From Sea To Rising Sea:

The Effects Of Climate Change On U.S. National Security And Military Readiness

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Source: https://blog.education.nationalgeographic.org/2016/06/07/how-climate-change-is-affecting-world-heritage-sites/

The Problem:

Our impressive economic might is thanks mostly to the burning of fossil fuels. Fossil fuels, however, have caused carbon dioxide levels in the earth's atmosphere to skyrocket (as shown in Figure 1), warming the Earth's climate, melting polar ice leading to sea-level rise, as well as an increase in occurrence and velocity of extreme weather events[1].

Due to sea-level rise, increasing temperatures, and more extreme weather, climate change will begin to threaten America's superior standing on the world stage as an economic, cultural, and military superpower. "The National Security Strategy (NSS) defines critical infrastructure, the economy, foreign interests, and public health as integral to the national security of the U.S[2]." With increasing temperatures, tropical diseases will infilitrate further north into the United States, our already crippling infrastructure will become increasingly dilapidated under stress from extreme weather and heat. Our foreign interests abroad, especially in the form of military installations, will be more vulnerable to sea-level rise. Without proper policy implementaion, the readiness of the U.S. armed forces will continue to be threatened.

"The IPCC says we can expect the oceans to rise between 10 and 30 inches by 2100 with temperatures warming 1.5 °C, inudating coastal cities and bases[6]."

What's At Stake

As the world's policeman, the United States has built military installations across the world, from Honduras to Japan. These bases host millions of American troops and their families, requiring housing and medical facilities. Most of these bases sit adjacent to the ocean, vulnerable to tropical cyclones. One of the biggest issues is that these bases are not rebuilt, when damaged, to standards that take into account a changing climate, wasting billions of dollars as these bases are sure to be hit by more storms in the future. In fact, many of America's bases are presently reporting climate-related problems, as depicted in Figure 2. The military is at risk of losing land where vital infrastructure, training and testing grounds, and housing for thousands of its personnel[3]. A failure to adequately prepare our nation's defense infrastructure to effects of climate change is already realized. "In 1992, Hurricane Andrew did such damage to Homestead Air Force Base in Florida, that it never reopened. In 2004, damage from Hurricae Ivan kept Pensacola Naval Air Station closed for almost a year[4]." Not only will our nation's critical defense infrastructure be comprimised, but also the thousands of families that live on these bases and surrounding communities.

"Naval Air Station Key West, Joint Base Langley-Eustis, Dam Neck Annex, and Parris Island—are at risk of losing 75-95 percent of their land by 2100[7]."

Besides military bases, rising temperatures and seas will prompt mass migrations away from coastal areas and tropical zones[5]. With this impending crisis, the military will have to deploy massive resources to manage the migration of millions across borders. Without proper planning and future risk assessments, the military will be unprepared to combat this issue. Coupled with our nation's comprised infrastruture from severe weather and hot temperatures, an adequate response to climate migration will not be realized.

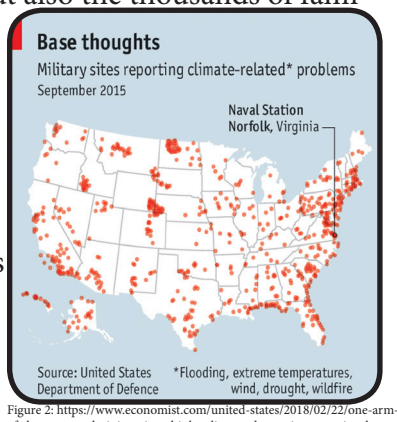

Figure 2: https://www.economist.com/united-states/2018/02/22/one-arm-of-the-trump-administration-thinks-climate-change-is-a-security-threat

Where To Start?

With such a broad, complex, and divisive issue, it is important to understand how to break-down the barriers to addressing this problem.

Historically, the American public did not agree in the existence of an anthropegenically-induced climate change. This is due mainly in part by special interest groups and politicians who have painted environmentalists as fringe scientists that intended to inflict harm on our economy. Another aspect is that Americans had largely not seen the effects of climate change until the 21st century. Hurricane Katrina, photos of ice sheets breaking off from Greenland, and decreped polar bears dotting social media have all helped increase public awareness of our changing climate. Now, there are only a few groups of Americans that deny the reality of climate change, as seen in Figure 3.

