and indigenous communities) and other problematic (economic development, other population categories, monotowns, other forms of cooperation) can help better understand the changing landscape of human-nature interactions that are (re)emerging in the Arctic. As noted by Stokke (2007), most analyses focus on institutional outputs in the form of normative (legislation) or cognitive (discourse) changes, while behaviour of actors and interactions between them - "turf struggles and conflictual interests" (p. 17) -

remain a 'blind spot'. The present research focuses on the interplay of these functional connections between stakeholders that are driving the change in a specific location (Yamal peninsula) as well as the local residents' interactions with the place in order to better understand regional environmental governance.

To sum up, Arctic regionalism is primarily seen as exemplified through multinational institutional arrangements, however extra-institutional interactions between the Russian government (that represents the Russian Arctic zone) and other governments (acting as investors, partners), between non-state actors from various states and other actors are forming nodes of connectivity in some locales within the Russian Arctic (e.g. Yamal megaproject). Such interactions are transformative not only on a local level, but on a larger geopolitical scale, and hence should not be ignored but studied on par with multinational regional institutions. A lack of specific, formal and binding environmental protection measures in the Arctic outside the state legal framework (and for certain issues within it) creates urgency for analysing how the Russian Arctic territorialisation project redefines human-nature relations and how that could inform the environmental governance of the Arctic. If territorialisation (regionalisation) is viewed through the balance of complex networked place-based interactions, the so-called "Arctic paradox", i.e. intensive economic development in a fragile natural environment (Exner-Pirot, 2015), may not seem so incomprehensible.

2.2. Methodology

In this chapter I lay out the methodological approach and conceptual interpretation of the fieldwork praxis. Following from the previous chapter that addressed theoretical premises related to the Arctic region and environmental governance, this section

focuses on the fieldwork timeframe, choice of the case study area, aspects related to data collection and data analysis. First, data collection is discussed, in particular document analysis, the importance of international conferences and fora for familiarisation with the Russian Arctic actors and dominating problematic, and archival work. Then, I discuss interview as a method, recruitment tactics, settings, questions, and issues specific to the Russian context, where I also touch on ethical considerations. Lastly, I go over the data analysis from the initial fieldwork analytic reflections to incorporating interview data into desk study outputs.

2.2.1. Data collection

The significance of the regional changes and their implications onto the environmental governance were initially analysed through main policy texts. Russia published its main Arctic strategy documents in 2008-2013 with subsequent updates that identified Yamal-Nenets Autonomous Okrug as a major development hotspot and the extractive industry as the main driver of the Russian Arctic national agenda alongside other priorities. Content analysis of these documents considered how and whether environmental protection and climate change mitigation were mentioned with regards to the Russian Arctic. Secondary sources were analysed in order to scan the opinions of the Russian academic elite onto the proposed development with many pointing out that Russia lacked a normative base and technological means to deal with technological disasters should they occur in the process of Arctic industrialisation. Yet, most scholars did not dispute the government pursuit of the Arctic natural resources.

To contextualise the Russian Arctic strategy and, in particular, Russia's interpretation of Arctic environmental value and means of its governance, official documents of international organisations related to the Arctic region (UN, Arctic Council) and other Arctic states' policies were analysed. I also scoured statistical and government-sourced data, official documents issued by federal, regional and local authorities in order to evaluate the definition, trajectory and scope of Arctic governance and to better understand social and economic changes envisaged by the respective sources. Russian conferences on the Arctic were also a good source of insight as by omission so by scope, extent and level of speakers. The content of the sources was analysed for key perspectives about what constitutes the Arctic and how its natural resources/nature/environment should be developed/ managed in the region as a whole, in the Russian Arctic and Yamal. When studying specific Arctic environmental issues, legal documents and drafts were consulted.

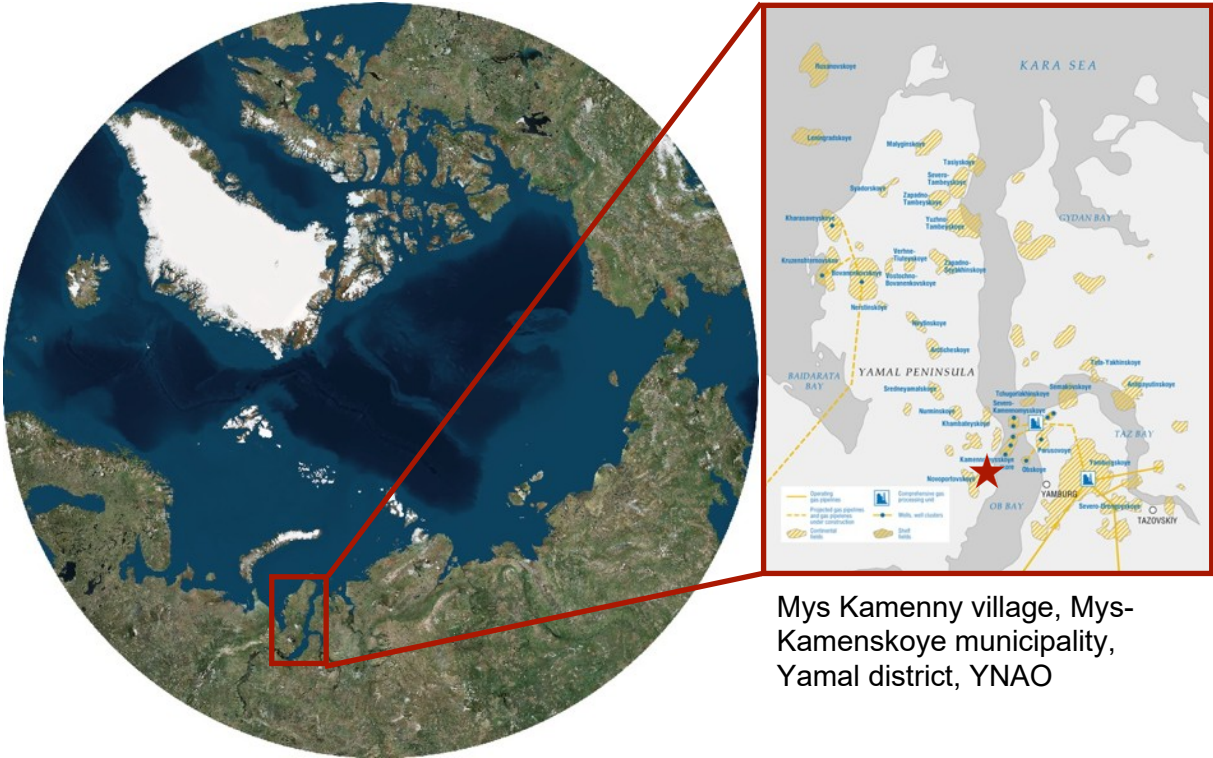
The level of environmental concern and associated protection activities of companies (Gazprom, Novatek, Yamal LNG) licensed or contracted to operate in the Arctic were assessed using company documents (procedures, statutes, press releases) and counterpoised with state-issued data on negative environmental impact and investigative articles of environmental organisations and media. The fact that Gazprom and its subsidiaries, as well as other state-owned companies (Rosatomflot, RZD) have no publicly available environmental impact assessment reports, was deemed significant. The content of available annual social responsibility/ environmental reports was analysed against locally sourced knowledge.

In Salekhard, I gained access to the local archive with the view to understand the history of Yamal peninsula exploration, there I discovered that information pertaining

to ecological data collected from geological settlements in the 1960-1980s was withdrawn by private owners of the respective assets in the 1990s during privatisation. This information gap along other data sources pointed at the significance of data availability for the environmental governance in the Russian Arctic.

Russian official documents were read and mostly quoted in Russian. International organisations' documents were read and referenced in English.

2.2.2. Case study



In addition to document analysis and historical overview pertaining to environmental governance in the Russian Arctic, this study addressed issues of direct and indirect human impact onto the environment and the gaps in such formulations by looking at one territorial unit in the complexity of the interactions that developed within it as a

proxy for understanding the potential impact and the capacity for its prevention or remediation through the feedback of the social component to the environment. Although the study shared the general human-environment interactions ethos, it assumed no specific hypothetical stance but instead chose an inductive approach. The research aimed to incorporate the relational scale or rather a-scalar vision of the territorial unit which is simultaneously a part of several levels of governance, yet how governance translates on the ground level is unclear and to be established. The fieldwork area was geographically limited to Salekhard and Mys Kamenny, Yamal peninsula, while maintaining its vision on the whole of the Russian Arctic region. Such an approach allowed, on the one hand, to interrogate Arctic environmental governance through a case study, that is, in principle, it is not important which place within the Arctic to choose in order to gain relevant research outcomes, yet, on the other, Yamal peninsula's moment may be indicative of the socioecological dynamic in other locales of the region. Thus, the choice of the case study was a balance of research and logistical gains.

Yamal peninsula is an area of accelerated development driven by hydrocarbon extraction and shipment along the Northern Sea Route. Mys Kamenny is a former base of the Yamal expedition of deep exploration drilling for oil and gas, branch of Yamalneftegazgeologiya, 1969-2002 with a population around 1,600 of settled locals (mainly non-indigenous) and c. 2,000 of shift workers. It is located 364km or 3 hours by helicopter from Salekhard at 68.4421° N, 73.5854° E. Mys Kamenny serves as an oil transportation hub with pipes connecting the loading terminal in the Ob mouth to the oil field in Novy Port, operated by Gazpromneft Yamal. The terminal is in operation since 2016 and is controlled remotely from the shore in the vicinity of the

settlement where other elements of the supporting infrastructure had also been erected (tank park, pumping stations,). Its annual capacity has reached 8.5 mln tons in 2017. This recent industrial development and its non-indigenous demographic made this particular place a good fit for the research.

Initially, the plan was to extend empirical research to three settlements on the peninsula: Mys Kamenny, Novy Port and Sabetta of Yamal district. For logistical and access reasons, the fieldwork was reduced to Mys Kamenny. Mys Kamenny village of Mys Kamenskoye municipality (referred to as Mys Kamenny) was chosen as for its suitability for the proposed research so for permit and timeframe limitations related to travel to the peninsula's other settlements. Yamal peninsula (capital Yar-Sale, villages Novy Port, Mys Kamenny, Seyakha) is only accessible by regular helicopter flights operated by Yamal airfreight company and charter flights in the winter months (October-June) and some places (e.g. Nov Port) can also be reached by a regular ferry service in the summer months (July-early October). Sabetta could only be reached by corporate transport or a charter with a special corporate permit and was, unfortunately, off limits for the purpose of the fieldwork. Salekhard could be easily accessed by a direct flight from Moscow, which was at the time easy to reach by direct flight from London, UK. The logistic caveat of the fieldwork was in procuring helicopter flights from Salekhard to Yamal peninsula as this cannot have been done in advance. The helicopter fare is 2.5 times over the return flight cost from Moscow to Salekhard with few scheduled flights per month which can only be purchased in Salekhard (or Yamal remote destinations) and which were heavily booked due to the beginning of summer vacation season. Summer months is the time of holiday leaves, most people fly 'to the continent' and the settlements are largely deserted (people

working in the High North are entitled up to 52 days of paid leave per annum) while some construction work is put on hold for safety reasons (i.e. permafrost thaw). As it turned out, I could not have purchased stacked flights (Salekhard - Yar-Sale - Novy Port - Mys Kamenny - Salekhard) due to some tickets being sold out or flights being too far apart and potential weather complications that could have resulted in a delayed or cancelled connection flight.

A permit for entry into the border area (Yamal district) had to be obtained from the Federal Security Bureau prior to the embarkation on the flight to Yamal district. The procedure took a few days and I was interrogated about the purpose of my journey and my credentials. Upon arrival to Mys Kamenny, an FSB officer came to the lodge to interview me.

Another logistical caveat was that it was not possible to pre-book accommodation (a former geologists' lodge) as no contacts were available online or through other Salekhard contacts. Commissioned research on the peninsula is normally organised by companies or the regional government, however, Mys Kamenny was not often visited by scientists or researchers, according to the locals.

Field trip timing was a result of a conscious decision and was constrained by polar night and harsh weather conditions in the winter as well as the 'holiday season' in the summer. Winter months on the peninsula are extremely harsh with temperatures reaching -50C, the helicopter communication is often disrupted which, together with polar night, makes it a perilous time to go to the district as in terms of research output, so in terms of personal safety. The temperature in May 2017 when the trip was undertaken reached -20C with high winds which caused some travel disruption at the time.

My visit to Mys Kamenny, as a solo-researcher, was wrought with a number of unknowables - from accommodation to recruitment success.

For instance, I had to adapt my research trajectory when in Mys Kamenny as it was clear that interviewing shift workers would be problematic. Most shift workers live in separate specially constructed camps (Gazpromneft) which are not easy to get to (permit system and distance) with the village having no public transport. Even though a few contracted workers were seen in town, it was difficult to identify the companies and assess their relevance given that the work site was outside of the settlement.

The decision was made to limit the area of research to Mys Kamenny itself, its administrative officials, police, and FSB. I had to take advantage of any contact made during the fieldwork as to orient myself in the unfamiliar location so to recruit participants for my study. For instance, when I got off the helicopter I expected to find an airport and buses or taxis to reach the village, but the landing pad was in the middle of the 'field'; I asked the policemen who were presumably collecting the post from the helicopter for directions and they kindly gave me a lift to the Yamalenergo office who had the keys for the lodge; I managed to arrange an interview with them whilst in the car. Similarly, I managed to interview the FSB officer who came to ask me a few questions the same day. The ad hoc conditions and considerations of safety and methodology undoubtedly had an impact on the fieldwork output.

2.2.3. Interviews

To address various planes of environmental governance in the Russian Arctic, interviewees were sampled in such a way as to incorporate voices of policy-makers and broadly defined 'practitioners'. As the former included two members of

parliament both representing the Arctic provinces, the latter group is made up of federal, regional and local oversight authorities officials, regionally funded Arctic research and exploration facilities, national and local environmental NGOs. They were first identified as relevant and later recruited at Arctic-themed venues, approached by direct email or visited directly at their place of work. The most successful strategy in Yamal-Nenets Autonomous Okrug was to visit a potential participant in the office, while in Moscow an interview had to be scheduled in advance. In Mys Kamenny, interviews had to be arranged after arrival due to lack of contact details available and a probable chance of refusal.

Conferences and fora on the Arctic were helpful in terms of reconnaissance, networking and observation. The Arctic Circle Assembly has been a unique venue in terms of accessibility and quality of speakers to observe Russia's positioning at such events. Its mainly official representation contrasted with a mixture of business, academic, cultural and political participants from other Arctic and non-Arctic states. Conferences on the Arctic were particularly fruitful for communication with Arctic scientists, sharing their experience of conducting science in the Russian North. Not all conversations that informed this thesis have been conducted and recorded as interviews, but a few of them led to formal interviews in Moscow, Saint-Petersburg and Reykjavik. All interviews were in Russia and all, except one, were conducted face to face. Interview settings were predominately office spaces (including State Duma).

In addition to talking to officials of Mys Kamenny municipality about environmental management issues and bottom-up communication between local, regional and federal authorities, the same officials were asked about their personal interactions

with the landscape, their observations of the changes; other residents whom I had an informal chat with shared their stories, their likes and dislikes, their outdoor pastime. Thus, Mys Kamenny interviews revealed values attributed to the landscape and sense of place, confidence and regularity of human-nature interactions such as fishing and hunting. For this, attention was paid to descriptors, emotional responses, duration of stay, future plans, and any particular details. All participants of Mys Kamenny were asked to provide their opinion about the impact of the development onto the landscape. Public sources (news reports, social media channels) were also used to draw insight into individual behaviour of work migrants further afield, especially in terms of human-animal interaction. Interview with local officials aimed to uncover waste management, water treatment and other problematic relations between residents and the natural landscape.

When in Yamal district, I could also make observations of the urban landscape, infrastructure, dilapidated buildings, stray dogs, and other ecological issues first hand, which I used as anchor points in my interviews with the local officials. In Mys Kamenny, I could observe how the village functioned: the residential core with administrative buildings, shops, canteen with a nearby heat and power station and a polyclinic followed by brownfield outskirts (a polygon used for construction materials, bulky waste, a yard with partially dilapidated warehouses), boat garages and private storage sheds on the bank of the river and an uninhabited district with empty residential blocks scheduled for demolition. A short distance away was a Gazprom construction site and a pumping station. In good weather the Arctic Gate was visible from the town, and so were the tankers and icebreaker going to and fro from down the Ob estuary. To west and south-west the municipality was surrounded by lowland

tundra.

Table 1. Semi-structured interview participants.

Stakeholder	Name	Position, affiliations	Date of interview
Parliament	Vladimir Pushkarev	State Duma, Member of Parliament from Yamal-Nenets Autonomous Okrug, deputy chairman of State Duma Committee on regional politics and problems of the North and the Far East.	17/02/2017
Science and research	Anton Sinitskiy	YNAO State Public Institution Scientific Centre of Arctic research, director, geologist.	22/02/2017
Science and research	Roman Kolesnikov	YNAO State Public Institution Scientific Centre of Arctic research, local researcher, geographer.	22/02/2017
NGO	Alexey Rudkovskiy	Socio-environmental organisation "Green Arctic", director.	27/02/2017
Science and research	Andrey Baryshnikov	Non-commercial partnership, Russian Centre of Arctic Exploration, director.	27/02/2017
State ecological oversight	Adam Barkinhoyev	Rosprirodnadzor, Yamal branch, Head of department of environmental oversight, Rosprirodnadzor Directorate in YaNAO.	01/03/2017
Regional ecological oversight	Sergey Shnaider	YNAO State Public Institution Service for protection, monitoring and regulation of bioresources, deputy director.	03/03/2017
NGO	Vladimir Chuprov	Greenpeace Russia, Head of energy sector programme.	10/03/2017
Parliament	Igor Chernyshenko	Federal Assembly, Member of Parliament from Murmansk oblast, Member of Federation Council Committee on Federal Structure, Regional Policy, Local Government and Northern Affairs.	13/10/2017
Mys Kamenny	FSB officer	Federal Security Bureau, Russia	12/05/2017
Mys Kamenny	Krivorotova Marina	Administration of municipal entity Mys-Kamenskoye, Sector of property relations, housing and public utilities and housing policy, head.	15/05/2017
Mys Kamenny	Bulgarov Ruslan	District police officer of the Department of district police officers and youth crime of Department of Russian Ministry of Internal Affairs in Yamalskiy district, police lieutenant.	15/05/2017
Mys Kamenny	Solokhin Sergey, Ivanov Maxim	YNAO State Public Institution Service for protection, monitoring and regulation of bioresources, Yamalskiy territorial branch. SS - senior specialist; IM - leading specialist.	16/05/2017

Vladimir Pushkarev was a head of the non-commercial partnership 'Russian Centre for Arctic Exploration' (the centre was established on the President Putin's initiative in 2014 and is largely state-funded) before being elected as a member of State Duma from the United Russia party (Edinaya Rossiya) in 2016. He discussed his appointment and his previous work in Yamal as well as development he managed to observe across the Yamal peninsula. According to Pushkarev, Yamal (and Arctic in general) is a resource region and that essentially it 'belongs' to the extractive industry. He believed that the industry is interested in preserving its reputation and legal mechanisms (such as contractor licences, fines) are in place to ensure that shift workers do not hunt, fish or harvest anything from tundra in their licence area. In any case, he said, tundra has such low productivity that there is nothing to take from it. The cleanup of Bely island, which Pushkarev personally oversaw, was sponsored by the companies and banks.

Igor Chernyshenko discussed the draft of the new Arctic Code that he was engaged in contributing to as well as other aspects of norm-production pertaining to the Arctic.

Anton Sinitskiy explained the structure of the Research Centre, its main activities, funding and mode of operation, its ties with Yamal government officials as well as external institutions, including foreign. His opinion on the regional environmental issues was that less attention was paid to those areas of Yamal unaffected by the industrial development. In addition, he brought up a concern of reindeer population increasing beyond the carrying capacity of tundra.

Roman Kolesnikov, geographer, working at the Scientific Centre of Arctic Research, shared his insight of the Centre's work, the process of scientists' recruitment from other research facilities across Russia, the gatekeeper's role of the Centre as in

terms of organising field trips to remote areas so in terms of research that would be funded by the region.

Andrey Baryshnikov shed light on the research scoping and organisation process as the centre provides logistic, navigation and transportation services to teams of scientists from various institutes across Russia. The centre, according to him, functioned as a bridge between business and science, however data collected by scientists on commission generally remains copyrighted and undisclosed by the company. He brought to my attention that there is no exchange of data between regional authorities, the centre of scientific research and institutes conducting field studies in Yamal.

Alexey Rudkovskiy (Green Arctic) and the environmental organisation that he leads participated in the cleanup on Bely island off Yamal peninsula, it provided and trained volunteers. Its main focus after the Bely island cleanup has been to bring under control breeding of homeless dogs and increase awareness of responsible attitude towards domestic animals in the Arctic. To my question whether extractive industry no longer requires their attention, Alexey praised oil and gas sector efforts compared to a previous decade.

Adam Barkinhoyev discussed the impact of the recent changes that divided the regional and federal levels of oversight with Rosprirodnadzor overseeing compliance of major pollutants and regional authorities dealing with minor pollutants and non-hazardous pollutants within major pollutants' sites. According to the interviewee, this division not only made it difficult for authorities to inspect the site as at times there are no such divisions in practice whether as a result of the technological process or location. The department is made of legal specialists, rather than ecologists, and was

downsized from 7 to 2 employees. He spoke at length about legal leeways and conditions that prevent them from inspecting (and penalising) certain non-compliances.

Sergey Shtainer discussed the limited boundaries of regional responsibility with those of federal services and national ministries. The Service's main task is to oversee hunting (fishing is not in their scope), including setting up quotas, scheduling seasonal hunting periods throughout the region, issuing licences and monitoring compliance (poaching is in the scope of other bodies). Due to limited human resources and large area of coverage, animal count is challenging and animal quotas are issued based on historical data and often small sampling.

Vladimir Chuprov shared his perspective on the Yamal peninsula oil and gas development as that of caution and impunity of the major oil and gas players. The legislation is inadequate, according to him. Greenpeace contributes to environmental governance by establishing relations with informants (esp. indigenous) on location and travelling there upon a call with recording equipment.

In addition, I talked to other employees of the Scientific Centre of Arctic Research, the Department of the nature and resource regulation, forestry and development of oil and gas sector, Yamal Nedra (GIS team).

In Mys Kamenny, I interviewed a FSB officer (in his 20s, single) on his outdoor practices and general sense of place. The officer was seconded to Mys Kamenny and had been there for less than a year, originally from Smolensk (west of Russia), he was not interested in the natural environment (foraging for berries, mushrooms or fishing). Hunting is something he would consider but he was not willing to go to the trouble of getting a gun, a licence, a safebox. The main benefit of the area, according

to him, is higher northern salaries. Such a perspective may reflect his age, origin, reasons for coming to Yamal and temporary residence, all of which are not exclusive to FSB staff.

I interviewed the Ministry of interior (police) officer and his colleague who, among many other duties, together with the border control seek out poachers. Both officers were from Karachay-Cherkess Republic, North Caucasus. One police officer had been in Mys Kamenny for 14 years, another - 4. The department is made of 6 people which is not enough to cover a large area of municipality, according to the officers. Their perspective was important to understand enforcement issues and share of MVD and FSB responsibility in the matter.

Marina Krivorotova, Head of the Sector of Property Relations, Housing and Utility Infrastructure, and Housing Policies, Administration of the Municipal Entity, deals with matters of municipal property, waste collection and management, including historical waste, modernisation of property stock. Her perspective was indispensable in understanding functioning of a remote Arctic settlement. The problems she listed included industrial and construction waste (cuts of pipes, plastic, sand-and-cement mix, fuel), which is not being disposed off by companies but stored on the municipal land. The same problem exists for residential waste and demolition debris. And as solid waste transportation is expensive, part of town has been turned into a wasteland. Another issue she voiced was the stray dogs that grow wild during summer period when the settlement is deserted. No cases of rabies among dogs have been detected (to her knowledge) but arctic foxes have been known to carry the virus. Marina shed some light on the plans for development and how the oil and gas

companies are involved. Although she knew nothing about the prospective oil field development in the close proximity of the municipality.

Sergey Solokhin and **Maxim Ivanov** of Service for protection, control and regulation of the use of bioresources YaNAO, Yamal territorial branch, discussed their duties, which mainly constituted issuing seasonal hunting licences to local hunters, inspections and public education. They said that the village had 25 local hunters who were mostly old-time migrants from the south or their sons. Number of hunters has decreased and shift workers are not allowed to transport and store weapons on the corporate premises, which created a barrier to new recruits. Indigenous hunters did not approach them for a licence (but hunted anyway). As for species, the main target species are ducks and geese in the summer and hares in the winter. I asked them about their opinion on the long-term changes in the natural environment surrounding Mys Kamenny. Both specialists complained about the industry's disturbance leading to disappearing of aquatic birds from the lake adjacent to the settlement. They also noted that, according to them, there are more arctic foxes and that nobody hunts them. They also explained the procedure of licensing, saying that there are discrepancies in calculated quotas in the central office (as well as deciding the dates of a hunting season) compared to the local data, since data on the number of species does not come from them but given to them from the top. As part of the Year of Ecology the department read a lecture on local nature at the school earlier the same year and I was given a copy of it.

Among others I spoke to two shop keepers, one just moved to the municipality, originally from Uzbekistan, and is very happy with the setting, another lives there since the age of 4, she brought up her own children there who subsequently left. The

latter spoke of fishing, which ceased: “the fish left” due to the industrial development but hunting still persists. I spoke to a young driver of a Vacuum truck who was born in Mys Kamenny, left it for university but then came back because he struggled to find a job elsewhere. I spoke to Tatyana, a Ukrainian, who moved to Yamal in 1994, and worked as a secretary at Yamalenergo, she also complained about absence of fish and lamented the loss of informal (‘grey’) trade in muksun¹⁸ which flourished in the 1990s.

2.2.4. Ethical considerations

While the project was approved by the Ethical Review Committee of the University of Birmingham, I encountered scepticism towards my credentials as a representative of a foreign academic community in Russia. Being Russian, I believe, played in my favour when it came to securing interviews with civil servants, due to the introduction of a clause against foreign agents in the legislation in 2012 pertaining to NGOs as well as individuals. The 2016 amendments indicated that sociological research by individuals or organisations receiving foreign sponsorship can be interpreted as a political activity and therefore illegal.

All semi-structured interview participants were informed of the option to withdraw at any time before, during, and after interview participation during the introduction of the research. With other residents of Mys Kamenny whom I had an observant conversation with were initially curious about my visit there (as few outsiders make the journey) and were generous with their comments. The research did not seek demographic equality; sampling was determined by participants’ involvement in the

¹⁸ *Coregonus muksun* is a freshwater whitefish native to the Siberian Arctic.

Arctic environmental governance which resulted in predominantly male and middle aged demographic. Most interviewees have not been anonymised as their public position is relevant to the research.

2.2.5. Researcher positionality

My standpoint of participation as a researcher switched from a participant (at various Arctic fora and at the Scientific centre of Arctic research and Russian Centre of Arctic Exploration in Salekhard where I could be considered and treated as a colleague, a person affiliated with the Arctic matters) to an observer in Salekhard and Yamal district to absorb and to compensate for absent local insight (Tracy, 2013). Having been born in an indigenous region in West Siberia (south of YNAO) to Russian work migrant parents and having lived in the UK for nearly 10 years have given me a 'double vision' of cultural practices and the ability to disengage from certain inherent biases of either. At the same time, I had to be aware that information provided to me by respondents could have been different in other circumstances, e.g. different affiliation, nationality, gender, a larger research group. My origin, growing up in a recently set up oil mining town of non-indigenous population in Khanty-Mansi Autonomous Okrug neighbouring YamalNenets Autonomous Okrug (Yugra) with the same river that runs through them both, undoubtedly helped during the fieldwork as I could relate to the respondents' experience and imagine their interactions with nature and other residents which would have guided my questioning. It was also the personal experiences of fishing, foraging and camping and the insight into environmental degradation as a result of extractive development in Yugra that has provided motivation to pursue a particular line of inquiry - that of direct

socioecological interactions as a basis for environmental governance.

Being able to communicate in the language of a respondent might seem solely advantageous: there is no interruption or barrier to communication, speech is more natural, the time cost of an interview may be considered less, there is commonality of cultural intertext. At the same time, there are benefits to inter-cultural communication as it may be perceived as less trivial and more valuable to respondents, its ceremonial nature (i.e. having an interpreter, having more than one researcher) might have aided the recruitment success especially among the elites, it could have also provided a greater epistemological distance. Some official respondents seemed reluctant to talk with a representative of a foreign university, so I had to make an effort to put them at ease and gain their trust (that would occasionally be sharing facts about myself, i.e. my origin).

Since I could not prearrange meetings before the field trip to Yamal peninsula, I could only rely on recruiting respondents on the spot and being referred to. Initially, I planned to conduct a survey among the shift workers involved in the oil sector; and even though I managed to talk my way through to getting access to the shift worker camp in the vicinity of Mys Kamenny, I doubted my success as there would have been an issue of trust and openness given the nature of questions. I also had to consider my position as a sole female researcher in the male dominant environment. As such, I also declined a trip to the hunters' lodge that could have provided a more in-depth insight into the hunting setup and given access to other hunters.

Having no means of transportation limited my geographical exploration of the municipality and industrial sites in its vicinity. I tried to walk to a construction site nearby the settlement but the deceptive tundra landscape made everything look

closer than it was and with no transport or local experience it was perilous considering feral dogs, low temperatures and poor visibility. It was evident that newcomers to this place, especially from urban areas, would have to readjust their environmental risk assessment when being outside.

I was aware that the language used to frame and discuss ecological issues varies between the English and Russian cultural vocabularies. Even the term 'environmental governance' cannot be translated without descriptors or otherwise its meaning is reduced to 'ecological management'. The sensitivities had to be translated into localisation of interview questions and a mode of speaking where I could not always directly discuss an ecological issue but instead let the interviewees bring it up and define it. Fish poaching, for instance, was a delicate topic in Yamal, as the sense of entitlement to illegal white fish was stronger than the sense of personal environmental responsibility or a fear of being caught by the authorities. Thus, my age and gender as well as my background perceived as non-threatening could be considered advantageous for accommodating a more sensitive discussion. Nonetheless, any communication is a filtering process as in response to researcher's traits and research agenda so to the respondents' cultural code, expectations and experiences: my task remained to discern between what was said and what was omitted.

2.2.6. Data analysis

The documents were analysed for content related to environmental protection, monitoring, research, climate change mitigation measures, species protection and development plans related to the Russian Arctic. Public statements were analysed for

awareness and concern over environmental matters in the Arctic. Translation of interview and document quotations from Russian into English was done by me (unless a commonly used or official translation already existed). The analysis was done manually although spreadsheets and word documents were used for organising analytical points and data.

Most interviews were recorded by means of a digital audio recorder and notes were taken during the meeting or shortly after. A telephone interview was not recorded and neither was the interview with V. Pushkarev due to a technical malfunction. All recorded interviews were re-listened and partially transcribed. Pushkarev's and Shtainer's interview notes were used in place of the transcription. A preliminary analysis was done in the field and raw analytic reflections recorded.

The research followed iterative analysis pathway (Srivastava & Hopwood, 2009): data was revisited and connected to form a systemic picture of environmental governance in the Russian Arctic, including its existing, emerging and absent elements. Mys Kamenny field trip provided a 'lived' dimension (Lefebvre and Nicholson-Smith, 1991) perspective, showing politically disenfranchised locus of environmental governance in the Russian Arctic.

The structure chosen to iterate the findings addressed both scale, environmental governance mechanism and Lefebvre's trialectic spaces. While scale is an obvious divider of research space, which can be paired with the environmental governance mechanism (e.g. norms, institutions), field research revealed the complexity of environmental governance sources resulting in overlapping to insufficient objects and areas of oversight, regulation and data generation in one territorial unit. Moreover, the Arctic region itself is not spatially, socially, politically or economically separated

from the south, which is especially evident in the Yamal peninsula development that brought in foreign investment, equipment, workforce, and environmental ethos. The case study, therefore, was used as non-exhaustive evidence to interpret how the Arctic (Yamal) nature is protected in view of the ongoing and future industrialisation as well as to provide socioecological insight from a place affected by such development. The theoretical framework of environmental governance research was augmented by incorporating regional and local feedback gathered through interviews with the Russian Arctic actors.

Chapter Three: Environmental governance in the Russian Arctic: context and problematic

The following chapter looks at the Arctic environmental governance in the context of epistemological ambiguity of the framework and political and geographical unboundedness of the region. It gives an overview of the case study area and overall structure of the empirical section. It provides rationale and context for the study.

3.1. Context and problematic

The field of environmental governance was colourfully likened to the Medusa of Greek mythology by the Geography Professor J.P. Evans due to its unconquerable complexity and its figurative extension to various phenomena (Evans, 2012, p.XIV). Generally, environmental governance can be defined as a sum of formal, regulated, enforced and informal, voluntary and policy-led as well as individual or community-sourced mechanisms and principles (e.g. Evans, 2012; Morin and Orsini, 2020). Researching environmental governance in the Arctic is not a simple task. For one, the Arctic is not a physically fixed and politically unified region and features a complex history and current geopolitical tension. Understanding the workings of multi-scalar, multi-institutional environmental governance in the Arctic is further complicated by the selective normative relations between Arctic states and weak political and socioeconomic ties within it i.e. between Arctic provinces inside specific countries. In view of the prevailing international law, the Arctic can be formally divided into at least two regions: that of the international central Arctic ocean, water column and seabed that belongs to all of humanity (so called “common heritage of humankind”), and the coastal zones (Exclusive Economic Zone and Continental

Shelf) over which the respective states exercise sovereign rights. This distinction has no power over, or alignment with, the complex biophysical flows that, in turn, shape emerging economic opportunities throughout the Arctic region, or domestic perceptions and imaginaries of what constitutes the Arctic. Yet, these two 'parts' of the same geographic space seem to attract different sets of funding, research questions, methodologies and political agenda even in the field of environmental governance.

Secondly, environmental governance research literature comes with a baggage of assumptions of what is, and what is not, a convincing and impactful study in the field. More specifically, these assumptions are based on the geographical clustering of the 'Arctic' in question while referring to the whole circumpolar region, i.e. North America, Fennoscandia and Russia present very different regional research landscapes; such studies tend to be based on geopolitical macro-scale and focus on the Arctic Council as a source of environmental governance and the Arctic as a geopolitical unit, even though it is acknowledged that environmental processes and issues are not confined to the High North and most environmental norms fall under sovereign jurisdictions (see e.g. Young, 2019).

The "failure to take into proper account the scale and cross-scale dynamics in human-environment systems..." (Cash et al., 2006, p.1), that is interactions between international, state, regional, local and individual levels of environmental regulation, was blamed for ineffective and futile attempts at environmental governance in many parts of the world. This static definition of environmental governance as intended goals and actions does not automatically point to capacity, reach or efficiency of such a system. And when faced with issues of global impact it gives us little information

about the local scale and, vice versa, it can be difficult to scale up the local insight. This is where socioecological approach and cross-scalar translation of environmental governance mechanisms could provide analytical feedback to knowledge of the source and content of environmental governance. With the Arctic region at the fore of the global environmental discourse, this research was inspired by the socioecological framework as a keyhole through which to reinterpret environmental governance. To resolve the epistemological problem of complex regionality, we could follow Debarbieux's approach (2012) and focus on "how social actors and organisations make use of it [region]" (p. 124), instead of trying to determine what a region is, or should be, in order to limit the scope of environmental governance research. This means that to understand environmental governance in the Arctic region, we would need to understand its sources and *modus operandi* therein. This includes looking at the elements of environmental governance, what they do and who they operate through (e.g. regional or federal authorities, environmental organisations and research centres) and the interactions between them. In addition, it is essential to localise and embed the region in the historical and (geo)political context, as well as acknowledge the current public discourse associated with the region's environment, in order to understand the drivers and values behind the legal and political mechanisms at work.

The objective of this project was to interrogate environmental governance of Russia's Arctic in the emerging relations between the Russian state and its Arctic region. The geography of the studied region makes the research into environmental governance more poignant not only as a result of accelerated climate change impact but also through its physical and logistic remoteness in the context of knowledge generation

and renewed colonisation. Focusing on the Russian Arctic, I aimed to understand how interactions between a perceived problem (e.g. environmental degradation of the Arctic), intended outcome (e.g. manageable industrial impact, lower pollution levels), environmental governance mechanisms (e.g. laws, industry standards), and the socioecological reality (e.g. poaching for subsistence) should be framed and analysed.

Despite the stretch and reach of globalisation, connectivity and scientification, the Russian and to a large extent global Arctic remains a place where the imaginary space often dominates over the known as due to it being defined by change, lack of scientific knowledge so due to the prevalent outsiders' perspective. While Russia is an Arctic state, most Russians, including those in power at federal and regional level, businesses and other stakeholders, are outsiders to the Arctic. To a large extent, environmental governance in the studied region is a product of these unchallenged perspectives. Thus, to study the Arctic governance as it plays out in Russia, or any other Arctic state, it would be essential to understand the local situation, associated perspectives and socioecological interactions. With the sensitivity to the Russian context, the research attempted to go beyond the facade of the Russian Arctic environmental governance architecture and discourse, and by focusing on one prominent locale, to interpret the knowledge and understanding of the actually-existing regional environmental governance and feedbacks.

The research was based on a case study of Yamal peninsula, a lowland region located in the north-east of Yamal-Nenets Autonomous Okrug, north of West Siberia. The peninsula is bounded by the Kara sea on the west and the Ob estuary on the east and southeast. It stretches 700 km from south to north and 240 km from east to

west; its maximum height is 90 m. It lies in the palearctic realm and is part of the Yamal-Gydan tundra ecoregion which features extensive wetlands and permafrost reaching 300-400 m in depth.

The Yamal peninsula has undergone rapid industrial development since the late 2000s, and it provides researchers with an opportunity to observe the Russian state response to the emerging Arctic ecological and anthropogenic challenges. The case study also highlights the shift in the socioecological interactions between the Yamal residents, fly-in/fly-out workers and nature.

Chapter Three establishes the context of the renewed economic interest in the Arctic subsoil resources and addresses the following sub-questions:

- what is geopolitical, political, social, economic delimitation of the Russian Arctic?
- what are sources and scales of environmental governance in the Russian Arctic?
- what is the significance of the Arctic in the Russian policy context?
- what is the composition and interactions of the Arctic governance institutions in Russia?

The research into the environmental governance in the Russian Arctic is first analysed through the interplay of various formal and informal mechanisms aimed at the preservation and safeguarding of the Arctic species and ecosystems (Chapter Four). It focuses on sources, tools and enablers of the Russian environmental governance in Yamal region of the Russian Arctic and addresses the following research sub-questions:

- what is environmental legislation in effect in the Russian Arctic and how has it responded to the renewed development?

- what is the structure, functionality and efficiency of environmental monitoring and oversight in the Russian Arctic?
- how is the Russian Arctic land use restructured in response to renewed development and ecological challenges?
- to what extent oil and gas operators and other companies working in the Russian Arctic contribute to environmental governance?
- are there any forms of governance based on cooperation, allegiances or civil participation, if so how do they operate in the Russian Arctic?
- what is the political discourse around the Russian Arctic environment outside and inside the region?
- what is the state of scientific knowledge about the Russian Arctic? How is the data communicated and shared between various Arctic stakeholders?

Then, I attempt to analyse the impact of environmental governance mechanisms on the local scale through observation, interview data and demographic analysis on the Yamal peninsula conducted in 2017. Chapter Five focuses on Yamal peninsula socioecological relations and explores the effects of industrial development onto the non-indigenous residents' experience and changing sense of place. It answers the following sub-questions:

- what is the scale and scope of Yamal peninsula industrialisation?
- what is the industrial history of the peninsula and the Yamal region?
- what is the effect of development onto the demographic of the peninsula?
- how do non-indigenous residents perceive their natural environment? What elements of the landscape are reflected in the residents' sense of place? What

is the relation between duration of stay and environmental knowledge/
environmental responsibility?

- how do local residents engage with the environment and what are main socioecological impacts on the peninsula?
- to what extent socioecological interactions on Yamal peninsula are reflected in the Russian Arctic development policies?
- how can socioecological framework contribute to the environmental governance research?

