

Climate Change and Responsibility: Arctic States' Cooperation through the Arctic Council in Climate Change Mitigation and Adaptation Efforts

Volker Roeben & Smith I. Azubuike

The Arctic is experiencing what is understood to be the impact of climate change. As a global environmental challenge, climate change mitigation ideally requires a comprehensive solution. However, when a global agreement is difficult to realise, regional cooperation may be useful to accomplish global mitigation objectives, at least in part, and to enable individuals to adapt to changing climatic conditions. Human rights law reinforces the international law of climate action. It imposes the responsibility on states individually and collectively to respect, fulfil and protect rights concerning the impact of climate change. In carrying out this responsibility, states are to cooperate through appropriate regional fora and to use the potential of these fora to the utmost. International environmental governance underscores the benefits of shared objectives, common historical backgrounds, geographical proximity, and a smaller number of negotiating parties, which make it easier to come to an agreement and to synchronise mitigation effort; the Arctic region benefits from these views. The article first establishes the intersection between climate change and human rights and emphasises the responsibility of states to cooperate. It then identifies and discusses the suitability of the Arctic Council as a forum for their cooperation. It finally examines possible areas of collaboration which include the slowdown of hydrocarbon exploration in the region, utilising offshore off-grid initiatives, and the opening of the North-East Passage to reduce vessel travel time and cut down on CO2 emission. The article concludes that regional coalition formation is crucial for effective climate change mitigation and adaptation in the Arctic region.

Introduction

Discussions about climate change in the Arctic assume saliency because of the negative impact it has on the ecosystem and the people who depend on it. In the Arctic region, as with the rest of the world, climate change threatens the enjoyment of human rights (IPCC, 2014) due to melting ice, permafrost, alteration of the food chain and reindeer herding in the Arctic. These rights include the right to life, food, clean water, healthy living, and the right to earn a living through work (Azubuike & Songi, 2020). Climate change also threatens the housing and subsistence of Indigenous people, communities in the Arctic that may be disadvantaged due to poverty, geography, gender, disability, age, and ethnicity (OHCHR, 2020).

In the international arena, climate change is governed by instruments that regulate greenhouse gas emissions (GHG) such as the United Nations Framework Convention on Climate Change (UNFCCC), the Kyoto Protocol and the Paris Agreement. These instruments are grounded in international environmental law and its general principles on responsibility, sovereignty and law-making (Bodansky, Brunnee & Rajamani, 2017). They place the burden on states to cooperate in the areas of mitigation and adaptation to climate change. Human rights law reinforces and concretises the normative impetus of the international law of climate action. This law turns global climate action into enforceable rights of individuals with a corresponding responsibility of states. This responsibility to respect, fulfil and protect affected human rights requires developing climate change mitigation and adaptation strategies.

In the discharge of this responsibility, states are to cooperate using the appropriate regional fora and to use their potential to the utmost. Although climate change arises from global emissions of GHGs, countries in various regions can take climate action through a regional coalition. This strategy has become essential as international environmental agreements (IEA), such as the Kyoto Protocol or the Paris Agreement may be difficult to achieve and to enforce, due to the absence of supranational agency to enforce compliance (Barrett, 2003; Barrett, 1994; Asheim et al., 2006), as well as political (Finus & Rundshagen, 2001) and economic reasons, conflicting interests and contending priorities of various states (Hallegatte et al., 2016).

In their analysis of the importance of regional cooperation over international cooperation, Asheim et al. (2006) note that regional coalition formation (RCF) involving a small number of negotiating parties can facilitate climate action. RCF is possible when the parties are geographically close, have a comparable political and economic system, share a common objective and tend to have cultural closeness (Carraro, 2000). The possibility of rivalry may be limited, and there is a higher chance of success because members pool their efforts (Sánchez-Pagés, 2007). These factors tend to reduce negotiation cost and uncertainty and enhance trust, making countries more likely to join and comply with regional arrangements (Asheim et al., 2006). The Arctic Council is arguably an appropriate institutional forum to achieve regional cooperation on several climate arrangements in the region.

Accordingly, this article first gives an overview of climate change concerns in the Arctic. It then examines how climate changes impact human rights and particularly the rights of the people of the Arctic region, before discussing the responsibility of states to respect, protect and fulfil these rights by synchronising mitigation and adaptation efforts for climate action. It furthermore utilises a coalition formation framework to establish the normative basis for regional cooperation and how it could facilitate climate change mitigation and adaptation given the geographical proximity and shared objectives of Arctic states. It finally discusses areas of cooperation such as the opening up of the Northeast passage to reduce vessel travel time to cut black carbon emission; a shared off-grid initiative; the slowing down of hydrocarbon exploration in the Arctic; and the development of an early warning system to foster adaptation. The article concludes that cooperation in the identified areas will limit CO₂ emissions, thus, facilitating effort towards climate change mitigation and adaptation in the Arctic region.

Climate change in the Arctic region

Apart from the overall effects of climate change on the global ecosystem and humanity, there exist specific effects on the Arctic region. Climate change severely impacts water and sanitation, housing, education, self-determination and the right to informed and meaningful participation (CIEL, 2013) in the Arctic. Research about the Arctic shows that the region's weather and climate

are changing rapidly due to global warming, warming twice as fast as the worldwide average. This change is resulting in the melting of ice, snow cover, permafrost, rise in sea level (Yumashev et al., 2019), loss of fish stock, marine mammals and birds in the region. Post et al. (2019) note that “the Arctic has warmed by 0.75°C, far outpacing the global average”. Referring to the work of Post et al. (2019), Pierre-Louis (2019) notes that under a high-emissions scenario, late autumn temperatures in some parts of the Arctic could reach more than 23 degrees Fahrenheit warmer than the historical average (Pierre-Louis, 2019, p.1). Arctic annual surface air temperatures in 2014, 2015, 2016, 2017, and 2018 surpassed those of any year since 1900 (AMAP, 2019).

The Arctic acts as a refrigerator for the rest of the world as it gives off more heat to space than it absorbs, thus helping to cool the planet (NSIDC, 2020). But the thawing of Arctic ice, relative to their benchmark, now negatively impacts the region and the globe in general. A recent study (The IMBIE Team, 2020) finds that the ice in Greenland is thawing seven times faster than it did in the 1990s, a rate that would add about three extra inches of the rise in sea level by the end of the century. As the ground melts, it emits sequestered carbon into the atmosphere, increasing climate change (Pierre-Louis, 2019). Observation of CO₂ flow in Alaska reveals that more carbon is released than stored. This could result in flooding of coastal communities in the Arctic (IPCC, 2019). There is also the concern about wildfire arising from heatwave due to climatic conditions. As the heat thaws and dries up the vast tracts of the far-northern snow forest, it leaves tundra vulnerable to wildfires which devastates the land (Wood, 2019).

Climate change-induced thawing of permafrost in the Arctic is now causing roads to slump, and houses, built on permafrost, to collapse (Pierre-Louis, 2019). The infrastructure in the Arctic regions could experience a high incidence of mudslides, avalanches and floods arising from climate changes in the area. The impact will probably increase the cost of building, at least in the short term, as new designs will emerge to handle permafrost instability and modification to the existing building due to snow load and wind strength (Eskeland & Flottorp, 2006). Permafrost sequesters twice as much heat-trapping CO₂ as is present in the atmosphere.

