National Security Impacts of Climate Change on NATO

ADEKOYA, SEUN
INTRODUCTION

No precedent exists for the magnitude of the effects of climate change. It affects entire civilisations in multiple ways simultaneously and is increasingly understood to have a myriad of complex and unpredictable national security concerns.\(^1\) Several studies have shown that climate change will increase the frequency and magnitude of natural disasters, drive conflict over flood and water, and cause huge increases in migratory flows. Climate change must be recognised as an important factor in geopolitics. For example, the ongoing conflict in Syria can be linked to extreme drought which plagued the country between 2006 and 2009. Crop failures caused a migration of 1.5 million people into urban areas, which was a factor that influenced the uprising in 2011.\(^2\) Similar narratives will become only more common in the future while factoring climate change into geopolitics is rendered more challenging by its volatile nature.

The North Atlantic Treaty Organisation (‘NATO’) is the largest and most powerful military alliance in the world. NATO was founded to strengthen European military capacity in response to the rise of Soviet Russia. However, after the Cold War NATO has transformed into a vehicle committed to global stability and security, engaging in tasks beyond its preordained purpose of collective self-defence operations\(^3\). In the past decade, NATO has conducted numerous non-traditional activities, including providing humanitarian assistance and institution building in fragile states.

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\(^1\) Kurt M. Campbell, Climate Cataclysm: The Foreign Policy and National Security Implications of Climate Change 18 (2008).
NATO has recognised the threat of climate change in its most recent Strategic Concept of 2010, stating that the issue will shape the future security environment and have the potential to significantly affect NATO’s planning and operations. The strategic document shows that there has been recognition of climate change as a security risk, but the focus is mainly on reducing NATO’s own energy consumption rather than running operations in climate-stressed environments, nor assessing the broader climate forced changes to geopolitics.

The first section of this paper will first assess the nature and importance of climate change as a security risk, laying out key national security concerns. The next section will detail the development of NATO as an organisation from 1949 to the present day, and the organisation’s current climate change strategy. Thirdly, the last section discusses how NATO policy should develop to mitigate climate change, assist in efforts to adapt to climate change and prepare for security challenges in a climate-stressed world. Policy suggestions will be discussed with regard to the best practices of NATO’s member states.

**CLIMATE CHANGE AS A SECURITY THREAT**

This section of the paper will outline the nature of climate change as a security threat.

**THE UNAVOIDABLE NATURE OF CLIMATE CHANGE**

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4 The Strategic Concept is a paper released around every 10 years which states NATO’s enduring purpose and its fundamental security tasks.
The Paris Agreement on Climate Change in 2015 at the 21st Conference of the Parties (‘COP21’) was heralded as ground-breaking as world leaders agreed to limit the increase in global temperatures to ‘well below 2°C above pre-industrial levels’. However, world leaders were not equally satisfied. Leaders of the world’s smallest nations, including Tuvalu, the Marshall Islands and the Maldives, faced with the ultimate security threat of the disappearance of their nations considered that a lower goal would be essential for their survival. The result is the most recent Intergovernmental Panel on Climate Change (‘IPCC’) Report which compares global warming of 1.5°C to 2°C. The picture painted by the IPCC, in this last Report and previous iterations, is bleak. The world has warmed 1°C, by 2018, and a further half-degree could expose a great proportion of the world population to extreme heat, water scarcity and substantially lower crop yields. This is likely to be the reality.

Climate Action Tracker assessed that under current policies the world is projected to warm by 3.4°C above industrial levels by 2100. This projection includes all the national pledges made in the Paris Agreement and does not subtract for the fact that there can be a substantial gap between what governments pledge and deliver, nor the election of climate change sceptics in the USA and Brazil. The IPCC Report on Global Warming of 1.5°C makes clear that drastic change is needed to avoid such warming. What is required is ‘rapid

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and far-reaching transitions’ within the global economy. The Carbon Brief’s summary of the IPCC Report notes that to limit warming to 1.5°C with no overshoot, net global CO2 emissions need to fall by about 45% of 2010 levels by 2030 and to net-zero by 2050. These figures adjust to 20% by 2030 and net-zero by 2075 for the goal of 2°C. Dr Gavin Schmidt of NASA commented that it is ‘very unlikely’ that the world will reduce emissions sufficiently to reach the 1.5°C limit. Therefore, I start this section of the paper stating that the following scenarios displayed may be the best that we can hope for and are most definitely the least we ought to prepare for.

THE IMPACT OF CLIMATE CHANGE ON SECURITY

It has long been recognised that climate change has impacts on global security. The Secretary-General of the United Nations Antonio Guterres in key speech announcing a 2019 Climate Summit stated that keeping global warming to well below 2°C is essential for ‘global prosperity, people’s well-being and the security of nations’.

