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An unstable discussion: the complexities of climate change impacts on human security

As we saw throughout the student presentations given this semester, global climate change could carry numerous, complex, multi-layered effects. Identifying just how the climate is changing and just what physical impacts that change is likely to create is difficult enough. Moving a step beyond those physical impacts toward asking how those impacts may impact society dramatically increases those complexities.

One question that arises is whether those changes will impact human security. Like most discussions of the intersection of climate change science and its implications for society, the relationship between political security and climate change is complicated. Nonetheless, to avoid getting bogged down, this paper focuses on an evolving understanding of the way climatological factors alternately affect, contribute to and degrade the stability of specific societies.

Before delving into discussion of specific climate change impacts, this paper will first examine some of the parameters of the discussion in terms of what is meant by terms such as "stability" and "security." Next, the paper surveys some of the general human impacts global climate change will likely cause. It will then discuss how these impacts affect politics and governance. Finally, it focuses on specific examples where these effects are beginning to appear in Africa, where climate change may be most dramatically impacting society.

Discussions of climate change and security require overcoming two barriers. First of all, there needs to be some discussion of what, exactly, is meant by the term "security." Secondly,

there has to be understanding — and common acceptance — of the scientific backing used to define what are and are not climate change-related threats.

There is a certain amount of debate as to what stability is, especially in terms of environmental factors affecting it. Does it just mean a stable government, or something more? Some scholars prefer, therefore, to discuss political security. Where states and their stability are abstract, talking about security allows individuals and populations not interchangeable with states to become part of the discussion. Security can have obvious meanings, such as the security that comes with living safely and healthily, and it can have more abstract meanings, such as the security that comes with enjoyment of human rights.

Some scholars, though, don't believe it's appropriate to discuss environmental problems such as climate change in terms of security because, they say, it reinforces systems, such as the military establishment, that contribute to the very security problems they are meant to solve. Such a thought was articulated by Dan Deudney, a University of Pennsylvania professor who has long argued that entirely new frameworks have to be developed to respond to the threats environmental problems pose to humanity.[1] With climate change a global phenomenon that pays no heed to specific national boundaries, Deudney argues it is inappropriate to think of the problem in terms of one's country.

On the other hand, the reason some scholars use security terminology, as Oli Brown and Alec Crawford put it, is "...more political." Citing an earlier scholar, they point out that describing environmental threats in security terms may compel governments to action.

> It is part of a clear move by some campaigners to invest the climate negotiations with a greater sense of urgency, to raise climate change to the realm of high politics and to create the political space for serious concessions on greenhouse gas emissions...As Jon Barnett pointed out in 2001: '[S]ecurity communicates a certain gravitas that is arguably necessary in climate change policy. In that climate change is a security

1 Stammer, Larry B. "Geopolitical Effects of Global Heating Gauged," *Los Angeles Times*. Feb. 10 1992. P. 1

> problem for certain groups, identifying it as such suggests that it is an issue that warrants a policy response commensurate in effort if not in kind with war.' [2]

Uncertainty about the impact of climate change complicates the problem. Challenges already exist in accurately projecting and modeling climate change. Discussing how climate change will impact political stability (or any aspect of human life) is even more difficult because it is difficult to isolate these impacts from other factors. "Climate change impacts spread from directly impacted areas and sectors to other areas and sectors through extensive and complex linkages," one summary for policymakers from the International Panel on Climate Change said.[3] Climate change's direct impacts may be measured in certain categories, but those specific impacts indirectly influence behaviors in society not normally associated with the climate. In other words, a case could be made attributing malnourishment and migration to climatological pressures; but such a case would ignore other contributing factors, such as political and historical influences.

Conscious of these debates over how to *respond* to climate change threats to societies, this paper will move forward to discuss what these threats are.

As articulated in the International-Governmental Panel on Climate Change's Fourth Assessment Review, climate change is upon us. The report examines a growing scientific consensus that the physical effects of climate change are now becoming observable. In addition to exploring how climate change is now being measured, the IPCC prepared a summary for policymakers describing what these measurements mean for the natural and human environment.