Since climate change affects the marine and continental parts of the Arctic differently, it impacts lifestyles within the region differently as well. Climate change is causing the region to experience a loss of hunting culture, a decline in food security and human health (Atapattu, 2013). Livelihoods connected with hunting, fishing and reindeer herding by Indigenous people are under threat as these activities depend on weather conditions. Indigenous peoples have a strong bond with nature, and the changes in harvesting activities have implications on the economy, society, culture and health (AMAP, 2019), and herding, hunting, fishing and farming, which provides the basis for traditional foods. Seasonal variation and changing ecological conditions affect these activities and the right to enjoy them (Eskeland & Flottorp, 2006). The result is that Indigenous communities in the Arctic region are affected as the warming Arctic shrinks access to food resources that provide a source of their community resilience (Pierre-Louis, 2019; Khan, 2019).

The temperature change is also shifting food seasons. An Inupiat community in Alaska have seen changes in the harvesting season of clams move from fall to summer (Pierre-Louis, 2019). These changes have an implication on the right to food in the Arctic. For instance, Athabaskan people have a cultural and spiritual link to their environment, including significant dietary intake of traditional foods. Many goods and medicines are gathered from the environment to support Athabaskan traditional lifestyles and cultures. The impacts of climate change are already altering the usual lifestyle. Changes in conventional foods and contaminants negatively impact the nutritional diets and sociocultural values and health of Athabaskan people (Keith & Dickson, 2004).

Global warming is affecting the Arctic ecosystem and its residents significantly. Climate change in this context emphasises people in relationship to the environment, not just the air, the ice and shrinking glaciers (Huntington et al., 2019). The impacts on ecosystems, freshwater resources, and human settlements undermine access to food, clean water, shelter, and other basic human needs. Thus, interfering with livelihoods and displacing people from their homes (UNEP, 2015). Even if temperature rise remains at 2° C, these effects will increase intensely in the coming years (UNEP, 2015).

The intersection between climate change and human rights: A responsibility to cooperate

The 1948 Universal Declaration of Human Rights (UDHR) affirms the rights that enable everyone to live with dignity, freedom, equality, justice, and peace. These inalienable rights underpin the commitment of the international community of states to protect the world from climate change and global warming. The intersection between climate change and human rights is visible when we understand the impacts of climate change primarily arising from the emission of greenhouse gases (GHGs) and the way climate change affects both the ecosystem and the human rights of existing and future generations. Socio-economic activities such as transportation, energy production, industry, etc. contribute to climate change, and climate change and global warming affect the means of sustenance, livelihood and life in communities which are core human rights concerns (Bodansky et al., 2017).

Addressing climate change through mitigation strategies and adapting to its challenges through states' cooperation is then crucial for the protection of these rights; it becomes a human rights-based responsibility. This section sets out this human rights approach to climate change and defines the resulting obligation of states to cooperate to prevent such effects.

A human rights approach to climate change

Climate change has physical effects on humans, and the ecosystem arising from the rise in sea level, extreme weather conditions, unexpected changes in precipitation pattern and rapid increases in the earth's temperature. The result is a reduction of agricultural soil, loss of land, contamination of water sources, damage to coastal property, the spread of disease, interruption of educational services and displacement of populations (Orellana, 2012). The impacts of climate change on human rights are extensive. The affected rights include the right to life, adequate food, clean water, healthy environment and housing, and the right to work and earn a living (Azubuike & Songi, 2020; Wewerinke & Doebbler, 2011). The impact ranges from the damage of ecosystem, water pollution, and degradation of farmland which constitutes a significant source of economic and social existence for rural communities. Climate change has severe effects on the psychological and physical health of humans, thus impairing the enjoyment of these rights (Hayes *et al.*, 2018). The following discussion on the principal human rights impacts will necessarily be selective.

The right to life

The Universal Declaration of Human Rights (UDHR) and the International Covenant on Civil and Political Rights (ICCPR) reiterates and emphasises the inherent right to life, liberty and security of every human being (Article 3, UDHR & Article 6, ICCPR). With the commitment of states to protect and promote the right to life, there is a responsibility on governments to take measures against predictable and avoidable loss of life (OHCHR, 2015). Climate change poses an existential threat to life as it could leave paths of starvation, death and destruction in vulnerable communities. Climate change could cause people to drown, get injured, or result in the spread of disease due to flooding (UNEP, 2015) or extreme weather (World Bank, 2012), thus, denying people the right to life. According to a report, climate change is already responsible for approximately 400,000 deaths

per annum, with the number likely to increase to 700,00 by 2030 (DARA & Climate Vulnerable Forum, 2012).

The right to food

Article 11 of the International Covenant on Economic Social and Cultural Rights (ICESCR) and Article 25 of UDHR recognises the right to food as a fundamental right. This means that food must be available and accessible to citizens from productive land and natural resources (Azubuike & Songi, 2020). The right to food is impacted when sea-levels rise and cause flooding in coastal communities, or when rise in temperature causes draught and affects farming activities due to anthropogenic climate change. Thus, causing damage to crop, food shortage and severe hunger (DARA & Climate Vulnerable Forum, 2012). Within the context of the right to food, governments most cooperate to protect and improve existing food sources. They should not allow the adverse effects of climate change to impact food sources, thus preventing peoples' effort to feed themselves.

To ensure food supply means that states have a responsibility to implement measures to promote mitigation and adaptation strategies that will curb the rise in sea level or reduce GHG emissions. The World Bank estimates that a 2°C increase in average worldwide temperature would put more people at risk of hunger and could result in further deaths from malnutrition. The report notes that an increase in temperature is a threat to agricultural harvests, often the sole source of food and income for most people, especially in Africa (World Bank, 2010).

The right to work and an adequate standard of living

The ICESCR provides for the right to earn a living through work, and both the ICESCR (Article 11) and the UDHR (Article 25) affirms the right to an adequate standard of living. Coastal communities exercise these rights by engaging in farming and fishing as a means of sustenance and livelihood (Azubuike & Songi, 2020). Climate change impairs the exercise of these rights and impact on livelihood when floods overtake farmland or sea level rises and make fishing impossible. Nobody can work or earn a living when the environment is in disarray. It is, therefore, the duty of governments to take all necessary measures to protect this right, including infringements through activities of non-state actors. Climate change has occasioned increased degradation of the environment; occasioned food insecurity following the death of crops and fish, and impact on farmlands and rivers for fishing activities (CIEL, 2013). In the Arctic region, fishing activities have been affected by climate change as specific fish stock is now sensitive to changes in water temperature, making them unreachable and posing a threat to subsistence and commercial fishing (Worldwide Fund, 2020).

The right to health and a healthy environment

Both the UDHR (Article 25) and the ICESCR (Article 12) articulate the right to health by affirming that human beings have the right to the highest attainable standard of physical and mental health. This right includes the right to a healthy environment (Azubuike & Songi, 2020). The World Bank (2013) in its report notes that climate change will cause health impacts which may increase and worsen with high rates of malnutrition, including likely increases in vector-borne diseases, and that amplified levels of smog from the heat could aggravate respiratory ailments. Hayes et al. (2018) note that climate change also threatens mental health. Also, the IPCC (2014) report found that climate change is likely to result in increases in ill-health in several regions and particularly in developing countries with low income, as compared to a baseline without climate change. In fulfilling these rights, the state has to improve environmental and industrial hygiene (ICESCR, Art 12.2).

