

trail six

Undergraduate Journal of Geography



Vol. 14: 2019 - 2020

UBC Department of Geography

trail six

UNDERGRADUATE JOURNAL OF GEOGRAPHY

VOLUME 14: 2019-2020

Geography Students' Association

Department of Geography

University of British Columbia

TRAIL SIX EDITORIAL BOARD 2019 - 2020

Editor-in-Chief: Nigel Tan

Editors:

Olena Poburko, Michele (River) Walter, Elana Shi, Jennifer Lipka, Dannish Sayani, Enoch Lam, Chezsa De Los Santos, Mary Kristen, Henry Kwan, Kia Green, Phoebe DeLucco, Sara Hill, Shira Sanghvi

Layout & Design: Matt Campos, Alicia Sun

Faculty Acknowledgements:

Dr. Geraldine Pratt (Department Head), Dr. Trevor Barnes, Dr. Michele Koppes, Dr. Philippe Le Billon, Dr. Brian Klinkenberg, Dr. Loch Brown, Maria Cervantes, Peter de Montmollin

Land Acknowledgment:

We acknowledge that UBC's Point Grey Campus is located on the traditional, ancestral, unceded territory of the x^wməθk^wəy'əm (Musqueam) people. The land it is situated on has always been a place of learning for the x^wməθk^wəy'əm people, who for millennia have passed on in their culture, history, and traditions from one generation to the next on this site.

Special Thanks to:

UBC Department of Geography & Geography Students' Association

All correspondence should be addressed to:

Trail Six: Undergraduate Journal of Geography
Department of Geography
University of British Columbia
1984 West Mall, Vancouver, BC, Canada, V6T 1Z2

Email: trailsix@ubcgsa.ca Website: trailsix.geog.ubc.ca

© UBC Geography Students' Association, March 2020

Cover photograph: © Max Kittner

The opinions expressed herein are solely those of the individual authors.

CONTENTS

FOREWORD	4
LETTER FROM THE EDITOR	5
Climate Change Demands Sensible and Cohesive European Union Asylum Policy <i>Sean Cameron</i>	6
Twinnings English Breakfast: A Commodity Chain Analysis <i>Alana Davies</i>	20
Quantifying Glacial Meltwater Contribution to Streamflow in British Columbia: A Case Study of the Monarch Icefield in the Bella Coola Watershed <i>Anna Kaveney</i>	26
Time to be Late: A Geographical Approach to Sedate Mobilities <i>Marianne Carre</i>	47
National Parks: A Geographical Analysis <i>Hannah Sarchuk</i>	66
Chile's Neoliberal Crisis: The Discourse of Privatized Water <i>Max Kittner</i>	76
Site Suitability Analysis for Wind Farms on Hawaiian Islands <i>Elana Shi, Nigel Tan, and Angela Liu</i>	85
Queer Diasporas: Queerness, National Identity, and the Geopolitics of Queer Migration <i>Henrique Fernandes</i>	109
EDITOR AND AUTHOR BIOGRAPHIES	122

FOREWORD

These papers exemplify what I love about Geography -- and teaching undergraduate students in Geography. The topics range from transnational migration to escape from the persecution associated with homophobia in Russia, to establishing the most suitable location for windfarms on the Hawaiian Islands. They take on one of the most pressing issues of our day: climate change, and collectively trace the impacts, which range from increasing meltwater from the Monarch Icefield on stream flow in the Bella Coola watershed, to climate refugees seeking asylum in the European Union.

Through careful and, in many cases, strikingly original argumentation, they trace the connections and discontinuities that build (and threaten) our world. We learn, for instance, that the Ontario Teachers' Pension Plan holds majority stakes in a number of private Chilean water corporations, and of the 10 degrees of separation between a cup of Twinings tea in Vancouver and the poverty of women who labour as tea pluckers for \$2.25 Canadian in the Indian state of Assam. The papers are nicely written and argued. (Who can resist a paragraph that begins: "Karl Marx would not have been impressed by my shallow morning thinking [over a cup of Twining English Breakfast tea]" and moves into an explanation of commodity fetishism?) They invite us to hold the contradictions of our world together to think with some subtlety and complexity about them: our national parks can both be a site of pleasure and conservation *and* evidence of violent acts of primitive accumulation that rely on the continuing commodification of nature; slow movements (e.g., of food and cities) can be both progressive and elitist.

I hope you will enjoy this edition of *Trail Six*. I certainly have! Thank you to the student editors who have worked so hard to create this issue.

Geraldine Pratt

Department Head

UBC Department of Geography

LETTER FROM THE EDITOR

The release of this volume marks the passing of another year. A year of learning, growing, discovering, and creating in the Department of Geography. Students here in this Department have long prided themselves on rigorous scholarship and research, and this year is no different. After more than a decade, Trail Six continues to grow. It would be a Herculean task to even attempt to compile the accomplishments of our academics, and as such this volume presents but a minuscule sample of the scholarship that is crafted in the Geography Building.

Though it goes without saying, I must offer my earnest thanks to those who have poured their very soul into the making of this year's Trail Six. The talents of every single author, editor, faculty member, and layout designer has been integral in producing this 14th volume. Furthermore, this year marks the first time that Trail Six has been printed in colour, bringing a new dimension of life to many of the pieces within. Hopefully, this heralds the beginning of a tradition to be upheld for eons to come.

The bounds of this volume touch upon a plethora of global issues, ranging from questions about human rights in Chile and the EU, to environmental studies of glacial impacts and sustainable futures, to the seemingly impalpable geographies of society and humanity. These papers have brought knowledge from the bounds of the world and wrapped in an accessible, appealing package.

Every page following is a step on the journey of a lifetime, and I am delighted and honoured to once again present them to you. I sincerely hope you will enjoy reading this volume as much as we did making it.

Nigel Tan

Editor-in-Chief

Climate Change Demands Sensible and Cohesive European Union Asylum Policy

by: SEAN CAMERON

Every year, millions of people are displaced from their homes due to war, civil conflict, and natural disasters. Particularly vulnerable regions like the Middle East and Northern Africa experience droughts, food scarcity, and other forms of environmental degradation which exacerbate the issue of forced migration. The rapid pace at which the Earth is warming will exponentially increase the number of people who are forced to flee their countries as certain regions of the planet become uninhabitable. Many displaced individuals seek asylum at European borders due to Europe's close proximity to these threatened countries. However, the European Union has failed to justly handle the influx of individuals seeking refuge in nearby European countries in recent years. Each European Union member-state maintains control over their asylum policies resulting in disjointed methods of managing their borders. Meanwhile, the European Union's approach to border security has been to engage in irresponsible and unethical dealings to reduce the number of asylum-seekers that reach Europe. The European Union has also failed to recognize climate change as a legitimate reason to apply for asylum, despite the United Nations doing so in 2018. The long-term stability of these regions and the safety of those who are displaced may fundamentally depend on how the European Union decides to manage the escalating refugee crisis. This paper seeks to a) illustrate the connection between climate change and forced migration, b) provide a brief history of the European Union's migration policy, and c) discuss the European Union's vital role in establishing asylum policies that treat refugees with dignity and foster a sense of ethical leadership for countries around the world.

Introduction

The 2015 refugee crisis set a new record of first-time asylum-seekers (i.e., individuals applying for asylum) in the European Union, totaling over 1.2 million individuals (Eurostat, 2016). Populations in Syria, Iraq, Afghanistan, and other war-torn regions of the Middle East enduring conflict and persecution fled to Europe to seek

protection. This was not the first time that Europe had experienced pressure from high numbers of asylum-seekers; over six million people have applied for asylum in the European Union over the past two decades (Hatton, 2015). Strife in the Middle East and Northern Africa continue to force large populations to travel vast distances to seek safety despite the European Commission

having declared the refugee crisis over in March 2019 (Elbers, 2019).

Looking to the future, rapid changes in the Earth's climate will render many of these same areas uninhabitable, meaning climate change may be the cause of the greatest number of refugees (i.e., individuals "forced to flee his or her country because of persecution, war or violence"[UNHCR, 2020]) in history. Developed regions of the world that are more insulated from the immediate effects of climate change must be prepared to support large numbers of environmental refugees (i.e., individuals who have been forced to flee from climate-related duress). Many of these displaced people will migrate to Europe due to its close proximity to nearby vulnerable regions. Historically, the European Union has not exercised great forethought in equipping its institutions with the means necessary to justly handle high numbers of migrants. If the European Union hopes to avoid past mistakes, the measures the European Union takes in the coming decades must change.

Climate change is a complex and multidimensional issue that affects individuals, societies, and the environment in different ways which is one reason why there has been hesitation to link such a broad issue to increases in forced migration. For

example, estimations of the fallout of climate change could be overstated – humans could very well adapt to a changing environment as they have done for generations (Orlove, 2005). Another view could also see estimations as understated, and not inclusive of the full effects that climate change may have on civil unrest (Missirian & Schlenker, 2017). Unfortunately, while migration has always been a part of human survival, the warming that is predicted to occur based on current projections of greenhouse gas emissions is unlike anything humans have ever lived through. The Intergovernmental Panel on Climate Change now considers "climate change-induced migration 'possibly the most threatening short-term effect of climate change on human settlements'" (Klepp & Herbeck, 2017, 171). Studies indicate that asylum applications will indeed rise in extended periods of extreme hot or cold temperatures as loss of land and damage to property force people to migrate to places where survival is possible (Missirian & Schlenker, 2017).

It is important to acknowledge that developed countries in Europe (and globally) have contributed more to climate change than these vulnerable regions that are now experiencing the worst effects of a changing

environment and require the immediate support of well-equipped nations. The European Union is a great power in today's geopolitical landscape and has the capacity to take action that could mitigate the fallout from another refugee crisis. However, given the European Union's past and present displacement of asylum-seekers and a historical failure to provide principled leadership during the migrant crisis, it is fair to question Europe's ability or willingness to accommodate the inevitable influx in environmental refugees that anthropogenic (i.e., originating from human activity) changes in the planet's climate will cause. This paper then seeks to understand the short comings of the European Union's asylum policies and properly attribute culpability of past mistakes so that clear solutions may be considered which could ease the pressures of an environmental refugee crisis and ultimately determine the long-term stability of the region.

Conflict, climate, and displacement in the Middle East and Northern Africa

The Middle East and Northern Africa are historically among the most conflict-ridden regions in the world (UNHCR, 2019). While many displaced individuals seek asylum in Europe and elsewhere, most displaced people remain within their country of origin,

heightening tensions in already unstable regions. For example, of the 60 million people that were forcibly displaced worldwide in 2014, roughly 38 million remained within the borders of their home country (Hatton, 2016). Still, recent civil wars in Syria and Libya, as well as unrest in Sudan, Iraq, Afghanistan, and Tunisia have all resulted in millions of displaced people fleeing to neighbouring countries for safety (European Stability Initiative, 2015). While civil conflicts in these regions are often attributed to corruption, unemployment, economic decline, poverty, and famine (Bush, 2019), integrating both the factors contributing to, and the consequences of climate change in to our analyses will allow for a better understanding of why these conflicts occur in these regions specifically, and to what degree they can be made worse in the future.

The fallout from the historical drought beginning in 2006 which devastated parts of Syria and Iraq is a clear example of climate change leading to and exacerbating civil unrest. The Fertile Crescent has been a sight of agricultural prosperity in the Middle East for thousands of years. In 2006, it experienced the worst 3-year drought in recorded history (Kelley et al., 2015), triggering massive instability in the region, and led to widespread crop and water shortages as well as

mass livestock mortality. As a result, approximately 1.5 million citizens from rural farming areas were forced to migrate to urban centers of their countries, where they had greater access to resources (Kelley et al., 2015). This 3-year drought was preceded by droughts from 2003 to 2007 in Iraq that triggered a mass movement of Iraqis to Syria. By 2010, almost 20% of the urban Syrian population consisted of people displaced from Iraq, putting immense strain on an already tense situation in Syria (Kelley et al., 2015).

The Middle East and Northern Africa are still considered the most water-scarce regions of the world (Burrows & Kinney, 2016). These highly vulnerable regions continue to experience rising average temperatures and worsening effects of droughts, as the area is unable to recover year after year. Droughts have a devastating cascading effect, leading to water scarcity, crop failure, food insecurity, rising food prices, unemployment, and ultimately a shrinking GDP and recession as economic output is reduced (Missirian & Schlenker, 2017). Social impacts follow, for example with increases in civil conflict as those most affected are forced out of work and must compete for resources (Burrows and Kinney 2016). These droughts and resulting

social and economic conditions played a significant role in the conflict in Syria in 2010 (Kelley et al., 2015). The United Nations and the Syrian government have also linked the worsening environmental conditions to an increase in societal tension (Solh, 2010). Similarly, in Niger, Lake Chad has shrunk to one-sixth of its former size. The hundreds of thousands of people that depend on the lake for water must now look elsewhere. The shrinking of Lake Chad has coincided with conflict and war in the region, leading to millions of people displaced from their homes (Webber, 2017).

The global scientific community now firmly supports that the increase in frequency of these unprecedented droughts is due to anthropogenic warming of the planet. Forced migration as a result of climate change is becoming “unmistakable with tens of millions of people at a time displaced by extreme weather events...and many millions more displaced by climate processes like desertification, salinisation of agricultural land and sea-level rise” (Brown, 2007, 21). There is conclusive evidence of a direct connection between droughts and worsening environmental conditions, conflict, and increasing forced migration whether or not the European Union is willing to acknowledge it.

Europe's past response to forced migration

When the European refugee crisis culminated in 2015, the roughly 1.3 million displaced people that sought asylum across Europe in countries such as Germany, Hungary, Italy, and Greece, (UNHCR, 2017) accounted for 15% of the world's refugees (Dustmann et al., 2017). When Libya experienced an influx of migrants from neighbouring countries and was unable to accommodate the sharp rise in refugee population, leading many to flee to Europe through dangerous migratory routes across the Mediterranean Sea and into Italy. This dangerous passage resulted in thousands of deaths in 2015 and 2016 (Webber, 2017). In the coming decades, the millions of environmental refugees could become billions, as the places they live are no longer habitable (Tajani, 2018). By 2050, estimates of the number of environmental refugees are between 50 million and 1 billion (Burrows & Kinney, 2016). Most experts including the International Panel on Climate Change (IPCC) have agreed roughly 200 million people will seek asylum due to forced climate migration (Brown, 2007; Bassetti, 2019). Such an estimate calls into question the European Union's ability to handle a refugee crisis of this severity, given that its immigration

policy has largely been focused on limiting incoming asylum-seekers by any means necessary.

The member-states of the European Union have been unwilling to relinquish autonomy over their asylum policies, resulting in many incoherent, anti-migration policies lacking forethought. The absence of a unified European asylum policy has only served to sow division among European Union citizens and their elected officials. Since "receiving countries can decide whether to reject asylum claims [or] grant full GCR [Global Compact on Refugees] refugee status (which often leads to permanent settlement in the host country)" (Dustmann et al., 2017, 501), refugees have been unevenly distributed throughout Europe. The European Union created a refugee-relocation program in 2015 to relocate approximately 160 000 refugees to other parts of Europe from the coasts of Italy and Greece, where many refugees first arrive. This agreement was regrettably not accepted by many countries and resulted in a fraction of refugees being relocated than the program intended. Those who have their application for asylum rejected must return to their home country willingly or by force. (Dustmann et al., 2017). However, the 'non-refoulement' principle forbids host countries from

returning asylum-seekers to their country of origin if it is deemed to be unsafe, leaving many people in limbo with no place to call home. These individuals seeking refuge from persecution only to be prohibited from settling in a new place yet unable to return home reside in unofficial refugee camps at borders, “living in the desperate search for protection and human dignity” (Tondo, 2019). This scenario is far from rare, with almost 900 000 such cases in Europe at the end of 2018. (Tondo, 2019).

Europe is still recovering from the 2008 recession, and with the rise of right-wing populism and racist, anti-immigration sentiments spreading throughout the western world, (Dustmann et al., 2017) refugees are viewed by many as harmful to society instead of human beings seeking protection. Many member-states have tightened visa restrictions and border control to reduce the number of individuals able to successfully be granted asylum since the crisis began (Dustmann et al., 2017). The number of rejected asylum applications within Europe has continued to increase since 2015, rising “from 37% in 2016 to 64% in 2019” (Tondo, 2019). The protectionism demonstrated by European countries not only encourages illegal migration and people-smuggling by way of

dangerous sea-crossings, it fosters negative views of refugees, portraying them as illegal immigrants (Hatton, 2015). In areas of Europe that sustain pressure from the uneven burden-sharing of refugees such as Germany, Hungary, and Ukraine, xenophobia towards refugees has become common, viewing them as a threat to their jobs, safety, and culture (Burrows & Kinney, 2016; Horn, 2015). The migrants entering Europe are both greater in numbers and more culturally diverse than those in the past (Dustmann et al., 2017). Media reports of Islamic State fighters disguised as refugees entering countries such as Germany (Copley, 2016) have spread fear and alarm throughout the European Union, and refugees have been treated with hostility as a result. While European media propagates division of the public’s perception of refugees, European Union member-states continue to focus on short-term fixes to halt migrant flows through heterogenous asylum policies.

Preparing for an uncertain future

The European Union must improve coordination between member-states in order to mitigate the destabilizing effects climate change-induced migration will have on European society and its national and domestic security (Klepp & Herbeck, 2017). If the European Union is going

to equitably manage future mass migration, it must address its foreign policy and investment. To its credit, the European Union has funded several programmes to manage migration and asylum-seekers over time. The European Refugee Fund created in 2000 partially financed refugee relocation. The European Refugee Fund was later replaced by the Asylum, Migration, and Integration Fund, providing 3.137 billion euros in funding from 2014 and 2020. However, “nearly 90% of the funds are actually managed by Member States themselves to finance activities such as resettlement, relocation and support to national migration and asylum systems” (Faure, Gavas, & Knoll, 2015, 19), leading to fragmented fund allocation and conflicting relocation strategies. While the United Nations High Commissioner for Refugees (UNHCR) has provided a proposal for 2021-2027 establishing a need for the European Union to continue funding (UNHCR Regional Representation for EU Affairs, 2019), the European Union has yet to release plans of their own.

Under European Union law, only member-states that the European Commission considers safe countries (i.e., countries who have a democratic form of government, and where migrants will be free from violence, conflict, persecution, and demeaning

treatment) (European Commission, n.d.) are able to grant asylum to refugees. Despite its safe asylum policies, the European Union has been known to engage in contentious agreements with other states to reduce the number of refugees arriving at its borders. In 2016, the European Union agreed to the EU-Turkey Joint Action Plan which approved three billion euros in funding to Turkey to reduce irregular migrant flows into the region by way of closing the eastern Mediterranean route into Greece without considerations of the refugees’ safety (Nebehay & Baczynska, 2016). Turkey was deemed a safe asylum country as a result, and the deal also led to loosening visa restrictions of Turkish nationals and reopening discussions of Turkey’s admission into the European Union (Webber, 2017). The European Union continued on with this foreign policy shortly after when it approved 100 million euros in funding for Sudan to reduce migrant flows to Europe through the Horn of Africa (European External Action Service, 2018) while stating that the funding was officially for humanitarian aid and addressing irregular migration. The funding was earmarked for a Sudanese government led by President Omar al Bashir who was charged by the United Nations for genocide and war crimes. Over two million people were displaced because of Bashir’s actions and the European

Union saw fit to fund his regime in order to reduce these displaced people from reaching Europe (Webber, 2017). The European Union's willingness to engage in these unprincipled deals with foreign actors that aim to halt migration flows only serves to create further inequalities globally as the regions most vulnerable to climate-related migration become more susceptible to economic decline, loss of communities, and unnecessary deaths. (Burke, Hsiang, & Miguel, 2015; Worland, 2019). Such agreements will not go unnoticed by other actors around the globe when addressing their own asylum policies as the number of forced migrants continues to rise in a changing climate.