Climate change is complex, which means non-linear and unstable. Nonlinear means incremental changes in the level of inputs into a system can result in major changes in the system’s output, and unstable as it is not possible to create a single, predictable model for the system’s behaviour. Crises are interconnected and self-perpetuating. For example, even a small temperature shift could cause water shortages which lead to food shortages and

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9 Global Warming of 1.5°C: Summary for Policymakers at 17.
11 Campbell, supra note 1, at 98.
13 See Kurt M. Campbell, Climate Cataclysm: The Foreign Policy and National Security Implications of Climate Change 18 (2008).
consequent conflict over the remaining resources in a given area. When a drought destroyed one-fifth of Russia’s wheat harvest in 2010, Russia banned all exports of grain. As Russia is one of the world’s largest wheat exporters, this move, along with similar droughts in Argentina and Australia caused production to decline, and global grain prices rose. Climate change acted as a threat multiplier, exacerbating political tensions in Egypt where food-price inflation spiked by 19% in early 2011, fuelling the protests that overthrew President Hosni Mubarak in the Arab Spring.

One of the most poignant effects of climate change is the increasing prevalence of natural disasters. The Fifth IPCC Report of 2014 (‘IPCC AR5’) determined that extreme events such as heatwaves, extreme precipitation and coastal flooding which are climate change-related can already be observed. Furthermore, the IPCC AR5 predicts that the intensity and the frequency of such events will increase as the global mean temperature rises. The thinktank Germanwatch released the Global Climate Risk Index 2018 (CRI), which analyses the impacts of extreme weather events, listed the United States as one of the top 10 most affected countries for 2016. In this year the U.S. experienced flash floods and floodwaters in North Carolina, extreme flooding in Louisiana and severe wildfires in Tennessee. This trend has not abated in the U.S. 2017 was the worst year recorded for the rapid intensification of hurricanes, where a storm increases its maximum sustained winds by at least 35mph within a 24-hour period, with 40 separate cases. This correlates with the

15 Fifth Assessment Report: Summary for Policymakers at 12.
IPCC’s finding that the frequency of heatwaves in large parts of Europe, Asia and Australia, and the number of heavy precipitation events in most land regions, especially Europe and North America, will continue to increase.

Natural disasters will present a challenge not only to the directly affected states but to the entire international community. The United States especially will commonly be looked to as a ‘first responder’\(^\text{18}\) in the aftermath in a wide range of natural emergency situations. The Center for Naval Analysis (‘CNA’) recognises that extreme weather may lead to ‘increased missions for a number of U.S. agencies’. U.S. relief efforts during the 2004 Indian Ocean Tsunami of nearly 16,000 troops, 26 ships and 10 million pounds of food were essential.\(^\text{19}\) The U.S. has continued to respond across the world and provided further assistance after the 2018 Indonesian Earthquake and Tsunami.\(^\text{20}\) Multinational organisations will be looked to with frequency to manage food aid distribution and disaster relief amongst other emergencies. NATO also has a developing humanitarian relief profile. For example, NATO’s Euro-Atlantic Disaster Response Coordination Centre (‘EADRCC’) engaged in relief operations in response to Hurricane Katrina and flash floods in Pakistan.\(^\text{21}\) Moreover, the CNA has noted the impact of extreme weather on U.S. military installations around the

\(^{18}\) Campbell, supra note 1, at 123.
Hurricane Michael’s devastation of Tyndall Air Force Base, damaging F-22 Raptor aircraft is a present reminder of this climate risk.\(^2\)

Climate change is also projected to severely affect worldwide food and water supplies. The Food and Agriculture Organisation of the UN stated that the number of undernourished people has increased to nearly 821 million in 2017.\(^3\) The number of people facing such food deprivation has increased for the third year in a row. The 2017 State of Food and Nutrition Security Report provided new evidence that climate variability is a key force behind the rise in food insecurity. Extreme climate-related disasters harm agricultural productivity leading to shortfalls in food availability which increases food prices. The 2018 Global Food Policy Report of the Food Policy Research Institute states that global food production growth from 2010 to 2050 will be 10 percent less than it would be without climate change, while global agricultural production must grow by 70% by 2050 to keep 9 billion people fit and healthy.\(^4\) Richard Youngs argues that food will be one of the main forces behind climate-driven conflict.\(^5\) The ongoing crisis in Yemen shows that climate change-induced food security can worsen the effects of geopolitical conflict. Even though agriculture is one of the main elements of the Yemen economy (with oil), Yemen imports nearly 80% of its food. The food situation in Yemen is highly vulnerable to climate variability, where


\(^{26}\) Richard Youngs, Climate Change and European Security 9 (2014).
increased temperatures, decreased rainfall and the ongoing war have resulted in one of the most serious humanitarian crises in the world.27

Increasing water scarcity due to climate change will feed into worldwide instability. The IPCC AR5 concluded that about 80% of the world’s population already suffers from serious threats to water security.28 According to the UN, by 2025 1.8 billion people will be living in regions with absolute water scarcity.29 There is enough freshwater on the planet to satisfy the current population, but water is distributed unevenly and too much of it is wasted or unsustainably managed. John Podesta and Peter Ogden argue that because water does not have the same economic value as oil ‘water wars’ are unlikely, but countries will be forced to pursue more aggressively political arrangements that enable them to exist in a region will beyond its water limits. Tensions in the Middle East will be exacerbated as water shortages will coincide with a population boom. Especially so since 75% of all water in the Middle East is located in Iran, Iraq, Syria and Turkey. Consequently, political tension in a region where the U.S. is currently engaged in its longest-running war is considerably likely.