States' responsibility for cooperative mitigation and adaptation efforts

The international climate regime addresses the common concern for the climate. Its basis is the UNFCCC, the Kyoto Protocol and now the Paris Agreement. The Paris Agreement obligates state parties to take measures to mitigate climate change to achieve the agreed objective of limiting the global temperature rise to well below 2°C. An essential obligation is for each state party to formulate and submit a document on its Nationally Determined Contribution to the collective effort. However, this does not exhaust a state's obligation to act according to the principle of common but differentiated responsibility.

Human rights law reinforces this climate change regime and adds a new normative impetus as well as a legal approach to climate action. This impetus is for states to protect each individual, rather than just a public good. This impetus means identifying specific climate threats to vulnerable individuals and groups of individuals, such as Indigenous peoples in the Arctic where the melting ice poses a severe threat to human, as well as aquatic and animal existence. Broadly, the impetus means that states become accountable for effective measures towards all individuals affected by climate change in the Arctic, rather than just other countries.

In addition to this normativity, human rights provide a stricter legal approach, not least because the expert committees established by human rights treaties are composed mainly by lawyers (Bodansky et al., 2017) and because international courts have jurisdiction over several (regional) human rights treaties. This legal approach turns on a clearer understanding of the responsibility that states have to ensure the effectiveness of human rights. As it is now widely accepted, this responsibility has three dimensions: the obligation to respect, to protect and to fulfil each substantive right. That is the state must refrain from interferences, it has to prevent interruptions by third parties, and it has to take decisive positive measures where this is necessary. The reference point of these responsibilities is persons under the jurisdiction of the state, comprising territorial and extraterritorial action of the state. What is less clear is whether this responsibility has a fourth vector, the obligation to cooperate with others. We present three arguments in support of the latter.

First, the obligation to cooperate is emphasised explicitly in the ICCESCR that sets out the rights to economic and social conditions of a life in dignity. This covenant contains rights that by their nature, require positive action. The covenant generally provides, in Article 2, that States should "take steps, individually and through international assistance and *cooperation*" (emphasis added) to realise the rights recognised in the covenant. Climate change affects these conditions.

Second, the discharge of this responsibility cannot be formal but must be effective. Effectiveness of the response is a function of the nature of the threat. Human rights law then requires cooperation between states to tackle issues such as climate change that are inherently transboundary and cannot be addressed by one country alone even if they affect rights holders under their jurisdiction (Bodansky et al., 2017). The Human Rights Committee, established under the ICCPR, has recently recognised that states will have to cooperate to meet their human rights obligations to counter threats of climate change (UN Human Rights Committee, 2019). The Committee emphasises that climate change threatens the right to life in dignity under article 6 of the Covenant, and the obligations of States parties under international environmental law informs their duty to respect and ensure the right to life. Implementation of the right to life demands measures against climate change caused by public and private actors. States parties should therefore ensure sustainable use of natural resources, develop and implement substantive environmental standards, and conduct environmental impact assessments. These measures of necessity are

cooperative. Thus, states, according to the Committee “should consult with relevant States about activities likely to have a significant impact on the environment. They should also provide notification to other States concerned about natural disasters and emergencies, and cooperate with them, provide appropriate access to information on environmental hazards and pay due regard to the precautionary approach” (ibid).

Third, human rights law recognises the common concern of states for the human right situation beyond a state’s borders, and it encourages states taking action, including legal action, to improve such cases. The International Court of Justice has recognised this concern, and also that this means putting the necessary legal powers in the hand of states parties. From the case of *Belgium v Senegal* to the recent provisional measure in *The Gabon v Myanmar*, these cases make clear that human rights create obligations *erga omnes* parties, that is international legal obligations of each party toward all other state parties. These cases are evidence of the concrete legal consequences that states have when standing before the Court, notwithstanding whether any of their nationals are concerned to legally, and indeed judicially, protect these rights in another state. It also has the consequence that the Court, as a *de facto* mechanism under the treaties, can use its legal powers to this effect, including by issuing provisional measures. This qualification of human rights as obligation *erga omnes* implies more broadly that states must be ready to exercise their responsibility for effective action cooperatively through institutional mechanisms endowed with the competence to adopt legal measures if need be.

When states cooperate to mainstream mitigation and adaptation strategies necessary to reduce GHG emission, they are preventing a threat to human rights and satisfying the obligation to respect, fulfil and protect human rights (OHRHC, 2015). Adequate cooperation to address global warming is crucial, especially as climate change poses disproportionate threats to states without resources to protect human rights and to invest in adaptation (Orellana, 2012). For instance, coastal and low-lying islands that lack the resources to adapt to severe climate change could encounter rising sea level and natural disasters associated with global warming. They then require international cooperation, including financial, technological and capacity-building support, to realise low-carbon, climate-resilient, and sustainable development, while also rapidly reducing greenhouse gas emissions (OHCHR, 2020). But the responsibility to cooperate is not limited to these situations. It is also triggered where ecosystems are particularly vulnerable or where GHG emissions are transboundary. In all these instances, the objective is to enable human beings to realise their potential in dignity and equality in a healthy environment (United Nations, 2015).

The collaborative efforts of non-state actors such as international firms, the shipping industry and Indigenous people in the Arctic region can further mitigate the human rights impact of climate change. For instance, the active participation of Indigenous people, in existing or new initiatives similar to the New York Declaration on Forest (NYDF) (United Nations, 2014) and the Climate and Clean Air Coalition (CCAC, undated) can assist in mitigation and adaptation measures. Both ideas are driven by actors with a common goal to limit deforestation, improve air quality and reduce short-lived climate pollutants to complement the actions of state actors (Hale, 2018). The NYDF grew out of dialogue among governments, Indigenous people, companies and civil society, with Indigenous peoples pledging to protect hundreds of millions of hectares of tropical forests, and country governments committing towards reducing deforestation (United Nations, 2014).

Regional coalition formation for climate action in the Arctic

If there is a responsibility to cooperate and if the international climate regime does not exhaust this, then regional cooperation comes to the fore. The global climate change regime provides a

broad if not exhaustive framework within which states may discharge their collective responsibility that they have under human rights. The UNFCCC imposes this obligation by stating that states “share a duty to prevent dangerous anthropogenic interference with the atmosphere” (Article 4). The declarations from Iqaluit in 1998 to Rovaniemi in 2019 recognise the adverse effect of climate change on the Arctic and emphasises the need for mitigation and adaptation. In this regard, the second Iqaluit declaration in 2015 encouraged members to commit to work together and partner with other actors towards a significant and lasting climate agreement in Paris in December 2015 (Heininen et al., 2019).

The responsibility of governments to cooperate under the climate regime has a substantive and procedural vector. The former relates to the obligation to provide adaptive measure and strategies such as disaster relief assistance, early warning system, emergency response plan, and improvement of infrastructure against environmental harms that result from the adverse impacts of climate change. There is also a mitigation responsibility which involves the reduction of carbon emissions, mitigation of transboundary ecological damage and investing in or developing plans for renewable energy development, according to the maximum extent of their resources (UNEP, 2015). Fulfilling this obligation requires the enactment of institutional and legal frameworks to mitigate, protect and respond to climate impacts. It also involves financing of renewable energy projects, sharing of technical expertise and capacity building. The procedural aspects include the responsibility of states to provide information about climate impacts, facilitate involvement in decision making and access to justice for environmental harm (UNEP, 2015).

