



Environment, Climate Change and Security in the Arctic

Scenario Workshop Report: Workshop on Environment, Climate Change
and Security in the Arctic

Copenhagen, 28 February 2013

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List of Abbreviations

APCS	Areas of Particular Climatic Significance
EEA	European Environment Agency
EFTA	European Free Trade Association
EU	European Union
IPCC	Intergovernmental Panel on Climate Change
NATO	North Atlantic Treaty Organization
OCEEA	OSCE Co-ordinator for Economic and Environmental Affairs of the OSCE
OSCE	Organization for Security and Co-operation in Europe
UN	United Nations
UNFCCC	United Nations Framework Convention on Climate Change
UNSC	United Nations Security Council

1 Introduction

The 2007 Madrid Ministerial Declaration on Environment and Security (OSCE 2007) recognizes that “climate change is a long-term challenge” and acknowledges that “the United Nations climate process is the appropriate forum for negotiating future global action on climate change, and the Organization for Security and Co-operation in Europe (OSCE) – as a regional security organization under Chapter VIII of the United Nations (UN) Charter – has a complementary role to play within its mandate in addressing this challenge in its specific region.”

Launched in October 2009 at the Chairmanship Conference in Bucharest, the Office of the Co-ordinator of OSCE Economic and Environmental Activities (OCEEA) established an extra-budgetary project to address the security implications of climate change in the OSCE region. The project ended in June 2013. It was implemented in cooperation with the European Environment Agency (EEA) and aimed to develop a better understanding of the potential impacts of climate change as well as security and environmental risks in OSCE regions. In addition, the goal was to raise awareness, develop recommendations and reflections on how to minimize risks and environmental impacts and how to promote co-operation among participating countries.

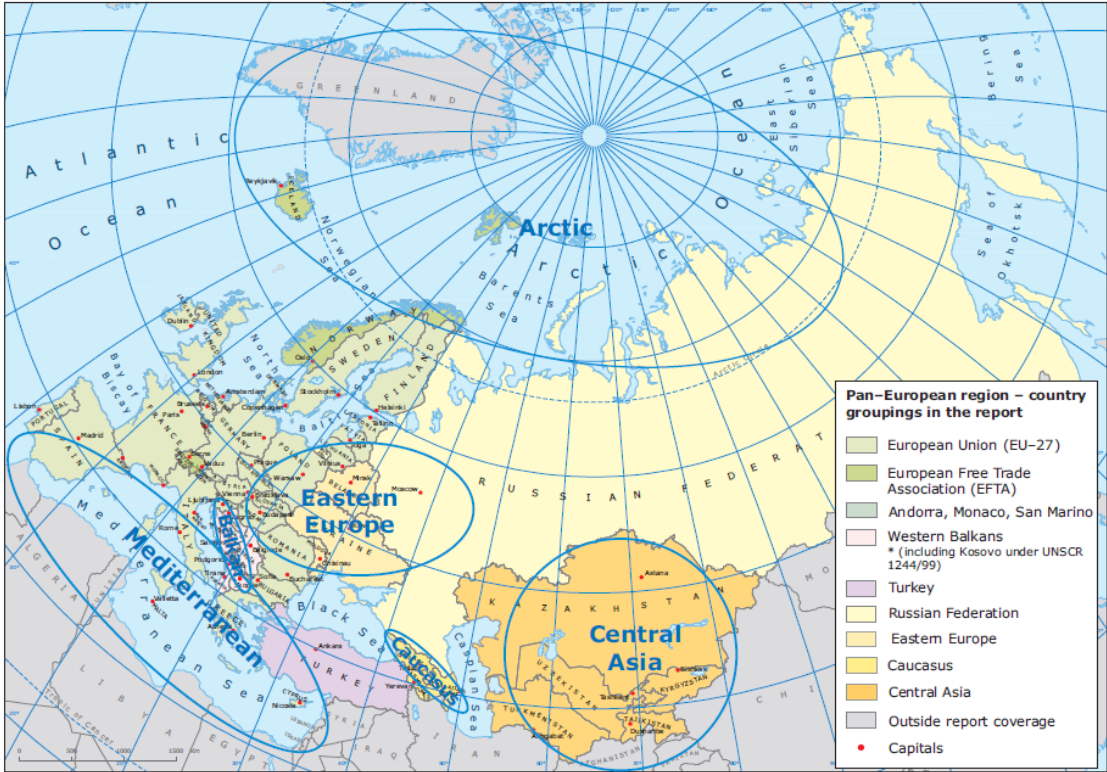
The project was divided into two main phases: The first involved conducting a scoping study on climate change’s possible security implications in the OSCE region. The second entailed producing regional scenarios to help identify how the OSCE could contribute to mitigating these challenges in the field of climate change and security.

Four scenario workshops were carried out in South Eastern Europe, Eastern Europe, the South Caucasus and Central Asia. These were complemented in 2013 by an expert meeting on the High North/Arctic and a desk study on the Mediterranean (see figure 1). This paper reports on the **expert meeting for the Arctic, including a fast scenario exploration exercise** that was held in Copenhagen, Denmark on 28 February 2013. The workshop brought together ten international experts on climate change, security and the Arctic from across the globe. For details on the participants list and agenda, please refer to the Annex.