A further security risk will arise from mass migrations due to climate change. The CNA explains that there are three types of migration: intrastate migration, inter-state migration and cross-ocean migration.30 The International Organisation for Migration indicates that future forecasts vary from 25 million to 1 billion environmental migrants by 2050, moving either within their countries or across borders, on a permanent or temporary basis.

28 Intergovernmental Panel on Climate Change, Fifth Assessment Report.
30 Center for Naval Analysis, supra note 22, at 16-18
basis, with 200 million being the most widely cited estimate.\(^{31}\) While the World Bank predicts that the world could see over 140 million people move within their countries’ borders by 2050.\(^{32}\) Migration will rise due to the factors discussed above such as food and water scarcity. A further important factor is the rising sea levels. About two-thirds of the world’s population live near coastlines, and one-tenth live within 10 meters of sea level while the global population continues to migrate coastward.\(^{33}\) A rise in sea level will cause huge losses of land and population displacement. Migration has become a divisive political issue, especially across Europe and North America. The European migrant crisis beginning in 2015 centred on migrants from climate stressed locations in Africa perilously crossing the Mediterranean to reach the safety of the EU. The immigrants were a heterogeneous group of asylum seekers, economic migrants and environmental migrants and there were political and legal disagreements over how to deal with these different categories. In the U.S. Midterm elections of 2018, the so-called ‘migrant caravan’ became a political hot button and was labelled by the President of the United States as an ‘invasion’ to stoke anti-immigrant sentiment in local politics.

In general, climate change has aptly been described as a ‘threat multiplier’\(^{34}\) or ‘accelerator of state fragility’.\(^{35}\) Notably, climate vulnerability and impact must be separated. The impact of climate change is global, but different countries and regions are more vulnerable because of existing conditions. Projected climate change may tip the balance in many Asian, African and Middle Eastern countries where the standard of living is already

\(^{33}\) Campbell, supra note 1, at 80.
\(^{34}\) Center for Naval Analysis, supra note 22, at 3.
\(^{35}\) Youngs, supra note 26, at 10.
low, leading to ‘widespread instability and the likelihood of failed states’. The Stockholm International Peace Research Institute found that climate change can cause violent conflict when: a) it leads to a deterioration in people’s livelihoods, b) influences the tactical considerations of armed groups, c) elites use it to exploit social vulnerabilities and resources, and d) it displaces people and increases levels of migration. South Asia was, in particular, cited as an area in which many countries are facing climate change and are host to violent conflicts. India and Pakistan both rely heavily on water from the Indus Valley, which crosses through disputed territory. The 1960 Indus Waters Treaty currently provides the means for the rivalrous countries to cooperate, but demand is increasing as water scarcity amplifies. In 2016, Indian Prime Minister Narendra Modi temporarily suspended India’s participation in efforts to manage the river, and has planned infrastructure projects to ‘maximise’ its water use from the Valley. Peaceful collaboration between the two powers will be harder to achieve as the climate worsens.

Climate change will be an increasingly important factor in regional sensitivity and shaping the geopolitical order. John Podesta and Peter Ogden argue that Europe, NATO’s area of focus, is one of the three regions that will present the greatest geopolitical challenge, with South Asia and Africa. They argue that a surge of Muslim migrants into the EU could exacerbate existing tensions and increase the likelihood of radicalisation in Islamic communities. These developments will test the stability and cohesion of the European project if member states fail to resolve their over responsibilities towards migrants.

36 Center for Naval Analysis, supra note 22, at 6.
40 Campbell, supra note 1, at 103.
Meanwhile, Germany, the greatest European recipient of migrants and the largest economy, is affected by climate change much sooner than anticipated. The Rhine, through which 80% of all cargo transported into Germany traverses, is facing long dry spells and dropping to record low levels forcing ships to reduce cargo or avoid the river completely.\textsuperscript{41}

The nature of security has changed. Climate change is a security threat that does not fit easily into traditional theories of international relations. The dominant theory is realism, which describes an anarchical system, where states are the sole unitary actors in a fight for survival. Realism is limited when addressing climate change, which is purely a non-traditional threat. The UN Secretary-General labelled climate change as a ‘direct existential threat’, which if unconsidered would have disastrous consequences on the ‘natural systems that sustain us’. It is a direct and indirect cause of a range of political, social, economic and strategic impacts, all of which need to be addressed by militaries and military alliances.

NATO

This section of the paper will, first, outline the development of NATO from the signing of The North Atlantic Treaty in 1949 to the present day and, secondly, provide an overview of NATO’s policy developments on climate change.

NATO was primarily formed in response to the perceived threat from Soviet Russia, but also served as an institution to strengthen European military capacity and cooperation. The most important Article in the founding Treaty is Article 5, which establishes collective

self-defence as the central tool for the safeguarding of the NATO community. Article 5 states that the Parties agree ‘an armed attack against one or more of them in Europe or North America shall be considered an attack against them all’.\textsuperscript{42} In the event of such an attack, a state may respond with ‘such action as it deems necessary, including the use of armed force’.