The rationale for regional coalition formation for more effective climate action

While this international framework is essential, it has limitations. In the discussions about environmental and climate action, scholars (Galan-Martin et al., 2018; Asheim et al., 2006; IPCC, 2014) note that it is difficult, if not impossible, to get all countries of the world to agree on the specific and useful cooperative regimes that mainstream the reduction of GHGs and pursue adaptation measures to climate change. International environmental agreements (IEA) such as the Kyoto Protocol, which sought a top-down approach, have not been able to ensure commitment to GHG emission reduction from states. Some scholars suggest that it is because of the absence of a supranational agency to enforce compliance (Barrett, 2003; Barrett, 1994; Asheim et al., 2006), political (Finus & Rundshagen, 2001) economic reasons, and conflicting interests and contending priorities of various countries (Hallegatte et al., 2016). The 2015 Paris Agreement combines a bottom-up with a top-down approach, but its effectiveness has not been fully tested.

Thus, a regional coalition formation (RCF) in GHGs control can make a difference (Asheim et al., 2006). An RCF provides a normative basis for regional cooperation and promotes the use of regional regimes by states to address transboundary and global pollution challenges. This framework shows the benefit of such collaboration to solve a common problem in universal pollution control. Asheim et al. (2006) use a dynamic game-theoretic model to establish that regional coalition formation involving a small number of negotiating parties can facilitate climate action.

RCF is possible when the parties are geographically close, have a comparable political and economic system, share a common objective and tend to have cultural closeness (Carraro, 2000). The likelihood of rivalry is usually limited, and there is a higher chance of success because members pool their efforts (Sánchez-Pagés, 2007). These factors tend to reduce negotiation cost, uncertainty and enhance trust, thus making countries more likely to join and comply with regional arrangements (Asheim et al., 2006). The Arctic region consists of eight countries which share

similar geography and climatic conditions (Vinogradov & Azubuike, 2018). Their typical challenge results from the negative impact of climate change, and their shared objective is how to mitigate and create adaptive measures to climate change. The lifestyle in the region is similar, and the culture tends to be close.

An analysis under the RCF

It has been suggested that the model of the Antarctic Treaty System (ATS), which is a symbol of openness, scientific foresight and effective collaboration for regional cooperation in that part of the world, could also apply in the Arctic (Post et al., 2019). Yet, of course, there are significant differences between the regions in both geological and legal terms. Ultimately, the Antarctic Treaty System rests on suspended sovereign rights, while the Arctic has active sovereignty claims under the Law of the Sea and on land. The ATS does not, therefore, meet the rationale of regional coalition building for climate action in the Arctic.

The Arctic Council is the regional agency that facilitates states commitment. Thus, a coalition formation approach could rely on it to promote climate action in the region. Does it meet the rationale that has been set out above?

The Arctic Council promotes cooperation among member states, monitors and assesses the evolving climate of the region and makes recommendations regarding its findings. Its aim includes the protection of the biodiversity and peoples of the Arctic region by encouraging the reduction of emissions and pollutants and assisting with emergency preparedness and response mechanisms. The Ottawa declaration formally established the Arctic Council in 1996 and contains significant aspects of these aims (Arctic Council, 1996).

State, non-state actors and observers recognise the importance of the Arctic and the negative effect of climate change in the region. Canada's 2009 strategy and 2010 policy document highlight the importance of understanding climate-related effects, conducting scientific research, creating a regional adaptation plan and developing partnerships crucial to implementing the plan (Heininen et al., 2019). Finland's 2010 and 2013 Strategy documents recognise the negative impacts of climate change with two record lows reached in five years (Finland PMO, 2013). Its mitigation and adaptation strategy stresses the need to reduce emissions; support actions that facilitate adaptation to livelihoods based on renewable natural resources; and prioritise the use and management of water resources, including the risk arising from more frequent floods. It also emphasises the necessity to intensify dialogue between governments and the scientific community concerning several connections to different global trends (Heininen et al., 2019).

For Iceland, the strategy involves conducting climate change research, working within the UNFCCC framework and following the sustainable development principles, while 'cooperating on efforts to reduce GHG emissions, including utilisation of renewable energy sources' (Iceland, 2011). The Danish strategy recognises the impact of climate change on the region, the work of the scientific community and the need to engage in research to develop mitigation and adaptation measures. The project concerning the consequences of climate change on the fishing and hunting industry to identify opportunities for adaptation that manage the challenges while exploiting new opportunities, is a case in point. Its strategy document also focuses on addressing GHG emissions (Heininen et al., 2019).

Both the 2014 and 2017 Norwegian strategy documents imply or expressly emphasise the intention to reduce emissions through the Barents Cooperation Forum, and to carry out research on climate models. This approach entails both mitigation and adaptation measures (Norway MFA, 2017). The Russian strategy documents of 2008 and 2013 highlights the need for further research, technology

to predict change and the need for cooperation in climate change issues. The Swedish strategy document identifies collaboration with Arctic countries in knowledge-building and action to strengthen the capacity for adaptation to and recovery from the effects of climate change as essential in climate action. The United States of America's strategy document made limited implied inference to mitigation and adaptation, apparently due to the non-recognition of climate change agreement.

From the Observers side of things, there are champions and sceptics regarding climate action in the Arctic. For instance, France supports climate-focused research in the region and internationally driven regulations to new uses of the Arctic ocean. Italy also supports climate change research, but Germany appears pessimistic in its guidelines, noting that previous efforts to reduce emission have not been successful. Other observers focus on one form of study or another that seek to assist the region (Heininen et al., 2019).

Collaboration to mitigate and adapt to the adverse effects of climate change runs through most of the strategy and policy documents of Arctic states and Arctic declarations. This element strengthens the argument for a RCF to forge a common agenda, especially as some of these countries are yet to realise their climate action strategies fully. State and non-state actors can also collaborate and finance scientific investigations to find new adaptation and mitigation models suitable for the region. A RCF is now crucial given the problem of pollution and climate change as well as reconstructing their reality and going beyond traditional power and hegemony game by redefining climate action (Heininen, 2018). The Arctic Council stands as an appropriate forum to drive such cooperation.

Through a RCF in the Arctic, state and non-state actors can create partnerships to mitigate and adapt towards climate change. Indigenous people, for instance, can collaborate with the Arctic Council, and state actors to promote afforestation and clean cooking which can assist in climate action in the region. Collaboration on these issues is essential in supporting the ACAP Project on climate mitigation which targets the reduction of emission of black carbon from wood in residential homes. There can also be partnerships with international firms and state actors in the Arctic region to reduce carbon emissions as in the case of CCAC, which drives air quality improvement and reduction of short-lived climate pollutants. A recent study reveals that between 1988 and 2015, 100 companies accounted for 71 per cent of global emissions (Griffin and Heede, 2017). Some of these firms could generate enabling conditions through finance, information exchange, technical capacity-building or other measures. Carbon reduction partnerships are particularly necessary as the various features of climate change and the political dynamics around it favours collaborative frameworks.