The focal question of the workshop was:

- **What are the potential security implications for the Arctic in the face of a changing climate up until 2060?**

Figure 1: Overview of regions for scenario-building workshops¹



Source: EEA.

The report is structured as follows:

- Chapter 2 briefly outlines the background and implementation of the workshop.
- Chapter 3 provides an overview of the four scenarios explored and analyses each of them in terms of opportunities and challenges.
- Chapter 4 reviews the four scenarios from a comparative perspective and outlines challenges and opportunities identified by participants.

¹ Source: EEA 2012, p.9.

2 Workshop Development

Based on an analysis of the complex interactions that link climate change, fragility and conflict, as well as the great uncertainty when projecting many of these trends into the future, the OSCE commissioned desk-based scoping study on the possible security impacts of climate change in the OSCE regions (Maas et al. 2010) identified scenario development as an appropriate approach to assess climate-related security risks on a regional level.² These findings were used to design all scenario workshops.

As a first step, a focal question was defined for each of the workshops. For the Arctic, the question was:

→ **What are the potential security implications for the Arctic in the face of a changing climate up until 2060?**

The scoping study served as a starting point for the scenario workshop, particularly the following points: The Arctic will open up new shipping routes and make natural resources accessible. Territorial claims will need to be resolved to avoid potential political tensions and maritime border disputes. In addition, the climate-induced environmental changes are likely to degrade livelihoods and threaten ecosystems. This will particularly impact the local indigenous communities. The key challenges for the region result from the novel situation created by a melting Arctic, which may require amendments to current international law.³

The one-day scenario workshop itself was designed to be exploratory and stakeholder-driven. It is important to note that the methodology, timeframe and approach of this workshop were more limited than in the other four scenario workshops.

The workshop consisted of plenary sessions and working groups and was divided into four parts:

Part 1 served as an introduction to possible future changes in the Arctic, featuring a number of presentations on the environmental, socio-economic, cultural and security aspects of climate change in the Arctic.

A key message emerged with regard to environmental, socio-economic and cultural aspects: Arctic governance needs to balance different perspectives, in particular:

- environmental protection versus economic prosperity
- urgencies of the present versus needs of the future
- national interests (relevant in particular for sea floors and related resource extraction) versus common interests (relevant for international waters)

Regarding the security impacts of climate change, the presentations reiterated the findings mentioned in the scoping study. In addition, they highlighted potential second order climate security impacts: The extraction of Arctic fossil fuels can add to global

² For more detailed information, please refer to Maas et al. 2010.

³ See <http://www.osce.org/eea/climatechange>.

climate insecurity by increasing global emissions, indirectly serving as a threat multiplier in other regions. This also means that a global approach to the Arctic is needed. This includes identifying and institutionalizing an appropriate forum to tackle these challenges. It could be beneficial to address the Arctic challenges together with related challenges in other regions, in particular with regard to the third pole (the Himalayas).

The presentations identified the following potential entry points for conflict prevention:

- Accept multi-level cooperation architecture: Due to the multitude of actors and security issues, no one single organization is able to ensure peace and stability (e.g. Arctic Council). Cooperation and conflict in the Arctic are two sides of the same coin: Cooperation of the A-5⁴ needs to be embedded in a broader governance framework.
- Strengthen environmental cooperation and dialogue: The Arctic Council has proven to be an appropriate platform to address environmental security risks in the Arctic. This role should be strengthened. Arctic Impact Assessments need to take a global perspective when it comes to first and second order climate security impacts.⁵
- Promote sustainable energy and livelihoods: Build partnerships to design and implement policy measures, such as low carbon and green growth strategies for the Arctic and globally. Address human security concerns and develop concepts to balance competing interests and compensate for climate change related losses.

To promote cooperation, the presentations suggested three subsequent steps:

1. develop a common understanding of the risks
2. identify common objectives regarding the design and implementation of integrated infrastructures that mitigate risks
3. decide on and manage the institutional interplay to achieve the common objectives

Particular emphasis should be given to the first two steps, since they are often overlooked or insufficiently addressed in the policy debate.

The introductory session also focussed on identifying and analysing **driving forces**, in particular critical uncertainties. Driving forces are key factors that will have a decisive impact on the focal question. Some driving forces are quite predictable, such as demographic trends. These driving forces are called predetermined elements: They are easily recognizable and are somewhat inert, i.e. difficult to change. They are thus easier to understand and it is simpler to devise coping strategies. Uncertain factors are,

⁴ The five states that have coastlines bordering the Arctic Ocean: Canada, Denmark/Greenland, Norway, Russia and the U.S.

⁵ First order impacts are direct effects, e.g. lives lost due to extreme weather events such as floods, while second order impacts are indirect, e.g. security impacts of migratory movements in response to a drought.

therefore, more important, as they are less predictable but at the same time have a decisive impact. This class of driving forces is called critical uncertainties.