3.2. Why it is important to study environmental governance in the Arctic

Arctic states comprise those countries whose territory or territorial waters lie above the Arctic Circle latitude and include: Russia, the USA (Alaska), Canada, Denmark (Greenland), Finland, Norway, and Sweden. While Iceland lies below the Arctic circle, its territorial waters crossing the parallel allow it to be a member of the Arctic Council as an Arctic state. All of these states have published and recently updated their Arctic strategies: Norway's High North strategy (2006), Arctic strategy (2017) and the Norwegian Government's Arctic Policy (2021)¹⁹, Russia's Strategy of Arctic Development and National Security (Strategiya..., 2013; 2020), Canada's Northern Strategy (2009) and Trudeau's Arctic and Northern Policy Framework (2019)²⁰, US National Strategy for the Arctic Region (The White House, 2013) and Department of

¹⁹ https://www.regjeringen.no/en/dokumenter/arctic_policy/id2830120/#tocNode_30

²⁰ <https://www.rcaanc-cirnac.gc.ca/eng/1560523306861/1560523330587>

Defence Arctic Strategy (2016; 2019)²¹, Denmark’s Strategy for the Arctic 2011-2020 (2015), Finland’s Strategy for the Arctic Region (2013) updated in 2016²², Sweden’s Strategy for the Arctic region (2020)²³ and Iceland’s Arctic Policy (2011)²⁴. All these key Arctic documents emphasised responsible development and environmental protection, some more explicitly and lengthily than others:

Table 4. Environmental statements in Arctic states’ policies.

Country with Arctic territory	Environmental postulates	Key policy documents
Norway	<ul style="list-style-type: none"> - stronger focus on energy and the environment; - 2021 Arctic policy sets to develop “integrated approach to management of the natural environment” and integrated ocean management (managing petroleum extraction vis-a-vis natural processes, e.g. bird nesting) 	High North strategy (2006), Arctic strategy (2017), Norwegian Government's Arctic Policy (2021).
Greenland (Denmark)	- “development with respect for the Arctic’s vulnerable climate, environment and nature”	Strategy for the Arctic 2011-2020 (2015); Arctic strategy 2021-2030 to be issued in 2021.

²¹ <https://media.defense.gov/2019/Jun/06/2002141657/-1/-1/1/2019-DOD-ARCTIC-STRATEGY.PDF>

²² <https://vnk.fi/documents/10616/334509/Arktisen+strategian+päivitys+ENG.pdf/7efd3ed1-af83-4736-b80b-c00e26aebc05>

²³ <https://www.government.se/country-and-regional-strategies/2011/10/swedens-strategy-for-the-arctic-region/>

²⁴ <https://www.government.is/media/utanrikisraduneyti-media/media/nordurlandaskrifstofa/A-Parliamentary-Resolution-on-ICE-Arctic-Policy-approved-by-Althingi.pdf>

Country with Arctic territory	Environmental postulates	Key policy documents
Canada	<ul style="list-style-type: none"> - :“social and economic development” and “protecting the North’s environmental heritage” (2009); - 2019 Arctic and Northern Policy Framework co-developed with the Indigenous peoples set to bridge the gap between Canada’s Arctic and the rest of the country, “face the effects of climate change and support healthy ecosystems”, take on a leadership role in “international action to address environmental challenges that have an impact on Arctic and northern environments and peoples”. 	<p>Canada’s Northern Strategy (2009); Statement on Canada's Arctic Foreign Policy (2010); Canada's Arctic and Northern Policy Framework (2019)</p>
USA	<ul style="list-style-type: none"> - responsible stewardship, sustainable development of economic and energy resources, providing for future US energy security while recognising the imperative to “exercise responsible stewardship, using an integrated management approach and making decisions based on the best available information, with the aim of promoting healthy, sustainable, and resilient ecosystems over the long term” (The White House, 2013, p. 1). - 2019 DoD Arctic Strategy solely acknowledges the impact of climate change but prescribes no mitigating action. 	<p>US National Strategy for the Arctic Region (The White House, 2013), DoD Arctic Strategy (2016, 2019).</p>

Country with Arctic territory	Environmental postulates	Key policy documents
Russia	<ul style="list-style-type: none"> - comprehensive social and economic development, environmental security, science and technology development with regard for the fragile Arctic environment; - 2020 Strategy specifies adaptation to climate change, cleanup of historical waste and “prevention of negative ecological impact during natural resource exploration” (art.15) which is at the core of the Strategy. Other environmental clauses reinforce general environmental policy and legislation (e.g. Ecological strategy, President, 2017) i.e. creation of protected areas, removal of accumulated historical damage, reduction of pollution, etc. 	Strategy of Arctic Development and National Security (Strategiya..., 2013; 2020).
Finland	<ul style="list-style-type: none"> - “promote growth and actions to enhance competitiveness in the region with due regard to its environment” (2013, p. 7); - lead the way in sustainable development and combat climate change and mitigate its impact. 	Government Policy regarding the Priorities in the Updated Arctic Strategy (2016); Finland’s Strategy for the Arctic Region (2013).
Sweden	<ul style="list-style-type: none"> - peaceful, stable and sustainable development with response to dramatic climate and environmental changes; - “a leader in the implementation of the Paris Agreement to limit global warming, including in the Arctic” (p. 6); - “a non-toxic circular economy” (p. 29). 	Sweden's strategy for the Arctic region (Government Offices of Sweden, 2020).
Iceland	<ul style="list-style-type: none"> - securing Iceland’s position as a coastal Arctic state, cooperating with other Arctic states, preventing human-induced climate change 	Arctic policy (2011).

The European Union²⁵, comprising three Arctic states, first outlined its Arctic policy in 2008 and in 2016 defined three goals in the ‘Joint Communication on An integrated European Union policy for the Arctic’ as: climate change and safeguarding the Arctic environment; sustainable development in and around the Arctic; and international cooperation on Arctic Issues (European Commission, 2016). The first EU response to the Arctic was rationalised by the view that environmental changes “are altering the geo-strategic dynamics of the Arctic with potential consequences for international stability and European security interests” (European Commission, 2008). The EU described its main contributing strengths as fighting climate change, funding and commissioning research and maritime safety and using leverage as a major consumer of Arctic goods, services and resources (European Commission, 2012; European Commission, 2016).

All the national Arctic policies expressed the urgency to protect the natural environment and acknowledged uncertainties pertaining to the climate change. Additionally, some, e.g. USA and Norway, made attempts to toughen regulations in oil and gas operation safety and environmental protection in the Arctic²⁶. While other countries are still working towards formulating a legal basis for the emerging economic activities in the Arctic region. For example, Russia has been deliberating a comprehensive Arctic law since 2012, but the so-called Arctic Code, which would regulate social, economic and environmental relations in the Russian Arctic and

²⁵ https://ec.europa.eu/commission/presscorner/detail/en/IP_20_1318

²⁶ The Norwegian government commissioned a report on the current state of environmental protection in the petroleum industry, which was published in 2017 and will serve as a basis for new measures (<https://www.norskoljeoggass.no/Global/2017%20dokumenter/Environmental%20Report%202017.pdf>).

affirm the region's special status has already seen several drafts and parliamentary discussions, but remains in draft only.

The circumpolar recognition of climate change and related socioeconomic opportunities and ecological problems create a positive context for national response to existing or expected environmental degradation in view of natural or anthropogenic processes. In addition, becoming more interlinked with the rest of the world, not only through international relations but also through flows of capital, suppliers, buyers, shipping and construction companies and the commodity market may have practical environmental benefits regardless of a single state's efforts. In particular, Russia's Arctic policies acknowledge the need to cooperate with other states on the Arctic issues and set the tone of openness and commonness of concerns pertaining to the Arctic, including scientific cooperation and environmental concerns. And, so far Russia has been cooperating on the political stage and by economic means - the portfolio of investors in the Arctic projects ranges from Australia to Czech Republic to China. While these networks may not affect the existing national environmental regulations directly, they may still contribute to the environmental outcomes by other means (e.g. environmental performance return, Arctic responsible investment guidelines²⁷, even market oil and gas prices). Arguably, it is not the relations between the Arctic states that influence Arctic governance most significantly in the long run, but other links that are forged within particular parcels of Arctic territory that make and unmake spaces foretelling the change in the socioecological environment. Thus, this changing biophysical and socioeconomic landscape of the 'last frontier' at the

²⁷ http://www3.weforum.org/docs/WEF_Arctic_Investment_Protocol.pdf

present moment may have far reaching consequences for concerted or sovereign effort to govern the Arctic environment.

3.3. Delimitation and regionalisation of the Russian Arctic

The northern borders of the Russian Arctic are determined by the UN Convention of the Law of the Sea (UNCLOS) which Russia has been a party to since 1997.

According to UNCLOS, the sovereign Exclusive Economic Zone (EEZ) and the



Waste and debris covered by snow, picture taken in May 2017 west of the Ob estuary in Mys Kamenny.

Continental Shelf (CS) define the northern border of the Russian Arctic. The Continental Shelf is the area where a state can exploit non-living sea-bed and subsoil resources. It extends throughout the natural prolongation from the state's shoreline to the outer edge of the continental margin, 200 miles (EEZ) or even further.

Importantly, the claims on the Continental Shelf beyond 200 nautical mile have not been put to rest either by Russia or its four Arctic counterparts. Russia, Denmark and Canada made overlapping claims for the North Pole²⁸. Mendeleev-Alpha Rise, Lomonosov's ridge and Chukchi Plateau were all included in the 2015 bid to extend Russia's territory revised and resubmitted in 2021²⁹. As part of an earlier bid, Russia managed to defend its claim for a 52,000 sq. km enclave in the Okhotsk sea in 2014³⁰.

The terrestrial or southern boundaries of the Russian Arctic zone have been formally established by the Presidential Decree³¹ in May 2014 and included Murmansk oblast, northern regions of Arkhangelsk (Nenets autonomous Okrug) and Tyumen (Yamal-Nenets autonomous Okrug) oblasts, Komi and Saha republics, Krasnoyarsk kray, Chukotka autonomous region, and islands of the Arctic ocean basin. In 2017, three districts of Karelia republic were added to the map³², showing malleability and the political nature of this delimitation. The area defined as the Russian Arctic Zone in 2014/2017 was noticeably smaller than the Arctic zone defined according to the USSR Government State Committee Decree of 1989, and the region that 'lost' most of its Arctic areas was Sakha Republic (Yakutia). Its land-bound districts were excluded from the Decree, which pointed at a more focused coastal and sea

²⁸ <https://www.sciencemag.org/news/2019/06/countries-battle-control-north-pole-science-ultimate-winner>

²⁹ UN. (2021). Submission to the Commission by the Russian Federation. [online] Available at: https://www.un.org/depts/los/clcs_new/submissions_files/submission_rus_rev1.htm

³⁰ <https://en.ria.ru/russia/20140315188455689-UN-Declares-Huge-Part-of-Far-Eastern-Sea-Russian-Shelf/>

³¹ static.kremlin.ru/media/acts/files/0001201405050030.pdf

³² <https://www.garant.ru/products/ipo/prime/doc/71605322/>

shipping-oriented Arctic vector versus the more expansive approach of the Soviet



development. However, in 2019, the number of territorial units that had been previously included in the Arctic Zone was augmented. 8 land-bound districts of Sakha republic, 3 more districts of Karelia, 3 of Komi republic, 10 settlements of

Krasnoyarsk kray, and 2 districts of Arkhangelsk oblast were additionally designated as the Russian Arctic³³.

The Soviet Union had no legal definition of what should constitute the Arctic region until 1989. The socioeconomic boundary of the Arctic zone has traditionally been included in the broader notion of the 'Far North' (Rus.: *Krayniy Sever*) which had been adopted in the Soviet Union in 1932 when the North, similar to the virgin lands (Rus.: *tselina*), was considered a place of high social, economic and symbolic significance (see e.g. Armstrong, 1958) and provided economic incentives for work migration. Together the land area of the Russian Arctic takes up 18% of Russia and approximately one third of the entire land area of the Arctic; the total area of the Russian Arctic Zone is about 9 mln. km².

The Russian Arctic Zone is made up of 1 oblast, 3 autonomous Okrugs, 33 municipal districts and municipalities, 10 villages, 2 cities, and archipelagoes and islands of the Arctic ocean that make part of 8 larger administrative units (oblast/kray/republic) and 1 independent autonomous Okrug which are in turn incorporated in the 4 federal regions. Thus governance structure is complex and distributed between local, regional and federal areas and levels of responsibilities.

3.3.1. Arctic succession from Soviet to Russian

Institutional, political as well as legal succession of Arctic governance from the collapse of the Soviet Union to present day Russia has been rather erratic. The management of matters pertaining to the region was juggled between various levels

³³ <http://www.kremlin.ru/acts/bank/38377> and <https://rg.ru/2020/07/16/193-fz-ob-arkticheskoy-zone-dok.html> (in Russian)

of state hierarchy and across ministries, whilst the problems and objectives were being reinterpreted and reinstated. The overall trend was that of a steady decline in importance of the North and its matters in the Russian Parliament and Government alike until early 2010s (see more in Pilyasov, 2015).

In 1992 an Interdepartmental commission on the matters of Arctic and Antarctic replaced the State commission on the matters of Arctic and Antarctic of RSFSR, which was, in turn, set up in 1991. The main mission of the commissions was to secure claim on the Arctic continental shelf and oversee activities and legislation within the regions. This trans-ministerial commission ceased to exist in 2004. In 2002, a Council on the matters of the Far North and the Arctic was set up under the auspice of the government but only existed until 2004.

In the 1990s the administration of the Arctic was under the State committee for the North (*Goskomsever*), which was shut down in 2000. Its functions were first absorbed by the Ministry of Economic Development, then taken over by the Ministry of Regional Development which was created in 2004 to oversee social and economic development of the sub-federal entities and small indigenous peoples. After this Ministry was made defunct in 2014, matters within its jurisdiction related to the North were once again passed to the Ministry of Economic Development.

The overall strategic management of the Arctic Zone since 2015 has been coordinated by the State Commission of Arctic Development first headed by Dmitry Rogozin, former NATO representative and Deputy Chairman of the Russian Government, and from 2018 onwards by Yury Trutnev, Deputy Chairman and former head of the Ministry of natural resources and ecology (2008-2012). Currently, in addition to the Commission on Arctic development, there is a Committee on the

Federal Structure, Regional Policies, Local Self-Governance and Affairs of the North at the Federal Assembly of the Russian Parliament and a Committee for regional policy and matters of the North and the Far East in Duma, the lower chamber of the Parliament. While the Committee of the Federal Assembly covers a wide range of questions relevant to the Arctic including that of social and economic development, natural resources and environmental protection, its main mode of operation is through review and feedback of legal initiatives on the subjects of its expertise. The Duma Committee oversees regulatory, social and economic matters rather than that of the environment.

Russia's renewed attempts to re-colonise the North by restoring what was lost³⁴ after the collapse of the Soviet Union, in particular, the methods and instruments by which the Russian Arctic is being put back onto the map of Russia's prosperity has had and will continue to have implications onto the environment and the environmental governance in the international Arctic region. The political delimitation of the region and the active policy has created development opportunities in the Russian Arctic beyond the traditional oil and gas provinces of the Nenets, Yamal-Nenets Okrugs and Krasnoyarsk kray as well as Chukotka's, Yakutia's and Murmansk's mining industry. However, the main focus remained the advancement and expansion of extractive industries and development of resource transportation across the northern rim.

³⁴ On restoration (vs. militarisation) discourse of Arctic military infrastructure see <https://www.kommersant.ru/doc/2872014>; <https://www.rbc.ru/society/16/09/2013/57040fa39a794761c0ce1cfe>.

3.3.2. Russian Arctic capitalisation potential

The Russian Arctic holds over 100 billion tons of oil equivalent of proven conventional hydrocarbon resources and ‘plenty’ of unconventional hydrocarbon resources, such as gas hydrates³⁵. Estimates of the Russian Arctic petroleum reserves vary, but in relative terms the lion share of them belongs to the Russian Arctic shelf. The most promising deposits lie within Barents, Kara and Pechora seas. Only two mining companies can obtain offshore licences in the Russian Arctic, namely state-owned Rosneft (55 offshore licences) and Gazprom (33 offshore licences). Most of the known deposits were discovered in the 1970-1990s, and the stock of offshore and onshore licences was fully allocated to bidding companies in 2016. It does not, however, mean that no more conventional oil and gas is out there, for instance, in 2014 Rosneft uncovered a new and to date the northernmost offshore oil deposit, named “Pobeda” (‘victory’ in Russian). Nonetheless, since 2016 the exploitation of offshore fields has been temporarily suspended by Rosnedra (Russian subsoil resources agency) for 2 to 12 years leaving only one offshore platform Prirazlomnaya in commercial operation. The delay in the exploration of offshore resources has been strongly linked to the post-Ukraine economic sanctions posed on Russia stemming from the country’s dependence on the foreign technologies and investment (Aalto and Forsberg, 2016), while it seemed to have been disruptive for some partnerships, some projects, i.e. Shtokman field, were suspended before the crisis broke out signalling the existence of other non-political causes, such as low oil prices or insufficient geological data (as happened to Dolginskoye field suspended in 2016), or unproved reserves.

³⁵ <http://ogst.ifpenergiesnouvelles.fr/articles/ogst/pdf/2011/06/ogst100044.pdf>

Apart from the hydrocarbon reserves, the Russian Arctic already supplies nickel, gold, copper, tungsten, diamonds, coal and other mineral resources to the Russian and global markets. Reindeer meat has become a new marketable commodity of the Russian Arctic, specifically from Yamal Okrug, which holds the world's largest herd of domesticated reindeer and is thought to soon break into European food markets. As for marine biological resources, the Russian Arctic holds fishing hotspots in the Barents, White in the west and Laptev and Bering seas in the east as well as estuaries of the Arctic rivers. After the collapse of the Soviet Union, the fishing industry declined significantly, and the government now sees to stimulate growth in commercial fishing and aquaculture³⁶. With the melting sea ice it is likely that fishing areas will shift further north while warmer temperatures may make other seas, such as the Kara sea, more productive and hence attractive to commercial fishing. To modernise the industry, in 2016 the government introduced investment quotas, which are catchment quotas in exchange for investment projects, i.e. construction of fishing fleet or infrastructure³⁷.

Transport potential of the Arctic has been a hot topic in the context of aviation back in the late 1990s and now circumpolar navigation has made a comeback on the geo-economic agenda. There is a similarity between the burgeoning Northern Sea Route navigation and the polar aviation routes in terms of revenue streams of

³⁶ That is demonstrated through gross decline in wild catch (e.g. in 2013 Murmansk oblast contributed approx. half of the 1990 catch), processing infrastructure, up to 50% of unprofitable businesses, aging and unproductive fishing fleet... (more in Makoedov, 2015). Arctic fishing catch share (Northern fishing basin) has decreased since 2000 and accounted for around 20% of Russia's total catch (Makoedov, 2015). At the same time, with adoption of the State programme on fishing industry in 2014, the downward trends might shift (see <http://static.government.ru/media/files/c3r0cgagUEc.pdf>).

³⁷ <https://minvr.ru/press-center/news/2158/>

overflight fees in the first instance and icebreaker escort fees and other charges in the second. But until now the main users of the NSR remained Russian companies, such as Norilsk Nickel, Gazprom, Lukoil, and Rosneft. And as with polar aviation routes, the state has to develop the infrastructure, including hydrometeorological networks, communications, search and rescue in order to make the route attractive to international users, primarily freight companies operating from Asia.

Another civil project from the Soviet era that has seen a renaissance is the railway communication along the northern latitude, i.e. Belkomur connecting the White sea with the Urals, Northern Latitudinal Route connecting east and west of Yamal-Nenets Autonomous Okrug and the northern railway with southward rail lines. Some of the transport infrastructure built in remote areas (e.g. rail line Obskaya-Bovanenkovo or Sabetta international airport) is largely unavailable for general public, non-corporate, use, the same applies to industrial and military power infrastructure.

The past several years before the COVID-19 related slow-down have seen a shift in the global energy market with gas production and consumption growing year-on-year. China's coal-to-gas substitution policy and growth in industrial consumption worldwide provided for a stronger global demand for natural gas. 2018 was a year of accelerated gas consumption growth with China increasing LNG imports by as much as 43%³⁸. According to World Energy Council (2016), Asia has become a significant LNG importing region and in 2014 accounted for approximately 75% of all LNG imports with India and China being emergent markets for both pipeline gas and LNG. The largest producers of natural gas globally remain the United States and Russia³⁹.

³⁸ <https://yearbook.enerdata.net/natural-gas/balance-lng-trade-world.html>

³⁹ BP (2016) BP Statistical Review of World Energy 2016

2018 was the record-breaking year for gas extraction in Russia due to the rising export and domestic consumption. With Russia's Energy Strategy (2013) set to innovate the energy sector and diversify export markets as well as exported energy products by including energy sources with higher added value (e.g. LNG), it is clear that new gas fields of Yamal and the Arctic estuarine and offshore licence areas as well as the corresponding infrastructure, will be of increasing economic and political importance in the coming decades.

In 2016 the Ministry of Economic Development after consulting with other federal and regional ministries and agencies and the business sector including Rosatom, Roscosmos, RZD, Norilsk Nickel, Alrosa, Gazprom, Lukoil, and Novatek, attempted to concert the efforts of public and private sector in a list of priority projects for the Russian Arctic Zone. The list consisted of 145 projects with the majority (56) placed within the oil and gas sector⁴⁰. In order to implement these projects, the Social-economic development state programme (2017) devised focal zones of development (lit. 'support zones') across the Russian Arctic. The focal zones were defined as complex social and economic development projects that simultaneously use territorial and sectoral development approaches and are to be implemented as investment projects. They would mainly compose of 'mineral and resource centres' which would include operational and planned resource fields connected through existing or future transport infrastructure and integrated into the federal or regional transport system through a single point of shipment. Yamal-Nenets Autonomous Okrug is one of these eight designated focal zones strategically positioned in the middle of the Arctic coast

⁴⁰ <https://www.arctic.gov.ru/FilePreview/9053275b-7821-e611-80cc-e672fe4e8e4e?nodeId=4370391e-a84c-e511-825f-10604b797c23>

of Russia with Yamal peninsula in the centre of this development zone. According to Rosstat (Federal Agency of Public Statistics), in 2016 Yamal received more than half of all investment of the entire Russian Arctic zone amounting to RUB 1,075,745,137,000 (or GBP 14,167,896,935.28); the lion share of the money was spent on costly infrastructure development. Interestingly, less than 3% of the investments are quoted to have come from the public finances (Rosstat, 2017). With previously untapped Yamal and Gydan peninsulas undergoing development and a strong federal and business drive for expanding hydrocarbon extraction northward and off-shore, Yamal district of the YNAO presents a rare opportunity to explore human-nature relations as through the discourse so through observations in relations between nature and non-indigenous residents of Yamal district.

Liquefied natural gas production has already become an anchor of Yamal and Russian Arctic development boosting domestic manufacturing, shipping, geological survey and exploration as well as attracting investment to the region. In 2018 Russia added the most of global LNG capacity with Yamal LNG trains 1 and 2 producing 11 MPTA. Novatek has also secured investment to build two more trains on the east side of the Ob estuary - Arktik LNG 2 and 3. In addition to LNG plants, Novatek and the French multinational oil and gas company Total are developing terminals along the NSR in Murmansk and Kamchatka to facilitate its shipping as to Europe so to Asia.

While there is a visibility of the cohesive Russian Arctic development, in practice, resource inequality between Russia's Arctic provinces drives uneven flow of capital, human power and environmental burden. Thus, north of Yamal-Nenets Autonomous

Okrug may be unrivalled in terms of shifting socioecological tensions while also symptomatic of targeted Arctic re-colonisation.

3.3.3. Russian Arctic development strategy

The Russian Arctic project rolled out in late 2000s has often been compared in scope and scale to Joseph Stalin's 1931 Arctic exploration plan (e.g. Zonn, 2017). Yet, as the heightened interest and political intent set out in the primary policy documents takes shape and playing fields are divided between newly established state bodies, state-owned corporations and defence, the ongoing instrumentalisation of the Twenty First century Arctic endeavour reveals the growing schism between authoritarian nationalist semantics and neoliberal means. The section overviews the content and evolution of Arctic policies and institutions in Russia.

Until late 2000s the state policy of the Russia's Arctic region was underpinned by the Concept of state support of economic and social development of Northern areas (Government Decree No. 198, 7 March 2000) which resided to securing social privileges and subsidies to the communities and people living and working in the North after the collapse of the Soviet Union and subsequently the industry. The political trajectory of the region's governance noticeably changed from social and economic support to rent-seeking at the end of 2000s-early 2010s. According to A. Pilyasov who was the head of the Arctic department in Goscomsever in the 1990s, the Arctic policy of independent Russia only repeated the principles of the Soviet Arctic agenda including those concerning security, military presence and protection of national interests, but the wording and the narrative of the Arctic agenda of today's Russia has fundamentally changed (Pilyasov et al., 2013; Pilyasov, 2015).

The first attempt to bring the Russian Arctic into the political discourse was in the late 1990s as part of the federal programme 'the World Sea' under the president Boris Eltsin. The draft of the subprogram devoted to the Arctic development was never approved by the Government and was subsequently shelved. One of the first tasks defined by the draft was to create an Arctic code, however the issue with a comprehensive block of laws for a region within a legal framework of the state was precisely that it would have created a practically separate legal system within the state and could have exacerbated the separatist tendencies.

Late 2000s-early 2010s saw a publication of the key Russia's strategies in the Arctic. The key policy documents consist of the Foundations of the State Policy in the Arctic through to 2020 and beyond (Osnovy..., 2008), the Strategy of the Arctic Development and National Security (Strategiya..., 2013), and the Programme of Social and Economic Development in the Arctic (Pravitelstvo..., 2014). All these documents set the objective of the Russian Arctic policy through to 2020 and beyond at facilitating state support to large businesses operating in the Russian Arctic Zone, primarily those engaged in the development of hydrocarbon and freshwater and marine biological resources, by the means of investment in transport and energy infrastructure, provision of customs and tax preferences, and other stimulating mechanisms. While the Strategy mentions 'climate change' ("(global) climate change", "climatic changes", "changing climate", "negative climatic shifts") just five times, terms such as "national security", "military security" and "defence" figure at least three times as often through the text. Overall, the themes of development of hydrocarbons/natural resources/fossil fuels/deposits, biological resources dominate the content of the document (the terms referring to subsoil resources are mentioned

21 times and bioresources - 8 times). The prerogatives of scientific research, including international scientific cooperation, and scientific backing of Arctic-bound activities also resonate throughout the text of the Strategy.

In March 2020 President V. Putin signed the new Arctic policy document, Foundations of the state policy of the Russian Federation in the Arctic through to 2035⁴¹. This policy document outlined some outcomes of the previous Foundations (Osnovy..., 2008), concurrent issues and future objectives. Importantly, it stated that the existing environmental system in the Russian Arctic was not fit for purpose in the face of ecological challenges. Environmental protection along with economic development acceleration remained top priorities of the state in the region.

Environmental goals this time included the following: to create a network of protected terrestrial and aquatic areas to protect ecological systems against climate change; to protect wildlife and vegetation of the Arctic; to continue clearing up accumulated damage; improve the monitoring system; incorporate best available technologies; to facilitate sustainable use of natural resources on indigenous lands; create a complex system of waste management; and to carry out 'a set of measure to prevent toxic, pathogenic and radioactive particles from entering the Russian Arctic Zone'. It also specified that the general management of the policy implementation is carried out by the president. While it stipulated a number of control indicators for the state policy implementation, none of them related to the environmental protection.

The state programme of socio-economic development published in 2014 was amended in 2017⁴². Its new objectives were to establish support zones of

⁴¹ <http://static.kremlin.ru/media/events/files/ru/f8ZpjhpAaQ0WB1zjywN04OgKil1mAvaM.pdf>

⁴² <http://gov.garant.ru/SESSION/PILOT/main.htm>

development, development of the Northern Sea Route and shipping and development of technology and machine building for oil and gas sector for exploitation of Arctic natural resources as well as to create mechanisms of administration, legal basis and statistical monitoring for the whole Arctic zone. The revision included allocation of funds and specified the mode of development via eight support zones. These zones included Kola, Arkhangelsk, Nenets, Vorkuta, Yamal-Nenets, Taymyr-Turukhan, North Yakutia and Chukotka. Each of them was allocated a number of priority projects to be implemented through public-private partnerships (PPP).

The aforementioned Strategy... (Strategiya..., 2013) foresaw as one of its priorities provision of military security in the Russian Arctic; the military development in the North practically brought to a halt in the tumultuous 1990s with many bases abandoned has since restarted and in December 2014 a new military command authority was set up to oversee the North.

Soviet juris corpus pertaining to the Arctic either lost its effect or had to be rewritten. At present, there are over 500 legal norms from different political eras regulating the Arctic affairs, according to T. Khabrieva⁴³, vice-president of the Russian Academy of Sciences. While experts and politicians all agree the need for a single legal framework for the Russian Arctic development, the overarching character of such a document has so far prevented its approval and adoption. The relations between the state and the regions, the state and businesses or the businesses and the environment in the Arctic are governed by structural legislation and sectorial regulations and divided between central and regional jurisdictions. Moreover, while

⁴³ <https://rg.ru/2015/01/21/arktika.html>

there is a strong rhetoric in support of a coordinated approach towards the Arctic zone development, it would require the coordination of many more stakeholders from within and outside the Russian Arctic zone provinces, facilitation of transport links between them and harmonisation of development goals across many Arctic territorial units.

In 2020, a number of laws on the Arctic were passed by the State Duma and signed by the President; according to them, the whole Russian Arctic zone was to be declared a special economic zone and would benefit from a wide range of tax concessions and other preferences for investors and entrepreneurs. For instance, ice-breaker support, sea shipping, and cargo transshipment would have a zero-rated value added tax (VAT) and duty-free zones would be established at ports, airports and other areas.

The development of the Arctic has been managed through various ministries - Ministry of Economic Development (Minekonomrazvitiya), Ministry of Energy (Minenergo), Ministry of Natural Resources (Minprirody), Ministry of Defence (Minoborony). And as of recently, the responsibilities for the Northern Sea Route have been divided between the Ministry of Transport and a state atomic energy corporation Rosatom. In 2018, Rosatom has been assigned the managing duties over the development of the Northern Sea Route. Since 2019, the Ministry of the development of the Far East subsumed the matters of the Russian Arctic Zone and was restructured into the Ministry of the development of the Far East and the Arctic. Environmental matters are generally overseen by the Ministry of Natural resources and ecology (Minprirody). In 2018, Minprirody established a new Department for state policy and regulation in the field of hydrometeorology, research of the Arctic, the

Antarctic and the World Ocean dedicated to ecological monitoring of the polar regions and marine areas. Unfortunately, there has been no publicly available information as to its structure and activities.

In 2018 the former governor of the Arctic Yamal-Nenets Autonomous Okrug became the minister of natural resources and environment. He also appointed Denis Khramov, a former vice chairman of the board of directors at Novatek, a major oil and gas operator, as his first deputy and a former Yamal LNG manager, Sergey Khrushchev, as a head of department for the Arctic research evidencing interaction between state and corporate management. In 2020, there was a changeover of ministers, and the new top official, Alexander Kozlov (former governor of Amur region) also has a background in extractive industry. Minprirody’s dual function to exploit and preserve natural resources tends not to be reflected in its top management expertise.

Table 5. Official and public-private organisations engaged in the Russian Arctic governance

Name	Establishment date	Affiliation	Main areas of involvement	Top official
State commission of Arctic development	2015	Russian Government	coordination of federal and regional executive bodies and other state authorities on socio-economic and other matters related to the Arctic region; overseeing effective usage of the NSR, expansion of the resource base, military presence, environmental protection, Arctic cooperation, etc.	Yuriy Trutnev

Table 5. Official and public-private organisations engaged in the Russian Arctic governance

Name	Establishment date	Affiliation	Main areas of involvement	Top official
Development Fund for the Far East and the Arctic/ Development Fund for the Arctic Zone of the Russian Federation	2011 / 2021	Vnesheconombank (VEB.RF)	funding of priority projects in the Arctic; the former first funded Arctic zone projects in 2020	Alexei Chekunkov
Department for Arctic Development	2020	Ministry for the development of Far East and Arctic	organisation of Russia's chairmanship in the Arctic Council in 2021-2023; implementation of the national plan on climate change adaptation through to 2022 (issued in 2019); participation in effectiveness control over state's powers in water, forest, urban development legislation and ecological expertise in Arctic regions. Creating accelerated growth territories, special economic zones in the Arctic; investment, labour, etc.	Alexei Chekunkov (minister)/ Y.N. Rudenko
Department for state policy and regulation in the field of hydrometeorology, research of the Arctic, the Antarctic and the World Ocean	2018	Ministry of the Natural Resources and Ecology	modernisation of polar stations, programme of scientific research of polar regions, renewal of Roshydromet research vessel fleet, hydrometeorological safety of NSR shipping	Stanislav Urzhumtsev (appointed in 2020)

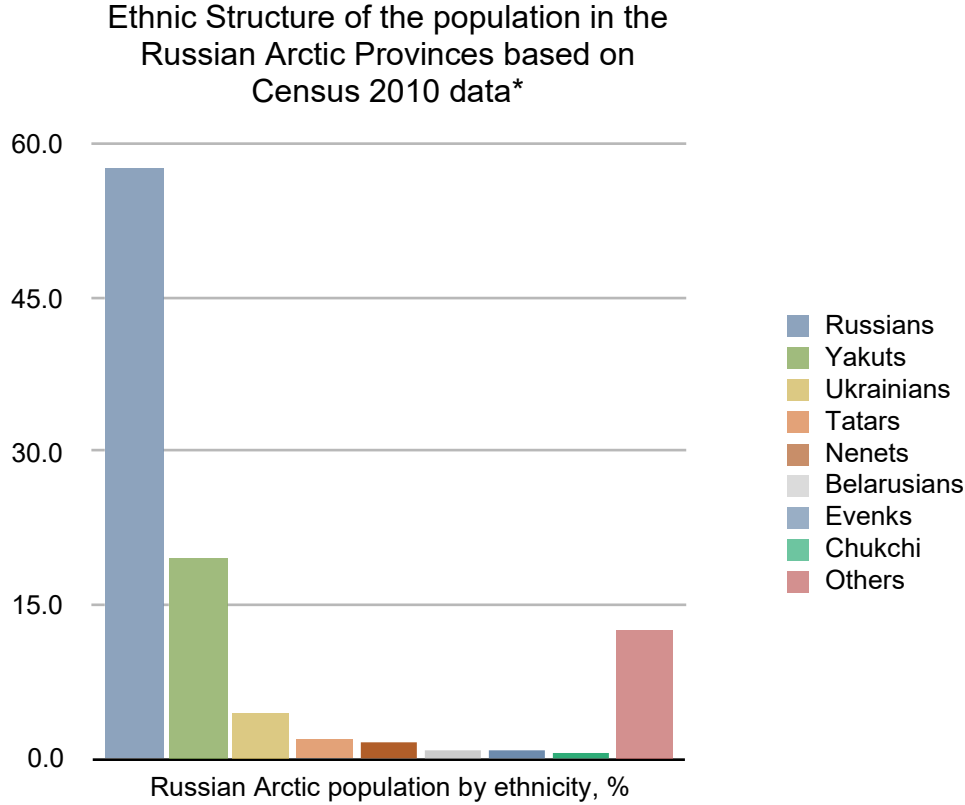
Table 5. Official and public-private organisations engaged in the Russian Arctic governance

Name	Establishment date	Affiliation	Main areas of involvement	Top official
Arctic Civic Council	2020	Ministry for the development of Far East and Arctic	<ul style="list-style-type: none"> - monitors interactions between Arctic zone residents (i.e. businesses with a special status) and small-numbered indigenous peoples of the North; - takes part in developing environmental protection measures; - reports to the federal body and the managing company on the “effectiveness of their management activities in the Arctic zone”. 	Members are elected by regional vote
Managing company, i.e. <i>Stolitsa Arktiki, Far East Development Corporation</i> subsidiary	2020	Regional government (sic. Murmansk) and Development Fund for the Far East and the Arctic	<ul style="list-style-type: none"> - register business-residents of the Russian Arctic zone; - liaise with investors and residents of the territory of accelerated development (sic. Murmansk). 	

All in all, Russia’s institutional mechanisms for managing Arctic development have been growing in number and scope and adapting in order to catch up with the actual pace of change in the region (i.e. oil and gas exploration and other projects existed before the publication of the 2013 Strategy of Arctic development), define and moderate its trajectory through deregulation and economic zonation.

3.3.4. Demographic characteristics of the Russian Arctic

The Russian Arctic has been traditionally inhabited by the indigenous ethnic groups, the largest of which are Nenets, Yakut, Evenk, etc. Since mineral and hydrocarbon mining commenced in the Northern Siberia in the late 1960s the local population has been surpassed in number by the work migrants and their families encouraged to move to the northern frontiers and settle in the newly emerged towns and nearby mining settlements. The 1990s saw a mass exodus⁴⁴ from the Arctic towns and in



* The graph shows data for Murmansk oblast, Nenets AO, Yamal-Nenets AO, Chukotka AO, Saha Republic but excludes data for other Arctic districts of Arkhangelsk oblast and of Krasnoyarsk kray (included in the RAZ as per Presidential decree 2014).

⁴⁴ 19% decline between 1990 and 2014 according to <http://council.gov.ru/media/files/VAzBy5r749GuZRCQD6zKQ6N0UzKAICAg.pdf>.

some cases abandonment of the entire towns (e.g. Dixon), yet the ratio of immigrant to indigenous population has remained largely unchanged.

The total population of the Russian Arctic amounts to circa 2.5 million people, which accounts for 40% of the global Arctic population or less than 2% of Russia's population. Despite the ethnic diversity, Russia's Arctic population is largely made of the ethnic Russian majority with a substantial component of non-Arctic peoples residing in the Russian Arctic provinces, including Ukrainians, Tatars and Belarusians. Some parts of the Russian Arctic have recently seen an influx of southerners from the Russian Caucasus (e.g. Chechens, Nogais, Kumyks...), Armenia, Azerbaijan, Tajikistan, and Moldova. In addition, thousands of temporary workers come to the Arctic from the southern provinces of Russia and abroad every year. The native ethnic peoples comprise around 25% of the total population with extremes represented by 1 Kerek and almost half a million of Yakuts residing in the Russian Arctic Zone and parts of Yakutia that were not included in the zone (as per 2010 Census⁴⁵). The demographic data of the whole of the Russian Arctic show a continuing decline of population with few spots of population growth (e.g. Yamal-Nenets Autonomous Okrug). The Arctic remains sparsely populated with vast areas remaining largely devoid of human and/or technological occupation.

The Russian Arctic is the most urbanised region of the global Arctic and Russia (86% of its population live in urban settings). The majority of towns are comparatively young and date back to 1970-1980s (Noyabrsk, Tarko-Sale) and are known as monotowns , i.e. industry satellites. The bigger cities are fairly well connected to the south and the capital by air transport, rail or ferry, but the cost of such a journey may

⁴⁵ http://www.gks.ru/free_doc/new_site/perepis2010/croc/perepis_itogi1612.htm

be comparatively high and unaffordable to some of the population. Winter roads (*zimniki*) make automotive transportation possible between remote areas in the Arctic and Siberia in winter months. However, with changing seasonal patterns and thawing permafrost the accessibility of remote areas by winter roads is forecasted to shrink by 13% by 2050 (Frolov, 2016). North-south connectivity dominates the movement pattern, the lateral railway connection exists only between Labytnangi, Vorkuta and Arkhangelsk in the western part of the Russian Arctic and up to the Ob river in the east. Urbanisation reflects structural changes in the population, namely the influx of non-native inhabitants.

Most of the bigger towns and settlements have basic social infrastructure such as hospitals, kindergartens, schools and colleges. Some larger cities have universities including Northern (Arctic) Federal University of Arkhangelsk and Murmansk Arctic State University, but many young people still move to regional centres or bigger Russian cities to continue their education, find jobs, some never to return. The number of students in the Russian Arctic in 2020 was four times lower than in 2005 (Minprirody, 2020). This tendency alongside the historical migration has created a deficit in skilled human resources as within the region so outside of it (few new graduates are motivated to relocate to the Arctic from non-Arctic university cities or hometowns⁴⁶). The demand for engineers and construction workers in the Russian Arctic zone is disproportional to a) aspirations and lifestyle of local and indigenous youth; b) availability and profile of higher education and professional training

⁴⁶ <https://forpost-sz.ru/a/2019-05-24/molodyozh-ne-khochet-rabotat-v-arktike-dazhe-za-270-tysyach-v-mesyac>

facilities⁴⁷; c) competitiveness of local workforce versus that of central regions (in line with recruitment strategy of the major oil and gas companies) (see also Loginov et al., 2020). The region will need to fill 184,200 new vacancies before 2035, according to official sources⁴⁸, which can only partially be covered by the regional population.

3.3.5. Re-colonisation of the Russian Arctic in times of environmental crisis

The Russian Arctic has been undergoing dramatic ecological shifts in the past few years whilst suffering from consequences of Soviet and post-Perestroika era industrialisation. Its size, scope of planned development and increased scale has the potential to render significant the influence on substantial parts of the broader Arctic region. The Russian Arctic remains connected to the mainland south of the polar circle through atmospheric and hydrological flows and hence depends on the ecological health of areas spanning far beyond the High North.