The European Union must continue to provide aid towards regions in Northern Africa and the Middle East that require assistance. In doing so, it must be transparent and principled when allocating funds, investing only in organizations that will work to reduce the need for citizens to flee in the first place and improve living and working conditions in their home countries. There are already several organizations that are working on sustainable, low-carbon solutions in these regions such as the Climate Investment Funds and the Green Climate Fund. These organizations are working to provide funding for efficient

forms of infrastructure such as solar technology, which would reduce rates of deforestation as wood-burning is the primary source of energy for much of rural Africa (Werz & Hoffman, 2016). There is also funding dedicated to building climate-resilient agriculture and irrigation and expanding transportation. Bolstering the transportation industry would improve public health and ease the impact of food shortages as medical supplies and food can be brought to market and transported to rural areas more easily (Werz & Hoffman, 2016). A bolstered transportation sector along with durable irrigation systems would enable communities to have a better chance at withstanding and navigate the forces of climate change. Furthermore, the European Union should work to ensure that these vulnerable regions of the world are not only provided with a platform in which to have their concerns heard but accounted for in a meaningful way. Future policies having to do with sustainable development and climate mitigation must include representatives from all regions of the global population.

If the European Union hopes to accommodate the predicted number of environmental refugees in the coming decades, addressing its structural and cultural limitations must be a priority as

well. Asylum-seekers arriving in Europe are often refused asylum because their reason for fleeing is unrecognized or deemed insufficient by the European Union despite the United Nations officially recognizing climate refugees' need for asylum in 2018 (Apap, 2019). In 2002, British Member of European Parliament Jean Lambert began lobbying European Parliament to recognize environmentally forced migrants as legitimate applicants for asylum (Klepp & Herbeck, 2017). Her efforts have somewhat paid off as the European Parliament Green Party and other nongovernmental organizations such as the Environmental Justice Organization have since advocated for enhanced refugee protections and for the recognition of environmental refugees as legitimate applicants for asylum (Klepp & Herbeck, 2017). While not all European Union member-states agree on what qualifies, the United Nations High Commissioner for Refugees (UNHCR) maintains the mandate of relocating immigrants and now considers those seeking refuge from general threats (i.e., climate change) as opposed to individual threats (i.e., persecution) as acceptable cause for asylum (Dustmann et al., 2017). Official recognition of environmental refugees is a big step towards appropriately integrating refugees into European society. Member-states must then work

on creating a homogenous asylum policy with clear communication and strategies in order to diffuse the rise of anti-immigrant populist sentiments throughout Europe and ensure an equitable transition for refugees who have fled their home countries. A more harmonious asylum policy across Europe that considers the long-term implications of climate-related migration as opposed to ad hoc solutions that attempt to limit asylum-seekers will only serve to benefit member-states.

By strengthening its border security in tandem with a structured relocation system, countries will all share the burden of asylum-seekers which is currently being disproportionately felt by those countries who accept the majority of refugees. In fact, a majority of European citizens support a European Union-level migration policy as opposed to individual state policies, including imposing a binding quota of admitted refugees set by the European Union (Faure, Gavas, & Knoll 2015). Furthermore, a stronger border a clear asylum policy may lead to a reduction in people-smuggling that results in thousands of avoidable deaths every year as individuals seeking asylum are now more likely to go through the proper channels to be granted refugee status (Hatton, 2016). A fair and well-

defined asylum process would have the added benefit of improving public perception of refugees as they can be assured of their legal entry. Providing support for refugees that allows them to take part in the economy is a key solution to ensuring their successful transition into European society. Currently, refugees granted temporary asylum while they wait for their applications to be processed are less likely to be employed or have lower salaries than those who are given permanent status, regardless of their educational background (Dustmann et al., 2017). However, studies have shown that if refugees were provided more equal opportunities, “within two years of an influx of migrants, unemployment rates drop significantly and economic health increases” (Maxmen, 2018). Therefore, any future asylum policy must acknowledge refugees’ right to participate in the economy and articulate these benefits.

Conclusion

As much as the European Union may want to limit asylum-seekers at their borders, there is no clear indication that the flow of migrants will stop in the future (Dustmann, et al., 2017). Although the European Commission has managed to reduce migration flows for now, climate change will continue to take a toll on the most vulnerable regions of the

world. Once parts of the world are no longer habitable, returning citizens to their countries of origin will not be an option. As it stands, the European Union is not prepared to withstand a refugee crisis in a world with 200 million climate migrants, where one out of every forty-five people in the world have been displaced due to climate change, as the International Panel on Climate Change predicts will occur by 2050 (Brown, 2008).

Immediate action is needed both domestically and internationally in order for the European Union to mitigate and adapt to the effects of anthropogenic climate change on future refugee emergencies. Many members of the European Union have been fully developed for decades because of the benefits provided to them by the fossil fuel industry. Fossil fuels have warmed the planet so rapidly continue to be exploited at an unsustainable rate and its these same developed countries that need to take responsibility for their role in environmental degradation. While the effects are being felt by all parts of the world, developing nations and regions that lack adequate infrastructure are disproportionately being affected by the planet’s warming despite contributing the least to it. Yet as people are displaced from their homes and look to these developed countries

for assistance, they are being turned away at alarming rates and portrayed as dangerous and burdening. The European Union has an opportunity to set an example for the rest of the world by providing protection for those in dire

need and advancing a global initiative to assist our fellow humans in a fight for survival. Climate change will be a mighty adversary that may only be defied through solidarity.

References

- Bassetti, F. (2019). Environmental Migrants: Up to 1 billion by 2050. Retrieved November 25, 2019, from <https://www.climateforesight.eu/migrations/environmental-migrants-up-to-1-billion-by-2050/>
- Brown, O. (2007). *Human Development Human Development Report Office Climate change and forced migration: Observations, projections and implications*.
- Brown, O. (2008). *Migration and Climate Change*. Geneva.
- Burke, M., Hsiang, S. M., & Miguel, E. (2015). Global non-linear effect of temperature on economic production. *Nature*. <https://doi.org/10.1038/nature15725>
- Burrows, K., & Kinney, P. (2016). Exploring the Climate Change, Migration and Conflict Nexus. *International Journal of Environmental Research and Public Health*, 13(4), 443. <https://doi.org/10.3390/ijerph13040443>
- Bush, S. (2019). On the migrant crisis, European governments are failing the first test of climate change. Retrieved November 6, 2019, from NewStatesmanAmerica website: <https://www.newstatesman.com/politics/environment/2019/07/migrant-crisis-european-governments-are-failing-first-test-climate>

Copley, C. (2016). German spy agency says ISIS sending fighters disguised as refugees. Retrieved November 25, 2019, from Reuters website:
<https://www.reuters.com/article/us-germany-security-idUSKCN0VE0XL>

Dustmann, C., Fasani, F., Frattini, T., Minale, L., Schönberg, U., & Schö, U. (2017). On the economics and politics of refugee migration. *Economic Policy*, 497–550. Retrieved from
<https://academic.oup.com/economicpolicy/article-abstract/32/91/497/4060669>

Elbers, F. (2019). The European Commission Declared the Refugee Crisis Over, But Is It? Retrieved November 26, 2019, from <https://muftah.org/the-european-commission-declared-the-refugee-crisis-over-but-is-it/>

European Commission. (n.d.). *Current National Lists Member State Country considered as safe*.

European External Action Service. (2018). EU actions on Migration in Sudan. Retrieved November 26, 2019, from
[https://eeas.europa.eu/headquarters/headquarters-homepage_en/34103/EU actions on Migration in Sudan](https://eeas.europa.eu/headquarters/headquarters-homepage_en/34103/EU%20actions%20on%20Migration%20in%20Sudan)

European Stability Initiative. (2015). *THE 2015 REFUGEE CRISIS THROUGH STATISTICS*.

Faure, R., Gavas, M., & Knoll, A. (2015). *Challenges to a comprehensive EU migration and asylum policy*. Retrieved from www.ecdpm.org

Hatton, T. J. (2015). Asylum Policy in the EU: the Case for Deeper Integration. *CESifo Economic Studies*, 61(3–4), 605–637.
<https://doi.org/10.1093/cesifo/ifv002>

- Hatton, T. J. (2016). American Economic Association Refugees, Asylum Seekers, and Policy in OECD Countries. *Source: The American Economic Review*, 106(5), 441–445. <https://doi.org/10.1257/aer.p20161062>
- Horn, H. (2015). Refugee Crisis: Which European Countries Are Most Xenophobic? Retrieved February 16, 2020, from The Atlantic website: <https://www.theatlantic.com/international/archive/2015/10/xenophobia-eastern-europe-refugees/410800/>
- Kelley, C. P., Mohtadi, S., Cane, M. A., Seager, R., Kushnir, Y., & Lamont-Doherty, C. (2015). Climate change in the Fertile Crescent and implications of the recent Syrian drought. *PNAS*, 112(11), 3241–3246. <https://doi.org/10.1073/pnas.1421533112>
- Klepp, S., & Herbeck, J. (2017). Politicising climate change adaptation Negotiating environmental migration in the European Union and the Pacific. In *Climate Change, Migration, and Human Rights* (pp. 169–188). London: Routledge.
- Maxmen, A. (2018). Migrants and refugees are good for economies. *Nature*. <https://doi.org/10.1038/d41586-018-05507-0>
- Missirian, A., & Schlenker, W. (2017). Asylum applications respond to temperature fluctuations. *Science*, 358, 1610–1614. Retrieved from <http://science.sciencemag.org/>
- Nebehay, S., & Baczynska, G. (2016). U.N., rights groups say EU-Turkey migrant deal may be illegal . Retrieved November 26, 2019, from <https://www.reuters.com/article/us-europe-migrants-idUSKCN0WA1D4>
- Solh, M. (2010). Tackling the drought in Syria. *Nature Middle East*. <https://doi.org/10.1038/nmiddleeast.2010.206>

Tajani, A. (2018). The migration crisis threatens to destroy the EU. We must not let it. Retrieved November 6, 2019, from The Guardian website:
<https://www.theguardian.com/commentisfree/2018/jun/27/migration-crisis-destroy-eu-collapse-schengen>

Tondo, L. (2019). Nearly 900,000 asylum seekers living in limbo in EU, figures show. Retrieved February 15, 2020, from The Guardian website:
<https://www.theguardian.com/world/2019/aug/25/asylum-seekers-limbo-eu-countries>

UNHCR. (2017). Mediterranean Situation. Retrieved November 25, 2019, from
<https://data2.unhcr.org/en/situations/mediterranean?page=1&view=grid&Type%255B%255D=3&Search=%2523monthly%2523>

UNHCR. (2019). *Global Trends: Forced Displacement in 2018*. Retrieved from
www.unhcr.org/5c6fb2d04

Twinnings English Breakfast: A Commodity Chain Analysis

by: ALANA DAVIES

There is much more to a cup of Twinings English Breakfast tea than a surge of caffeine: its surprisingly dynamic commodity chain links geography, economics, history, and people across time and space. In this article, the life cycle of a cup of tea is illustrated through the ten steps of growing, picking, withering, rolling, fermenting, drying, firing and baking, sorting and grading, blending, and packing. The broader meanings of this process are dissected by examining the commodity chain through different lenses of economic geography (in particular, those of Marx, Cook, and Leslie & Reimer). This is followed by an economic geographic analysis of Twinings' marketing techniques. Ultimately, this investigation into English Breakfast tea reveals that the common morning energy boost is more complex than one would think.

Introduction

I start every morning with a cup of Twinings English Breakfast tea. While the caffeine gives me a small boost in energy and alertness, I drink tea mostly for comfort and enjoyment. Such a simple drink, I always thought — hot water, a teabag, some milk, and a spoonful of honey. Little did I know what a complex story lay behind it.

Tea, like many other goods used daily and so essential to our routines, is often taken for granted. Very few stop to consider all the processes involved in it arriving at the breakfast table. All I had ever contemplated when I reached for my English Breakfast was my anticipation of that first glorious sip of hot, sweet tea.

Karl Marx would not have been impressed by my shallow morning thinking. It was a prime case of engaging in commodity fetishism: the belief that the value of a product is intrinsic and the associated lack of appreciation for the labour and social processes that led to its production (Barnes, 2018). This was a concept Marx articulated and abhorred. In my fixation on the final product of my cup of tea, I ignored the many steps that had created it and the networks embroiled in its making. Like many consumers, I assigned it an independent existence without consequence or history. My commodity fetishism allowed me to obliviously enjoy my tea without any thought to its background.

But that very love of my cuppa drove me to find the knowledge I was missing. To do this, I researched and mapped out the commodity chain of a Twinings English Breakfast teabag. I called upon the concept of defetishizing, which is accomplished by acknowledging the social and geographical connections implicit in the making of a commodity (Cook et al., 2007). By examining the life cycle of a commodity, from production to consumption, those social and geographical connections are immediately apparent and hence fetishism is avoided (Cook et al., 2007). I also considered the holistic approach to commodity chains, which recognizes that goods are formed by a network of labour and production processes that involve conception, design, production, retailing, and consumption (Leslie & Reimer, 1999). With this understanding, I began my inquiry into Twinings English Breakfast tea in order to become a more informed consumer.

I discovered the commodity chain of a seemingly simple teabag to be surprisingly intricate and lengthy. It involves ten steps: growing, picking, withering, rolling, fermenting, drying, firing and baking, sorting and grading, blending, and packing. First, seeds

from the *Camellia sinensis* plant are harvested and replanted, either in a hot and humid outdoor region or a nursery bed ("Tea," n.d.). After growing for 12 to 18 months, the young plants are transferred to a plantation to mature into bushes, reaching a height of 1.2 metres after four years (Cooke, 2017). The tea plants are then fine-plucked, a technique which refers to the picking of only the bud and two leaves ("Tea," n.d.). Within 24 hours, the leaves are transported to a factory where they undergo intensive processing ("Tea," n.d.).

Withering, which entails spreading the leaves out in a warm environment for eight to 18 hours, allows them to shrivel and break off into flakes ("Tea," n.d.). These flakes are then rolled using the CTC (cut, tear, and curl) method, in which a machine crushes the leaves into even smaller pieces to release a new colour, strength, and aroma ("Manufacture of Traditional," 2018). During the fermentation stage, the tea leaves are acidified and oxidized by being exposed to hot air ("Manufacture of Traditional," 2018). The tea is then left to dry. English Breakfast, like all black teas, dries longer than other tea strains, which is what gives it its robust flavour ("Tea Making Process," 2018).

In the firing and baking process, exposure to even hotter air deactivates the fermenting enzymes and brings moisture levels to a desirable 2.5%-3% ("Manufacture of Traditional," 2018). The tea leaves are sorted into grades by means of mesh screen filters and then packed into bunches ("Tea Making Process," 2018). At this point, the tea packets are auctioned off to tea companies through brokers (Cooke, 2017). Twinings' purchases are transported back to London, where the tea is carefully tasted and blended with other batches to create their signature English Breakfast ("Tea Making Process," 2018). Finally, it is packaged into teabags and sold to retailers globally.

While this research had educated me on the material production of tea, I had yet to discover the network of social and geographical relationships involved in its making. In the defetishization exercise, these factors are even more important than the physical manufacturing process (Barnes, 2018). The crux of defetishizing goods is knowing about the workers, their conditions, and the circumstances of each step of the commodity chain; and so I set about researching these connections.

Twinings is an excellent example of a firm that employs the concepts of global spread, regional assets, and strategic coupling of region and network (Coe et al., 2004). Its English Breakfast is sourced from tea gardens in China, India, Kenya, Sri Lanka, and Eastern Europe, all territories with optimal climates for growing leaves ("Tea Making Process," 2018). Its headquarters, however, are located in the United Kingdom – the unofficial tea Mecca of the world. It is the connections among all the sites involved in tea production, from the specialized growing areas to the head office, that constitute Twinings' global production network.

Twinings is also a vertically disintegrated firm, proven by its outsourced labour and externalized production processes. While this may be economically beneficial, the ethical implications are more questionable. Labourers living on tea estates in developing countries are often overworked, uneducated, living in poverty, and without any other employment options (Sharman, 2018).

Tea pluckers, many of whom are women, harvest up to 21 kilograms of tea leaves per day, one pound of which creates more than 200 cups of tea ("Tea," n.d.). In the Indian state of

Assam, workers are paid only CAD\$2.25 per day and often do not have sufficient access to food, sanitation, or housing – despite the tea estate’s legal obligation to provide these services (Sharman, 2018).

In early 2018, a damning report from UK-based development agency Traidcraft Exchange exposed the atrocious treatment of labour by tea companies worldwide. Amidst global pressure and scrutiny to move to more ethical production, Twinings (among other tea companies) published a list and map of its suppliers in an effort to increase transparency. It claims to only source from third-party certified plantations who “maintain quality conditions” and provide their workers with “housing, education, subsidized food ration, and healthcare” (“How We Work,” 2018). In using “feel-good” rhetoric, Twinings tries to win customer satisfaction, which in turn guarantees its ongoing success. How many of its claims are accurate, however, has yet to be determined.

The commodity chain does not stop at labour and production. Closer to home and nearer the end of the manufacturing process, Twinings continues to appeal to consumers’ need for assurance of excellence. Its taste-testers (dubbed “master

blenders”) are trained for five years in the art of tasting and blending before they are sent out to make purchases from tea estates around the world (“Tea Making Process,” 2018). Even Twinings’ slogan, “You deserve a better cup of tea” plays into the comforting, self-indulgent culture of the beverage while convincing customers that it can be trusted to deliver a quality product. Using deliberate wording, Twinings confirms the validity of its consumers’ desires to treat themselves to a cup of tea of the caliber that “only” Twinings could offer.

As the Chinese proverb goes, “a day without tea is a day without joy”. As an avid tea drinker, I wholeheartedly concur. But what I believed to be one of the simpler parts of my day in fact involves great complexity. The physical process involved in tea-making is a significant operation on its own, requiring hard labour, multifaceted organization, and intricate detail. But on top of the physical process, a cup of tea represents a maelstrom of other interacting factors: atrocious working conditions found on tea estates, social movements for more ethical production, and clever marketing from offices in London.

My research on the commodity chain of Twinings English Breakfast

demonstrated that this single item, so essential in the morning routines of millions of people, involves inextricably connected geographical, economic, and social links. My conscious defetishization of this good opened my eyes to the questionable conditions of tea estate labourers, the ethics of the companies that exploit them, and deliberately enticing advertising. It demonstrated the inordinately complex nature of tea and the significance of its massive network of people, places, and procedures. When I take my first sip of tea tomorrow morning, I will no longer be an uninformed consumer – I will be tasting so much more than my usual English Breakfast.

References

- Barnes, T. (2018, November 6). Global Production Networks. *Geography* 361. Lecture conducted at the University of British Columbia, Vancouver, BC.
- Coe, N., Hess, M, Wai-cheung Yeung, H., Dicken, P., and Henderson, J. (2004, December 2004). 'Globalizing' regional development: A global production networks perspective. *Transactions of the Institute of British Geographers*, 29(4), 468-84.
- Cook, I., Evans, J., Griffiths, H., Morris, R., and Wrathmell, S. (2007). 'It's More than Just What It Is': Defetishising Commodities, Expanding Fields, Mobilising Change.... *Geoform*, 38(6), 1113-26.
- Cooke, C. (2017, August 28). *The Amazing Supply Chain of a Cup of Tea*. All Things Supply Chain. Retrieved November 28, 2018 from <https://www.allthingssupplychain.com/the-amazing-supply-chain-of-a-cup-of-tea>.
- How We Work*. (2018). Twinings Sourced with Care. Retrieved November 28, 2018 from <https://sourcedwithcare.com/en/how-we-work/>.

Leslie, D., & Reimer, S. (1999). Spatializing Commodity Chains. *Progress in Human Geography*, 23(2), 401-20.

Manufacture of Traditional Black Leaf Tea. (2018). Dilmah School of Tea. Retrieved November 28, 2018 from <https://www.schooloftea.org/module/manufacturer-of-traditional-leaf-tea.html>.