Article 2 encourages cooperative development of the member states, urging the parties to promote ‘conditions of stability and well-being’,\textsuperscript{44} while Article 3 determines that states should ensure the readiness of their own military against an armed attack capacity through individual and cooperative means.

The first Strategic Concept document titled ‘The Strategic Concept for the Defense of the North Atlantic Area’, issued in 1949, was aimed at building European military and economic strength, and developing plans to counter the Soviet threat. Recognising that it would be years before Western Europe gained enough strength to counter the Soviet threat in manpower, plans were made for the deployment of nuclear weapons.\textsuperscript{45} The Strategic Concept details the ability of the organisation to respond to a threat ‘with all types of weapons, without exception’.

Continued fears of communist expansionism during the Korean War lead to institutional reformation of NATO, including the creation of the Supreme Allied Command Europe (SACEUR). In wartime, SACEUR would assume control over all allied forces. In this period, NATO transformed from a loose political alliance into an organisation with an elaborate political and military structure.\textsuperscript{47}

\textsuperscript{43} North Atlantic Treaty art. 5, Apr. 4, 1949, 63 Stat. 2241, 34 U.N.T.S. 243.9
\textsuperscript{44} North Atlantic Treaty art. 2, Apr. 4, 1949, 63 Stat. 2241, 34 U.N.T.S. 243.
\textsuperscript{45} The Strategic Concept for the Defense of the North Atlantic Area, DC 6, 1 December 1949.
\textsuperscript{46} The Strategic Concept for the Defense of the North Atlantic Area, DC 6, 1 December 1949.
The end of the Cold War was another defining period for the organisation. NATO had to reinvent itself after the downfall of the threat it was established to counter. In the 1991 Strategic Concept NATO evolves from a pact of collective self-defence to an institution capable of a broad range of activities. The Strategic Concept defined NATO’s fundamental security tasks as providing for a stable security environment in Europe, serving as a transatlantic forum on security issues (through Article 4), deterring threats of aggression against allied states and preserving the strategic balance within Europe.\textsuperscript{48} Importantly for the issue at stake in this paper, NATO recognised that the global context must be taken into account and that contingencies be made for eventualities that occur outside the borders of allied states. Henceforth, NATO could act in tasks beyond that prescribed in Article 5.

From 1992, NATO cooperated with the UN enforcing no-fly zones in Yugoslavia, where the fall of communism led to multi-ethnic conflict and engaged in its first direct military action: a naval embargo.\textsuperscript{49} In 1995, NATO engaged in its first major crisis management operation following the genocide of Srebrenica. Operation ‘Deliberate Force’ was a sustained eleven-day airstrike campaign on Bosnian-Serb military facilities, which played a decisive role in ending the hostilities. The 1999 Strategic Concept widened the scope of its predecessor and explicitly endorsed crisis management operations of the type seen in the Balkans as ‘non-article 5 crisis response operations’. Debate ensued over whether this Strategic Concept constituted an amendment of the 1949 Treaty. The U.S. Senate even discussed whether ratification of the new Concept was required as it may have contained new obligations for the U.S. Ratification was not required. The general prevailing view is that the

\textsuperscript{48} The Strategic Concept of 1991, 7 November 1991.
original treaty is open-ended or ambiguous enough to allow the organisation to adapt to new security environments and develop functions to suit new aims.\(^{50}\)

Immediately after the recognition of the ‘global context’ by NATO, global terrorism forced NATO’s hand. The 11 September 2001 attacks on U.S. territory showed that security risks in distant parts of the world could have real effects with NATO borders. Article 5 was invoked within hours of the attack by the North Atlantic Council (NAC), the principal political body of the organisation. From August 2003, NATO became involved by taking over command of the peace-making force ‘International Security Assistance Force (ISAF)’.

Throughout this period NATO continued to expand from its original founding 12\(^{51}\) members to 29\(^{52}\) to include many Eastern European states of the former Soviet Union. The Strategic Concept of 2010, its latest iteration, established three central tasks: Collective Defence, Crisis Management and Co-operative Security\(^{53}\). The last two tasks are especially relevant to this paper. Overall, it is clear that NATO is moving a more globalised direction, which proves to be a major break from past versions of the organisation\(^{54}\). Any threat to the security of member state nations can be recognised no matter where the origin.

**NATO AND CLIMATE CHANGE**

50 Nauta, *supra* note 47, at 59.
51 Belgium, Canada, Denmark, France, Iceland, Italy, Luxembourg, the Netherlands, Norway, Portugal, the United Kingdom, and the United States.
52 Albania, Belgium, Bulgaria, Canada, Croatia, Czech Republic, Denmark, Estonia, France, Germany, Greece, Hungary, Iceland, Italy, Latvia, Lithuania, Luxembourg, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Turkey, United Kingdom, United States.
NATO was one of the first international organisations to define environmental challenges as a potential security threat in 1969 when forming the Committee on the Challenges of Modern Society. However, taken as a whole NATO’s engagement with the issue has been lacking considering its importance to greatly affect the organisation’s future. NATO’s efforts are primarily focused on raising awareness of the issue, sponsorship and participation in events55 as opposed to preparing to develop the organisation to adapt to the world in a global warming context.

