

WORKSHOP REPORT



**ARCHIPELAGO**

# NATO Climate Change & Security Centre of Excellence

IN PARTNERSHIP WITH



Global Affairs  
Canada



Supported by:



Mobilizing Insights in Defence and Security (MINDS)

# Disclaimer

The views, perspectives and suggestions expressed in this report do not represent those of the Government of Canada, the Canadian Department of National Defence or Global Affairs Canada. For this reason the content should be taken as any research result, where the application of the information contained herein requires professional judgement, critical thinking and adaptation for its intended context.

# Acknowledgements

The Archipelago of Design (AOD) is a non-profit organization supporting the leading independent network on strategic design, foresight and innovation in defence and security. This project seeks to assist the Department of National Defence (DND) and Global Affairs Canada (GAC) by identifying potential opportunities for the future design of the NATO Centre of Excellence (COE) focused on Climate and Security, to be headquartered in Montréal, Canada.

This design-futures workshop series was held over two online sessions, and served as building blocks to capture insights across international experts in climate change and security issues. Workshop insights were organized according to COE priority areas of focus: awareness, adaptation and mitigation.

The AOD would like to thank all the experts who dedicated their time to participate in these workshops and share their knowledge and experience. Workshop participants were represented by the following organizations: Clingendael, Hague Centre for Strategic Studies, E3G, Climate Centre, International Research Institute for Climate and Society - Columbia Climate School, United Nations Development Program (UNDP), Stockholm International Peace Research Institute, Adelphi, CGIAR, Inuit Circumpolar Council, Metis Nation, Royal Military College Saint-Jean, Centre for Climate and Security, Foresight Canada, ODI, European Leadership Network, CDPQ, Foundation for Global Governance and Sustainability, International Committee of the Red Cross, University of Exeter, Canadian Climate Institute and Trent University.

A special thank you to the AOD team for leading the design and facilitation of this customized workshop series: Michele Mastroeni, Donna Dupont, Quinn Davidson, Emily Krause, Kassie Miedema, Thomas Changarathil, Mikhial Gurarie, Cyrena Sitter, and Habiba Elgendy.

The AOD team produced a video series highlighting workshop activities and post-workshop reflection interviews from expert participants. To access please visit our AOD YouTube channel and AOD website.

**What Should the NATO Climate and Security COE Prioritize? A First Tour d'Horizon With 30+ Experts:** <https://youtu.be/IVGEDJYDFSg>

**AOD-GAC NATO Climate and Security Centre of Excellence Workshop Highlights:**  
<https://youtu.be/IVGEDJYDFSg>

**What Key Issues Should a NATO Climate and Security Centre of Excellence Address? | Teaser:** [https://youtu.be/GQ-P8\\_qsPSs](https://youtu.be/GQ-P8_qsPSs)

**Erin Myers: Climate Expert | What Key Issues Should a NATO Climate and Security CoE Address?:** <https://youtu.be/FU1qrLbxi6Y>

**Georgios Kostakos: Political Expert | What Key Issues Should a NATO Climate & Security CoE Address?:** <https://youtu.be/2eEPQvYCZhc>

**Jeanette Jackson: Foresight Expert | What Key Issues Should a NATO Climate and Security CoE Address?:** <https://youtu.be/ITGcfG9QPC8>

**Peter Laderach: Climate Scientist | What Key Issues Should a NATO Climate and Security CoE Address?:** [https://youtu.be/OX\\_5mVZ\\_nvg](https://youtu.be/OX_5mVZ_nvg)

**Jamie Shea: Security Expert | What Key Issues Should a NATO Climate and Security CoE Address?:** [https://youtu.be/omwta9\\_wl-E](https://youtu.be/omwta9_wl-E)

**John Furlow: Climate Expert | What Key Issues Should a NATO Climate and Security CoE Address?:** <https://youtu.be/yinaVhWxaho>

**Erin Sikorsky: Foresight Expert | What Key Issues Should a NATO Climate and Security CoE Address?:** <https://youtu.be/ud7DVMTR4lw>

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# 01

## Context



# 1. Context

Canada announced its intent to establish a NATO Climate Change and Security Centre of Excellence (CCASCOE) in 2021, and the Government of Canada is actively working in collaboration with its NATO Allies.

Expert consultation and discussions is part of the process to help inform the design of the new Centre of Excellence focused on climate and security. These discussions took place through two virtual workshops, held in April and July 2022.

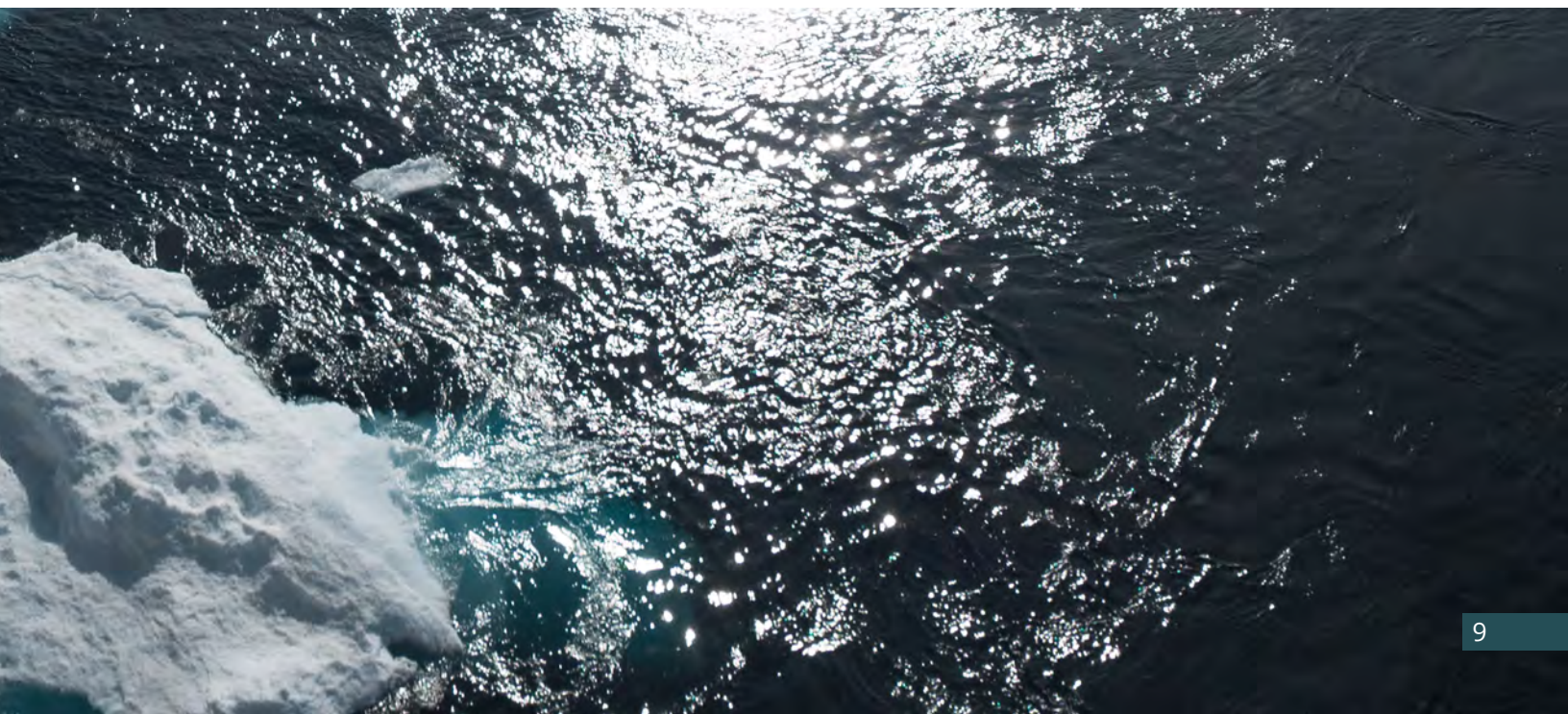
NATO is a cornerstone of Canada's international security and defence policy, and is central to transatlantic security and international stability. Canada is supporting this initiative as concrete actions to address future threats and challenges affecting transatlantic security and to strengthen collective security commitments that will keep our people safe. Climate change is one of the defining challenges of our time, with global impacts affecting all countries. The response to climate change threats requires collaboration across many sectors and must consider diverse perspectives, including those of women and girls, Indigenous peoples, as well as marginalized, and vulnerable populations.





# 02

## Workshop Scope & Objectives



## 2. Workshop Scope & Objectives

In a rapidly changing global security environment, NATO must continue to prepare for, mitigate, and adapt to the security impacts of climate change.

The workshop series was held over two sessions, and were designed as building blocks to capture insights across international experts in climate change and security issues. The workshop facilitators encouraged participants to consider diverse perspectives including those of women and girls, Indigenous peoples, as well as marginalized and vulnerable populations.

The first workshop sought expert advice and diverse points of view in order to:

- **FRAME:** the problem of climate and security and understanding the landscape using a global community lens;
- **EXPLORE:** what role the COE could play in helping NATO, its Allies, and partners to address this global security concern; and
- **CAPTURE:** information that integrates expert perspectives towards the establishment of the COE.