Some parts of the Russian Arctic zone, including its major rivers, are highly polluted⁴⁹ making the estuaries and coastal areas of the Arctic seas extremely vulnerable to accumulated and combined effects of organic pollution and bringing to the fore the issue of the south-north connectivity and transboundary nature of water-borne

⁴⁷ While YNAO has no university, other oil and gas provinces have been instructing their local universities to adapt programmes to cater for the oil and gas industry (e.g. Krasnoyarsk Oil and Gas Institute was created in 2007 with financial help from Gazprom and Rosneft; ...). 2 universities were founded in 2010 in the Arctic region, in Arkhangelsk and Yakutsk.

⁴⁸ <https://minvr.gov.ru/press-center/news/29471/>

⁴⁹ Incidents of extreme pollution in the Ob river increased by 13% in 2018 compared to 2017 while level of pollution was reported to have remained consistently high for at least 5 years previously (Minprirody, 2018). Murmansk region and Yamal-Nenets Autonomous Okrug of the Arctic had the highest number of extreme pollution cases in 1998-2016 (Kotova et al., 2018).

pollution. To date, there are no effective means of environmental cleanup in extreme cold and icy conditions of tundra, Arctic desert and sea ice, and any technological disaster has the potential to cause irreparable damage to the natural environment and indigenous economies (e.g. Bogoyavlenskiy, 2014). For example, from 2011 to 2015 there were 20 incidents of hydrocarbon spillage in the Russian Arctic (Fyodorov, 2016), which are likely to have a long-lasting negative effect on local ecosystems (e.g. a 2003-2012 investigation of the beluga whale population in an area affected by mazut spillage in the White sea showed just that, see Andrianov et al., 2012).

In addition to the risks associated with the new industrial development, the amount of hazardous waste left as a result of the Soviet Union activities in remote Arctic locations has also recently received political and media attention. In 2012 a cleanup programme was devised to remove such waste with 8 thousand tons of fuel casks and other technological debris successfully collected and taken out of selected Arctic islands and coastal areas. To put this number in perspective, by the end of 2015 the Russian Arctic provinces together had reportedly accumulated approximately 1 billion tons of waste (Fyodorov, 2016), highlighting the problem of waste management in the context of undeveloped infrastructure and an increased pace of development.

The Siberian North has been left with biological hazard sites, such as more than 13,000 animal burial grounds containing Anthrax spores and natural reservoirs of infectious disease agents that are likely to become more active and spread further as a result of climate change (Revich et al., 2012). There are also sites of high radioactivity (atomic submarine waste yards at the Kola peninsula and Severodvinsk, infamous 'Tsar'-bomb testing grounds on Novaya Zemlya, nuclear waste and atomic

submarines submersion spots in the Kara and Barents seas, etc., e.g. Salbu et al., 1997) that pose environmental as well as health risks in view of aforementioned climate uncertainties.

In addition to the historical sources of radioactive waste, there are two operational nuclear power stations above the Arctic circle, and both are located in Russia.

Bilibino nuclear power station (NPS) in Chukotka was due to be decommissioned in 2016-2019, but its licence was extended until 2025 when an innovative floating nuclear power station in the East Siberian Sea will take its place in supplying the region with heat and power. Due to remote location and poor transport connections of the NPS, the radioactive waste is typically stored on site in spent fuel pool as opposed to standard removal and processing at a designated facility. Another, Kola peninsula NPS will continue operation until about 2030 while two brand new units will be constructed at the same location. The inherent risks of the nuclear energy as well as its long-lasting landscape footprint in the changing Arctic climate should not be considered lightly.

The Arctic is warming much faster than the rest of the world (e.g. Mauritsen, 2016), and this has created both economic opportunities and uncertainties related to the tipping events and the impact they would have on the rest of the world bringing to the fore the need for environmental governance reevaluation. Geomorphological and biological changes have already been observed in certain areas of the north and associated with the changing climate. The coastline of the Russian Arctic stretches for over 22,000 km and is now more susceptible to coastal erosion as a result of climate change. Coastal erosion caused by thawing permafrost and thermoabrasion already accounts for a loss of about 10 m of coast a year (Global Environment Fund,

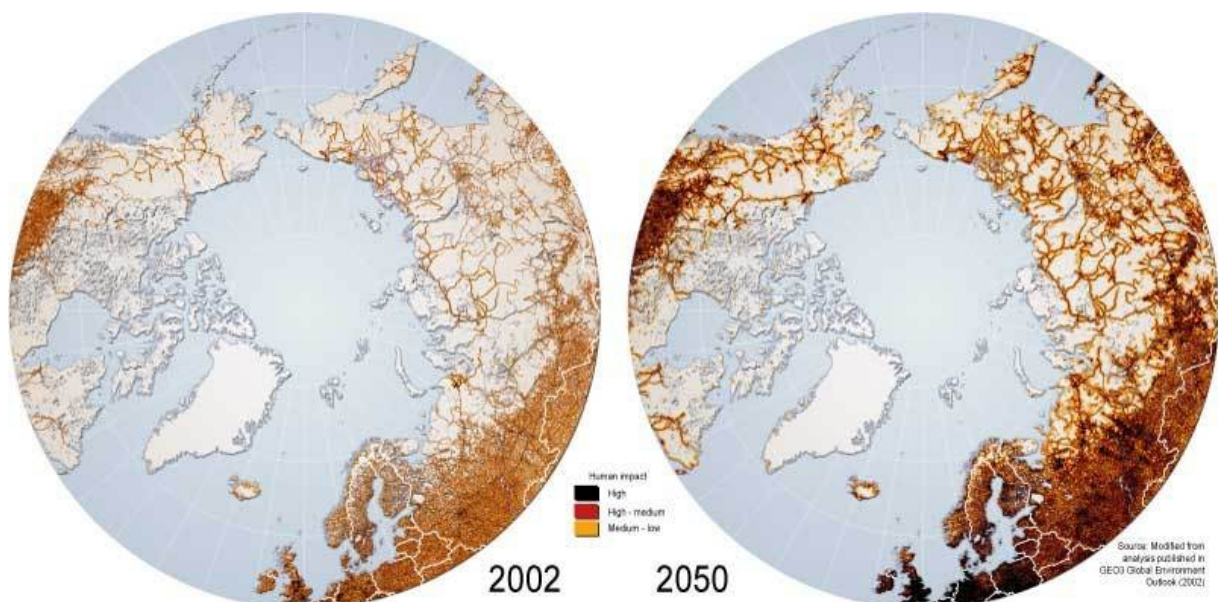
2011) and is predicted to increase (Ogorodov, 2008). Coastal development and shipping can both aggravate ecosystem risks for the marine mammals and bird colonies nesting on the shores (Korelskiy, 2016). The studies in the Kara Sea in 2013 found that offshore permafrost of the Arctic shelf may be more degraded than previously thought with large amounts of seafloor methane escaping into the atmosphere (Portnov et al., 2013; Serov et al., 2015). The offshore study is consistent with the conclusions about the nature of Yamal craters⁵⁰ that were also linked to the changing climate (e.g. Arzhanov et al., 2016). In all permafrost reduction scenarios, the Russian Arctic and Northern Siberia are considered the most vulnerable across the north polar region (Anisimov and Reneva, 2006). National parks and nature reserves cover about 7% of the Russian Arctic. The distribution of protected areas is uneven, fragmented and is to a large extent dependent upon such priorities as national security or resource value of a given subregion. Russia has been perceived to have less strict environmental regulations especially in the field of resource exploration compared with other Arctic states, such as Norway, Canada and the USA⁵¹. At the same time very little is known about how and to what extent these regulations are implemented, whether any other informal

⁵⁰ This new Arctic phenomenon coined Gas Emission Craters has been first discovered on Yamal peninsula in 2013 and the number of known craters on both Yamal and Gydan peninsulas reached 17 by 2020. See also: Bogoyavlensky, V. (2015). Gas blowouts on the Yamal and Gydan Peninsulas. Available at: <http://archives.datapages.com/data/geo-expro-magazine/012/012005/pdfs/74.htm>; Leibman M.O., Kizyakov A.I., Plekhanov A.V., Streletskaya I.D. New permafrost feature - deep crater in Central Yamal(West Siberia, Russia) as a response to local climate fluctuations. *GEOGRAPHY, ENVIRONMENT, SUSTAINABILITY*. 2014;7(4):68-79. Available at: <https://ges.rgo.ru/jour/article/view/67>

⁵¹ According to Energy Analyst Doug Mathews, it is precisely why Russia, unlike Canada and the USA, is doubling down on the hydrocarbon exploration in the Arctic (<https://www.offshore-technology.com/features/the-cold-thaw-inside-russias-300bn-arctic-oil-and-gas-investment/>).

mechanisms are at work, how they translate down to the local level in the Russian Arctic context and what is lost in 'translation'.

The image of human impact in 2050 created by the cartographer Hugo Ahlenius in 2006 for a Norwegian environmental communications centre shows very little structural change in coloration in the Russian Arctic. And in particular, it shows hardly any colour on the Yamal peninsula, which has been under intense industrial development since late 2000s. This is most likely to be the result of limited data and information on the development plans with regard to this peninsula and neighbouring Gydan peninsula, as well as the rest of the Russian Arctic. However, it could also point at the possibility of irregular shifts in the trajectory and extent of human impact in the region under sovereign state jurisdiction as well as potential transference of such impacts across the circumpolar north and beyond.



Re-colonisation of the Russian Arctic in the outlined above baseline conditions makes environmental governance a poignant topic in the Russian and global Arctic context. While little is known about Russia's environmental governance and

mitigation of climate change impact in the Arctic, industrialisation and economic relaxation in the region is bound to change these research conditions in the next couple of decades. Thus, this case study can be seen as, on the one hand, insightful for the rest of the Arctic region, especially resource rich parcels, and, on the other, given the relative size and extend of the Russian section, inform of the anthropogenic changes across the whole circumpolar North.

Chapter Four: Scale and source of environmental governance in the Russian Arctic

The following chapter explores international, political and legal scales and sources of environmental governance in the Russian Arctic. It challenges the notion of the Arctic as a geopolitical unit by analysing mechanisms and enablers of environmental governance in the region, specifically what drives the adoption of pro-environmental principles and norms, forces behind national narratives and relation to space and place outside and inside the Russian Arctic. The particular mechanisms of environmental governance included environmental monitoring and oversight, corporate responsibility, civil society engagement, Arctic environmental discourse, awareness, and scientific data in view of the challenges posed by the industrialisation. Particularly, the section analyses how these mechanisms are translated and deployed or effectuated on the regional and local level, Yamal-Nenets Autonomous Okrug and Yamal district (peninsula) respectively. It is based on interview data and document analysis.

4.1. International Arctic governance

The international Arctic regime is a 'soft law' regime, which, some argue, is bound to become 'hard' as a result of climate change, especially in the context of the environmental protection legislation that has been "increasingly influenced by international law principles" (Johansson and Donner, 2015, p. 1). However, up to now, very few problem areas have received this attention. The anticipated increase in shipping has brought about changes to the International Convention for the

Prevention of Pollution from Ships (MARPOL) and United Nations Convention on the Law of the Sea (UNCLOS) interpretations, e.g. the new MARPOL annex, the so called Polar Code that took effect in 2017 takes into account potential risks associated with climate change. Emerging fishing opportunities as a result of receding sea ice have also been addressed by the international community in 2017 through a voluntary cessation of rights to carry out fishing for 16 years in newly ice-free zones of the Central Arctic ocean. Both cases demonstrate a precautionary approach adopted by the international community.

The 1991 Arctic environmental protection strategy and its successor, the Arctic Council, have been at the forefront of the Arctic environmental discourse since 1990s, however their influence, efficiency and authority have been questioned as a result of their voluntary nature, the limited scope of political issues covered, and the growing economic and climatic pressures on the region in question (e.g. Koivurova, 2010; Young, 2010). The Arctic Council has been promoting itself as the highest order of the Arctic governance, for instance, in the 'Vision for the Arctic' they stated that "The Arctic Council has become the preeminent high-level forum of the Arctic region and we have made this region into an area of unique international cooperation" (Arctic Council, 2013). Yet the Arctic Council could still be described in Koivurova's words as a "sticky form of cooperation, that is, a form of cooperation resistant to change" (Koivurova, 2010, p. 1) which suggests limited likelihood of this forum evolving into a treaty based organisation. As Oran Young pointed out, most of the achievements in the field of Arctic governance have been made outside of this institution (e.g. the Polar Code, Kolarctic, bilateral cooperation examples) suggesting the discrepancy between the rhetoric surrounding the forum and its measurable

outcomes but not discounting its discursive influence. Its structural flexibility and shift from producing normative outputs to scientific assessments, some argue, may be conducive to durability of this institution as the region opens up to resource competition, shipping and development (Koivurova et al., 2015; Barry et al., 2020; Spence, 2017). At the same time, “an increasingly diverse approach to knowledge acquisition and information exchange” (Wiseman, p. 450) may be needed to sustain the competitiveness of this intergovernmental forum. The “soft” agency may, too, evolve with the Arctic Council having succeeded in producing binding international agreements: Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic in 2011 (in force in 2013), Agreement on Cooperation on Marine Oil Pollution Preparedness and Response in the Arctic in 2013 and Agreement on Enhancing international Arctic Scientific Cooperation in 2017 (in force in 2018). With the ever-growing argument for a more inclusive Arctic governance in view many non-Arctic states claiming connection to or expertise for the region (e.g. Knecht and Keil, 2013) and commonality of ecological concerns, the extent to which governance inclusivity and cooperation in the Arctic can be achieved in practice has hinged upon a wider geopolitical and historical context, namely that of the continuous divide between the East and West ‘Arctics’ and the ‘ghost’ of Cold War (see e.g. Lee, 2017; Burke and Rahbek-Clemmensen, 2017). This wider context affects not only the communication between official actors, but also that between scientists, NGOs, indigenous and northern peoples, businesses. Beyond that, it affects the policies, allegiances and outcomes of international efforts, including those adopted within the Arctic Council and other fora within the region, which is harder to account for and also harder to locate in the academic literature. Yet, the unbalanced dynamic of such

inclusivity can be detected in more open international fora of communication on the Arctic, such as the Arctic Circle Assembly, the Northern Forum, and many annual and biannual scientific and political conferences.

While the intellectual and political value of such venues is unquestionable, Arctic states' and actors' representation and hence distributional impact may be uneven across the Arctic states. For instance, the Arctic Circle Assemblies 2016 and 2017 had a comparatively low number of Russian participants and were dominated by official Russian presence, in contrast, Russia's annual international 'Forum Arktika: Present and Future' in the same years gathered quintessentially domestic participants and few, mainly official or well-established speakers or attendees from outside Russia (e.g. Bob Paquin, Head of Canadian International Arctic Centre in 2016, Harkonen Aleks, Arctic Ambassador for Finland, in 2017). Thus, the national Arctic discourse may vary depending on the depth and extent of participation in various international circumpolar discussions, which is especially noticeable in downplaying climate change topic while boosting natural resource exploration and navigation in Russia but emphasising ecological and ethnic issues at the Arctic Circle (e.g. Ban Ko-Moon's speech in 2016). This may point at counter narratives of the Arctic defined by climate change and the Arctic defined by extractive industry.

In terms of international obligations, all Arctic states are members of the United Nations, which as an organisation has been known to lead the environmental and climate change debate since the Stockholm Conference on the Human Environment in 1972. While evaluation of the UN environmental architecture is a matter for another study, a number of international agreements produced by the UN are of significance in the Arctic region. The table below illustrates the contingency of

adoption success and disorderly timeframe related to signing and ratification of the international environmental conventions by the Arctic states. There are few environmental conventions (Table 6) that all Arctic states have signed and ratified: Ramsar, CBD, World Heritage, London and the Air Convention. For others, in some cases, it took over 20 years for individual countries to begin to implement the requirements of the international agreement. What really escapes academic grasp is the effectiveness and observable impacts of such conventions. For instance, more than a decade after the Soviet Union had ratified the Clean Air Convention, Nordic environmental organisations battled the transboundary industrial pollution, so called 'death clouds', coming from the North-West of Russia (Honneland and Jorgensen, 2003, p. 4). This demonstrated that legality does not necessarily equal accountability; and also that other factors, in this case political and economic turmoil of a state in transition, may have a greater impact onto the matters of environment. Another example demonstrating ambivalence towards non-ratification of a UN convention is the USA management of persistent organic pollutants (POPs) outside of the convention via bilateral agreements with Canada, Russia and European states. At the same time, studies on POPs in Alaska (Haguet et al., 2013), Canadian Arctic (Braune et al., 2005) and the compilation of statistical data across a wider circumpolar region (Riget et al., 2019) were based on data collected from the 1970s and 1980s, well before the Convention, and all, apart from Alaska, showed a downward trend in POP concentrations. Alaska's increase was not linked to the lack of source management in the US but the likelihood of atmospheric and oceanic transport from Asia and Russia. This shows that the conventions may not be a strong driving force and their non-ratification may not mean violation of its principles.

Table 6. UN Conventions on environment: participation of the Arctic states

Arctic state / Convention	Russia	USA	Canada	Iceland	Norway	Finland	Sweden	Denmark
Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (Aarhus Convention) (2001) and Kiev Protocol on Pollutant Release and Transfer Registries (2009)	-	-	Canada did not ratify the agreement.	Ratified in 2011.	Ratified in 2003.	Accepted in 2004.	Ratified in 2005.	Approved in 2000.
Convention on Long Range Transboundary Air Pollution, 1979	Ratified in 1980, but did not sign Gothenburg protocol (1999) with 2014 amendments which included black carbon, especially relevant for the Arctic, or the Volatile Organic Compounds Protocol (1991)	Accepted in 1981.	Ratified in 1981. Ratified Gothenburg protocol in 2017.	Ratified in 1983. Did not sign Gothenburg protocol.	Ratified in 1981.	Ratified in 1981.	Ratified in 1981.	Ratified in 1982.
Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention), 1991	Signed in 1991. Did not ratify.	Signed in 1991. Did not ratify.	Ratified in 1998.	Signed in 1991. Did not ratify.	Ratified in 1993.	Accepted in 1995.	Ratified in 1992.	Approved in 1997.

Table 6. UN Conventions on environment: participation of the Arctic states

Arctic state / Convention	Russia	USA	Canada	Iceland	Norway	Finland	Sweden	Denmark
Convention on the Protection and Use of Transboundary Watercourses and International Lakes, 1992/1996	Accepted in 1993.	-	-	-	Approved in 1993.	Accepted in 1996.	Ratified in 1993.	Approved in 1997.
Convention on the Transboundary Effects of Industrial Accidents, 1992/2000	Ratified in 1994. In force since 2000.	Signed but not ratified.	Signed but not ratified.	-	Ratified in 1993. In force since 2000.	Ratified in 1999, in force since 2000.	Ratified in 1999, in force since 2000.	Ratified in 2001.
Convention on Biological Diversity (CBD), 1992	Signed in 1992, ratified in 1995. In force since 1995.	Signed in 1993. Not ratified.	Signed in 1992, ratified in 1992. In force since 1993.	-	Signed in 1992, ratified in 1993. In force since 1993.	Signed in 1992, accepted in 1994. In force since 1994.	Signed in 1992, ratified in 1992. In force since 1993.	Signed in 1992, ratified in 1993. In force since 1994.
Convention on Trade in Endangered Species (CITES), 1973	Continued from the USSR in 1992.	Ratified in 1974. In force since 1975.	Ratified in 1975. In force since 1975.	Acceded in 2000. In force since 2000.	Ratified in 1976. In force since 1976.	Acceded in 1976. In force since 1976.	Ratified in 1974. In force since 1975.	Ratified in 1977. In force since 1977.
Conservation of Migratory Species of Wild Animals (CMS), 1979	-	-	-	-	Party since 1985.	Party since 1989.	Party since 1983.	Party since 1983.

Table 6. UN Conventions on environment: participation of the Arctic states

Arctic state / Convention	Russia	USA	Canada	Iceland	Norway	Finland	Sweden	Denmark
Convention on Wetlands of International Importance (Ramsar Convention), 1971	Ratified in 1976.	Participated since 1986.	Acceded in 1981.	Acceded in 1977.	Signed in 1974. In effect in 1975.	Ratified in 1974, in effect in 1975.	Signed in 1974. In effect in 1975.	Acceded in 1977.
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, 1989 (1992)	Signed in 1990, ratified in 1995. In force since 1995.	Signed in 1990. Not ratified.	Signed in 1989, ratified in 1992. In force since 1992.	Acceded in 1995. In force since 1995.	Signed in 1989, ratified in 1990. In force since 1992.	Signed in 1989, accepted in 1991. In force since 1992.	Signed in 1989, ratified in 1991. In force since 1992.	Signed in 1989, approved in 1994. In force since 1994.
Stockholm Convention on Persistent Organic Pollutants, 2001	Signed in 2002, ratified in 2011. In force since 2011.	Signed in 2001. Not ratified.	Signed in 2001, ratified in 2001. In force since 2004.	Signed in 2001, ratified in 2002. In force since 2004.	Signed in 2001, ratified in 2002. In force since 2004.	Signed in 2001, accepted in 2002. In force since 2004.	Signed in 2001, ratified in 2002. In force since 2004.	Signed in 2001, ratified in 2003. In force since 2004.
Convention on the prevention of marine pollution by dumping of wastes and other matter (London Convention), 1972	Excluded. In effect since 1994.	Ratified in 1974. In force since 1975.	Ratified in 1975. In force since 1975.	Ratified in 1975. In force since 1975.	Ratified in 1974. In force since 1975.	Ratified in 1979. In force since 1979.	Ratified in 1974. In force since 1975.	Ratified in 1974. In force since 1975.

Table 6. UN Conventions on environment: participation of the Arctic states

Arctic state / Convention	Russia	USA	Canada	Iceland	Norway	Finland	Sweden	Denmark
Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, 1998 (2004)	Acceded in 2011. In force since 2011.	Signed in 1998. Not ratified.	Acceded in 2002, in force since 2004.	-	Signed in 1998,	Signed in 1998, accepted in 2004. In force since 2004.	Signed in 1998, accepted in 2001. In force since 2004.	Signed in 1998, ratified in 2004. In force since 2004.
Minamata Convention on Mercury, 2013	Signed in 2014. Not ratified.	Signed in 2013, accepted in 2013.	Signed in 2013, ratified in 2017.	Acceded in 2018.	Signed in 2013, ratified in 2017.	Signed in 2013, accepted in 2017.	Signed in 2013, ratified in 2017.	Signed in 2013, approved in 2017.
Convention on the Law of the Sea (UNCLOS), 1982	Signed in 1982, ratified in 1997.	-	Signed in 1982, ratified in 2003.	Signed in 1982, ratified in 1985.	Signed in 1982, ratified in 1996.	Signed in 1982, ratified in 1996.	Signed in 1982, ratified in 1996.	Signed in 1982, ratified in 2004.
World Heritage Convention, 1972 (1975)	Ratified in 1988.	Ratified in 1973.	Accepted in 1976.	Ratified in 1995.	Ratified in 1977.	Ratified in 1987.	Ratified in 1985.	Ratified in 1979.

The international institutions such as the UN and the EU (EU members, Denmark, Sweden and Finland, have a perfect track record with these UN conventions) undoubtedly exercise their influence and legal authority within the Arctic region and on a range of issues which are mainly linked to the Central Arctic Ocean and, in the case of EU, pertain to the EU or EEU states. At the same time Russia, Canada and

the USA - together accounting for over 75% of the global Arctic coastline - lean towards selective international collaboration on environmental and other issues while exerting territoriality over their Arctic zones through normative dominance, militarisation and economic development. While there has been environmental policy convergence in the European Arctic states and there are also bilateral treaties in the American Arctic sector and some border cooperation between the USA and Russia and Finland, Norway and Russia, we can hardly foresee environmental governance integration in the Arctic region in the nearest future.

Additionally, an argument exists that some international agreements have managerial, data availability and reporting issues (Steinar Andresen, 2007; Seelarbokus, 2014) to such an effect that it causes 'a paralysis' in compliance due to the overwhelming number of obligations for a state (DiMento, 2016) or as a result of conflictive inter-institutional regimes (Biermann and Pattberg, 2012). A particular issue in the implementation of the UN environmental conventions is the insufficient allocations of domestic budget, corruption, illegal activities, lack of political will or resources (e.g. Jorgensen and Honneland, 2006; Conca, 2015). All in all, ratification of an international agreement while being an important enabler of environmental governance may not reveal how certain measures are being adopted, localised and enforced.

The blurred lines of all-encompassing hierarchical versus unstructured 'soft' international cooperation may make the concept of governance epistemologically excessive and unusable in the multi-national North Polar region context. Some authors attempt to overcome the scalar problem in studying policies and governance within the Arctic without fixating solely on non-governmental institutions and supra-

state fora when addressing the question of environmental governance or more generally Arctic governance (e.g. O. Young, E. Wilson Rowe). But few if any are attempting to connect the local processes and governance elements with the funnelling effect⁵² of the higher-level normative, cognitive and integrative mechanisms, including the Arctic Council, the Northern Forum, UN, namely, whether values, principles, policies and resolutions of these high order organisations trickle down to the local Arctic. While, it is impractical to dismiss them as ineffective for lacking dissimilation or enforcement without any prior understanding of the processes happening at the ground level (as certain practices may not need enforcement or political instrumentalisation), it would also be insufficient to rely on the Arctic Council expertise and achievements or UN environmental conventions as a sole source for extrapolating and analysing socioecological relations in the many regions of the circumpolar North.

In contrast to the institutionalised international forum such as the Arctic Council, Arctic governance can also be understood as a network of non-hierarchical governance elements. As Young (2016) notes the “Arctic regime complex encompassing a number of distinct elements that all deal with matters relating to the Arctic but that are not hierarchically related to one another” (Young, 2016). Other researchers managed to overcome the scale issue by adopting a nested approach in order to interpret regional, national and local governance mechanisms (e.g. Wilson Rowe, 2018). Non-state actors, quoted as sources of Arctic governance, such as cross-regional and people-to-people diplomatic relations (e.g. Tennberg, 2012; Olsen

⁵²Funnel-based approach has been used in corporate management and marketing to trace the path from product awareness to purchase and here is used metaphorically to grasp a similar process of decision-making in the field of public and community environmental governance.

and Shadian, 2016) as well as international environmental NGOs may provide an interesting viewpoint onto the political dynamic in certain Arctic areas, e.g. engagement with tribal chiefs, parity of scientific and indigenous knowledge, but less reliably so onto the governance outcomes as there is little to none followup on co-joint decision-making or other types of participation pertaining to the Arctic nature. Regardless of the UN environmental conventions' goal to regulate and reduce transboundary atmospheric and waterborne pollution as well as increase environmental transparency, the Arctic environmental governance on land and on sea remains fragmentary and to an extent outdated through the effects of climate change, geoeconomic shifts and sociopolitical momentum within individual Arctic states (e.g. Koivurova and Molenaar, 2009; Young, 2019). And if political boundaries of the governance system in the Arctic are somewhat penetrable through communication and facilitation channels - whether it may have a positive (e.g. tighter environmental regulations) or negative (e.g. militarisation) effect - on the normative level, the Arctic remains in the grips of a number of nationally adopted environmental conventions (UN), bilateral agreements (e.g. Russia and Norway) and national laws, of which the latter have most relevance, highest 'density' and deepest reach.

4.2. Russia's Arctic environmental governance

4.2.1. Environmental policies in the Russian Arctic

Neither of the Russia's key policy documents on the environmental security, the Foundations of the state policy in the area of environmental development through to

2030 (2012)⁵³ nor the Environmental security strategy (2017⁵⁴) are specific to the Arctic's environmental problems, but both list and acknowledge systemic and general issues in the relations between society, state and natural environment throughout Russia. The 2012 Foundations document was issued in order to mark the need for a more stringent approach to environmental security in the course of economic modernisation. The document introduced a range of measures including: a precautionary principle ('presumption of environmental danger of an economic or other activity', and a ban on an economic activity if its environmental consequences are either unpredictable or detrimental for the natural environment), priority of preserving natural ecosystems, landscapes and complexes, and 'full compensation' for environmental damage. All these points were fairly radical within the context of the prevailing legal vocabulary, but have not been reiterated in subsequent documents. The 2017 Environmental security strategy was adopted to replace the strategy issued back in 1994. Part II of the document listed current environmental problems acknowledging the poor state of the Russian environment at large, including aquatic pollution, poor air quality, degradation of soil resources, mainly as a result of previous economic activities and ineffective management of present economic impact onto ecology. Part III defined the challenges and threats to the state's environmental security, in particular it pointed out such societal factors as poor environmental awareness of the Russian people, criminalisation of the natural resource sector, legacy waste, and lack of public funding for the environmental protection measures. It also recognised climate change and direct ecological damage through pollution and

⁵³ <http://kremlin.ru/events/president/news/15177>

⁵⁴ <http://pravo.gov.ru/proxy/ips/?docbody=&firstDoc=1&lastDoc=1&nd=102430636>

degradation. The objectives that the Strategy (2017) set to mitigate and improve the ecological situation in the country included ecological restoration and rehabilitation, prevention of future damage as well as improvements in regulations, enforcement and the respective institutional system governing the matters of environment. Ultimately, it pointed at the areas in need of modernisation or existing lacunae like data availability and social awareness. One particular issue was mentioned in relation to the Arctic, that is a significant risk of oil spills and the danger it presents for the region while one of the mechanisms of its implementation was described as 'strategic ecological assessment of projects and development programmes of the Russian Federation, macroregions, territorial units of the Russian Federation, municipalities', in addition to standard impact assessment and document expertise, which would include the Russian Arctic Zone by definition (either as a whole or as a sum of its parts). The environmental security status of the Russian Federation is to be evaluated via indices such as percentage of the territory below the environmental standard threshold relative to the country's total area, the proportion of protected land or that covered by forest. The Environmental security strategy has undoubtedly been a positive development in recognising and attempting to mitigate Soviet and Russia's negative impact onto the environment, but it also failed to fully embrace the new areas of accelerated growth and development (i.e. some areas of the Arctic such as Yamal) as those of higher risk and requiring special measures.

The Environmental protection programme 2012-2020 (2014)⁵⁵ had seven funded sub-programmes and aimed to protect and restore biodiversity, increase efficiency of hydro-meteorological monitoring, fund scientific expeditions to the Arctic and

⁵⁵ <http://gov.garant.ru/SESSION/PILOT/main.htm>

Antarctic, mitigate the negative environmental impact through removal of legacy waste. It was the only official document that addressed regional issues, e.g. the Lake Baykal special area and to a certain extent the Arctic albeit by only facilitating research whilst not advancing environmental management in the region. The National project 'Ecology' (2018)⁵⁶ has been widely quoted as the instrumental document of the Ecological security strategy, it was scheduled to run through to December 31, 2024. Its main objective is to fast-track solutions to pressing ecological issues, such as extreme levels of atmospheric pollution in some industrial cities across Russia, decline in biodiversity, aquatic pollution in the major water bodies and other. While it specified some geographical locations, i.e. Lake Baykal and the river Volga, its implications for the Arctic were not as clear. While the Arctic provinces would benefit from some of its initiatives (e.g. 'Clean water', preserving biodiversity and implementing best available technologies), the priority was given to more populated areas where the impact and political rewards were believed to be most significant.

While 'element-based' environmental programmes (e.g. Clean Air, Clean Water) are issue-oriented and aimed at decreasing levels of pollutants, little attention is paid to integrating environmental governance targets in ecosystem outcomes. The Arctic Council proclaimed the ecosystem-based approach (EA) as a key management strategy in the region⁵⁷. But at the moment Russian environmental laws and policies do not operate in terms of ecosystem approach, new policies and strategies such as the State Policy on Environmental protection 2012-2020 and Strategy on

⁵⁶ <https://ecologyofrussia.ru/proekt/>

⁵⁷ <https://pame.is/document-library/amsp-documents/180-ecosystem-based-approaches/file>

environmental security through to 2025 (President Rossii, 2017) show a shift towards ecologically informed governance, they incorporate values of biodiversity and ecosystem services into economic indicators, stress role of citizens in protection measures. Unlike the existing environmental laws, the Strategy of environmental security, specifically stated the protection of marine and terrestrial ecosystems rather than 'natural objects' or particular species. Still, this changing vocabulary does not go as far as an EA. The Strategy on the Conservation of Rare and Endangered species of animals, plants and fungi up to 2030 is the only document that sets a goal of developing and implementing the "ecosystem approach" in order to achieve sustainable use of natural resources throughout the economic sectors as a protective measure but no specifics or timeframes were given, and at this stage it continued to rely on species, organism and population approaches to conservation. The discrepancy in terminology here has a far reaching effect onto the monitoring, assessment, enactment and enforcement of any such measures.

As for individual species, the history of wildlife protection dates back to 1978, year of the first edition of the Red Book (or 1983 for the Russian Soviet Federative Republic), and is based on the Red Book of the Russian Federation, which was updated in December 2017 after its previous edition in 2000 for animals and 1988 for plant species. The list of protected species was modified but no decision was made for 16 'controversial', mostly hunted species including some populations of wild reindeer. In January 2018, the Ministry of Jurisprudence halted the registration of the document pending the resolution of this controversy and public discussion of the new version of the book. The public outcry against the hunters' lobby to take certain birds and mammals off the list in the new edition brought up general concerns over

unregulated hunting and poaching across Russian media⁵⁸. An open letter was addressed to the President and signed by over 200 scientists in November 2017 notifying of the violations in the decision-making process and the influence of commercial hunting organisations onto the Red Book commission⁵⁹. The list of Red Book species was settled in 2020 (Minprirody decree of 24.03.2020 № 162) and added 29 new bird species and 14 mammals to be protected by law. For the Russian Arctic, these additions are significant as two out of three populations of wild reindeer, a population of orcas, a population of polar foxes, several species of geese are now excluded from hunting and commercial circulation. Scientists are still concerned that the niche left vacant by the new Red Book edition will be filled in by other yet unprotected species (e.g. walrus instead of killer whale to export to China)⁶⁰. Although there is no Arctic-specific endangered species list, regions within the Arctic zone can issue their own 'red books'. Regardless, indigenous populations maintain the right to procure many marine mammals, birds and fish that are listed in the regional or national Red Book, including grey and Greenland whales, walrus, beluga whale, and wild reindeer. Polar bear has been traditionally hunted by Chukotka indigenous peoples for meat and fur as well as by non-native recreational hunters across the Arctic until the ban was imposed in 1957. The 1990s saw a spike of illegal capturing of polar bear in Chukotka and it is estimated that over 200 polar bears were

⁵⁸ http://expert.ru/russian_reporter/2018/01/bitva-za-krasnuyu-knigu/

⁵⁹ The text of the open letter on the Red Book preparation by Russian scientists to V.V. Putin is available at n.a. (2017) Otkrytoye pismo uchenyh V.V. Putin o podgotovke Krasnoy Knigi RF. TRV-Online. [online]. Available at: https://trv-science.ru/2017/11/20/letter_to_putin_about_red_book/ Accessed: 1/2/2020

⁶⁰ <https://www.rgo.ru/ru/article/kosatki-kasatki-oleni-i-tyuleni-kogo-eshchyo-dolzha-spasti-novaya-redakciya-krasnoy-knigi>

harvested annually with the number gradually falling to around 20 in the early 2010s (Kochnev and Zdor, 2014). 2010 saw a new strategy on preservation of polar bears in Russia⁶¹, which addressed new threats associated with Arctic development for the three populations of polar bears in the Russian Arctic.

Regardless of Russia's spread over several climatic zones and vast area of tundra, environmental policies do not differentiate between the zones or their specific needs, for some exceptions. Generic nature of Russia's environmental vision may be read as curtsy to the economic prerogatives while acknowledging the demand for the government's response to ever more visible ecological problems across all of Russia.

4.2.2. Environmental legislation in the Russian Arctic

While the rhetoric of a Russia's return to the Arctic captured imagination of the epistemic community worldwide (e.g. Young, 2010; Tatarkin, 2014), the emerging Russia's governance system for the Arctic environment has attracted far less scrutiny. The complexity of actors - beyond the state, the Soviet legal heritage and the legacy of semi-legal practices and enforcement failure throughout the Russian North in the 1990s, spike of industrial and mining activities in the 2000s, new Arctic strategies and redefined domestic boundaries - all added to the descriptive complexity and led (and continues to do so) to the re-definition of socioecological governance within the region.

While Russia has been a signatory to several relevant international environmental conventions as discussed above (e.g. Ramsar in 1977; London Convention and Protocol in 1972/2005), issues of implementation, participation and enforcement are

⁶¹ http://www.mnr.gov.ru/docs/strategiya_sokhraneniya_redkikh_vidov_zhivotnykh/98535/

still pertinent. For instance, Russia has fewer designated Ramsar sites than the UK, and they are only slightly greater in area than those of Norway, despite possessing vast areas of wetlands covering 1.8 million sq. km including peatlands and river deltas in its northern regions, i.e. the area larger than Alaska, serving as breeding grounds for many bird species⁶². Less than 6% of potential Russian wetlands are included in the Wetlands of International Importance inventory. Adding sites to the list is complicated as it would require putting special management plans in place in those areas, which in turn would set in motion internal political and regulatory processes⁶³. The Russian Arctic environment is governed by federal legislation on environmental protection, radioactive safety, industrial and consumer waste, protection of atmosphere, codes governing uses of water, soil, subsoil and forest resources and ecological norms under sectorial regulations. The generic nature of federal environmental laws is exacerbated by the fact that there is a trend among sub-federal regions to copy the federal laws without writing into them particular features or relations pertaining to the area of the vast country but simply repeating or reiterating national norms (e.g. Bogolyubov, 2003).

The debate on the necessity to bring about an Arctic-specific law sensitive to the Arctic natural environment has been ongoing for at least five years (i.e. 2013 Draft of federal law on the Arctic region of the Russian Federation) but is unlikely to be approved in its comprehensive draft version. When the proposed law was first discussed in 2015, the emphasis was placed on embracing the special

⁶² <https://russia.wetlands.org/wetlands/wetlands-in-russia/>

⁶³ The 2000 shadow list of potential Ramsar sites in Russia foresaw addition of 165 new sites to the convention, most of them situated in the Arctic, Siberia or the Far East of Russia (Wetlands on the Ramsar Shadow List // Wetlands in Russia / Ed. Krivenko V.G. Volume 3: Wetlands International Global Ser., №6, 2000. 490 p.).

characteristics of the Arctic region and overcoming sector-based principle dominating the legal system of approximately 500 norms governing the Russian Arctic at present. The Arctic is also subject to 40 federal laws and approximately 1,200 governmental decrees and ministerial orders governing the relations between society and nature (Solovyanov, 2011). Former Minister of the Environment, Dmitry Donskoy saw the purpose of such a law in 'securing special aspects of the Arctic region development, sustainable use of its natural potential and minimisation of ecological risks of exploitation' (n.a., 2015). The 2016 draft was debated in the Government but was never moved through to the State Duma. The 2017 federal law draft on the development of the Russian Arctic Zone⁶⁴ described in detail the procedure by which an area can become a support zone of accelerated development, however, within this procedure there was no mentioning of the requirement to verify or estimate ecological impact of proposed activities. The Development Support Fund that would be set up according to the draft would not be used to allocate funds to ecological research or conservation. Chapter 8 supposedly dealt with measures of environmental protection and oversight but it only specified ecological expertise of the project documentation and quotes the Federal law 'On ecological expertise' dated 1995 and not tailored to address particular Arctic issues or, as a matter of fact, those of the climate change or a growing anthropogenic footprint in the region and beyond. The 2017 federal law draft on the development of the Russian Arctic Zone⁶⁵ foresaw the formation of support zones of development and prescribed a procedure for their formation - the majority of key support zones already do exist and have been formed

⁶⁴ <http://regulation.gov.ru/projects/List/AdvancedSearch#npa=74838>

⁶⁵ <http://regulation.gov.ru/projects/List/AdvancedSearch#npa=74838>

around multi-million industrial projects (e.g. Yamal-Nenets AO - oil and gas deposits and LNGs of Yamal and Gydan peninsulas, Chukotka - Chaun-Bilibinskaya and Anadyrskaya industrial zones, Kola peninsula, and other). The draft law built on such terms of economic development as 'anchor project', preferential conditions and support economic zones which were defined as areas of coordinated territorial and sector-based development and investment mechanisms, e.g. Public-Private Partnerships (PPPs) and concessional agreements. The draft ignored drastically different starting points for the Russian Arctic provinces - the investment interest, infrastructure and natural resources vary across the Russian North. While European part of Russia and Yamal are fairly well connected to the centre and supply regions, Taymyr, Yakutia, and Chukotka are more isolated and to various degrees 'ruined' following the collapse of the Soviet Union.