Given that climate change is caused by, and affects almost all sectors of the economy, addressing it requires the collaboration of both state and non-state actors. State and non-state actors can collaborate to implement and deliver National Determined Contribution and mobilise technical knowledge, capacity-building or finances to address climate change in the Arctic region. Thus, creating the condition for more ambitious actions in the future and boosting the resources, confidence and political will of governments to raise their ambition and strengthen the Paris Agreement. Another advantage is that it can allow for policy innovations and agreement with the various actors regarding carbon reduction through experimentation on a country/regional level and for possible upscaling internationally. It can also increase the use of carbon-neutral sources, decarbonise energy production and facilitate renewable energy research and development between actors. These actions can stimulate mitigation and adaptation and limit the impact of climate change on human rights.

In the Arctic region, the 2018 Inuit Circumpolar Council declaration to commit towards making international organisations recognise and put resources in place to minimise the impact of climate change and stabilise emissions, can be upscaled through cooperation similar to the NYDF. Additionally, the traditional knowledge of Indigenous people can be leveraged upon and shared in research to build climate resilience, including monitoring and movement of animals arising from climate change, erosion and community relocation. This will assist AMAP in its work plan on Arctic climate issues and concerns.

Finus and Rundshagen (1998) note that environmental agreement must be designed to be self-enforcing in the absence of a global agency to enforce a binding agreement. However, they note that this approach may result in 'free riders' who may want to take advantage of the deal. In this regard, a regional body such as the Arctic Council offers an excellent opportunity to monitor compliance and discourage free riders, after states have committed to an agreement to protect, fulfil and respect human rights and preserve the ecosystem which receives the impact of climate change. The Arctic Council, through its various working groups, have been facilitating climate change and adaptation actions in the high north. Thus, acting as the appropriate intergovernmental forum to enhance coalition efforts for the region and knowledge broker and global advocate for Arctic issues.

Cooperating through the Arctic Council

Regional efforts to mitigate climate change and foster adaptation may not immediately end global warming and its challenges to human beings. Albeit, it could contribute to slowing down the impacts of climate change. We discuss some possible areas of cooperation below.

Monitoring and Assessment

No state can unilaterally change the atmospheric, cryospheric and biospheric situation in the Arctic. Although programmes such as the US Arctic Observation Network exist, expanding these efforts will provide significant value in situation planning and policy development in expectation of ongoing impacts of global warming (Schindler & Hilborn, 2015). Post and Brodie (2015) notes that the need for cooperation and policy shift in the expectation of climatic change is crucial. These initiatives require coalition efforts by member states who must commit to a binding agreement, with coordination from the Arctic Council. Technical, financial and capacity building efforts must be synchronised to realise them.

In the Arctic, the Arctic Monitoring and Assessment Programme (AMAP) monitors and assesses pollution and climate change matters. It produces science-based assessments of the status of pollution and climate change in the Arctic to enable sound policy and decision-making by member states. AMAP, with external support, is assessing short-lived climate forces, climate-ecosystem interactions and Arctic climate trends (Tørseth et al. 2019). In the area of mitigation, there is a circumpolar capacity-building and knowledge programme - Arctic Remote Energy Networks Academy - which focuses on integrating isolated power systems. This programme has the support of the Arctic Council's Sustainable Development Working Group with partnership from Canada, Iceland and US (Arctic Council, 2020). Albeit, this is a training programme and not a binding coalition and does not involve all the member states. There is also the new Arctic Contaminants Action Program (ACAP) project on climate mitigation which targets the reduction of emission of black carbon from wood in residential homes (Arctic Council, 2015).

While this project will facilitate data collection to help in strategies that will reduce black carbon emission in residential wood combustion, it does not have the substantial cooperation of member

states. It does not include black carbon from ships in the Arctic region. Again, the second phase of the project is yet to begin. There have also been assessments done by AMAP on the impact of climate change in the region (AMAP, 2019) and the Protection of the Arctic Marine Environment (PAME) is developing Factsheets which relates to the livelihood of Indigenous people in a changing globe. AMAP has also published adaptation actions for a changing climate for the Baffin Bay/Davis Strait, Barents, Bering/Chukchi/Beaufort regions (AMAP, 2017). There is a need for upscaling cooperation in monitoring and assessing climate impacts.

Opening of the Northeast Passage

The Northeast Passage (NEP) encompasses the route along the Russian and Norwegian Arctic coasts (Buixadé Farré et al., 2014). The NEP is sometimes called the Northern Sea Route (NSR), and under the Russian law, it is defined as extending from the Novaya Zhelaniya straits to Cape Dezhnev by the Bering Strait (Solski 2013). A significant distinction between the NEP and NSR is that the former includes the Barents Sea (Østreng et al. 2013) and offers access to the port of Murmansk, the major Russian Arctic port. The Russian Federation and Norway, under the 1982 UN Convention on the Law of the Sea, exercise control over the NEP that falls into their exclusive economic zone (EEZ) including passage of ships for transport, as well as fishing.

One possible area of the coalition is for Norway and Russia to work on the opening of the NEP to reduce ship travel time and thus cut down the amount of black carbon mostly from cruise vessels and cargo ships travelling from the Arctic to the Pacific. These vessels sometimes use heavy fuel oil known to emit black carbon which has been recognised by the International Maritime Organisation as having damaging effects in the Polar region (Brzozowski, 2020). Increases in natural resource extraction, tourism and shipping due to melting ice will continue to facilitate the emission of black carbon as vessels travel long routes. Since the challenge is mutual in the region, a binding agreement would allow ships to go shorter routes within the territories of member nations, thus reducing the release of black carbon. States could complement this by committing to a framework to minimise bush burning and black carbon from residential wood combustion in various countries of the region.

Shared offshore grid initiative

In the area of climate and green energy solutions, the Icelandic Chairmanship of the Arctic Council is making efforts to introduce renewable energy strategies and encouraging member states to act according to their international responsibilities and national action plans (Arctic Council, 2019). A coalition in this regard is essential to realising the idea. The development and application of practical green energy solutions in the Arctic region are necessary, and one possible way of achieving this is through offshore grid initiatives with the cooperation of member states. It will contribute towards decarbonisation and net-zero emissions in the future for climate action (Beck, 2020).

Renewable energy from the oceans provide an avenue to mitigate the impact of climate change. Its exploitation requires feeding into and distributing power via large-scale offshore infrastructure that extends through the marine jurisdictional zones of numerous countries (Roeben, 2013). Offshore grids are subsea power transmission cables which interlink land grids to feed power supplied from marine renewable sources, such as wave, wind, and tidal energy, into terrestrial networks. Offshore grids interconnectors allow for energy trading between different countries and offer an avenue for the use of renewable energy and storage options, and increases the security of electricity supply (RGI, 2020). An initiative with model character to this effect has been taken by states bordering the North Sea through the joint 'North Seas Countries Offshore Grid Initiative'.

This initiative allows neighbouring countries to cooperatively establish and share large-scale electricity infrastructure to exploit their offshore wind resources (European Commission, 2020).

A transboundary offshore grid initiative requires a secure allocation of competences regarding ocean use among countries as a prerequisite for such cooperation; agree to principles about such collaboration; and the establishment of a structure within which to take synchronised decisions (Roeben, 2013). The 2010 Treaty on maritime delimitation and cooperation in the Barents Sea and the Arctic Ocean between Norway and Russia provides this legal certainty (Jensen, 2011). Elements of a coalition framework favour this initiative in the Arctic region, and it will facilitate joint financing and development of renewable energy sources to solve a common challenge.