Sharman, T. (2018). *The Estate They're In: How the Tea Industry Traps Women in Poverty in Assam*. Traidcraft Exchange. Retrieved November 18, 2018 from <https://static1.squarespace.com/static/59242ebc03596e804886c7f4/t/5b27a6270e2e72364827f389/1529325117476/The+Estate+They%27re+In.pdf>.

Tea. (2018). Solidaridad Network. Retrieved November 28, 2018 from <https://www.solidaridadnetwork.org/supply-chains/tea>

Tea Making Process. (2018). Twinings North America. Retrieved November 28, 2018 from <https://twinings.ca/pages/tea-making-process>

Quantifying Glacial Meltwater Contribution to Streamflow in British Columbia: A Case Study of the Monarch Icefield in the Bella Coola Watershed

by: ANNA KAVENEY

This study examines the contribution of glacial meltwater from the Monarch Icefield to streamflow in the Bella Coola River by modeling meltwater flux over the period 1979-2018. A simple temperature index, or positive degree day model is used to model glacial meltwater flux. This model is based on the empirical relationship between temperature and generation of glacial melt. This analysis elucidates the contribution of glacial meltwater to streamflow on annual and seasonal temporal scales and highlights important implications of changing glacial meltwater in source to sink systems.

1. Introduction

As the climate warms, accelerated deglaciation poses important ecological and hydrological consequences. By quantifying the contributions of glacial meltwater to streamflow from the Monarch Icefield, this analysis aims to enhance understanding of seasonal variation of meltwater flux and highlight the ecological and hydrological implications of glacial meltwater flux. I hypothesize that glacial meltwater will contribute a greater percentage of total discharge during the summer and that this contribution will have increased over the period 1979-2018.

2. Literature Review

2.1 Hydrologic impacts of deglaciation in British Columbia

Globally, mountain glaciers and icefields have experienced a strong response to climate change in the 21st century, exhibiting considerable glacial shrink and retreat (Huss & Hock, 2018). Specific to British Columbia, glacial retreat projections indicate that retreat follows a regional pattern, where maritime glaciers experience considerably less deglaciation than glaciers in the interior (Clarke et al., 2015). The Monarch Icefield, located in the Coast Mountains, experienced a total volume loss of $-2.9 (+/-1.6) \text{ km}^3$ during the 1980s – 2000, similar to

other icefields and glaciers in the area (Vanlooy & Forster, 2008).

In British Columbia, glaciers act as a “buffer” by moderating interannual variability in streamflow, especially during the summer when there is less rainfall (Stahl & Moore, 2006). As the climate warms, glacial meltwater increases until reaching a “peak” where glacial meltwater is maximized. Following this peak, glacier volume reduces, decreasing long term ice storage and causing glacial meltwater to decrease until it reaches a new steady state, which is characterized by increased variability in meltwater timing and magnitude (Gleick & Palaniappan, 2010; Huss et al., 2008). This variability is often caused by a shift from reliance on glacial melt to the less predictable rainfall events and snowmelt runoff (Milner et al., 2017). Moore and Stahl highlight the difference in peak water trends regionally in British Columbia (2006). They find that a regional difference exists in trends of streamflow in highly glacierized catchments: areas in northern British Columbia exhibit an increasing trend, while areas in southern British Columbia exhibit a decreasing trend (2006). This, combined with glacial retreat lag in the maritimes, signifies that large glacial areas in the Coast Mountains have

likely not reached peak water and are experiencing a lag in response time to climatic signals (Stahl & Moore 2006; Clarke et al, 2015).

2.2 Implications of deglaciation in source-to-sink systems

The Monarch Icefield is an element of a source-to-sink system, in which the system is a continuum from icefield to ocean (O’Neel et al., 2015). Glacial retreat poses consequences on hydrological, ecological and geomorphic levels in source-to-sink systems. On a hydrologic scale, glacial retreat will create increased runoff variability in timing and magnitude of freshwater (O’Neel et al., 2015). This variability will impact ocean circulation due to the varying levels of input of cold, buoyant freshwater (O’Neel et al., 2015). Ecologically, retreat and corresponding variation in glacial meltwater runoff is likely to contribute to a loss of biodiversity and varying food web dynamics (Milner et al, 2017). The complexity of ecological response is exemplified by the salmonid, which relies on the glacially controlled temperature of mountainous streams (Milner et al., 2017; Stahl & Moore, 2006). Influx of glacial meltwater will potentially increase habitat for salmon, as has occurred in Alaska through

decreases in stream temperature, while simultaneously decreasing habitat for the same reason in other areas (O'Neel et al., 2015; Milner et al., 2017). Consequential decrease of glacial meltwater could decrease habitat as streams warm (O'Neel et al., 2015). In terms of geomorphology and sediment transfer, deglaciation will expose unconsolidated sediments, creating hazards like landslides or other forms of slope instability (Milner et al., 2017). As glaciers shift thermal regimes, less sediment is expected to be generated, while sediment loads may increase due to mobilization of sediment materials (Milner et al., 2017). Though the impacts of deglaciation in source-to-sink systems remain difficult to predict, they will be multifaceted and highly interdependent.

2.3 Temperature index (PDD) modeling in mountainous climates

Temperature index melt (PDD) models rely on the proven empirical relationship between air temperature and melt generation to predict melt (Hock, 2003). This relationship is grounded in the high correlation between air temperature and several elements of the energy balance (Hock, 2003). Use of temperature index melt models in mountainous areas presents

new challenges due to factors not included in the model including slope, aspect and shading. Further limitations include omission of radiation balance elements, the influence of the katabatic glacial cooling layer and high temporal and spatial variation in melt factors. Certain limitations inherent to simple temperature index models can be ameliorated through incorporation into extended forms of the model (Hock, 2003). However, despite these limitations, temperature index models generally exhibit good performance compared to radiative and enhanced temperature index models, making them a viable and popular method for modeling melt with limited data (Hock, 2003; Shea, 2010).

3. Data & Methods

3.1 Climate & hydrologic data

NCEP-DOE Reanalysis 2 climate reanalysis data was utilized for this investigation. NCEP-DOE Reanalysis 2 data was used at a daily temporal resolution and a ~209 km spatial resolution on a Gaussian grid (Kanamitsu et al., 2002). Daily average surface temperatures (2m) were downloaded for the time period 1979-2010. Temperature reanalysis data was situated at the coordinates 52° 0' 49", 126° 8' 53", a point in the middle of the

Monarch Icefield. In order to adjust reanalysis temperature values to glacier elevation, I use the standard environmental lapse rate of $6 \text{ km}^\circ\text{C}^{-1}$. Hydrologic data was downloaded from the Water Survey of Canada from the stream gauge station 08FB007, Bella Coola River above Burnt Bridge Creek. The gauge is located at $52^\circ 25' 20'' \text{ N}$, $126^\circ 09' 29'' \text{ W}$. The hydrologic data measures average monthly discharge in m^3s^{-1} from the period 1965 to 2010, though the time scale 1979-2010 is examined in this analysis (Water Survey of Canada, 1965-2010).

3.2 Glacier area & site

The Monarch Icefield is located in the Coast Mountains in British Columbia, near the Bella Coola and Kliniklini Rivers (Figure 1). One of five major icefields in coastal British Columbia, the Monarch Icefield has an area of $\sim 491 \text{ km}^2$ (Vanlooy and Forster, 2008). The Bella Coola watershed has an area of 1190 km^2 and 26% of the area is glaciated (Figure 1). Hydrologic data from the chosen stream gauge indicates that this watershed experiences significant influence from both snowmelt and glacial melt (Figure 2). Average monthly streamflow rises in May and June, peaks in July and falls in August and September. Snowmelt

would likely influence the hydrograph on the rising limb, while glacial melt would be more influential during the falling limb. However, the summer peak indicates that this watershed is more nival and glacial than pluvial (Déry et al., 2009).

Glacier area was determined from data from the Randolph Glacier Inventory 6.0 (RGI Consortium, 2017). The designation of the Monarch Icefield was based on a similar delineation done by Vanlooy and Forster for their analysis of glacier volume change (2008). In order to determine glaciers that were pertinent to the designated stream gauge, station 08FB007, I downloaded the Bella Coola watershed and chose glaciers that corresponded to the watershed, as illustrated by Figure 1 (Data BC, 2011). After determining the 47 glaciers that were within the range of the Bella Coola watershed, I reduced my focus to just glaciers that were greater than 3 km^2 in area. This analysis yielded 11 glaciers, including the prominent Jacobsen, Talchako and Princess glaciers (Figure 3). Median glacial elevation was used as a proxy for equilibrium line altitude (ELA) in this analysis since it is empirically well-correlated with ELA, though 10 out of 11 glaciers studied have a higher median glacial elevation

than average approximate ELA (1900 m.a.s.l.) in the Monarch Icefield in 2000 (Braithwaite & Raper, 2009; Vanlooy and Forster, 2008). All glacier outlines and ELA values were determined in 2006, meaning the analysis does not account for differences in area, volume or ELA before or after 2006. This limits the scope of the analysis to the first-order relationship between temperature and melt generation, excluding the influence of area and volume variation.

3.3 Positive degree-day model for meltwater flux

In order to determine meltwater flux for the Monarch Icefield I employed a positive degree day model. Utilizing this model, I was able to investigate the amount of meltwater flux by determining the amount of positive degree days. First, I calculated the temperature at the glacier as

$$T_{glacier} = T_{average} - \Gamma(E_{glacier} - E_{grid})$$

where $T_{average}$ is average daily temperature from NCEP-DOE 2 data, is the environmental lapse rate, assumed to be the standard $6 \text{ km}^\circ\text{C}^{-1}$, $E_{glacier}$ is the median glacier elevation and E_{grid} is the elevation of the reanalysis grid cell, which remained constant at 2m. Next, I determined the positive degree days, where

$$T_a = T_{glacier} > 0.$$

This metric assumes that glacial melt is occurring when temperatures at the glacier are above 0, but not when temperatures are equal to or less than zero. Then, I was able to calculate the glacial melt in m.w.e. as

$$M_{glacier} = T_a * f_m$$

where f_m is a melt factor. The melt factors used were $K_s = 1.096 \text{ m}^\circ\text{C}^{-1}\text{yr}^{-1}$ and $K_i = 1.675 \text{ m}^\circ\text{C}^{-1}\text{yr}^{-1}$, determined as average melt factors for British Columbia from analysis of in situ data (Shea, Moore & Stahl, 2009). In my analysis I used an average of both of these factors, assuming that half of the positive degree days would be melting snow (early summer) and the other half would be melting ice (late summer). The average factor used was $K_{avg} = 1.39 \text{ m}^\circ\text{C}^{-1}\text{yr}^{-1}$.

Finally, I calculated the meltwater flux in $\text{km}^3\text{yr}^{-1}$ as

$$Q_{glacier} = M_{glacier} * \text{area}.$$

All four equations were used for each of the 11 glaciers in the study area, specifying different elevations and areas.

Glacier meltwater flux was examined at the annual and seasonal scale from 1979-2018, and modeled

meltwater flux was compared to stream gauge data from 1979-2010. This time period was chosen based on the availability of stream gauge data, since measurement of discharge at the stream gauge was discontinued after 2010. The seasonal scale investigated the relationship between meltwater and discharge in June, July, August and September. These months were chosen because they have the highest inputs of glacial meltwater (Figure 7). Trends in glacial meltwater generation and stream gauge discharge were evaluated through a Mann-Kendall test, which determines the existence of a monotonic trend over time for a specified data variable and indicates the direction of the trend. Trends in the proportion of glacial meltwater to total stream discharge at an annual and seasonal scale were also determined with the Mann-Kendall test. Modeled glacier meltwater was evaluated for variation in timing and magnitude in over period 1979-2010 on a decadal scale. Trends in timing variation were evaluated for significance using the Mann-Kendall test, while trends in magnitude variation were evaluated using ANOVA.

4. Results

4.1 Glacial meltwater and stream discharge on an annual and seasonal scale

Glacial meltwater fluxes exhibit increasing trends on an annual and seasonal level, as depicted in Figure 4. Positive modeled glacial meltwater trends are statistically significant on an annual and seasonal level, though the slope of the trend is steeper on an annual scale (Figure 5). Trends in streamflow over annual and seasonal temporal scales do not exhibit statistically significant slopes (Figure 6; Figure 5). Though a maximum value of annual and seasonal streamflow occurs in 2007, no significant trend exists in streamflow over time from 1979-2007 or 1979-2010 (Figure 5). This result indicates that annual variability is more likely to have caused the slope of streamflow over time than the occurrence of peak water.

4.2 Contribution of glacial meltwater to stream discharge on various temporal scales

Examination of the annual hydrograph that includes both glacial meltwater flux and stream discharge shows that the temperature index model overpredicts meltwater

discharge (Figure 7). The annual hydrograph shows that August and September both have higher monthly glacial meltwater flux values than stream discharge. This casts doubt on the accuracy of the modelling approach, though certain factors that are not accounted for by the model, further explored in the discussion, could have impacted this result.

Glacial meltwater exhibits considerably different contributions to stream discharge on an annual and seasonal scale. Over the time period 1979-2010, glacial meltwater contributed an average of 15% of stream discharge at an annual scale and 60% of stream discharge in the summer. Figure 8 depicts the change in percentage change in contribution of glacial meltwater at both temporal scales. Both trends exhibit statistically significant positive slopes, which indicate that these trends are monotonically increasing over time (Figure 5).

4.3 Timing of glacial meltwater and stream discharge

Analysis of variation in timing and magnitude of modeled meltwater indicates that melt

has been increasing on a monthly scale over time (Figure 10). June, July and

September exhibit statistically significant positive trends of modeled meltwater, with the strongest trend occurring in June (Figure 9). The results of the ANOVA indicate that there are statistically significant differences in the monthly means of meltwater on a decadal scale for all summer months (Figure 12). Comparatively, timing of streamflow discharge appears to decrease over time, though no statistically significant trends exist (Figure 9; Figure 11).

5. Discussion

5.1 Temporal variation in contribution to streamflow

Modeled meltwater flux from the Monarch Icefield in the Bella Coola watershed indicates that glacial discharge is an important component of streamflow on both an annual and seasonal time scale, in spite of potential overpredictions of glacial meltwater flux. Annual contributions of meltwater were lower, with a mean value of 15% over the time period examined, while seasonal contributions had a mean of 60% (Figure 13). Therefore, while glacier meltwater flux is important year-round, it is critical for streamflow during the summer. Moreover, since modeled glacial meltwater flux exhibits

statistically significant increasing trends, this indicates that the contribution of melt to streamflow may continue to increase.

5.2 Implications regarding peak water

Examinations of stream gauge data indicate that it is unlikely that peak water has yet to occur in this watershed. Though a maximum value of annual and seasonal streamflow occurs in 2007, the lack of statistically significant trend indicates that peak water has yet to be reached. This means that the watershed is most likely in the rising limb stage of peak water (Gleick & Palaniappan, 2010). This result is consistent with glacial retreat and streamflow patterns for maritime glaciers, since they appear to be more resilient to climate forcings than glaciers in the interior of British Columbia (Stahl & Moore 2006; Clarke et al., 2015). Moreover, this result indicates that maximum glacial meltwater contribution to streamflow will be reached at some point after 2010.

Analysis of modeled glacial meltwater demonstrates increasing variability in timing and magnitude over the study period, results consistent with the theory of peak water. Analysis of

meltwater timing shows that more meltwater is being generated at months earlier and later in the melt season, while meltwater generation in August is more consistent (Figure 9; Figure 12). This is consistent with the increased variability in seasonal timing of glacier meltwater as glacial retreat occurs (Gleick & Palaniappan, 2010). These trends are strengthened by the results of the ANOVA statistical test, which show that the most significant difference in means occurs in June, July and September (Figure 12).

5.3 Implications regarding source to sink systems

The Bella Coola watershed has yet to reach peak water and modeled glacier meltwater flux displays an increasing trend, hydrological, ecological and geomorphic components will likely be responding to an overall increase in glacial meltwater, characterized by increasing variability. In hydrological terms, this will increase discharge, while introducing changes in timing and magnitude of discharge. The increasing influx of cold, buoyant freshwater in mountainous streams will likely impact microorganism and salmonid habitat - though my analysis did not provide sufficient information to

indicate whether this cooling of streamflow will increase or decrease habitat. The influx of freshwater will also likely mobilize increasingly available sediment, since sediment has been shown as a transport limited phenomenon in similar glaciated source-to-sink systems (Love et al., 2016). Increased sediment transport will increase turbidity in mountainous streams, which has implications for both channel morphology and water quality, depending on the coarseness of the sediment (Moore et al., 2009). Larger grained sediments can influence channel morphology, while fine grained sediment can inhibit water quality (Moore et al., 2009). As glacial meltwater flux enters the ocean, it modifies ocean circulation, which increases primary productivity and nutrient transportation (O'Neel et al., 2015).

Eventually, following the peak of glacier meltwater flux, decreased glacial meltwater will substantially alter the aforementioned consequences. Decreasing glacial meltwater flux will still exhibit increased variability and magnitude, though at a smaller scale. Stream temperatures will likely rise, making certain streams uninhabitable for salmonids while decreased streamflow will consequently reduce

sediment transport capacity (Stahl & Moore, 2006; O'Neel et al., 2015). At the “sink” of the system, oceanic circulation will be limited due to a lack of freshwater input, potentially creating challenges for primary productivity and nutrient transportation (O'Neel et al., 2015).

5.4 Limitations

Apart from the inherent limitations of the temperature index modelling method, a variety of potential sources of error that could have caused the model to overpredict exist, including uncertainty in temperature, melt factors, area and storage capacity. The temperature reanalysis data used is presented at a fairly coarse resolution. Not only does this limit temperature variability, it also limits the accuracy of the data since the lapse rate may not properly account for the katabatic layer of cooling around the glacial surface, causing the predicted temperatures to be higher than the actual glacial temperatures (Shea, 2010). The exclusion of the katabatic glacier cooling layer, which can insulate glaciers from melt when air temperatures reach above 0°C, would increase the predicted meltwater flux.

The estimated melt factors add further uncertainty to my analysis since

they are not specific to the Monarch Icefield, instead representing an average of melt factors for the entirety of British Columbia (Shea, Moore & Stahl, 2009). While averaging the melt factors of ice and snow is convenient for this analysis, it assumes that exactly half of the melt in a given year occurs from snowmelt while the other half occurs from ice melt, which is not necessarily true. Glacial ice melt is highly dependent on snow coverage, which means that drier years will experience higher ice melt than wet years with more snow coverage (Jost et al., 2012). The averaging of melt factors introduces the potential for over or underprediction of melt due to incorrect division of snow and ice melt. Given the likely strong influence of snow in the Bella Coola watershed, the potential for overprediction due to overuse of the melt factor for ice is very possible (Figure 2).

Using a single glacial area delineation from 2006 introduced uncertainty due to the static modelling of a dynamic aspect. Glacial retreat in British Columbia indicates that the glacier areas were likely larger before 2006 and smaller after 2006, meaning that the model may overpredict melt post-2006 and underpredict melt pre-2006. The lack of area variation in this

model is especially pertinent due to the high correlation between area and meltwater generation explored in a similar temperature index modelling analysis in the Indus watershed in Nepal (Koppes et al., 2015). Moreover, utilizing a single, static median elevation as an ELA proxy introduces error in two ways. First, using one ELA value over the entire period assumes that the ELA did not change, which is unlikely in the current period of retreat. Second, although median elevation is empirically situated as a well-correlated proxy of ELA, it often overestimates ELA due to failure to account for variations in valley morphology, which often are strong drivers of area-elevation distribution for glaciers (Braithwaite & Raper, 2009).