The second workshop sought to generate ideas which may assist to support COE Steering Committee decisions. Discussions were framed within the following CCASCOE themes and pillars required by NATO COEs:

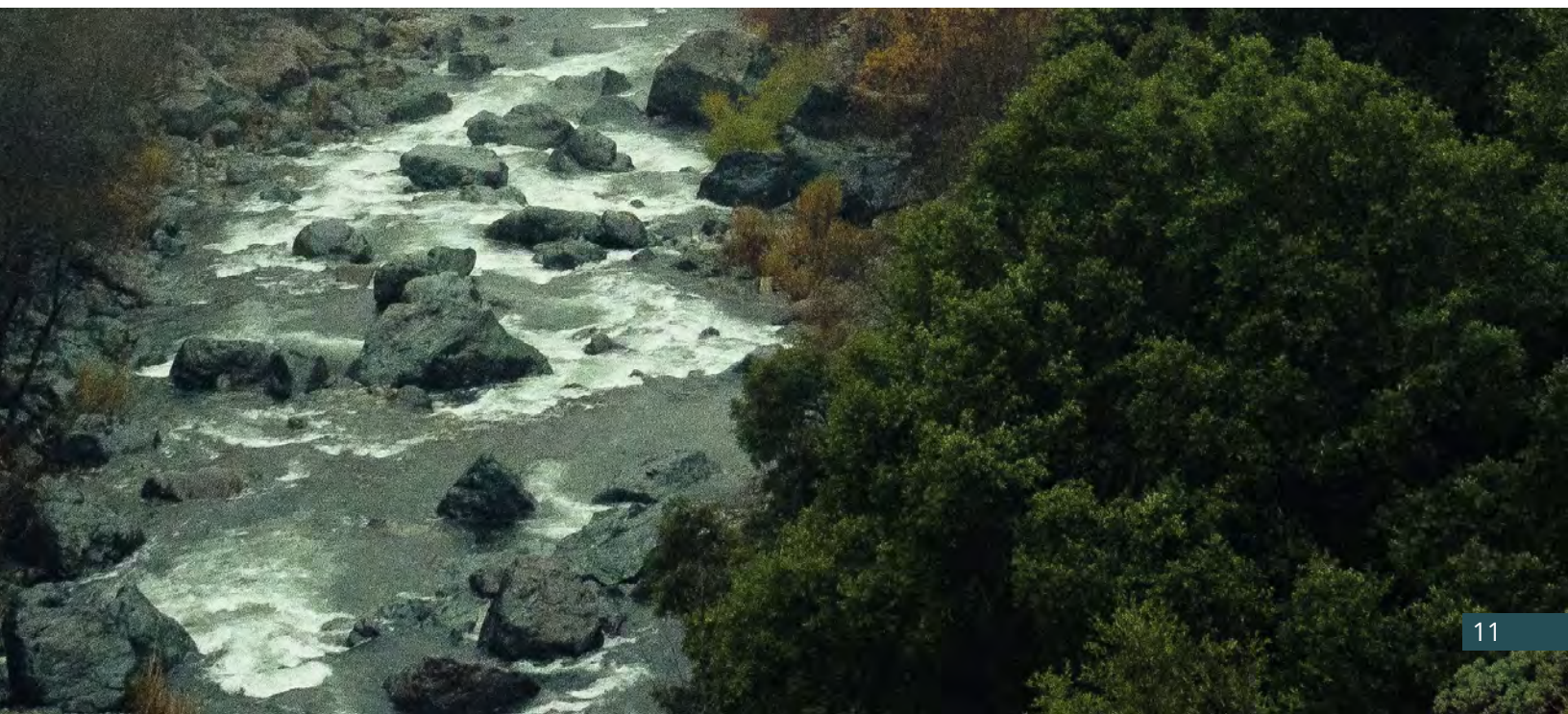
- **THEME:** core thematic streams - awareness, adaptation, and mitigation;
- **PILLARS:** (1) analysis and lessons learned, (2) doctrine development and standardization, (3) education, training, exercise, and evaluation, and (4) concept development and experimentation; and
- **RELEVANCE:** to military/defence and to the NATO Alliance.





# 03

## Understanding the Landscape



## 3. Understanding the Landscape

The climate and security landscape was framed in workshop one through discussions on trends, challenges, future threats, and security implications of climate change, as described on the cards in Appendix A. The intent of discussions was to better understand the changing landscape and shifting dynamics in order to uncover opportunities to inform policy and address strategic issues.

The landscape was framed using a STEEP framework to define broad categories of different challenge themes, categories include: social, technology, economic, environment, political and governance. Data was organized into a horizon scan and radar map.

### 3.1. Horizon Scan & Radar Map

#### Climate Security Trends & Challenges

Workshop discussion captured a total of 49 different climate security challenges across six categories, the breakdown includes: social - 6 challenges; technology - 6 challenges; economic - 10 challenges; environment - 7 challenges; political - 13 challenges; and governance - 7 challenges.

Political and economic challenges were most prominent, followed by environment, governance, social and technology challenges. Challenge data was further coded according to core thematic areas of awareness, adaptation, and mitigation.

**[See Appendix A for a complete list of climate security challenge cards]**

# CLIMATE SECURITY TRENDS & CHALLENGES MAP

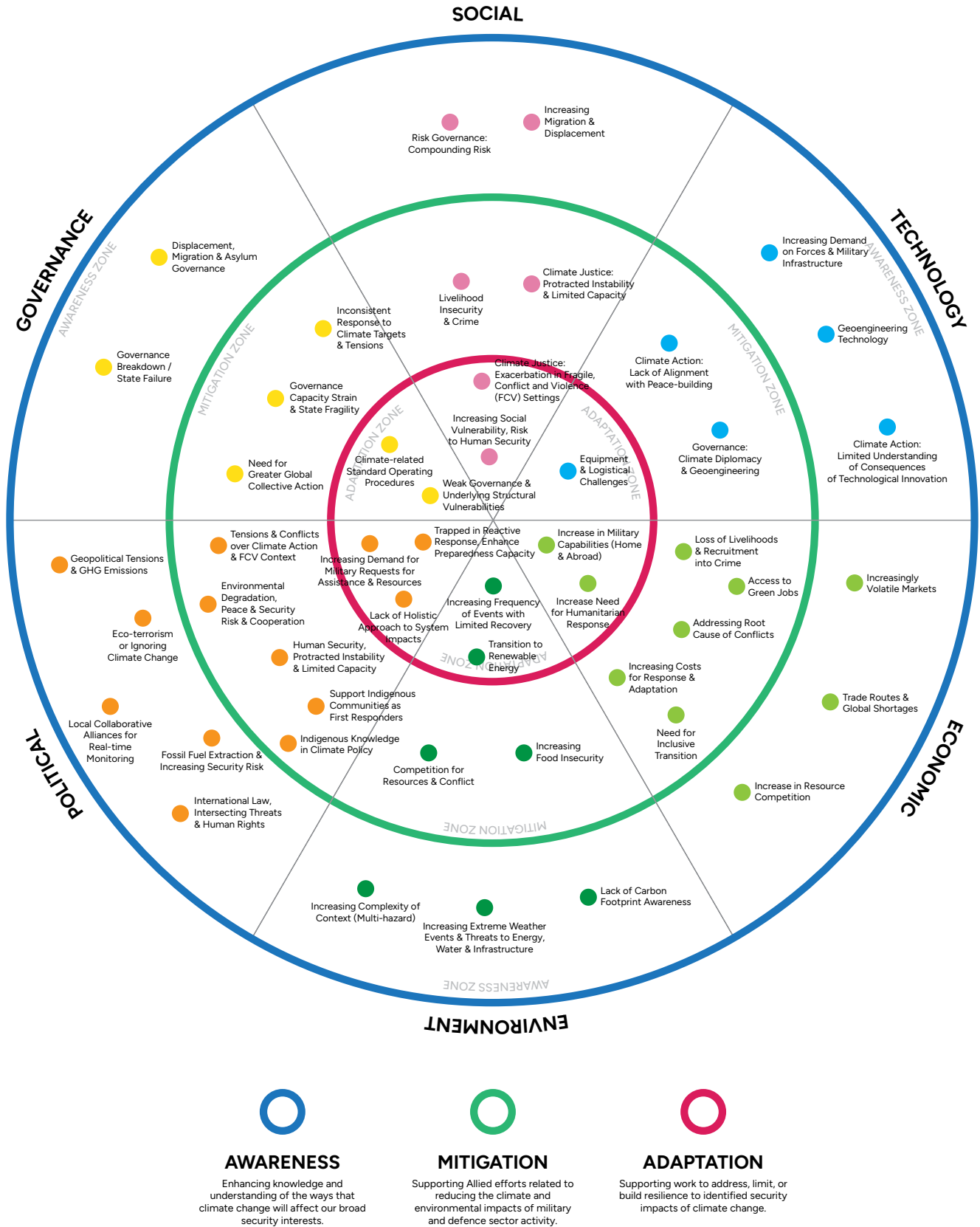


Figure 1- Climate Security Trends + Challenges Map



## Critical Challenges for the COE to Address

Based on the 49 climate security challenges captured in workshop one, the following 10 critical challenges were identified as priority areas and are organized across four broad themes:

### 1. Volatility, Complexity & Security

- **Increasing Demand & Volatility** – the scope of needs is actively increasing, and is attributed to increasing frequency and intensity of climate related events/ disasters.
- **Managing Complexity** – the need to manage multiple complex ‘fronts’ on climate change makes it difficult to assess and identify primary threats or root causes of issues. This may lead to systemic blind spots, missed opportunities, or over-simplification of the issues and/or taking a narrow securitization approach.
- **Conflict over Resource Competition & Human Security** – this has spillover risks in terms of increasing social vulnerability of local populations and risk to human security, especially for coastal and Indigenous populations, and negatively impacting crisis management, and prevention and deterrence missions.

### 2. Governance

- **Need for Coordination Efforts** – as intensity and frequency of events increase, allies need to better coordinate efforts. Development, disasters, and instability lie along a continuum; addressing each is led by different agencies, which requires effective coordination of planning budgets, and operational efforts.
- **Decision-Making Processes** – awareness of adaptation and complexity needs to be improved for new kinds of decision making processes and collective problem solving with multiple inputs from various areas of expertise.

### 3. Operational Vulnerability

- **Resource Scarcity** – there is a danger of diverting resources from core military missions in order to address climate and security issues. This may create a reputational risk, as public and political expectations of military resources may exceed actual capabilities.
- **Supply Chain Disruptions** – there is a need to secure stable and just access to



energy and resources as supply chain disruptions have the potential to worsen due to climate change.

- **Energy & Emissions** – continuous reliance on fuels makes NATO militaries vulnerable; reducing energy demand and emissions can improve military effectiveness, and improve long-term operability as part of global energy transition initiatives.

#### 4. Climate Change Global Initiatives

- **Net Zero** – the world cannot achieve net zero emission targets without military cooperation and participation. Military carbon impact is larger than the carbon impact of some countries.
- **Reputational Risk & Credibility** – NATO’s ability to reduce its carbon footprint is vital in order to be considered a leader in climate change initiatives and role-model to address climate security challenges.

These critical challenges were further discussed in order to explore:

- The challenge ‘so what?’;
- Barriers and resistance to change;
- Opportunities for early activities and building relationships; and
- A vision for an established NATO COE.

## 3.2. Barriers & Resistance to Change

The past contains historical weights, which are structural barriers that inhibit change and can prevent the ability to achieve momentum towards creating future change. Identifying these barriers is critical, and will need to be addressed in order to move forward.

Insights from workshop one uncovered barriers and systemic resistance to change related to:

- Governance and the slow pace of bureaucracy;
- Outdated understanding of security threats;
- Lack of interest or commitment to taking action;
- Tactical near-term focus and prioritization of assessed threats; and
- Not addressing root causes.