Development of hydrocarbon in the region

The Arctic is the last frontier for conventional hydrocarbon development. The region holds about 13% of the world's unidentified oil resources and 30% of the world's undiscovered natural gas resources (Vinogradov & Azubuike, 2018). It is attracting more interest from international oil companies who seek to explore the vast untapped resources in the polar region due to melting ice. While exploiting these hydrocarbon resources will significantly benefit the economies of Arctic states, it will also have an impact on the environment of the polar region. The general calls on resource-endowed states to employ emission cutting approaches to their obligations under the Paris climate agreement and the UN Sustainable Development Goals (Gabbatiss, 2018) have significance for the Arctic region and its vulnerable ecosystem. These concerns call for bespoke regional strategies.

One such approach is to agree to postpone or limit drilling activities in the pristine polar region to cut the release of CO₂ during petroleum operations and the possibility of an oil spill. Only a coalition formation can achieve this plan. Each state exercises the right to develop its resources independently, but they could delay the issuance of licenses for exploration in the interest of the region. A powerful tool to this effect would be coherent, coordinated environmental impact assessment procedures that streamline the relevant considerations. It bears mentioning that the Norwegian constitution recognises the right of present and future generations to be protected from the effects of climate change. Whether this extends to the control of hydrocarbon exploitation is currently being tested in the courts.

Transboundary emergency response and early warning system

The AMAP (2017) report on adaptation action for the changing Arctic shows that developing shared knowledge and understanding of the increasing and continued impacts of climate change is crucial for developing actual policy responses. Shared experience and information are significant in climate change adaptation. One of the known effects of climate change is flooding which creates a disaster situation (UNEP, 2015).

Since disaster risks could be transboundary, it is necessary to promote regional cooperation between nations that are open to common hazards and threats. Transboundary early warning systems are a significant step to foster this regional cooperation on disaster risk reduction. This is especially important for the Arctic region where the possibility of a cross-border disaster exists and could displace coastal Arctic communities. It is important to note that the region has a legally binding instrument known as the Search and Rescue (SAR) agreement (Koivurova, 2012). This agreement seeks to reinforce SAR coordination and cooperation efforts in the Arctic by assigning tasks to each Arctic state in its jurisdiction and by setting up measures for countries to cooperate in cases of emergency. The agreement on marine oil pollution preparedness and response for the Arctic is also legally binding. There is a need to extend such cooperation to early warning systems

by sharing information, expanding scientific investigations on adaptation models and building capacities to enhance adaptation strategies.

Governance

The Arctic Council acts as the vital governance structure for the region. It performs certain governance functions through the various working groups such as AMAP and PAME. AMAP has some responsibility of monitoring and assessing pollution and climate change issues in the Arctic for sound policy and decision-making. The Arctic Council could facilitate the proposed cooperation by designing a framework directive or strategy, with inputs from states, to govern mitigation and adaptation in the region. Each state would then implement this strategy as binding national law with a stipulated date of implementation. The Arctic Council would supervise implementation by states and provide progress report through AMAP. This approach resembles that of the European Union in its Directive 2013/30/EU on safety of offshore oil and gas operations. Although the European Union is an international organisation and hence is structurally different from the Arctic Council, both the EU and Arctic Council serve the need to address issues with transboundary effects.

Arctic Council member states could also cooperatively establish a long-term approach, such as the implementation of a net-zero strategy to curb the emission of GHGs. Northern states could work together to define a quantified baseline emission scenario, select appropriate emissions mitigation measures, and estimate the possible results of applying those procedures under a binding agreement. This governance approach of bottom-up national strategies coupled with top-down scrutiny by a joint body underlies the European Energy Union (Roeben, 2018). Regulation (EU) 2018/1999 of 11 December 2018, Official Journal L 328/1, on the Governance of the Energy Union and Climate Action organises this approach.

Non-state actors such as oil majors in the region could facilitate the net-zero target strategy by implementing it as corporate social responsibility and as an obligation imposed by law.

Conclusions

The concern about climate change arises from the apparent impact on the ecosystem and on humans. The result affects the enjoyment of human rights in the Arctic region. Climate change has a global origin but states in the Arctic region can mainstream strategies to limit the emission of GHGs. States have a responsibility to respect, fulfil and protect human rights and to cooperate with other countries in limiting climate change. This responsibility arises from both human rights and climate change laws, which are mutually reinforcing. This article has focused on the responsibility of states under human rights law that adds powerful normativity as well as a legal basis to climate law. Arctic states can fulfil their human rights responsibilities through a regional coalition formation to mitigate and adapt to climate change, given their geographical proximity and the common objective of minimising the impact of climate change in their region.

Regional cooperation finds support in the fact that global operational agreements on specific or tailored climate actions may be unrealistic given heterogeneous political and economic goals of states and the absence of a supranational agency to enforce compliance of the relevant frameworks. An Arctic coalition could help to reduce black carbon from vessels by opening the Northeast Passage to reduce ship travel time. Offshore off-grid initiatives can also boost the supply of renewable energy through wind energy from the sea, and Arctic states can agree to slow down the development of hydrocarbon in the region, reducing the amount of GHGs that would have been emitted during petroleum operations. Such cooperation, possibly through a binding agreement,

could also facilitate knowledge exchange, capacity building and information sharing for an early warning system and emergency response to enable local Arctic communities to adapt to climate change in a resilient manner.

References

- Agrawala S., Klasen, S., Moreno, R. A., Barreto, L., Cottier, T., Guan, D., ... & Venables, A. (2014). Regional Development and Cooperation. In Edenhofer, O., Pichs-Madruga, R., Sokona, Y., Farahani, E., Kadner, S., Seyboth, K., ... & Minx, J. C (eds.), *Climate Change 2014: Mitigation of Climate Change*. Cambridge: Cambridge University Press.
- Arctic Council. (1996). Declaration on Establishment of The Arctic Council (The Ottawa Declaration)-1996.
- Arctic Monitoring and Assessment Programme (AMAP). (2017). *Adaptation Actions for a Changing Arctic (AACA) - Baffin Bay / Davis Strait Region Overview Report*. Retrieved from <https://oaarchive.arctic-council.org/bitstream/handle/11374/1948/aaca-bbds-ovr.pdf.pdf?sequence=1&isAllowed=y>
- Arctic Monitoring and Assessment Programme (AMAP). (2019, January 05). *Arctic Climate Change Update 2019: An update to key findings of snow, water, ice and permafrost in the Arctic (SWIPA) 2017*. Retrieved from <https://oaarchive.arctic-council.org/bitstream/handle/11374/2353/ccupdate18.pdf?sequence=1&isAllowed=y>
- Asheim, G. B., Froyn, C. B., Hovi, J., & Menz, F. C. (2006). Regional versus global cooperation for climate control. *Journal of Environmental Economics and Management*, 51(1), 93-109.
- Atapattu, S. (2013). Climate Change, Indigenous Peoples and the Arctic: The Changing Horizon of International Law. *Michigan State International Law Review*, 22, 377.
- Azubuike, S. I., & Songi, O. (2020). A rights-based approach to oil spill investigation: A case study of Bodo community oil spill in Nigeria. *Global Energy Law and Sustainability*, 1(1), 28-54.
- Barrett, S. (1994). Self-enforcing international environmental agreements, *Oxford Economic Papers*. 46, 878–894.
- Barrett, S. (2003). *Environment & Statecraft: The Strategy of Environmental Treaty-Making*. New York: Oxford University Press.
- Beck, L. (2020). Carbon capture and storage in the USA: the role of US innovation leadership in climate-technology commercialisation. *Clean Energy*, 4(1), 2-11.
- Bell, D. (2013). Climate change and human rights. *WIREs Climate Change*, 4, 159–170.
- Bodansky, D., Brunnée, J., & Rajamani, L. (2017). *International climate change law*. Oxford: Oxford University Press.
- Brzozowski, A. (2020, January 03). *Global Europe brief: Arctic special*. Retrieved from <https://www.euractiv.com/section/global-europe/news/global-europe-brief-arctic-special/>
- Buixadé Farré, A., Stephenson, S. R., Chen, L., Czub, M., Dai, Y., Demchev, D., ... & Kivekäs, N. (2014). Commercial Arctic shipping through the Northeast Passage: routes, resources, governance, technology, and infrastructure. *Polar Geography*, 37(4), 298-324.