Part 2: Developing scenarios – fast explorative scenario exercise

Based on the main impacts outlined by the presentations, the workshop organizers identified possible driving forces which impact the focal question, clustered into five dimensions:



- the social dimension: population growth and urbanization; access to state services and wealth distribution
- the technological dimension: development of the (regional) energy infrastructure; introduction of renewable energy and other clean technologies
- the economic dimension: global and regional economic development; global prices for oil, foodstuffs and other commodities; production rates of fossil fuels
- the environmental dimension: changes in land and resource usage; environmental pollution (land and water)
- the political dimension: internal and regional conflicts, regional political cooperation

Two critical uncertainties were identified as being the most important and most uncertain: The impact of climate change was chosen because of the challenges of predicting regional impacts over time, especially due to the multitude of potential repercussions within the climate system. As a second critical uncertainty, workshop participants identified the degree of cooperative behaviour of nation states or, in other words, their degree of willingness to cooperate multilaterally, on the one hand, and their determination to pursue policies unilaterally (or bilaterally), on the other.⁶

These two critical uncertainties served as a basis for the **scenario framework**. A scenario framework provides a larger context in which to develop the scenario narratives. In this case, the scenario framework involved a four-by-four matrix. The critical uncertainties identified served as the building blocks and axis of the scenario framework. The impacts of climate change and the degree of government cooperation formed the two axes of the scenario framework. Please refer to table 1 for more details on the definition of the two axes.

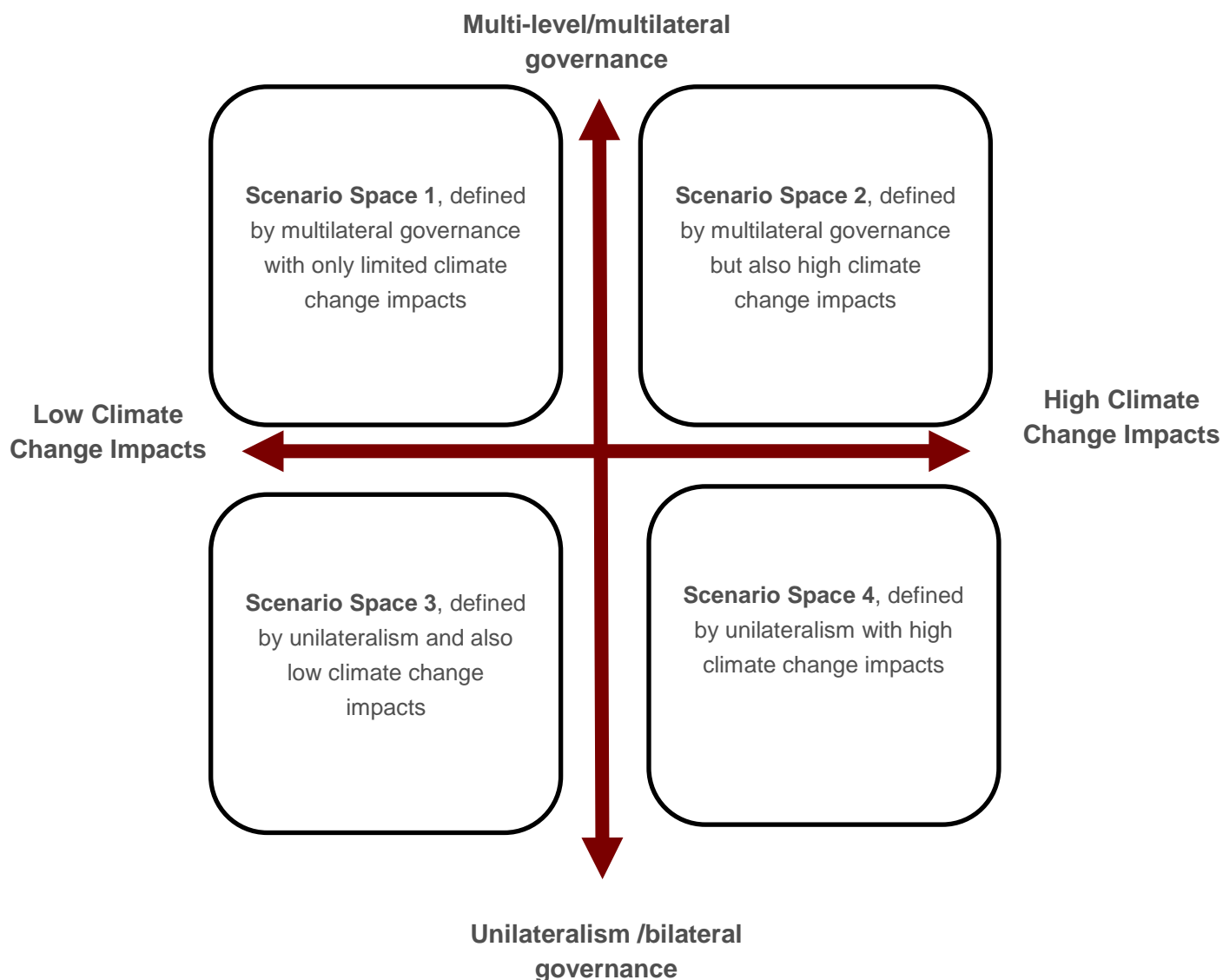
⁶ See Annex 2 for the agenda and for details of the sessions and discussion.

Table 1: Axes of uncertainty

	Impact of climate change	
<p>Low impact of climate change:</p> <ul style="list-style-type: none"> • low temperature rise (according to IPCC A2 Scenarios) • high adaptive capacity 		<p>High impact of climate change:</p> <ul style="list-style-type: none"> • high temperature rise (according to IPCC A2 Scenarios) • low adaptive capacity
	Governments and the degree of multilateral cooperation	
<p>Multilateral/multi-level governance</p> <ul style="list-style-type: none"> • governments place emphasis on international cooperation, both on the global and regional level • well-functioning international organizations with high capacities 		<p>Unilateral/bilateral governance</p> <ul style="list-style-type: none"> • governments mainly act unilaterally • limited cooperation possible where it immediately benefits national interests • international organizations are marginalized or cease to exist

When combined, these two axes of uncertainty form the scenario framework which creates four scenario spaces.