There were also a number of deep system structures—bureaucracy, short-term thinking, comfort zones, migration and the default security threat narrative, and the reliance on fossil fuels—that were also identified as barriers to change.

As part of workshop two, participants were asked to identify what barriers need to be transcended to achieve success related to the identified opportunities. Many of the barriers identified echo the challenges identified in workshop one.

### Identified Barriers

- NATO's lack of normative power;
- Geopolitical developments and changes;
- Differences between national and international rules;
- Sovereignty issues;
- Achieving “excellence” is a moving target;
- Mission, cultural, budgetary, and priority differences among countries;
- Lack of political will;
- Lack of trust between actors;
- Limited openness to complexity and flexibility on doctrine, partnerships, and operating procedures;
- Fixed budget allocations/financial constraints;
- Lack of standardized terminology among stakeholders;
- Fragmented and/or poor quality data;
- Belief that decarbonization will weaken security and defence.



# 04

## Strategic Insights and Potential Next Steps



## 4. Strategic Insights and Potential Next Steps

### 4.1 Opportunities for the COE (priorities for next 1-2 years)

Workshop one discussions broadly captured ideas and insights on opportunities to address the security implications of climate change and strengthen collective security commitments, and the potential role of the COE. Ideas were analyzed and coded to create opportunity cards for each priority area, and were further categorized according to the four pillars of work for CASCOE.

Participants in workshop two were divided into three breakout groups to discuss one of the three priority areas (awareness, adaptation, mitigation). Based on the top 1-3 challenges selected, opportunities were discussed. Five common themes emerged across the breakout groups for the COE:

#### Common Themes for COE Opportunity

COE Opportunity	Description
COE as a Leader	Leadership, transparency, and accountability for climate security
COE as a Collaborator	Strategic partnerships with many stakeholders, to bridge the military and private sector, and to share capabilities across countries, research bodies, and on the ground communities
COE as a Repository	Sharing and dissemination of knowledge and best practices
COE as an Educator	Knowledge mobilization through education and training
COE as a Innovation Hub	Research, analysis, experimentation, and innovation for new technologies and green technology opportunities

Workshop two further explored priorities and key opportunities for the COE's over the next 1-2 year time horizon. An overarching summary of the short-term key opportunities as a starting point for CASCOE over the next 1-2 year horizon are outlined below.

## Summary of COE Priorities & Key Opportunities

COE Priority Area	Summary – Priorities for the Next 1-2 Year Time Horizon	
Awareness	Threat perception, complexity and competition risks	<ul style="list-style-type: none"> <li>• Support a whole society approach to risk assessments (private, defence, diplomacy, development) with the inclusion of local knowledge and fostering private/public partnerships;</li> <li>• Promote the inclusion of a complexity perspective in doctrine development.</li> <li>• Convene diversity of expertise from many stakeholders, including other COEs and international actors</li> </ul>
	Sharing information, data, and intelligence	<ul style="list-style-type: none"> <li>• Develop new technologies and solutions that address supply constraints, but also have broader spillover applications for society, both within and beyond the NATO alliance (eg. leveraging DIANA)</li> </ul>
	Education and specialized training	<ul style="list-style-type: none"> <li>• For mid and senior level officers on systems thinking, complexity, adaptive leadership, and climate change and the environment</li> </ul>
	Transparency and accountability	<ul style="list-style-type: none"> <li>• Green investments toward a healthy economic environment</li> </ul>
Adaptation	Capability and Collaboration	<ul style="list-style-type: none"> <li>• Shared warning capability, best practices, lessons learned across the NATO alliance;</li> <li>• Convening capability and collaboration across sectors, such as militaries inside and outside the NATO alliance, development, humanitarian, meteorological, disaster organizations, to bring communities together;</li> <li>• Build on what already exists to accelerate integrated thinking at the level of government for policy formulation and to identify gaps.</li> </ul>
	Preparedness, education and training	<ul style="list-style-type: none"> <li>• Analysis of military investment and preparedness versus demand for support;</li> <li>• Political and public education to manage expectations of militaries</li> <li>• Training and education for military planners on climate security risks</li> </ul>
	Doctrine development	<ul style="list-style-type: none"> <li>• Develop doctrine that addresses the climate threat and inclusive decision making that involves input from vulnerable/affected people</li> </ul>
	Innovation	<ul style="list-style-type: none"> <li>• Create opportunities for tools, data collection, and discussions at different levels (community, local, national, international) to provide innovative and contextually appropriate solutions</li> </ul>
Mitigation	Knowledge exchange	<ul style="list-style-type: none"> <li>• Knowledge exchange of lessons learned, best practices, and updating this repository regularly to ensure it is current and relevant</li> </ul>
	Innovation, Energy, Carbon Footprint	<ul style="list-style-type: none"> <li>• Experiment with new technological innovation and green technology opportunities</li> <li>• Research and analysis to create a compelling dataset for a stronger argument for decarbonizing energy use, reducing carbon footprint, and increase operational effectiveness of militaries</li> <li>• Strategic partnerships to collaborate on and support military decarbonization (eg. IMCCS, EU Defence Agency)</li> <li>• Bridge military and private sector start ups to spur more research and development around green technologies (eg. leveraging Project DIANA)</li> </ul>

## 4.2 Vision for the COE (potential over 10+ years)

Workshop two explored narrative visions of the COE’s potential over a 10+ year time horizon. Breakout groups focused specifically on what this meant for each priority area of the COE.

### Summary of Long-term Vision for the COE

COE Priority Area	Summary for Vision for a COE – 10+ Year Time Horizon	
	Informs climate security policy through coordination	<ul style="list-style-type: none"> <li>• Collaboration and coordination with governments and established initiatives;</li> <li>• Create and share knowledge/data;</li> <li>• Risk analysis with attention to blindspots and bottlenecks;</li> <li>• Utilize different anticipatory scenarios for planning and strategic conversations that relate to risk, emerging issues, weak signals of change and the shifting complex environment. Assess capabilities and resource availability to identify gaps and new opportunities for investment and/or change.</li> </ul>
Awareness	Leverages knowledge through a collaborative, holistic and inclusive approach	<ul style="list-style-type: none"> <li>• Leveraging collaboration and expertise;</li> <li>• Leveraging local knowledge and insights on regional contexts;</li> <li>• Striking a balance between strategic competition/vision and human/environmental aspects; and</li> <li>• Inclusive and holistic approach to intersectorial exercises and scenario building.</li> </ul>
	Promotes leadership, experimentation and innovation	<ul style="list-style-type: none"> <li>• Leadership on excellence and adaptation that encourages risk-taking, innovation, and experimentation;</li> <li>• Create a healthy, thriving environment of multifaceted expertise and collaboration;</li> <li>• Engage a multiplicity of actors and interests to promote global security;</li> <li>• Fund research and development for innovative solutions (e.g. fuel alternative for military equipment);</li> <li>• Commitment to incorporating complexity into solutions</li> <li>• Find a balance between institutionalization, standardization and experimentation.</li> </ul>
Adaptation	An authoritative space to convene and prioritize climate security for action	<ul style="list-style-type: none"> <li>• Be an authoritative space the convenes the right people for practical and useful resources (ie. asking questions, understanding changing context);</li> <li>• Having the power to resolve issues once they have been identified and convening the right people to take action;</li> <li>• Helping militaries appropriately prioritize climate security in the context of other competing priorities;</li> <li>• Providing practical education and tools to help militaries integrate climate security information into on the ground planning.</li> </ul>
Mitigation	Leading voice in climate-security, with partnerships to coordinate for action and hub for innovative solutions	<ul style="list-style-type: none"> <li>• Leadership in climate-security and energy transition</li> <li>• Partnerships to coordinate with other COEs and initiatives (ie. Project Diana)</li> <li>• Innovation / creative hub for solutions (ie. be a test bed for new green tech innovations)</li> <li>• Communications - be a voice that breaks through the noise (ie. debunking current misinformation and the belief that decarbonization will weaken our security and defence)</li> </ul>



## Expanded List of Potential Opportunities & Vision by Priority Theme

Tables 1-3 presents the full expanded list of potential opportunities for the COE. This list is organized based on the three priority areas, and further categorized by the four pillars of work. These insights can be leveraged and used to build upon opportunities for activities in the next 1-2 years and moving into the future.

Tables 4-6 presents additional details on the vision for the COE across the priority areas of awareness, adaptation and mitigation, including intent, system orientation and deep leverage points for design.

# Table 1: Opportunity – Awareness

Definition: Enhancing knowledge and understanding of the ways that climate change will affect our broad security interests.

COE Pillar of Work	Opportunity for COE
Analysis and Lessons Learned	<p><b>Science, evidence, programming and finance</b></p> <ul style="list-style-type: none"> <li>• employ good science to understand causal pathways (not correlations) with linkages to inform programming, policies, and finance;</li> <li>• shift away from the causality framing: go beyond policy dialogues and use grounded evidence.</li> </ul>
	<p><b>Climate adaptation and disaster risk reduction opportunities</b></p> <ul style="list-style-type: none"> <li>• enhance understanding of the humanitarian implications of climate change in the most vulnerable contexts;</li> <li>• enhance situational understanding and awareness through smarter risk assessments and early warning systems to support measures that address systematic risks.</li> </ul>
	<p><b>Risk tools, data evidence, decision-making</b></p> <ul style="list-style-type: none"> <li>• leverage predictive tools and capabilities to better inform risk assessments and improve data and evidence and analysis to support decision-making;</li> <li>• consider tools from the security community and data evidence technologies that move beyond policy discourse;</li> <li>• conduct gap analysis for adaptation gaps while leveraging locally informed, down-scaled climate-security risk analysis.</li> </ul>
	<p><b>Education, training and best practices</b></p> <ul style="list-style-type: none"> <li>• learn from the Women, Peace and Security (WPS) Agenda: what worked and what did not in mainstreaming the WPS Agenda across NATO.</li> </ul>
	<p><b>Collaboration, cooperation and coordination</b></p> <ul style="list-style-type: none"> <li>• strengthened partnerships and collaboration across sectors, build multi-sectoral/silo-busting approaches to addressing climate risks;</li> <li>• climate science cooperation with data sharing for harmonized perceptions of climate threats, and with integrated analysis and joint planning;</li> </ul>
Doctrine Development & Standards	<p><b>Opportunity for Indigenous Knowledge and participation</b></p> <ul style="list-style-type: none"> <li>• include Western and Indigenous knowledge to inform decision-making;</li> <li>• increase observation, monitoring and forecasting of relevant trends and essential infrastructure (eg. ship tracking) in partnership with Indigenous partners</li> <li>• Eg. Will ice-breakers be needed in the Arctic by 2030? What is the impact of melt on the integrity of essential infrastructure such as airport runways, installations, harbours, etc.?</li> </ul>
Education, Training, Exercise, and Evaluation	<p><b>Education, training and best practices</b></p> <ul style="list-style-type: none"> <li>• embed climate literacy in military training and education;</li> <li>• include more training to military personnel responding to climate-related threats that affect both national security and human security;</li> <li>• increase climate literacy across NATO foresight, strategy, planning, and exercises.</li> </ul>