- Caney, S. (2010). Climate change, human rights and moral thresholds. In Humphreys S. (ed.), *Human Rights and Climate Change*. Cambridge: Cambridge University Press.
- Carraro, C. (2000). The economics of coalition formation: The potential for structural and instrumental leadership. In Gupta, J & Grubb, M. (eds.), *Climate change and European leadership* (pp. 135-156). Dordrecht: Springer.
- DARA and the Climate Vulnerable Forum. (2012). *Second: A guide to the cold calculus of a hot planet*. Available from <https://daraint.org/wp-content/uploads/2012/09/CVM2ndEd-FrontMatter.pdf>
- Energy Community Secretariat (2010, September 10). *Annual Report on the Implementation of the Acquis under the Treaty Establishing the Energy Community*. Retrieved from https://author.energy-community.org/enc-author-prd/dam/jcr:5219f100-f8ba-4f3f-aaff-a4ec41424bb1/EnC_IR2010.PDF
- Eskeland, G.S., & Flottorp, L. S. (2006). Climate change in the Arctic: A discussion of the impact on economic activity. In Glomsrød, S. and I. Aslaksen, I. (eds.), *The Economy of the North*. Oslo: Statistics.
- European Commission (2009). Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources. Available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32009L0028:EN:NOT>
- European Commission. (2020, April 21). The North Seas Energy Cooperation. Retrieved from https://ec.europa.eu/energy/topics/infrastructure/high-level-groups/north-seas-energy-cooperation_en
- Finland PMO (2013). Finland's Strategy for the Arctic Region 2013. Prime Minister's Office (PMO), Helsinki.
- Finus, M., & Rundshagen, B. (1998). Toward a positive theory of coalition formation and endogenous instrumental choice in global pollution control. *Public Choice*, 96, 145-186.
- Finus, M., & Rundshagen, B. (2001). Endogenous coalition formation in global pollution control. *FEEM Working Paper* No.43.2001.
- Gabbatiss, J. (2018, November 29). UK support for oil and gas drilling in Arctic incompatible with climate change goals, warn MPs. Retrieved from <https://www.independent.co.uk/news/uk/home-news/arctic-uk-oil-gas-fossil-fuels-climate-change-carbon-emissions-environment-a8655926.html>
- Galan-Martin, A., Pozo, C., Azapagic, A., Grossmann, I. E., Mac Dowell, N., & Guillén-Gosálbez, G. (2018). Time for global action: an optimised cooperative approach towards effective climate change mitigation. *Energy & Environmental Science*, 11(3), 572-581.
- Griffin, P., & Heede, C. R. (2017). The carbon majors database. CDP carbon majors report 2017, 14.
- Hale, T. (2018). The role of sub-state and non-state actors in international climate processes. Londres: Chatham House.
- Hallegatte, S., Rogelj, J., Allen, M., Clarke, L., Edenhofer, O., Field, C. B., ... & Vuuren, D. P. (2016). Mapping the climate change challenge. *Nature Climate Change*, 6, 663-668.
- Hayes, K., Blashki, G., Wiseman, J., Burke, S., & Reifels, L. (2018). Climate change and mental health: Risks, impacts and priority actions. *International Journal of Mental Health Systems*, 12(1), 28-39.

- Heininen, L. (2018). Arctic geopolitics from classical to critical approach—the importance of immaterial factors. *Geography, Environment, Sustainability*, 11(1), 171-186.
- Heininen, L., Everett, K., Padrtova, B., & Reissell, A. (2019). Arctic Policies and Strategies—Analysis, Synthesis, and Trends.
- Iceland (2011). Parliamentary Resolution on Iceland's Arctic Policy. Approved by Althingi at the 139th legislative session March, 28.
- Intergovernmental Panel on Climate Change (IPCC). (2014) Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. (Core Writing Team, Pachauri, R. K., & Meyer, L. A. (eds.). IPCC, Geneva.
- Intergovernmental Panel on Climate Change (IPCC). (2019). Summary for Policymakers. In Pörtner, H. O., Roberts, D.C., Masson-Delmotte, V., Zhai, P., Tignor, M., Poloczanska, E., ... & Weyer, N. (eds.), *IPCC Special Report on the Ocean and Cryosphere in a Changing Climate*. In press. Available from https://report.ipcc.ch/srocc/pdf/SROCC_SPM_Approved.pdf
- Intergovernmental Panel on Climate Change (IPCC). (2019, September 24). *The Ocean and Cryosphere in a Changing Climate: Summary for Policymakers*. Available from https://report.ipcc.ch/srocc/pdf/SROCC_SPM_Approved.pdf
- International Covenant on Civil and Political Rights (ICCPR) Adopted and opened for signature, ratification and accession by General Assembly resolution 2200A (XXI) of 16 December 1966, entry into force 23 March 1976, in accordance with Article 49.
- International Covenant on Economic, Social and Cultural Rights (ICESCR)
- Jensen, Ø (2011). The Barents Sea: Treaty between Norway and the Russian Federation concerning Maritime Delimitation and Cooperation in the Barents Sea and the Arctic Ocean. *International Journal of Marine and Coastal Law*, 26(1), 151-168
- Keith, M., & Dickson, C. (2004). Impacts of Climate Change on the Health of Northern Indigenous People, in 2004//The ACIA International Scientific Symposium on Climate Change in the Arctic. November 9–12. *Reykjavik, Iceland*, 1.
- Khan, S. A. (2019). Rebalancing state and Indigenous sovereignties in international law: An Arctic lens on trajectories for global governance. *Leiden Journal of International Law*, 32(4), 675-693.
- Koivurova, T. (2012). New Ways to Respond to Climate Change in the Arctic. *American Society of International Law Insights*, 16(33).
- National Snow and Ice Data Centre (NSIDC). (2020, May 04). *Climate Change in the Arctic*. Available from https://nsidc.org/cryosphere/arctic-meteorology/climate_change.html
- Norway MFA. (2017). Norway's Arctic Strategy—between Geopolitics and Social Development. Oslo: Norwegian Ministry of Foreign Affairs, Norwegian Ministry of Local Government and Modernisation.
- Orellana, M. A. (2012). A Human Rights-Based Approach to Climate Change. In Jose Para (ed), *The human rights-based approach: A field action for human rights education*. Geneva: Cifedhop.
- Østreg, W., Eger, K. M., Fløistad, B., Jørgensen-Dahl, A., Lothe, L., Mejlænder-Larsen, M., & Wergeland, T., (2013). *Shipping in Arctic Waters: A Comparison of the Northeast, Northwest and Trans Polar Passages*. Berlin: Springer.