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2 Brown, Oli and Crawford, Alec, "Climate Change: A new threat to stability in West Africa? Evidence from Ghana and Burkina Faso. *African Security Review,* Vol. 17, no. 3, September 2008. p. 41

3 IPCC, 2007: Summary for Policymakers. In: Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds., Cambridge University Press, Cambridge, UK, 7-22. 12

This summary describes both observed impacts and likely future scenarios. The vulnerabilities discussed include changing water supplies, shifting growing seasons and availability of food crops and other agricultural land, coastal flooding and destruction of low-lying areas, more intense weather events and increased malnutrition and disease prevalence, especially among people with "low adaptive capacity."[4]

In 2007, the IPCC and Al Gore shared a Nobel Peace Prize for bringing these issues to the world's attention. That same year, the subject was discussed by the United Nations Security Council, it was debated by the African Union, and a group of U.S. generals described how they perceived climate change as a "threat modifier" in conflicts.[5] Some may have wondered why. What, they might have asked, did raising awareness about climate change have to do with peace? A report issued that same year may help explain why.

The report was prepared by International Alert — a peacebuilding nongovernmental organization. It described the "social and human consequences likely to ensue" from climate change. Citing a "broad scientific consensus" articulated in the IPCC Fourth Assessment that the physical effects of climate change are already starting to be seen,[6] it detailed how these effects contribute to conflict and outlined approaches the organization believed the international community and the private sector should take to resolve such conflicts.

"Hardest hit by climate change will be people living in poverty, in under-developed and unstable states, under poor governance," the report said. Forty-six countries with a population of 2.7 billion people faced a high risk of violence as a result of climate change impacts straining existing tensions. Another 56 countries with 1.2 billion inhabitants could experience "political

4 *Ibid*, 11-12.
5 Brown & Crawford, P. 40
6 Smith, Dan and Vivekananda, Janani, "A Climate of Conflict: The links between climate change, peace and war," Nov. 2007, International Alert, London, P. 3

instability" as their governments try to cope with the added strain of climate change, the report said.[7]

Increasing volatility of weather patterns could reshape the productive landscape and redistribute access to food, water and energy sources. Increasing intensity of natural disasters and shifting landscapes contribute to destabilization of populations. This can prompt migration, as populations seek food, water and natural resources. As these "climate refugees," seek new sources for these resources they come into contact with other, once distant groups, increasing competition for limited resources. Finally, rising sea levels may threaten low-lying states, furthering the possibility of new waves of climate refugees. Such pressures may cause once-stable states to become fragile, while countries that were already unstable may be pushed over the edge to become "failed" states.

Meanwhile, the changing climate might cause concerns for more traditional understandings of "security." Receding glaciers and melting sea ice may make previously unavailable oil and gas supplies accessible and open up transit routes in the Arctic. These new economic opportunities may spark competition among Arctic powers as they vie for control over new found riches. Just last fall, researchers at the University of Durham even mapped the various claims nations are making in the Arctic as new boundary lines are defined by a UN Commission.[8]

So how does conflict start? Groups like International Alert use a number of interlocking factors to determine the likelihood of conflict, including poverty, bad governance and a legacy of previous conflict.

7 *Ibid*, p. 18
8 "Map shows Arctic claims." http://www.geographical.co.uk/Home/Worldwatch/Arctic_Claims_-_Oct_08.html, accessed April 4, 2009.

International Action uses a number of international measures to quantify “stability.” They are then cross indexed. These measures include the United Kingdom's Department for International Development listing of “fragile states,” a country's presence in the bottom 50 of the “Global Peace Index” ranking of 121 states, existence on the International Crisis Group's Crisiswatch list, and a presence on the World Bank list of low income countries under stress. The group also checks for the presence of an operational UN peacekeeping force and a country either experiencing political or economic transitions or where such changes are possible.[9]

Some argue that there is a relationship between climate change and human rights. In January, the United Nations High Commissioner for Human Rights reported on this relationship. The UNHCR conducted the report to determine what “obligations” states had to combat climate change under international law ensuring access to human rights.[10]

“There exists broad agreement that climate change has generally negative effect on realization of human rights,” the report says. It uses the IPCC Fourth Assessment report as the scientific basis for its argument. If climate change can be framed as a rights issue, the United Nations has more areas where it has the authority to take action to prevent exacerbation of climate change. Nevertheless, the concerns of people like Deudney that enforcing human rights law through military means such as UN security forces reinforce nationalism remain. Additionally, it may be hard to convince the security council to take action on climate change since the largest emitters of carbon dioxide have permanent seats and veto power on the council. The U.S. and China, thus, are unlikely to support security council enforcement actions against themselves.