Continued on the following page

Table 1: Opportunity – Awareness

COE Pillar of Work	Opportunity for COE
Education, Training, Exercise, and Evaluation	<p><b>Raise awareness of risks and educate about necessary actions</b></p> <ul style="list-style-type: none"> <li>• develop bold policy and education campaigns that democratize access to information;</li> <li>• Support action to drive change in consumer habits, and create better awareness of unintended negative consequences of climate action on stabilization efforts.</li> </ul>
	<p><b>Alignment of climate action with development gains and peace-building</b></p> <ul style="list-style-type: none"> <li>• improve climate literacy and equip decision makers with technical and financial assistance, as well as education and advocacy measures.</li> </ul>
Concept Development and Experimentation	<p><b>Climate Security Community of Practice</b></p> <ul style="list-style-type: none"> <li>• build up the dynamic and engaged community of practice on climate security by engaging decision-makers and create a space for collective reflection/action;</li> <li>• create clear transition roadmaps for policy, investments, and technology adoption and be a political home that applies pressure for action;</li> </ul>
	<p><b>Inclusive development</b></p> <ul style="list-style-type: none"> <li>• enhance coherence across humanitarian, development, climate responses, and finance to include diverse knowledge systems to find solutions and build/strengthen collaboration.</li> </ul>
	<p><b>Regional approach to increase situational awareness</b></p> <ul style="list-style-type: none"> <li>• stronger cooperation with regional and sub-regional entities and strengthening regional approaches to enhance resilience against climate-related threats;</li> <li>• bring high level discussion to the grassroots level;</li> </ul>

## Table 2: Opportunity – Adaptation

Definition: Supporting work to address, limit, or build resilience to identified security impacts of climate change.

COE Pillar of Work	Opportunity for COE
Analysis and Lessons Learned	<p><b>Climate adaptation and disaster risk reduction opportunities</b></p> <ul style="list-style-type: none"> <li>enhance compound and cascade risks analysis of climate, conflict, and other risk factors, to design tailored risks-informed measures for adaptation/resilience;</li> </ul>
	<p><b>Risk tools, data evidence, decision-making</b></p> <ul style="list-style-type: none"> <li>leverage predictive tools and capabilities to better inform risk assessments and improve data and evidence and analysis to support decision-making;</li> <li>consider tools from the security community and data evidence technologies that move beyond policy discourse;</li> <li>conduct gap analysis for adaptation gaps while leveraging locally informed, down-scaled climate-security risk analysis.</li> </ul>
	<p><b>People-centred and diverse voices</b></p> <ul style="list-style-type: none"> <li>bring diverse voices to the table from the humanitarian and development sector to address the issues of people and avoid the risk of ignoring concerns;</li> <li>include diverse voices across industries and schools to ensure people feel heard, with opportunities to build solutions together.</li> </ul>
Education, Training, Exercise, and Evaluation	<p><b>Opportunity for Indigenous Knowledge and participation</b></p> <ul style="list-style-type: none"> <li>cooperation and collaboration with Indigenous communities and Indigenous Peoples (UNDRIP commitments) including supporting community infrastructure and training</li> <li>eg. using community members as first responders, involving them as partners in contingency planning and leveraging their sophisticated understanding of the operating environment.</li> </ul>
Concept Development and Experimentation	<p><b>Inclusive development</b></p> <ul style="list-style-type: none"> <li>enhance coherence across humanitarian, development, climate responses, and finance to include diverse knowledge systems to find solutions and build/strengthen collaboration.</li> </ul>
	<p><b>Build on what already exists</b></p> <ul style="list-style-type: none"> <li>accelerate integrated thinking at the level of government for policy formulation;</li> <li>set a clear COE mandate and ensure leadership is capable of hitting the ground running.</li> </ul>
	<p><b>Convene actors and communities to strengthen collective response</b></p> <ul style="list-style-type: none"> <li>build strategic partnerships and agreements for supply, Intellectual Property (IP), and collaboration between military, academia, policymakers, CSOs and others to strengthen regional/multilateral responses;</li> <li>engage with different sectors to align on objectives, priorities and actions (preparedness, mitigation and adaptive capacity).</li> </ul>
	<p><b>Mitigation &amp; Adaptation in Fragile, Conflict &amp; Violence Contexts</b></p> <ul style="list-style-type: none"> <li>increase research on the possibilities and impossibilities of mitigation and adaptation in Fragile, Conflict and Violence (FCV) contexts through action-oriented research goals.</li> </ul>

Continued on the following page

Table 2: Opportunity – Adaptation

COE Pillar of Work	Opportunity for COE
Concept Development and Experimentation	<p><b>Climate Security Community of Practice</b></p> <ul style="list-style-type: none"> <li>• build up the dynamic and engaged community of practice on climate security by engaging decision-makers and create a space for collective reflection/action;</li> <li>• create clear transition roadmaps for policy, investments, and technology adoption and be a political home that applies pressure for action;</li> </ul>
	<p><b>Alignment of climate action with development gains and peace-building</b></p> <ul style="list-style-type: none"> <li>• consider more funding for climate adaptation that also provides opportunities to reduce climate impacts to also improve health and living conditions.</li> </ul>
	<p><b>Operationalize and spur action</b></p> <ul style="list-style-type: none"> <li>• pivot from response to preventative action;</li> <li>• use adaptation for conflict prevention to create peace-building;</li> <li>• identify areas where security is “doing the right thing”, capitalism is antinomic, and develop policies to bridge this gap and enable action.</li> </ul>
	<p><b>Energy access, affordability, tech transfer and transition</b></p> <ul style="list-style-type: none"> <li>• increase energy access and affordability (eg. technology, fossil fuels) as part of peace-building activities</li> <li>• renewable energy can be generated everywhere and at local level;</li> <li>• enable technology transfer and knowledge sharing to ensure mitigation, stability, energy security, and peace.</li> </ul>

## Table 3: Opportunity – Mitigation

Definition: Supporting allied efforts related to reducing the climate and environmental impacts of military and defence sector activity.

COE Pillar of Work	Opportunity for COE
Analysis and Lessons Learned	<p><b>Finding opportunities to reduce climate impacts</b></p> <ul style="list-style-type: none"> <li>integrate with NATO Energy Centre on common solutions to decarbonize energy use, reduce carbon footprint and increase operational effectiveness of military operations via mitigation</li> <li>set targets for militaries to comply with emissions and adaptation standards that are at least as strict as standards for civilian sectors.</li> </ul>
	<p><b>Mitigation &amp; Adaptation in Fragile, Conflict &amp; Violence Contexts</b></p> <ul style="list-style-type: none"> <li>increase research on the possibilities and impossibilities of mitigation and adaptation in Fragile, Conflict and Violence (FCV) contexts through action-oriented research goals.</li> </ul>
Doctrine Development and Standards	<p><b>Global governance and international standards on climate justice</b></p> <ul style="list-style-type: none"> <li>evolving expertise is creating a new generation of climate security experts;</li> <li>strengthen international norms &amp; standards, embrace different perspectives, work together and build trust on climate justice;</li> <li>eg. Task Force on Climate-related Financial Disclosures (TCFD)/Environmental, Social, and Governance (ESG) reporting, governance of technology, global commons, deep oceans, space, cryosphere (international law is lagging in these areas).</li> </ul>
	<p><b>Opportunity for Indigenous Knowledge and participation</b></p> <ul style="list-style-type: none"> <li>cooperation and collaboration with Indigenous communities and Indigenous Peoples (UNDRIP commitments) including supporting community infrastructure and training</li> <li>eg. using community members as first responders, involving them as partners in contingency planning and leveraging their sophisticated understanding of the operating environment.</li> </ul>
	<p><b>Engage in strategic diplomacy</b></p> <ul style="list-style-type: none"> <li>develop environmental diplomacy for crisis prevention (NATO hub, catalyst) and mitigating Great Power Competition;</li> <li>develop environmental strategy and implementation for NATO that defines, identifies, and disaggregates sources of insecurity.</li> </ul>
Doctrine Development and Standards	<p><b>Collaboration, cooperation and coordination</b></p> <ul style="list-style-type: none"> <li>strengthened partnerships and collaboration across sectors, with coordination across the nexus that contribute to development gains, and international cooperation;</li> <li>develop integrated approaches between climate, defence, diplomacy, defence/security, development, and humanitarian communities;</li> <li>“Whole of Government” approach (energy, transportation, housing, health, communications) (also in regards to Canada’s recent announcement addressing international climate finance);</li> <li>increase collaboration and capacity for natural/climate disaster response and coordinated efforts;</li> <li>improve and find new ways for civil-military cooperation in addressing climate-related threats.</li> </ul>
Concept Development and Experimentation	<p><b>Climate Security Community of Practice</b></p> <ul style="list-style-type: none"> <li>build up the dynamic and engaged community of practice on climate security by engaging decision-makers and create a space for collective reflection/action;</li> <li>create clear transition roadmaps for policy, investments, and technology adoption and be a political home that applies pressure for action.</li> </ul>
	<p><b>Alignment of climate action with development gains and peace-building</b></p> <ul style="list-style-type: none"> <li>consider finance and incentive opportunities to leverage mitigation investments, and align climate action and climate-security with peace-building.</li> </ul>
	<p><b>Inclusive development</b></p> <ul style="list-style-type: none"> <li>enhance coherence across humanitarian, development, climate responses, and finance to include diverse knowledge systems to find solutions and build/strengthen collaboration.</li> </ul>



## Table 4: Vision – Awareness

The vision statements listed below are intended to enhance NATO’s knowledge and understanding of the ways that climate change will affect broad security interests. Below are the top 9 prioritized visions identified in workshop two out of a total of 14 identified in workshop one (\* indicates vision statements chosen across multiple groups):