- Pierre-Louis, K. (2019, December 10). *Climate Change Is Ravaging the Arctic, Report Finds*. Available from <https://www.nytimes.com/2019/12/10/climate/climate-change-arctic-warming.html>
- Post, E., Alley, R. B., Christensen, T. R., Macias-Fauria, M., Forbes, B. C., Gooseff, M. N., ... & M. Wang, M. (2019). The polar regions in a 2°C warmer world. *Science Advances*, 5(12), 1-12.
- Post, E., J. Brodie, J. (2015). Anticipating novel conservation risks of increased human access to remote regions with warming. *Climate Change Responses*, 2(1), 2-9.
- Renewable Grid Initiative (RGI). (2020) *Offshore grids*. Retrieved from <https://renewables-grid.eu/topics/offshore-grids.html>
- Roeben, V. (2013). Governing shared offshore electricity infrastructure in the Northern Seas. *International & Comparative Law Quarterly*, 62(4), 839-864.
- Roeben, V. (2018). *Towards a European Energy Union: European Strategy in International Law*. Cambridge : Cambridge University Press.
- Sánchez-Pagés, S. (2007). Endogenous coalition formation in contests. *Review of Economic Design*, 11, 139-163.
- Schindler, D. E., & Hilborn, R. (2015). Prediction, precaution, and policy under global change. *Science*, 347, 953–954.
- Skjærseth J. B. (2010). EU emissions trading: Legitimacy and stringency. *Environmental Policy and Governance*, 20, 295–308.
- Solski, J. (2013). New developments in Russian regulation of navigation on the Northern sea route. *Arctic Review on Law and Politics*, 2013(1), 90–120.
- The Arctic Council. (2015, August 7). *New ACAP project on climate mitigation*. Retrieved from <https://arctic-council.org/en/news/new-acap-project-on-climate-mitigation/>
- The Arctic Council. (2019, May). Together towards a sustainable Arctic: Iceland's Arctic Council Chairmanship 2019-2021. Retrieved from https://oarchive.arcticcouncil.org/bitstream/handle/11374/2456/Arctic_Council-Iceland_Chairmanship_2019-2021.pdf?sequence=1&isAllowed=y
- The Arctic Council. (2020, February 19). *The Arctic Remote Energy Networks Academy (ARENA) Program seeks Renewable Energy Enthusiasts*. Retrieved from <https://arctic-council.org/en/news/the-arctic-remote-energy-networks-academy-arena-program-seeks-renewable-energy-enthusiasts/>
- The Center for International Environmental Law (CIEL). (2013). *Climate Change & Human Rights: A Primer*. Available from https://www.ciel.org/wp-content/uploads/2014/11/CC_HRE_8July2013.pdf
- The IMBIE TEAM. (2020). Mass balance of the Greenland Ice Sheet from 1992 to 2018. *Nature*, 579, 233-239.
- The Office of the United Nations High Commissioner for Human Rights (OHCHR). (2020). *Human rights and Climate change*. Available from <https://www.ohchr.org/EN/Issues/HRAndClimateChange/Pages/HRClimateChangeIndex.aspx>
- The Office of the United Nations High Commissioner for Human Rights (OHCHR). (2015, November 27). *Understanding human rights and climate change*. Available from <https://www.ohchr.org/Documents/Issues/ClimateChange/COP21.pdf>

- Tørseth, K., Andrews, E., Asmi, E., Eleftheriadis, K., Fiebig, M., Herber, A., ... & Mazzola, M. (2019). Review of Observation Capacities and Data Availability for Black Carbon in the Arctic Region: EU Action on Black Carbon in the Arctic–Technical Report 1.
- United Nations. (2014) UN Climate Summit 2014 - Catalyzing Action?. 23 September 2014 | UN Headquarters, New York, United States of America
- United Nations. (2014). New York declaration on forests. United Nations Climate Summit, New York, NY.
- United Nations Environment Programme (UNEP). (2015). *Climate Change and Human Rights*. Available from [https://web.law.columbia.edu/sites/default/files/microsites/climate-change/climate change and human rights.pdf](https://web.law.columbia.edu/sites/default/files/microsites/climate-change/climate%20change%20and%20human%20rights.pdf)
- United Nations General Assembly. (2015). Transforming our world: The 2030 Agenda for Sustainable Development, Resolution adopted by the General Assembly on 25 September 2015.
- UN Human Rights Committee (HRC). (2019). General comment no. 36, Article 6 (Right to Life), 3 September 2019, CCPR/C/GC/35, available at: <https://www.refworld.org/docid/5e5e75e04.html> (accessed 24 September 2020)
- Universal Declaration of Human Rights (UDHR) Adopted by the United Nations General Assembly 10 December 1948.
- Universal Declaration of Human Rights Adopted by the United Nations General Assembly 10 December 1948
- Vinogradov, S., & Azubuike, S. I. (2018). Arctic Hydrocarbon Exploration and Production: Evaluating the Legal Regime for Offshore Accidental Pollution Liability. In L. Heininen, & H. Exner-Pirot (eds.), *Arctic Yearbook 2018* (pp. 307-327). (Arctic Yearbook). Northern Research Forum.
- Wewerinke, M., & Doebbler, C. F. J. (2011). Exploring the Legal basis of a Human Rights Approach to Climate Change. *Chinese Journal of International Law*, 10, 141-160
- Wood, J. (2019, July 19). *4 crazy things that are happening in the Arctic right now*. Available from <https://www.weforum.org/agenda/2019/07/4-crazy-things-that-are-happening-in-the-arctic-right-now/>
- World Bank. (2010). *World Development Report 2010: Development and Climate Change*. Washington, DC: World Bank. Available from <https://openknowledge.worldbank.org/handle/10986/4387> License: CC BY 3.0 IGO.
- World Bank. (2012). *Turn down the heat: why a 4°C warmer world must be avoided (English)*. Available from <http://documents.worldbank.org/curated/en/865571468149107611/Turn-down-the-heat-why-a-4-C-warmer-world-must-be-avoided>
- World Bank. (2013, June). *Turn Down the heat: Climate Extremes, Regional Impacts, and the Case for Resilience*. A Report for the World Bank by the Potsdam Institute for Climate Impact Research and Climate Analytics. Washington DC World Bank. Available from https://www.worldbank.org/content/dam/Worldbank/document/Full_Report_Vol_2_Turn_Down_The_Heat_%20Climate_Extremes_Regional_Impacts_Case_for_Resilience_Print%20version_FINAL.pdf
- Worldwide Fund for Nature. (2020). *Arctic Climate Change*. Available from <https://arcticwwf.org/work/climate/>

Yumashev, D., Hope, C., Schaefer, K., Riemann-Campe, K., Iglesias-Suarez, F., Jafarov, E., ... & Eleanor J. Burke. (2019). Climate policy implications of the nonlinear decline of Arctic land permafrost and other cryosphere elements. *Nature Communications*, 10 (1), 1-11.