In 2009, a Group of Experts gathered to prepare recommendations for the 2010 Strategic Concept and released the report: NATO 2020: Assured Security; Dynamic Engagement.56 Climate change was highlighted several times in this report and recognised as a security risk, albeit not one of fundamental importance. After the most probable threats to the Allies are listed,57 climate change is second last in the category of ‘other’ threats alongside the harmful consequences of the financial crisis. Before the document is concluded there are some important recommendations on climate change as an ‘unconventional danger’:

‘NATO could... be called upon to help cope with security challenges stemming from such consequences of climate change as a melting polar ice cap or an increase in catastrophic storms and other natural disasters. The Alliance should keep this possibility in mind when preparing for future contingencies.’58 The sentiment in this recommendation must be heeded in accordance with the gravity of the climate change threat. The 2010 Strategic Concept

57 1) an attack by ballistic missile (whether or not nuclear-armed); 2) strikes by international terrorist groups; and 3) cyber assaults of varying degrees of severity.
officially acknowledges climate change as a key environmental constraint that will shape the future security environment and NATO’s operational activities.\textsuperscript{59}

NATO’s Emerging Security Challenges Division (ESCD) was established in 2010 to respond to an array of non-traditional security challenges.\textsuperscript{60} The unit was formed to expand NATO’s ability to anticipate new threats that will be central to the future of the Alliance, so climate change falls well within its remit. Furthermore, energy security is an area in which NATO is gaining momentum. The Green Defence Framework, which is focused on environmental protection and energy efficiency, was approved by the North Atlantic Council in 2014.\textsuperscript{61} The Framework stresses the need for the sharing of best practices of ‘green’ solutions to improve energy efficiency and hopes the Green Defence Framework will become integral to the Alliance’s endeavours. Functional Smart Energy solutions were implemented in the exercise Capable Logistician 2015 (‘CL15’). During CL15, private companies worked with the U.S. and German armies to provide Smart Energy production, storage, distribution and consumption solutions, such as highly insulated tents with solar panels.\textsuperscript{62} Since 2014 NATO has been conducting Energy Security Strategic Awareness Courses at the NATO School and hosting annual roundtables on Energy Security.

The Committee on the Challenges of Modern Society (‘CCMS’) merged with NATO’s Science for Peace and Security (‘SPS’) Programme in 2006. The Programme is focused on environmental protection and security and has formed two organisations to promote collaboration and standardisation between NATO and partner states: the

\textsuperscript{59}The Strategic Concept of 2010, 19 November 2010.
Environmental Protection Working Group (‘EPWG’) and the Specialist Team on Energy Efficiency and Environmental Protection (‘STEEEP’). The EPWG develops NATO policies to reduce the impact of its military activities on the environment. STEEEP works to integrate the various environmental and energy efficiency regulations into requirements and specifications for naval hardware and infrastructure, reporting to the NATO Naval Armaments Group. NATO Military Principles and Policies for Environmental Protection is a key policy document for the operation side of NATO’s activities, instructing military commanders to adhere to the best practical environmental protection standards available.\textsuperscript{63}

Policies dealing with climate change as a security threat are hitherto underdeveloped. NATO’s Parliamentary Assembly has consistently advocated for climate change to be integrated into NATO’s political agenda. The Assembly’s Science and Technology Committee released a report detailing the links between climate change and international security before COP21 urging member states to agree to an ambitious agreement. Moreover, the Parliamentary Assembly passed Resolution 427 in 2015, which calls for an increase in political and military consultations within NATO on climate change, and an examination of how NATO’s co-operative security efforts can take into account climate risks.\textsuperscript{64} The Assembly provides a link between NATO and its member nations, but is an independent body from NATO, having no oversight over official policies. Several more significant documents have been released by the Assembly’s Science and Technology Committee, including 2017 reports on food and water scarcity in the Middle East and North Africa,\textsuperscript{65} and security in the Arctic.\textsuperscript{66} NATO’s Strategic Foresight Analysis Report 2017 identifies that

\textsuperscript{63} NATO, NATO Military Principles and Policies for Environmental Protection (2011).
\textsuperscript{65} NATO Parliamentary Assembly, Science and Technology Committee, Food and water security in the Middle East and North Africa (2017).
\textsuperscript{66} NATO Parliamentary Assembly, Political Committee, NATO and security in the Arctic (2017).
climate change will affect geopolitics in the Arctic and weaken governance systems. The report mentioned in particular the increased requirement for humanitarian support as the frequency of extreme weather events increase.

NATO has a history of responding to humanitarian disasters and extreme weather events through the European-Atlantic Disaster Response Coordination Centre (‘EADRCC’). The EADRCC was formed in 1998 to be NATO’s principal civil response emergency mechanism. Its original mandate was the geographic area of the NATO states, but this has since been expanded to cover the globe. The centre has responded to over 70 requests for assistance from nations affected by natural and man-made disasters. For example, a NATO Response Force provided essential assistance after Hurricane Katrina in 2005, and similarly played a crucial role in delivering supplies to Pakistan after an earthquake in 2006 and flooding in 2010. In 2017 and 2018, the EADRCC has been requested to assist across a range of scenarios from floods and forest fires to medical supply crises.