Figure 2 Scenario spaces for the Arctic



Part 3 focused on developing a **scenario narrative** for each of the four scenario spaces in two working groups. One group was responsible for both of the multilateral governance scenarios; the other group developed the two unilateral scenarios. This explains some of the commonalities between the scenarios. Firstly, the groups concentrated on describing what the region would look like in 2060 for each scenario space. In the time remaining, they subsequently developed a timeline from the present (2013) to 2060 explaining how this future scenario came into being.

Part 4 focused on analysing the **challenges and opportunities** of the scenarios. Due to the limited time available, it was not possible to develop comprehensive strategies and reflections. However, participants drew some conclusions from the discussions and made some strategic reflections.

3 Scenarios for the Arctic

The following chapter describes the four scenarios developed. All scenarios follow the same structure: Firstly, they describe the state of the region in 2060. They subsequently explain the timeline and major events and dynamics leading to this situation. Finally, they analyse key challenges for the main security-related issues in the Arctic region. Among the key issues are environmental degradation, resource and territorial claims, transportation routes, militarization, and indigenous communities. Given the different composition of the working groups, this structure was adapted where appropriate.

Box 1: Scenarios⁷

Scenarios as described in this report are structured stories or narratives of how the world might look in the future. Drawing upon the best available scientific data and regional expertise, scenarios are a process of illustrating how changes might occur, what pathways those changes might take, and what the repercussions they may have. **Scenarios do not attempt to predict the future**, but rather help to uncover what is not known, expected or monitored. In this way they help decision-makers deal with uncertainty and plan for risks that might come as surprises.

Figure 3 on the following page summarizes key aspects of all four scenarios, based on the scenario framework outlined in chapter 2.

⁷ Source: Maas et al. 2010, p.16.

Figure 3: Scenario matrix

Multi-level, multilateral governance

Scenario 1: Multilateralism, low climate change impact

- The Arctic ecosystem changes completely, yet change occurs at a pace that allows for adaptation and preventive measures.
- International institutions have high capacities and are effective. Legal arrangements based on existing rules exist. Actors beyond the Arctic Council play a bigger role in Arctic governance. There are several areas governed by international mandate: Areas of Particular Climatic Significance (APCS), including the Arctic.
- Decreased food availability (fisheries) induces global population control.
- WILDCARDS: Cooling; China disintegrates

Scenario 2: Multilateralism, high climate change impact

- Sea levels are rising fast worldwide and weather changes (monsoon pattern, Europe) lead to more resource conflicts. Ecosystem collapses in the Arctic.
- International institutions have high capacities and are effective. Legal arrangements based on existing rules exist. The UN has been reformed to reflect political realities. The new reformed UN Security Council can decide on preventive interventions to protect the climate – the use of force is legitimate.
- Decreased local food availability (fisheries) induces global population control.
- WILDCARDS: Cooling; China disintegrates

Scenario 3: Unilateralism, low climate change impact

- Local communities in the Arctic will not be affected much and/or are able to adapt.
- Multilateral institutions have disintegrated and regional cooperation is almost non-existent. National interests lead to conflicts. The Arctic is characterized by tensions that do not escalate into violent conflicts.
- While there is a risk of states becoming unstable, resource claims do not play a key role.
- WILDCARDS: Cooling; China disintegrates

Scenario 4: Unilateralism, high climate change impact

- The capacity, also of local communities, to respond to the rapid impacts of climate change is low. The living conditions of the local indigenous population deteriorate; overfishing is one of the reasons.
- Regional cooperation is almost non-existent. The international legal system has fallen apart, nations act unilaterally. Local tensions occur in the Arctic with incidents of violence due to competing national interests.
- Tensions around resource claims are high, destabilizing countries politically. A gold rush occurs, even though it does not focus on energy resources (because alternatives exist: for example, renewables). Territorial claims lead to the increasing militarization of the region. Geoengineering occurs – (for example, in China) to manipulate interests (i.e. it is used as a “weapon”)
- WILDCARDS: Cooling; China disintegrates

Low Climate Change Impacts

High Climate Change Impacts

3.1 Scenario 1: Multilateralism, low climate change impact

In this scenario, climate change impacts remain low while the international system is characterized by multilateralism.

Summary: The year 2060

Multilateralism is universally regarded as beneficial. Existing multilateral institutions evolve and become more effective. The Arctic Council evolves in a similar way to the League of Nations, which eventually developed into the United Nations (UN). Rising interconnectedness and the belief of most countries that multilateral agreements are in their best interests have led to an ever-increasing number of international treaties which include action on climate change.

Multilateral bodies are very powerful. Cooperation regarding the Arctic extends beyond the eight member states of the Arctic Council, which is unable to deal with the challenges alone, as they often have global feedback loops. Unexpected multilateral agreements, such as a new Kyoto protocol, are possible.

The Arctic, the Amazon and the Himalayas are designated areas of planetary climatic significance (APCS) and governed multilaterally. Climate change impact remains low, allowing the international community sufficient time to react to the imminent threats and devise effective international institutions that have the power to intervene “on behalf of the planet”. The institutional capacities established to date are sufficient to address climate change challenges in the Arctic.