Finally, the analysis does not account for diversion of flow from icefield source to stream gauge. Given the distance of the stream gauge from the terminus of the glacier, diversion of streamflow is likely (Figure 1). Diversion of flow could have occurred through changes in water storage within the catchment, glacial sublimation and evaporation during streamflow. Moreover, inclusion of glacier areas that are not fully encompassed within the watershed boundary could have increased modelled glacial meltwater,

even though this meltwater may not be flowing in the same watershed as the stream gauge (Figure 1).

5.5 Future Studies

Interesting further studies of glacial meltwater generation in the Monarch Icefield could explore various methods of modelling, including radiation balances and input of area. Moreover, meteorological, hydrological or mass balance in situ data from a glacier in the Monarch Icefield would assist future modeling. These techniques could allow for more effective comparison of modeled meltwater flux through inputs (more accurate temperature data and melt factors) and outputs (stream gauge data in closer proximity to icefield). Further studies of the implications of changes in glacial meltwater flux could further explore the role of sediment as an input both in streams and the ocean.

6. Conclusion

Glacier melt modelling for the Monarch Icefield indicates that glacial meltwater flux makes substantial contributions to streamflow in the Bella Coola watershed at both an annual (15%) and seasonal (60%) level. Examination of trends in streamflow situated this watershed on the rising limb of the peak water cycle, which demonstrates that these contributions are likely to increase following 2010. Investigation of variability in timing and magnitude of meltwater indicated that timing and magnitude of modeled meltwater were more variable over time. These results highlight important implications for the ecosystem in terms of hydrology, ecology and geomorphology as cold, freshwater permeates the icefield to ocean system.

References

- Braithwaite, R. J., & Raper, S. C. B. (2009). Estimating equilibrium-line altitude (ELA) from glacier inventory data. *Annals of Glaciology*, 50(53), 127-132.
- Clarke, G. K. C., Jarosch, A. H., Anslow, F. S., Radic, V., & Menounos, B. (2015). Projected deglaciation of western Canada in the twenty-first century, *Nat. Geosci.*, 8, 372–377.

- Data BC. (2011). Hydrology: Hydrometric Watershed Boundaries. [Data file]. Retrieved from: <https://catalogue.data.gov.bc.ca/dataset/hydrology-hydrometric-watershed-boundaries>.
- Déry, S. J., Stahl, K., Moore, R. D., Whitfield, P. H., Menounos, B., & Burford, J. E. (2009). Detection of runoff timing changes in pluvial, nival, and glacial rivers of western Canada. *Water Resources Research*, 45(4).
- Gleick, P. H., & Palaniappan, M. (2010). Peak water limits to freshwater withdrawal and use. *Proceedings of the National Academy of Sciences*, 107(25), 11155-11162.
- Hock, R. (2003). Temperature index melt modelling in mountain areas. *Journal of hydrology*, 282(1-4), 104-115.
- Huss, M., Farinotti, D., Bauder, A., & Funk, M. (2008). Modelling runoff from highly glacierized alpine drainage basins in a changing climate. *Hydrological processes*, 22(19), 3888-3902.
- Huss, M., & Hock, R. (2018). Global-scale hydrological response to future glacier mass loss. *Nature Climate Change*, 8(2), 135.
- Jost, G., Moore, R. D., Menounos, B., & Wheate, R. (2012). Quantifying the contribution of glacier runoff to streamflow in the upper Columbia River Basin, Canada. *Hydrology and Earth System Sciences*, 16(3), 849-860.
- Kanamitsu, M., Ebisuzaki, W., Woollen, J., Yang, S-K., Hnilo, J.J., Fiorino, M. & Potter, G. L. (2002). An Overview of Reanalysis 2. *Bulletin of the American Meteorological Society*, 1631-1643.
- Koppes, M., Rupper, S., Asay, M., Winter-Billington, A. (2015). Sensitivity of glacier runoff projections to baseline climate data in the Indus River Basin. Special Issue on Climate Change Impacts on Water Resources. *Frontiers in Earth Sciences* 3:59.
- Love, K. B., Hallet, B., Pratt, T. L., & O'NEEL, S. H. A. D. (2016). Observations and modeling of fjord sedimentation during the 30 year retreat of Columbia Glacier, AK. *Journal of Glaciology*, 62(234), 778-793.

- Milner, A. M., Khamis, K., Battin, T. J., Brittain, J. E., Barrand, N. E., Füreder, L., ... & Hodson, A. J. (2017). Glacier shrinkage driving global changes in downstream systems. *Proceedings of the National Academy of Sciences*, 114(37), 9770-9778.
- Moore, R. D., Fleming, S. W., Menounos, B., Wheate, R., Fountain, A., Stahl, K., ... & Jakob, M. (2009). Glacier change in western North America: influences on hydrology, geomorphic hazards and water quality. *Hydrological Processes: An International Journal*, 23(1), 42-61.
- O'Neel, S., Hood, E., Bidlack, A. L., Fleming, S. W., Arimitsu, M. L., Arendt, A., ... & Hayward, G. D. (2015). Icefield-to-ocean linkages across the northern Pacific coastal temperate rainforest ecosystem. *BioScience*, 65(5), 499-512.
- RGI Consortium (2017). Randolph Glacier Inventory – A Dataset of Global Glacier Outlines: Version 6.0: Technical Report, Global Land Ice Measurements from Space, Colorado, USA. Digital Media.
- Shea, J.M. (2010). *Regional-Scale Distributed Modelling of Glacier Meteorology and Melt, southern Coast Mountains, Canada* (Doctoral dissertation). Retrieved from: UBC Library.
- Shea, J. M., Moore, R. D., & Stahl, K. (2009). Derivation of melt factors from glacier mass-balance records in western Canada. *Journal of Glaciology*, 55(189), 123-130.
- Stahl, K., & Moore, R. D. (2006). Influence of watershed glacier coverage on summer streamflow in British Columbia, Canada. *Water Resources Research*, 42(6).
- VanLooy, J. A., & Forster, R. R. (2008). Glacial changes of five southwest British Columbia icefields, Canada, mid-1980s to 1999. *Journal of Glaciology*, 54(186), 469-478.
- Water Survey of Canada. (1965-2010). Daily Discharge Station 09FB007. [Excel file]. Retrieved from: https://wateroffice.ec.gc.ca/mainmenu/historical_data_index_e.html.

Water Survey of Canada. (2019). Hydrometric Station Name Index. [Excel file].
Retrieved from:
https://wateroffice.ec.gc.ca/station_metadata/station_index_e.html?type=stationName&stationLike=A.

Figures

Influence of Monarch Icefield Meltwater Flux in Bella Coola River

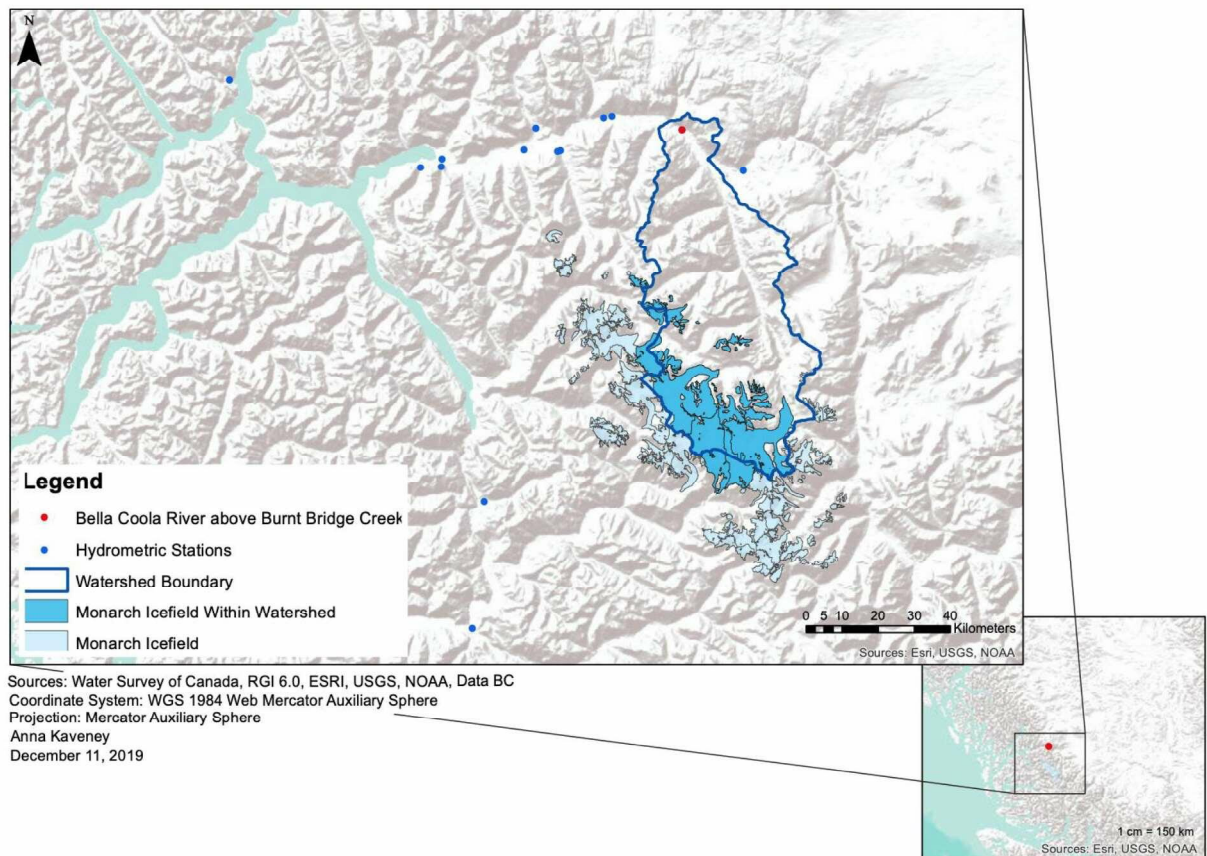


Figure 1: Illustration of the Monarch Icefield location within British Columbia. Delineates glaciers within watershed boundary, glaciers in the icefield and hydrometric stations.

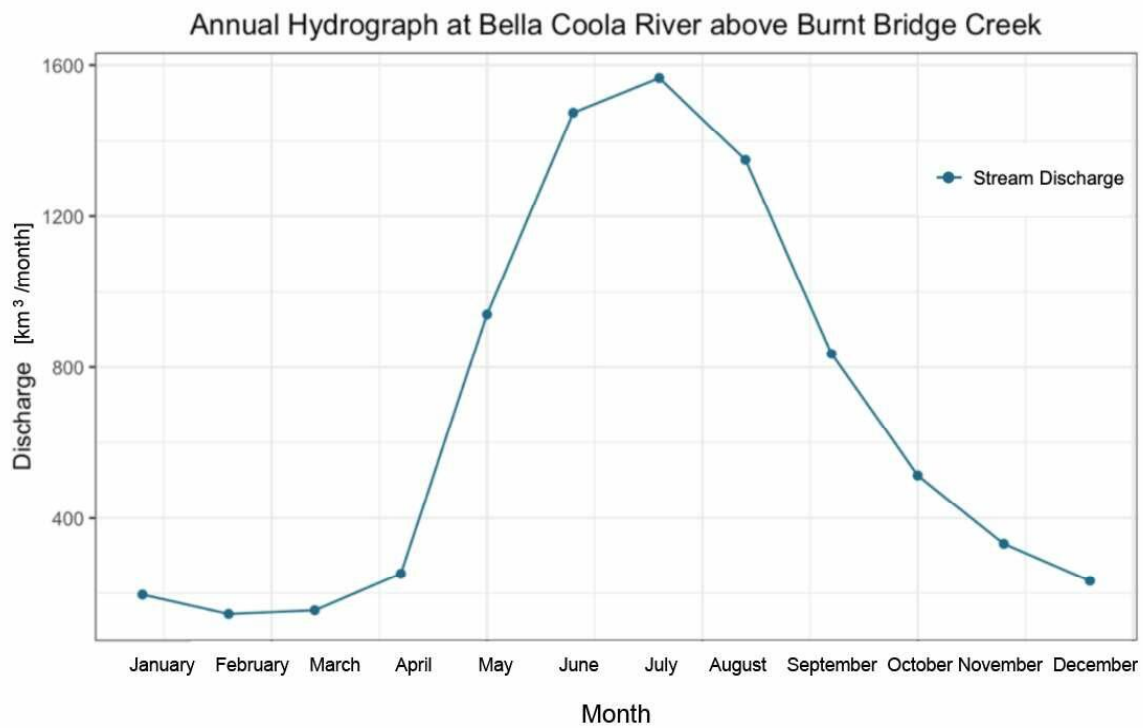


Figure 2: Annual hydrograph for Bella Coola River above Burnt Bridge Creek over the period 1979-2010.

#	GLIMS ID	Area [km ²]	ELA elevation [m]	Mean annual glacier temperature [°C]	Mean annual meltwater flux [km ³ yr ⁻¹]
1	G233819E52013N	73.25	2200	-1.80	41.45
2	G234027E51987N	5.39	2212	-1.86	2.99
3	G234036E52014N	3.89	2302	-2.40	1.76
4	G233823E52065N	3.43	2102	-1.20	2.37
5	G233761E52077N	18.08	2043	-0.85	13.92

6	G234038E51945N	66.34	2041	-0.84	51.25
7	G233978E51911N	24.13	2087	-1.11	17.15
8	G233914E51937N	51.10	2256	-0.83	39.47
9	G233961E51991N	10.16	2077	-0.83	7.85
10	G233824E52141N	5.48	1865	0.22	5.64
11	G233780E52139N	4.50	1914	-0.07	4.30

Figure 3: GLIMS ID, area, median elevation, average temperature and modeled total meltwater flux for each glacier studied.

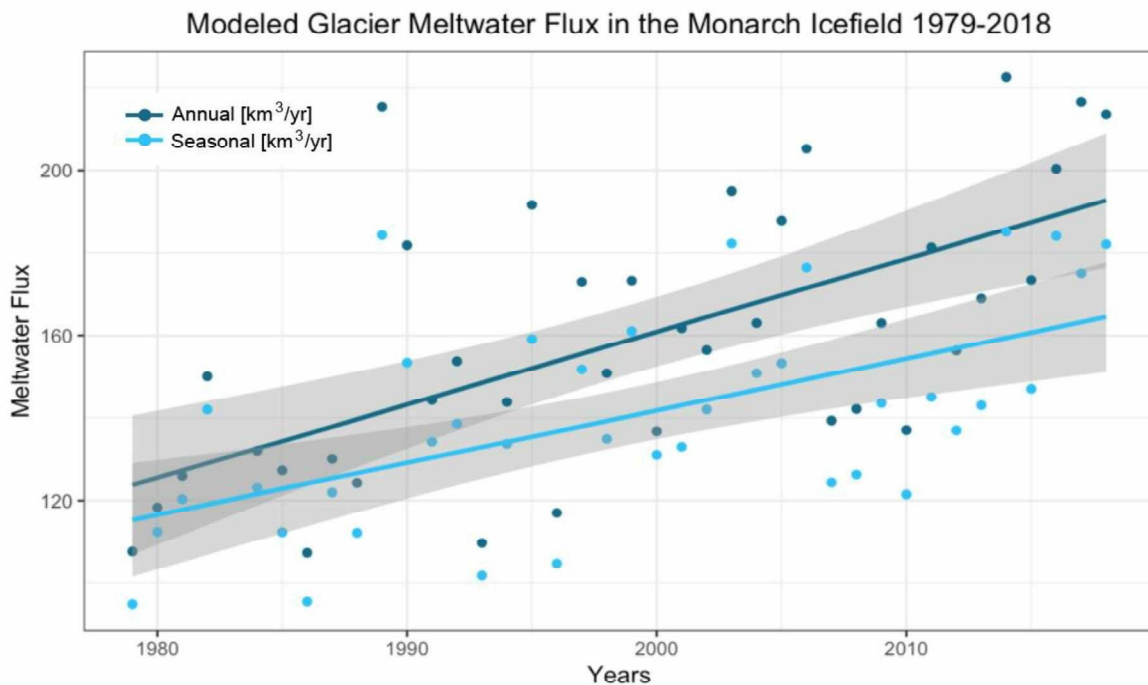


Figure 4: Modeled glacial meltwater flux in the Monarch Icefield at two temporal scales.

Trend	Time period	p-value	Kendall factor (S)
Annual meltwater flux	1979-2018	<i>0.000035</i>	345
Seasonal meltwater flux	1979-2018	<i>0.00041</i>	293
Annual streamflow	1979-2010	0.71	-23
Seasonal streamflow	1979-2010	0.86	11
Annual meltwater to streamflow	1979-2010	<i>0.038</i>	123
Seasonal meltwater to streamflow	1979-2010	<i>0.021</i>	137
Annual streamflow pre-peak	1979-2007	0.98	2
Seasonal streamflow pre-peak	1979-2007	0.92	6

Figure 5: Time periods, p-values and Kendall factors for trends studied. Statistically significant trends are italicized.

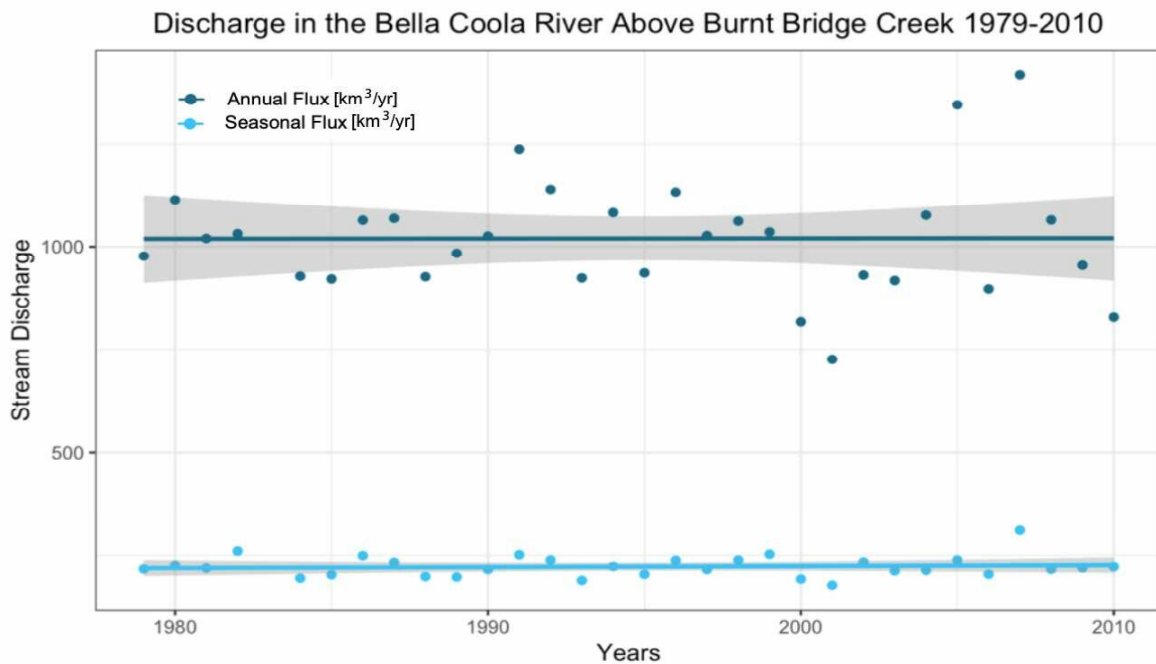


Figure 6: Streamflow in the Bella Coola River at two different temporal scales.