NATO’s response to flash floods in Bosnia and Herzegovina is an exemplary case study of the organisation’s disaster relief abilities. In May 2014, the heaviest rainfall in more than a century hit Bosnia and Herzegovina causing severe floods and landslides, which destroyed infrastructure, businesses, livelihoods, farms and crops. The lives of more than 1.5 million people were endangered as cities flooded and bridges were devastated, leaving villages isolated, without running water or electricity. Moreover, over 2000 landslides

68 NATO and civil emergency response: marking 20 years since the creation of the Euro-Atlantic Disaster Response Coordination Centre, ReliefWeb (Jun. 2018).
70 NATO, NATO Aircraft to Deliver Humanitarian Relief Goods to Pakistan (2010).
dislodged many of the 9000 marked minefields. NATO’s EADRCC received a request for assistance from Bosnia and Herzegovina and immediately called for aid from member and partner nations listing essential requirements, such as motorboats for rescue operations.\textsuperscript{72} As the disaster developed NATO published further situation reports assessing the ground conditions and updating the list of requirements. Twenty-one member states provided aid, including helicopters, boats, water purification units, tents and blankets.\textsuperscript{73} Fewer than one hundred people died, though much of the infrastructure in North-East and Central Bosnia and Herzegovina was devasted. Coordination by NATO’s EADRCC was an essential element of the potency of the response to the disaster, Bosnia and Herzegovina would have faced untold obstacles without support from the international community mobilised by NATO.

When Europe faced its greatest refugee and migrant crisis since the end of the Second World War in 2016, Germany, Greece and Turkey requested assistance from NATO.\textsuperscript{74} NATO sent navy vessels to the Aegean Sea in support of the EU’s border control agency, Frontex, providing surveillance and reconnaissance activities to counter smuggling and human trafficking. The key advantage of the NATO mission was that it could act in Turkish territorial waters where Frontex could not and share Turkish intelligence with the EU.\textsuperscript{75} However, NATO’s actions were not without controversy. Doctors Without Borders commented that such ‘deterrence measures… clearly miss the point’.\textsuperscript{76} The Alliance took pains to emphasise that the mission would not to stop refugee boats, but only support

\textsuperscript{74} NATO, Assistance For The Refugee And Migrant Crisis In The Aegean Sea, https://www.nato.int/cps/ua/natohq/topics_128746.htm.
\textsuperscript{75} NATO’s Mediterranean Mission, Foreign Affairs (Feb. 2016).
Frontex’s monitoring efforts and share information between Greek and Turkish coast guards. There is an argument that NATO’s actions were not coercive enough, as refraining from disrupting the path of migrant vessels did not help to abate the crisis. The clearest obstacle to an expanded role of NATO during the crisis was the lack of political will. Senior NATO leaders were wary of engaging in a humanitarian crisis that could hamper military readiness. Political discussions that weigh the key advantages that NATO can deliver in response to a humanitarian crisis against traditional threats will become more common as climate change heightens, which is why NATO needs to formulate policies on this issue as soon as possible.

NATO’s former Secretary-General Anders Fogh Rasmussen recognised that ‘floods, food shortages and riots do not only constitute a humanitarian crisis, but also a security challenge’ However, according to NATO’s Secretary-General, Jens Stoltenberg, ‘NATO is not the first responder to climate change. We are a military alliance . . . the most important things that can be done with climate change is more related to energy’. NATO is an organisation that makes decisions through consensus, so Stoltenberg’s reluctance to carve out a distinct role for NATO beyond increasing energy efficiency, may be rooted in the difficulty in forming an agenda states can agree on.

THE FUTURE OF NATO CLIMATE CHANGE POLICY

79 Anders Fogh Rasmussen, Hungry for Security: Can NATO Help in a Humanitarian crisis?—Speech by NATO Secretary General at Erasmus University, Rotterdam, The Netherlands.
80 Politico Brussels Playbook Cocktails with Jens Stoltenberg, Politico (Jun. 6, 2016).
This last section of the paper deals with the future development of NATO policy regarding climate change. The author will suggest principles upon which NATO should base future policy, and survey member state practice for measures that can be adopted. Though NATO is not a primacy actor nor is it the UN, it does have an important role in helping member states and partners adapt to climate change and in the event of natural disasters, to respond.

This paper argues that the future of NATO policy should be focused on three main aims: integration, adaption and mitigation. Integration means integrating climate change into NATO’s political agenda and raising the issue at NATO summits and forums. Adaption requires NATO to adapt itself to climate change through continuing to invest in energy efficiency and renewable energies and upgrading vulnerable military installations. Centrally, a common Alliance strategy should be developed to deal with how the military planning and operations should be adapted to respond to the climate change, drawing on the best practices at the member state level. The last aim of mitigation seeks to mitigate the effects of climate change through international disaster response, which NATO itself must bolster while encouraging other member states to do the same.