Transport routes in the Arctic become more accessible and are open for longer periods each year. This serves as a stimulus for the global economy, as shipping costs and the duration of journeys between Europe and Asia are greatly reduced.

The underlying transformation of the energy system changes policy incentives. As the influence of the fossil fuel industry wanes, policy-makers are more determined to act on climate change. For the Arctic, this also means that fossil fuel extraction is less relevant than anticipated in 2013.

Traditional North-South divisions are of little relevance. Extreme weather events affect all regions, and the global North is hit harder by disruptions in the global (economic) system because of its more complex production chains. This will motivate countries of the global North to support climate mitigation despite slight gains in agricultural productivity that some areas may experience.

Timeline

Two major events play an important role in fostering strong multilateral cooperation: In 2020, Canada and the U.S. clash with Russia over Arctic resources. The incident convinces the international community that strong multilateral mechanisms are needed to deal with similar conflicts of interest more effectively in the future. The second

important event is in 2030, when an ecological tipping point is reached and the Arctic ecosystem and many of its vital services – above all, the availability of fish – collapse. Most importantly, this puts global food security at risk by creating a global shortage of protein due to a dramatic decline of fish populations that are dependent on the plankton of the Arctic.

In the 2030s, international cooperation is stepped up and leads to several agreements aiming to protect the climate and to adapt to climate change: Strict population controls are put in place. Most importantly, regulatory holes regarding ecosystems of global importance such as the Arctic, the Amazon, and the Himalayas are filled by establishing several areas of planetary climatic significance (APCS), which are governed multilaterally.

Analysis: Challenges and opportunities

This scenario clearly shows that an adequate response to the challenges in the Arctic, such as reduced food security, involves increased regional governance in the Arctic as well as improved global governance. This includes a UN reform, especially of the UN Security Council, aiming to make it more effective.

3.2 Scenario 2: Multilateralism, high climate change impact

In this scenario, climate change impacts are high while the international system is characterized by a high degree of multilateral cooperation.

Summary: The year 2060

High climate change impact only allows for two options to resolve the climate crisis: More government control – by setting population targets to reduce resource needs, for example – and more military power to intervene wherever emission reductions are not implemented.

This leads to an evolution of existing multilateral institutions in order to make them more effective. In the year 2060, multilateralism looks different than it does today. Rather than being based on the Westphalian concept of respect for the sovereign state (one state, one vote), the world and its multilateral institutions are dominated by large states. This also changed the structure of the UN.

Multilateral bodies are very powerful. Multilateral bodies can also authorize the use of force in order to protect the climate. Based on this threat, multilateral climate cooperation works well in terms of compliance. This radical concept is based on an understanding that is similar to the “responsibility to protect”, as applied to genocides at the beginning of the 21st century. Climate interventions are legitimate to enforce the emission reduction targets necessary to stay below 2°C of global warming or an acceptable level of warming. Member states of the UNFCCC accept this power, which is mainly used to set national reduction targets.

As transport routes in the Arctic become much more accessible and are open for longer periods each year, countries compete for control, as these routes promise

reduced shipping costs and shorter journeys between Europe and Asia. Even though the Arctic is not ice-free all year, new icebreakers allow China to cross the North Pole directly rather than having to navigate along Russian shorelines. As the world and China's economy are still growing, the Arctic has become an area of major military significance in the quest to keep these new transport routes open for trade. China is a major Arctic player, not only because of the stakes involved in accessing Arctic resources and benefitting from transport routes, but also because of the significant role of Chinese money in investment in the region. The U.S. seizes Greenland in order to be able to compete with China in the Arctic.

In a world of very limited resources, access to Arctic resources is key. Even though the transition to renewable energies has reduced the need for fossil fuels, the Arctic is still home to important reserves of fish, minerals, and methane. This also includes a number of minerals that were discovered in recent years. Due to the overall scarcity of rare earths, the Arctic resources have turned out to be a potential source of conflict.

Timeline

The scenario features similar events to the previous one, albeit with different outcomes. In 2020 Greenland belongs to the U.S. and hence Scandinavian countries are no longer a key player in the Arctic. Two blocks of interest have developed in the Arctic: Canada and the U.S., on the one hand, and Russia, on the other. Conflicts between the two increase as they clash over Arctic resources. This temporarily reduces the ability of the international community to respond to climate change, increasing future pressures to address it in a more radical fashion. The clash between Canada/U.S. and Russia convinces the international community that strong multilateral mechanisms need to be put in place to deal with similar conflicts of interest more effectively in the future.

In 2030 the Arctic ecosystem and many of its vital services collapse. Most importantly, this induces a global shortage of protein due to a dramatic decline of fish populations, putting food security at risk. The shortage leads to famine and results in a global population control agreement:

As the impacts of climate change become more and more visible, the idea of fixed population targets and a reduced population base are increasingly regarded as a moral necessity, because an adequate standard of living will not be sustainable for all if projected population growth continues.

As the climate changes, monsoon patterns change and there is an increase in extreme weather events in Europe. Water shortages become much more severe. In this context, sea-level rise triggers mass-scale migration from Bangladesh to India throughout the 2040s and facilitates a global agreement that allows for military intervention where individual countries fail to meet their climate mitigation targets. The agreement is based on the concept of "responsibility to protect".