Intent / System Orientation (value/goal)	Deep Leverage Points for Design (system structure)	Vision for Enhancing Knowledge and Understanding of Climate Change and Security
Inclusive, convening, representation, dialogue, collaborative action	add governance, re-organize information flows	<p><b>Inclusive Convening Role</b></p> <ul style="list-style-type: none"> <li>• Take an inclusive convening role connecting academia, NGOs, militaries, etc. working on climate security challenges</li> <li>• Connect Alliance members with similar or complementary interests or needs to facilitate joint collaborations</li> <li>• Break down silos and stimulate a desire for collaborative action across sectors</li> <li>• Improve dialogue, inclusive discussions, increase representation, and bridge different fields that are key to the conversation</li> </ul>
Coordination, commitments, best practices	re-organize system rules, information flows	<p><b>*Government Coordination &amp; Thought Leadership</b></p> <ul style="list-style-type: none"> <li>• Focus on government coordination (domestic, national and international) and include commitments for investment and action</li> <li>• Convene global thought leaders and organizations working in this space to select best practices</li> </ul>
Partnerships, coordination, integrate, convene	re-organize system structure and rules	<p><b>Partnerships to Coordinate with other COEs and Initiatives</b></p> <ul style="list-style-type: none"> <li>• Build partnerships to coordinate with other related COEs to provide input and avoid duplication</li> <li>• Integrate with other COEs to align on goals, improving both resilience and reduced energy demand</li> <li>• Convene other initiatives (past and present) to avoid duplication of work or unnecessary overlap of scope (e.g. anticipatory governance)</li> </ul>
Awareness, analysis, security dimensions, standard-setting, convene, research and action, beyond traditional	add/re-organize system structure and information flow	<p><b>NATO Hub for Climate Security</b></p> <ul style="list-style-type: none"> <li>• Create a NATO hub for climate security awareness and consequences analysis</li> <li>• Consider the national and human security dimensions, and take a standard-setting role (help set mitigation standards for military procurements and practices)</li> <li>• Convene multidisciplinary groups to identify research and action areas</li> <li>• Embrace a willingness to go beyond traditional approaches</li> </ul>
Voices, risk, share lessons, partnerships	re-organize information flow and system rules	<p><b>Climate Risk Management</b></p> <ul style="list-style-type: none"> <li>• Bring the voices of people most at risk and institutions that focus on climate risk management (i.e. human development) to share lessons and ideas with the NATO community</li> <li>• Importance of civil-military partnerships</li> </ul>

Continued on the following page

Table 4: Vision – Awareness

Intent / System Orientation (value/goal)	Deep Leverage Points for Design (system structure)	Vision for Enhancing Knowledge and Understanding of Climate Change and Security
Perspectives, knowledge, analysis, implications, evidence for decision making	re-organize system rules (incentives/constraints); structure of information flow (access to information)	<p><b>*Research, Analysis, Decision-making, Policy Development</b></p> <ul style="list-style-type: none"> <li>• Include diverse perspectives and knowledge systems</li> <li>• Conduct research and comprehensive analysis on the security implications of climate change that informs policy development</li> <li>• Support dialogue and evidence for decision making on the role of preventative (resilience building) versus responsive interventions (military and humanitarian)</li> </ul>
Balance, dedicated teams, protect and develop, political economic analysis, system change	re-organize system structure and system rules	<p><b>Strategic &amp; Operational Balance</b></p> <ul style="list-style-type: none"> <li>• Ensure balance between strategic and operational approach</li> <li>• Employ dedicated teams for climate change prevention, strategy development and technological innovation</li> <li>• Define roles that NATO could play to help protect and develop key carbon sinks (both marine and terrestrial)</li> <li>• Use political economy analysis to show transformation change (practical and tactical approach)</li> <li>• Address need for system change (identify drivers, levers, actions, outcomes, etc.)</li> </ul>
Evidence based, assessment, simulations	re-organize system rules; structure of information flow (access to information)	<p><b>*Training - Evidence &amp; Action Oriented Model</b></p> <ul style="list-style-type: none"> <li>• Use evidence-based risk assessment tools and practices, existing climate threat assessments, and assessment of vulnerability to climate change for the installations/ infrastructure of all Allies</li> <li>• Use simulations (scenarios exercises and gaming) for stakeholders to internalize crisis with climate security discussion, actions, and protocols</li> </ul>
Creative solution space, technology and policy innovation, pilot/ test/ iterate ideas	add system structure	<p><b>Innovation/Creative Hub for Solutions</b></p> <ul style="list-style-type: none"> <li>• Create a problem-solving and creative solution space that prioritizes innovative “outside of the box” approaches and thinking</li> <li>• Focus on technology and policy innovation (e.g. stress testing doctrines, carbon sinks)</li> <li>• Pilot many creative solutions, expecting high failure rates but one or two big impact successes (consider a venture capital approach)</li> </ul>

## Table 5: Vision – Adaptation

The vision statements listed below are intended to address, limit, or build resilience to identified security impacts of climate change. Below are the top 2 prioritized visions identified in workshop two out of a total of 14 identified in workshop one:

Intent / System Orientation (value/goal)	Deep Leverage Points for Design (system structure)	Vision to Address, Limit, or Build Resilience to Security Impacts of Climate Change
Climate security best practices, promote dialogue, promote policy messages	structure of information flow (access to information)	<p><b>Leadership in Climate Security</b></p> <ul style="list-style-type: none"> <li>• Leadership in developing and sharing operational climate security best practices for NATO Allies (and other countries)</li> <li>• Promote dialogue among NATO Allies (listen and connect different thinking and arguments on mitigation agenda)</li> <li>• Promote policy messages that help advance coherence, collaboration and cooperation among the peace/security, climate, development and humanitarian communities</li> </ul>
Clarify the climate security nexus, inclusive of diverse approaches, holistic/global approach, unique value-add	re-organize system structure; structure of information flow (access to information)	<p><b>Inclusive Approach to Climate Security Nexus</b></p> <ul style="list-style-type: none"> <li>• Work to help clarify the climate security nexus while being inclusive of the diverse climate security approaches and challenges among allies</li> <li>• Work with a holistic/global approach (integrate non trans-Atlantic regions into the discussion)</li> <li>• Maintain a unique value-add (avoid replicating work others are doing)</li> </ul>

## Table 6: Vision – Mitigation

The vision statements listed below are intended to support allied efforts related to reducing the climate and environmental impacts of military and defence sector activity. Below are the top 4 prioritized visions identified in workshop two out of a total of 14 identified in workshop one:

Intent / System Orientation (value/goal)	Deep Leverage Points for Design (system structure)	Vision for Supporting Allied Efforts to Reduce Climate and Environmental Impacts
Partnerships to coordinate, integrate with other COEs, convene other initiatives	re-organize system structure, adjust rules of the system (incentives/constraints)	<p><b>Partnerships to Coordinate with other COEs and Initiatives</b></p> <ul style="list-style-type: none"> <li>• Build partnerships to coordinate with other related COEs to provide input and avoid duplication</li> <li>• Integrate with other COEs to align on goals, improving both resilience and reduced energy demand</li> <li>• Convene other initiatives (past and present) to avoid duplication of work or unnecessary overlap of scope (e.g. anticipatory governance)</li> </ul>
Prioritize innovation, technology and policy innovation, Pilot creative solutions	re-organize system structure, adjust rules of the system (incentives/constraints)	<p><b>Innovation/Creative Hub for Solutions</b></p> <ul style="list-style-type: none"> <li>• Create a problem-solving and creative solution space that prioritizes innovative “outside of the box” approaches and thinking</li> <li>• Focus on technology and policy innovation (e.g. stress testing doctrines, carbon sinks)</li> <li>• Pilot many creative solutions, expecting high failure rates but one or two big impact successes (consider a venture capital approach)</li> </ul>
Leading voice, strategic communications, environmental diplomacy	structure of information flow (access to information)	<p><b>Communications - A Voice to Break Through the Noise</b></p> <ul style="list-style-type: none"> <li>• Build on the existing strong reputation that NATO has and be a leading voice for links between climate and security, representing different experts</li> <li>• Invest in strategic communications and new mediums to break through the noise</li> <li>• Enable NATO in regards to environmental diplomacy in crisis prevention, great power competition, and environmental strategy</li> </ul>
Climate security best practices, promote dialogue, promote policy messages	structure of information flow (access to information)	<p><b>Leadership in Climate Security</b></p> <ul style="list-style-type: none"> <li>• Leadership in developing and sharing operational climate security best practices for NATO Allies (and other countries)</li> <li>• Promote dialogue among NATO Allies (listen and connect different thinking and arguments on mitigation agenda)</li> <li>• Promote policy messages that help advance coherence, collaboration and cooperation among the peace/security, climate, development and humanitarian communities</li> </ul>



# 05

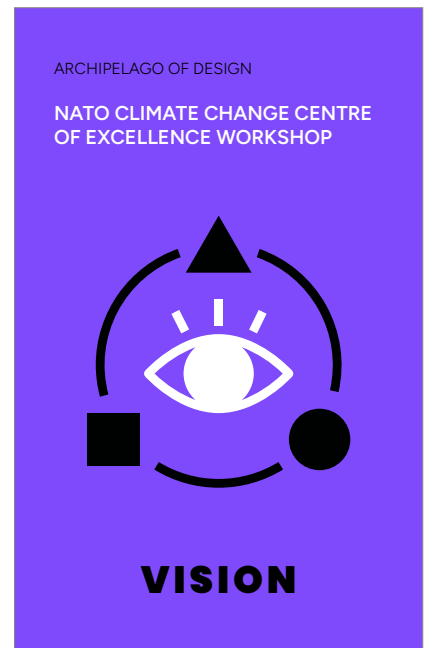
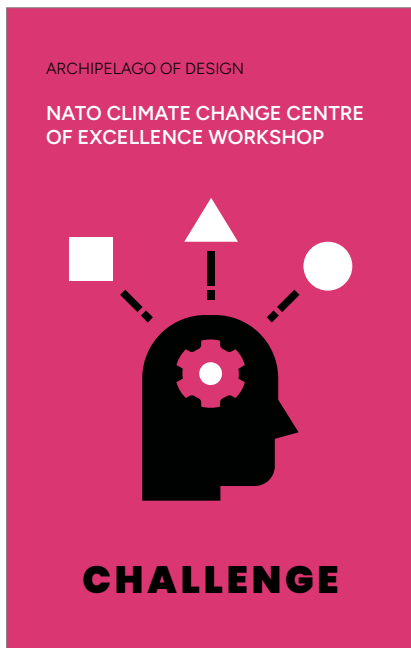
## Appendix A

# 5. Appendix A

## Workshop Images

Climate Security Cards for Strategic Conversations

### Activity – Climate Security Challenge Cards





# Challenge Cards

ARCHIPELAGO OF DESIGN

NATO CLIMATE CHANGE CENTRE OF EXCELLENCE WORKSHOP

**CHALLENGE**

**CHALLENGE**

**Climate-related Standard Operating Procedures (SOPs)**

There is a need for standard operating procedures to tackle climate-related emergencies.