When the federal law was ultimately passed in 2020, it devolved from all-encompassing Arctic Code to 'State Support of Entrepreneurial Activity in the Arctic Zone of the Russian Federation' (13 July 2020, N 193-FZ). Ecological matters were only briefly mentioned as part of the activities to be discussed by the Civic Council, a consultation/ observation body made up of 19 regionally elected figures (university officials, leaders of indigenous organisations, heads of civic chambers, public figures). At this stage, it is unclear whether the 'environmental code' lobby would resume the campaign for a different law.

Russian environmental legal scholars unanimously agreed (e.g. Bogolyubov and Krasnova, 2018; Zlotnikova, 2017; Khludeneva, 2015; Ignatyeva, 2013; Solovyanov, 2011) that industrial development of the Russian Arctic is risky due to insufficiency and non-specificity of the Russian ecological legislation. In particular, Ignatyeva

(2013) argued that the existing legislative base would not support environmental safeguarding and abating objectives outlined in the key policy documents as in terms of existence of certain norms so in their implementation efficiency. None of the mechanisms of environmental impact assessment, expertise, compensation and standardisation were adapted to the needs of the Arctic ecosystems (Bogolyubov and Krasnova, 2018).

Despite delimitation of the Russian Arctic Zone as an economic region, its ecological regionality has not been formally recognised. Some argued that a law on the Arctic environment was overdue (Solovyanov, 2011; Bogolyubov and Krasnova, 2018); and it would particularly focus on coastal ecosystem management, adaptation to climate change, territory zonation, pollutant quotas adjusted to the Arctic conditions, Arctic specific licensing and auditing, etc.

An ecological catastrophe in Norilsk, Krasnoyarsk kray, in the summer of 2020 where 21 thousand cubic metres of diesel fuel leaked into the environment and led to the national state of emergency⁶⁶ as well as Putin's request to amend the environmental legislation could serve as an indicator of responsive norm making, even though smaller accidents in the Russian Arctic Zone had already been known. There have been at least two characteristics to this event that highlight geographical features of the Russian Arctic: there was a 2 day delay in response as the authorities and the Ministry of Emergency found out about the accident from social media and the company responsible blamed climate change, i.e. permafrost thaw, for structural damage to the tank. The reason the former is particular to the region is that Arctic industrial sites are largely remote and unobservable, hence information flow may be

⁶⁶ <https://www.vesti.ru/article/2418126>

slowed down or manipulated. Climate change rationale may become especially prominent for older operational technical objects (20 or more years old), such as fuel tanks, oil and gas pipes, and will concern areas of established operation, e.g. north of Krasnoyarsk kray, north-east of Yamal-Nenets Autonomous Okrug.

The problem with generic legislation in the Russian Arctic is that it leaves plenty of room for interpretation and leeway for businesses to evade accountability for negative ecological externalities. The discrepancy between generalised environmental regulations and specific characteristics of Arctic and sub-Arctic biomes have led to a wide-range interpretation of safeguarding and reclamation measures. Soil reclamation is one such example. The law requires the companies to bring soil layer back to a productive state, however, historically 'recultivation', the term used in the Russian legislation, of the damaged topsoil layer was built on experience gained in agricultural areas of the mid-latitude temperate climatic sub-zones where the main purpose was to return land to farming. As there is no farming in the Arctic and human activities such as hunting, deer husbandry and fishing depend on the health of the whole ecosystem, the recovery of the soil damage should be based not on restoring the vegetative cover alone but the entire ecosystem. However, the law remains open to interpretation in the arctic and subarctic environments and grass seeding has been a wide-spread method throughout Russia, including tundra biomes⁶⁷. Similarly, issues of oil spill damage are not properly dealt with for cold climate conditions and permafrost in this legislation.

⁶⁷ Agronomic grasses have been widely used in Russia's north in place of aboriginal plants thanks to simpler care and a higher success rate of species survival (**ref.**) .

Since 2017, there has been a proposition to introduce a federal law on the protection of permafrost (Prokopyev, 2017), as, in fact, it existed on the regional level in Yakutia. The law would prescribe monitoring of the permafrost areas, special oversight over companies that have a negative impact on permafrost and fines. The federal law “On rational use and preservation of permafrost” was drafted in the summer of 2020 by Saha (Yakutia) parliament and the idea was verbally supported by the new Minprirody in 2020.

Some particular issues, such as gas flaring at hydrocarbon mines on the Arctic shelf, have recently been addressed by the government in a form of decrees (2018 - Arctic⁶⁸, 2012 - general). While the overall measure designed to reduce the permissible gas flare to 5% (0% from 2020) is positive, the companies (i.e. Gazprom and Rosneft) exploiting offshore deposits in the Arctic seas have been given 10 years from 2020 to 2030 to capture only 25% of the admissible range and burn the rest (Decree №1676 dated 28 December 2017, published on 10 January 2018).

Another measure addressing environmental impact through technology was introduced by a Federal law on the Best available technology in 2014; it prescribes the gradual increase in the negative impact tariffs, the complex environmental permit system (*KER*), the state environmental expertise for large-scale infrastructure projects, other technological refurbishment incentives. The complex environmental permit system bears similarities and has been drawn from the EU Environmental Permitting Regulations (2010). These regulations set out a holistic view of the company’s profile rather than specific polluting activities that would require separate licences. The best available technology combines criteria of meeting the ecological

⁶⁸ <http://government.ru/docs/30907/>

goals and its technical feasibility⁶⁹. Rosstandart (Federal agency for technical regulation and metrology) issued guidebooks of the best available technology in 2017. At the moment there are regulatory gaps that give companies a possibility to opt out from implementing, among others, the best available monitoring equipment and hence bear no burden for the accurately read or measured emissions.

Introducing BAT as a principle was scheduled for 2019 when all companies that have a significant negative impact (category 1 - mining, energy generation, smelting, refinery) should have applied for a comprehensive ecological permit but which have been postponed to the end of 2022 for around 200 companies responsible for 60% of emitted or produced pollutants, 2023 (for a handful of Khanty-Mansi and YNAO companies) and 2025 (for most YNAO based companies)⁷⁰. The Ministry of natural resources and environment was responsible for outlining the procedure for the comprehensive ecological permit application before the law came into force in 2019, the governmental decree on the matter was issued at the end of 2018. It specified that the permit would be valid for 7 years but could be revised should industrial processes or equipment change or extend by further 7 years. The delay in legal specification and implementation of norms is one of the factors underlying the environmental governance functioning and efficiency in Russia. Another significant factor is that regulations tend to catch up (or fail to do so) with the environmental issues of the economic development, and that is especially true for the Russian north and the Arctic.

⁶⁹ <https://www.gost.ru/portal/gost/home/activity/NDT>

⁷⁰ Media analysis: <http://expert.ru/ural/2016/45/vyizhivut-ne-vse/>; official source Rospirodnadzor: https://rpn.gov.ru/regions/72/for_users/permission/

When it comes to the Arctic and Siberia, natural environment, to a certain extent, is also safeguarded through indigenous peoples legislation (Federal law dated May 7, 2001 No. 49-FZ On the territories of traditional land use), however, in practice, oil and gas companies infringe on the territories designated for the traditional use whilst the indigenous families get a pay-off for the use of kinship land in settled communities (e.g. in Khanty-Mansiyskiy AO⁷¹) or payment in kind (e.g. fuel) or compensatory payments based on reindeer head count in nomad communities (e.g. Yamal-Nenets Autonomous Okrug and Komi). Having said that, there is no national law that would regulate the relations between indigenous peoples (small-sized or otherwise) and industrial companies operating on territories of traditional use. The only exemption is Saha Republic (Yakutia) that in 2010 passed a regional law “On ethnologic expertise in areas of traditional habitat and economic activities of small-sized indigenous peoples of the North of Saha Republic (Yakutia)” (more on the problems of compensation in Burtseva et al., 2019); it helps calculate compensation due as a result of land use change and technogenic disturbance for lost profit in various traditional activities.

While heated conflicts of 1990s and early 2010s in Yugra and Komi between oil companies and indigenous peoples showed determination and leadership in protecting indigenous lands, the amendments to the Federal law were proposed in

⁷¹ There were many heated conflicts in the 1990s (<https://realnoevremya.ru/articles/61481-etnolog-o-konflikte-neftyanikov-i-gazovikov-s-narodami-severa>). Recently, in 2013, there was conflict between Khanty and LUKOIL in Nizhnevartovsk district (<https://www.znak.com/2013-11-13/hanty-hotyat-zabrat-u-neftyanikov-svoi-zemli-i-zayavlyayut-o-prave-na-samoopredelenie> (in Russian)); in Komi between reindeer herders and LUKOIL in 2014 and 2015 (https://fedpress.ru/news/conflict_map/socpolitical_conflicts/1416854837-konflikt-nedeli-komi-izhemtsy-boryutsya-s-neftyanikami-chtoby-vyzhit; <https://rg.ru/2015/03/12/reg-szfo/neft.html>);

2017⁷² to allow hydrocarbon extraction and other economic activities within licensed areas on the territories of traditional land use to be legalised while at the same time attribution of a traditional status to a territory would be subject to thorough consideration of its alternative economic value. That means hunting and fishing grounds (as well as habitats for other species) would be potentially compromised through construction of roads, pipelines, mining sites, etc. It is not surprising this proposal was heavily criticised by the environmental activists of Greenpeace Russia⁷³ and its adoption for now stalled.

4.2.3. Arctic spatial restructuring and conservation methods

In addition to political and legal means, land use can be another important factor in environmental governance. Opening up of the Arctic zone to economic and industrial development may be seen as spatial restructuring (e.g. Bassett and Gautier, 2014; Elden, 2013; Sack, 1986; Scott, 1998). Thus, it is important to observe how the Russian state is restructuring its Arctic territory as for development and security so for conservation.

The majority of protected areas within the Russian Arctic zone were established before 2000. There are now over 26 federal protected areas with a total area of approx. 28 million ha and that includes marine area of 7.6 million ha (Smilevets, 2018). There are also 127 regional protected areas and 11 local with a total area of about 30 million ha. The distribution of protected areas in the Russian Arctic is uneven amongst the territorial units, fragmented and to a large extent dependent

⁷² <http://regulation.gov.ru/projects#npa=66793>

⁷³ <http://www.greenpeace.org/russia/ru/news/2017/indigenous-06-19/>

upon such priorities as national security or resource value of a given subregion. Since 2016, as part of the national project ‘Ecology’ and industrial development, there have been changes to borders and status of some protected areas and accretion of new territories.

In 2018, Minister of Natural Resources announced the plans to increase the protected area of the Russian Arctic by 10 million ha. The same year, the uninhabited Novosibirsk Islands (6,594,496.3 ha) and Khibiny (84,804 ha, Murmansk region) were added to the list of protected areas. In 2019, a new national park was created in Yakutia (Kytalyk, 1.9 mln ha) to help protect the habitat of the Arctic crane. On the regional level, Dvinsko-Pinezhskiy reserve (*zakaznik*) was created in Arkhangelsk oblast. Two more protected areas are to be established before 2025: Medvezhyi (Bears’) islands reserve and Laptevomorskiy reserve (*zakaznik*) in Saha republic. In 2016, the government issued a decree restructuring the Franz Joseph Land reserve by stripping it of its reserve status and including most of its previous territory (not without a controversy according to Greenpeace⁷⁴) into the National park ‘Russkaya Arktika’ opening it up to eco-tourism and other activities. The same change in status occurred to the Gydan nature reserve located in the North of Yamal-Nenets Autonomous Okrug which was converted into national park in 2018 as development within its area was inaugurated. Geographical distribution of these changes is notable primarily due to major clustering in Yakutia and uninhabited islands away from subsoil rich hotspots. Allocation of a protected area status does not mean resolution of a potential land use conflict. For instance, Taymyr peninsula with

⁷⁴ <http://m.greenpeace.org/russia/ru/mid/news/2017/arctic-27-03-2017/>

approximately 15% of protected area, holds several unique oil deposits whose exploration began in 2020 and land disputes and redistribution are imminent⁷⁵. Several military bases have recently been constructed in sections of land owned by the Ministry of Defence bordering with or cut out of protected areas, including Alexandra (construction in 2007- 2014) and Wrangel islands (completed in 2014; UNESCO site), Cape Schmidt (construction began in 2014; Chukotka) and Kotelny island of Novosibirsk archipelago (construction in 2013-2016). Greenpeace protested against the military training that took place on Wrangel island in 2014 and an incident of 2015 involving a construction contractor of the Defence Ministry and resulting in an injury inflicted upon a polar bear by the company's employee which was circulated on social media and heavily criticised by the general public⁷⁶. From 2015 to 2017, UNESCO requested ecosystem status reports and impact assessments concerning the Wrangel island from the Russian government following the information on the geophysical prospecting activities in the marine areas of the reserve as well as military base construction and issued a recommendation to halt all the activities pending comprehensive impact assessment, however, the Russian state failed to submit any EIAs to the organisation⁷⁷. An ecosystem status report was submitted in February 2018 but provided few answers to the UNESCO's queries; the organisation therefore reserved its right to add the property to the list of World Heritage in Danger

⁷⁵ On oil deposits in protected areas of the Ramsar reserve - <https://www.oilexp.ru/news/russia/rosneft-pretenduet-na-uchastki-na-osobo-okhranyaemoj-prirodnoj-territorii/210222/>

⁷⁶ (<https://www.greenpeace.org/russia/ru/news/blogs/green-planet/blog/55190/?commentlistpage=2&expandid=b106791>)

⁷⁷ <https://whc.unesco.org/en/soc/3619>

unless Russia provided evidence of due environmental diligence and the activities in the strict nature reserve are curbed.

While there has been some restructuring of the Russian Arctic territory advancing to an extent environmental protection by setting aside territories of natural value from exploitation at least on paper, the reality of this measure is that it is not always easy to determine what it achieves, especially in the context of 'shared' or overlapping responsibilities between the Ministry of Natural resources, Defence and the oil companies holding prospecting or exploration licences and often left without proper management and funding. Moreover, as recently as in 2018 the Ministry of Economic Development proposed to exclude residential areas, linear objects such as roads and pipelines, overhead power lines and agricultural lands from protected areas arguing that the former often contradict the conservation regime, yet it would in some cases mean significantly reducing the size and fragmenting a territory of the protected site and opening up the excluded sections for further development. While these amendments were not passed, Minprirody drafted a bylaw in 2018⁷⁸ to replace a 2015 bylaw regulating setup of protected zones, in which it reduced the minimum length of a protected site from 1000 to 5 m, allowed for subsoil resource exploration on licenced plots, selective logging, construction of buildings and other structures, which according to Greenpeace could make protected area status pointless⁷⁹ if approved. This shows that the Ministry of development and the Ministry of natural

⁷⁸ https://regulation.gov.ru/projects?_ga=2.83066710.1730542800.1607523725-885129019.1567087902#npa=88970

⁷⁹ <https://greenpeace.ru/expert-opinions/2020/01/09/zapovednaja-sistema-rossii-2019-radosti-i-pechali/>

resources and ecology work towards the same end in nature conservation pursuing relaxation of the protected status or fragmentation of protected areas.

Opening up the Russian Arctic to accelerated resource development and further development of domestic tourism has already been putting pressure on the protected areas within the region. There is no data what impact the Northern Sea Route navigation is going to have on the coastal, insular and aquatic protected territories in the Russian Arctic, but it is clear that oil and gas companies will incorporate sea transportation and port infrastructure in the emerging northernmost continental and off-shore projects. Another stumbling block for the conservation effort throughout Russia is a lack of monitoring or its consistency (e.g. Bogdanova and Okmyanskaya, 2019 on Yamalskiy reserve), not to mention enforcement of environmental laws which is a problem for all of Russia.

4.3. Environmental monitoring and oversight from federal to local level

Environmental monitoring has been a sore point of the Russian Arctic governance since dissolution of the Soviet Union. The 1990s saw a massive decline in the number of weather stations throughout the Russian Arctic due to cuts in public spending. From 112 in the 1980s, less than a half remained operational and with 29 stations subsequently restored, there were still only 68 operational stations in the year of 2011⁸⁰ and around 40 in 2019⁸¹. The International Polar Year of 2007/2008 played an important role in drawing attention to the lack of primary meteorological

⁸⁰ https://ria.ru/arctic_news/20110914/437143501.html

⁸¹ Roman Ershov, head of Sevgidromet, reported to TASS in March 2019 (<https://rossaprimavera.ru/news/082f1607>)

data for this region (Chilingarov et al., 2013). Yet, the issue pertaining to the environmental monitoring in the Russian Arctic persists not only as a result of this lack and uneven distribution of hydrometeorological stations, but also as a result of the pressing need for refurbishment of the ones that kept on running. The 2017 Programme of socio-economic development⁸² foresaw an increase in monitoring stations across the Arctic between 2021 and 2025, following the development of the support zones and the Northern Sea Route which are already under way. As an illustration to this mismatch in the data availability and development, there has been an upward trend in atmospheric pollution in Yamal, the forerunner of Russia's Arctic investment recipient, but in 2017 it only had one monitoring station (Salekhard) per entire region⁸³. Similarly, in other regions of Russia monitoring equipment is in need of modernisation as it is limited in the scope of pollutants and the frequency of measurements it can take.

Meteorological monitoring in the Arctic is conducted by the Northern branch for hydrometeorology and ecological monitoring (*Severnoye UGMS*) which was set up in 2011 to collect data on physical parameters and level of pollution in Arkhangelsk region, Komi Republic, Nenets Autonomous Okrug, Yamal district (YNAO), Taymyr district (Krasnoyarsk kray), Dixon, Khatanga, part of Karelia Republic and Vologda region. The annual report on the environmental pollution in the monitored area is not, however, available through public sources. The content page of this report though suggested that Yamal district was only partially featured (i.e. snow cover) and the Ob

⁸² <http://gov.garant.ru/SESSION/PILOT/main.htm>

⁸³ <https://tass.ru/obschestvo/4764439>

estuary was not included in it either⁸⁴. Environment of Krasnoyarsk kray is monitored by Mid-Siberian branch for hydrometeorology and ecological monitoring (*Srednesibirskoye UGMS*); Yakutia and Chukotka are under different branches of Rusgidromet, i.e. Chukotskoye UGMS in Pevek and Yakutskoye UGMS in Yakutsk. Federal prosecution (*Genprokuratura*) is in charge of establishing facts of violation of ecological norms including contamination of soil, freshwater and marine environments. In 2017, a *Genprokuratura* official announced a plan to create a polar environmental prosecution office⁸⁵ similar to that of Amur environmental protection prosecution area where a special regime was established in order to protect the population of Amur tigers' habitat. The same year, Arctic prosecution offices were instructed to pay special attention to the environmental protection of the Arctic as within two years nearly 7,000 instances of environmental law violation were uncovered and 590 court cases filed⁸⁶. In 2019, a new authority was established within the General prosecutor's office (*Genprokuratura*) to recognise the importance of some vulnerable ecoregions in Russia and to enforce legal compliance in environmental protection and use of natural resources in the Arctic region among others. This organ would oversee Rosprirodnadzor's and Rosrybolovstvo's oversight of environmental law compliance as well as conduct its own investigations. YNAO as other Arctic-based regions already has a regional branch of environmental prosecutor's office, whose main concerns are atmospheric, soil and water pollution in the region, it seems that addition of the new level of authority might bring a political

⁸⁴ http://www.sevmeteo.ru/monitoring/reviews/i/monitoring_review-2017.pdf

⁸⁵ <https://ru.arctic.ru/environmental/20170328/580497.html>

⁸⁶ <https://tass.ru/obschestvo/4595239>

spotlight onto the region but it is unclear as to what it would add to the existing efforts. Given the high latency of environmental crimes in Russia estimated to be between 95-99% (Dzhunusova, 2012) and insufficient capacity along the enforcement chain in the northern region, the strong punitive strategy may not necessarily guarantee legal compliance and reduction of environmental crime in the Arctic industrial hotspots.

Rosprirodnadzor, an environmental oversight authority of the Ministry of natural resources and ecology, is responsible for environmental protection and control over exploitation of natural resources as well as ecological expertise.

There are other federal agencies that share some areas of environmental oversight with Rosprirodnadzor. Rosrybolovstvo, federal agency for fishery (Government), oversees marine and freshwater bioresources protection and sustainable use.

Rosnedra (Federal agency on subsoil resource use) grants and withdraws licences for subsoil exploration and use but may fail to take into account a licensee's ability to pay a fine for a negative environmental impact and so it works closely with Rosprirodnadzor that monitors the adherence of the licence operators to the environmental norms. Federal agency of ecological, technological and nuclear oversight (Rostekhnadzor) oversees construction, industrial safety and radioactive and hazardous waste and may together with Rosprirodnadzor deal with ecological damage such as oil spills. While the functions of Rosprirodnadzor and Rostekhnadzor overlap in certain aspects, both focus on polluting companies' adherence to the standards set by the state (i.e. maximum allowed concentration, *PDK*) at the stage of planning (state expertise) and operation (scheduled expertise - once in three years). There is a view that the two oversight agencies are battling

each other for influence (e.g. interview with Sergey Ivanov, Russian President's envoy on conservation, ecology and transport, in 2018⁸⁷) while reports and rumours of corruption within both these institutions are abundant in the media⁸⁸.

A known and significant flaw of Rosprirodnadzor is the insufficient number of employees. There are approximately 1,800 people for the entire country employed by the RPN or, according to the official report 1000 industrial sites per inspector⁸⁹, which is, physically challenging if at all possible (see also I. Blokov, Greenpeace⁹⁰).

Rostekhnadzor employed just over 7,000 employees in 2017, which is 1/3 of their staff in 2004⁹¹, that, on the one hand, is significantly more than the ecological oversight inspectorate and, on the other, no correlation was so far established between the number of industrial accidents and that of ever decreasing number of RTN staff (while no independent studies are available).

An institutional reform has been long overdue for Rosprirodnadzor, which is especially critical for the extractive regions such as Yamal. In 2018, following a series of complaints to the YNAO branch of Rosprirodnadzor, Sergey Popov, head of Yamal Rosprirodnadzor at the time, was reprimanded by the Minister of Natural Resources and Ecology and in 2019 left his post, his predecessor Natalia Kolesnikova held an

⁸⁷ <https://newizv.ru/news/economy/05-07-2018/a-ekologiya-podozhdet-kak-dva-nadzornyh-vedomstva-boryutsya-za-vliyanie>

⁸⁸ e.g. https://www.znak.com/2019-12-23/glava_rosprirodnadzora_rasskazala_za_chno_uvolila_rukovodstvo_otdelov_na_yamale_i_v_yugre; https://www.znak.com/2018-05-07/za_vzyatku_chinovniku_rostehnadzora_v_yanao_stroyfirmu_oshtrafovali_na_polmilliona_rub_ley

⁸⁹ State report on the status and preservation of the natural environment of the Russian Federation in 2016 (<http://www.mnr.gov.ru/upload/medialibrary/bad/564.pdf>).

⁹⁰ https://echo.msk.ru/blog/greenpeace_rus/2109988-echo/

⁹¹ <http://www.gosnadzor.ru/news/64/2163/>

interim position in 2013-2017 replacing another disgraced official. In 2019 the systemic crisis of the federal environmental oversight agency was finally recognised at the top government level and the territorial units underwent restructuring. The Urals Federal Okrug Department of Rosprirodnadzor (which incorporates YNAO and Yugra branches) was divided into Urals and Northern Urals interregional divisions, the latter would integrate YNAO and Yugra offices and relocate to Tyumen (the Tyumen region's capital), away from the extractive districts. While this reform is trying to solve an obvious issue of local assimilation of regional branches, it may create a barrier to gaining local insight as well as trust of local informants. The head of Rosprirodnadzor explained the decision to merge the two branches as a result of many years of unsatisfactory performance in both YNAO and KhMAO-Yugra. Svetlana Radionova, head of Rosprirodnadzor, wrote on her Instagram page that YNAO and KhMAO will be under her strict control for the whole of 2020: "there are piles of problems there, one cannot sort them all out. If employees cannot do their job, then I will do it myself"⁹². The reforms speak more of the status quo in environmental oversight in some of the most vulnerable territories of Russia: the shortage of inspectors, the misuse of Rosprirodnadzor procedures by businesses in dealing with competition, many unresolved cases. All the while, in the course of the interview with a Rosprirodnadzor inspector in YNAO in 2017, many more systemic shortcomings were uncovered and are likely to persist.

Typical occurrence in the Russian Arctic and Siberia, for some exemption, is outsiders, people that have no connection to the region, appointed as top officials.

⁹² https://www.znak.com/2020-03-05/glava_rosprirodnadzora_snova_perenesla_svoyu_poezdku_v_regiony_tyumenskoy_matreshki

The person who was appointed to manage the environmental oversight in the two largest oil and gas extracting provinces in Russia, Andrey Gurzhev was moved to Tyumen from Rostov-on-Don in the South-West of Russia, curiously, his predecessor in Yamal was from the same city. Such wide geographical mobilisation and lack of experience with oil and gas industry let alone the climate zone, may be a continuous weakness of the agency operation, especially if its staff is relocated away from areas of their direct supervision.

During the field trip to Salekhard, capital of Yamal-Nenets Autonomous Okrug, in 2017 the interview with the federal environmental oversight branch was arranged to enquire of region-specific issues in their work. The Head of Department of Environmental Oversight, YNAO branch, highlighted that the regional and national levels of ecological oversight have recently been divided with Rosprirodnadzor overseeing compliance of major pollutants and regional authorities dealing with minor pollutants and non-hazardous pollutants within major pollutants' sites. According to the interviewee, this distribution not only made it difficult for the federal authorities to inspect the site as at times there are no such divisions in practice whether as a result of a technological process or location but in some instances inspectors would not see certain industrial objects for fear of a legal action.

Their department was made of legal specialists, rather than ecologists; absence of expertise could make it difficult to understand and interpret environmental data, for this a specialist company would be contracted. At the same time, lab samples were often not sent for verification due to conflict of interest as the only state authorised laboratory located in the same building was at the same time contracted by the

companies in question. Instead, the oversight authority will rely on the inspected company's own data.

Another problem the official identified was transportation costs, that is a company under inspection is not legally obliged to transport inspectors to the site of operation (e.g. where no roads yet exist) and the budget of the state authority does not allow for a hire of a private helicopter (c. 50,000 rub an hour). These mainly geophysical survey sites, according to the Rosprirodnadzor official, would often be a blind spot. Hence the department would mainly rely on documents provided by the companies and crosscheck them against the legally permitted values. Fines would be issued based on these documents. This accessibility problem is likely to spread to estuarine and off shore sites. The state programme of Arctic social and economic development specified that a fleet designated for the environmental oversight in Russia's Arctic seas and shelf would be built for Rosprirodnadzor, however the funding would become available only from 2021 to 2026 after many ongoing infrastructure and hydrocarbon projects would have already been implemented.

The unscheduled inspections would be prompted by information of violations. The main sources of YNAO branch were local (indigenous) people and environmental organisations such as Greenpeace. With the main issue faced by the department, that is understaffing (reduced from 7 to 2 people) and transportation costs the vast majority of inspections is carried out without fieldtrips.

The YNAO Rosprirodnadzor official and his colleague also spoke about legal leeways and conditions that prevented them from inspecting (and penalising) certain non-compliances, such as unavailability of monitoring devices would make a company exempt from being penalised on exceeding levels of emissions. The

authority would be limited by the business project design, which had gone through the phase of approvals and assessments (even though the effects would be ongoing/permanent/irrecoverable, such as land use change). That is, if the project design was approved, certain environmental damage was 'approved' with it.

Compensatory activities generally include a fine and/or reclamation/ rebuilding of the population/ regeneration. However, in most cases only a fine is paid while further actions are not enforced. While the negative impact onto the environment was outlined as a payable duty by all legal entities polluting the environment in three ways (atmospheric emissions from stationary sources, discharge into water bodies and storage of industrial or residential waste) in the federal law of 2002 (7-FZ on the Environmental protection), the actual mechanisms of categorising polluters and hence calculating tariffs were completed only in 2016 () and set tariffs for the list of polluting compounds issued in 2015 (N 1316-p)⁹³. The payment for the negative impact onto the environment is received by the federal budget with no targeted allocation for, e.g. restoration or sustainability projects. The Arctic provinces or any other areas of environmental significance are not distinguished for the purposes of this payment. One of the arguments for why it should be recognised is indigenous and local peoples' reliance on local flora and fauna for subsistence and effects of bioaccumulation of toxic pollutants in fish, birds, mammals and people (e.g. Sorokina, 2019).

The regional authority in charge of environmental compliance is the Department of natural resource regulation, forest relations and development of oil and gas sector of Yamal-Nenets Autonomous Okrug headquartered in Salekhard. Its duties include

⁹³ <https://rg.ru/2015/07/13/pollutanty-site-dok.html>

management and oversight over use and protection of subsoil, water bodies, forests, fauna, environmental protection, state ecological expertise of regional level sites, creation and management of protected areas. It functions through three separate entities overseeing subsoil, forests and bioresources respectively.

In the interview with the top official of the Service for protection, monitoring and regulation of bioresources in 2017, he explained that there is a fine line in environmental management between the regional department and the state authorities: the Federal services, border control, and the Ministry of Interior (police).

The Service is responsible for the hunted animal track count in winter and estimating hunting quotas that are issued by the Department of natural resource regulation...

Tundra and mountain areas are not included in the animal count route. This Service has a local branch in Mys Kamenny, Yamal district, located in tundra but local officials reported that there was no bottom-up feedback on local observations regarding animal hunting quotas or animal count. The Service has limited human and financial resources and thus focuses exclusively on hunted species (brown bear, moose, hare, ducks and geese) within a stretch of taiga and forest-tundra. It was also reported that the Service for bioresources has no liaison with the scientists studying regional fauna, and while they observe changes in habitat and nesting, this information is not shared with any other decision-making authorities.

Commercial or recreational fishing in the region is not managed by regional organisations either. It is done by three federal organisations: border security service in the Obe-Taz estuary, Federal Agency for Fishery (internal water bodies) and the Interior service (fishery protection division).

There are several governance issues related to the Arctic monitoring and oversight: lack of technological capability, understaffing and lack of skilled personnel in the field of ecology, biology, hydrology, etc., and organisational misalignment that is limited interrelations between federal, regional and local branches overseeing various aspects of socioecological interactions. It is not always clear which authority oversees what in the Russian Arctic, as delimitation is object and geography based. For instance, on Yamal peninsula hunted species are overseen by the regional authority with some quotas and licences issued biannually, fishing and fish abundance is overseen by the federal agency's branch while populations of e.g. polar bear, walrus or falcons are not monitored by either⁹⁴. If a crime is committed, enforcement authorities (FSB, police, nature protection prosecution) are in charge of investigation and prosecution, and on occasion it is the regional Department of natural resource regulation... and local branches that are found culpable of improper management of natural resources.

4.4. Non-governmental sources of environmental governance

4.4.1. Corporate responsibility and economic modernisation

Environmental responsibility of companies is generally associated with adherence to an international standard framework such as EMAS or ISO. ISO 14000 family of standards (see e.g. Kosyakova et al., 2015) includes a number of requirements such

⁹⁴ There has been a number of expeditions funded by Rosneft between 2014 and 2020. There was, for instance, a university research expedition funded by Rosneft in 2020 studying polar bears and walrus. The Ministry of Natural Resources and Ecology together with Rosneft also developed a project to count polar bears in 2021-2023.

as compliance with environmental policy of a state, implementation of environmental programmes, transparency of corresponding non-financial data, etc.; having a designated environmental service up to top management; independent audits with transparent results and corrective actions taken upon such audits. ISO 14001 is the most widely adopted voluntary non-governmental environmental regime (e.g. Boiral et al. 2017).

Major extractive companies operating in the Russian Arctic or at least their flagship companies adhere to some international environmental standards that require repeat audits every three years. For instance, Rosneft has been certified under ISO 14001 since 2006⁹⁵. Novatek was first certified in 2008⁹⁶. Yamal LNG reaffirmed its compliance to the standard in 2018⁹⁷. Gazpromneft was re-certified in 2016. Despite the fact that the literature abounds with successful rhetoric around the adoption of ISO 14001, the effectiveness of this mechanism still remains debatable (Boiral et al. 2017). That is this standard may have a positive impact onto the international corporate image or better regulatory compliance of a company but it may not in itself lead to a better environmental performance, especially on a day to day basis (ibid., 2017).

The Russian government, too, stimulates better environmental performance through mutually agreed projects. The programme of activities under 2017 Ecology Year in Russia included strategies for hazardous solid waste management in Murmansk and other Arctic provinces, a launch of Norilsk Nickel Sulphur project which foresaw

⁹⁵ <https://www.rosneft.com/press/news/item/192849/>

⁹⁶ <http://www.novatek.ru/en/development/environment/>

⁹⁷ <http://yamallng.ru/en/press/news/36546/>

capture of SOx emissions from the company's industrial facilities in the Arctic, collection and removal of historical metal waste from Sakha republic, development of reindeer migration routes in areas affected by Transneft-Sibir pipeline, as well as many educational activities across the country. It is not the first such year, when special attention is drawn to environmental issues, the previous Year of Ecology took place in 2013 and resulted in two national parks being created in the Russian Arctic ('Beringiya' in Chukotka and Onezhskoye Pomorye in the Arkhangelsk oblast). But 2013 was also the year of commercial launch of the first offshore oil platform and was remembered for the notorious detention of MV *Arctic Sunrise* with Greenpeace activists protesting against that very platform in the Pechora sea. This shows that publicity component of "year of ecology" works for both the state and the business whilst there may be no long-term shifts to environmental performance of the industry. While the main theme of the 2013 ecology year was forestry, in 2017 the focus was placed on waste and emissions, both extremely important and timely in the Arctic context. According to ex-minister of Natural resources D. Donskoy, one of the most significant achievements of the Year of Ecology 2017 was signing of 60 agreements on transition to the best available technology (BAT) with various businesses⁹⁸. The technological fix and ecological modernisation which is supposed to be achieved through BAT, similarly to ISO 14001, do not challenge the economy allowing the state/ business to change. As noted by Ebbesson (2010), "by only focusing on the technology used in the installation, rather than its effects on health, the environment and natural resources, this approach fails to consider the impact of ecological changes on the responsibility of the operator of the activity" (p. 6). Thus, using BAT in

⁹⁸ <https://iz.ru/688601/valeriia-nodelman/itogi-goda-ekologii-ostanovitsia-uzhe-ne-poluchitsia>

exploring greenfield gas deposits in the Arctic will not revert the trajectory of land use change and degradation of ecosystems around and alongside the components of the development.

Environmental impact assessment (EIA) system is another mechanism that expands the knowledge base of a project and may prevent or mitigate certain negative ecological impacts or at least inform the business and the public thereof. In Russia, EIA procedure was developed in 2000, it adopted a universal approach which meant that it did not consider scope or scale of a project in question and did not follow any region-specific guidelines (see Koivurova et al., 2016 on Russia). Several main reasons have been identified to explain why EIA is not as an effective tool in Russia as it is in some other countries: a) no need for a positive feedback, which means that public consultation holds no effect on whether the project will continue or not, b) catch 22 - to contest the project people/organisations need documentation that is not in the public access; c) it has a secondary role to the state ecological expertise⁹⁹ which crosschecks project documentation against environmental regulations and, unlike EIA, does not require independent field research but may include EIA data. While the results of an impact assessment study should be publicly available, pertaining to Yamal peninsula development, only Novatek published the documents related to their LNG plant construction on the world wide web. Gazprom, its operational subsidiaries and other organisations (e.g. Sevmorput) have no clear routes for obtaining such documents by researchers like the author of this project or the general public.

⁹⁹ Since 2006 most construction, reconstruction and transportation infrastructure projects do not require state ecological expertise.

In December 2019, the Russian government issued a decree that revoked the Order by which Environmental Impact Assessment of a planned economic activity was adopted in 2000. This caused a media outcry from the Russian environmental organisations (Greenpeace Russia, WWF Russia)¹⁰⁰. The government promised to rewrite the law by 2021, but the activists saw it as an act of diminishing citizens' right to participation in hearings on economic projects that may bear ecological risks. As challenging environmental soundness of large-scale extractive and infrastructure projects has already been an issue for environmental activists and the public, regulatory uncertainty between 2020 and 2021 would only further undermine the citizens' access to environmental governance.

There are extra-normative factors that drive multinational energy companies to improve their image inasmuch as environment is concerned (e.g. Thurner and Proskuryakova, 2014 on management role in corporate greening). Gazprom was the first Russian oil and gas company proclaiming voluntary environmental responsibility in 1995¹⁰¹. Novatek, too, reports of its annual environmental action plans. While such steps should play in favour of companies' public image, there is uncertainty pertaining to effectiveness of such voluntary environmental initiatives relative to other instruments. As other scholars noted oil and gas sector lacks certification schemes that are being deployed in "soft commodities" sectors, such as agricultural products, forestry, fishery and aquaculture (Shvarts et al., 2018), so there is no accountability to self-proclaimed environmental schemes. Moreover, Gazprom and Gazpromneft,

¹⁰⁰ <https://ria.ru/20191203/1561905303.html>

¹⁰¹ Gazprom. (2017). *Ekologicheskiy otchet PAO Gazprom za 2017 god (Ecological report of Gazprom PLC for the year of 2017)*. <https://www.gazprom.ru/f/posts/85/227737/gazprom-environmental-report-2017-rus.pdf> (in Russian) Accessed on 28 September 2021.

being state-owned, while “facing weak pressure from civil society, had utilized their state-owned status to avoid meeting requirements related to the transparency and environmental responsibility of their operations” (Shvarts et al., 2018).

WWF with Creon Group have been ranking 20 major Russian oil and gas companies since 2014, and according to Aleksey Knizhnikov (WWF Russia) there have been improvements in levels of transparency of non-financial reporting. Their analysis is based on publicly available information. Between 2015 and 2019 Gazpromneft (2015 - 10th; 2016 - 8th; 2017 - 7th, 2018-2019 - 9th), Gazprom (2015-2016 - 2; 2017-2018 - 6th; 2019 - 10th) and Novatek (2015 - 12th; 2016 - 7th; 2017 - 12th, 2018-2019 - 13th) that operate in Yamal district either gravitated towards the middle of the list¹⁰² or worsened their position. While some companies on the list are owned by others (e.g. Gazpromneft by Gazprom, Arktikgaz by Novatek and Gazprom), a few companies on the list ceased to exist in the period from 2014 to 2019, which affected the distribution of the core listers. All in all the rating gives more information on the level of openness than that of environmental responsibility, for instance, a joint venture Arktikgaz was scored down for not publishing its eco-strategies and policies online. In addition, being company- rather than place-specific it provides little information on the environmental management of the companies within the Arctic region.

WWF and some other scholars (e.g. Trubitsina and Bashkin, 2019) found this mechanism useful for informing investors, but whether the ranking of Arctic hydrocarbon giants such as Gazpromneft, Gazprom, Rosneft and Novatek with

¹⁰² <https://wwf.ru/what-we-do/green-economy/ekologicheskiy-reyting-neftegazovykh-kompaniy-rf-sovmestnyy-proekt-wwf-i-kreon/>

widely dispersed assets will encourage them to form allegiances and finance environmental projects is uncertain.

While regulations remain the main driver of environmental compliance, minimisation of ecological risks by major Arctic-based oil and gas companies is part of the business process especially when a greenfield project is concerned. In addition, Gazprom, Novatek and other major oil and gas operators in Russia have been implementing integrated environmental management strategies pursuant the Arctic recolonisation¹⁰³. At the same time, environmental law violations have not seized and Rosprirodnadzor keeps issuing oil and gas operators and their contractors in the Arctic with substantial fines¹⁰⁴. With major inspections following the accident in Norilsk planned for 2021 in the Russian Arctic, the pressure on technical and environmental safety of companies operating in the region is likely to come under the public spotlight.

4.4.2. Lateral governance: environmental NGOs and public opinion platforms

In the theory of network governance, state and non-state actors form networks in order to achieve political goals, enact policies and enable democratic forms of communication between the civil society and those in power. In the context of Russian research, scholars tended to focus on either formal institutions or informal and illicit power networks, e.g. corruption, when studying the governance regimes

¹⁰³ Novatek's ISO certificates date back to 2014 while Gazprom revised its Environmental Management System in 2015.

¹⁰⁴ The record-breaking fine of 2 billion roubles (c. £20 million) is to be paid by Norilsk Nickel in 2020 (<https://www.forbes.ru/newsroom/biznes/410335-rosprirodnadzor-obosnoval-rekordnyy-isk-k-nornikelyu-iz-za-razliva-topлива-v>).

(e.g. Berg-Nordlie et al., 2017; environmental governance - Newell and Henry, 2016).

Some scholars, however, argue that even a centralised regime like Putin's Russia relies heavily on horizontal modes of governance (Kropp et al., 2017). "Networks are not only anchored into the multi-layered, albeit strongly decentralised federal setting, but also interact with various, sometimes even competing, authorities representing different portfolios and pursuing diverging policy objectives at the different territorial levels" (Kropp and Assland, 2018, p. 222). This quote illustrates the complexity associated with studying such systems.