9 *Ibid*, p. 18

10 “Report of the office of the United Nations High Commissioner for Human Rights on the Relationship between climate change and human rights,” United Nations Human Rights Council. Jan. 15, 2009

That said, what are the specific rights international law ostensibly protects? The law doesn't specifically guarantee a right to environmental security. But the UN entities overseeing the protection of human rights "all recognize the intrinsic link between the environment and the realization of a range of human rights, such as the right to life, to health, to food, to water, and to housing."[11]

. As Battisti and Naylor recently noted, food production is projected to initially increase at mid to high latitudes as a result of climate change. Meanwhile, productivity will decrease at the lower latitudes. This could make it difficult to "balance the food deficits in one part of the world with the food surpluses in another, unless major adaptation investments are made soon ..." they write.[12]

The risks to security that might be caused by these changes were further outlined in a blog administered by *Wired* magazine. When food prices jumped by 50 percent in March 2008, riots broke out in 33 countries.[13] Even before climate change is factored into the discussion, food supplies are out of whack. Mismanagement and bad trade policies, increased use of agriculture for biofuels, profiteering and hoarding, and meat rich diets in the West requiring five pounds of rice for every one pound of beef all strain food supplies.

Exactly what extent these impacts will have will vary by location around the world, but the IPCC has already declared Africa "the continent most vulnerable"[14]

Between 75 million and 250 million people on that continent are projected to be exposed

11 *Ibid*. P. 7
12 Battisti, David S. et al. "Historical warnings of Future Food Insecurity with Unprecedented Seasonal Heat," *Science* 323, 240. February 14, 2009. P. 244
13 Keim, Brandon, "Rising heat threatens world food supplies, Wired Science, Jan. 8, 2009. Accessed April 5, 2009 at http://blog.wired.com/wiredscience/2009/01/futurefood.html
14 Perry, Alex, "Weather Wars," *Time*, Dec. 8, 2008, Vol. 172, Issue 23, P. 34

to increased water stresses as a result of climate change.[15] Climate change and variability will hurt agricultural production in Africa and exacerbate malnutrition. Yields from rain-fed agriculture could drop by as much as 50 percent there. Meanwhile, rising seas could take a direct toll on African economies. Flooded mangrove forests, damaged coral reefs and lost tourism opportunities in former resort areas could mean gross domestic products across Africa might drop by as much as 5 to 10 percent, further increasing economic instability.

Looking at specific examples, The United Nations Environmental Program, for example, provides an interesting statistic from Uganda. There, Robusta coffee plantations are at risk. A 2 degree temperature increase could dramatically decrease suitable soil cultivation. While soil would remain suitable for Robusta coffee at higher elevations, lower elevations would be too hot for the commodity.[16]

How would this affect Uganda? According to the CIA, agriculture accounted for 80 percent of the country's workforce in 2008.[17] Most of the money the country makes from exports come from coffee. If the nation can no longer grow coffee, it will lose a significant portion of its revenue.

On the Northern coast of the continent, meanwhile, Algeria is at risk of desertification, as a case study in International Alert's study points out.[18] Not only is arable land in Algeria increasingly being swallowed up by the Sahara, it is happening at a faster rate. Already, only three percent of Algerian land is arable. The country must therefore import 45 percent of its food**.** If rainfall decreases and temperatures increase farmland will continue to shrink however, it is

15 Parry, Canziani,Palutikof, van der Linden and Hanson, Eds , p. 13
16 "Impact of temperature rise on robusta coffee in Uganda," Vital Graphics, United Nations Environment Programme, http://www.grida.no/publications/vg/climate/page/3090.aspx
17 "Uganda," CIA World Factbook, Accessed April 5 at https://www.cia.gov/library/publications/the-world-factbook/geos/ug.html.
18 Smith & Vivekananda, p. 11

important to note that desertification can not be solely attributed to climate change.