How may we support work to address the lack of climate SOPs, and build systemic resilience?



GOVERNANCE; ADAPTATION

**CHALLENGE**

**Weak Governance & Underlying Structural Vulnerabilities**

If everything is viewed with a climate lens, underlying structural vulnerabilities such as corruption and weak governance might not be addressed.

How may we support work to address issues associated with weak governance, that can lead to downstream security challenges?



GOVERNANCE; ADAPTATION


**CHALLENGE**

**Increasing Demand for Military Requests for Assistance & Available Resources**

There will be increasing demand for humanitarian and military assistance for disaster relief support, with conflicts over limited resources.

This may overwhelm military actors, and can lead to situations where military actors are used inappropriately by governments to respond to rising high availability/disaster recovery (HA/DR) demand.

How may we support work to address demand, and ensure effective use of resources?



POLITICAL; ADAPTATION


**CHALLENGE**

**Lack of Holistic Approach to System Impacts**

There will be impacts on food security, health, mental wellbeing, infrastructure, economic development, transport, communications, etc.

This means climate change requires a holistic approach to systemic impacts.

How may we support work to build a holistic approach to global security challenges?



POLITICAL; ADAPTATION


**CHALLENGE**

**Trapped in Reactive Response, Enhance Preparedness Capacity**

"Developed" vs "developing" nations have a differing ability to tackle climate change. States/institutions that are trapped in a reactive response to crises can never get ahead.

There is a need to be mindful of the diverse impacts and to focus on preparedness.

How may we support work to enhance preparedness capacity to address security challenges?



POLITICAL; ADAPTATION


**CHALLENGE**

**Transition to Renewable Energy**

How fast will we transition to renewable energy sources, and how adequate will these sources be to meet our defence/security needs?

Who will win/lose from the transition? What are potential unintended consequences?

How may we support work and begin to address expectations concerning the transition to renewable energy?



ENVIRONMENT; ADAPTATION


**CHALLENGE**

**Increasing Frequency with Limited Recovery**

Climate hazards are becoming more intense and more frequent.

This is creating situations where there is no time to recover before the next disaster hits.

How may we optimize recovery and build systemic resilience to climate hazards and security impacts?




ENVIRONMENT; ADAPTATION

**CHALLENGE**

**Increase Need for Humanitarian Response**

Increased frequency, intensity, and distribution of extreme weather events with a lack of integrated responses will increase humanitarian needs.

How may we support development of an integrated response to build system resilience?



ECONOMIC; ADAPTATION

**CHALLENGE**

**Increase in Military Capabilities (Home & Abroad)**

More military capabilities will be needed to respond to climate-related insecurity at home and abroad.

How may we deploy and build military capabilities to respond to climate-related security challenges?



ECONOMIC; ADAPTATION

Continued on the following page


**CHALLENGE**

**Equipment & Logistical Challenges**

Military equipment is optimized for specific temperature ranges.

Climate change will create logistical challenges for our supply routes, military bases, airfields, and will make it harder for our militaries to carry out their tasks.

How may we support work to address, limit or build resilience to logical challenges that may impact defence capabilities?



TECHNOLOGY, ADAPTATION


**CHALLENGE**

**Increasing Social Vulnerability, Risk to Human Security**

Ranging from physical safety, to water, food, economic security and health - all are negatively impacted.

Slow onset and growing climate hazards/risks are reducing societal resilience, and increasing vulnerability of communities. Existing underlying structural vulnerabilities to other shocks are drastically exacerbated with limited coping capacity.

How may support work to address, limit or build resilience to security challenges, and avoid a situation of crisis fatigue?



SOCIAL: ADAPTATION


**CHALLENGE**

**Climate Justice: Exacerbation in Fragile, Conflict and Violence (FCV) Settings**

Communities living in already fragile and conflict-affected countries are increasingly impacted by growing risks, costing lives, livelihoods and hampering development.

Climate action and finance are inadequate in fragile and conflict-affected community settings. Lack of investment, unevenly distributed impact work, and trade-offs are exacerbating factors between climate, peace, and security objectives.

How may we support work to address, limit or build resilience to security challenges in fragile, conflict and violence settings?



SOCIAL: ADAPTATION

**CHALLENGE**

**Inconsistent Response to Climate Targets & Tensions**

There were uneven responses to the Paris climate targets, increasing tensions among nations.

How may we support allied efforts to mitigate against political tensions and consequences?




GOVERNANCE: MITIGATION

**CHALLENGE**

**Governance Capacity Strain & State Fragility**

There will be increasing strains on governance capacity with increasing state fragility.

How might we increase allied efforts and regional presence to address climate security challenges without triggering the security dilemma?



GOVERNANCE: MITIGATION

**CHALLENGE**

**Need for Greater Global Collective Action**

Greater global response and collective action is needed within functional multilateral spaces.

How may we support collective action to reduce climate and environmental risk and impacts?



GOVERNANCE: MITIGATION


**CHALLENGE**

**Tensions & Conflicts over Climate Action & Fragile, Conflict & Violent (FCV) Settings**

There will be increased risks of conflict or violence within states. Tensions include conflicts over mitigation and adaptation strategies.

Climate action is inadequate in fragile and conflict-affected settings.

How may we support allied efforts to mitigate risks, and support opportunities to build resilience?



POLITICAL: MITIGATION; ADAPTATION


**CHALLENGE**

**Environmental Degradation, Peace & Security Risk & Cooperation**

There will be climate change and environmental degradation, with increased risks for peace and security.

There may be opposition to the idea of the military in environmental peacebuilding.

How may we support allied efforts and cooperate on this issue with militaries in other countries to mitigate risks? (climate security is not as much recognised by Russia, China, etc.)




POLITICAL: MITIGATION

**CHALLENGE**

**Indigenous Knowledge in Climate Policy**

There is an increasing recognition of the importance of Indigenous knowledge in climate assessment and policy making.

How may we support allied efforts to leverage Indigenous knowledge to inform policy that mitigates climate and environmental risks?



POLITICAL: MITIGATION

Continued on the following page

**CHALLENGE**

**Support Indigenous Communities as First Responders**

There is a need to support Indigenous communities as first responders and a need to support their capacity (through community infrastructure and training).

How may we support allied efforts for Indigenous communities, and reduce need for military requests for assistance?



POLITICAL; MITIGATION

**CHALLENGE**

**Competition for Resources & Conflict**

Competition for resources such as fresh water, farmland, important minerals, etc. is leading to increased local and global conflict.

How may we support allied efforts to mitigate conflict and need for defence sector activity?



ENVIRONMENT; MITIGATION


**CHALLENGE**

**Increasing Food Insecurity**

As the climate crisis continues, the number of people becoming food insecure will increase.

Food insecurity and instability are also a consequence of increased migration and increased conflict. Migration will be too large to address through humanitarian interventions.

How may we support allied efforts to mitigate impacts of food insecurity and conflict?




ENVIRONMENT; MITIGATION

**CHALLENGE**

**Increasing Costs for Response & Adaptation**

The cost of humanitarian and military response as well as adaptation will increase beyond available budgets.

How may we support allied efforts to mitigate need for military response activities?



ECONOMIC; MITIGATION

**CHALLENGE**

**Need for Inclusive Transition & Access to Green Jobs**

Transition risks are not fully understood and there is a need for a just and inclusive transition.

Who will have access to industry and financing? What will be the impact/ consequences?

How may we support allied efforts towards an inclusive transition, and mitigate economic insecurity and instability?



ECONOMIC; MITIGATION


**CHALLENGE**

**Addressing Root Cause of Conflicts**

Addressing the cost of conflicts is much higher than addressing its root causes.

A shift from response to prevention is needed.

How may we support allied efforts to address the root cause of conflicts, and mitigate need for defence activity?



ECONOMIC; MITIGATION

**CHALLENGE**

**Climate Diplomacy & Geoengineering**

Who governs or determines geo-engineering? The UN Code of Conduct? Is there norms or treaties in place?

There is an increased role for diplomacy to arbitrate resource competition and disputes (eg. Ethiopia/ Egypt over the Nile).

This is deeply connected to political and climate diplomacy (eg. geo-political rivalries over water bodies and rivers).

How may we supported allied efforts to mitigate risk of conflict and need for defence sector activity?




TECHNOLOGY; MITIGATION

**CHALLENGE**

**Climate Action: Lack of Alignment with Peace-building**

Climate action and peace building need to be aligned.

How may we support allied efforts and align activities on climate and conflict sensitive programming, policies, and investments to mitigate risks?




TECHNOLOGY; MITIGATION

**CHALLENGE**

**Climate Justice: Protracted Instability & Limited Capacity**

There is a need to ensure climate justice. Growing climate risks contribute to protracted instability in already unstable places, and where institutions have limited capacity to manage resources in a sustainable manner and address tensions. Tensions related to the use of resources continue to grow.

How may we collaborate and support allied efforts to mitigate risk of escalation, and need for defence sector activity?



SOCIAL; POLITICAL; MITIGATION


Continued on the following page

**CHALLENGE**

**Livelihood Insecurity & Recruitment into Crime**

Climate-related livelihood insecurity contributes to people seeking alternative livelihoods (organised crime, armed groups).

How may we collaborate and work with allied partners to mitigate the risk of escalation, and need for defence sector activity?




SOCIAL; ECONOMIC; MITIGATION

**CHALLENGE**

**Governance Breakdown / State Failure**

What can be done when a climate crisis or extreme events lead to state failure, breakdown of governance, or state disappearance? (eg. low lying islands that are at greater risk).

How might we enhance our knowledge and understanding of security implications, and better anticipate the need to address legal and succession issues, deployment advanced planning, and/or state relocation?




GOVERNANCE; AWARENESS

**CHALLENGE**

**Geopolitical Tensions & GHG Emissions**

There will be geopolitical tensions between greatest emitters of greenhouse gases.