When it comes to the Russian Arctic, such interactions are visible, whether they have a symbolic status or go beyond it. Greenpeace and other environmental NGO's, based on the interviews, as well as their public work, have been closely watching and commenting on the disputes over protected land in the Arctic and Siberia, participating in public hearings of EIAs and even employing more radical methods, such as their 2013 Prirazlomnaya rig protest.

According to Greenpeace Russia, one of the most active environmental organisations in Russia and the Russian Arctic, there are many problems and threats to the natural environment, but its main source is often the government itself that succumbs to industrial lobbying. For instance, in the Arctic, the repeated attempts have been made to remap protected sites by taking out economically valuable areas, such as a potential gold mine in Komi's Yugyd Va nature reserve and the shipping bay in the Great Arctic Reserve (BolshoyArkticheskiy zapovednik) (Yagodina, 2019). The pressure of the development is essentially testing the integrity of the ministry responsible not only for the nature preservation but also its exploitation, as well as the ability and willingness of Russia's emerging civil society and other actors to voice

their opinions. Which is, according to this and other organisations (e.g. Green Arctic), stem from the lack of environmental culture and awareness (prosvescheniye) as within so outside of the Russian Arctic zone. Aleksey Rudkovskiy, head of Yamal-based environmental organisation Zelenaya Arktika (Green Arctic) put the emphasis of their outreach on the population and people's behaviour (e.g. consumerism, irresponsible attitude towards pets, littering) rather than corporate bad practices. In concord with that, WCIOM (Russian Public Opinion Research Center), conducted a poll in 2019 on the public perception of the ecological situation in Russia, and respondents of the poll did not associate ecological problems with the industry: the burden was laid upon local (30%) and regional authorities (23%), then individuals (21%), while only 3% was attributed to the industry¹⁰⁵.

There are other types of allegiances forged between the oil and gas industry and the environmental organisations. For instance, WWF Russia cooperates with Yamal LNG on monitoring and protecting key Arctic species, for instance Atlantic walrus (WWF, 2015) and polar bear. The company supported the walrus protection strategy in the Barents and Kara sea basin as the data of walrus distribution and behaviour are still lacking. In 2016 Yamal LNG sponsored the monitoring project aimed at studying the population of polar bear in view of the increasing anthropogenic impact to prevent human-animal conflicts. Novatek Sustainability report 2018¹⁰⁶ indicated that the company cooperated with the Marine Mammal Council, a non-governmental public organisation that 'unites specialists in marine mammals and people who are not indifferent to the issues and problems associated with the conservation and study of

¹⁰⁵ <https://wciom.ru/index.php?id=236&uid=9544>

¹⁰⁶ Novatek. (2018). Sustainability report. [online] Available at: [https://www.novatek.ru/common/upload/doc/SR_2018_NOVATEK_ENG\[1\].pdf](https://www.novatek.ru/common/upload/doc/SR_2018_NOVATEK_ENG[1].pdf) Accessed on: 29 September 2021.

marine mammals'¹⁰⁷, as part of the Yamal LNG project. While there is no information on funding provided by oil and gas sector towards WWF or other environmental NGOs initiatives for ethical or legal reasons, this arrangement can be seen as an extension of continuous logistical and technological support provided by oil and gas companies towards academic research in the Russian Arctic as a commissioner or sponsor.

The only regional environmental organisation of YNAO Zelenaya Arktika is a 4 people strong activist group located in Salekhard, capital of Yamal-Nenets Autonomous Okrug, and offices in Moscow, Saint-Petersburg and Vorkuta; it works closely as with the government of the Okrug and municipalities so with the industry representatives. The organisation pursues two job fronts - one being environmental awareness of the population, that is addressing root causes of certain environmental issues, such as stray pets, and another providing volunteers for cleanup of illegal landfills and abandoned sites across the YNAO. Green Arctic prides itself of their unique 9-day volunteer training programme designed specifically for the Arctic. In the liaison with the regional authorities, the organisation attends the Council on environmental security of the YNAO at the Legislative Assembly, where they have an opportunity to speak out on issues that concern them, and in return, serve as a spokespeople for the regional Parliament on new legislation and other initiatives. Rosprirodnadzor official mentioned that they rely on environmental organisations, such as Greenpeace, and indigenous people (that can freely travel to the border region, e.g. Yamal peninsula) that send coordinates of oil spills and other signs of environmental damage as a solution to the transport scheme problem. From the

¹⁰⁷ <http://marmam.ru/en/about/main/>

interview with Vladimir Chuprov, Greenpeace Russia, on their attempts to locate and report violations of ecological legislation by the companies operating above the Arctic circle and the interview with Rosprirodnadzor, it is evident that the two organisations act in concert and in this case their efforts are aligned against major operators.

In contrast, Greenpeace Russia, Energy spokesman, Chuprov mentioned that his team had issues with the Federal Security Bureau (border control) that annulled their tickets to the YNAO Arctic district when they tried to report on an ecological incident and prevented their meeting with the indigenous informant. It might have been a case of miscommunication, nonetheless FSB is the authority that can halt access to the Arctic should it not be satisfied with the reasons. A 10 km border zone has been established along YNAO coastline in 2006¹⁰⁸, including most Yamal district's settlements (Novy Port, Mys Kamenny, Yaptik-Sale, Seyakha), and Sabetta, where Yamal LNG megaproject is based, was excluded from the border zone yet not becoming more accessible to the public. The border zone status makes it difficult, according to Vladimir Chuprov, to react to information from the native locals about spills and other environmental accidents in the area as a permit needs to be obtained, which could take from several days to several weeks.

In 2015 WWF collected over 80,000 signatures against offshore exploration in the Russian Arctic under the slogan "Arctic oil can wait". In 2016 the Cabinet of Ministers proposed the moratorium for further allocation of offshore licences (in effect since 2017). While there is no overt cause-effect link between these events, WWF claimed

¹⁰⁸ The border zone excludes the port of Sabetta (<https://www.yanao.ru/activity/2884/>), yet there is no public access to this facility.

a victory¹⁰⁹ and thus showed a capacity for non-hierarchical means of communication between the state and non-state actors. Even if the decision of the state to impose the said moratorium was simply coincidental¹¹⁰, it vitalised the collaborative rather than simply confrontational relations between WWF Russia and the Russian government.

In August 2019, Project Office of Arctic Development (PORA) in cooperation with the Ministry of Development of Far East and the Arctic launched a digital platform to collect ideas from the general public to be included in the development strategy Arctic 2035 (arctic2035.ru). The Project Office held 'round tables', expert meetings and discussion clubs in the Arctic province centres across Russia as well as the capitals. The experts of this Project Office, similarly to the Arctic Commission, included scientists, scholars, researchers, public officials, non-for-profit organisations and businesses. Contributors to the project offered insightful proposals/ raised issues and some were in tune with this research. The majority of ideas as of end of 2019 lied within the scope of economy and infrastructure followed by tourism, ecology, education and technology. Some of the relevant problems relevant to the socioecological relations raised are:

- lack of communication between science sector and local Arctic educational and medical institutions
- lack of local integrated scientific centres/ campuses/ universities (e.g. Chukotka)

¹⁰⁹ <https://wwf.ru/resources/news/zelenaya-ekonomika/vypolneno-glavnoe-trebovanie-petitsii-wwf-o-neftedobyche-v-arktike/>

¹¹⁰ In 2020, the Ministry of the Far East and Arctic Development proposed to open up off-shore development to private companies, pointing at the main reason behind the 2017 decision, that is financial strain for the state companies (Rosneft and Gazprom) to explore allocated let alone new licences.

- lack of ecological education in schools
- poaching
- dumping of non-recyclable waste
- maladapted legal norms written to cater to the most densely populated Central Federal District

Physical and access barriers, limited open platforms for public participation, lack of awareness of environmental norms and regulations and understanding of how to report a violation, prevalence of personal connections and various formal and informal networks between state, regional authorities, companies and NGOs create a complex environment that remains largely impenetrable to non-participants (from researchers to community members to new regional officials). As written previously (French, 2018) and demonstrated by PORA experiment, online platforms and social media can be used to gather local insight on ecological issues in the remote areas that would defy the physical barrier but may face the same bureaucratic hurdles¹¹¹.

4.5. Environmental discourse, awareness and data

4.5.1. Political discourse on the Arctic environment

The political line of development of the Russian Arctic was conceived by then new President of Russia, Vladimir Putin, back in 2000, as is evidenced in his speech at the meeting on the issues of northern maritime shipbuilding in Murmansk¹¹². Then, he mentioned three important assets of the region, namely: maritime shipping, defence

¹¹¹ Commission on Arctic development has slowed down its activities (latest 25/07/2019) but Trutnev and many other members of the Commission appeared on the expert group of Arctic2035 Project Office.

¹¹² <http://news.kremlin.ru/transcripts/21346>

and resources for the energy sector, as well as the need for each respective Arctic province to take an active part in the region’s development. Ultimately, Putin saw the Arctic as a means for nation building: “it can, but what’s more, it must become the pivotal backbone for the development of the Russian nationhood, our weighty argument in foreign trade and politics” (Putin, 2010). While the nationalist agenda behind the complex and costly expansion into the Arctic has been carried through to the Strategy (2013) and the Programme (2017) unchanged, issues of ecology and Arctic nature have, in fact, gained in resonance.

Table 7. Mentioning of the Arctic nature in various fora by the heads of the state, V. Putin and D. Medvedev:

Year	Arctic ecology/nature	Forum
2004	“exploration of the North should go hand in hand with nature preservation measures, protection of biological resources”	V.Putin, meeting of the State Council presidium on the state policy pertaining to the northern territories
2010	“An irresponsible attitude towards the Arctic could spell global problems, rather than global advantages, in the near future”	V. Putin’s speech at the forum ‘Arctic - territory of dialogue’. 23.09.2010. http://archive.premier.gov.ru/eng/events/news/12304/
2012	“ecologic problems of the North remain a priority”	V. Putin, Arctic Council state leaders’ meeting, Franz Joseph Land
2014	“The condition of this region in many ways defines environmental well-being of all our planet, of all our home... It is common knowledge that Arctic nature is fragile and extremely sensitive to the external pressures; and it is clear therefore that everyone who works there bears the high responsibility, especially considering the scale and complexity of set tasks”.	V. Putin’s meeting on effective and safe exploration of the Arctic, Saint-Petersburg, 5 June 2014
2017	Arctic development should go “hand in hand with taking care of its nature and providing security for the region”	V. Putin’s Press-conference, December 2017

Table 7. Mentioning of the Arctic nature in various fora by the heads of the state, V. Putin and D. Medvedev:

2018	“When implementing projects in the Arctic zone, we should not forget about ecology. Our presence in the region should not cause harm to the natural environment as it, unfortunately, happened in the past.”	D. Medvedev, meeting on the issues of Arctic development, Sabetta, 11 December 2018.
2019	“And the main threats (ibid. in the Arctic), the largest, I think, are most of all environmental. I feel sorry for bears (diminutive <i>mishka</i> in Russian), in this instance polar bears. But I’m speaking figuratively of all fauna. As with the warming and with the tentative economic development of the Arctic zone, the risks are naturally increasing. We need to take this into account.”	V. Putin at the Plenary of the V Arctic forum ‘Arctic-Territory of Dialogue’, 9 April 2019.

Throughout Putin’s first two terms of presidency (2000-2008), Arctic was a recurrent topic in national security context as well as development of energy resources. From mid 1990s to early 2000s, there was no funding and no parliamentary work dedicated to the Arctic issues while most existing state Arctic programmes remained unimplemented (Kokis, 2015). There was a shift in the environmental discourse in 2006 with the “Concept of sustainable development of the Arctic zone of the RF” delivered to the Ministry of regional development; it stressed the priority of environmental security in the country’s transition to sustainable development¹¹³. While this “Concept...” was essentially shelved, the case for environmental protection of the region as one of the principles of the Arctic policy was picked up by the Foundations... published in 2008 and the Strategy of 2013. Both these documents were criticised for the eclectic and somewhat contradictory lists of priorities, thus evocation of ecology in official speeches, positive intent and retroactive action (Arctic cleanup) as well as normative formulation of environmental values in the official

¹¹³ <http://www.regnum.ru/news/polit/592839.html#ixzz3MXMYO5II>

documents may shift the representativeness of the environmental problematic while at the same time do little to actually offset the impact of other 'priorities' such as exploitation of Arctic resources and region's militarisation. While from 2000 to 2018 individuals in presidential position changed twice¹¹⁴, the line of policy rhetoric and environmental component has to a large extent carried on (see Table above). These acts of politically binding the meaning of the Russian Arctic can be referred to as *l'espace conçu* in Lefebvre's trialectics; this vision of the region has been circulated for nearly twenty years and is likely to be present and dominant in most discourses about the Arctic in Russia.

In the early 2010s the environmental discourse seems to have picked up pace again with multiple events and fora attempting to categorise and mitigate emergent and historical ecological impact. In 2010, Putin visited Franz Joseph's Land, former site of early warning systems, there he made an announcement about the cleanup of remote Arctic territories. The same year, 2010, the President initiated the Russia-based international Arctic forum - "Arctic - the territory of dialogue" - that has been taking place on an annual basis from 2010 to 2013, however, stalled after that and was re-launched only in 2017¹¹⁵. Putin's visit to Franz Joseph's Land played a significant part in visualisation of the Arctic problematic to the voters and the government/parliament alike. Putin's public image as a person who has deep affection for the wildlife (e.g. him putting a tracker on a polar bear in 2010, flying a hang glider with Arctic cranes in 2012, releasing Amur tigers in 2014) to a certain extent helped the cause of increasing awareness about the region and put it on the

¹¹⁴ Vladimir Putin has been President of Russia in 2000-2008, 2012-2024; Dmitry Medvedev - in 2008-2012.

¹¹⁵ <https://forumarctica.ru/about-forum/>

political map 'by association' as within so outside the state¹¹⁶. Some see the recent renewal of Arctic development in Russia as a personal project of Vladimir Putin (Lukin, 2012) motivating it by his eager involvement and love for both nature and the country.

Newell and Henry (2017, p. 3) inferred that "environmental protection and the trajectory of the Russian economy and political system are deeply intertwined" meaning that the change in one is only possible following the change in the other.

The systemic view of the state of environmental governance has a flaw in that it filters out meaningful variations in the public discourse on the environmental issues and individual-driven efforts (that would be true for people in power as well as environmental activists and scientists).

More events point to the fact of raised interest towards environmental problematic, including discussions around the new concept of environmental security initiated upon request of president Dmitry Medvedev in 2010-2011¹¹⁷. One of the key elements of the environmental management, according to Medvedev, was addressing the issue of accumulated legacy waste and paying special attention to the energy sector, mainly, due to its size. Addressing the State Council general committee in 2011, Medvedev pointed out that "no matter what laws we pass, they will not be effective if they run into our age-old attitude towards the natural environment... If you want, it's kind of a birthmark of the past attitudes. And so it is that no one in our country would deal with these problems before all the other ones

¹¹⁶ <https://narfu.ru/upload/iblock/7d9/02.pdf>

¹¹⁷ <http://kremlin.ru/events/president/news/11519>

have been resolved”. In 2012, Medvedev signed off the Foundations of the State Policy of Russia’s environmental development up to 2030¹¹⁸.

Despite the policies and high-level concerns, it is perceived that the ecological situation in the Russian Arctic will inevitably worsen as a result of the current and future industrial development¹¹⁹. Thus discussions about ecological values and practical steps to prevent environmental degradation of the territory still largely devoid of human habitation envelop higher ranks of politicians, state officials as well as top management of corporations at public fora (e.g. Arctic - Territory of Dialogue). Views of the Russian officials on the development and environment in the Arctic vary across power branches, levels of authority and geography of their appointment or origin, yet the colonisation discourse remains unchallenged.

Dmitry Fishkin, Deputy Minister of Natural Resources and Ecology for Arctic development (formerly, employee of the Ministry of the Economic development) in 2017-2018 and the Arctic branch of the state-run Far East Investment and Export Agency, for instance, was adamant about the role of the region as “the country’s richest resource base” (Fishkin, 2018). He saw the environmental protection measures as ancillary to the goals of development of natural resources and the corridors of their transportation. He explained his move to the Environmental ministry as an opportunity to specialise in the Arctic region (rather than exercise better environmental control or introduce new measures of environmental governance). Vladimir Pushkarev, MP for one of the strategic Arctic subregions, Yamal-Nenets Autonomous Okrug, who has been regularly invited to speak at public fora (Forum

¹¹⁸ <http://kremlin.ru/events/president/news/15177>

¹¹⁹ <https://forumarctica.ru/news-from/ekologicheskaya-otvetstvennost-v-arktike-standarty-povedeniya-i-vedeniya-biznesa/>

Arctic Present and Future 2016 and 2017 in St.-Petersburg, Arctic-2017: Offshore projects and sustainable regional development in 2017, Moscow; CAFF Conference on Biodiversity in 2018 in Rovaniemi; Days of the Arctic in 2018, Moscow). As a Deputy chairman of the Duma committee on regional politics and problems of the North and Far East, Pushkarev acknowledged and supported the state-led course of the Arctic development, calling it a second wave of territory exploration¹²⁰. As for environmental safety, he thought that the industry is interested in preserving its reputation and legal mechanisms (such as contractor licences, fines) are in place to ensure that shift workers do not hunt, fish or harvest anything from tundra in their licence area. In any case, he said, tundra has such low productivity that there is nothing to take from it (Interview, 2017). The cleanup of Bely island, which Pushkarev personally oversaw, was sponsored by the companies and banks. Companies, to his knowledge, also conduct environmental monitoring and hire scientists (from e.g. Yekaterinburg University) to conduct ecological research. Regardless of the industry, Pushkarev perceived state and regional authorities responsible for dealing with environmental issues such as waste (Interview, 2017). Having said that, Pushkarev indirectly identified non-state means of environmental governance involving a) personal responsibility, b) corporate organisation that strictly controls off-duty activities of its personnel and shift workers and punishes them with monetary fines and dismissal, c) low productivity of the environment means that fly-in job 'migrants' often from the south are not motivated by the free bounty (except maybe fish). High flow of work migrants was not considered an issue since, according to him, it is

¹²⁰ http://www.stoletie.ru/obschestvo/vladimir_pushkarev_rossija_v_arktike_vstupajet_v_novuju_epohu_697.htm

temporary, i.e. needed for a construction phase (Interview, 2017). He also stated at Forum Arktika-2017 that it was essential to change the attitude towards natural environment in the Arctic, comparing the issue of waste disposal in the Arctic, where illegal dumping sites abound, to the Antarctic where strict waste management plans are in force, and to recognise the region as 'special' in legal terms in order to adapt regulations, increase monitoring and adapt governance mechanisms.

Igor Shpektor, President of the Union of Cities of the Arctic Circle and Extreme North, who spent 47 years in the Arctic complained that the region has become an attraction point for people that "confuse polar bears with penguins" but hold an active position at various political and official fora and that he feels shame for what is going on in the Russian Arctic in terms of environmental management. According to him, there is no enforcement or punishment for violations of environmental norms strong enough to overturn the industrial lobby within Russia's Arctic provinces. He participated in liquidation of 21 settlements abandoned after the collapse of the Soviet Union and feared that it might be indicative of what is yet to come in the Russian Arctic.

Evgeny Nikora, Deputy Governor of the Murmansk region (2017), when talking about Murmansk oblast, the most economically explored region of the Russian Arctic, pointed out that the main issue was waste, including that left behind as a result of Soviet activities. According to Nikora (2017), there is no economic driver for building new waste management facilities in the far corners of the Arctic since the 'Arctic waste' is treated similarly to that of other regions of Russia from the point of view of legislation. Thus, the problem is likely to spread to other development hotspots re-creating the cleanup needs incomparable to contemporary efforts.

Chief specialist of Centre of the state monitoring of subsoil resources (part of Rosnedra) Vladimir Dubrovin was, similarly, of opinion that the Arctic should not be open to all unless special additional requirements were met and “everything should be done in accordance with long-term and continuous programmes”¹²¹. The Russian Union of Industrialists and Entrepreneurs representative, Evgeny Konygin also spoke for the geographical limitation of the development hotspots in the Arctic. Director of Association ‘Arctic legal centre’ (*Arkticheskiy pravovoy tsentr*), Denis Gudkov voiced an opinion that the legal framework of the Arctic ecological protection lacks strategic vision¹²².

Within the context of state policy (from law-making to executive branches to lobbies and advisors), despite some individual voices, there is no coherent opposition to industrial development in the Arctic - the few pro-environmental outlets can be found in opinions of stricter or special control as well as legislation (e.g. non-existing Arctic environmental protection law) and ‘fragile nature’ rhetoric. Yet, there is no clear official lobby for the preservation of natural environment against the risks of industrialisation, hence l’espace conçu of the Arctic development project is likely to persist unchecked across various government institutions and would require a dramatic event to shift its trajectory towards diversification.

4.5.2. Regional perceptions of the Russian Arctic

In 2007, after the resonant and highly politicised expedition Arktika 2007 when the Russian flag was planted on the ocean floor at the North Pole, VCIOM (Russia Public

¹²¹ <https://tass.ru/v-strane/4975777>

¹²² <https://tass.ru/v-strane/4975777>

Opinion Research Centre) surveyed 1,600 people on the importance of the Arctic to Russia. 70% of respondents recognised the urgency of Arctic exploration and 69% agreed with the need for public financing. Another survey, conducted by the Public Opinion Foundation (*Fond Obschestvennoye mneniye*) in 2015 across Russia showed a surprisingly low level of awareness about the Arctic - 69% of respondents have not come across anything on the topic in the mass media within the six months leading to the survey¹²³. Of those that have, only 2% read about the region's environmental issues. Yet, respondents generally supported the significant public investment in the region (50% approve the spending on the Arctic exploration). 68% (83% of those who heard/read about the Arctic previously) approve of (lit. found permissible) extraction of mineral resources within the region; in a similar study by the same public opinion company two years earlier, in 2013, the same question received only 45% approval rate with 20% of those finding it impermissible as it would have a negative impact onto the natural environment¹²⁴. Both these surveys showed support for the state policy and low concern for the ecological impact (even though there was no explicit question regarding the ecology), however, the number of respondents (1500 in 2015 and 1000 in 2013) allows for a reasonable variation in opinions.

¹²³ ¹²³ The national poll 'Meaning and value of the Arctic' conducted in 2015 by FOM (lit. Fund of Public Opinion) found low awareness of the Russian Arctic development but positive appraisal of the Arctic extractive development. The poll showed that respondents knew little of the region's ecological problems and only 37% of them expressed an interest of visiting the region, pointing at cognitive distancing as from the region's politics so from its physical environment (FOM. (2015, July 1). Smysl i tsennost Arktiki (Meaning and value of the Arctic). [online] <https://fom.ru/Mir/12216>).

¹²⁴ <https://fom.ru/Mir/11136>

Public perceptions of the Arctic or particular regional issues such as effects of climate change have not been systematically studied and have only recently received attention of sociologists (e.g. Anisimov et al., 2017). One poll conducted in Murmansk region in 2016 showed that almost half of local respondents considered hydrocarbons, the Northern Sea Route and marine bioresources as the most valuable and important Russian Arctic attributes (and only c.10% saw it in the unique and pristine nature) (Guschina, Kondratovich and Polozhentseva, 2017). While such a result of a relatively small study may be due to the wording of the question itself, the utilitarian approach to the natural resources and ecological services and the non-impartial nature of the response are both part and parcel of the region's societal sensitivities. Most of its population is of non-indigenous descent and most economy-defining businesses operating in the Russian Arctic zone are also set up and headquartered in other more southern parts of Russia and the world. An academic study conducted in 2015 in Murmansk, Arkhangelsk oblast and Nenets Autonomous Okrug, which are all partially or fully included in the Russian Arctic Zone, showed that over a half of respondents between 18 and 49 years of age wanted to emigrate to another region of Russia mainly (c.50%) due to harsh climate and nature of the North¹²⁵. The visions of the Arctic were analysed in the same study through focus groups and showed that the majority of the respondents associated the Arctic with the natural living and non-living environment through images of polar bear, iceberg, and ice ridges. The first two images would unlikely be based on real-life experiences of the respondents as the area in question, i.e. European part of the Russian Arctic (excluding Novaya Zemlya), is not known to be the usual polar bear habitat or have

¹²⁵ http://www.arcticandnorth.ru/Encyclopedia_Arctic/arctic_for_people.pdf

icebergs. The same respondents considered the value of the Russian Arctic being in its oil and gas potential, Northern Sea Route, bioresources (fish), and solid minerals - all above Arctic pristine nature¹²⁶. The sociologists conducting the study described the northerners' view of the Arctic's value as 'superficial and pragmatic' (p.34) tying it in with the prevailing desire to emigrate and the non-indigenous predominantly first and second generation structure of the population. These polls show how l'espace vécu has been encroached upon by l'espace conçu of the state discourse capturing the meaning and the value of the Arctic for its inhabitants, particularly affecting the non-indigenous majority.

In 2017, which was declared a Year of Ecology in Russia, Russian citizens were given a tool to participate in the cleanup initiative by pinpointing a site of an illegal accumulation of waste on the open map 'Karta svalok'¹²⁷ with hundreds of such sites found in the European part of the Russian Arctic, fewer in Yamal and practically none at the north of Krasnoyarsk kray, Yakutia and Chukotka. Such interactive programmes, on the one hand, help politicise issues related to the environment, but, on the other, show distributional effects of environmental concern, which depends both on the regional economy and environmental awareness of region's inhabitants¹²⁸.

A gap between federal (central), regional and local levels of environmental governance in the Arctic, which is at the core of this research, amongst others can be

¹²⁶ The solid mineral resources were ranked lower than the pristine nature only in NAO.

¹²⁷ <http://kartasvalok.ru/#>

¹²⁸ (<http://porarctic.ru/about/> - attempts to increase public knowledge about the region) Media analysis: Gritsenko, 2016 (https://helda.helsinki.fi/bitstream/handle/10138/297772/2016_Gritsenko_Energy_Research_Social_Science.pdf?sequence=1)

detected in the way the Arctic region and regional policies are perceived within the region and outside of it. To date there has been no focused study within on the topic. It has, however, been found that many regional and especially municipal officials have poor knowledge of the policy documents on the Russian Arctic Zone (Katorin, 2015). In addition, experts agreed on the distribution of roles in the planned social and economic development in the Russian Arctic stressing that the federal government has overall influence over the region's future, while provinces (interstate regions and municipalities) included in the Arctic zone have no real control over them. According to the study, 90% of Arctic-based experts believe that federal authorities are the strongest agent of the Arctic policy mainly due to the fact that the centre holds financial and administrative resources required for the region's costly development, next in line of influence are public corporations and regional authorities (Katorin, 2015). Some experts in the above-mentioned 2015 sociological study agreed that the Arctic policy documents have a strong industrial focus while the social component was largely left out, the same goes, albeit unmentioned by these experts, for the natural environment.

What is striking in the Russian Arctic region-making is the dissociation between the natural environment and the intended space of resource extraction¹²⁹ even at the regional level, i.e. in the Arctic, whether that is a result of political recruitment and opinion leadership (e.g. appointment of governors), demographic characteristics of the Russian Arctic (young population, high levels of in and out- migration), low environmental culture, or a combination of these and other factors is to be

¹²⁹ In L'èvfefbre's concept: the conceived or existing space - l'espace perçu - and a perceived space of political intent - l'espace conçu.

determined. Lefebvre's spatial triad could provide an explanation for such dissonance through a lack of balance between the perceived resource value of the Arctic and its 'uninhabitability', that is l'espace perçu and vécu do not fit well with the strictly 'conceived' treasure trove of natural gas and other sources of national wealth. The constant reminder of its ecological significance on the highest level can be perceived as reassurance or act as a smokescreen, yet low level of public engagement and awareness allows for state-industry dialogue on ecological matters to escape public scrutiny.

4.5.3. Scientific data: ownership and availability

Scientific knowledge, which could be attributed to l'espace perçu of Lefebvre's trialectics, is an essential component of environmental governance. One of the drawbacks that could contribute to the sporadic level of awareness of the Arctic natural environment as described above could be attributed to the lack of scientific data availability and sharing. This is true as for baseline data collected by public bodies and corporations so to data sharing between the state, various regional and local stakeholders and the international community. As Russia is yet to ratify the Aarhus convention (1998) on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters despite the decade-long discussions and preparations¹³⁰, there is no legal obligation to either facilitate public

¹³⁰ The Foundations of the state policy in the field of environmental development through to 2030 (2012) stipulated that Russia would join the Convention in 2013. In March 2018, the Ministry of Natural resources submitted a draft of the law on ecological information to the Government thus introducing the definition and terms of access to the Russian legal vocabulary (http://mnr.gov.ru/press/news/minprirody_rossii_vneslo_v_pravitelstvo_rf_zakonoproekt_ob_ekologicheskoy_informatsii/).

access, standardise the data or for companies to disclose environmental data.

Having said that, the latest plan (2019)¹³¹ related to the implementation of the Ecological security strategy up to 2025 (President Rossii, 2017) included an article on ‘creation and development of the state data base of state ecological monitoring data’ that would provide verified ecological information to all levels of executive power as well as businesses.

This multi-faceted issue of collecting and accessing data, i.e. lack of continuous published scientific research output or publicly available datasets (including satellite imagery and GIS), was highlighted as by the regional research community (A. Baryshnikov, A. Sinitskiy both spoke that they are not aware of the outcomes of the research they helped to facilitate to unaffiliated researchers in the region) so by the authorities in Salekhard and Mys Kamenny (State Public Institution ‘Service for protection, control and regulation of the use of bioresources YaNAO, Yamal territorial branch’ reported that no one is collecting data related to the hunting season or quotas from their branch and that they have not seen an ornithologist in years). In 2010, the Presidential Decree prescribed to regional authorities to publish an annual environmental report by March each year. In YNAO, this report addresses a range of topics such as atmospheric pollution, greenhouse gas emissions, water consumption, subsoil resources, etc. which helps increase the level of transparency in regional environmental monitoring and remediation but may give a false sense of

¹³¹ <http://government.ru/docs/36912/>

data availability and understanding¹³². Additionally, it purports the social and economic focus in the report structure, data acquisition and analysis highlighting the relative value of the natural environment (environmental health, hunting, fishing, forestry).

The issue of data generation is especially acute in the Yamal-Nenets Autonomous Okrug where there is no independent research institute. There are two regionally funded research centres affiliated with the YNAO Department of science and innovation and funded through the regional budget: Russian Centre of Arctic Exploration that prepares and facilitates expeditions to remote areas for groups of scientists, volunteers, etc. and the State Public Institution “Scientific Centre of Arctic Research” that employs a few scholars (anthropologists, archaeologists) that coordinate regional expeditions with other universities and distribute regional funds to conduct geobotanical and other surveys. The future of these organisations is uncertain as a result of a) weak academic capacity (i.e. staff) and b) overlapping/ competing competences. The funding has been dependent on the approval of two people in the governor’s office, the director of the named above department of science and innovation and the deputy governor for science, whose replacement could lead to subsequent decline or dismissal of the centres.

Andrey Baryshnikov was the head of the Arctic Exploration Centre in 2016-2018.

Andrey shed the light on the research scoping and organisation process as the

¹³² For instance, The Environmental report for 2018 issued in 2019 mentioned widespread occurrence of erosion, water logging and other exogenic geological processes in the region but provided only small-scope study findings and no references to data sources. It also pointed out at the fact that over the years oil and gas development decreased hunting resources through habitat deterioration but failed to elaborate on the impact onto other species. Chapter 13 entitled the Impact of selected economic activities onto the environment provided figures of oil and gas extraction, agricultural sector... but no relevant information regarding their impact onto the area of operation save from waste.

centre provided logistic, navigation and transportation services to teams of scientists from various institutes across Russia. The centre also functioned as a bridge between business and science, however data collected by scientists on commission remained copyrighted and undisclosed by the companies. There is no exchange of data between regional authorities, the centre of scientific research and institutes conducting field studies in Yamal.

Anton Sinitskiy worked as the director of the Scientific Centre of Arctic Research in Salekhard from 2015 to 2019. His main take on the environmental issues of the region was that less attention is paid to those areas of Yamal unaffected by the industrial development. As a former employee of Gazprom research institute he considered that the decision to employ someone with his background was motivated by the necessity to fill in the gap in natural science research as initially the centre was created based on Budanov's centre of ethnography and anthropology. He brought up a concern of reindeer population increasing beyond the carrying capacity of tundra, the 2017 geobotanical expedition confirmed degradation of vegetative cover. The polemic that drives the research funding has affirmed a hidden conflict of interests and blame-shifting between the extractive industry and the nomadic nenets. Yamal-Nenets governor Dmitry Artyukhov stated that 'environmental well-being is one of the government's priorities' (2019)¹³³. But what it means in actual terms is often limited to retro-active actions such as cleanup of historical waste and primary accumulation of knowledge (establishing monitoring stations and commissioning data gathering expeditions) in areas that are not being exploited by the oil and gas companies, such as Bely and Vilkitskiy islands.

¹³³ <https://www.yanao.ru/presscenter/news/11248/>

For instance, comprehensive research of the Arctic zone of the Yamal-Nenets Autonomous Okrug was carried out in 2012-2013 by S.R. Verkulich of the Arctic and Antarctic Research Institute and his team (report dated 2016, unpublished). No further monitoring or expeditions were financed in the subsequent years to verify and further the findings. The aim of that research was to “obtain new data and understanding of the current state and changes of the natural environment of the studied areas in the context of climatic changes and intensive industrial exploration of the natural resources of Yamal-Nenets Autonomous Okrug based on scientific analysis and integration of expedition and analytical outputs” (p. 3, 2016 unpublished). The report brought to the fore the fact that many scientific tests and methods were used on Yamal and Gydan peninsulas and in the surrounding coastal waters for the first time in the region’s history and that the area is largely understudied. According to YNAO press release of October 2019, a single-source database of environmental research results in Yamal is being put together and it will be referred to when regional environmental quality standards are developed¹³⁴. It goes to show that development precedes scientific research in the field of environmental studies in this particular region and possibly others too. It is an environmental governance issue that development is preceding or runs in parallel with environmental understanding of its direct and indirect impacts. Moreover, a standard of the acceptable damage can easily shift as economic value is being secured and before environmental values are formed through socioecological interaction despite the long history of the same.

¹³⁴ <https://arctic.yanao.ru/presscenter/news/17383/>

The nature of the political environmental discourse on the Arctic, limited data on environmental awareness of Russian citizens, and lack of publicly accessible research data about the Arctic region all factor in the political, legal and land-use trajectory of the Russian Arctic. If we apply trialectic concept, this situation would mean that in absence of available and accessible scientific knowledge the 'real' space would only exist in the physical, as experienced in situ, at the local scale, and thus would be greatly diminished if not substituted by other notions of space. The dominating state discourse of 'resource base' and 'driver of Russian economy' remains unchallenged as the poor ecological awareness, little environmental concern and insufficient data emerge through polls and interviews, the overt critique of the renewed exploration of the region can hardly be found within the Russian society as outside so inside the Arctic¹³⁵. The effect of practically opposition-free development rhetoric onto the emerging system of socioecological relations within the region is something that requires a closer examination. The conceived (known) and perceived (constructed) conceptions of the Arctic region are in particular non-opposition in Russia with the latter used to fill in the knowledge gaps of the former. On the one hand the state claims the primacy of scientific information in the cause of development (e.g. *Strategiya*, 2013), on the other, the exploration, in many cases, precedes or runs in parallel with scientific fieldwork in the context of low availability of baseline data throughout the region as well as changing socioecological circumstances (e.g. climate change or ten-fold increase in population in northern settlements).

¹³⁵ Greenpeace has been taking an active part in the discourse but its impact has a limited range and reach.

Legal access requirements to the border areas of the Russian Arctic, inaccessibility of environmental information together with lack of civic engagement create a barrier to assimilation of grassroots environmentalism. The dual role of the state in facilitating the *a priori* risky development and punishing non-compliance, lack of decentralisation of the environmental governance (overwhelming federal oversight in the Arctic border region) and substitution of corporate environmental responsibility for the funding of research on charismatic Arctic species and other media-worthy initiatives portend weak foundations in the field of environmental protection for the accelerated Russian Arctic development. The local perspective may shed more light on the intrinsic EG mechanisms embedded in the socioecological relations of the Arctic residents and its surroundings as well as the socioecological effects of industrialisation.

Chapter Five. Changing dynamic of socioecological interactions in the Arctic development ‘hotspot’

5.1. Renewed Yamal peninsula colonisation

Yamal district occupies 19.1% of the YNAO and sits north of the Arctic Circle on the Yamal peninsula. It inhabits 16,779 people and has a low density of 0.11 people/sq.km (2018). Officially, it has 6 municipalities, one of which is its administrative centre Yar-Sale. Six other settlements were abolished in 2010, including Sabetta.

Yamal district has a high rate of indigenous population (74.5%). The district boasts 32 hydrocarbon fields, 19 of which have been distributed amongst the oil and gas operators. Out of the 56 priority projects in oil and gas sector Yamal alone received a share of 36¹³⁶.

The special place of Yamal in the Russian and Arctic economy was initially reflected in the Russian Energy Strategy (ES) through to 2030 which designated Yamal as the most important gas province of the Russian Federation holding 72% of Russia’s gas resources in 2009 increasing to 81.3% in 2018¹³⁷. Yamal-Nenets Autonomous Okrug is a well-established extracting province with Nadym-Taz-Pur district holding the position of Russia’s gas centre, while Yamal and Gydan peninsulas remained poorly developed until recently. With 26 newly discovered fields within Yamal peninsula, its share in gas extraction is predicted to increase from 0 to 23-24% by 2030 (Energy

¹³⁶ <https://www.arctic.gov.ru/FilePreview/9053275b-7821-e611-80cc-e672fe4e8e4e?nodeId=4370391e-a84c-e511-825f-10604b797c23>

¹³⁷ Pravitelstvo Rossiyskoy Federatsii. (2009). Energeticheskaya strategiya Rossiyskoy Federatsii do 2030 goda (Energy Strategy of the Russian Federation through to 2035). [online] <https://minenergo.gov.ru/node/1026> Accessed: 29 September 2021 (in Russian) <https://minenergo.gov.ru/node/1026>; <http://ac.gov.ru/files/publication/a/22922.pdf>

strategy, 2009). Yamal district is the fastest growing gas province with Bovanenkovo production showing an increase from 4.9 billion m³ in 2012 to 82.8 billion m³ in 2017. Gazprom, world's largest natural gas producer, holds over 27 billion cubic metres of reserves on Yamal peninsula, which is over a half of its total reserves.

In the draft to ES-2009 revision, Yamal peninsula is seen as a testing ground for the resource-based innovative development and building of infrastructure for the new economy in Russia from 2021 to 2025 with the view of subsequently maximising efficiency of traditional energy sources and relying on new hydrocarbon and non-hydrocarbon sources and intelligent power systems¹³⁸. Yamal peninsula has been designated an area of special interest and has become a hotspot of development of the entire Yamal-Nenets Okrug (port Sabetta, Bovanenkovo oil field, oil loading terminal 'Arctic Gate', Yamal LNG plant). And there were several reasons for it, at least according to the Socio-economic development programme (2017), they included:

- the need to develop new resources of Yamal peninsula (as well as Gydan peninsula and Ob and Taz estuaries and the Kara sea offshore deposits);
- depletion of traditional resources in the region;
- need for a transport hub and industrial complex adjacent to the oil and gas fields (partly, of course, to cater for the Asian oil and gas markets).

Yamal peninsula has been subdivided into three development areas: Bovanenkovo industrial zone in the north-west, Tambey industrial zone in the north-east, including Sabetta, and Southern industrial zone from the base of the peninsula to Mys Kamenny. Bovanenkovo industrial zone has 3 fields, Tambey - 6, and the Southern

¹³⁸ <https://minenergo.gov.ru/node/1913>

industrial zone - 9 fields (Chudakov et al., 2016). The licences on the peninsula are distributed between two main players - Gazprom (including subsidiaries Gazprom Dobycha Nadym, Gazpromneft Yamal, Gazpromneft Novy Port) and Novatek (including a joint venture Yamal LNG).



2014 Scenario of accelerated development in Yamal district up to 2020

(Golovnev et al., 2014).

This division reflects the history of geological exploration of the peninsula with Karskaya (Harasavey), Tambeyskaya (Sabetta) and Yamalskaya (Mys Kamenny) oil and gas exploratory expeditions (that were active from 1964 to 1990s and drilled over 700 deep exploration and prospecting wells across the peninsula) corresponding to Bovanenkovo, Tambey and Southern zones respectively.

The forerunner of the peninsula development is Gazprom which operates Bovanenkovo hydrocarbon field and adjacent transport infrastructure. Gazprom, Russia's largest gas producer, signed a memorandum of cooperation in industrial development of hydrocarbon fields of the Yamal peninsula and adjacent areas with the Yamal-Nenets government in 2002.