Analysis: Challenges and opportunities

In this high-impact scenario, the Arctic environment looks similar to the environment in the low-impact scenario. However, climatic and environmental changes are occurring much faster. This also means that their impacts are more severe, since there is not enough time to respond adequately and take preventive measures. At the same time, the world is more unstable because of the high impacts of climate change. Even though these impacts are more devastating in other regions, they also feed back into states' capabilities to deal with the Arctic. One key difference to the low-impact scenario is that there is cooperation because countries view it as economically advantageous. In the high-impact scenario, cooperation and compliance are backed by the threat of military force and there appears to be no alternative due to the dire consequences of climate change. Multilateral cooperation takes place in response to a catastrophe caused by climate change. However, a factor which plays an important role in the multilateral solutions to climate threats in both scenarios is the absence of typical "nationalist" thinking: For example, Brazil does not claim to have the right to determine on its own what to do with its rainforest ecosystem.

3.3 Scenario 3: Unilateralism, low climate change impact

This scenario is defined by low climate change impact and an international system that is characterized predominantly by unilateral action and some bilateral cooperation.

Summary: The year 2060

The importance of multilateral organizations has waned in the absence of multilateral cooperation. Organizations, such as the North Atlantic Treaty Organization (NATO) and the European Union, have lost power and influence. The Arctic Council has ceased to exist. Instead, Arctic states are behaving in a way that reinforces each other's right to act unilaterally. International law has disintegrated. Russia has stepped up submarine sea trials in international waters. In relative terms, the U.S. has lost some power, while China and India have gained in influence due to economic developments which started in the last decades of the 20th century and have continued far into the 21st.

Low climate change impact means that states have remained relatively stable. Moreover, there has been no scramble for Arctic resources, aided by the fact that the transition to renewable energies has helped reduce fossil fuel demand. Slow climate change has also meant that local communities in the Arctic have not been badly affected by climate change, or have at least been able to adapt.

National interests lead to tensions. However, the Arctic is characterized by tensions that do not escalate into violent conflicts. But even though they do not spark violence, they certainly result in destabilizing effects. These are created by the secondary impacts of climate change, such food insecurity in certain parts of the world, and occur in places outside the Arctic, because tensions are generally much higher in other regions. Under certain circumstances, individual countries cooperate with one another – if this is in their own best interests – on specific transboundary issues. Some

countries cooperate on search and rescue missions in the Arctic, for example. However, the scope of these instances of cooperation is very limited, they involve a small number of actors and are restricted to particular regions. On a global level, cooperation happens between blocks of countries which are forced to act together in their own interests. These blocks are made up of countries which have been impacted in similar ways and vary according to the challenge.

Timeline

Throughout the 2020s to 2040s, there are several events and developments that undermine international cooperation. For example, Russia steps up submarine sea trials in international waters, putting a stop to cooperation in the Arctic.

Analysis: Challenges, opportunities and strategies

In the case of low climate change impact, the risk of resource conflicts is relatively small. However, the risk of states becoming instable remains and is exacerbated by unilateral, uncooperative behaviour. There is a need for more contextual information in order to better pinpoint the respective trajectories of individual countries and identify who gains and who loses relative power. For example, while the U.S. benefits from navigational and resource extraction changes in the Arctic, climate change impacts become more severe in the state of Florida.

3.4 Scenario 4: Unilateralism, high climate change impact

This scenario is defined by high climate change impact and an international system that is characterized predominantly by unilateral action and some bilateral cooperation.

Summary: The year 2060

The Arctic environment has changed. It is now ice-free for a longer period from spring to autumn each year. The high impact of climate change leads China to decide that it is necessary to deploy geoengineering technologies in order to manipulate the climate and avoid some of the climate change impacts which it deems unbearable. At the same time, it wields its geoengineering capabilities as a threat to other states. One projected impact of the deployment of geoengineering technologies is that the Arctic will eventually cool down and ice layers will increase again. This leaves a relatively short timeframe for resource extraction and leads to a “gold rush” in the Arctic.

Temperatures have increased more than expected and the high impact of climate change has a destabilizing effect on many countries as they have less capacity to adapt. The livelihoods of local Arctic communities are particularly hampered by overfishing, but they are still adapting relatively well.

As a result of the high climate change impact, local tensions arise in the Arctic, leading to incidents of violence due to competing national interests. However, even though

tensions do not necessarily result in violence, they certainly have a destabilizing effect on the international system. This is caused by the secondary impacts of climate change which have a devastating effect on different parts of the world, as they compromise food and energy security. These destabilizing factors mainly impact places outside the Arctic, as the conflict potential in these regions is much higher.

Countries pursue their own best interests, not only avoiding international cooperation to address risks such as climate change, but also refusing to cooperate with one another on specific transboundary issues. For example, some countries have joined forces to cooperate on search and rescue missions in the Arctic. However, these collaborative arrangements are always limited in scope, have a narrow focus, involve a small number of actors and are restricted to particular regions. As far as conflicting interests are concerned, there is little evidence of effective cooperation. However, as can be seen in the Arctic, countries use bilateral relations to avoid getting a larger number of countries involved in a broader governance approach. This mode of cooperation is mainly adopted by countries that have been impacted in similar ways and varies according to the challenge.