How may we enhance our knowledge and understanding, and potential security implications?



POLITICAL; AWARENESS


**CHALLENGE**

**Eco-terrorism or Ignoring Climate Change**

To what extent will there be “eco-terrorism” as developed countries continue to ignore climate change or do not change their behaviour that contribute to escalation of risks?

Will other actors perpetrate violence to punish people/actors?

How may we enhance our knowledge and understanding, and potential security implications?



POLITICAL; AWARENESS

**CHALLENGE**

**Local Collaborative Alliances for Real-time Monitoring**

There is a need for collaboration with local residents and organizations to allow for ongoing monitoring, identifying indicators, and present real-time data insights to understand impacts.

How may we collaborate with local communities/organizations to enhance our knowledge and understanding of risk?




POLITICAL; AWARENESS

**CHALLENGE**

**Fossil Fuel Extraction & Increasing Security Risk**

There will be tensions concerning fossil fuel energy extraction and evolving security risks. Fossil fuels, food security, and climate security are intrinsically linked.

How might we enhance our knowledge and understanding and mitigate security risks associated of fossil fuel extraction?



POLITICAL; AWARENESS

**CHALLENGE**

**International Law, Intersecting Threats & Human Rights**

There is a weakness of international law to address intersecting threats.

Climate-security is largely considered a problem in developing countries, but extreme weather events can also hit developed countries hard. There will be an impact on human rights.

How may we enhance our knowledge and understanding of situations that have an impact human rights and broader security interests?



POLITICAL; AWARENESS

**CHALLENGE**

**Increasing Complexity of Context**

Climate impacts coupled with biodiversity loss, pandemic, and conflict situations create increasingly complex and multi-hazard contexts.

How may we enhance our knowledge and understanding of systemic complexity in multi-hazard contexts, to better anticipate potential security implications?



ENVIRONMENT; AWARENESS

**CHALLENGE**

**Critical Infrastructure Risks & Threats to Security**

The threats to energy security, water security, and damage to infrastructure are increasing as extreme weather events increase.

How may we enhance our knowledge and understanding of critical infrastructure risk, and potential consequences on the broader security landscape?



ENVIRONMENT; AWARENESS


Continued on the following page

**CHALLENGE**

**Lack of Carbon Footprint Awareness**

Military and the general public are unaware of their own carbon footprint.

How may we enhance military and civilian awareness of their carbon footprint, and motivate actions that potentially mitigate escalation of security risks?



ENVIRONMENT; AWARENESS

**CHALLENGE**

**Increase in Resource Competition**

There will be an increased competition for fertile land (for growing food) and water, as well as competition for newly accessible resources (notably in the Arctic).

How may we enhance our knowledge and understanding of shifts in resource competition, and the potential consequences on the broader security landscape?



ECONOMIC; AWARENESS

**CHALLENGE**

**Increasingly Volatile Markets, Trade Routes & Global Shortages**

Supply chain disruptions, loss of livelihood, and breakdown of insurance markets and systems all contribute to market volatility. The potential impact on trade routes will lead to global shortages.

How may we enhance our knowledge and understanding of the impact of market volatility and potential consequences on the broader security landscape?



ECONOMIC; AWARENESS

**CHALLENGE**

**Climate Action: Limited Understanding of Consequences of Technological Innovation**

There is a glimmer of hope in technological innovation however, we don't know the unintended consequences of solutions (eg, extraction of particular minerals, energy requirements, etc.).

How may we enhance our knowledge and understanding of technology innovation and potential consequences on the broader security landscape?




TECHNOLOGY; AWARENESS

**CHALLENGE**

**Geoengineering Technology**

Deployment of geoengineering technologies as solutions are not fully assessed, and associated risk are not fully understood.

How may we enhance our knowledge and understanding of geoengineering technologies, and the potential consequences on the broader security landscape?



TECHNOLOGY; AWARENESS

**CHALLENGE**

**Increasing Demand on Forces & Military Infrastructure Uncertainty**

There is increasing demand on military forces for humanitarian aid, disaster-relief missions, and assistance with resource conflicts. There is uncertainty around military installations for all Allies and existing potential vulnerabilities.

How may we enhance our understanding of the changing environment, and better anticipate demand for support to ensure there is sufficient infrastructure capacity to respond?




TECHNOLOGY; AWARENESS

**CHALLENGE**

**Increasing Migration & Displacement**

As a result of shocks or significant changes in climate, people/actors may migrate due to droughts/hunger, country-wide economic collapse or for political reasons. This can potentially result in pressures to accommodate refugees and migrants from other countries, further increasing the need for humanitarian assistance. This is expected to challenge existing migration/asylum governance structures and legal frameworks.

How may we enhance our knowledge and understanding of mitigation/displacement patterns and better anticipate security challenges?



SOCIAL; GOVERNANCE; AWARENESS


**CHALLENGE**

**Risk Governance: Compounding Risk**

Many countries are not yet prepared to deal with heat wave implications.

Multiple and cascading climate impacts are happening at once. Human suffering in countries most affected by climate change is resulting in increased demand for humanitarian assistance and is also straining global response systems. There are also climate risks to civilian infrastructure.

How may we approach risk governance and enhance our understanding of compounding risk?



SOCIAL; AWARENESS

# Opportunity Cards

ARCHIPELAGO OF DESIGN

NATO CLIMATE CHANGE CENTRE  
OF EXCELLENCE WORKSHOP




**OPPORTUNITY**

OPPORTUNITIES

**Climate adaptation and disaster risk reduction opportunities**

Enhance understanding of the humanitarian implications of climate change in the most vulnerable contexts. Enhance situational understanding and awareness through smarter risk assessments and early warning systems to support measures that address systematic risks.



AWARENESS; ANALYSIS & LESSONS LEARNED; CONCEPT DEVELOPMENT & EXPERIMENTATION

OPPORTUNITIES

**Collaboration, Cooperation and Coordination**

Strengthened partnerships and collaboration across sectors, build multi-sectoral/silo-busting approaches to addressing climate risks.

Climate science cooperation with data sharing for harmonized perceptions of climate threats, and with integrated analysis and joint planning.




AWARENESS; ANALYSIS & LESSONS LEARNED

OPPORTUNITIES

**Raise awareness of risks and educate about necessary actions**

Develop bold policy and education campaigns that democratize access to information. Support action to drive change in consumer habits, and create better awareness of unintended negative consequences of climate action on stabilization efforts.




AWARENESS; EDUCATION, TRAINING, EXERCISE & EVALUATION

OPPORTUNITIES

**Alignment of climate action with development gains and peace-building**

Improve climate literacy and equip decision makers with technical and financial assistance, as well as education and advocacy measures.



AWARENESS; EDUCATION, TRAINING, EXERCISE & EVALUATION

OPPORTUNITIES

**Build on what Already Exists**

Accelerate integrated thinking at the level of government for policy formulation. Set a clear COE mandate and ensure leadership is capable of hitting the ground running.




ADAPTATION; CONCEPT DEVELOPMENT & EXPERIMENTATION

OPPORTUNITIES

**Risk tools, data evidence, decision-making**

Leverage predictive tools and capabilities to better inform risk assessments and improve data and evidence and analysis to support decision-making. Consider tools from the security community and data evidence technologies that move beyond policy discourse.

Conduct gap analysis for adaptation gaps while leveraging locally informed, down-scaled climate-security risk analysis.



ADAPTATION; ANALYSIS; AWARENESS

OPPORTUNITIES

**Convene actors and communities to strengthen collective response**

Build strategic partnerships and agreements for supply, intellectual property (IP), and collaboration between military, academia, policymakers, CSOs and others to strengthen regional/multilateral responses.

Engage with different sectors to align on objectives, priorities and actions (preparedness, mitigation and adaptive capacity).




ADAPTATION; CONCEPT DEVELOPMENT & EXPERIMENTATION

OPPORTUNITIES

**People-centred and diverse voices**

Bring diverse voices to the table from the humanitarian and development sector to address the issues of people and the risk of ignoring concerns.

Include diverse voices across industries and schools to ensure people feel heard, with opportunities build solutions together.



ADAPTATION; ANALYSIS & LESSONS LEARNED

OPPORTUNITIES

**Alignment of climate action with development gains and peace-building**

Consider more funding for climate adaptation that also provides opportunities to reduce climate impacts to also improve health and living conditions.




ADAPTATION; CONCEPT DEVELOPMENT & EXPERIMENTATION

Continued on the following page

OPPORTUNITIES

**Alignment of climate action with development gains and peace-building**

Consider finance and incentive opportunities to leverage mitigation investments, and align climate action and climate-security with peace-building.




MITIGATION; CONCEPT DEVELOPMENT & EXPERIMENTATION

OPPORTUNITIES

**Collaboration, Cooperation and Coordination**

Strengthened partnerships and collaboration across sectors, with coordination across the nexus that contribute to development gains, and international cooperation. Develop integrated approaches and cooperation between climate, defence, diplomacy, peace/security, development, and humanitarian communities.

Increase collaboration and capacity for natural/climate disaster response and coordinated efforts. Improve and find new ways for civil-military cooperation in addressing climate-related threats.



MITIGATION; DOCTRINE DEVELOPMENT & STANDARDS

OPPORTUNITIES

**Mitigation & Adaptation in Fragile, Conflict & Violence Contexts**

Increase research on the possibilities and impossibilities of mitigation and adaptation in Fragile, Conflict and Violence (FCV) contexts through action-oriented research goals.



MITIGATION; ADAPTATION; ANALYSIS & LESSONS LEARNED

OPPORTUNITIES

**Engage in Strategic Diplomacy**

Develop environmental diplomacy for crisis prevention (NATO hub, catalyst); and mitigate Great Power Competition.

Develop environmental strategy and implementation for NATO that defines, identifies, and disaggregate sources of insecurity.




MITIGATION; DOCTRINE DEVELOPMENT & STANDARDS

OPPORTUNITIES

**Finding opportunities to reduce climate impacts**

Integrate with NATO Energy Centre on common solutions to reduce carbon footprint and increase operational effectiveness of military operations via mitigation. This includes setting targets for militaries to comply with emissions and adaptation standards that are at least as strict as the standards for civilian sectors.

EXAMPLE: Renewing fuel needs




MITIGATION; ANALYSIS & LESSONS LEARNED

OPPORTUNITIES

**Opportunity for Indigenous Knowledge and participation**

Develop new and unique models for Northern operations could result in enhanced interoperability and efficiencies.