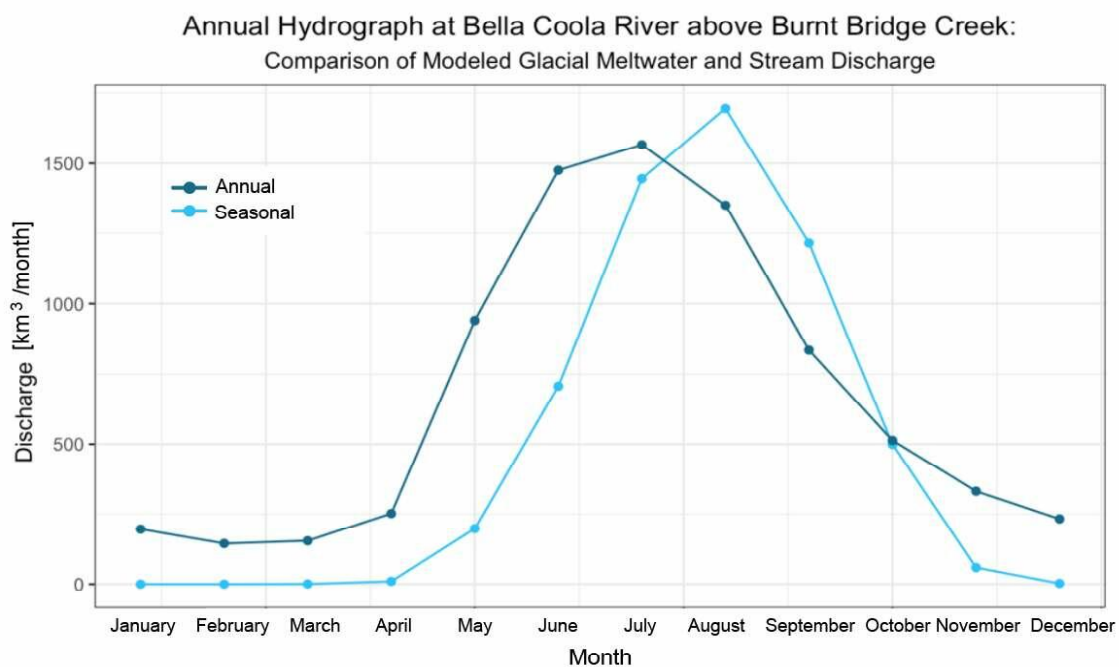


Figure 7: Annual hydrograph showing monthly average discharge for stream discharge and meltwater flux. Monthly values are determined during the period 1979-2010.

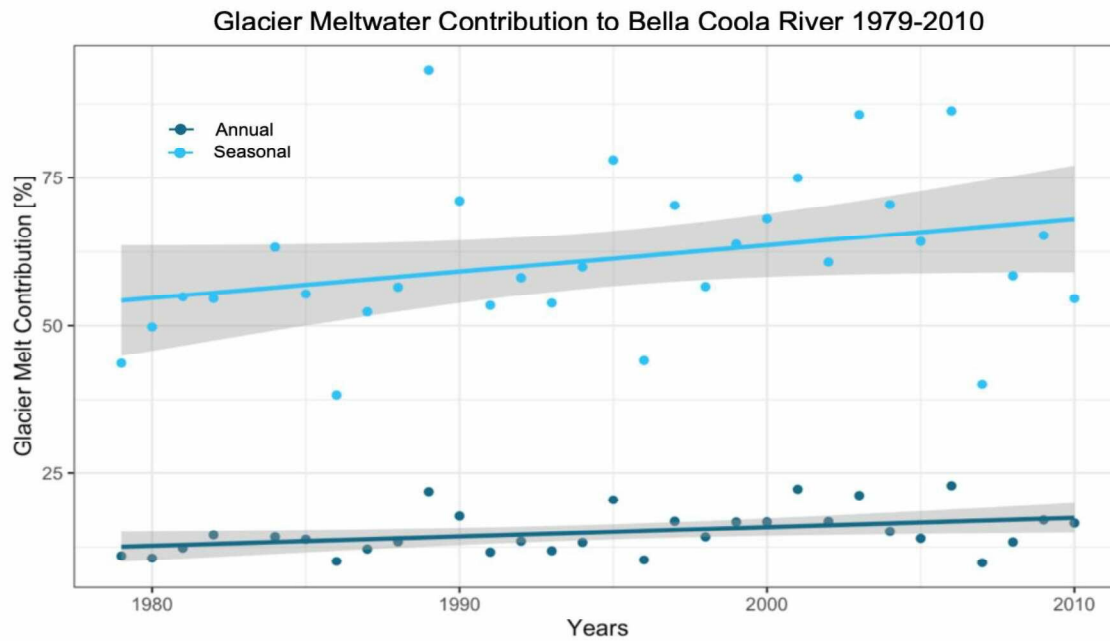


Figure 8: Percent glacial melt contribution to streamflow on an annual and seasonal scale in the Bella Coola River from 1979 to 2010.

Trend	Time period	p-value	Kendall factor (S)
June modeled meltwater	1979-2018	<i>0.0034</i>	243
July modeled meltwater	1979-2018	<i>0.013</i>	207
August modeled meltwater	1979-2018	0.81	21
September modeled meltwater	1979-2018	<i>0.031</i>	179
June streamflow discharge	1979-2010	0.34	60
July streamflow discharge	1979-2010	<i>0.17</i>	86
August streamflow discharge	1979-2010	<i>0.76</i>	20
September streamflow discharge	1979-2010	<i>0.062</i>	-116

Figure 9: Time periods, p-values and Kendall factors for trends studied. Statistically significant trends are italicized.

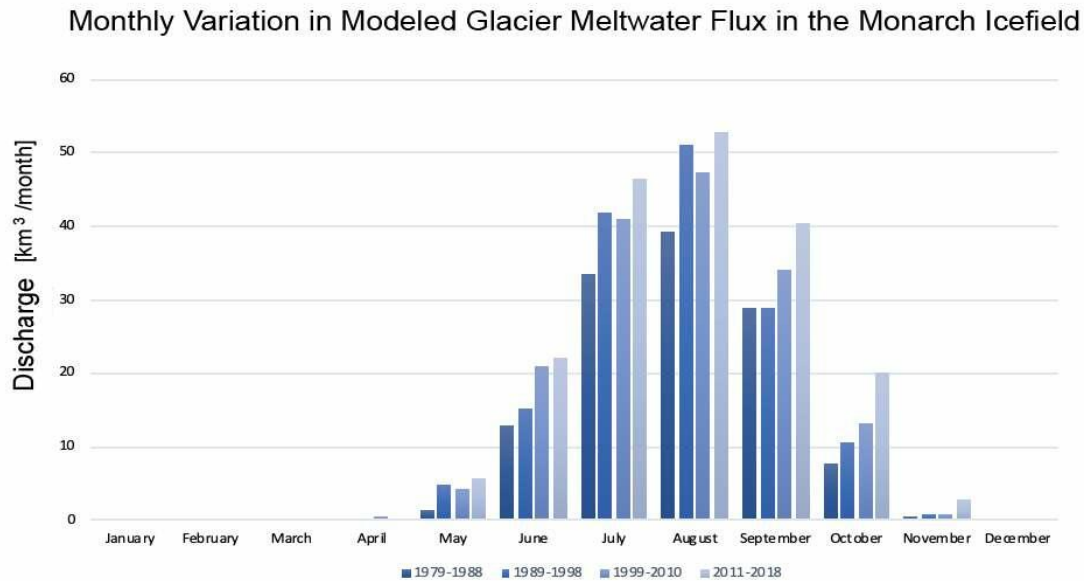


Figure 10: Monthly variation in modeled glacier meltwater in the Monarch Icefield on a decadal scale.

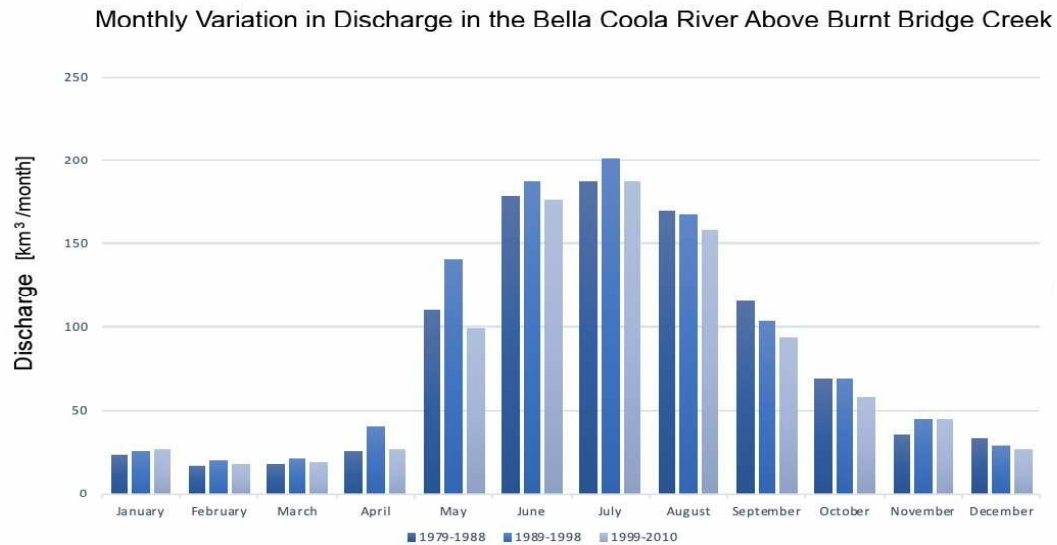


Figure 11: Monthly variation in streamflow discharge in the Bella Coola River at Burnt Bridge Creek.

Month	p-value
June	<i>0.021</i>
July	<i>0.024</i>
August	<i>0.049</i>
September	<i>0.037</i>

Figure 12: Results of ANOVA statistical test for modeled glacier meltwater. Statistically significant results are italicized.

	Mean	Standard Deviation
Annual glacial meltwater flux	150.46 kmyr ⁻¹	29.15 kmyr ⁻¹
Seasonal glacial meltwater flux	134.71 kmyr ⁻¹	23.58 kmyr ⁻¹
Annual streamflow discharge	1019.74 kmyr ⁻¹	142.81 kmyr ⁻¹
Seasonal streamflow discharge	222.75 kmyr ⁻¹	25.96 kmyr ⁻¹
Annual glacial:streamflow ratio	15%	n/a
Seasonal glacial:streamflow ratio	60%	n/a

Figure 13: Means and standard deviations of modeled glacial meltwater flux from 1979-2010.

Time to be Late: A Geographical Approach to Sedate Mobilities

by: MARIANNE CARRE

While immobilities are imposed on marginalized places and populations and slownesses are discursively related to an involuntary lack of connectivity and reduced accessibility; in the framework of rapid international flows, slowing down voluntarily is a social privilege. Drawing from the literature on mobilities, this paper suggests a reading of slow culture movements through the prism of Tim Cresswell's politics of mobility (Cresswell, 2010). It identifies voluntary sedate mobilities as an emerging constellation and investigates its socio-demographic implications. Ultimately, it argues that slow mobility is a worthy goal, but it requires equitable social structures such as a guaranteed minimum income to transcend its current characterization as a white middle-class fetish and allow a greater portion of the population to have the opportunity to slow down.

*Think in the minute.
Offset your steps
Against Earth beat. (...)
You bang
Your walking
Head on sun
As if you forget
It's there. Go
Nowhere
Until wrung dry
Of sleep (...)
If you drive, drive
Into every trap
Of space.*

"How to be Late" by Matthew Griffiths (O'Neill, Martell, Mendick and Müller, 2014)

This poem, by Matthew Griffiths, and activists arguing that our societies poeticizes the discourse of an need to slow down (O'Neill et al. 2014). emerging movement among scholars The slow movement culture started

with slow food (Andrews, 2008) and rapidly extended to other fields, including transportation and tourism, which will be the focus of this paper.

As a mobile international student whose intention is to submit this essay on time, I nevertheless attempt to “think in the minute” and “drive into every trap of space”, looking at those who have tried to “go against earth beat” and at how their walk might have changed the pace of society. Cresswell’s visual conception of “constellations of mobilities” (2010) accounts for the connections drawn between different historical meanings, relations, and practices of mobility and their relative dominance in a given historical period. “Head on sun” or other sources of light, I observe emerging constellations of mobilities (Ibid.) and identify their growing radii. This walk however, is not aimed at “going nowhere”; I propose to look at the way new constellations leave some spaces in the dark.¹

¹ I acknowledge the inherent hermeneutical subjectivity of poems. One of my reviewers read the poem as the inverse of meaning: to him, most of the actions could be read as critical or sarcastic: “drive into every trap of space” may mean that no temporal space is allowed to go unutilized, like *Murke’s Collected Silences* (Heinrich Böll). Banging your head on

Specifically, this paper suggests a reading of slow culture movements through the prism of Tim Cresswell’s “mesotheoretical approach to the politics of mobility” (Cresswell, 2010 p.17). Thinking of (im)mobilities in terms of constellations of mobility, it identifies voluntary sedate mobilities as an emerging constellation, progressively leading dominant mobility discourses toward a diminished status. Given concerns around wellbeing and environmental threats, slow mobility is a worthy goal, but it requires equitable State-based social programs, such as a guaranteed minimum income, to transcend its current characterization as a white middle-class fetish.

The ‘new mobility paradigm’ (Sheller and Urry, 2006) is based on various premises. Sheller and Urry begin their argument by observing that “the world is on the move” (p.207). This “world” the scholars are analysing is not only comprised of moving bodies— “Asylum seekers,

the sun may indicate that Griffiths’ target is unaware of the diurnal changes of daylight, so focused are they on going nowhere against the natural rhythm of the earth. Yet, this is only an extract of a poetry pamphlet published in 2013 which Griffiths himself read at the Slow University seminar at Durham University.

international students [...] commuters, prostitutes”—but also materials carried by these bodies and intangible information and data. Growing flows of people, materials and information are facilitated by new forms of mobility, such as low-cost airlines and new communication technologies (Pooley, Turnbull and Adams, 2006), and to some extent obliterate distance. “Connectivity (being in relation to) is added to, or even imposed upon, contiguity (being next to)” (Offner 2000, quoted in Cresswell, 2010, p.25).

From these observations emerge a variety of theories on mobility. Bauman understands flows and networks of people, goods and information as the embodiment of “liquid modernity”, distinct from the previous “solid and heavy stage of modernity” (Bauman, 2000). While this theory suggests that “hard” notions, such as borders and territory, are progressively being replaced by global flows and a diffuse sense of place, Sheller and Urry argue that immobilities, referred to as “moorings”, are also inherent to global mobile dynamics (Hannan, Sheller and Urry, 2006). In their view, “deterritorialization” resulting from international mobilities is made possible by foundational immobile and

material infrastructures. For example, the “spatial fix” (Harvey, 1989) is characterized by networks of highroads, docks, airports and electric poles, that is, an infrastructure that supports and sustains various mobilities.

Another significant consequence of this connectivity is the production of new enclaves of immobility (Mountz et al., 2012) and low mobility challenging the positive connotations associated with “moorings” and assumptions around soft borders. Mountz et al. point out how borders are still “hard” for asylum seekers whose mobility is dictated by dynamics of containment and detention. Furthermore, the logic behind the low mobility argument is similar to the one behind the mobility-moorings argument: connecting specific routes and people creates zones of centrality and empowerment. However, these zones entail the social exclusion and disconnection of marginalized places and population. The high-speed rail service in France illustrates this spatial dynamic. The introduction of the high-speed railway in France improved the level of accessibility between Paris and other urban hubs of the country, notably Lyon, Marseille, Toulouse, Lille and

Nantes. However, it bypasses a large territory, commonly known as the French *diagonal du vide* (diagonal void) and acts as a tunnel (Graham and Marvin 2001, as cited in Cresswell 2010, p.26) which, by ensuring the speed of a targeted segment of the population, also exacerbated the relative slowness of others through infrastructural budget inequities.

Sheller and Urry's new mobilities paradigm analyses mobilities, immobilities, speed and slownesses in terms of power relationships. "Transcending the dichotomy between transport research and social research" (Sheller and Urry, 2006, p.208), the new mobilities paradigm helps to understand the social implications of mobilities at all scales. While spatial mobility is increasing, immobility is seen to be restricted and dictated by mobility structures (Kölbel, 2018). Similarly, slowness is discursively related to an involuntary lack of connectivity and reduced accessibility. In the framework of rapid international flows, people with sedate mobilities are often categorized as immobile, hence the relationship between immobility and slowness. Yet, the dominant mobility discourses that characterize slowness and immobility as inherently connected are reductive. Immobility

does suggest that speed has been annulled, reduced to a non-existent state; it is the ultimate state of slowness, but slowness does not necessarily lead to immobility. This paper further investigates the drivers of sedate mobility movements, the socio-demographic dynamics that these movements entail and what distinguishes them from constrained immobility.

In his politics of mobility, Cresswell proposes to "think below the level of mobility and immobility" (2010, p.17) by looking at mobility as the "entanglement of movement, representation and practice" (Ibid.) and then breaking it up into six of its constituents (i.e. motive force, speed, rhythm, route, experience and friction). In Cresswell's view, physical movement is the raw material for mobility; however, he says nothing about the meaning given to mobility or the way that bodies experience it. Movement can have different interpretations according to the historical period and the social representation of that movement. Cresswell's notion of "practice" entails that experience of mobility varies from one person to the other. In fact, practice is not limited to the enactment of mobility but can further refer to one's

capacity to move, known as ‘motility’. For example, consider mobility experience for a body with abilities different from the norm. Going from point A to point B may or may not require the use of mechanized means of transportation or the intervention of a third party. Therefore, this person’s motility may be seen as either limited, or simply qualitatively different and might affect their experience of mobility.

The politics of mobility, in Cresswell’s view, refers to the way that mobilities are a product of social relations and are themselves implicated in the production and distribution of power. A mobile hierarchy is constituted by the frequency of the movement, its scope and speed, and the narrative constructed about the respective form of mobility. Consider, as an example, the difference in frequency of movement, speed and narrative for a refugee crossing the Mediterranean with no possibilities of return and an international lecturer taking the plane from Paris for a conference in the Middle East.

However, spatial mobility does not necessarily imply social privilege; this idea is exemplified by a comparative study of refugee and

immigrant workers in the United States (Jamil et al. 2012). Iraqis residing in Michigan were surveyed on the work barriers they encountered. The results show that refugees were twice as likely to be unemployed as the immigrants (Ibid.). In this specific case, mobile hierarchies are not the product of mobility, but rather of its different constituents. Immigrants indeed have a different motive for immigration than refugees. Whilst push factors exclusively cause the latter to leave their country, the former are often attracted by pull factors, such as: economic opportunities, a better cultural, political or social situation. Even though it is difficult to measure to what extent immigrant mobility results from pull factors, it can be argued that immigrants have more choice than refugees in their migration process.

Slow Movement Culture

And what of voluntary sedate mobilities? Hitherto, mobilities that could be characterized as voluntary slow mobilities seemed to be on the periphery of the mobilities literature and mainly perceived as reactionary marginal and elitist mobilities. This idea will be further studied through the example of the slow movement culture and its demographics.

The slow movement culture was initiated in 1986 by Carlo Petrini's protest against McDonalds' presence in *Piazza di Spagna*, Rome (Italy). Originally, the rationale of the movement was not to slow down but to control the entire production process. The Slow Food movement, therefore, was created as a reaction to the fast food society; rather than taking out a quickly served pre-cooked burger that would be eaten *on the way* to work, slow food restaurants take time to *pause* and prepare meals from farm to table. The movement developed into a subculture and was applied to other areas, both in terms of locations and fields. This essay considers slow mobilities through the examples of slow food transport and slow tourism.

Cargonomia

Cargonomia is a community-based initiative in Budapest that advocates for a transition toward degrowth and sustainability organized around three directive principles: use of sustainable transportation, production and provision of local organic foods, as well as re-valuation of social spaces (Gambos and Párdi, 2017). Among other things, the initiative manages the production and distribution of local foods via sustainable transport ("cargo

bikes") to the community (Ibid.). It is important to understand the context of Budapest and, more broadly, Hungary, to understand the motive behind such an initiative. From the 1960s onwards, urban planning in Budapest followed other modernization models that prioritize motorized traffic at the expense of public transport, cycle routes and walking areas. Indeed, automobiles on the main routes of the city, notably *Váci út*, *Bajcsy-Zsilinszky út*, and *Rákóczi út*, displaced tram lines and other public spaces previously accessible to pedestrians (Ibid.). Therefore, Cargonomia's promotion of sustainable transport can be understood as a reaction to the city's recent transformation.