Timeline

Throughout the 2020s to 2040s, there are several events and developments that undermine international cooperation. For example, China tries to use its geoengineering capabilities to address the rapidly changing conditions, thus provoking protests from other countries. The transport routes in the Arctic regions are ice-free much earlier than expected, causing tensions between Canada and the U.S., among other countries. The same is true for the ambitions of the countries neighbouring the Arctic, as they try to be the first to gain access to some of the mineral resources.

Analysis: Challenges and opportunities

The “gold rush” in the Arctic leads to a scramble for resources in the region. In the absence of multilateral cooperation, there is little room to resolve conflicts of interests and resource claims. As the high climate change impacts are felt around the world, countries have limited capacity to adapt and the risk of destabilization is high.

3.5 Wildcards

In the workshop, participants identified the following possible wildcards that could be applied across all scenarios. Due to the time constraints of the workshop, the implications were not examined in great detail and deserve further discussion.

- The first wildcard involved the possibility of the Arctic cooling, as the earth’s system switches back to a glacial period. Even though a high-temperature runaway process is much more likely, it could be interesting to take such a low-probability yet high-impact event into consideration when developing strategies.

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- The second wildcard involved China disintegrating due to climate change impacts, severe environmental pollution and further distortions of economic development. China's struggle leads to geopolitical transformation, changes the balance of political power in different regions around the world. Countries such as the U.S. or Russia benefit from these changes and can broaden their influence, e.g. in the Arctic region.

4 Scenario Comparison and Conclusion

In the final session of the workshop, the participants focused on comparing and summarizing the risks as well as developing response options which built upon the positive developments identifiable in all scenarios. Participants warned that, due to lack of time, these scenarios could not be used for a comprehensive, systematic risk assessment. A narrative that allows for conclusions needs more contextual information.

Participants stressed that for the Arctic region in particular, it is crucially important to take into account the **global context**. In fact, participants recommended that all stakeholders, including the Arctic Council, need to be much more aware of the global nature of the issues at stake: Interconnectedness – with respect to ethical questions of biodiversity, migratory species, or the consequences of further tipping points – requires greater cooperation between actors on global and regional levels.

Participants pointed out that the Arctic has already changed and that the consequences for the environment and geopolitics are already visible in the area. In fact, as far as the melting of the ice cap is concerned, it appears that a tipping point has already been reached. An appropriate way to frame the security risks is to think of them as risks to stability. The scenarios highlighted the following main challenges and opportunities:

- **Environmental degradation:** Whether high or low, climate change impacts will not significantly change the outcome of changes in the Arctic climate. Instead, uncertainty will play a role as far as impacts in other regions are concerned and therefore affect how countries are able to cope with and react to changes in the Arctic. This illustrates how conflicts over ecosystem services can increase or decrease cooperation and how different scenarios are possible in the context of the very same events. The reason for the varying consequences in these scenarios lies in climate change's different impact paths up until 2060, which determine how well countries can cope with events. A higher pace of change can reduce their adaptive domestic capacity at home, resulting in policies that they would otherwise not have pursued.
- **Resource claims:** In all scenarios, the risk of a potential Arctic gold rush is triggered by minerals and not energy resources. This is due to the anticipated global transformation of energy systems, which reduces the demand for fossil fuels. Arctic fish stocks also play a role, especially in the high impact scenarios, because global food production is diminished. A question that was left open is why this transformation happened: Is it the result of multilateral cooperation or rather based on national interests? The German case could possibly serve as a showcase of the dynamics behind the process of transition to renewable energies: By diversifying its energy supply, the country is responding to strong national interests and at the same time paving the way for international climate cooperation by showing leadership in reducing greenhouse gas emissions.
- **Territorial claims** were not a central issue in any scenario, even though the U.S. claimed Greenland in one scenario as a tool for advancing its interests in the Arctic. While no clear answer to the question of future territorial claims emerged, conflicts around territorial claims did not play a significant role. One

reason is that the vast energy resources are likely to become less valuable in the future as the transition to renewable energies progresses. The competition for control over transport routes does not tend to translate into territorial conflicts because these are too costly. Moreover, the delimitation of continental shelves will probably be settled within the next two decades. However, going a step further, the question of how to deal with pollution from seabed extraction remains unresolved. This is a possible regulatory deficit and could trigger tensions in the future.

- **Indigenous communities:** Participants highlighted the role of fisheries and hunting for indigenous communities, exemplified by current developments in Greenland. They are generally able to adapt well. To a certain degree, they may also benefit from new economic opportunities in the Arctic, such as the increased use of transport routes.
- **Adaptation:** From a global point of view, there will be different urgent adaptation priorities in other regions, e.g. in densely populated, low-lying coastal areas. Adaptation must always be seen in the context of the complexity of, and interactions with, other processes, and linked to foreign policy, energy policy, and other communities. Regarding future challenges, participants highlighted that adapting infrastructures affected by the melting of permafrost may not pose the greatest challenge, since it is to a certain degree foreseeable. It may be more challenging to deal with future health implications, for example, and other second order effects that we may not yet be aware of. This is why it is important to gain a better understanding of different future climate change pathways and their secondary impacts. In this regard, the Arctic Vulnerability Assessment, carried out by the Arctic Council with final results expected in 2015, is certainly an important point of reference for decision makers and policy planners.