Another significant player in the district is a privately owned Novatek, which has been acquiring licenses in YNAO by overtaking smaller companies left from the Perestroika privatisation period and through open auction since 1995 and has become Russia's largest independent producer of natural gas between 2012 and present¹³⁹. In 2008 it purchased 51% of shares in Yamal LNG increasing its share to 100% in 2011¹⁴⁰, and subsequently became the second largest player on the peninsula. Gazprom and Novatek established a joint enterprise OOO Yamal razvitiye (Yamal development) in 2010 in order to unite efforts in the exploration of potential hydrocarbon deposits within YNAO¹⁴¹.

While at the moment, only two fields are in operation - Bovanenkovo (since 2012) and Novy Port (since 2014), the plans to develop other fields of the peninsula stretch

¹³⁹ <http://ac.gov.ru/files/publication/a/13691.pdf>; <http://ac.gov.ru/files/publication/a/22922.pdf>

¹⁴⁰ In 2013 20% of shares were sold to the China National Petroleum Corporation.

¹⁴¹ <http://www.novatek.ru/ru/about/company/history/>

far and wide. The South Tambey field is at the stage of development drilling at the same time as the LNG plant was being built with the first train launched in 2017. More than 200 directional wells are to be drilled from 19 well pads spreading over the area of more than 1000 square km. In March 2019 Vladimir Putin, the President of Russia, 'launched' the development of Kharasavey field located to the North of Bovanenkovo¹⁴². Kruzenshternskoye field, south of Kharasavey, is planned to be put in commercial operation in mid-2020s¹⁴³. The so called 'largest discovery of the 21st century' Tambey field (includes West Tambey, North Tambey, Tasiyskoye, Malyginskoye deposits) which was found to contain 7.7. billion cubic m of natural gas (Martsinkevich, 2019) will be put in production in 2026, according to Gazprom¹⁴⁴. Gazprom owns user rights to subsoil resources of several fields located close to Novatek's South Tambey field, Yamal LNG and port of Sabetta. At the same time, Novatek's Malo-Yamalskoye field (Novatek-Yarsaleneftgaz) is located near the Gazprom infrastructure west of the Arctic Gate and Novy Port field. It was clear that such asset distribution may have called for negotiations and further development of the peninsula, which in fact happened in April 2019 when the asset exchange deal was reached. Gazpromneft will receive Malo-Yamalskoye field in exchange for a share in two fields of Arktikgaz (Evo-Yakhinskoye and Severo-Chaselskoye both on mainland south-east of the peninsula). Gazpromneft announced a call for tender for design and survey works for Malo-Yamalskoye gas condensate field which are expected to commence in 2022.

¹⁴² <http://kremlin.ru/events/president/news/60113>

¹⁴³ <http://ac.gov.ru/files/publication/a/22922.pdf>

¹⁴⁴ <https://www.vedomosti.ru/business/articles/2019/04/22/799919-gazprom>

Table 2 shows the development potential of the peninsula in terms of active licences and their distribution between the two main players, Gazprom and its subsidiaries and Novatek and its joint ventures.

Table 8. Operating licences of oil and gas companies in Yamal peninsula (data from <http://www.rfgf.ru>)

Companies	Subsidiaries (licence holders)	Licences for subsoil exploration	Development zone	Status if known
Gazprom	Gazprom добыча Nadym	Bovanenkovo	Bovanenkovo industrial zone	In operation from 2012.
	Gazprom	Harasavey		Licence since 2016, valid until 2043.
	Gazprom	Kruzenshternskoye		Licence since 2016, valid until 2028.
		North Tambey	Tambey industrial zone	Licence since 2008, amended in 2016, valid until 2028.
	Gazprom	West Tambey		Licence since 2017, valid until 2028.
	Gazprom	Tasiyskiy		Licence since 2017, valid until 2028
	Gazprom	Malyginskiy		Licence since 2017, valid until 2028
	Gazpromneft Novy Port	Novy Port		Southern industrial zone
	Gazprom добыча Yamburg	Kamennomyszkoye-more (shelf) (Ob estuary)	1st gas from 2023. Licence since 2016, valid until 2057.	
	Gazprom добыча Yamburg	Severo-Kamennomyskiy plot (Ob estuary)		Licence since 2016, valid until 2076.
	Gazpromneft Yamal	Kamennomyszkoye-susha (land)	Not formally included in the zones.	Licence since 2016, valid until 2041.

	Gazprom dobycha Yamburg; Gazprom dobycha Urengoy	Seyahinskiy plot	Not formally included in the zones, located 28km from Sabetta	Licence since 2007
	Gazprom	Nilivoyskiy plot	Not formally included in the zones, located 80km from Sabetta	Licence since 2007
	Gazpromneft Yamal	Blichnenovoportovskoye	Not formally included in the zones, located in Yuzhno-Kamennomyskiy licence plot; discovered in 2018.	
Novatek	Yamal LNG	South Tambey plot	Tambey industrial zone	Licence since 2005, valid until 2045.
	Novatek - Yurharovneftegaz	Verhnetiuteyskoye (Верхнетиутейское) deposit		Licence since 2017, valid until 2044.
		West-Seyaha (Западно-Сеяхинское) deposit		Licence since 2017, valid until 2044.
	Novatek - Yurharovneftegaz	Syadorskiy plot		Licence since 2016, valid until 2041.
	Novatek Yarsaleneftegaz	Maloyamalskiy plot	Southern industrial zone	Licence since 2013, valid until 2034.
Undistributed		Rostovtsevskoye		Will not be auctioned as it lies within a nature reserve 'Yamalskiy'. Classed as large.
		Arkticheskoye		Classed as large.
		Sredne-Yamalskoye		Classed as large.
		Nurminskoye		Classed as medium.

		Hambateyskoye		Classed as medium.
		Neytinskoye		Classed as medium.
		Zapadno-Geofizicheskiy plot	Not included in the zones, 7.5km south of Seyaha, 18km north of Yaptiksale.	2007-2011, Surgutneftegaz; classed as medium.
Arktik LNG-2		Shtormovoye	Ob and Gydan estuary	

The Table 2 only shows licences with the right of operation (i.e. operation licence or combined exploration and operation licence), however there are more actors (e.g. Novohim, Parma...) that own licences for geological prospecting and evaluation of extractable resources for other fields. Every year more reserves are discovered on the shelf of Kara sea (e.g. Gazprom's Dinkova and Nyarmeyskoye in 2019), so in the near future spatial colonisation of Yamal district may carry on offshore thus stimulating current infrastructure investment.

Yamal LNG, a liquefying natural gas plant in Sabetta, is the joint venture with Novatek as the main shareholder at 50.1% as well as Total (20%), China National Petroleum Corporation (20%) and Silk Road Fund (9.9%). The project also received direct subsidies from the state: in 2015 the National Welfare Fund purchased 150 billion rub. worth of Yamal LNG bonds¹⁴⁵, in addition it was exempt from the property tax and granted income tax benefits as well as a zero LNG export duty.

The LNG production in Sabetta is made up of 4 process trains, 3 of which are in operation. The equipment of over 650,000 tons, soil, concrete and other materials have been transported there from all over Russia and the world. Post-2014 import

¹⁴⁵ <https://www.rbc.ru/opinions/business/11/12/2017/5a2e37599a79476b576c3f91>

replacement strategy helped boost localisation of various components for the project. It is no secret that Yamal LNG is a highly politicised project so much so that in December 2017 Vladimir Putin was present at the launch of the first train and gave instructions to the government to speed up development of domestic LNG technology, encourage cooperation between Gazprom, Novatek and Rosneft, and accelerate development of Arctic natural resources in order to facilitate and increase LNG production¹⁴⁶.

The majority of process equipment for Yamal LNG was designed and supplied from abroad by the USA's Air Products and Chemicals Inc. (Ott et al., 2019) as Russia did not possess the technology at the time; only in 2018 Novatek announced that it patented its own liquefaction process technology "Arctic cascade" and planned to incorporate it in the fourth experimental process train of the existing plant. The concept behind the innovation was to adapt the technology to the cold climate thus reducing the energy loss and cost.

Extractive and industrial development of the Yamal peninsula required and went hand in hand with transportation infrastructure development. Road transportation on the peninsula is generally seasonal as there are few permanent roads, which are clustered around settlements, and no roads that would run across the peninsula. Cargo shipping in the winter is done by air (by helicopter or plane where there is a runway) or in the navigation period by river or sea.

Railway:

- Severny Shirotniy Hod (Northern Latitudinal Route), including 170km Bovanenkovo-Sabetta (North Latitudinal Route -2) and Karskaya-Kharasavey

¹⁴⁶ <http://kremlin.ru/events/president/news/56339>

railway lines on Yamal peninsula, which would extend existing Obskaya-Bovanenkovo-Karskaya 572 km railway

- Payuta-Novy Port

The project of a railway connecting the existing station of Obskaya with the Yamal peninsula was conceived in the 1980s and 1986 saw the commencement of construction of the railway line Obskaya-Bovanenkovo/Harasavey. First train came to Bovanenkovo in December 2009. The stretch from Bovanenkovo to Sabetta will be done under concession.

Pipelines:

- Oil: Novy Port - Rostovtsevskoye-Bovanenkovo-Harasavey, Zapolyarye - Purpe - Samotlor (Transneft)
- Condensate: Tambey-Harasavey
- Gas: Bovanenkovo-Uhta-Torzhok and Bovanenkovo-Uhta-Torzhok- 2 (2017) that connect into the Nord Stream - across the Russian border into the European Union (through Germany). The installation was complete in 2017, however following technical malfunctions in 2018-2019 9.2 km of pipeline are in need of overhaul. The main reason is novelty of laying pipes at the bottom of the estuary in the harsh climatic conditions of the area. 106km of gas pipe will be added to transport gas from Kharasavey between the gas field and Bovanenkovo in 2020s.

Ports:

- Multifunctional seaport Sabetta (in operation since 2017)
- Novy Port (existing river port for local communication)

Airports:

- International airport Sabetta (in operation since 2016)



Oil loading terminal Arctic Gate in Mys Kamenny <https://www.gazprom.ru/projects/>

Other:

- Oil loading terminal Arctic Gate in Mys Kamenny (in operation since 2016)

Port Sabetta is adjoint to the Yamal LNG infrastructure. Its cost amounted to 96 billion roubles (71 billion roubles were invested by the state). Opposite Sabetta, on Gydan peninsula on the other side of the Ob estuary, a cargo terminal Utrenny was built to facilitate Arktik LNG shipping and to boost NSR trading to 80 million tons by 2024 (President Putin's May decree of 2019). The Utrenny terminal will require ice protection structures and estuary dredging that were estimated to attract further 112.2 billion roubles of state finances¹⁴⁷.

99% of Novy Port oil was shipped via the Northern Sea Route from Mys Kamenny, located to the south of Sabetta. The icebreaker-assisted shipping was conceived by

¹⁴⁷ https://www.znak.com/2019-04-01/pravitelstvo_rf_rasshirilo_granicy_porta_sabetta_do_poluostrova_gydan

Gazprom and tested in 2011 and in 2014 after the state ecological expertise the loading terminal was built in the estuary. Six Arc7 tankers and special icebreaking vessels capable of breaking up to 2 m of freshwater ice (e.g. Aleksandr Sannikov, Andrey Vilkitskiy) were built to transport oil from the loading terminal. In 2016 the Arctic Gate was officially launched by Vladimir Putin, which again serves to demonstrate his political will and personal investment into the development of the Arctic resources.

The state company Rosatomflot signed a contract with Yamal LNG (Yamal Trade LLC) to transport 16.5 MMTA of LNG in 2014-2040. It will also ship Novy Port oil (8.5 MMTA of crude oil) and will supply cargo to Arktik LNG-2. These projects will provide revenue for the company for decades to come and it already shows in the company's statistics: its revenue in 2017 was 3.6 times higher than the figure of 2013¹⁴⁸. In 2016 the shipping via NSR amounted to 6.8 million tons of cargo which is 4.7 times above the 1998 level (the 20th century minimum). In 2018 the commodity flow through the Northern Sea Route reached the record 20 million tons, and it is predicted to exceed that in 2019 by 45%¹⁴⁹.

Hydrocarbon extraction, pipe transportation and LNG production and shipping will have different geographic and environmental effects on the district. While LNG and oil marine-based transportation would have an impact on the estuarine ecosystems and the coast, the gas pipes would have a stronger impact on the local communities, permafrost and terrestrial ecosystems. According to Greenpeace study of Yamal LNG, "neither has integrated environmental impact assessment of entire LNG

¹⁴⁸ <http://www.rosatomflot.ru/press-centr/novosti-predpriyatiya/2018/01/23/11160-v-2017-godu-kolichestvo-ledokolnyh-provodok-rosatomflota-v-akvatorii-sevmorputi-vyroslo/>

¹⁴⁹ <https://www.gazeta.ru/business/2019/09/06/12631171.shtml?updated>

production and transportation life-cycle been done in Russia, nor has the comprehensive analysis of all types of impact on natural maritime and land ecosystems been carried out” (Ametistova and Knizhnikov, 2016). The unknown risk profile, the limited time between project initiation and implementation for environmental assessment and public hearings, such semi-legal practices as the fact that initial EIA for Yamal LNG did not include the later added 4th train and unavailability of open-access EIA for Gazprom projects, the fact that EIA for the runway in Sabetta was made when it was already being built (interview with a former employee of the EIA contractor) all suggest possibility of haphazard yet potentially unknowable outcomes.

At the moment, the nearest response unit of the Ministry of Emergency is located several hundred kilometres away from Yamal peninsula. While there have been talks between Yamal LNG and the Minister of Emergency¹⁵⁰ of setting up the Arctic coordination and rescue centre in Sabetta, that would require planning, personnel training and transportation of specialised equipment and vehicles to the settlement, and was scheduled to take place in 2020.

In 2018 the governor of the Arctic Yamal-Nenets Autonomous Okrug became the minister of natural resources and environment. He also appointed Denis Khramov, a former vice chairman of the board of directors at Novatek, a major oil and gas operator, as his first deputy and a former Yamal LNG manager, Sergey Khruschev, as a head of department for the Arctic research evidencing interaction between? state and corporate management. In 2020, there was a changeover of ministers, and the

¹⁵⁰ https://www.znak.com/2019-09-06/na_poluostrove_yamal_v_2020_godu_poyavitsya_arkticheskiy_centr_mchs

new top official, Alexander Kozlov (former governor of Amur region) also has a background in extractive industry. Minprirody's dual function to exploit and preserve natural resources tends not to be reflected in its top management expertise.

In late 2020, first vice-premier Andrey Belousov created a work group consisting of major players of the Yamal peninsula development (Gazprom, Novatek, Gazpromneft, RZhD, Rosatom, Sovkomflot, RFPI) and government officials including Deputy Minister of Energy, head of Rosnedra, heads of Ministry of Finance, Ministry of Economic Development, Ministry of Transport and Yamal governor. The main task of this working group has been to devise a plan for monetisation of peninsula's gas resources. Vice-premier Alexander Novak proposed that a gas processing and chemical cluster be created and LNG production expanded on the Yamal peninsula; both projects could attract up to 5 trillion roubles (c. £50 billion) of investment. According to Yamal governor, the idea of building a gas refinery cluster was approved by Vladimir Putin¹⁵¹. The group was not reported to include indigenous representatives, environmental organisations, scientists or even the Ministry of Natural Resources and Ecology, effectively demonstrating the ethos and drive behind peninsula's future.

The scale and unprecedented pace of development of Yamal peninsula, the Ob estuary and the increase in the Northern Sea Route traffic holds an intrinsic risk that mechanisms for addressing knowledge gaps and scientific uncertainty as well as devising and implementing safeguarding mechanisms have not been put in place, while the same goes for the unavailability of effective means of tackling possible

¹⁵¹ <https://www.rbc.ru/business/14/01/2021/5ffdb7bd9a79478200d01f25>

accidents¹⁵². Such properties of the district as low population density, interests of nomadic nenets and sparse distribution of settlements are important factors in defining and quantifying environmental disturbance from this development. While indigenous land use may correlate positively with environmental safeguarding, lack of substantial local opposition puts this remote area at disadvantage. Little if anything is known about the socioecological relations of non-indigenous residents and fly-in shift workers to the local environment.

While it is difficult to quantify the potential and future individual and cumulative effects that this development will have onto the landscape of Yamal peninsula and there are no governance mechanisms that would provide such scenarios, it is possible to draw insights from the past damage resulting from the attempts to colonise the district as well as that of its neighbouring oil province located to the south, Khanty-Mansy Autonomous Okrug, and draw analytical points from the existing and emerging socioecological relations within it.

5.2. The history of colonisation: historical impact and perspective

5.2.1. From discovery of gas to economic restructuring

Yamal-Nenets Okrug was formed in 1930 as part of the Priuralskaya oblast and was a typical northern reindeer husbandry, fishing and hunting region. Change in the regional economy began with establishment of the Yamal-Nenets complex geological

¹⁵² There has been news of the Ministry of Emergency setting up a response centre in Sabetta since 2016. After the minister's visit in 2019, Arctic coordination and rescue centre was promised to be launched in 2020 (https://www.znak.com/2019-09-06/na_poluostrove_yamal_v_2020_godu_poyavitsya_arkticheskiy_centra_mchs).

prospecting expedition in 1958. Its main functions included geological research and exploration of oil and gas potential south-east of Salekhard and studying radioactive and magnetic anomalies in the polar Urals. In 1964 the exploration of natural resources of the Okrug was taken over by Yamal-Nenets geological prospecting trust. It conducted geophysical prospecting and seismic exploration in Novy Port and Zapolyarnoye fields among others until 1971. The south of Yamal peninsula was studied for hydrocarbon potential in Yar-Sale (presently the capital of Yamal district) and Novy Port. Yamal-Nenets geophysical trust, founded in 1967, discovered Bovanenkovo and Harasavey fields in the north-west part of the Yamal peninsula. From 1976, Yamal geological association for oil and gas prospecting Yamalneftegazgeologiya (based in Labytnangi, west of Ob estuary) of Glavtyumengeologiya (headquartered in Tyumen) was the main body overseeing exploratory works in the region. It comprised eight expeditions whose main task was to locate and prove oil and gas reserves in the Okrug. These expeditions included Kara, Tambey and Yamal expeditions, which were based on the peninsula itself. However, discoveries on Taz peninsula overshadowed those on Yamal peninsula. The 1960s were coined the 'age of big gas' as a result of major discoveries such as Tazovskoye, Urengoykoye, Yamburgskoye, Zapolyarnoye, Medvezhye deposits made in the north-east of Yamal Okrug.

The period of active geological exploration in Yamal-Nenets Okrug continued in the 1970s in the north-easterly direction where several giant fields were put in commercial operation¹⁵³. The first pipeline from Yamal-Nenets AO to the Urals was constructed in 1972 (Medvezhie-Nadym-Punga). More pipelines were constructed in

¹⁵³ <http://bsk.nios.ru/enciklodediya/gazovye-mestorozhdeniya-yamala>

the late 1970-1980s subsequently connecting Yamal gas with the centre and European export markets. From mid-1980s to early 1990s Urengoy gas field alone supplied half of all Soviet gas (Pusenkova, 2011).

During the Perestroika, the Soviet government set an objective to develop oil and gas reserves of West Siberia as part of the 1986-1990 energy programme. The start of the development in Yamal peninsula was foreseen for 1991 kicking off with Bovanenkovo, expanding to Harasavey, and gradually increasing the capacity with Kruzenshternovskoye, Neytinskoye and other fields of the peninsula. The remote areas of hydrocarbon exploration were to be connected with the central part of the Soviet Union by pipeline, permanent and temporary roads as well as railway (Solodovnikov, 2018). Preliminary construction, provision of building materials, energy infrastructure and settlement of personnel recruited from projects in West Siberia duly began in the polar Urals and along Yamal peninsula coast in late 1980s, however, the projects never saw the fruition due to the political events that unfolded in the early 1990s. In 1993 and 1996, the government of the Russian Federation adopted a federal target programme “Fuel and energy” aimed at development of Yamal reserves, however the economic and political crisis stalled the implementation of the programme. Although exploratory drilling carried on through to 1996 in some areas of Yamal peninsula, the state funding of the hydrocarbon exploration and infrastructure development in Yamal peninsula dried up and the sites were abandoned until late 2000s.

In 1992 financial accounts of Tambey and Yamal expeditions of deep prospecting drilling were closed. In 1994 Kara expedition was reincorporated as a private stock company while Tambey and Yamal expeditions were reorganised. Privatised in 1995,

Yamalneftegazgeologiya was liquidated in 2005; in the process, its subsidiaries, Yamal and Tambey expeditions, were also closed down. The information on its reserves, environmental protection measures in place throughout its development was removed from the Salekhard archive in the course of privatisation. The assets were acquired by small capitalists and later subsumed in the chain of acquisitions and auctions by the state-owned giant Gazprom and a privately owned Novatek. The development of the remote fields has been deemed uneconomic with the fluctuating global gas prices and without major investment from the Russian state and multinational corporations. This resulted in mass exodus and abandonment of geological settlements in the late 1990s.

This rapid and experimental search for hydrocarbons in permafrost conditions was costly, technically and logistically challenging and ecologically detrimental. And while it was not unrivalled: the controversy over the Yamal peninsula exploitation dates back to the 1980s when the gas development of the Yamal peninsula was postponed partly due to environmental protests (Vitebskiy, 1990; see also literature on Soviet ecological demise¹⁵⁴), the scale of ecological impact of first geophysical exploration is unknown to this day. As the exploration focus has been shifting in north-west direction towards Yamal peninsula and the estuary since late 2000s with the gas giants such as Yamburg, Urengoy and Medvezhye in the east approaching depletion, the Taz peninsula will be the first foretoken of the post-gas landscape in the 20-30 years' time. Notwithstanding notable changes in political, legal and economic conditions of the current industrialisation, the lack of understanding of the scale and

¹⁵⁴ e.g. Hill and Gaddy (2003); Oldfield (2017); Peterson (2019); Coumel and Ellie (2013).

scope of post-gas disturbance¹⁵⁵ in the Arctic Siberia suggests that the ecological trajectory of Yamal peninsula development may be not too dissimilar.

5.2.2. Accumulated historical damage

Back in the late 1980s and early 1990s, the head of the State Ecological inspectorate Vyacheslav Lukichev, advocate for saving the tundra from all-out industrialisation, contributed to the local newspaper *Krasniy Sever*¹⁵⁶ (Red North) accusing the officials (*vedomstva*, pl.) of “crossing out” Yamal alluding to ATV tracks criss-crossing the peninsula compromising the fragile nature of the tundra biome. He argued on the pages of this journal (No 7, 1990) that industrialisation of the Yamal peninsula was illegal and could be compared to a ‘genocide of the territory’ (Bakshtanovskiy, 1991, p. 76).. The so-called “Yamal conflict” was discussed by the members of the Russian Academy of Science and intellectuals and their opinions on ethicacy and conflict of the Yamal gas extraction documented in the publication: “Yamal conflict: humanitarian expertise” in 1991 (Bakshtanovskiy, 1991). The symptomatic emergence of the “ethic of the North” in the Soviet Union in the late 1980s suggested the shift in the public perception of the imbalance in the effort to exploit versus the effort to safeguard the affected northern landscapes, which was most likely driven by the centre-region political struggle¹⁵⁷. The same sentiment for the fate of the Yamal region was shared by Boris Komarov (alias of Ze-ev Wolfson, a Soviet official and

¹⁵⁵ While there are document-based studies on improvements in ecological procedures in the oil and gas sector, there have been “no reports on real changes in natural environment in the oil and gas production areas of the Russian Federation or in areas of major deposits” (Kornienko, 2011, p.67).

¹⁵⁶ https://ks-yanao.ru/str-news-caalog.php?SECTION_ID=143&ELEMENT_ID=23352

¹⁵⁷ Arkticheskaya politika: human dimension. 1990. Tyumen.

what would be now called a whistle-blower), who considered it the most vulnerable of all the Russia's northern territories and "possibly the most vulnerable parcel of land in the world" (Komarov, 1994, p.22).

The early years of exploration and the 1990s transition economy left a mark on all of the remote locations off and on the Arctic coast. The abandoned structures and waste left behind on Yamal peninsula and in other parts of the Russian Arctic and Siberia prior to privatisation (e.g. Franz Joseph's Land, Amderma, Kola peninsula) had no owners and remained in the 'gray area' of law and politics until 2010s and to an extent to the present day. In the course of privatisation, new owners tried to rid themselves off the responsibility over sites requiring ecological restoration by using gaps in legislation thus relaying the cost and burden onto the state (Solovyanov and Chernin, 2017, p.126). In 2008, a state report written by the Federal service for ecological, technological and nuclear oversight painted a grim picture of pollution resulting from past as well as present economic activities. In absolute figures, it stated that the largest areas of disturbed land were located in Yamal-Nenets (121,000 ha), Koryakskiy (114,500 ha; part of Kamchatka since 2007), and Khanty-Mansy Autonomous Okrugs (77,500 ha). It also stated that there were no methods available to determine, inventory and evaluate sites of ecological damage resulting from previous economic activity (Solovyanov and Chernin, 2017). The 2018 report on the status and usage of land in the Russian Federation (Ministry of Economic Development, 2018) updated the area of disturbed land in YNAO to 103,700 ha (17,300 ha reduction but still the Russian leader) and KhMAO to 55,700 ha, which could be due to the methodology and the inability to account for disturbance of the water bodies rather than physical reduction of disturbed land.

In Yamal, a preliminary assessment found abandoned machinery, equipment and waste on all undistributed 576 wells that had been drilled since 1960s. According to Aleksey Sitnikov (2017), the total mass of waste and debris was around 12,500 tons and the area covered approximately 1,500 hectares¹⁵⁸. The inventory was conducted in 2011-2013 and resulted in the list of 86 sites of accumulated ecological damage. From 2013 to 2017 9 were fully remediated and 9 were in progress¹⁵⁹, at this rate the work on all 86 could be completed by 2050s, provided no more such sites are discovered. In 2016, Yamal officials set the completion year of the cleanup programme for 2025¹⁶⁰.

In 2013 a Federal Programme was devised to determine and finance cleanup of environmental 'hotspots', and while 4 such sites made it to the list in YNAO, the programme was never adopted and in 2017 the Okrug government forwarded a letter to the Minprirody requesting subsidies to deal with the region's vast and remote exploration legacy, such as wells, geological bases, abandoned settlements, sunken ships, machinery and fuel tanks¹⁶¹ but no reports of such funding followed. The NGO Zelenaya Arktika (Green Arctic) estimated the cost of cleanup in Yamal district in 2018 alone to be around 20-25 million roubles¹⁶², which were to be sourced from the regional budget and the energy sector.

¹⁵⁸ <https://ecomap89.ru/posts/119>

¹⁵⁹ <http://docs.cntd.ru/document/543546410>

¹⁶⁰ https://www.znak.com/2016-11-08/process_likvidacii_sovetskogo_ekologicheskogo_ucherb_a_na_yamale_prodlitsya_do_2025_goda

¹⁶¹ <http://pravdaurfo.ru/news/152644-v-yanao-ne-nashli-sredstv-na-likvidaciyu>

¹⁶² <https://greenarctic.ru/news/na-yamale-kazhdyy-god-god-ekologii-zhurnalistam-rasskazali-ob-okhrane-okruzhayushchey-sredy-v-arktich/>

The two major examples of waste removal in Yamal were Bely (2012-2017) and Vilkitskiy (2017-2019) isles, both located in the Kara sea in the tip of Yamal and Gydan peninsulas respectively. The works were carried out by volunteers recruited by the environmental organisation based in YNAO, *Zelenaya Arktika*. In the interview with Aleksey Rudkovskiy, Director of *Zelenaya Arktika*, he explained that the Bely island project would not have happened without YNAO governor's personal initiative and support (then Dmitry Kobylkin), while the former head of the expedition was later elected the Member of federal parliament.

Both islands were uninhabited and left with profound human impact, both had hundreds of tons of waste, including scrap metal, fuel casks, and machinery. In 5 years 52 hectares of Bely island were cleared of 1,200 tons of waste. In 2018-2019, on Vilkitskiy island volunteers collected over 300 tons of waste, cleared 90 ha of land and dismantled 20 buildings, but it was estimated that there are around 1,000 tons of waste remaining and the works should continue in the summer of 2020.

Another major cleanup began in 2019 in the vicinity of Kharasavey field (that is due to be put in production); it is forecast to last 3 years, cover 70 ha of the Kara sea coast and tackle approximately 25,000 tons of waste, including construction materials and metal scrap, as well as 33 abandoned buildings of Kharasavey settlement¹⁶³. In August 2020, ecosociological expedition made of volunteers undertook cleanup of the indigenous settlement Seyakha, south of Sabetta whilst attempting to survey local population on their littering habits. In the summer and autumn of 2020, the

¹⁶³ https://newdaynews.ru/yamal_ugra/660734.html

military platoon of the Central Military District attempted to clean up 676 tons of metal scraps left in the former military site Marre-Sale south of Bovanenkovo¹⁶⁴.

A survey of legacy waste in Yamal district assessed 23 potential sites of accumulated ecological damage and found 240 derelict buildings and structures, 155/1257.26 tons of abandoned vehicles, 9380 barrels, 865 metal containers at the total area of 342.91 ha (YNAO, 2018). They also found several hundred tons of drilling waste, including barite (which has been found to have irreversible ecological effects in the Arctic-Boreal region, Fang et al., 2018).

In addition to large-scale sites of accumulated waste, there are small parcels of contaminated and cluttered land across Yamal district that have not received attention from the state or the Okrug while local authorities lack the necessary funds for the specialist works. There are, for instance, polluting legacy or disused sites within municipalities of the district whose environmental impact is unknown. In 2018 a reconnaissance study was conducted in Mys Kamenny. It collected and analysed soil and water samples from an abandoned oil products supply site and within Mys Kamenny settlement. It found places with visible soil contamination with oil, waste build-up, high pH in the lake adjacent to the landfill and the reservoir park. Ultimately, it showed a high level of anthropogenic pollution, but what is more the signs of mass transfer of pollutants as a result of land runoff and high level of groundwater table, that, together with local low soil resistivity, could lead to impairment of ecosystem functions (Kulikova et al., 2019). This study points to the fact that the negative impact of past activities remains an issue in areas that have been continuously inhabited.

¹⁶⁴ https://vesti-yamal.ru/ru/vjesti_jamal/voennyi_ekodesant_na_marre-sale_ochistil_territoriyu

In the interview with the Head of the Sector of Property Relations, Housing and Utility Infrastructure, and Housing Policies of Mys Kamenny municipality in 2017, she said that the municipality had no financial means or donations to manage the logistical costs of removing old-time waste from the shore of the Ob river. Some metal waste had been collected by a scrapping company by barge, she said, but other types of construction and domestic waste had no value and no takers. Gazprom operating facilities (pumping station and the 'Arctic Gate' loading terminal) offered no assistance at the time. In 2017, Gazpromneft-Yamal undertook to collect rubbish from the river bank in Mys Kamenny and Novy Port as part of their corporate responsibility programme by employing indigenous people and using volunteer labour, the programme allegedly carried on in the summers of 2018-2019¹⁶⁵ with the purpose to improve the company's public image.

In 2010, the problem of historical waste was publicly acknowledged by Vladimir Putin and included in the Strategy of Arctic development of 2013. In 2010 a standard GOST 54003 2010 "Ecological management. Assessment of the damage accumulated in the past deployment sites" somewhat referred to the term of accumulated waste but with a limited scope. In 2017 a definition of 'accumulated damage to the natural environment' was added to the Federal Law on the environmental protection (2002). According to the same amendments the responsibility for the removal of such waste and remediation is to be laid upon regional and local authorities. However, there is no mentioning of the costs or additional sources of funds that would be required to spur the regional and local

¹⁶⁵ <http://www.yamalpro.ru/2017/08/02/gazpromneft-vyivela-pribirat-bereg-obskoy-gubiyi-zhiteley-novogo-porta-i-myisa-kamennogo/>

authorities into action. Economic estimation of the cost of the past environmental damage according to Minprirody's calculation back in 2013 was equivalent to 4-6% GDP per annum (Donskoy, 2013). The Government Decree of 04.12.2014 No2462-p 'On establishing the list of priority measures aimed at mitigating the effects of pollution and other type of negative environmental impact resulting from the economic and other type of activity' foresaw state and regional financing of 26 projects (2 in the Arctic - Murmansk region and Nenets Okrug)¹⁶⁶.

In 2016, an amendment to the Federal Law 'On the Environmental Protection' (2002) clarified the definition of 'accumulated environmental damage' and assigned responsibility for organisation of environmental rehabilitation to the Ministry of Natural Resources and Environment (Minprirody). In 2018, the Minprirody made a list of 121 sites of accumulated environmental damage with only 16 being in the Arctic zone¹⁶⁷ (none of them in Yamal, the area of rapid economic development and, according to the regional sources, has 86 sites of accumulated ecological damage).

In 2018, the federal Ministry of Natural Resources offered subsidies for removal of historical waste at the total amount of 2.7 billion roubles to regional authorities across Russia, however only few such 'hotspots' received the funds and according to the deputy minister Murad Kerimov, none of them were in the Arctic¹⁶⁸.

Despite some positive examples (see e.g. French, 2019), Arctic zone remains largely prohibitive due to its vast area and high costs of waste removal and environmental

¹⁶⁶ http://komitet2-21.km.duma.gov.ru/upload/site22/document_news/000/191/516/Bibliodose_20_03_17.pdf

¹⁶⁷ http://www.mnr.gov.ru/press/news/121_obekt_v_nastoyashchee_vremya_vklyuchen_v_gosudarstvennyy_reestr_obektov_nako_plennogo_vreda_okruzh/?special_version=Y

¹⁶⁸ <http://rcc.ru/article/minprirody-likvidiruet-nakoplenyy-vred-okruzhayuschey-srede-63468>



rehabilitation, as a result, certain assessment criteria such as impact onto the population or accessibility could narrow down the list of potential sites in the northernmost areas of the Russian Arctic or postpone their rehabilitation. Another emerging dilemma is that any removal works may cause more disturbance to the thin productive layer and subsequently stress to arctic and subarctic ecosystems. According to Alexey Rudkovskiy, head of Green Arctic, who took part in several expeditions to clean up Bely island, observed that metal structures and debris became part of the landscape, animals adapted to them, birds used them for nesting, so its removal brought more unwanted interference into the environment. Thus,

available technology and understanding of the damage is another limiting factor for the Arctic cleanup.

Additionally, multiple issues can arise from the remote location of the affected sites and the fact that the impact of such rehabilitating efforts are generally not studied in the aftermath of the cleanup as within so outside of the Arctic. As tens of thousands of tons of debris are annually transported from the Arctic to other regions of Russia, the 'damage' may be transferred from one region to another. For instance, in 2019 Arkhangelsk activists protested against waste from Sabetta (Yamal) being illegally dumped near the city, which was found to have been taking place since 2015; the landfill and the shipping company were subsequently fined for violation of environmental protection norms¹⁶⁹. Another peculiar situation took place in the same region, where under the national 'Clean country' project, the regional authority received a federal subsidy to clean up the old time oil spill but the hired contractor misused the funds and left the region with the original problem, for which the region may now had the funds.

There are a few discussions (e.g. Sokolov, 2013; Ignatyeva, 2017; Zhavoronkova and Agafonov, 2016) on the legal and organisational clarity pertaining to inventory (i.e. what is and what is not a site of accumulated environmental damage resulting from past economic activity), priority, polluter responsibility, ownership, cleanup extent and technology and prevention. Regarding the latter, investment projects in Russia do not incorporate environmental protection measures into their economic feasibility assessment (more in Vakula and Medvedeva, 2016). All these demonstrate

¹⁶⁹ <https://29.ru/text/incidents/66155332/>; https://newdaynews.ru/yamal_ugra/672420.html



Photo of Kharasavey accumulated waste, 2019, <https://www.yanao.ru/presscenter/news/8511/>

that there are more outcomes to recognising and solving the problem of historical environmental damage, including that of the future.

The activities taking place on Yamal peninsula and in the region generally throughout the exploratory phase in the second half of the Twentieth century were pioneering and had not attained to the ecological standards and practices available today for the industry (regardless of whether they are actually sustained consistently across the sector). The abandonment of sites across Russia's North as a result of the uneconomic nature of their development resulted in ruination and contamination of semi-urbanised and industrial landscapes. At the same time, in 40-50 years' time or upon decommissioning of the gas fields, LNG plants, and other infrastructure the environmental problems of waste removal, soil remediation, restoration of ecosystem services, as well as associated financial, legal and organisational issues may be as unresolved. In addition, the ecological situation in certain aspects is getting progressively worse in the Tyumen region (e.g. Reshetnyak, 2013 on the growing Ob

river pollution levels) while the environmental regulations and requirements have been getting stricter and corporate responsibility and companies' environmental profile more public. Some argue that several decades of hydrocarbon extraction in Russia show that it becomes impossible to differentiate between the damage resulting from the long-term normal operation and that resulting from an accident (Vladimirov and Dubnov, 2013).

5.3. Socioecological interactions on Yamal peninsula

Socioecological interactions show how the land and its natural resources are being perceived and used, how people and the environment change in co-adaptation to the changing conditions of this interaction. Ultimately, it is made of two actors - people and nature. The following sections looked at the demographic and ecological contexts specific to Mys Kamenny, Yamal district and Yamal-Nenets Autonomous Okrug varying the scale depending on relevance and data.

5.3.1. Long and short-term effects of changing demographic onto the Arctic environment

The renewed interest in the north development saw a significant increase in work migration in almost all Russian Arctic provinces and particularly affected Yamal-Nenets Autonomous Okrug, that in 2014 attracted 50% of all work migrants in the Russian Arctic (Kharlampieva, 2017). Yamal is one of the forerunners of the extractive industry and it experienced a 10-fold rise in population on account of migration with some effects of natural increase over the past 50 years¹⁷⁰. The region,

¹⁷⁰ (http://expert.ru/russian_reporter/2014/40/preobrazhenie-arktiki/)

like the rest of the Russian Arctic, has seen outflow of the population since 1990s and has retained negative net migration, yet between 2013 and 2019 this number has decreased from over 10,000 to nearly 3,000¹⁷¹. The net outflow rate of work migrants, however, is extremely low, suggesting a young structure of the population in the Arctic.

YNAO is one of the most densely populated Arctic provinces, but only c.7% of the YNAO population are of indigenous descent (2010 Census data- Yamalstat, 2010, p. 74). Approximately 40% (or 14,667 people) of these 7% live a traditional nomadic lifestyle while the majority live in towns and municipalities (Tishkov, 2015). Yamalskiy district covers 19.2 %of the Okrug but inhabits only 3.1 % of YNAO residents (excluding shift workers) while 75% of its population are of indigenous descent. The average density of its population is equivalent to 0.11 people per square km which is 7 times below the YNAO average (Solodovnikov, 2018). Thus, Yamal district is an odd one as due to its indigenous population ratio so to its vast uninhabited space. The exact numbers of FIFO workers for Yamal district are not available but at peak construction times they could have exceeded the registered population of the district. According to the Russian Arctic labour market analysis, 46% of YNAO labour is constituted by shift workers¹⁷². The region, unlike other Arctic provinces, also attracts more foreign migrants than Russia on average (Kharlampieva, 2017).

Historically, the main factor of the population growth in YNAO was migration, which amounted to 1.5 million people (gross migration) in 1960-1980s. Two thirds of the migrants were from other regions of the USSR and the rest were from the Tyumen

¹⁷¹ <https://showdata.gks.ru/report/>

¹⁷² <http://arctic.labourmarket.ru/interview/results>

region (Kornilov, 2014). This mass flow of people was associated with the indigenous demographic crisis when the numbers of nenets, khanty and selkup peoples plummeted in 1970-1980s. While traditional practices and socioecological relations akin to the indigenous peoples are often an object of anthropological research (e.g. Forbes et al., 2009), the environmental attitudes and behaviours of migrants, effects of settled lifestyle and co-habitation with people of different origin and geographical references (apart from specific issues, such as **national policies**)¹⁷³ and its socioecological repercussions, have not been studied.

Shift work (Fly-in/fly-out) method (*vakhtovy metod*) has been historically used to explore oil and gas resources of the Siberian North. While there has been a political discussion on whether the Arctic should be “conquered” or “populated”¹⁷⁴ in the Twenty-First century, the number of shift workers in the Yamal region has reached 1/4 of the entire population¹⁷⁵ in 2020 with the last resource town established in 1980 (Novy Urengoy). There are two types of shift work in the Russian Arctic: interregional and intra-regional shift work depending on the distance of commute¹⁷⁶, both have been used since 1970-1980s and found more cost-effective than settlement. The number of fly-in/fly-out workers in YNAO doubled between 2010 and 2018 (Silin, 2019) and is likely to shape the work demographic of this region and other resource hotspots across the Russian Arctic in the near future.