Thus, the voluntary shift to slow mobilities that Cargonomia exemplifies emerged out of at least three concerns. First, it is derived from an environmental imaginary – in Purdy's sense of the term, that is a representation of nature shaping political considerations surrounding an issue like climate change (2018) – which believes that a shift in pace of society and human behaviours is fundamental to reduce greenhouse emissions. According to The Intergovernmental Panel for Climate Change (IPCC) greenhouse emissions

from transportation have doubled from 1970 to 2014 with about 80% of the increase coming from road vehicles (IPCC 2014, p.606 cited in Nikolaeva et. al, 2019). Road networks and motor vehicles also dramatically impact energy reserves, habitat availability, fertile agricultural land availability (Chomitz & Gray, 1996), as well as social fragmentation (Heeres et. al, 2016). Therefore, in this case, low carbon transport came as a reaction to the high environmental and social impacts of motorized vehicles.

Secondly, like other slow culture movements, Cargonomia was motivated by a desire that has been highly endorsed by slow movements, the handling of production locally and collectively from the start of the process to the end. In fact, this desire could be considered a reaction to the increasing “tunnelling effect” of mobility in the contemporary urban landscape, as previously mentioned by Graham and Marvin (2001).

Finally, Cargonomia shows a strong interest in fostering identity-building and a sense of belonging within the community. In fact, a 2016 survey of Cargonomia’s organic food customers revealed that being part of a community was one of the main reasons they chose Cargonomia as a

box pick up point (Gambos and Párdi, 2017, p.44). Thus, the initiative provides an open public space where members can meet, debate, learn, share knowledge and skills, and engage in sustainable activities. This social space is the opportunity for Cargonomia to encourage alternative thoughts, thereby flourishing as an intellectual community. The Cargonomia example illustrates the importance of breaking down mobility into its different constituents (Cresswell, 2010). Here, slow mobility is more than a mere reduction of speed; it is driven by a manifest political philosophy, referred to as “motive” by Cresswell and related to a specific route, rhythm and experience.

Città Slow Movement

The Città slow movement, initiated in 1999 by Paolo Saturnini, mayor of Greve di Chianti in Italy, is itself driven by a desire to pay more attention to the “spaces in-between” (Dickinson & Lumsdon 2010, p.126). Slow cities’ purpose is to improve the quality of life by slowing down the pace and re-thinking city spaces in order to value the experience of walking. With regards to walking tourism, slow cities enhance the experience of walking *between* places rather than travelling

from one landmark to another. The argument is that “spaces in-between”, spaces where the walking takes place, are social spaces in which people actually get to know the city. In Edensor’s view (2000 *in* Dickinson & Lumsdon 2010, p.124), walking holds great emotional benefits: “the walker [...] experience[es] continuity, embrac[es] change, while acquiring poetic sensibilities.”

Thus, there is more to slow mobilities than reducing the speed and pace of life: slow mobilities introduce new ways of being and a complete revision of people’s sense of place. In fact, there are many benefits to being a pedestrian, as highlighted by Demerath and Lvinger (2003) who describe a pedestrian lifestyle as essential for “developing shared meanings (i.e., culture) and a sense of community.” Slow mobilities are therefore a singular “culture”; they constitute an opportunity to engage in self-expression but also to connect to a territory and with a community (Nixon, 2014). Slow tourism is modelled in resonance with Casey’s argument that “knowledge of place begins with the bodily experience of being-in-place” (Casey 2009 as cited in Nixon, 2012, p.1662). All the senses are involved in this bodily experience, thus

transforming the simple process of walking into a human experience, namely “staying, playing, walking, talking, smiling” (Tolley and Walker, 2004 as cited in Dickinson & Lumsdon 2010, p.126). As Tolley and Walker recommend: “we must stop thinking about how fast our feet are moving and start listening to our hearts” (Ibid.).

The idea of movement is associated with a set of meanings; for example, mobility as liberty, mobility as progress, mobility as ableness, mobility as masculinity (Creswell, 2010). As an illustration, consider how car industry advertisements perpetuate association of masculinity with mobility, speed, adrenaline, engine power, massiveness and control (Jain, 2005). However, slow mobilities are given a different meaning within the slow movement culture. Initially, voluntary sedate mobilities were seen as a reactionary movement seeking to slow down the pace of life. Yet, the social ambitions of the slow movement culture progressively led these marginal discourses to the centre of attention and initiated a questioning of the dominant model of being in time and space. Slow mobilities have an inherent role to play in low-carbon transitions and may be part of the pre-existing movements that informed the

more recent climate strikes. Who would have predicted during the first climate strikes of August 2018 that the worldwide series of strikes would culminate on September 27th 2019 with over 7.6 million protesters (Global Climate Strike)? To some extent, young activists demanding that politicians adopt a climate action plan engage in slow mobility culture. The climate strike protesters advocate urgent measures to accelerate ecological transition, meaning the adoption of a green economic and social system, including the cessation of carbon dioxide emissions by 2050 (Shingler, 2019). Like slow mobilities, the movement is both local and international, diffuse and engrained in a territory.

Slow mobilities, therefore, are becoming increasingly influential and are permeating the contemporary imaginary. Whilst being slow still connotes being unable to “keep up” in the competitive sphere, voluntary sedate mobilities have also become an “antidote to the fast-paced imperatives of global capitalism” (Fullagar, Markwell, Wilson, 2012, p.1). In light of Cresswell (2010), slow mobilities can be described as an emergent constellation with the ambition to become the dominant model. Like constellations, slow mobilities

represent both an element of the past (i.e mobilities in slower times) and a possibility for the future.

Social-demographic implications

However, like any other mobility model, slow mobilities must be framed within the production and distribution of power. Even though slow movements shift the representation of sedate mobilities, they perpetuate mobility hierarchies. Thus, Mendick points to the problematic condition of slow movement cultures as they are conceived of today. He argues that “only some selves are in a position to take on slow ways of being and to gain value through so doing” (Mendick, 2014, p.2). The author refers to Bourdieu and Wacquant’s metaphor of a “fish in water” to differentiate between the people who “feel at home within Slow” and those “who feel the weight of the water” (Mendick, 2014, p.6). This meaningful image encourages us to think about who exactly has the opportunity to slow down. The lack of diversity of the Slow Food movement has been criticized by Carlo Petrini, the founder of the movement, himself (Petrini et al, 2007 as cited in Hayes-Conroy A&J, 2010).

The census data of the US slow food movement helps to establish a

standard profile of an American slow food proponent in 2016 (c.f. annex 1). In the US in 2016, an individual who supported the slow food movement was most likely to be a white woman between 36 and 65 years old, coming from a middle-class urban background. The data seems to suggest additional bias: people from rural backgrounds, lower social classes or from Afro-American origins are underrepresented. Interestingly, wealthy people are equally absent from the pattern, though the source of this absence is more likely disinterest rather than inability.

A survey of 96 slow food members conducted in the San Francisco Bay Area revealed that 88% of the people surveyed were white, 7% Asian, 3% other, 2% Hispanic and 0% black, while the Bay Area at large is considerably more racially or ethnically diverse (47.3% white, nearly 20% Asian and Hispanic, 9.5% other and 7.3% black) (Hayes-Conroy A&J, 2010, p. 2961). Further considering education levels, nearly 90% of the people responding to the survey had a university degree compared to only 41% of the Bay Area population (Ibid.). Thus, this study supports the above findings that raced-based, class-based differences influence slow movement culture

demographics. As of now, little study exists on the differences in gender among members of the slow-movement culture. Interestingly, there is a lack of Slow Food movement demographics studies in Europe, perhaps because ethnicity-based research is more prominent in the US and in the case of France, because gathering of data based on ethnicity is prohibited.

Allison and Jessica Hayes-Conroy's research draws attention to the visceral processes involved in slow food practices and develop new understandings as to why discourses and practices establish spaces of alternative food practices as white and upper-middle-class having a "chilling effect on people of color" (Guthman 2008, p.388 as cited in Hayes-Conroy A&J, 2010, p.2956) and lower income class people. Their project interviewed 40 Slow Food members in California. Hayes-Conroy identified numerous associations by the participants between being considering a person as being black", enjoying "fast and processed foods" and having "popular unhealthy tastes". Likewise, eating arugula and goat cheese salad was commonly perceived as "white", "hippie" and "good" behaviors (Ibid. p.2965). The authors argue that such

associations of ideas “encourage certain visceral feelings about food to adhere to other tendencies of feeling about race, economic capacity and social status” (Ibid. p.2966), thus hindering Afro-American and low-income population inclusion in the movement.

Keeping Slow Mobilities with Universal Basic Income

Rather than dismissing something otherwise good for society because particular disadvantaged groups cannot access it, some politicians propose facilitating access for those groups by removing the initial disadvantages. This political reasoning is exemplified by the universal basic income (UBI), a policy that would unconditionally guarantee a financial payment to every citizen at a level above their subsistence needs. The idea of basic income is widely contested throughout the world. It has been indeed proposed and rejected within the same political parties: in France for example, whilst economic liberals argue it could substitute for current social prestations others fear it would symbolically reward idleness; whilst some socio-democrats conceive UBI as a complementary social protection, others argue it would

fragilise the current system; whilst some proponents of degrowth contend with optimism that UBI is a tool to handle the “end of employment”, others argue that reducing working time for everyone would be more efficient and equitable; finally, whilst some Marxists see in UBI, the opportunity to unsettle the power relationship between workers and capitalists, others object that UBI fails at questioning the basis of capitalism (Allègre & Sterdyniak, 2016). In *La décroissance économique : pour la soutenabilité écologique et l'équité sociale*, Mylondo (2010) gathers academic research to create a bridge between the notion of economic degrowth and social equity, assessing alternatives such as the universal basic income to enhance slow movements, target ecological imperatives and rethink current modes of production.

Addressing the different ambitions of the proponents of the UBI, Allègre & Sterdyniak (2016) rightfully note that this political tool is often presented as a “miracle solution” (p.12) to growing social and environmental concerns. Nevertheless, it is worth considering its empirical effect in a specific social context. Finland’s centre-right coalition government ran an experiment from

January 2017 to 2019 (Martinelli, 2019). A sample of 2,000 randomly-selected unemployed people receiving a basic income of €560 per month was compared with a “control group” of unemployed people. Overall, the number days in employment, and income from self-employment were similar for the two groups (cf. appendix 2). However, the self-perceived assessment of health and the perceived level of stress diminished for the experimental group (cf. appendix 2). To Malsin and Lewis (2019), UBI does more than improving the population’s health and happiness: carefully managed, it is a powerful tool to reduce environmental impacts (Ibid.) and give people the opportunity to slow down. Indeed, the authors argue that the UBI would ultimately “break the cycle of production and consumption” by “giving people the agency to say “no” to undesirable work, including much environmentally damaging work, and “yes” to opportunities that often lie out of reach” (Ibid.).

To conclude, this paper suggests a reading of the slow culture movement through the prism of Cresswell’s politics of mobility. Thus, getting to one place becomes going to that place; eating becomes preparing and

enjoying the food; the process and *route* taken being at least as important as the object. This positive representation of sedate mobilities puts forward an emerging constellation which has the ambition to progressively lead dominant—and still hegemonic—mobility discourses to their residual status. However, as the politics of mobility suggest, this new model has implications. This paper suggests the need to examine power relationships resulting from slow movement culture and argues that, as of today, slowing down is a social privilege. Whilst some people experience slowness as “rigidity” (Mendick, 2014, p.9) and attempt to catch up with the pace of a capitalist society, for the upper-middle income white class, slowness is a *valuable* “mobility” (Ibid.). Thus, slow mobilities are more than reducing the pace of life; they are part of a movement that challenges the current dominant value system. However, it is often difficult to value the journey when there is a critical urgency to get to the destination. Instead of diminishing these middle-class environmental and social movements, further political imaginaries envisage a universal basic income to allow a greater portion of the population to have the opportunity to slow down.

References

- Allègre, G. & Sterdyniak, H. (2016). Le Revenu Universel: une Utopie utile? *OFCE policy brief, Sciences Po*.
- Andrews, G. (2008). The slow food story politics and pleasure. London: Pluto.
- Bauman, Z. (2000) Liquid Modernity (Polity, Cambridge).
- Casey, E. (2009). Getting back into place: toward a renewed understanding of the place-world. Bloomington, IN: *Indiana Univ. Press*.
- Chomitz, K. M., & Gray, D. A. (1996). *Roads, land use and deforestation: a spatial model applied to Belize*. Washington, DC: Oxford University Press.
- Cresswell, T. (2010) Towards a Politics of Mobility. *Environment and Planning D: Society and Space*, 28, 17-31. DOI:10.1068/d11407
- Demerath, L., & Levinger, D. (2003). The Social Qualities of Being on Foot: A Theoretical Analysis of Pedestrian Activity, Community, and Culture. *City and Community*, 2(3), 217–237. doi: 10.1111/1540-6040.00052
- Dickinson, J. & Lumsdon, L. (2010). Walking and Tourism. In *Slow Travel and Tourism* (pp. 119-133). London: Earthscan. eBook ISBN 9781136531736
- Edensor, T. (2000). Walking in the British Countryside: Reflexivity, Embodied Practices and Ways to Escape. *Body & Society*, 6(3-4), 81–106. doi: 10.1177/1357034x00006003005
- Fullagar, S., Markwell, K., & Wilson, E. (2012). *Slow tourism: Experiences and mobilities*. Bristol: Channel View Publications.
- Graham, S., & Marvin, S. (2001). Splintering urbanism: networked infrastructures, technological mobilities and the urban condition. London: Routledge & Kegan Paul.

- Gambos, M. Párdi, E. P. (2017) Transition towards sustainability in Budapest through the case of a degrowth fueled social cooperative. *Aalborg University Student Report*. Retrieved from http://cargonomia.hu/wp-content/uploads/2017/02/Transition_towards_sustainability_in_Budapest_EMSS3.pdf
- Global Climate Strike → A Historic Week. Retrieved from <https://globalclimatestrike.net/>.
- Guthman, J. (2008) “If they only knew”: color blindness and universalism in California alternative food institutions. *The Professional Geographer*: 387-397
- Hannam, K. Sheller, M. Urry. J (2006) Editorial: Mobilities, Immobilities and Moorings, *Mobilities*, 1:1, 1-22, DOI: 10.1080/17450100500489189
- Harvey, D. (1989). *The Condition of Postmodernity*. Oxford : Blackwell.
- Hayes-Conroy, A., & Hayes-Conroy, J. (2010). Visceral Difference: Variations in Feeling (Slow) Food. *Environment and Planning A: Economy and Space*, 42(12), 2956–2971. doi: 10.1068/a4365
- Heeres, N., Tillema, T., & Arts, J. (2016). Dealing with interrelatedness and fragmentation in road infrastructure planning: an analysis of integrated approaches throughout the planning process in the Netherlands. *Planning Theory & Practice*, 17(3), 421–443. doi: 10.1080/14649357.2016.1193888
- IPCC (2014). Climate change 2014 mitigation of climate change. Working group III contribution to the fifth Assessment report of the Intergovernmental Panel on Climate Change. O. Edenhofer, R. Pichs-Madruga, Y. Sokona, J. C. Minx, E. Farahani, S. Kadner, K. Seyboth, A. Adler, I. Baum, S. Brunner, P. Eickemeier, B. Kriemann, J. Savolainen, S. Schlömer, C. von

Stechow, T. Zwickel, and the Working Group III Technical Support Unit (Eds.), Cambridge, UK: Cambridge University Press

Jain, S. S. L. (2005). Violent submission: Gendered automobility. *Cultural Critique*, 61(1), 186-214.

Jamil et al. (2012) Promoters and barriers to work: a comparative study of refugees versus immigrants in the United States; *New Iraqi J Med.* 8(2): 19–28.

Kölbel, A. (2018) Imaginative geographies of international student mobility, *Social & Cultural Geography*, DOI: 10.1080/14649365.2018.1460861

Lefebvre, H. (2004) *Rhythmanalysis: Space, Time, and Everyday Life* (Continuum, London)

Martinelli, L. (2019, February 21). Basic income: world's first national experiment in Finland shows only modest benefits. Retrieved from <http://theconversation.com/basic-income-worlds-first-national-experiment-in-finland-shows-only-modest-benefits-111391>.

Maslin, M., & Lewis, S. (2019, May 20). Here's How a Universal Basic Income Can Help Us Mitigate The Climate Emergency. Retrieved from <https://www.sciencealert.com/a-universal-income-can-help-us-mitigate-our-climate-emergency-here-s-how> Mendick, H. (2014) Social Class, Gender and the Pace of Academic Life: What Kind of Solution is Slow? *Forum : Qualitative social research Sozialforschung*. 15(3). Retrieved from <http://www.qualitative-research.net/>

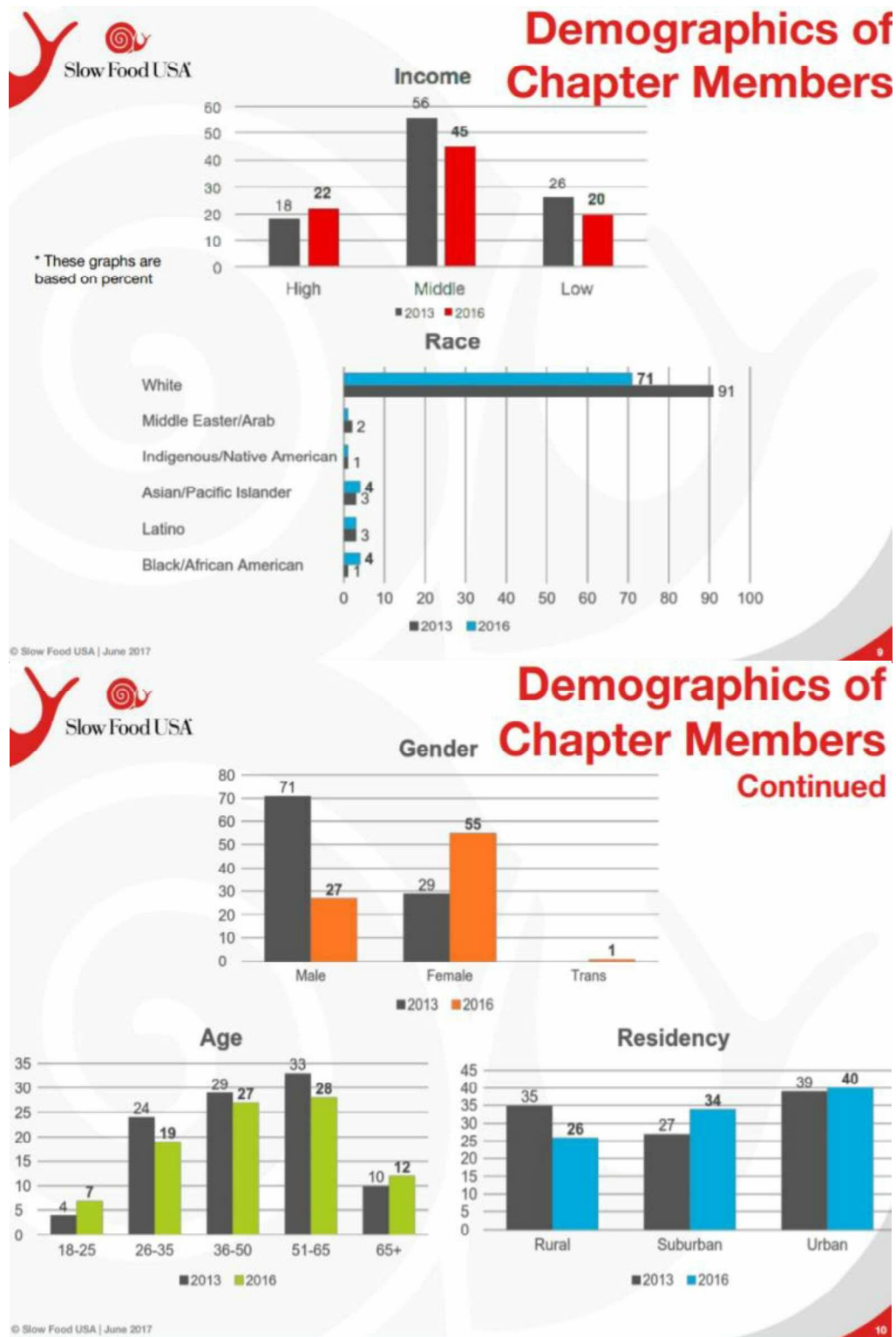
Mountz, A., Coddington, K., Catania, R. T., & Loyd, J. M. (2012). Conceptualizing detention. *Progress in Human Geography*, 37(4), 522–541. doi: 10.1177/0309132512460903