Algeria has only recently emerged from a civil war, which stretched from 1992 to 2002. As noted earlier, the risk of political instability and violence is worse in countries with recent histories of violent strife. While the country is transitioning to democratic rule, it remains in an official state of emergency. As International Alert describes, using the War on Terror as a justification for its action, the Algerian government has imprisoned dissidents as terrorists. Its economy, meanwhile, leaves much of the population without any real security, as 25 percent of the population is unemployed. Employment figures may be even more worrisome when thinking of the country's future. 50 percent of Algerians under the age of 25 are jobless. That means physical impacts of climate change could worsen the productivity of Algerian land just as the country's jobless rate increases.

Of course, perhaps the clearest example of the relationship between environmental stress and climate change might be found in Darfur, the Sudanese region, where conflict has scarred the landscape. There, in an area already prone to drought, shifting rainfall patterns can spark violence.[19] In fact, *Time* magazine writer Alex Parry called the war in Darfur this century's "first war over water."[20] At one point, settlers in Darfur were able to cooperate, but as productive land became scarce these groups began competing with one another. Janjaweed militias supported by the Sudanese government have capitalized upon these tensions in a campaign to exterminate outside groups.

Perhaps one of the best ways to understand how climate change can contribute to political instability is to examine specific nations side by side. International Alert, for example, contrasts

19 Sachs, Jeffrey D., "Ecology and Political Upheaval," *Scientific American.* P. 37
20 Time mag article

the neighboring nations of Mali and Chad. Each of these nations import most of their food. Meanwhile, their natural resources are underdeveloped. On the one hand, Chad, where a coup attempt narrowly failed in 2006, is struggling to cope with an influx of refugees from Darfur. Meanwhile, the country's underdeveloped infrastructure means food, water, and other resources cannot be easily deployed beyond its capital.

Mali, on the other hand, has a more stable government after years of civil war**.** Both countries are vulnerable to temperature increases, encroachment of the Sahel desert, and lessening rainfall. But where Chad lost livestock in previous droughts, suggesting it can't mange its food resources well, and must cope with declining levels of Lake Chad as a result of drought, Mali has adapted better to climate change impacts International Alert says are similar to Chad's because of good governance, decent economic performance and political stability.[21]

Elsewhere in the region, another comparison can be made between the nations of Ghana and Burkina Faso. Those countries' differing approaches to managing Climate Change impacts were examined in 2008 by the Institute for Security Studies' *African Security Review.*

This study is worth examining because it employed an interesting methodology. The analysis includes country-specific examinations of the impact of climate change on political stability. This approach attempts to fill in a gap in understanding the aforementioned complexities in moving beyond direct physical impacts of climate change to indirect political impacts.

Oli Brown and Alec Crawford, the study's authors, wanted to answer three questions: What do we know about the way climate change will interact with existing tensions and create new ones; Do we know enough to use climate change projections to predict future impacts; and

21 "Imith & Vivekananda,"P. 20

to what extent will adaptations to climate change ward off conflict?

The comparisons took a number of factors into account. They attempted to conduct the analysis as scientifically as possible in terms of isolating variables and constants**.** For example, the differing colonial histories, economies and geography of Burkina Faso and Ghana were articulated as possible varying influences on how each might adapt to climate change. Ghana is an anglophone, coastal and relatively wealthy nation. Burkina Faso is Francophone, landlocked, and one of the world's poorest countries.

Those are differences. What about similarities? Each country depends on rain-fed agriculture, they are vulnerable to drought, and they must deal with unstable neighbors and a number of regional cooperation concerns. They also both receive foreign aid from the Danish government.[22]

In addition to comparing these countries 'current political, cultural and economic realities, Brown and Crawford examine three potential paths for global climate change and how that will affect West Africa. They were guided by IPCC emissions scenarios, with further information from the IPCC Fourth Assessment and other studies. While the authors acknowledge the paths that the region may take over the next century is speculative, each model they explored was within the IPCC's bounds:

> "Each describes a future climate scenario, the likelihood of which depends on the complex interplay of factors such as total greenhouse gas emissions, the meteorological evolution of climate change, global population growth, energy use and international cooperation on mitigation and adaptation."[23]

They continue with an acknowledgment of the complexity in assessing the political impact of climate change:

22 Brown & Crawford, p. 43
23 *Ibid*, P. 43

> The projected impact of climate change on societies is, of course, one step more uncertain than the projected climate change itself, being a projection based on a projection. In addition, for West Africa as elsewhere, 'the discourse is further complicated by the near impossibility of disaggregating climatic from anthropogenic influences, as a whole range of variables other than climatic ones (for example demographic, political, economic, technical) are influencing land-use change throughout the Region'[24]

In the best case scenario described by Crawford and Brown, the earth would carry a population of 9 billion people by 2050, which would decline to 7 billion people by 2100 as economies stabilize. This scenario would include less material growth coupled with increasing prevalence of clean, efficient technology. It projects carbon dioxide concentrations to stabilize around 600 parts per million by 2100. Over that time period, global temperatures would rise 1.8 degrees and sea levels would grow by 18 to 38 centimeters. Specific impacts would include a 20 to 30 percent decrease in water availability in vulnerable regions and crop yield declines of about 5-10 percent.

The medium case scenario predicts a similar population curve. While there would be some newer, more efficient technology, this scenario would see energy sourced from a mix of fossil and non-fossil fuels. Atmospheric carbon dioxide would reach 850 parts per million by 2100 and temperatures would increase by about 2.4 degrees, although the increase might actually range between 1.7 and 4.4 degrees. In this scenario, flooding would affect 11 to 170 million additional people each year, even as a 20 percent drop in precipitation set in.

The worst case scenario would involve continued worldwide dependence on fossil fuesl. This case would see carbon dioxide levels around 1550 parts per million by 2100. This would likely generate a 4 degre etemperature increase along a range between 2.4 and 6.4 degrees. Water availabiilty would drop by as much as 30 to 50 percent as sea levels rise 29 to 59

24 *Ibid*

centimeters. By 2050, 160 million people would be exposed to flood risks, and that number might grow to 420 million people by 2100.

As earlier noted, a crucial problem arises from these studies, though. When it comes to political stability, it's incredibly difficult to separate climatic influences from anthropogenic ones. Moreover, the authors found that climate change isn't new to West Africa. The region, they argue, is one of the planet's most variable areas. For example, rainfall was unusually high from the 1930s through the 1950s. It was during the end of this period that African nations were starting to gain independence. Ghana secured its independence from the United Kingdom in 1957. Three years later, Burkina Faso emerged from French colonial control in 1960.

As Brown and Crawford argue, there's a danger of obscuring these countries' existing problems while focusing on climate change. Attributing problems such as malnutrition, bad resource management, poor governance and imbalanced trade all to climate change might cause scholars and policymakers alike to overlook more complex, interwoven influences in favor of simplistic explanations**.**

Ultimately, though, they argue that good adaptation policies are also good development policies. So the actions taken to strengthen local self-reliance economically and politically could also pay off in the face of climate change threats.

“Clearly, healthy, well-educated communities with diversified sources of income will be better able to cope with the impacts of climate change,” they write. Some of the methods these countries might benefit from to adapt to climate change have been around for years in Burkina Faso and Ghana. Many of these methods were developed in the 1970s as efforts to combat the negative impacts of desertification. They include Zai cultivation, a traditional agricultural

technique found in Burkina Faso and Mali. Zai farmers grow crops in small, circular pits perpindicular to slopes.[25]

Brown and Crawford do conclude climate change does have political implications in these two countries. But they argue those implications shouldn't become so central a focus that the international community ignores other development issues. Instead, climate change has to be contextualized among other factors affecting these countries. Each factor affecting these countries' natural conditions, including climate change, must be measured. Then these impacts have to be compared on both qualitative and quantative grounds.

Given the foregoing discussion about the political impact of climate change, there's another question worth asking. Why are we discussing political stability at all? Why should climate change scientists concern themselves with the political impacts of climate change? I'd ask what their work means if they don't. I'd ask why study the changing climate if one doesn't want to know the full breadth of its impacts. Knowing the system is one thing. But one might argue we, as humans, are part of that system (as are other animals, and plant life, as well as geophysical forces and minerals). To fully understand how this system works each avenue needs to be explored and compared fully.

25 *Ibid.* p. 47