BEST PRACTICES OF MEMBER STATES

Despite being the only major country where climate change is a politically contentious issue, the U.S. military has responded the most comprehensively to this non-traditional threat. Secretary of Defense, James Mattis, declared he would ensure that the department is ‘prepared to address the effects of a changing climate on threat assessments,
resources and readiness’. Chairman of the Joint Chiefs of Staff, General Joe Dunford, has also commented that climate change is ‘something that we take into account in our planning as we anticipate when, where and how we may be engaged in the future and what capabilities we should have’. Secretary Mattis and General Dunford join a list of at least 18 senior military leaders who have identified climate change as a security risk, showing that the direction is being provided from the top. The National Defense Authorization Act for Fiscal Year 2018 further shows that a consensus has been reached that the military must continue to deal with climate change. The Act states that the sense of Congress that climate change is a direct threat to the national security of the United States.

Since 2010, the Department of Defense has published at least 35 products that specifically address the risk of climate change, and the intelligence community has contributed a further 14 papers on the topic. The Quadrennial Defense Reviews of 2010 and 2014 provide that the Department will employ creative ways to address the impact of climate change, developing new strategies and building humanitarian assistance capabilities. The 2010 Quadrennial Review recognised climate change as providing two types of challenges: through shaping the operating environment physically and geopolitically and as a direct

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threat to military infrastructure and capabilities.\textsuperscript{87} The Climate Change Adaption Roadmap substantiates the aims of the Quadrennial Review. The Roadmap shows that the Department of Defense is responding to climate change in two ways: adaption and mitigation. The Roadmap is primarily concerned with adaption, which includes identifying the effects of climate change and managing such risks. The U.S. military is working to fully understand these threats and to incorporate projected climate variability into long-term planning. A 2015 report identified the most prescient climate-related risks for each Combatant Command and detailed ways in which the Commands were mitigating these risks.\textsuperscript{88} For example, U.S. Central Command, a geographic combatant command covering the Middle East and West Asia, closely measures water scarcity in the region as part of its planning process. While U.S. Europe Command is training with Arctic-specific resources as the Northern Sea Route opens up and offshore drilling increases. In many cases, the Combatant Commands are working with USAID to provide humanitarian assistance.\textsuperscript{89}

The U.S. has placed emphasis on researching the effect of climate change on military installations. The Department of Defense Report on Climate-Related Risk to Infrastructure Vulnerability is comprehensive on current infrastructure risks both within U.S. territory and abroad.\textsuperscript{90} The Report surveyed military personnel on-site and found that less than 50\% reported having no effects from flooding, extreme temperatures, drought, wildfire and wind.

\textsuperscript{89} See The Intersection of Global Fragility and Climate Risks, USAID.
\textsuperscript{90} U.S. Department of Defense, Office of Economic Adjustment, Climate-Related Risk to DoD Infrastructure Initial Vulnerability Assessment Survey (SLVAS) Report.
The United Kingdom’s Ministry of Defence described climate change as a focus area with strategic implications in the latest edition of Global Strategic Trends 2018.\(^91\) The National and Strategic Defence and Security Review 2015 shows that the UK military has begun to reconfigure itself to address the risks of climate change.\(^92\) The Ministry of Defence, Foreign and Commonwealth Office, and the Department for Energy and Climate Change created a Climate and Energy Security Envoy in September 2009. The envoy seeks to broaden the debate about the security implications of climate change, persuade defence communities of the need to understand and address its risk on global stability and entrench understanding of climate security across the government to inform decisions on mitigation and adaption.

Congruent with the publication of ‘Climate Change and its Impact on Defence’ in 2010,\(^93\) Spain’s Ministry of Defence has been one of the most active of European allied militaries in committing its armed forces to climate-related situations. The Spanish military created a Military Emergencies Unit (‘UME’) to deal specifically with emergencies caused by natural disasters, many of which are climate-induced.\(^94\) The unit comprised of over 3500 personnel from the Army, Navy, Air Force and Common Core, with a training programme that specifically addresses climate risks such as forest fires, floods and volcanic eruptions.\(^95\) The UME has engaged in more than 441 interventions since its creation in 2005, the majority of which have been forest fires with at least 342 interventions. The Unit has acted abroad in 9 cases, including providing earthquake relief in Haiti in 2010.\(^96\) Spain led the NATO mission

\(^94\) Youngs, supra note 26, at 78.
\(^95\) Unidad Militar de Emergencias, The Spanish Emergency Military Unit (UME), https://www.youtube.com/watch?v=XRBbuYcqFWY.
that was sent to assist with the relief efforts in Pakistan in 2009 owing to its experience in disaster relief. Though the Spanish military’s consideration of climate change has been limited to the challenges of disaster relief and energy efficiency.97

As the Arctic ice melts, the Northern Sea Route can remain open for longer increasing trade traffic in the Arctic Circle. No one state owns the Arctic, but Russia and four NATO allies (Canada, Denmark, Norway, the United States) all claim national territory in the Arctic. Norway’s military strategy has a strong focus on the Arctic. Developing resource opportunities and a substantial number of Norway’s population living in the Arctic Circle means this a crucial region.98 The Norwegian Defense Force relocated its Joint Headquarters, which is in control of all military activity, to a mountain complex 22km from the Arctic town of Bodø.99 The U.S. and Canadian militaries are also building their military capabilities in the Arctic area. The Canadian Armed Forces conduct regular exercises in the Arctic circle to guard Canadian sovereignty, improve operation under Arctic conditions and provide assistance to indigenous communities.100

Germany’s 2016 White Paper on Security Policy recognises that climate change must be integrated into crisis prevention and stabilisation activities, but does not describe particular measures.101 The Danish Defence Ministry’s 2016-2020 Environment and Energy Strategy emphasises Arctic preparedness and focuses heavily on reducing energy consumption.102

97 Youngs, supra note 26, at 78.
Danish Strategy document called for the development of common standards in NATO for managing environmental aspects of exercises and the exchange of experience on nature and environmentally friendly use of weapons systems, which is along the lines of what is advocated in this paper.