¹⁷³ Major works of the Russian social and cultural anthropologists studying ethnic groups of the Arctic focused on the ethnic policies

¹⁷⁴ In former YNAO governor Dmitry Kobylkin’s statement in 2017: the Arctic should be populated rather than conquered.

¹⁷⁵ <https://ru.arctic.ru/infrastructure/20200219/909066.html>

¹⁷⁶ Residents from 48 countries worked on the Yamal LNG project (Loginov et al., 2020).

One of obvious environmental problems of Yamal's 'boom and bust' is waste and pollution. The 1990s' exodus from the High North, including the northernmost districts of YNAO, meant that a great share of buildings and facilities were abandoned, structures came to disrepair. The population of Mys Kamenny (Yamal district) shrank threefold during the 1990s, and there were no construction works until 2013. The renewed interest resulted in capital investment (e.g. new residential blocks, administration building, sport facilities in Salekhard, a new school and residential blocks in Mys Kamenny¹⁷⁷, sponsored by Gazpromneft-Yamal), however, created a problem of abandoned hazardous residential buildings (Geologists' district in Mys Kamenny), debris and construction waste (alongside the river bank in Mys Kamenny). And while the population figures went up in 2010s, the population liquidity remained strong - between 2005 and 2015 227 families moved out from Mys Kamenny and according to official sources, such high numbers were unusual for the region.

While there are only two big oil and gas operators in Yamal district at the moment, almost any work from planning and design to construction, commissioning and maintenance requires a specialist contractor; the same goes for the port infrastructure and shipping operators, there are no absolute or relative figures for the seconded employees. So the pattern of settling demographic, as we could, for instance, see in the eastern part of YNAO (e.g. Novy Urengoy, Nadym), is unlikely to repeat in Yamal district as the fly-in/fly-out method and shift work would be likely to prevail. Bovanenkovo inhabits around 1,500 Gazprom personnel in a shift period and

¹⁷⁷ By 2014 14 flats were finished, in 2015-2017 6 blocks per 10 flats were built, in 2018 a block of 12 flats was completed (<https://www.mo-yamal.ru/naladoni/mys-kamennyi>).

any number of labourers and contractor employees. The construction phase is the most labour-intensive, while Bovanenkovo is an example of an operating facility, construction in Sabetta including the port, airport and LNG infrastructure increased the number of Sabetta inhabitants from around 200 before 2013 to 20,000 in 2017. This number is predicted to decrease in Sabetta in 2019 due to completion of 3 trains of the plant and infrastructure but increase on Gydan peninsula due to the beginning of the construction phase at Arktik LNG-2 and port Utrenny. The Northern Latitudinal Railway construction will also bring around 2,500 specialists to Yamal peninsula from around the country and so will the development of hydrocarbon fields. For instance, Kharasavey field exploration will require Gazprom to bring around 5,500 workers to the peninsula¹⁷⁸. Until 1999 Kharasavey inhabited around only 2,000 people most of whom subsequently left. In terms of the bigger picture, the Deputy Minister of the Ministry of Far East Development that oversees the Russian Arctic zone estimated that the Arctic projects would create around 200,000 jobs in the next 15 years¹⁷⁹, most of which will be filled by highly educated workforce as well as labourers from the South.

The problem of Yamal demographic and its potential load onto the local services (water purification and treatment, heating, waste collection, electricity, transportation, infrastructure) and local natural environment (e.g. fishing, hunting, using motorised vehicles) is that to a large extent industry and district administration exist separately and do not exchange or share demographic data. For instance, Yamal district

¹⁷⁸ <https://www.1tv.ru/news/2019-03-20/362248-na-yamale-nachata-razrabotka-krupneyshego-gazovogo-mestorozhdeniya-zapasov-kotorigo-hvatit-na-100-let>

¹⁷⁹ <https://regnum.ru/news/polit/2770147.html>

statistics does not include the fly-in/fly-out and temporary workforce of the peninsula, although its numbers may be as much as twice the registered population of the district (e.g. 20,000 in Sabetta, 5,500 in Kharasavey, 2,500 for the NLR vs. 16,700 people of Yamal district (Solodovnikov, 2018). Generally, Gazprom and Novatek are responsible for services within their licence areas, including waste removal, however, some services including waste management (as in Mys Kamenny) were laid upon the municipality while employees of their contractors, too, may stay within municipalities and villages of the peninsula increasing the demand.

Even though there are distinct indigenous (Seyaha), non-indigenous (Mys Kamenny) and mixed municipalities (Yar-Sale, Novy Port) on the Yamal peninsula, neither of the ethnic groups exist in isolation. Even if we presume that exchange of skills and knowledge related to the environment is taking place together with exchange of goods and services, no data is available so far to evaluate its frequency, impact and content. The long-term effect of the northbound migration had on Yamal is a certain degree of cultural erosion as a result of personal choice and consequences of landscape change, loss of reindeer grazing land and subsistence fishing¹⁸⁰, construction of infrastructure to support growing settled workforce and their families and hence a sprawl of urbanised areas in addition to growing industrial landscapes. Such remote localities as Yamal district may not necessarily follow the trajectory of YNAO's eastern gas districts, where settlement was encouraged and promoted natural increase, yet it is, nonetheless, important to understand the dynamic of

¹⁸⁰ In the 1989 article the Khanty writer complained that the oil and gas development of the Tyumenskaya oblast deprived the indigenous peoples of 11 million hectares of reindeer pasture, 17,700 hectares of spawning and feeding grounds and 28 rivers (in Vitebsky, 1990).

socioecological interactions holistically and observe changes in population in view of the migrant flows, economic development and environmental changes.

5.3.2. Evidence of anthropogenic impact and environmental change

The environmental context of Yamal peninsula includes several layers:

- past exploration damage (accumulated historical damage);
- lack of baseline/ control ecological data that would predate the industrialisation;
- uncertainties related to climate change as well as an increase in anthropogenic stressors. For instance in 2001 there was no industry in Yamal district while in 2019 98% of the district's economy was related to the oil and gas production and transportation. Anthropogenic burden onto the Arctic is exacerbated by the environmental crises, including manifestations of a changing climate. The Arctic is warming much faster than the rest of the world (e.g. Mauritsen, 2016), and this has created both economic opportunities and uncertainties related to the tipping events and the impact they would have on the rest of the world. In all permafrost reduction scenarios, the Russian Arctic and Northern Siberia are considered the most vulnerable across the north polar region (Anisimov and Reneva, 2006).

The following are some environmental factors that are in play in Yamal peninsula and its coastal waters. They demonstrate the complexity of natural and anthropogenic processes:

- high atmospheric pollution: 3 times higher than in the country on average as a result of high density of polluting industry especially in Komi and Krasnoyarsk regions bordering with Yamal-Nenets Autonomous Okrug in the west and east respectively (Smirennikova et al., 2018).

- top soil damage in many places, e.g. legacy boreholes, vehicle tracks; if reclamation takes place, it is done in accordance with GOST (17.5.3.05-84, 17.5.3.04-83), which essentially means revegetation, but in some cases restoration of the relief and habitat is required (e.g. Tikhonova, 2015). The rate of natural recovery of vegetation on disturbed soils in tundra is approximately 10 to 30 years. The time it would take for tundra ecosystems to recover near the Bovanenkovo field was estimated to range between 15 and 50 years (Ignatyeva et al., 2014).
- Seismic activity and release of methane. Yamal craters have demonstrated a change in seismic activity across the peninsula which can affect the built infrastructure and the overall industrial safety (e.g. Arzhanov et al., 2016). The studies in the Kara sea in 2013 found that offshore permafrost of the Arctic shelf may be more degraded than previously thought with large amounts of seafloor methane escaping into the atmosphere (Portnov et al., 2013; Serov et al., 2015).
- overgrazing (not an isolated issue as can be drawn out from the Ethnological expertise in Yamal: nenets nomadic routes and gas fields (Golovnev et al., 2014), which can worsen as a result of landscape fragmentation (Minprorody, 2014);
- Coast erosion. Coastal erosion caused by thawing permafrost and thermoabrasion already accounts for a loss of about 10 m of coast a year (Global Environment Fund, 2011) and is predicted to increase (Ogorodov, 2008). Coastal development and shipping can both increase ecosystem risks for the marine mammals and bird colonies nesting on the shores (Korelskiy, 2016).
- Changing vegetation (sedges and grasses spreading as a result of industrial expansion (Bashkin et al., 2017; Golovatin et al., 2010) push out mosses and

lichens affecting soil thermoregulation and potentially reindeer foraging/herding leading to overgrazing and erosion.

- High level of pollution in surface waters, e.g. in the Ob delta the amount of oil products in 1985 exceeded the safe limit by 5 times, in 1995 - 25 times (according to the deceased Aleksey Yablokov, founder of Greenpeace USSR¹⁸¹). From 2000 to 2010 the incidents of extremely high level of pollution along the Ob river stream amounted to 126 with higher frequency downstream towards delta (Reshetnyak, 2013). Since 1970s the hydrocarbon pollution in the Siberian rivers increased by 50% (Vladimirov and Dubnov, 2013).

5.4. Environmental awareness and ecological knowledge of the Arctic amongst non-indigenous residents

5.4.1. Perceived environmental impact of Yamal industrial colonisation

According to the ex-governor of Yamal-Nenets Autonomous Okrug, later appointed Minister of Natural Resources and Ecology, Dmitry Kobylkin: “Every year there will be more and more socially responsible companies in the Arctic region. Enterprises are engaged in reducing environmental impact on the Far North nature, sustaining protected areas and rare species such as polar bear, arctic crane”¹⁸². He also noted that “all technologies employed in Yamal have a clear nature conservation character”.

The official position regarding the development of the subsoil resources in the

¹⁸¹ <http://www.ecoindustry.ru/news/view/11573.html>

¹⁸² http://www.mnr.gov.ru/press/news/glava_minprirody_rossii_sotsialno_otvetstvennykh_kompaniy_v_arktike_stanovitsya_vsye_bolshe_dmitriy/?special_version=Y

conditions of the Arctic is that its impact onto the environment is perceived as neutral: “Yamal has managed to fulfil the tasks set by President Vladimir Putin on preserving the balance between the economic activity, presence of man and conservation of the Arctic environment”¹⁸³. At the interview in 2017, Vladimir Pushkarev, MP for YNAO, spoke of responsible approach of the companies in the Arctic and their external motivation as global players to maintain their image.

Companies, such as Novatek and Gazprom, assert having no significant impact or making effort to minimise its ecological footprint in the Arctic through attaining to environmental norms and conducting ecological monitoring. In 2018 Sustainability review, Novatek found that the state of components of the natural environment measured at monitoring points was stable and the state of the area outside of direct technogenic impact was at the ambient level, there was no impact on permafrost, GHG emissions were reduced compared to 2017 (Novatek, 2018¹⁸⁴). They found no significant impact on plant diversity and abundance, no anthropogenic impact onto the birds in the area of South Tambey field, hydrobiological analysis established that the level of anthropogenic load on the affected streams was also low.

Similarly, Gazprom stated that as a result of ecological monitoring conducted in 2017 and 2018 at Novy Port licence area and the oil acceptance transfer unit “Mys Kamenny” no negative environmental impact on flora and fauna was detected, biodiversity was high, measured indicators were at the ambient level (Gazprom Environmental report 2017; Gazprom Environmental report 2018)¹⁸⁵.

¹⁸³ (<https://www.pnp.ru/politics/arktiku-ne-nuzhno-pokoryat-ee-nuzhno-obzhivat.html>)

¹⁸⁴ <http://www.novatek.ru/en/development/>

¹⁸⁵ <https://www.gazprom.ru/f/posts/85/227737/gazprom-environmental-report-2017-rus.pdf>;
<https://www.gazprom.ru/f/posts/72/692465/gazprom-environmental-report-2018-ru.pdf>

At the same time, in 2014-2018 the gross emissions from stationary sources in Yamal district increased from 16,000 to 148,309 tons (carbon oxides and hydrocarbons take up about 80% of the total emissions). Yamal district emitted 36% of YNAO's CO and 45% of solid particles. But because most sources of atmospheric pollution are located far from major towns, they are not considered significant (YNAO, 2018)¹⁸⁶.

In the interview with Rosprirodnadzor specialists in Salekhard in 2017, they said that gas producers of Yamal are “clever enterprises, they have very good lawyers” and use them to exploit vagueness and ambiguity of law, which makes it hard for the RPN to prove any wrongdoing within the strict framework of legal procedure. While they acknowledge that Gazprom and Novatek attain to the stricter international standard, Yamal remains “an uncharted territory” when it comes to uncovering facts of violation of environmental law, thus sustaining the ‘neutral’ impact narrative.

What might be aiding the problem is the fact that these large companies sign cooperation agreements with the regional government for various ends and mutual benefits. Gazprom, Novatek, Rosneft and their subsidiaries all have such agreements with the government of YNAO on social development and environmental protection (including ecological monitoring, scientific cooperation). Gazprom has a general agreement with YNAO government and signs cooperation documents on various issues on an annual basis. Novatek signs multi-annual agreements, the latest was in 2020. It is difficult to assess their specific outcomes for the natural environment protection and safeguarding as such agreements are not made public and the extractive regions have traditionally had complex and interdependent relations with the major extracting companies (e.g. political elite is often recruited

¹⁸⁶ <https://www.yanao.ru/documents/active/28121/>

from the energy sector, certain municipalities and towns are sustained by the sector)¹⁸⁷.

The embeddedness of oil and gas industry into relations between Yamal people and environment is such that even the local environmental NGO, Zelenaya Arktika (Green Arctic) does not consider the extractive industry particularly problematic for the region. With practical insight of cleanup in the north of YNAO, Aleksey Rudkovskiy praised oil and gas companies' pro-environmental efforts and insisted that in contrast to the lack of environmental concern in the Soviet period, "now it is a different story, it is pleasant to see how many resources are invested in ecology", practices are being reviewed, moreover, all oil and gas companies operating in the Arctic are "stifled and hassled" by laws and regulations and are constantly in public focus whilst other industries (such as meat production) may contribute more to the environmental degradation and escape the same scrutiny (Interview, 2017). For instance, he said, that everyone is blaming the gas producers for the disappearance of white fish and sturgeon from the Ob estuary, however, the previous quotas were such that it was possible that this part of the river had simply been overfished. Aleksey took part in 4 cleanup expeditions to Bely island, for which Green Arctic provided and trained volunteers, in the summers of 2012-2014 (as a head of expedition in 2013-2014). His positive bias towards the industry may be partly explained by the fact that the companies that chose to take part in the activities of the cleanup whether through sponsorship or helping by other means (e.g. providing transportation) were acting as

¹⁸⁷ While there are a few articles on the relations between business and regional authorities in the Arctic (Dolgov, 2011; Luks, 2013), there is no recent analysis of the particular interdependence between extractive companies and the regional government in view of the accelerated development.

volunteers (and not companies that 'privatised' or inherited the waste together with the assets).

In contrast, WWF Russia and Greenpeace Russia, that are not stationed in the region, share a different view of the Yamal mega-project. Greenpeace Russia in tune with the international Greenpeace presents itself as being in hard opposition to oil and gas development in the Arctic. WWF Russia acts through targeted expert pieces, for instance analysis of the Yamal LNG environmental impact assessment. Yamal peninsula development is pivoted around several projects, one of them is LNG production in Sabetta. There has been some controversy around LNG life cycle impact in view of the climate change crisis¹⁸⁸. Main concern over LNG is higher estimates of fugitive emissions from 'cradle to grave', with methane being a more potent short-lived climate forcer, and in the Arctic context it is a lack of comprehensive analysis of its environmental impacts (Ametistova and Knizhnikov, 2016).

Yamal LNG is not the first LNG plant built above the Arctic circle. Located offshore at 71 degrees North Snøhvit LNG near Hammerfest in Norway started commercial operation back in 2007 and since then, being first of its kind, it experienced many technological problems and downtime. Nature sensitivity of the proposed construction site of Snøhvit LNG attracted a lot of environmental attention to the project; the main concern of activists was the plant's contributions to the greenhouse gas emissions¹⁸⁹ to which Statoil implemented a unique CO2 capture solution. There

¹⁸⁸ e.g. <https://globalenergymonitor.org/wp-content/uploads/2019/06/NewGasBoomEmbargo.pdf>

¹⁸⁹ <https://bellona.org/news/fossil-fuels/oil/2002-08-snohvit-reasons-for-bellona%C2%92s-opposition>

are also plans to build an onshore LNG plant in Alaska. The draft Environmental Impact Statement of 3,800 pages (vs. 953 pp. EIA for Yamal LNG) was submitted to the US regulatory body (FERC) early in 2019 and so far found that “cumulative impacts on these resources (permafrost, wetlands, forest, and caribou) would or could be significant” as a result of this and other foreseeable projects within the area¹⁹⁰. Unlike the Norwegian plant, Alaska LNG and Yamal LNG would be comparable in technology (the same Air Products AP-C3MR™) and annual output capacity (proposed 20 mln tons in Alaska vs. Yamal’s 18.5 mln t), hence the process by which its economic benefits are weighed against its environmental impact and its outcome are of particular relevance.

Yamal LNG Environmental Impact Assessment (EIA) conducted by a Russian ecological assessment company Environ and published online in 2014 was not as detailed, did not incorporate indigenous knowledge, did not consider in detail geologic hazards, or focused specifically on certain ecosystems; it failed to consider visual environment for alternative economic benefits such as tourism, found little impact on subsistence, air quality and noise; it did not discuss reliability and safety of used technology, e.g. LNG vessels, plant design; and had very little on cumulative impacts¹⁹¹. Conversely, it found that the impact of the project onto the local environment would be negligible, low or moderate (e.g. disturbance from noise and light pollution to marine mammals and birds). While the Yamal LNG EIA mentioned cumulative effect of potential development of other hydrocarbon fields and infrastructure on Yamal peninsula raising the estimated effect of noise and land

¹⁹⁰ <https://www.ferc.gov/industries/gas/enviro/eis/2019/06-28-19-DEIS.asp>

¹⁹¹ <https://www.ferc.gov/industries/gas/enviro/eis/2019/06-28-19-DEIS/Volume%202.pdf>

uptake on ornithological fauna from moderate to high, it lacked the data to properly account for the impact of other infrastructure projects (e.g. railway bridging Bovanenkovo and Sabetta) and development of other hydrocarbon fields on the peninsula.

Knizhnikov et al. (2013) affiliated with WWF Russia analysed Yamal LNG EIA and questioned the safety of the project for the natural environment: the reason why the environmental impacts of the development of the unique South Tambey field should not have been acceptable, contrary to the study's conclusion, was that it lacked in scrutiny and addressed only basic elements of industry-nature interface (vibration, atmospheric emissions, negligent impact on biodiversity and soil resources, water intake and affluents). What it lacked to produce, according to the authors, was assessment of ecological risks resulting from water siltation, compromised permafrost and general landscape change, as well as impacts of Ob estuary dredging. The latter was not properly analysed due to the fact that a different (state) organisation (Ministry of Transport) was responsible for the port works, the association that bore significant risks and held implications for assessment of the gas field development. The main concern of WWF ecologists is the salt water intrusion through the dredged shipping canal upstream, which would alter the salinity regime and lead to shrinkage of the most productive fresh water section of the Ob estuary (Knizhnikov et al., 2013).

The regional government has been aware of the damage to whitefish habitat in the estuary¹⁹², but as there has been a decline prior, the regional authorities in

¹⁹² In 2013 Vyacheslav Zhedulev, deputy director of natural resource regulation and oil and gas development department of YNAO: "The salty water that goes upstream will impact the Coregoninae. That is their habitat will get smaller". (<https://yamal-region.tv/news/9687/ОГТРК «Ямал-Регион»>)

cooperation with Novatek devised a plan to build a fish farm, which began operation in 2016, and release fry into the estuary to compensate for the environmental damage. Yet, a few precedents have been set when a polluter evaded a compensatory release of fry (e.g. USK MOST, the general contractor for port Sabetta construction) or chose cheaper (e.g. peled as opposed to muksun) or smaller cheaper less viable fry. Additionally, Rosrybolovstvo studies suggested that these measures have not yet made much difference to recovery of fish stocks, but, according to them, rather promoted poaching¹⁹³, yet no changes to compensatory measures or economic activities have been made.

While there is no denial that some long-term environmental changes are under way (climate change, decline in bioresources), the ecological impact is perceived as either less negative than during previous stage of exploration or neutral due to compensatory activities and technological advances. The watershed between neutral and negative impact opinion comes through endogenous/ exogenous actors rather than sectorial stakeholder (e.g. regional government, industry, NGO) and, as also witnessed by the low level of Arctic awareness and political discourse across Russia, is limited to the environmental organisations with no regional representatives.

5.4.2. Sense of place among the local non-indigenous residents of Yamal peninsula

There have been few attempts to discern and approbate mechanisms for measuring environmental awareness in Russia whether through environmental identity (Susan, 2019), environmental consciousness (e.g. Haliy, 2015; Nartsissova et al., 2020) or

¹⁹³ <http://www.fish.gov.ru/territorialnye-upravleniya/nizhneobskoe/26876-zapasov-sterlyadi-i-muksuna-v-obi-ostalos-okolo-7-5-tonn>

internet search data (Lösch, Okhrin and Wiesmeth, 2018). As there is no exact translation of the term, Russian language studies operate in such phrases as environmental consciousness, environmental responsibility, 'ecologisation' of the mind, environmental educatedness, etc. and generally focus on how to increase it as opposed to measure.

The study of a search engine history in arctic and subarctic regions of Russia showed a higher level of climate change awareness relative to the rest of Russia (Lösch et al., 2018). But it is unclear whether it was prompted by the observed changes in the region or how it may have reflected high liquidity of non-Arctic population in the region. The study, unfortunately, did not prompt a more place-specific research to explain and corroborate these results.

'People's polar index' created by the Arctic discussion club 'PORA' in 2018 asked 3,600 respondents (400 in each Arctic province) to assess economic, social and ecological factors of wellbeing in order to create a ranking list of Russian Arctic provinces. Yamal-Nenets AO came first together with Chukotka and Nenets AO (both mining regions) which was interpreted through higher average salary relative to other provinces. While ecological factor was not deemed important, most respondents were aware of systemic ecological issues, namely, aquatic pollution, landfills and atmospheric pollution, but what was notable from this poll was that ecological expectations were more pessimistic than on average in Russia, that is people expected the negative environmental impact to increase across all Arctic provinces¹⁹⁴. The national poll 'Meaning and value of the Arctic' conducted in 2015 by FOM (lit. Fund of Public Opinion) found that few respondents were aware of the

¹⁹⁴ <https://www.vesti.ru/article/1460830>

Arctic development but the majority expressed positive attitudes towards the Arctic resources exploitation. The poll showed little awareness of the region's ecological problems and revealed that only 37% expressed an interest of ever visiting it (as opposed to relocating there), showing cognitive distancing as from the region's resource economy so from its physical environment¹⁹⁵. None of these polls interrogated people's knowledge of the Arctic or measured interest in Arctic ecological matters.

Low level of environmental culture in Russia in general has been recognised by the government in the Strategy of Ecological Security through to 2025 signed in 2017¹⁹⁶ and confirmed by WCIOM poll of 2011 on ecological consciousness, that found that the main characteristic of environmental consciousness of Russians is 'ecological parasitism' and personal distancing from ecological problems¹⁹⁷ resulting from poor ecological education and awareness. 2014 Levada-Centre poll similarly showed that people's preoccupation with the natural environment was pragmatic (e.g. health, recreational zones...) and locational, correlating with low concern for preservation of biodiversity and rare species and demonstrating little to no concern for areas outside of their place of residence (see also Haliy, 2015)¹⁹⁸.

¹⁹⁵ <https://fom.ru/Mir/12216>

¹⁹⁶ President of the Russian Federation. (2017, 19 April). *Decree No. 176 on Environmental Security of the Russian Federation through to 2025*. <http://kremlin.ru/acts/bank/41879/print> (in Russian)

¹⁹⁷ WCIOM. (2011, January 20). *Ekologicheskaya kultura rossiyan (Ecological culture of Russians)*. <https://wciom.ru/index.php?id=236&uid=1763> (in Russian)

¹⁹⁸ Poll results: Levada-centre. (2014, July 10). *Ekologicheskiye problemy i bezopasnost (Ecological problems and security)*. <http://www.levada.ru/10-07-2014/ekologicheskie-problemy-i-bezopasnost> (in Russian)

Ecological education in Russian schools was taken out of the federal secondary school curriculum in 1998, which some link with the general attenuation of political and civil attention to ecological issues (Ivanova, 2017). This measure would have affected the most active workforce in their late 20s to early 40s. Alternative sources of environmental education such as mass media and family have been deemed ineffective due to the fact that these sources themselves lack relevant knowledge and skills (e.g. Novoselova, 2017). The most recent poll (WCIOM, 2020¹⁹⁹) conducted in August 2020 to test whether pandemic changed environmental attitudes of Russians found that young people (under 24) were least concerned about climate change relative to other age groups. Moreover, higher education did not positively correlate with people's readiness to stop driving a car, flying on a plane for ecological reasons; in fact, it revealed the opposite.

With this context in mind, the field work aimed to fill in the gap in understanding not only what local residents of Mys Kamenny, Yamal district did in the environment but also how they understood and related to it. The research relied on the concept of the 'sense of place' through which local residents' accounts could have been interpreted. While 'sense of place' is represented in the scientific literature as a social construct, physical attributes of a place and human uses of the environment have also been acknowledged to affect a person's attachment to it and the constructed meaning of such a place (e.g. Stedman, 2003; Masterson et al., 2017). Here sense of place is understood as a result of "dynamic interaction between people (including their senses) and their environment" (Horlings, 2018, p. 313; see also Chapin and Knapp, 2015; Williams, 2018).

¹⁹⁹ <https://www.asi.org.ru/news/2020/08/19/vtsiom-ekologiya/>

While the interviewees' experiences of the natural environment of Mys Kamenny were different, a certain pattern could be discerned. The interviews in Mys Kamenny showed that duration of stay correlated with a growing sense of place while emotional attitudes ranged from love to hate regardless of the time spent there but depended on something else. That is people that stayed longer felt comfortable outdoors and interacted with nature more (fishing, hunting, berry and mushroom picking, barbecues, snowmobile and boat rides...). Most people lamented that the white fish (muksun) disappeared which affected their sense of place and made it intolerable for those who lived through the 1990s. The new comers (less than a year) all talked about the higher salary, but were not keen on outdoor activities, they were not motivated to hunt and venture out. The hunters also reported that there were no new signees in many years, the most recent one was a son of one of the hunters, which would reflect the lack of continuity and structure of the population with few young people staying or returning. While exposure to nature, its observation increased environmental awareness of the long time locals (easy orientation, weather interpretation, observation of local changes, e.g. increase in number of polar foxes or decrease in nests on the nearby lake), the duration of stay was not a guarantor of accurate environmental knowledge - one hunter, for instance, built and put up a bird box on a light post, but there are obviously no trees in the tundra so birds nest on the ground.

According to the residents, a formative role for the old-time locals was the 1990s transition when food supply became short and everyone would heavily rely on natural bioresources for subsistence and trade. Head of the Sector of Property Relations... spoke of those who 'survived' the 1990s, they have all the equipment and knowledge

(a safe, a gun), that they would go fishing and hand out their catch to village residents: “Иначе никак не выжить, ели рыбу вместо колбасы и всего на свете. Денег нет...” (trans. “*You couldn’t survive otherwise, they ate fish instead of sausage and everything else. There was no money...*”). So ultimately, the 1990s were a school of nature harvesting for the non-indigenous locals and a focal point for creating a sense of place. And while subsistence harvesting was important for the place attachment, it also possibly generated a sense of entitlement (not unlike that amongst the indigenous people) for those bioresources. And when in 2014 the regional government placed a moratorium on muksun, fishing carried on with many reports of poaching coming from the municipality area or in relation to municipality residents (see next section). While there are certain events and place associations that can be formative for place attachment, what counteracts or buffers the response of non-indigenous locals to change will likely include other socioeconomic factors and opportunities that will determine whether they stay or leave the Arctic.

According to the interviewees, since 2012 several shops in Mys Kamenny started selling a variety of fruits and vegetables, dairy products, meat, chocolate and sweets, and other products that are available elsewhere in the country without interruption of supply, opposite to a shipment every 3 months as was done previously. You can also place an order for delivery with the next shipment. That allows new-comers to retain their food habits, while reducing some gastronomic pressure off the local bioresources. The hunters, too, confirmed that hunting became a recreational activity rather than a source of subsistence.

Table 3. Attitudes towards place of Mys Kamenny residents based on fieldwork of May 2017.

Interviewee	Duration of stay	Sense of place/ attitude towards MK	Demographic characteristics
Shop keeper 1	less than a year at the moment of the interview	positive; but fears stray dogs; place associated with work and income.	middle-aged female, moved from Uzbekistan
Shop keeper 2	since the age of 4 (over 40 years)	nostalgic; spoke of negative changes, disappearance of fish ("fish left"), but there is hunting; unwilling to move.	middle-aged female, brought up 2 kids in the municipality, both left
"Yamalenergo" secretary	since 1994	negative and nostalgic, noted the loss of 'grey trade' in muksun - you could have exchanged a muksun tail for practically anything in the 1990s in Tyumen. She said, you could have caught fish with your bare hands before Gazprom laid their pipes there.	middle-aged female, native Ukrainian
FSB officer	less than a year in May 2017	neutral, not interested in spending recreational time outdoors; he said he would be keen to take up hunting but not willing to go through all the associated formalities.	male, in his 20s; originally from Smolensk, west of Russia
Police officer 1	since 2003 (14 years)	generally positive; talked of the game/fish exchange; place associated with work and career growth.	from Karachay-Cherkessia (North Caucasus)
Police officer 2	since 2013 (4 years)	generally positive; moved for work.	from Karachay-Cherkessia (North Caucasus)

Interviewee	Duration of stay	Sense of place/ attitude towards MK	Demographic characteristics
Head of the Sector of Property Relations, Housing and Utility Infrastructure, and Housing Policies, Administration of the Municipal Entity	since 2012	“Impossible without muksun” - craves for it at least once a month, prefers reindeer meat, knows berry and mushroom spots, collects comarum and makes a medicinal brew, owns a nenets herding laika.	raised a son in MK;
Senior Specialist, State Public Institution ‘Service for protection, control and regulation of the use of bioresources YaNAO, Yamal territorial branch	since 1975 (42 years, since 3d grade)	Fully assimilated and attached to people (“На земле сплошные козлы, а тут люди попадают” - trans. “All people are scum on mainland but here you get good people”) as well as the place, which he knows well as often goes around tundra and to hunters’ huts.	owns a flat in Novosibirsk and Labytnangi where he might move upon retirement in 3 years but wouldn’t know what to do there.
Leading Specialist. State Public Institution ‘Service for protection, control and regulation of the use of bioresources YaNAO, Yamal territorial branch	since 2009	comfortable venturing out, observant and interested in the natural environment.	
Driver of a cistern truck	born in MK	came back from the university as there is work there; familiar with the environment.	early 20s

As for shift workers in the Russian Arctic, their interactions with the biophysical world have been studied mainly through the prism of the effects on physical health, psychological wellbeing and reasoning/decision-making capacity, that is the impact that weather and polar night has on migrants (e.g. Belogurov and Glinskiy, 2018; Holodilova, 2010). The seminar on ecological problems of YNAO that took place in Salekhard in 2012 discussed ecological issues in two separate domains: ecological medicine and fauna of the northern taiga (Shinkaryuk, 2013). The typical divide

between social and biological aspects of ecology has promoted and reinforced the view common in Russia of nature that exists separately from humans. In terms of migrants' behaviour and direct ecological impact, one study mentioned 'environmental laxness' ('экологическая распущенность') of 'wild' as opposed to 'organised' shift workers, i.e. those hired without specifying terms of relocation and living conditions (Silin, 2017).

There have been no studies done assessing environmental awareness amongst the shift-workers or their impact on the environment, apart from isolated statements that anthropogenic load of shift-type exploration is less compared to setting up villages or towns but at the same time there may be incidents of 'barbarian' environmental behaviour associated with the placeholder (*vremenschik*) mentality (e.g. Sorokin et al., 2002; Silin, 2015). If we assume that sense of place forms through experience and emerges from human interactions with the biophysical environment (Masterson et al., 2018), then limiting such interactions (e.g. in shift work camps) would have a negative effect on place attachment but how it would affect people's interactions with the wildlife (that has not been fenced out) is unknown.

While currently it is hard to measure the level of environmental awareness amongst shift workers from the 'south', to an extent it can be drawn out circumstantially. On the one hand, operating companies' report their ecological initiatives directed onto cleaning up the rubbish and planting trees²⁰⁰ in the towns of their operation areas. Novatek distributes leaflets on precautions of polar bear and arctic fox encounters, as well as rules of behaviour around marine mammals²⁰¹. Gazprom, too, lists increasing

²⁰⁰ <https://www.gazprom.ru/f/posts/85/227737/gazprom-environmental-report-2017-rus.pdf>

²⁰¹ <http://www.novatek.ru/en/development/>

competence on matters related to environmental protection and engaging all its employees in environmental management as part of their Environmental policy²⁰². On the other hand, there has been an increasing number of inappropriate and sometimes dangerous behaviour during wildlife encounters, including that with polar bears, arctic foxes, walrus, etc. reported by media and posted online by workers. There have been several anonymous reports of polar bear sightings and plenty of amateur videos on social media sites such as Youtube, Vkontakte and other in Kharasavey, Bovanenkovo and Sabetta uploaded by shift workers (or other non-indigenous locals within licence sites), some depicting feeding (biscuits, eggs, candies, bread and sausage), harassing polar bears and their cubs or talking about cases when polar bears were shot²⁰³. In the book dedicated to the 20th anniversary of the icebreaker *Vaygach* (Suslikov, 2009), on landing in Kharasavey in 2007 local workers compared polar bears to stray dogs, showed a relaxed attitude to polar bear presence in the settlement which would indicate habitual visitation of the predator and lack of informed advice.

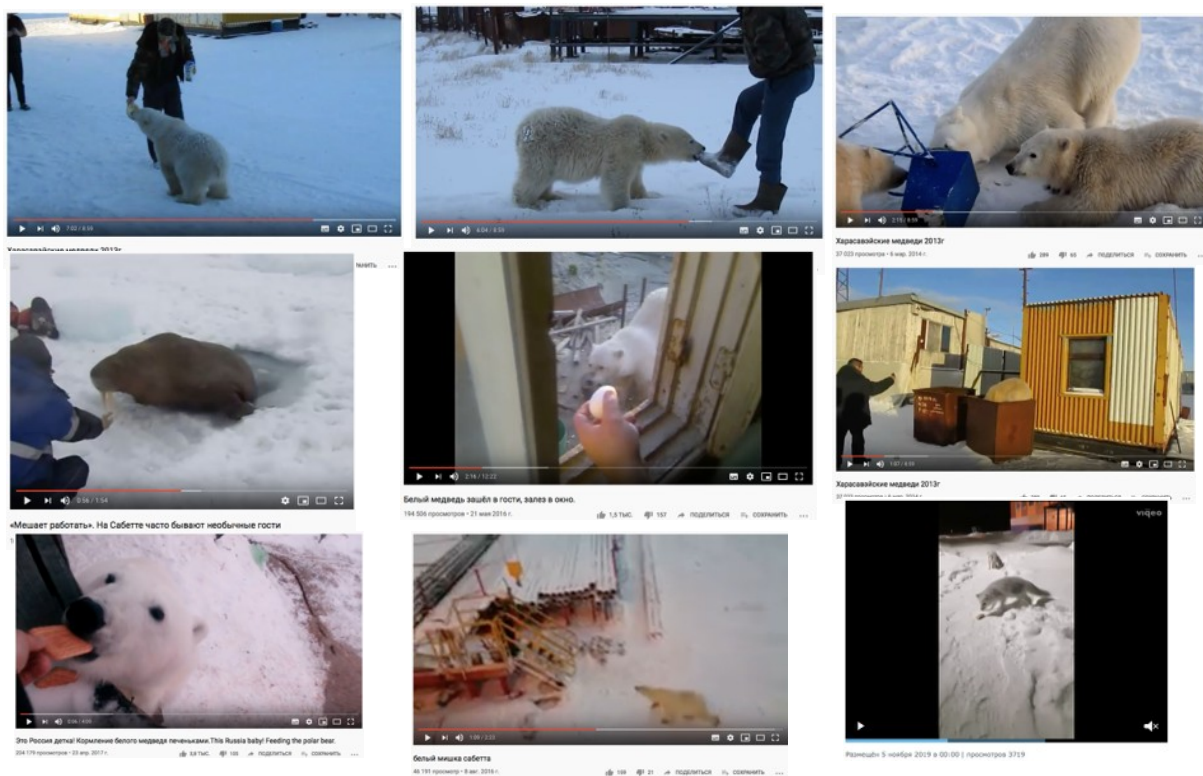
A new national standard (GOST) on managing conflicts when encountering polar bears might get issued in the nearest future²⁰⁴ but at the moment shift workers' actions are 'regulated' by the employer's health and safety policy and, in the words of Anatoliy Kochnev, RAS scientist, the attitude towards a polar bear as if it was a

²⁰² https://www.gazprom.ru/f/posts/73/278066/environmental_policy.pdf

²⁰³ <https://www.youtube.com/watch?v=rPpInT-dM6I>

²⁰⁴ The draft of this standard was published online in 2020 (<http://docs.cntd.ru/document/437259669>) with a disclaimer that it is "not subject to adoption and is for information only".

Russian kids' cartoon character Umka²⁰⁵. In 2018 WWF Russia issued its own Rules on avoiding conflict situations between man and polar bear in the Arctic (WWF, 2018). For working settlements in the Arctic these Rules recommended a 3 m fence around the perimeter of the whole facility or cooking stations and outdoor recreational areas; it also stated that special safety instructions should be issued to personnel limiting their movement outside of fenced off zone. These measures have not been put in place, and it is possible that people would continue to engage in such behaviour (as some these videos show the disregard for corporate health and safety rules, for which a person could be dismissed).



Snapshots of videos taken in Sabetta and Kharasavey showing human-animal encounters, 2012-2019

²⁰⁵ Egorova, N. (2018, February 2). Ucheny rasskazal ob ugroze populyatsii belyh medvedey (Scientist spoke of the threat to polar bear population). *RIA Novosti*. <https://ria.ru/20180227/1515334106.html> (in Russian)

The sightings of polar bears increased not only at the companies' sites but also further south and inland than would be typical for Yamal peninsula. For instance, in 2019 a polar bear was spotted in Yar-Sale, the district's capital. Scientists explain such behaviour as a result of climate change, but it is possible that recolonisation (e.g. increase in food waste and feeding) may be causing such visits; more data would be required to corroborate this. Similarly, construction sites (e.g. Sabetta) attracted arctic foxes; several hundreds dens have been discovered in the vicinity of Yamal LNG in 2014²⁰⁶. There have also been news reports of rabies contracted by shift workers from arctic foxes in the Yamal district.

In October 2019 around 1000 species of Atlantic walrus beached on the West coast of Yamal peninsula in the vicinity of Kharasavey; this behaviour is unusual and so far there is no explanation of it. Encounters between shift workers and walrus also happen. As was shown in the video (clip image above), several shift workers surrounded the hole in the ice and attempted to touch the walrus preventing him from getting on the ice. Such encounters may become more frequent and conflicts may ensue as with walrus so with polar bear that may be attracted to the rookery.

The majority of work migrants (temporary and local) come from other climatic zones and it is safe to presume that they have a limited practical and theoretical knowledge of the arctic and subarctic tundra. While YNAO government and both Gazprom and Novatek organise events to promote environmental enculturation amongst the locals and the employees, as it generally implies picking up rubbish and planting trees²⁰⁷, it

²⁰⁶ https://youtu.be/F4_VDcu0LMo

²⁰⁷ Government of YNAO. (2019, June 5). *Ekologicheskoye blagopoluchiye v chisle nashih glavnyh prioritetov. 5 iunya - den ekologa (Ecological wellbeing is among our main priorities. June 5 - Day of Ecologist)* [Press release]. <https://www.yanao.ru/presscenter/news/11248/>

may not necessarily engage them with the nature in a way that would promote understanding and safeguarding. While settled locals would have more freedom to experience and learn about tundra compared to shift workers that live on the company premises and are not allowed to fish, hunt or gather berries and mushrooms, what separates these two groups of residents from the indigenous population of Yamal is that most of them have a family and home somewhere else and an intention to return there. That, together with fairly low level of environmental awareness and knowledge, could be two major factors affecting how these non-indigenous communities interact with their adopted, temporary surroundings.