Governance

To cope with these challenges, policy-makers will have to come to terms with the fact that **early action is needed**. Central to all scenarios was the notion that **institutions were vital**. An important point, however, is to establish which forums will enable cooperation on the aforementioned challenges. It will be crucial to address the remaining **blind spots of multilateralism** and to **detail the institutional interplay** required. For example:

- Should existing institutions be developed further?
- How should they enhance modes of collaboration?
- What could be the specific tasks of regional organizations such as the Arctic Council and of global bodies such as the UNFCCC in addressing the risks of climate change in the Arctic?

Multilateral cooperation in the Arctic also means **multi-institutional cooperation**. Regional and global cooperation must be better connected by enabling the Arctic Council to feed its regional knowledge into global bodies, for example. Common knowledge and understanding of the concept of environmental security can also help find better solutions. In order to gain a better understanding of the implications for

peace and stability, it is necessary to elucidate the role of Arctic governance for the specific issues at stake. A **possible option is to discuss these challenges within the OSCE, which appears to be a valid platform** that has not been used as much as it could have been to date. This may also require the organization to broaden its scope to better integrate participants outside of Europe.

Participants also rejected the notion of the Arctic being similar to the Antarctic. A ban on exploiting resources like that in the Antarctic is unlikely to be feasible because the Arctic is not as remote from national interests. Arctic states have already rejected a similar type of treaty. In any case, **Arctic governance requires a multilateral angle to address the gaps and weaknesses of current institutions and regulations.** However, the current form of the Arctic Council (with some states participating as “observers”, for example) is probably insufficient to meet these challenges.

Overall, a clear message emerged: **More needs to be done to prepare for the security implications of climate change in the Arctic.** In the context of European security, this means integrating Arctic and neighbouring regions in holistic way into overall security policy to account for interconnectedness. This calls for follow-up activities on a regional and global level to further elaborate and operationalize the priority areas identified above.

References

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Annex 1: Lists of Participants

List of participants

1. **Paul Arthur Berkman**, Fulbright Distinguished Scholar and Research Professor, Donald Bren School of Environmental Science & Management, University of California
2. **Morten Skovgård Olsen**, The Danish ministry of Climate, Energy and Building (Klima-, Energi- og Bygningsministeriet) - Denmark - Arctic Climate Issues 2011: Changes in Arctic Snow, Water, Ice and Permafrost (SWIPA)
3. **Tom Spencer**, Vice-Chairman, Institute for Environmental Security (IES)
4. **Dennis Tänzler**, Head Climate & Energy Policies, Adelphi research, Germany
5. **Stephan Wolters**, Junior Project Manager, Adelphi, Germany
6. **Raul Daussa**, Environmental Programme Officer, Organisation for Security & Cooperation in Europe (OSCE), Vienna
7. **Kamrul Hossain**, Senior Research scientist, Northern Institute for Environmental and Minority Law and Research Professor in the Arctic Centre at the University of Lapland, Finland
8. **Arne Riedel**, Researcher, Ecologic Legal, Germany
9. **Golo Batsch**, Associate, Ecologic Institute, Germany
10. **Mirek Havranek**, Charles University Environment Center - Czech Environmental Information Agency (CENIA), Prague

Annex 2: Agenda

DRAFT AGENDA
Workshop on Environment, Climate Change and Security in the Arctic
Copenhagen 28 February 2013
 European Environment Agency
 Kongens Nytorv 6, 1050 Copenhagen – room 0020

Time	Session
9.30-9.45	<p>Opening Session</p> <p>Welcome</p> <ul style="list-style-type: none"> • Jock Martin, Head of Programme Integrated Environmental Assessments, EEA <p>Context of the workshop and workshop goals</p> <ul style="list-style-type: none"> • Raul Daussa, Environmental Programme Officer, OSCE
9.45-11.00	<p>Session I: Introduction to the possible future changes in Arctic: environmental, socio-economic and cultural sustainability in the Arctic and its impact on security</p> <p>Environmental, socio-economic and cultural aspects</p> <ul style="list-style-type: none"> • Nikolaj Bock, EEA engagement in Arctic, Special Advisor on International Affairs EEA • Hans Martin Fussel, Climate change vulnerability and adaptation EEA: EEA activities on climate change impacts and adaptation in Europe • Paul Arthur Berkman, Fulbright Distinguished Scholar and Research Professor, Donald Bren School of Environmental Science & Management, University of California • Morten S. Olsen, SWIPA, Arctic Climate Issues 2011: Changes in Arctic Snow, Water, Ice and Permafrost <p>Security aspects</p> <ul style="list-style-type: none"> • Dennis Tänzler, Head Climate & Energy Policies, Adelphi research • Tom Spencer, Vice-Chairman, Institute for Environmental Security
11.00-11.15	Coffee/tea break
11.30-12.00	<p>Session II: Possible future developments until 2060 with associated security implications</p> <ul style="list-style-type: none"> • driving forces of change in the Arctic, • security impacts at different regions (ie. impacts to environment related security, extreme events, food and energy security, sustainability of livelihood of inhabitants, conflicts) <p><i>Moderated working session</i></p>
12.00-13.00	Lunch
13.00-14.30	<p>Session III : Possible future developments until 2060 with associated security implications</p> <ul style="list-style-type: none"> • fast scenario setting <p><i>Moderated working session</i></p>
14.30-15.00	Coffee/tea break