- Mylondo, B. (2010). *La décroissance économique: pour la soutenabilité écologique et l'équité sociale*. Bellecombe-en-Bauges: Editions du Croquant.
- Nikolaeva, A., Adey, P., Cresswell, T., Lee, J. Y., Nóvoa, A., & Temenos, C. (2019). Commoning mobility: Towards a new politics of mobility transitions. *Transactions of the Institute of British Geographers*, 44(2), 346–360. doi: 10.1111/tran.12287
- Nixon, D. V. (2012). A Sense of Momentum: Mobility Practices and Dis/Embodied Landscapes of Energy Use. *Environment and Planning A: Economy and Space*, 44(7), 1661-1678. doi:10.1068/a44452
- Nixon, D. V. (2014). Speeding capsules of alienation? Social (dis)connections amongst drivers, cyclists and pedestrians in Vancouver, BC. *Geoforum*, 54, 91–102. doi: 10.1016/j.geoforum.2014.04.002
- Offner, J.-M. (2000). Territorial deregulation: local authorities at risk from technical networks. *International Journal of Urban and Regional Research*, 24(1), 165–182. doi:10.1111/1468-2427.00241
- O'Neill, M. Martell, L. Mendick, H. Müller, R. (2014) 'Slow movement/slow university : critical engagements. Introduction to the thematic section.', *Forum: Qualitative social research Sozialforschung*. 15(3). Retrieved from <http://www.qualitative-research.net/index.php/fqs/article/view/2229>
- Petrini, C. Furlan, C. Hunt, J. (2007) *Slow Food Nation: Why Our Food Should Be Good, Clean and Fair* (Rizzoli, New York)
- Pooley, C. Turnbull, J. Adams, M. (2006) The impact of new transport technologies on intraurban mobility: a view from the past. *Environment and Planning A*, 38, 253-267. DOI:10.1068/a37271

- Purdy, J. (2018). *After nature: a politics for the anthropocene*. Cambridge: Harvard University Press.
- Sheller, M. (2018). *Mobility justice: The politics of movement in an age of extremes*. London: Verso.
- Sheller, M. Urry, J. (2006) The new mobilities paradigm. *Environment and Planning A*, 38, 207-226. doi:10.1068/a37268
- Shingler, B. (2019, September 27). 'We are changing the world': Greta Thunberg addresses hundreds of thousands at Montreal climate march | CBC News. Retrieved from <https://www.cbc.ca/news/canada/montreal/montreal-climate-march-greta-thunberg-1.5298549>.
- Tolley, R. and Walker, J. (2004) 'Conference conclusions: Walk 21 V Cities for People, Fifth International Conference on Walking in the 21st century'. Available on: www.walk21.com/papers/copehagen%20conclusions.pdf (accessed 07.10.09)
- United Nations. (2019). *Figures at a Glance*. Retrieved from <https://www.unhcr.org/figures-at-a-glance.html>
- U.S. Energy Information Administration - EIA - Independent Statistics and Analysis. Retrieved from <https://www.eia.gov/energyexplained/energy-and-the-environment/where-greenhouse-gases-come-from.php>.

Appendix

(1) Demographics of Slow food movement in USA (2016)



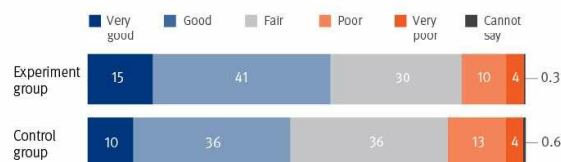
Copyright: Slow Food in the USA at a Glance: 2016 Annual Chapter Report (2017) *Slow Food USA*.

(2) Preliminary results of the basic income experiment in Finland (2019)

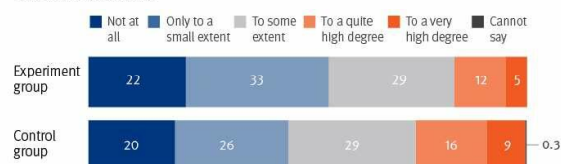
Preliminary results of the basic income experiment: perception of improved wellbeing, in the first year no effect on employment

Assessment of own wellbeing in the experiment group and the control group

Self-perceived assessment of own state of health

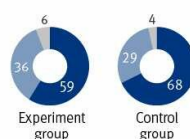


Perceived level of stress



Perception of bureaucracy involved when claiming social security benefits

Too much bureaucracy involved when claiming social security benefits



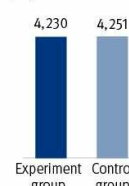
Days in employment on average in 2017, number of days



Days of employment in the experiment group

0.39 more.

Earnings and income from self-employment in total 2017, €



Earnings and income from self-employment in the experiment group €21 lower.

Kela

Copyright: Kela and the Ministry of Social Affairs and Health. (2019, February 8).

Retrieved from <https://www.epressi.com/tiedotteet/hallitus-ja-valtio/preliminary-results-of-the-basic-income-experiment-les-resultats-preliminaires-de-lexpérience-du-revenu-de-basepredvariteljnye-rezultaty-eksperimentaljnoj-koncepcii-bezuslovnogovorlaufige-ergebnisse-des-experiments-zum-grundeinkommen.html>.

National Parks: A Geographical Analysis

by: HANNAH SARCHUK

With millions of visitors per year, Canada's national parks have become symbols of the pristine natural landscapes the country has to offer. National parks are foundational to the Canadian identity and understanding of what constitutes true Canadian wilderness. What is often left out of this imagination, however, is the innately human factors that influence and construct ideas of nature, wilderness and national parks themselves. This paper examines these non-natural processes using three geographical lenses: the social construction of nature, enclosure and dispossession, and commodification. It analyses how the boundary lines drawn around national parks create an arbitrary distinction between nature and society, and investigates the historical and societal processes of enclosure and land privatization that led to the existence of national parks as they are today. The role of commodification and valuing nature in a modern capitalist state and how this allows Canadian national parks to prosper is also considered. The paper concludes by recognizing that although national parks are mandated to function primarily for the protection of biodiversity, historical, social and market-driven processes have contributed most significantly to their ongoing existence and success.

Introduction

The history of Canada's national parks began in 1883 when Canadian Pacific Railway workers happened across a natural hot spring, which two years later became the basis of an Order-in-Council reserving the area ten square miles around the spring to become Banff National Park (Campbell, 2011). In 1911, the Cabinet approved the creation of the Dominion Parks Branch as a new unit in the

Department of the Interior (Campbell, 2011). Canada was the only country to have an agency devoted to managing its national parks, and though it was only thought to be a minor bureaucratic shuffle of responsibilities at the time, it signalled a significant shift in thinking about wilderness and conservation (Campbell, 2011). National parks are now prized by Canadians, showcasing the natural beauty of the country and protecting valued ecosystems.

However, this narrative disregards the influence of distinctly human factors that have shaped national parks as they are experienced and known today. They are records of Canadian history, the product of centuries of work that document the relationships humans have historically had towards nature and wilderness and the ideologies that prevail in modern society (Campbell, 2011; Dahlberg et al., 2010). As Campbell argues, “public demands, political strategy, environmental concern, cultural symbolism, and scientific debate have all been inscribed into our parks” (2011). The rationales used to protect nature and wildlife are embedded in scientific, economic and nationalistic interests that justify designating large tracts of land as national parks (Dahlberg et al., 2010). They embody many parts of the Canadian identity, from a shared understanding of territory and the state, relations with First Nations peoples, and the development of environmental thought, practices and sustainability (Campbell, 2011). National parks are thus the result of the social construction of nature, enclosure, and the commodification of nature.

The following is an analysis of these three geographical lenses and their specific application to national

parks in Canada, arguing they are a distinctly human construction and fueled by social and market processes that are not often acknowledged in mainstream discourse.

Social construction of nature

National parks are inherently natural, many being extremely remote and home to complex ecosystems of wild animals, insects and plant life. However, they are also undeniably social, an idea invented and maintained by humans. Particularly in North America, wilderness is seen as the last remaining frontier that human society has not corrupted (Cronon, 1996). But both what you see in a national park and what you think you see are influenced by other people, whose ideas, images and assumptions are socially constructed and reproduce the idea of nature (Robbins et al., 2014). As Robbins and colleagues argue, nature is socially constructed in two significant ways. One’s ideas of “pristine” and “authentic” nature, their valuation of biodiversity, and their understanding of the concept of wilderness itself are constructed by the media, culture, education and other key social factors (Robbins et al., 2014). Second, national parks themselves are not raw or asocial, but

rather captured and frozen in a specific place and time (Robbins et al., 2014). Parks are constructed and artificialized by their entrance fees, maintained roads and hiking trails, limits on Indigenous use, and forest management practices which work together to create the expectation one has when visiting a national park, without realizing these identifying features are inherently social and not natural (Robbins et al., 2014).

Moreover, a stark distinction is drawn between nature and society. Nature is thought to be separate from, and functioning outside of, human influence and use, and it is precisely that division that reproduces the social construction of nature. Immersing oneself in the nature of a national park is a contrived act for when one wants to escape their normal life and return to their true state of being. In actuality, wilderness does not stand apart from humanity but is in fact a profoundly human creation of particular cultures at certain points in time (Cronon, 1996). The aforementioned human-nature distinction is paradoxical to Cronon: “wilderness embodies a dualistic vision in which the human is entirely outside the natural” (1994). However, for this to be true, one’s mere presence in nature means it is no longer natural, and the

place one stands is where nature can no longer exist (Cronon, 1996). He posits that by living primarily in industrial urban societies but maintaining a pretense that our true home is in the wilderness, one allows themselves to evade the responsibility of their actual lifestyle and choices (Cronon, 1994). Thus, people reproduce the ideas of nature and wilderness as existing outside and in contrast to human society because it serves their own interest to do so. Not only does it create a psychological separation that excuses the environmental degradation caused by one’s daily habits, but it gives wilderness a sense of otherness which one can escape to and use as they wish.

This dichotomy has held true since Canada started created national parks; beginning in 1887 and through the following two decades, the federal government designated land as national parks not to preserve the sanctity of nature from the influence of human activity, but as a method of reserving nature for people to use (Campbell, 2011). Delineating boundaries around national parks created a stark line between what existed as part of human society and what was considered wilderness.

Around the same time, a cultural shift was taking place that saw a growing public interest in the outdoors and rising popularity for “getting back to nature” for physical and spiritual renewal (Campbell, 2011). Wilderness tourism was a booming industry for Canada, driven by the fascination people had with “wild” areas and the prices they were willing to pay to experience them (Dent, 2013). This can be credited to the successful social construction of nature, which produces the narrative of nature as a place outside the norm that one can return to and pay to experience. What separates the wilderness contained within a national park and the wilderness existing beyond it is the park’s boundary line that is entirely decided and upheld by humans. When one wants to see and experience true Canadian wilderness they go to a national park, without realizing that what makes it wilderness is the socially constructed title it has been assigned. The rapid expansion of protected areas over the last century has thus been described as “symptomatic of an increasingly dominant ontological and ideological way of viewing the world which separates humanity and nature”, where we imagine ourselves to be “somehow beyond the world, and

therefore in a position to intervene in its processes” (Dahlberg et al., 2010).

Enclosure

A conventional practice for allotting land use and control historically has been through “commons”. This referred to a system wherein resources or other assets were shared among members of a group who could directly access and hold some degree of control over them, without needing mediation through legal or economic state structures or formal markets (McCarthy, 2009). However, this organizational structure largely disappeared with the rise of capitalism, when commons were subject to enclosure or land privatization. To Karl Marx, enclosures were fundamental to capitalism’s success because it forcibly separated labourers from their land and legally reframed labour power and nature as commodities to be privately owned (McCarthy, 2009). Thus, “tragedies of the commons” should more accurately be called “tragedies of enclosure” (The Ecologist, 1994).

The move away from feudalism severed a set of social and socio-natural relationships that necessarily led to a reconstitution of ownership,

production and exchange based on capitalist relations (McCarthy, 2009). Once enclosers took control of the land, they were able to log, mine, and completely degrade its ecosystem functions for the global market without suffering the personal losses that those who traditionally cared for the land would likely experience (The Ecologist, 1994). Today, with the expansion of the modern state as well as international and market institutions, commons have largely been eradicated and human communities instead exist within larger socio-political systems (The Ecologist, 1994). As the boundaries of politics, social life and ecology are systematically erased, land has been commercialized and placed under the management of private and centralized power (The Ecologist, 1994). Land, such as that making up national parks, is interwoven in the framework of private material infrastructure and laws that dictate its use, disembedded from its original local users (The Ecologist, 1994). The ongoing process and shifting dynamics of capital accumulation therefore create a “carbon space-economy based upon the enclosure ... of non-polluted air, oceanic carbon-absorption capacity, land, forests, social commons and indigenous knowledge” (Bond, 2012).

Not all land protected by national park designations was previously common land, and in principle, “many were and are being established for the public good” – therefore, at first, national parks might not seem to constitute enclosures (Corson & MacDonald, 2012). However, Carroll (2014) argues that despite their claim to provide public benefits, conservation enclosures such as national parks function as “violent acts of primitive accumulation through the exclusion of resident populations and the commodification of recreation and biodiversity”. The aforementioned narrative and representation of nature became a “critical means of securing this space as they legitimate certain claims not only to material resources but also to the authority that enables accumulation by certain claimants” (Corson & MacDonald, 2012). Corson and MacDonald use the example of scaling up measurements of, and justifications for, conservation through practices such as the coverage of important biodiversity areas and national parks to legitimate global claims to resources and delegitimize the rights and autonomy of previous, frequently local, users (2012). Enclosure, similar to territorialisation, is a practice that works to “fix or

consolidate forms of access, claiming, and exclusion” that produce and maintain power structures among governed environmental subjects and between authorities and subjects (Carroll, 2014). The result of these relationships is unequal opportunities and benefits assigned to different groups that can deprive earlier resource users of their rights, autonomy and decision-making authority (Carroll, 2014). Therefore, access rights are highly contingent on the historical settings and ideological contexts by which the institutions that manage national parks have come from (Dahlberg et al., 2010).

In Canada, this can take the form of Indigenous peoples being excluded from their traditional territory once it is deemed a national park and thus enclosed and restricted from outside use. As Cronon acknowledges, the movement toward enclosing land as national parks followed closely after the final Indian wars, in which the prior inhabitants of the land were forced onto reservations (1996). Once Indigenous communities were removed from their territories, the myth of wilderness as “virgin” uninhabited land could emerge, and tourists were then able to safely enjoy this illusion of nature in its supposed original pristine state

(Cronon, 1996). The generations of long-term land use interventions by local Indigenous populations to maintain ecological health and protect biodiversity were rarely considered or appreciated (Dahlberg et al., 2010). With the emergence of national parks and their prescribed and closely monitored boundaries, wilderness was stripped of its “savage” image and became an intentionally constructed safe place for the exploration and enjoyment of those privileged enough to experience it (Cronon, 1996). Enclosure and land privatization have now become so common in global environmental institutions that actors are accustomed to believing there is no alternative way of organizing land systems or protecting biodiverse areas, and therefore they function largely without opposition (Corson & MacDonald, 2012).

Commodification of nature

The move to capitalist society and the wave of enclosure movements not only necessitated the commodification of particular aspects of natural environments and ecosystem functions but built an entire institutional framework around one’s experiences of nature. Actors working in the conservation field have largely

embraced the market as the best method for biodiversity protection, supporting the enclosure movement of privatizing, commercializing and commodifying nature at an exponential rate (Corson & MacDonald, 2012). Abstracting constructions of nature and alienating them from actual natural environments and the social relationships that reproduce them proved key to the commodification process of creating new goods, markets, and other associated institutions (Corson & MacDonald, 2012). Private accumulation from enclosures led to the formation of commodities of multiple kinds: securing land for ecotourism, protecting rights to specific resources or ecosystem services, selling images of pristine wilderness, and drawing in conservation funding (Corson & MacDonald, 2012).

From their origin, national parks were meant to make money. Banff National Park, Canada's first to receive the designation, was inspired by the "dominant utilitarian desire to develop otherwise low-value land via tourism" (Frost & Hall, 2009). The intention behind reserving the land for Banff was not to protect its wilderness or biodiversity but to promote economically beneficial tourism (Frost

& Hall, 2009). The federal government saw national parks as a means of developing land in the western region of Canada, alongside extractive industries such as mining and lumbering (Frost & Hall, 2009). Railroad companies, in particular the Canadian Pacific Railway, were an important factor in the development of Canada's national parks, first supporting Banff's designation and in 1902 becoming a major stakeholder in the expansion of the Rocky Mountain National Park boundaries to include Lake Louise (Frost & Hall, 2009). Businesses, industries and market pressures have thus played an instrumental role in the enclosure and commodification of nature in Canada.

Additionally, park agencies have always had to use a product-oriented market approach to planning and managing visitor activities in national parks (Graham et al., 1988). Their primary task is to provide facilities, programming and services that are most appropriate by determining what the public wants and how the agency can best meet those desires (Graham et al., 1988). Thus, the management of national parks is heavily operation-oriented, focused on bringing in visitors and revenue rather than upholding their original mandate of ecological

preservation for generations of future use and enjoyment (Graham et al., 1988). This contradiction heightened in the early 1960s, as demand increased for park space due to the booming post-war economy and resulting suburban child-oriented cultural shift (Campbell, 2011). Conservation efforts became about appealing to this audience and were increasingly marked by the production and circulation of virtual commodities, which intentionally created consumer images and abstractions of nature for buyers (Corson & MacDonald, 2012). The general public was not yet familiar with national parks, and in combination with an increased pressure from the government to reduce personnel and financial resources, park agencies were encouraged to promote their value by commodifying nature and emphasizing products they could sell (Graham et al., 1988). The public consuming nature as a commodity demonstrates how the concept of nature itself has been constructed and is continually reproduced through economic processes (Robbins et al., 2014).

The commodification and valuation of nature did not go without consequence. While the parks agency insisted the health of natural

ecosystems was their top priority when making governance decisions, it became clear that this was not being completely upheld (Campbell, 2011). Parks Canada's mandate for environmental protection was strongest in the late 1980s than at any other time previous, yet the environmental quality in the parks at the time was at its lowest (Campbell, 2011). The cultural shift toward greener lifestyles and politics made national parks more popular travel destinations than ever, leading to their erosion under the influx and strain (Campbell, 2011). Campbell (2011) cites environmentalists who said people were "loving the parks to death". In 2000, the Canadian federal government commissioned a number of semi-independent investigations into the environmental state of their national parks, the ensuing reports for which consistently described them as "under serious threat", particularly for the smaller parks such as Prince Edward Island and Point Pelee (Campbell, 2011). Consequently, the enclosure and commodification of land can put ecosystem health at risk. An unnatural demand is placed on these environments, which are suddenly inundated by visitors because the land has been designated a national park

and can therefore be sold to the public as a place worth spending money to experience. Hence, national parks are often only protected to the degree that allows them to remain economically beneficial.