Richard Youngs reviewed the strategy documents of EU nations in 2012 and found that Italy, Belgium, Portugal, Greece, Estonia and the Netherlands had failed to flag the issue of climate change in their strategy documents. Policies have developed since. Italy, Estonia and the Netherlands’ strategy papers now reference climate change in a general sense, but do not offer a comprehensive strategy for dealing with its impacts on their military operations. Youngs’ conclusion that European defence establishments seek deeper cooperation on the issue still stands. The European militaries are clearly open to deeper multilateralism in responding to climate change. Bulgaria has also urged NATO to adopt a common approach to address the impact of climate change on military operations. Deputy Defence Minister of Bulgaria, Ivanov, argued that ‘states should monitor, assess, plan for and mitigate impact from climate change, sharing knowledge, using common approaches and providing for generally valid vulnerability assessments.’

NATO’s member states have responded to climate change in an asymmetric fashion. The U.S. has made the most progress on the issue, while the European nations have acted in a

103 Youngs, supra note 26, at 75.
105 Youngs, supra note 26, at 85.
106 The Center for Climate Change and Security, Bulgaria Urges NATO to Tackle Climate Change (Dec. 2013).
haphazard manner. This great disparity does not ensure the readiness of the members of the military alliance against the greatest danger of our age. NATO as a body tasked with ensuring the security of Europe must take the initiative and respond before the threat becomes overwhelming.

The three principles of integration, adaption and mitigation are key. NATO’s response to climate change must be given a higher profile at summits and forums. Sherri Goodman, of the CNA Military Advisory Board, calls this the ‘low hanging fruit’, especially as Jens Stoltenberg is a former Climate Change Envoy of the UN with diplomatic clout on the issue. However, it is also important that traditional threats are cognised in the context of climate change. Discussions of Russia’s military advancements in the Arctic must occur alongside calls to collaborate in assessing and responding to the changing nature of the climate in the Arctic circle. In these ways, preparing against climate change can complement preparations made in defence of more conventional threats. Article 4 of the NATO Treaty calls for Parties to consult whenever the security of one of the Parties is threatened. This paper has shown how climate change threatens the security of all the member states. It would be advantageous for this Article to be engaged before this becomes tragically apparent.

NATO has incorporated the language of climate change into its strategic documents but has not integrated the issue into military planning operations. This is key to adaption. Climate change must be institutionalised following the example of the U.S. military. The Climate Change Adaption Roadmap produced by the U.S. military should be seen as a

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framework document both in terms of its structure and the aims it seeks to achieve. NATO must heed the pleas to establish a common approach to responding to climate change. This should be focused on developing mechanisms for information sharing and scaling capabilities that member states have developed to an Alliance level. Strategies must be developed on how climate change will affect military operations and planning, the training of military personal and their infrastructure and installations. The Arctic, especially, is a region where NATO members must cooperate. Canadian Defence Minister Harjit Sajjan stated that it is a ‘harsh environment’ and ‘when things go wrong, search and rescue efforts happen, and they have to be collaborative’. In such a dangerous and underdeveloped region there is an overwhelming benefit to allies forming a common strategy.

Mitigation efforts will include NATO’s response to humanitarian emergencies and natural disasters. Though NATO does not see itself as a first responder to climate change, in the realm of disaster relief NATO is already a crucial actor on the international stage. In the future, as the frequency and magnitude of these events increase there will be debate over how to prioritise the North American and European geographic regions. Developing strategies that cater for the increased pressure the EADRCC will not only speed and streamline decisions at critical moments but decrease the costs of responding to these events.

CONCLUSION

How the world reacts to climate change will define this century. Climate change is not a future eventuality to deal with, but it is happening now and is constantly changing the global security environment. Military organisations have an oversized role in dealing with this existential threat, because of their size and capabilities. Therefore, NATO’s role, as the largest and most powerful military alliance in the world, is unique.
NATO must act precipitously in integrating and adapting to climate change while mitigating its negative effects. Integration into its political agenda necessitates the issue to be of a higher profile at future summits and forums. Adapting to climate change ultimately requires a common alliance strategy for responding to the negative effects of climate change, which must involve scaling the best capabilities of member states, especially following the example set by the US. NATO’s role in providing international assistance in climate-related circumstances must be explicitly recognised and concrete policies developed on the extent of member state assistance expected in the future climate stressed world.

The organisation has proved that it is an alliance that can adapt with changing times and security needs. From the cold war to the modern world NATO has remained the most effective security establishment in the world. Once again NATO must prove flexible in acclimatising to the world’s most complex and existential threat.