Utilize Indigenous peoples (Inuit in Nunangat, Gwich'in, Yukon First Nations, Metis), Northerners, Northern corporations, and other agencies operating in the Arctic for the use of equipment and hard assets, and/or personnel that are already located in the North.




MITIGATION; DOCTRINE DEVELOPMENT & STANDARDS

OPPORTUNITIES

**Opportunity for Indigenous Knowledge and participation**

Include Western and Indigenous Knowledge to inform decision-making. Increase observation, monitoring and forecasting of relevant trends and essential infrastructure (e.g. ship tracking) in partnership with Indigenous partners.

EXAMPLE: Will ice-breakers be needed in the Arctic by 2030? What is the impact of melt on the integrity of essential infrastructure such as airport runways, installations, harbours, etc.




AWARENESS; ANALYSIS & LESSONS LEARNED; DOCTRINE DEVELOPMENT & STANDARDS

OPPORTUNITIES

**Education, training and best practices**

Learn from the Women, Peace and Security (WPS) agenda: what worked and what did not in mainstreaming the WPS agenda across NATO.



AWARENESS; ANALYSIS & LESSONS LEARNED; EDUCATION, TRAINING, EXERCISE & EVALUATION

OPPORTUNITIES

**Education, training and best practices**

Embed climate literacy in military training and education. Include more training to military personnel responding to climate-related threats that affect both national security and human security.

There is also an opportunity to increase climate literacy across NATO foresight, strategy, planning, and exercises.



AWARENESS; EDUCATION, TRAINING, EXERCISE & EVALUATION

Continued on the following page

**OPPORTUNITIES**

**Regional Approach to Increase Situational Awareness**

Stronger cooperation with regional and sub-regional entities and strengthening regional approaches to enhance resilience against climate-related threats.

There is also an opportunity to bring high level discussion to the grassroots level.



AWARENESS; CONCEPT DEVELOPMENT & EXPERIMENTATION

**OPPORTUNITIES**

**Operationalize and spur action**

Pivot from response to preventative action. Use adaptation for conflict prevention to create peace-building. Identify areas where security is "doing the right thing", capitalism is antinomic and develop policies are in place to bridge this gap and enable action.



ADAPTATION; CONCEPT DEVELOPMENT & EXPERIMENTATION

**OPPORTUNITIES**

**Energy access, affordability, tech transfer and transition**

Increase energy access and affordability (eg. technology, fossil fuels) as part of peace-building activities. Renewable energy can be generated everywhere and at local level.

There is also an opportunity to enable technology transfer and knowledge sharing to ensure mitigation, stability, energy security, and peace.




ADAPTATION; CONCEPT DEVELOPMENT & EXPERIMENTATION

**OPPORTUNITIES**

**Opportunity for Indigenous Knowledge and participation**

Cooperation and collaboration with Indigenous communities and Indigenous Peoples (UNDRIP commitments), including support community infrastructure and training.

EXAMPLE: Using community members as first responders, involving them as partners in contingency planning and leveraging their sophisticated understanding of the operating environment.




ADAPTATION; CONCEPT DEVELOPMENT & EXPERIMENTATION; EDUCATION; TRAINING, EXERCISE & EVALUATION

**OPPORTUNITIES**

**Climate adaptation and disaster risk reduction opportunities**

Enhance compound and cascade risks analysis of climate, conflict, and other risks factors, to design tailored risks-informed measures for adaptation/resilience.



ADAPTATION; ANALYSIS & LESSONS LEARNED

**OPPORTUNITIES**

**Mitigation & Adaptation in Fragile, Conflict & Violence Contexts**

Increase research on the possibilities and impossibilities of mitigation and adaptation in Fragile, Conflict and Violence (FCV) contexts through action-oriented research goals.



MITIGATION; ADAPTATION; ANALYSIS & LESSONS LEARNED

**OPPORTUNITIES**

**Global Governance and International Standards on Climate Justice**

Evolving expertise is creating a new generation of climate security experts. There is a need to strengthen international norms & standards, embrace different perspectives, work together and build trust on climate justice.

EXAMPLES: TCFD & ESG reporting, governance of technology, global commons, deep oceans, space, and cryosphere (international law is lagging in these areas)




MITIGATION; DOCTRINE DEVELOPMENT & STANDARDS

**OPPORTUNITIES**

**Science, evidence, programming and finance**

Employ good science to understand causal pathways (not correlations) with linkages to inform programming, policies, and finance.

There is also an opportunity to shift away from the causality framing; go beyond policy dialogues and use grounded evidence.




AWARENESS; ANALYSIS & LESSONS LEARNED

**OPPORTUNITIES**

**Risk tools, data evidence, decision-making**

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AWARENESS; ADAPTATION; ANALYSIS & LESSONS LEARNED

Continued on the following page



OPPORTUNITIES

**Climate Security Community of Practice**

Build up the dynamic and engaged community of practice on climate security by engaging decisions-makers and create a space for collective reflection/action.

There is also an opportunity to create clear transition roadmaps for policy, investments, and technology adoption and be a political home that applies pressure for action.



CONCEPT DEVELOPMENT & EXPERIMENTATION

OPPORTUNITIES

**Inclusive development**

Enhance coherence across humanitarian, development, climate responses, and finance to include diverse knowledge systems to find solutions and build/strengthen collaboration.



CONCEPT DEVELOPMENT & EXPERIMENTATION

# Vision Cards



**VISION**

**Leadership in Climate-security**

Leadership in developing and sharing operational climate security best practices for NATO allies (and other countries). Promote dialogue among NATO Allies (listen and connect different thinking and arguments on mitigation agenda). Promote policy messages that help advance coherence, collaboration and cooperation among the peace/security, climate, development and humanitarian communities.




AWARENESS; MITIGATION; ADAPTATION

**VISION**

**Inclusive approach to Climate-security Nexus**

Work to help clarify the climate-security nexus while being inclusive of the diverse climate-security approaches and challenges among allies. Work with a holistic/global approach (integrate non trans-Atlantic regions into the discussion).

Maintain a unique value-add (avoid replicating work others are doing).



AWARENESS; MITIGATION; ADAPTATION

**VISION**

**Inclusive Convening Role**

Take an inclusive convening role connecting academia, NGOs, militaries, etc. working on climate security challenges. Connect Alliance members with similar or complementary interests or needs to facilitate joint collaborations.

Break down silos and stimulate a desire for collaborative action across sectors. Improve dialogue, inclusive discussions; increase representation; and bridge different fields that are key to the conversation.




AWARENESS; MITIGATION; ADAPTATION

**VISION**

**Climate Risk Management**

Bring the voices of people most at risk and institutions that focus on climate risk management (i.e. human development) to share lessons and ideas with NATO community.

Importance of civil-military partnerships.




AWARENESS; MITIGATION; ADAPTATION

**VISION**

**Partnerships to Coordinate with other COEs and Initiatives**

Build partnerships to coordinate with other related COEs to provide input and avoid duplication. Integrate with other COEs to align on goals, improving both resilience and reduced energy demand.

Convene other initiatives (past and present) to avoid duplication of work or unnecessary overlap of scope (e.g. anticipatory governance).




AWARENESS; MITIGATION; ADAPTATION

**VISION**

**Value-added Scope & Standards**

Add value and be clear on purpose (avoid duplication, ensure not an echo chamber).

Develop a clear mandate and method of delivery. Establish a draw-down service to commission specific knowledge products to answer specific NATO/Member states' questions, take action, and deliver results.



AWARENESS; MITIGATION; ADAPTATION

**VISION**

**Government Coordination & Thought Leadership**

Focus on government coordination (domestic, national, and international) and include commitments for investment and action.

Convene global thought leaders and organizations working in this space to select best practices.




AWARENESS; MITIGATION; ADAPTATION

**VISION**

**NATO Hub for Climate Security**

Create a NATO hub for climate security awareness and consequences analysis. Consider the national and human security dimensions, and take a standard-setting role (help set mitigation standards for military procurements and practices).

Convene multidisciplinary groups to identify research and action areas. Embrace a willingness to go beyond traditional approaches.



AWARENESS; MITIGATION; ADAPTATION


**VISION**

**Communications - A Voice to Break Through Noise**

Build on the existing strong reputation that NATO has and be a leading voice for links between climate and security, representing different experts.

Invest in strategic communications and new mediums to break through the noise.

Enable NATO in regards to environmental diplomacy in crisis prevention, Great Power Competition, and environmental strategy.



AWARENESS; MITIGATION; ADAPTATION

Continued on the following page

VISION

**Innovation/Creative Hub for Solutions**

Create a problem-solving and creative solution space that prioritizes innovative "outside of the box" approaches and thinking.

Focus on technology and policy innovation (e.g. stress testing doctrines, carbon sinks). Pilot many creative solutions, expecting high failure rate but one or two big impact successes (consider a venture capital approach).



AWARENESS; MITIGATION; ADAPTATION

VISION

**Research, Analysis, Decision-making, Policy Development**

Include diverse perspectives and knowledge systems. Conduct research and comprehensive analyses on the security implications of climate change that informs policy development.

Support dialogue and evidence for decision making on the role of preventive (resilience building) versus responsive interventions (military and humanitarian).



AWARENESS; MITIGATION; ADAPTATION

VISION

**Strategic & Operational Balance**

Ensure balance between strategic and operational approach. Employ dedicated teams for climate change prevention and strategy development and technological innovation.

Define roles that NATO could play to help protect and develop key carbon sinks (both marine and terrestrial). Use political economy analysis to show transformation change (practical and tactical approach). Address need for system change (identify drivers, levers, actions, outcomes, etc.)



AWARENESS; MITIGATION; ADAPTATION

VISION

**Training - Evidence & Action Oriented Model**

Lead training on climate security nexus to NATO partners. Develop an action oriented model to integrate and share learning.

Focus on the contribution of the military to climate mitigation, reducing the environmental and climate impacts of armed conflict (International Humanitarian Law (IHL) obligations).



AWARENESS; MITIGATION; ADAPTATION

VISION

**Training - Evidence & Action Oriented Model**

Use evidence-based risk assessment tools and practices, existing climate threat assessments, and assessment of vulnerability to climate change for the installations/infrastructure of all Allies.

Use simulations (scenarios exercises and gaming) for stakeholders to internalize crisis with climate security discussion, actions, and protocols.



AWARENESS; MITIGATION; ADAPTATION



# ARCHIPELAGO