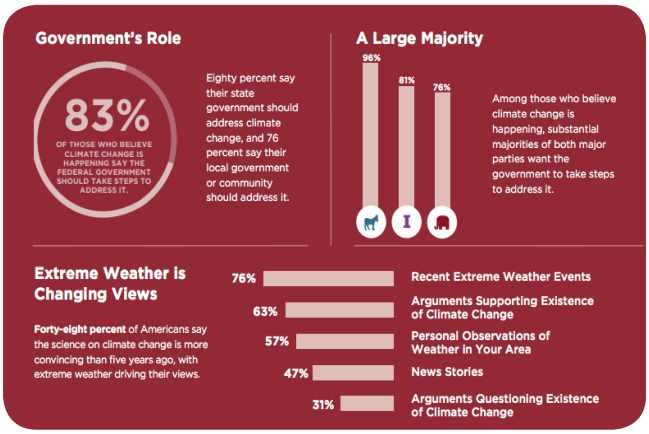

Figure 3: http://www.apnorc.org/projects/Documents/EPIC_infographic.pdf

One of the major roadblocks in creating policy is convincing politicians of climate change's existence. Many military leaders have begun to lobby politicians to institute resources to the DOD to adjust its strategies and planning for climate change. Continuing to frame climate change as a national security issue will result in more funding and resources for implementing serious action, as the Congress is most keen on funding the military and the defense sector[8].

Solutions

A study by the Union of Concerned Scientists concluded that individual bases needed to understand how their installations will be affected from climate change[9]. It stated that the DOD and Congress should:

- "Support the development and distribution of high-resolution hurricane and coastal flooding models.
- Adequately fund data monitoring systems such as our nation's tide gauge network.
- Allocate human, financial, and data resources to detailed mapping and planning efforts at military installations.
- As adaptive measures are identified, allocate resources for these projects, many of which will stretch over decades[10]."

Another area of strategic importance in the fight against climate change for the Armed Forces is the Arctic. As polar ice melts, a geopolitical struggle will ensue concerning control over the region, with access to shipping lanes and oil exploration. Russia is building icebreakers to establish physical presence and control over the region. America's fleet is largely underfunded and aging as the few icebreakers in operation are operating beyond their lifespans and there are no plans for more ships. America must invest more in icebreakers to preserve its interests and security in the Arctic region.

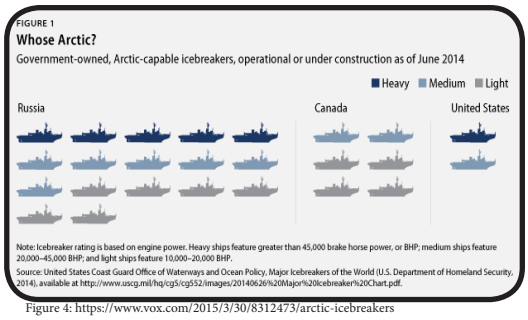

Figure 4: https://www.vox.com/2015/3/30/8312473/arctic-icebreakers

Lastly, America must develop risk assessments and analytics for identifying early warning signals for climate-related risks[11]. "Natural scientists, engineers, and planners must assess the critical vulnerabilities of systems and how best to respond. Such an interdisciplinary approach assesses multiple disaster/risk layers, and includes pre-planning coordination for mitigation and response[12]." America must adopt these appropriate analytical approaches to combat climate change. Public opinion and military advice is beginning to sway to support these measures as it would save money and lives while protecting our homeland.

Endnotes
1 Briggs, Chad, "Climate Security, Risk Assessment and Military Planning," International Affairs 8, 5 (2012).
2 Morales, Emilio, "Global Climate Change as a Threat to U.S. National Security." Journal of Strategic Security 8, 5 (2015): 134-148.
3 Spanger-Siegfried, Erika, Kristina Dahl, Astrid Caldas, and Shana Udvardy. "The US Military on the Front Lines of Rising Seas (2016)." Union of Concerned Scientists. 2016. Acc. February 19, 2019.
4 Busby, Joshua W., "Who Cares about the Weather?: Climate Change and U.S. National Security." Security Studies 17, 3 (2008): 468-504.
5 Morales, Emilio, "Global Climate Change as a Threat to U.S. National Security." Journal of Strategic Security 8, 5 (2015): 134-148.
6 https://www.nationalgeographic.com/environment/global-warming/sea-level-rise/1-
7 Spanger-Siegfried, Erika, Kristina Dahl, Astrid Caldas, and Shana Udvardy. "The US Military on the Front Lines of Rising Seas (2016)." Union of Concerned Scientists. 2016. Accessed Februa ry 19, 2019.
8 Busby, Joshua W., "Who Cares about the Weather?: Climate Change and U.S. National Security." Security Studies 17, 3 (2008): 468-504.
9 Spanger-Siegfried, Erika, Kristina Dahl, Astrid Caldas, and Shana Udvardy. "The US Military on the Front Lines of Rising Seas (2016)." Union of Concerned Scientists. 2016. Accessed February 19, 2019.
10 Spanger-Siegfried, Erika, Kristina Dahl, Astrid Caldas, and Shana Udvardy. "The US Military on the Front Lines of Rising Seas (2016)." Union of Concerned Scientists. 2016. Accessed Feb ruary 19, 2019.