5.4.3. Fishing, hunting and poaching on Yamal peninsula

Historical observations suggested that geophysical and geological expeditions to the North resulted in decreased numbers of bioresources in the area (Neelov, 2011; Vitebsky, 1990). Yet, informal accounts from past and present bring up instances of drill workers' irresponsible behaviour on a mass scale. Ethnographer Kirill Istomin who worked in Yamal recalled in the interview in 2017²⁰⁸ that drilling mast workers loved to shoot reindeer whilst on duty in the 1990s, they brought guns and traps with them from mainland. And while guns are more strictly regulated at present, the same workers go to tundra on their off days: "they make bonfires, have picnics, break glass...", explained the ethnographer.

To prevent this sort of irresponsible behaviour in the course of renewed exploration in the Arctic, Neelov (2011) proposed that any movement across the territory of shift

²⁰⁸ <https://realnoevremya.ru/articles/61481-etnolog-o-konflikte-neftyanikov-i-gazovikov-s-narodami-severa>

workforce excluding areas of work and activities unrelated to the purpose of secondment should be restricted. Both Gazprom and Novatek prohibit their employees from bringing hunting weapons into the premises and ban hunting, fishing and foraging. The contractors would get similar instructions. As there is no data of these activities conducted by shift workers within and in the vicinity of their places of work and accounts of other interviewees that they do not know of such activities taking place²⁰⁹, further analysis of socioecological interactions focused on the settled local population of Yamal.

There are 25 hunters in Mys Kamenny, referred to as “the last of Mahicans” by the Senior Specialist of the State Public Institution ‘Service for protection, control and regulation of the use of bioresources YaNAO, Yamal territorial branch’. He mentioned the number of hunters fell significantly compared to the 1990s, the young people are not interested and the shift workers would not be able to hunt in view of corporate policy restrictions (they said that in Gazprom if you’d have a gun “you’d rather shoot yourself”). Previously hunting was providing gastronomic assistance to local families but now it is a matter of habit and pleasure for the remaining old-time settlers. In 2017 the spring season hunting licence cost 650 rubles (c.£7), it covered a period of 10 days defined by the regional authority and allowed to harvest 10 geese and 30 ducks. In the autumn season they would hunt partridge and in the winter - arctic hare. The catch would not be sold but given as a gift to friends, family or others on special

²⁰⁹ There are informal accounts of hunting and fishing by shift workers of construction contractors in Kharasavey from 2007 (Suslikov, 2009). Instances of ‘exotic’ recreational hunting/ fishing by non-residents were also reported by the same source (President’s Security Service); recreational trips were also mentioned by one interviewee in 2017 as something that commonly takes place on Yamal peninsula (e.g. top management of oil and gas operators).

occasions, used as payment for a favour, exchanged for a fish (“a goose for a muksun”) or consumed by hunters themselves.

The Service comprises of two people - senior and leading specialist, neither of whom has a degree in ecology/biology or a related subject but were completing a distance degree in a related subject. The Service is responsible for conducting raids and poaching prevention and outreach activities as among locals so among the nomadic nenets. They say that all the people are known to them, that they go around hunters' huts within 50km to the north from the municipality before and after the season making sure that there are no firearms. As there are Red Book species nesting amongst hunted birds on Yamal peninsula, the hunters should be able to differentiate between them, the specialists of the Service are confident that the local hunters are very experienced but studies (e.g. Newth et al., 2019) from other parts of the Russian Arctic (as well as public sources, e.g. hunters' forums) suggest that accidental shooting at protected species does take place. Most problematic species are Bewick's swan, lesser white-fronted goose and red-breasted goose. The official information for hunters on YNAO website also indicates that in dim light or with bad optics it is very hard to recognise them even for a specialist, especially if they fly in a mixed flock²¹⁰.

The specialists hold some environmental knowledge about the state of local fauna: they observed smaller quantities of geese over several years suggesting that they do not come back from overwintering areas, that the heavy traffic of construction vehicles by the lake adjacent to the municipality deterred many birds from there, they

²¹⁰ Service for protection, control and management of bioresources of YNAO. (n.d.). Vnimanije! Krasnoknizhnye vidy guseobraznyh ptits Rossii! (Attention! Red Book species of anseriformes of Russia!). [online] <http://www.obr-yanao.ru/assets/files/informaciya-po-krasnoknizhnym-vidam-guseebraznyh.pdf> Accessed: 29 September 2021.

say that arctic fox has increased in numbers explaining it to an extent by decline in fur crafts among the nenets, they also see large numbers of ptarmigan, which might also relate to the arctic fox boom.

They mentioned during the interview that in other areas of Yamal district (Seyaha, south of Sabetta), indigenous hunters hunt aquatic birds in earnest, implying larger quantities. Indigenous people do not require a hunting licence and may not have a licence for a gun (which, for instance, could have been inherited from parents or grandparents and have no serial number). But nomadic nenets are, according to them, rather opportunistic hunters as they have no time to spare from moving the herd and the camp.

While hunting on Yamal peninsula bears a certain degree of uncertainty, due to lack of research and data, it seems the dynamic and scale of recreational and subsistence hunting should be diminishing, partly due to reliability of food supply and income, partly due to corporate policies preventing shift workers from taking up this activity. At the same time, little is known about the organised hunting tourism and its impact.

Fishing has been a traditional source of subsistence and wealth for local communities. But since 2000s the whitefish and sturgeon declined significantly. The Obe population of Siberian sturgeon had been affected by the industrial development and damming upstream the Ob river and was included in the Red Book in 1997 (EN IUCN). But unlike sturgeon, muksun population decline has, on the one hand, been associated with the hydrocarbon development in the Ob delta and on the other - with local fishing and poaching. The watershed in opinions can be generally traced to pro-

or anti-extractive narratives with the latter being voiced by scientists as well as locals personally affected by the loss.

The 'disappearance' of muksun and other species of fish from the Ob estuary have been reported by the locals of indigenous and non-indigenous descent as well as visiting scientists (e.g. Antropov et al., 2018; Bogdanov and Melnichenko, 2016; Forbes et al., 2009). The regional authorities went as far as placing a moratorium on muksun fishing by anyone from the Ob estuary in 2014 (leaving catchment from other areas in commercial circulation). In 2019, the neighbouring Krasnoyarsk region authorities also imposed a moratorium on fishing of several valuable species including nelma, sturgeon, muksun, arctic cisco in the Yenisey delta. Some even guess that the overwintering areas for the fish (Corregonidae and Acipenseridae) will be compromised to such extent that it will further undermine the fish population already in decline²¹¹.

While the scale and impact of construction works and compensatory release of fry are not fully understood, they might have an indirect effect by raising the price and boosting the demand. The value of whitefish as an exchange item as well as a delicacy may further promote illegal fishing and distribution²¹². One of the old-time residents of Mys Kamenny mentioned that in the 1990s you could exchange muksun tail for almost anything.

Fishing behaviour of non-indigenous locals of YNAO has been compared to 'hogging'. Regardless of whether they were raised in YNAO or not, the attitude towards free recreational fishing is to grab as much as you can and to fill up fridge-

²¹¹ (https://ugra-tv.ru/news/society/demograficheskaya_yama_dlya_muksuna_ob_osobennostyakh_kvesta_nerest_v_yugre/)

²¹² <https://ura.news/articles/1036268319>

freezers or as one person commented take as much fish so that grandchildren and the boss and everyone they'd give it to would never be hungry again²¹³. In Mys Kamenny, one of the respondents said in the 1990s the fishing was done 'by helicopters', meaning the large amount that was taken out. While enforcement measures have become more effective compared to the 1990s, the illegal means of fishing are abundant and can be easily accessed while catching a poacher in the act remains problematic due to low population density and territorial vastness. While import of synthetic nets that have been associated with poaching and fish population decline as a result of their accumulation in waterbodies across all of Russia, were officially banned in 2008²¹⁴, they have been widely available as the import of materials that they are made of remained legal and many are found in the Ob estuary by the fishing inspectors. To avoid a fine, poachers tend to ditch them in the river or on the shore, where ghost nets continue to have a negative impact on local fauna. It is difficult to assess such impact on the Ob estuary as there are no state-wide, regional or local studies on the issue²¹⁵. In 2019 some recreational fishermen addressed the government with the request to delegalise import and distribution of nets²¹⁶. From 2020 the use of such nets became illegal in all regions of Russia save

²¹³ See n.a., (2019, April 25).

²¹⁴ State Duma of the Russian Federation. (2004). Federal Law on Fishing and Protection of Aquatic Biological Resources. [online] <http://docs.cntd.ru/document/901918398> (Accessed: 29 September 2021).

²¹⁵ There are news reports on removal of ghost nets from the lake Baykal since 2013. See Fond Ozero Baikal. (2021). Baikal bez setey (Baikal with no nets). [online]. Available at: <https://baikalfoundation.ru/ourwork/sokhranenie-vodnykh-resursov/baikal-bez-setei/> (Accessed: 29 September 2021).

²¹⁶ See Gaiva, (2019, July 7).

from Yamal-Nenets Autonomous Okrug, Khanty-Mansy Autonomous Okrug and Sverdlovsk region.

In 2018, to address the problem of unregulated catchment, a daily allowance was set to 5kg for Russia with regional exceptions, one of which is Yamal, where the total daily allowance was not to exceed 20 kg for all permitted species of fish per person²¹⁷. One caveat of such a measure would be the case when the less valuable fish is discarded if a bigger fish is caught later. Another - is the existing problem of enforcement in remote areas.

There is no single data source regarding illegal fishing in YNAO, some cases made it to the media and notably a few of them were related to Mys Kamenny where allegedly there is a good fishing spot for muksun. One of the reports dated February 2019 referred to illegal activities (fish salting and smoking) taking place in the garage belonging to the administration of Mys Kamenny, of which the local mayor denied all the knowledge. According to the YNAO government, the criminal cases initiated in the first 5 months of 2019 were twice as much as in the whole of 2018²¹⁸.

Detrimental impacts of unregulated recreational fishing and poaching are not confined to means and amounts of fish caught, but are also caused by driving and parking on ice or in the close vicinity to the water bodies, cooking and littering, spillage of fuel and other chemicals. The influx of population on the peninsula would also mean an increase in demand whether purchased directly from indigenous or non-indigenous locals or via a network of distributors.

²¹⁷ YNAO Fishing Rules, http://www.zsyanao.ru/parliamentary_reception/v_sfere_turizma_fizicheskoy_kultury_i_sporta/13996.php (Accessed: 29 September 2021).

²¹⁸ See Government of YNAO, (2019, June 19).



Insulation sheets on frozen waste yard with visible weathering effects. May 2017, Mys

The areal of impact of whitefish decline has spread beyond Yamal and is already noticeable among the indigenous groups of khanty and mansi upstream the river. These ethnic groups traditionally used muksun as a form of currency but as of past three years (2016-2019) they have reported that 'muksun disappeared' and the rumour goes that the fish was "poisoned up above" (in Yamal) by oil and gas industry (Pivneva, 2019, p. 89).

There is a subverted media conflict between the oil and gas companies of the region who have been trying to divert the blame for the fish disappearance onto the greed of locals and the locals who blame the industry. And while there is no data on the fish catchment and unbiased ecosystem-based studies on the state of ichtiofauna of the

Ob estuary, the moratorium may not be effective and the negative trend is likely to remain unchanged.

5.4.4. Accumulation and disposal of waste

Waste is a growing problem in the developing Arctic region as a local municipal capacity issue as well as a result of physical limitations of the remote location and its seasonality. Accumulated historical waste poses additional difficulties to effective waste management in the settlements that, like Mys Kamenny, are in the catchment area of oil and gas companies' demographic impact and social responsibility programmes.

There has been a surge of Russian academic literature on waste disposal in the Arctic conditions in the past several years (e.g. Ryabova and Denisova, 2019 on Arkhangelsk region, Maryev and Demicheva, 2017; Grebenets et al., 2019).

According to Grebenets et al. (2019), there are three types of impacts of waste onto the Arctic landscapes: mechanical (change of relief), chemo-physical (leeching of pollutants into soils and groundwater), and thermal (thermoerosion of permafrost).

Solid domestic and construction waste, being common amongst all settlements, can pose all three risks to the dumping grounds in the permafrost area. Additionally, ruination of residential buildings and construction of new buildings has created more issues related to disposal of the construction and demolition debris. 30% of housing in Mys Kamenskoye municipality (includes Mys Kamenny and Yaptik Sale) was classed as dilapidated and hazardous buildings.

During the interview, Mys Kamenny official in charge of waste management lamented that removing waste from the municipality, which takes a large part of the settlement

stretching along the river bank as well as other landfill sites, is uneconomic and has to be subsidised, yet the municipality has been solely responsible for this task. The jetty, she said, was 34 km from the settlement, so transportation would first be required, then loading machinery, then a barge to Tyumen, unloading and disposal. Waste operators are discouraged to sign a contract due to high costs associated with rubbish handling, shipment and processing. The only way for the municipality to afford the disposal of waste is gratuitous service agreements (e.g. valuable waste such as metal scrap, gas pipe cuttings).

Before the industry returned to the area, the problem of domestic waste was not significant, as its proportion to other sources of solid waste was low. However, there was plenty of scrap metal and abandoned machinery. And while Gazprom (and its subsidiaries) similarly to Novatek supposedly have strict regimes on their licence territories, the Head of the Sector of Property Relations, Housing and Utility Infrastructure, and Housing Policies of Mys Kamenny said that 'there were no problems with household solid waste before Gazprom'. Major types of waste she had to deal with were cuttings of oil and gas pipes made of polymers and construction debris such as sand and concrete mix, empty oil casks and paint cans. According to her, the amount of waste increased manifold and from 2013 to 2017 no waste was shipped out from the municipality. She mentioned that Yevgeny Zakharov, Deputy General Director for organisational matters of Gazpromneft-Yamal when visiting Mys Kamenny insisted that in 2017 a garbage disposal unit (incinerator) would be installed²¹⁹. Two Russian-made incinerators type HURIKAN 1000 were, in fact, installed in Mys Kamenny in 2018. These are large installations that can burn 4-8

²¹⁹ The news report stated that it was installed in 2018 (<https://yamal-region.tv/news/33109/>).

tons of waste at a time or up to 24 tons a day each, they have been adapted for the use in the Arctic by being equipped with mountable burners, a suspended platform and thermal insulation. Waste incineration has been considered a controversial method of solid waste management due to emissions of black carbon and other toxic pollutants as well as heat, which is especially relevant in the Arctic; and while the manufacturer claims that the product passed state ecological expertise, is compliant with EU legislation and ISO certified for cleaner emissions, its effects onto the municipal waste dynamic and the local environment may vary throughout its service life. For instance, the shift in consumer goods supply since around 2012 from the 'northern delivery' (*severny zavoz*) to private small-scale helicopter shipments affected the composition of domestic waste with the growing amount of plastic packaging (every item in the local shops would be put in an individual plastic bag free of charge) and food waste (especially for products with short shelf life such as dairy and meat). The increase in domestic and construction waste in Mys Kamenny reflects the Russian trend of the past decade²²⁰. And while there has been a positive change towards recycling in the country on average, availability of incinerators would undoubtedly discourage it.

While waste management is affected by a combination of socioeconomic and technological factors, the effects of the population growth and changing supply of goods and products in the context of the remote locale underlain with permafrost onto the environment needs further understating. The incinerators may have as positive effects on the landscape (instant disposal of many years' of waste

²²⁰ See Volkova, A.V. (2018) (<https://roscongress.org/materials/rynok-utilizatsii-otkhodov-2018-god-/>).

accumulation) but may also create a market to meet the capacity of the equipment from the nearby area (the YNAO Regional Town-Planning Standards set a norm of solid domestic waste generation per person at 550 kg/annum which if multiplied by the number of residents of Mys Kamenny would only require around 30 days a year of one incinerator's operation at full load).

Another source of waste that was brought up by the official is the significant amount of driftwood from the estuary that cannot be utilised and has to be disposed of. Such problem is likely to be common along the entire estuary coastline which is also littered with the remnants of past exploratory activities. In 2016-2019 summer seasons Gazpromneft-Yamal contracted nenets people to clean up the shore in Novy Port and Mys Kamenny from such debris using machinery provided by the company²²¹ highlighting the exploitative nature of hydrocarbon industry.

Sewage effluents also pose a significant problem for the municipality, since 'everything flows into the water', said the official, and nobody knows how to control it. There is no water treatment plant in the municipality, but a cesspool which is emptied by a cistern truck and then discharged onto the relief outside the municipal area. The companies that operate in the area do not discuss anything relating to water intake or sewage with the municipality, hence the local officials have no data relating to water management within the industrial sites and shift-worker camps. The growth of the population within the municipality on account of subcontractors' employees has increased the load on local services; further development of hydrocarbon fields in the vicinity of the settlement is likely to affect the amount of water intake and discharge.

²²¹ See official press report in Russian at n.a., 2017b (<https://www.mo-yamal.ru/novosti/6297>).

The head of property relations of Mys Kamenny mentioned that until 2014 the Mys Kamenny residents drank water straight from the estuary (there are several water intake facilities on the river Ob bank), people would use domestic filters which they changed every week and bottles for the water to settle after it had been filtered. She also said that there were plans to update the piping system and that Gazprom was supposed to contract a company to deepen the nearby lake and build water supply but that was delayed due to some contractual complications.

While it is clear that the renewed development has had some effect onto the municipal services, the process of rebuilding seems to have a cyclical pattern while waste management strategy is reliant upon good will of local oil and gas operators. Mys Kamenny is an individual case, but similar effects of recolonisation are noticeable in Novy Port, Seyakha (south of Sabetta), while Kharasavey and Sabetta have been cleared of the legacy waste by Novatek and Gazprom respectively.

5.4.5. Subsidised predators

A particular issue that Mys Kamenny and other northern settlements share is the proliferation of stray or semi-feral dogs that are being left behind during the summer period or abandoned by their owners. According to Mys Kamenny official, there is no legal way of dealing with them. And their environmental impacts, e.g. predation on shorebird nests, reindeer and other animals; other wildlife—dog interactions, including transmission of rabies and other diseases, have not been studied. There is a consensus that dogs can significantly disrupt ecosystems (Young et al., 2011). As Dorothee Ehrich, UIT, who did her field work in Yamal, explained: “Dogs roam in the tundra, and as there are no trees there, all birds nest on the ground. Nests are easily



Domestic waste, May 2017, Mys Kamenny.

accessible and dogs actively ravage birds' nests around the settlements"²²². Some people bring their own dogs to protect themselves against stray dogs that form packs and often act aggressively or defensively towards people, which might propel the issue of strays in the long-run. Nenets reported cases of their reindeers being attacked and mauled by dogs in the vicinity of Mys Kamenny²²³. A similar issue has been brought to light in the Canadian Arctic²²⁴ where lethal attacks had been

²²² https://vesti-yamal.ru/ru/vjesti_jamal/strannye_pestsyi_i_plodorodnyiy_god_uchenyie_izuchili_ekologiyu_tundryi_v_rayone_sabet_tyi142158

²²³ https://www.znak.com/2018-02-12/tundroviki_yanao_zhaluyutsya_na_nashestvie_brodyachih_sobak_kotorye_ubivayut_ih_oleney

²²⁴ <https://www.rcinet.ca/eye-on-the-arctic/2014/10/17/struggle-to-control-dangerous-stray-dogs-across-northern-canada/>

reported, the solution adopted there was to sterilise the dogs using volunteer labour. Zelenaya Arktika (Green Arctic), environmental organisation based in Salekhard, put the emphasis in their dog-related campaigns in major cities onto educating people as according to them this problem is primarily a result of irresponsible attitude towards pets.

There is no evidence or data on other subsidised predators, such as grey crows (one crow sighted in Mys Kamenny), rats and cats in this settlement, but it is possible that these animals too survive.

5.4.6. Conclusion

In order to effectively safeguard the environment in places such as Mys Kamenny, Novy Port and Sabetta, strict regulations, cleanup measures and even adaptive governance may not be sufficient if the inhabitants and their interactions with the environment are not taken into account. In terms of the Russian Arctic generally and Yamal peninsula specifically, while indigenous population is considerable, some settlements (e.g. Mys Kamenny, Sabetta) are made up of non-native residents from the Russian or post-Soviet midlatitudes as well as expats from Europe and beyond. The issues that stem from the interactions of the natives with their environment, the immigrants with nature unfamiliar, alien or 'meaningless' to their environmental culture, and the relations that arise between the natives and immigrants as the numbers of the latter scale up are potentially four separate governance issues:

- Population increase would boost market for local bioresources which could put pressure on stocks or have unknown effects for bioresource harvesting;

- Dogs and other subsidised predators brought/ abandoned by migrants could serve as disease vectors (animal to human and animal to animal) and could have other unknown effects on local wildlife;
- Increasing settled population impacts (infrastructure, including waste, water, energy, roads, fuel);
- Consequences of interactions with large mammals, e.g. polar bear and walrus.

5.5. Conclusion: future in the making

The history of the peninsula shows the effect of political will, economic drive and social engineering onto the region, whose social and environmental consequences have not been sufficiently studied or even acknowledged. The environmental baseline data for the Arctic region and Yamal, in particular, is geographically and chronologically incomplete. The mass abandonment of settlements following the collapse of the Soviet Union left behind many tons of waste whose long-term effects onto the environment is also poorly understood (Sokolov, 2013). According to Komarov (1994), to maintain ecological balance in the North, 98% of the tundra and forest tundra must be left untouched. Yet, it is expected that the area of land disturbed by the oil and gas extraction in Yamal-Nenets Okrug will increase 10 fold (by 40-50,000 square km), which is equivalent to a regional environmental disaster (Vladimirov and Dubnov, 2013).

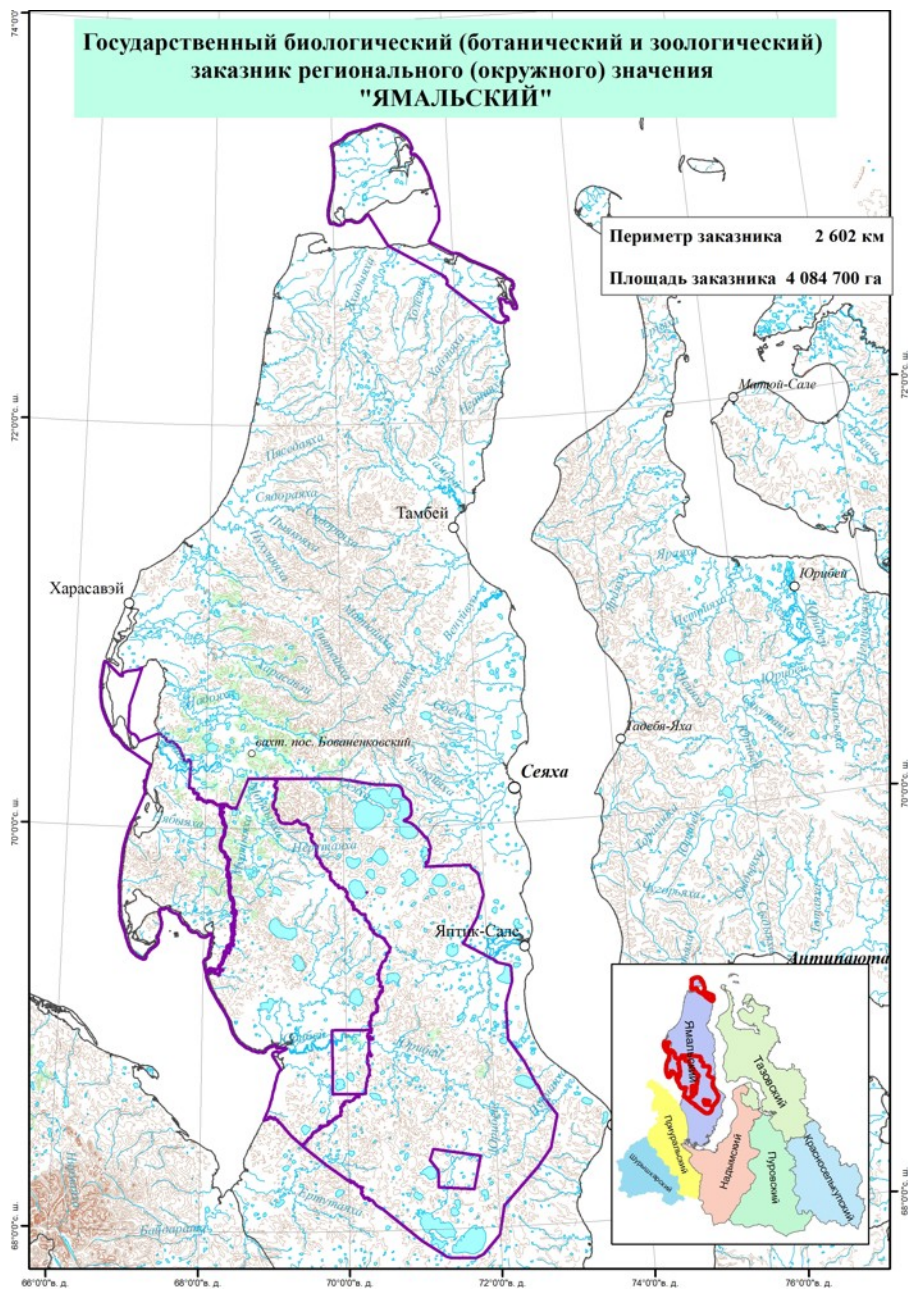
Below are the main environmental governance issues and drivers observed and noted during the fieldwork and interviews with the public officials and stakeholders:

- Lack of communication between business and government/ society (e.g. EIA does not require positive feedback from the community to go ahead; Mys Kamenny officials were not informed of nearby hydrocarbon field development);
- Research commissioning and ownership by the oil and gas industry (for the benefit of the industry) - interview with the Centre of Arctic research and general information on the research done in the Arctic by Rosneft and others... (Rosneft in the past seven years organised over 20 large-scale complex research expeditions²²⁵; there is an opinion that geological prospecting will enable ecological programmes in the region: «The more we know about the Arctic, the more responsible will be the attitude to work of the companies operating in the Arctic belt” said the cochair of the Environmental Chamber Vladimir Koptev-Dvornikov, which is a non sequitur. From the interview with a director of the Arctic research centre in 2017 it became known that the Centre was contracted by Gazprom to mediate in the geological research of the phenomenon of Yamal craters in the vicinity of Bovanenkovo field, however, all the scientific data gathered in the course of this research was considered private property of the company and classified.
- Flexibility/ permeability of borders of nature reserves (e.g. Yamalskiy reserve that excludes licence areas and Bovanenkovo railway)
- Fragmentation of environmental governance objects (species- rather than ecosystem-based approach; different bodies and levels of oversight controlling different parameters of an ecosystem). There are three main obstacles to

²²⁵ Kozlov, D. (2017) ‘Mechty ne sburilis’, *Kommersant*, 124 (17/07/2019). Available at: <https://www.kommersant.ru/doc/4033100> (Accessed: 1 March 2021)

uncovering environmental law violations in Yamal, according to YNAO RPN: remoteness and prohibitive cost of travel for the state body, seasonality (e.g. activities happen in the winter, inspections - in the summer), recent division of jurisdictional responsibilities over objects of the same company between regional and federal bodies (which are often difficult to differentiate so state workers tread on the safe side). Exploratory drilling, they said, was the worst in terms of both impact and control but there is no possibility of getting there in the summer due to lack of infrastructural development and prohibitive cost of private helicopter transportation (50,000 rubles an hour). There are also peculiarities related to application of certain articles (e.g. if a gas filter is not installed based on the project design, then it cannot be considered a violation). The Yamal branch of RPN has issues related to competency and staffing - RPN should be employing specialists with a degree in ecology or biology but instead it employs lawyers, and according to the specialists in Salekhard their work is to inspect compliance of controlled objects to the letter of law, hence they did not think that the ecological background would give more insight or help in this particular task. But the problem of understaffing, according to them, was more significant as instead of 8 specialists there were only 2 employed in 2017.

- Increased public visibility of the Arctic - more imagery, TV news, even youtube videos and blogs, as a gateway to lateralisation of environmental governance. Issues of environmental impact and its mitigation have become more visible and attracted more public attention as reporters from major Russian channels were taken to Yamal and other Arctic islands to document and report on the cleanup efforts.



Yamalskiy reserve, <http://oopt.aari.ru/system/files/oopt/yamalskiy/obzornayakartazakaznikyamalskiy.jpg>

- The direct implication of the perception of the Russian Arctic as a land of extractible resources (e.g. Dmitry Fishkin at 2017 Arctic conference: regional development of the Arctic will be driven by the energy sector: extraction of hydrocarbons will stimulate shipping, shipbuilding, refining industry, and generally urban development) onto its management.

- Information and data which are used to determine hunting quotas, pollution tariffs and penalties, monitor the dynamic of atmospheric or aquatic pollution in the Arctic are difficult to gather and verify. For instance, when it comes to hunting every year the Department of Biodiversity of YNAO issues quotas and determines seasons of spring and autumn hunting periods. According to the officials of the local Mys Kamenny branch of the Department, no data is collected locally to verify the sustainability of the quotas, e.g. 'bottom-up' reporting, and that the periods when hunting is allowed does not always match the seasonal window of



Today's infrastructure is the future's waste, however there are no contingency plans for its decommissioning. Picture of flood protection at Bovanenkovo oil field serves as an example of the emerging future waste that will not be easy or cheap to remove and scramble.

opportunity. In the interview with the Deputy Head of the YNAO Service for

protection, monitoring and regulation of the use of bioresources in 2017, he said that due to limited human resources and large area of coverage, animal count is challenging and animal quotas are issued based on historical data and often small sampling.

As for the bottom-up environmental governance, as we can devise from Mys Kamenny and Yamal district contested senses of place (as a place of work rather than home, temporality, availability of a place to go back to, lack of environmental awareness) can be an obstacle for fostering stewardship amongst the non-indigenous population (see also Chapin and Knapp 2015).

Chapter Six. Conclusion

With the majority of research on the Arctic governance focused on the international institutional component (i.e. Arctic Council), the sovereign governance of the Arctic environment and ground level repercussions have been given relatively limited consideration. However, such focus can serve as a litmus paper for the status and scope of the society-environmental governance in the Arctic and its 'trickle down' local effects as well as providing a counter to the existing, homogenised, circumpolar imaginaries and their associated governance models (i.e. macro-scale, incorporating the whole of the Arctic). The Russian Arctic region is particularly important in this respect due to its considerable size and connectivity.

The research project focused on the Yamal peninsula, the area that has become the focal point of Russia's Arctic endeavour with large-scale (e.g. the biggest gas-field in the world, Bovanenskoye deposit) industrial and infrastructure (power station, railway, deep water port, LNG plant) projects taking place in an area of permafrost, fragile tundra and coastal ecosystems, as well as increasingly noticeable consequences of climate change (i.e. thawing permafrost and increases in CO₂ and methane emissions, sinkholes, release of seabed GHGs). This case study area was chosen on the merit of its size, scale and relative amount of investment and as a harbinger for other emerging industrial projects across the Russian Arctic. The research aimed to produce knowledge of socioecological relations in the non-indigenous community in the part of the Russian Arctic undergoing a rapid economic development in order to then understand how the existing and emerging practices and knowledge could impact the EG framework in place and relations within it at

multiple scales. Given that the Russian environmental management has no EG vocabulary, the study was not relying on self-identified EG mechanisms but attempted to pinpoint them in the field.

The present work explored and extended the knowledge of Russian governance in the Arctic as through development and territorialisation policies so through environmental management policies, strategies and praxis. It found that the socioecological perspective can complement the traditional institutional and normative environmental governance research by filling in the gaps between policy, law and enforcement as well as through feedback to top-down management strategies that is especially poignant in the context of data deficiency and climatic uncertainty in geographically remote areas. The research contributed to the community and local research by exploring Arctic environmental governance feedback mechanisms between residents and the landscape. It attempted to link the local scale and people to the multi-scalar multi-institutional environmental governance mechanisms to contest representativeness of the Arctic nature (environmental protection and safeguarding agenda) in the Russian context. The fieldwork conducted in 2017 in Russia's capital Moscow, YNAO capital Salekhard and Yamal district was designed to investigate and observe the existing services, policies, regulations and attitudes in place to safeguard the Arctic environment through the current phase of development and exploitation of the region's northern territories but mainly to observe the relations that have been in play between individuals and community and the environment in the settlement affected by development. It attempted to understand how the non-indigenous locals in Mys Kamenny on the Yamal peninsula 'appropriated' the natural environment around

them and made sense of it in the context of the overall Russian and regional environmental culture. The research demonstrated the complexity and variety of interactions within one nested locale, it explored the effects of economics, politics, history and values onto the Arctic landscape exploring the particular embeddedness of non-indigenous residents versus cognitive and emotional distancing of fly-in/fly-out workers.

While the fieldwork started with assumptions of more rigid, systemic forms of governance, what was observed was that connections between state and regional actors, confluence and divergence of areas of their responsibility, as well as data availability and exchange or the lack of thereof were of great importance when it came to mitigating and managing environmental damage (or the reverse), the same went for informal and opinion leadership. The translation of state-level institutional and legal mechanisms to the local level was problematic due to overlapping and inconvenient division of areas of responsibility among authorities, lack of funding, monitoring and data. The research found that local experiences in Mys Kamenny demonstrated the lack of municipal and regional planning in connection with the industrial development agenda.

While these governance mechanisms were observed, their practical functioning could only be 'captured' symptomatically. In case of Yamal, it was monitoring limitations of Rosprirodnadzor and decreasing fish stocks in the estuary. The local perspective from Mys Kamenny uncovered that a weak sense of place and familiarity with the area among the non-indigenous people is an important factor in shaping the relations between man and nature: not only it can be defined by a few characteristics of the

place (e.g. muksun) but it can also be easily disrupted by forces such as oil and gas development.

Further studies using anthropological method would be beneficial to deeper engage with the non-indigenous population as well as FIFO workers' experience. Lack of bottom-up communication between local administration, regional government and the state and that between municipalities and companies suggest exclusion of the local non-indigenous stakeholders from the decision-making and governance process. In addition to being geographically (remote, expensive to get to, unreachable in bad weather) isolated, Mys Kamenny and other Yamal peninsula settlements could not be easily included in the lateral governance networks as a result of Yamal district border status, which means that a special permit needs to be attained from the Federal Security Bureau prior travel. For the same reason, companies' employees 'exist' separately from the district population. This misalignment could be a result of the superimposed Putin's Arctic strategy onto the Soviet geological expedition legacy when two systems so far managed to coexist.

But when it comes to socioecological relations, temporality, isolation, poor environmental knowledge could affect as the attitude so the behaviour of the non-indigenous Arctic residents, which stand at the majority in the Russian Arctic, further affecting the political perception of the region. And all the while independent scrutiny of the industrial development is problematic, it is ever more important to analyse and understand the way the nature is used, its socioecological foundations and dynamic in order to devise measures of environmental protection and predict its outcomes.

Renewed development has affected individuals' sense of place in two ways: on the one hand, local non-indigenous residents of Mys Kamenny were emotionally affected

by the observed negative impact of the development onto the landscape and fauna with a few wanting to leave the Arctic as a result, on the other, the influx of shift workers (especially in Sabetta, Kharasavey) led to an increased risk of human-animal conflict and enforced a sense of exoticism. For the non-indigenous population the development may have a demographic effect, pushing the long-term residents out whilst information networks in the community are likely to be disrupted. While reducing settled population with or without replacing it with temporary workers and assignees may have ambivalent impacts onto the surrounding environment and socioecological practices, it is, however, likely to translate through environmental governance as diminished environmental compliance and responsibility as of the new residents themselves so the companies that rely on municipal approval.

The official discourse of the regional and federal officials could be captured in the overwhelming emphasis on the central impetus of the Arctic development, private means of its achievement and a resource-driven paradigm. The environment is represented as a vague setting to industrial activities, which on the one hand has an absolute value and on the other no practical value or pragmatic tack of preservation. That is while the environmental rhetoric does come through, it has not been concretised with a vector and scope of fixed and rigid management plans, it is represented as something to consider during industrial exploration of the region. No alternative future, but decades of extractive exploitation, has ever been discussed for Yamal. Moreover, development of Yamal's hydrocarbons and construction of LNG plants essentially serves as a driver for the development of the Northern Sea Route and supporting infrastructure across the Russian Arctic rim, including the military facilities. Its hidden implications, such as changing landscape, population structure

and socioecological interactions in Yamal and beyond, e.g. increasing encounters with polar bears, poaching, ecosystem shifts in the estuary) are yet to be accounted for.

Research, monitoring and data openness remain a significant gap in environmental governance in the region. This can be due to high costs of expeditions to the remote border areas, which allowed for the primacy of the extractive industry in Yamal as often a sole proprietor and commissioner of such data. Oil and gas companies act as sponsors and facilitators of scientific research in the places of their operation.

Disproportional distribution or generation of this 'commodity' between state, regional, local actors, the industry and wider, i.e. international scientific community can eschew the conceived Arctic space and lead to misrepresentations of its regionalisation as environmentally safe and sound.

To sum up, the environmental governance in the Russian Arctic at this point is inadequate in the face of the natural pressures and the extractive expansion. The study uncovered the following contributing environmental governance issues:

- Despite years of discussions, no Arctic-specific environmental law has been produced in Russia allowing for wide interpretation of norms and practical experimentation in the hands of hydrocarbon giants and other privately contracted local operators.
- Lacking ecological baseline data, no data sharing between stakeholders and the industrial sponsorship of Arctic research in the area of intensive development are key to understanding power struggles over environmental governance in the region;

- The Russian government has no strategy for the Arctic settlements in terms of maintenance and development of municipal services which ultimately has a socioecological impact: for instance, Mys Kamenny heavily relies on ad hoc financial or in kind help from the oil and gas giants to provide ecological services such as waste disposal or water treatment. There is also no lifecycle view of migrant Arctic settlements.
- Transportation and accessibility is a key element of the environmental governance in the Russian Arctic - on the one hand, it can halt economic development and, on the other, it can impede access of environmental authorities, scientists (that have limited funding) or the public and NGOs to the area of concern.
- Russian Arctic policies manage spaces but not places (this would explain common rhetoric of ecological neutrality and compensability), superimposing industrial projects and infrastructure over the peninsula rather than integrating them.
- Lateral governance networks may positively contribute to safeguarding the Arctic environment. For instance, regional leadership expressed personal pro-environmental views, support of science and funding of expeditions and took part in cleanup of historical waste; a local environmental organisation which engages with the industry may re-direct the efforts of the latter towards meaningful environmental action, e.g. dangerous waste collection in remote corners of the Arctic.
- Low level of environmental awareness and concern of the Russian citizens translates at various levels: federal government officials and members of parliament responsible for the Arctic policy, regional officials responsible for communicating and facilitating the interests of their constituency, scholars

advising and the residents of a municipality that have no opportunity to observe and communicate up their environmental concerns.

- With no posterity plan, micro environmental governance lies with those closest to the environment and is not insignificant.

According to Newell and Henry, “environmental protection and the trajectory of the Russian economy and political system are deeply intertwined”. The transition from state to state-corporate model of development of the Arctic region in Russia would undoubtedly have implications for the local environment through corporate efforts, which should nonetheless be scrutinised in the political context of the state engagement. While the Russian state has a dual function towards the natural resources and environment, corporations pursue profit for the shareholders whilst development is subsidised and encouraged, natural protection received far less attention, funding and implementation. Facilitating rent-making in the remote border areas by creating enclaves of settlements and industrial estates bears a danger of misbalancing the practices of environmental protection as on national and regional scale so on local level as through direct physical impact so through displacing local residents and subverting community and environmental knowledge-building.

One cannot address a notion of environmental governance without delimiting its area of application, and while the Arctic remains geographically and denominationally fluid, the contestation over its environmental resources will remain a possible if not a desirable *status quo*. While local scale of Yamal may not provide a meaningful insight level for the environmental governance of the pan-Arctic region, its groundedness may serve as a source of ‘spatial stability’ and socioecological data to inform efforts at larger scales and different regional contexts. Socioecological perspective can inform

environmental governance framework through information on outdoor activities and frequency of time spent in nature, sense of place as an anchor for environmental behaviour and bottom-up feedback to top-down measures in addition to municipal data.

The Russian policies and actions in its Arctic region so far have reflected common trends in both politics and environment for the whole circumpolar Arctic - from development to infrastructure to climate change. Russia, along with other Arctic states, faces challenges of capitalising on its natural assets without stepping on the same rake of environmental degradation, and creating human capital in the most remote and scarcely populated areas of the country to preserve state unity and increase living standard throughout Russia. The problem lies in synchronising goals of better understanding the complex processes taking place in the region's environment and society, evaluating the full scope of interactions between people and nature and building development agendas with such sensitivities in mind in coordination with all the main stakeholders. One of the Russia-specific aspects of the Arctic policies is indisputably Russia's Soviet legacy, on the one hand, with social, economic, political influences that it still holds and, on the other hand, Russia's relatively dynamic, less rigid, governance, economic and intellectual structure that add complexity to the seemingly top-down regionalisation process in the Russian Arctic.

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