Conclusion

National parks have become an integral part of the Canadian identity. Flocked to by local citizens and international tourists alike, they showcase what have been deemed the most pristine and natural landscapes the nation has to offer. However, what this analysis showed was the influence of inherently human processes on the development and perception of national parks in Canada. Using the

three distinct geographical lenses of the social construction of nature, enclosure, and the commodification of nature, national parks can be better understood not only as a symbol of Canadian culture but a product of it and the country's history, ideology, institutions and markets. This is not an argument against having national parks; rather, it attests to their success in Canada and how deeply they are rooted in social, cultural and economic processes. The next time you visit a national park, consider looking through these lenses to better understand your experience and the mechanisms functioning interdependently to construct wilderness around you.

References

- Bond, P. (2012). Emissions trading, new enclosures and Eco-Social contestation. *Antipode*, 44(3), 684-701. doi:10.1111/j.1467-8330.2011.00890.x
- Campbell, C. E., & DOAB: Directory of Open Access Books. (2011;2012;2014;). *A century of Parks Canada, 1911-2011* (N - New, 1 ed.). Calgary, Alta: University of Calgary Press.
- Carroll, C. (2014). Native enclosures: Tribal national parks and the progressive politics of environmental stewardship in Indian Country. *Geoforum*, 53, 31-40. doi:10.1016/j.geoforum.2014.02.003

- Corson, C., & MacDonald, K. I. (2012). Enclosing the global commons: The convention on biological diversity and green grabbing. *The Journal of Peasant Studies*, 39(2), 263-283. doi:10.1080/03066150.2012.664138
- Cronon, W. (1996). Trouble with Wilderness. In *Uncommon Ground: Rethinking The Human Place In Nature* (pp. 69–90). W. W. Norton & Co.
- Dahlberg, A., Rohde, R., & Sandell, K. (2010). National Parks and Environmental Justice: Comparing Access Rights and Ideological Legacies in Three Countries. *Conservation and Society*, 8(3), 209-224. Retrieved from www.jstor.org/stable/26393012
- Dent, J. (2013). False Frontiers: Archaeology and the Myth of the Canadian Wilderness. *Totem: The University of Western Ontario Journal of Anthropology*, 21(1), 7.
- Frost, W., Hall, C. M., & Taylor & Francis eBooks A-Z. (2009;2012;). *Tourism and national parks: International perspectives on development, histories, and change*. New York, NY: Routledge. doi:10.4324/9780203884201
- Graham, R., Nilsen, P., & Payne, R. J. (1988). Visitor management in Canadian national parks. *Tourism Management*, 9(1), 44-61. doi:10.1016/0261-5177(88)90057-X
- McCarthy, J. (2009). Chapter 29: Commons. In *A Companion to Environmental Geography* (pp. 498–514).
- Oxford: Wiley-Blackwell. Robbins, P., Hintz, J., & Moore, S. A. (2014). *Environment and society: A critical introduction*. Retrieved from <https://ebookcentral.proquest.com>
- The Ecologist. (1994). Whose common future: reclaiming the commons. *Environment and Urbanization*, 6(1), 106–130. Retrieved from <https://journals.sagepub.com/doi/pdf/10.1177/095624789400600110>

Chile's Neoliberal Crisis: The Discourse of Privatized Water

by: MAX KITTNER

2019 has been a year of protest. All parts of the world, from Hong Kong to Bolivia, have undergone some form of social unrest over the last few months, largely advocating for the protection of human rights and the aspirations of democracy. It has also brought into question whether the institutions which uphold these countries' economies and political systems are more accountable to citizens or outside stakeholders. In an exploration of neoliberal development discourse, this paper will analyze Chilean water provision – one of the few fully privatized systems in the world – and how it undermines or makes vulnerable the connection between a government and its people. Chile's legacy of neoliberal policies from the Pinochet era, including water privatization, offers a means for a broader understanding of the inequality, the stakeholders and accountability of the political system.

Laying out the context

Across the globe, citizens in multiple countries have erupted into protest against the degradation of their human rights. In some cases, the protests have become violent – for example, in Hong Kong, where protesters are fighting for their semi-democratic rights, or in Bolivia, where a constitutional crisis has taken place over the recent election of Evo Morales to another term as president. In Chile, a transit fare increase was just the tip of the iceberg when it catalyzed a protest movement against what can best be described as “neoliberalism on steroids,” as per Rottenburg (2016). However unrelated they may seem, the

Chilean protest movement and other movements across the world are interconnected in opposition to neoliberal development discourse with similar players involved and forces at play.

Chile is one of the most economically developed countries in Latin America: it has the highest GDP in the region and gained a seat at the OECD in 2010. The country is also home to some of the starkest inequalities in the world, with an estimated Gini coefficient of 46.6 as of 2017 (The World Bank 2017). The Gini coefficient analyzes a countries economic inequality through measures such as access to resources (like

water) as well as income disparities on a scale of 0 to 100, where 0 is most equal and 100 is the most unequal. Chile adopted some of the most radical free-market approaches to growth under the repressive Pinochet regime (1973-1990), which transformed the economy and political structures in ways that have deepened inequality. Since the fall of the regime, Chilean institutions have not changed much. The constitution implemented by the military government is still in force today, though a few amendments have been made. Something unique to Chile is that it is one of the few countries that have completely privatized their water supply (Prieto 2015; Baer 2014), and this may provide insight on why so many citizens are disaffected by its current neoliberal system. It is difficult to analyze what is happening in the country as we speak, but by focusing water, a central resource to development, we may be able to see the frustrations firsthand. The Chilean government's privatization of water contributes to inequalities between the poorest and wealthiest Chileans, allows foreign stakeholders to exert influence over local needs, and degrades citizens' trust and ability to hold the government accountable.

Economic inequality

The physical and regulatory design of Chile's privatized water provision system makes it difficult for poorer people to be able to afford steady running water, perpetuating economic inequality. McMichael (2017) describes privatization of services as the natural result of the "development project" in a post-colonial world where the service provision and realization of development come "through new inequalities, embedded in states and markets along regional, class, gender, racial, and ethnic lines" (McMichael 2017, 56). In terms of development discourse, Escobar (1995) notes that "the spread of the market economy broke down community ties and deprived millions of people from access to land, water, and other resources" (Escobar 1995, 22). The separation of water rights and land rights from citizens during the Pinochet era which has continued after democracy was restored has made it easier for water companies to exploit poorer people.

A surprising result, however, is that water in Chile is relatively accessible for most citizens. Baer (2014) notes that the proportion of Chileans with access to running water

is about 99.8 % for drinking water and 95.2 % for sanitation in Chile (Baer 2014, 150). This number is even higher in the capital, Santiago, where almost all residents have both drinking and sanitation water. Local indigenous communities still disproportionately struggle with a stable water supply, but the issue is not as much about access as it is about the structure of the system (Prieto, 2015).

Similar to how cable companies act monopolistically in the US or Canada, water companies tend to operate with few competitors in the regions they operate. Chilean water companies are usually established around certain water basins or *cunecas* (SIAGUA 2010). The lack of oversight from permissive regulators – who are generally focused on economic outcomes - can motivate the companies to raise tariffs to levels higher than in other countries. The average cost of tariffs in the country is almost a dollar per cubic metre, which is almost a third more expensive than in the US and a quarter more than in Canada (Baer 2014). Chile's costs aren't the highest in the world, but when accounting for the average salary in Chile versus, for example, the average in Germany (where water tariffs are much higher), Chileans

spend disproportionately more of their incomes on water (Baer 2014, 151).

As well, Chile's climate and spatial inequality greatly hinder water provision for its lower classes. Chile, a climatologically diverse, long and narrow country, will face extreme effects of climate change. Arguably, it already has, as human and natural disasters have put large strains on the water supply. In 2016, *Santiaguinos* were faced with constant water shortages due to heavy flooding, and the city's main river, the Mapocho, is likely to continue flooding in the future (Newman 2018). Many regions of the country are also facing long term droughts that could worsen in the near future. Daniel Gallagher notes that the capital itself may permanently lose up to 40% of its steady supply by 2070 (Gallagher 2016a). This could create a disaster in a similar vein to Day Zero in Cape Town, South Africa, in which the capital city was counting down how much potable water it had left. This would likely be coupled with a humanitarian crisis given that, unlike in Cape Town, it is slightly harder to hold Chile's various water corporations accountable because there is greater devolution of government responsibility and there are more players involved amidst an already

polarized political environment. Additionally, Chilean cities are organized so that poorer residents tend to live on lower plains and wealthier residents in hillsides much closer to sources of clean water that lack runoff (unlike the Mapocho, which is heavily contaminated) (Gallagher 2016b).

It is not fair to claim that lower-income people do not have any support under the current system. In fact, the government has given water companies some subsidies to ensure more steady access to water for lower income dwellings (Baer 2014). The issue is that rather than the state actually trying to better the lives of its poorest citizens, it has largely left them at the mercy of water corporations, which see little benefit in the long term to ensuring accessibility, and would rather convert investments from outside entities into costly wastewater infrastructure. The push for costly wastewater infrastructure also creates a cycle that undermines subsidies for the poorer, as water corporations seek ways to generate as large of a profit as possible. This leads to another concern that the privatization of water creates: outside stakeholders who wield sizeable control over water corporations.

The impact of foreign stakeholders

Foreign investors have a large influence over how water is distributed because of their majority ownership in water corporations. This raises the question of whether water corporations are more accountable to outside stakeholders than Chilean citizens. To evaluate this problem and understand the dynamics of water provision in Chile, it is useful to look at an example close to Canada. In an era of neo-liberalization, water, even more so than oil, can be a very good investment if the risk/return ratios are favourable, as they are in Chile (Bakker 2007). Therefore, it makes sense that North America's largest teachers' pension fund, the Ontario Teachers' Pension Plan (OTPP), holds majority stakes in multiple Chilean water corporations for the benefit of Ontarian teachers who are about to retire or are setting up a long and stable retirement.

From the organization's own document on water stakes: "investing in water utilities is well-suited to our mission of providing retirement security for the plan's 316,000 members. These holdings represent safe, long term assets, which offer predictable returns over many years" (Ontario Teachers' Pension Plan 2017). The pension fund

owns stakes in four Chilean water companies, including two where it holds a more than 90% share: Nuevosur and Esval S.A. (Ontario Teachers' Pension Plan 2017). It is true that the pension funds and other outside entities have been able to help build more wastewater treatment plants in Chile. On the same token, the pension plan fails to cite any of its statistics, which is especially concerning when it comes to tariff pricing as well as access, and downplays the lack of transparency in its investment portfolio.

The connections between the Ontario Teachers' Pension Plan and Chile's water sector directly line up with the observations of dependency theory. In this case, Chile's water corporations in Chile are continually dependent on foreign investors to prop up much-needed infrastructure. As Frank alludes to in "The Development of Underdevelopment," the reliance on foreign capital in "satellite" (underdeveloped) regions necessitates a return on investment for "metropolitan" (developed) regions (Frank 1966). This uneven dynamic, where the chain of water infrastructure and financing continually perpetuate the weakening of the satellite's state apparatus, make the state unable to

provide better conditions for its citizens (Frank 1966). The results of this process can be seen unfolding today. As well, the position the pension fund takes on environmental concerns of water is interesting by trying to find "operational innovations that keep water safe and accessible" even though the safety and accessibility of water in the country are financially tied to people who are thousands of kilometres away (Ontario Teachers' Pension Plan 2017).

Additionally, vague blanket statements that outside forces are helping the Chilean people should be examined with a critical eye. Such discourse teeters on the line of being self-serving and neocolonial instead, as does the claim that Chile's regulations made it a "favourable environment" to work in. The creation of this "favourable environment" is rooted in the violent dispossession that took place under the Pinochet regime, which was itself empowered by foreign militaries and intelligence agencies (Gallagher 2016b; Benedickter et al. 2015, 34). Water and other service provision has slightly improved since the regime fell, with more government influence instituted by reforms under centre-left Concertación coalitions in the 1990s and 2000s (Borzutzky and Madden

2013). Yet these reforms also have to be taken with a grain of salt as it is very hard to undo decades of privatization when the institutions are never fully changed.

Water as a commodity

The privatization of water contributes to the distrust of the Chilean government because of its commodification of a resource that the UN defines as a human right. The one thing that has been stressed by Baer, OTPP, and others is that Chile's water supply system, for the most part, does meet the narrow requirements of ensuring sufficient access and can be seen as a successfully functional private water system with some regulation. However, the issue is that water should not be treated as a commodity in the first place. Water is, like land, a fictitious commodity; we have assigned it a numeric cost and given it value that can be exploited for personal gain (Polanyi 1957; Bakker 2007). When the privatization of water became established under Pinochet, it solidified the existing socioeconomic conditions of the population, constructing a system that had bodily consequences on those who were already marginalized (Borzutzsky and Madden 2013). The creation of a

private water system creates an easy way to exploit others and mismanage the resource in the face of crisis, or future crisis - given the short term thinking usually involved in capital gains. As Polanyi notes: "To allow the market mechanism to be sole director of the fate of human beings and their natural environment, indeed, even of the amount and use of purchasing power, would result in the demolition of society" (Polanyi 1957, 73).

Another concern that cannot be dismissed is that while these water corporations do have some regulatory oversight, they are corporations at the end of the day. Corporations operate to serve their shareholder's needs, not the people. This, in essence, is the continuation of autocratic views on water rights, where citizens have little to no input or pressure that can be applied to monopolistic corporations in charge of a fictitious commodity. As Baer notes, there is an aspect of the UN definition of water security that Chile fails to uphold: having a say in your own water supply (Baer 2014). This is completely lacking in the contemporary water system, where citizens are forced to interact with companies for their needs rather than the government.

Conclusion

Having a say is a large component of why so many disaffected people in Chile are protesting right now. Many feel as though they do not have a say in decisions that affect them. Multiple institutions within the country continue to function as they did during the Pinochet era, reproducing neoliberal social orders that have disconnected the country's elite from its poor. Chile's water supply is a very clear example of this, where, because of complete privatization, Chileans pay a rather large amount of money on water tariffs per income level. As well, many have to worry about looming water scarcity from environmental and human disasters that may affect service provision.

Protests that began over a transit fare hike have proliferated and

raised questions about which services should be public in the country and how one can make the lives of people better amidst growing inequality. It may not matter that everyone has equal access to water or transit, but a lack of political accountability over these matters is simply unfair to anyone dependent on current service provision. Longstanding discourse on development does not show any rosy future for the Chilean crisis. Chile is set to vote on whether to draft a new constitution that would do away with some of the Pinochet era reforms once and for all, though its specific contents are not yet known (Al Jazeera 2019). In the meantime, the conflict illustrates the need for the Chilean government to listen to its own citizens, who have been marching on the streets for cheaper services, cleaner water, and a better quality of life,

References

Al Jazeera. (2019). *Chile to hold referendum on new constitution*. Al Jazeera.

Baer, M. (2014). Private water, public good: Water privatization and state capacity in Chile. *Studies in Comparative International Development*, 49(2), 141-167. doi:10.1007/s12116-014-9154-2

Bakker, K. (2007). The "commons" versus the "commodity": Alter-globalization, anti-privatization and the human right to water in the global south. *Antipode*, 39(3), 430-455. doi:10.1111/j.1467-8330.2007.00534.x

- Benedikter, R., Siepmann, K., & Kupper, F. (2015). The cultural dimension: A nation in search of identity between the competing narratives of the “Center-right” and the “Center-left”; *Chile in transition: Prospects and challenges for Latin America’s forerunner of development* (pp. 35-79). Cham: Springer. Retrieved from [https://ebookcentral.proquest.com/lib/\[SITE_ID\]/detail.action?docID=3563240](https://ebookcentral.proquest.com/lib/[SITE_ID]/detail.action?docID=3563240)
- Borzutzky, S., & Madden, E. F. (2013). Markets awash: The privatization of chilean water markets. *Journal of International Development*, 25(2), 251-275. doi:10.1002/jid.1802
- Escobar, A. (1995). *Encountering development*. Princeton, NJ: Princeton Univ. Press. Retrieved from http://bvbr.bib-bvb.de:8991/F?func=service&doc_library=BVB01&local_base=BVB01&doc_number=006752832&sequence=000002&line_number=0001&func_code=DB_RECORDS&service_type=MEDIA
- Frank, A. G. (1966). The development of underdevelopment. *Monthly Review*, 17-31.
- Gallagher, D. (2016a). The heavy price of Santiago’s privatised water. Retrieved from <https://www.theguardian.com/sustainable-business/2016/sep/15/chile-santiago-water-supply-drought-climate-change-privatisation-neoliberalism-human-right>
- Gallagher, D. (2016b). Urban climate adaptation planning in the Latin American megacity: Lessons from Santiago, Chile., 1-17. Retrieved from <https://planning-org-uploaded-media.s3.amazonaws.com/document/Urban-Climate-Adaptation-Planning-Santiago-Chile-2016-03.pdf>

- McMichael, P. (2017). The development project - the international framework. *Development and social change: A global perspective* (Sixth edition ed., pp. 55-62). Los Angeles ; London ; New Delhi ; Singapore ; Washington DC: SAGE. Retrieved from http://bvbr.bib-bvb.de:8991/F?func=service&doc_library=BVB01&local_base=BVB01&doc_number=029238798&sequence=000002&line_number=0001&func_code=DB_RECORDS&service_type=MEDIA
- Newman, L. (2018). *Chile droughts: Private water system under pressure*. Doha: Al Jazeera.
- Ontario Teachers Pension Plan. (2017). Ontario teachers' our investment in Chilean water utilities. Retrieved from https://www.otpp.com/documents/10179/777016/Ontario+Teachers_Investment+in+Chilean+Water_March+2017.pdf/32178107-de09-4d68-a69d-aef2967ce34e
- Prieto, M. (2015). Privatizing water in the Chilean Andes: The case of Las Vegas de Chiu-Chiu. *Mountain Research and Development*, 35(3), 220-229. doi:10.1659/MRD-JOURNAL-D-14-00033.1
- Polanyi, K. (1957). *The great transformation* (1. Beacon paperback ed. ed.). Boston, Mass: Beacon Press. Retrieved from http://bvbr.bib-bvb.de:8991/F?func=service&doc_library=BVB01&local_base=BVB01&doc_number=015505018&sequence=000002&line_number=0001&func_code=DB_RECORDS&service_type=MEDIA
- Rottenberg, C. (2016). Trumping it up: Neoliberalism on steroids. *Common Dreams*.
- SIAGUA. (2010). Superintendencia de Servicios Sanitarios. Retrieved from <http://www.siagua.org/organismos/superintendencia-servicios-sanitarios>
- The World Bank. (2017). *Gini index (World Bank estimate)* The World Bank.

Site Suitability Analysis for Wind Farms on Hawaiian Islands

by: ELANA SHI, NIGEL TAN, & ANGELA LIU

To address energy insecurity issues in Hawai'i, we conduct a site suitability analysis for potential wind farm locations by weighing several factors with varying degrees of importance through the use of a multi-criteria evaluation (MCE) in ArcGIS 10.6. Factors included were slope, wind power, and distance from areas such as urban centres and ecologically sensitive zones. Several conditions were normalized through fuzzy membership functions. Additionally, land use data constituted the majority of the selection criteria. Potential sites were then scrutinized using a visibility analysis in order to determine the degree of interruption to background scenery. Several ideal locations were identified on the islands of Kaua'i, O'ahu, Maui, and Hawai'i. In addition to identifying possible wind farm construction sites, we have also created least cost pathways between each wind farm and the nearest existing electricity substation, in order to allow for easy propagation of clean power. In total, six potential wind farm sites and pathways were generated in our final map.

A. Introduction

Like many other isolated islands, Hawai'i is plagued by the ever-present spectre of energy insecurity. Heavily reliant on imported fossil fuels, Hawai'i has long needed a transition to a sustainable and economical energy source. As one of the most geographically isolated population centres, Hawai'i has some of the highest electricity costs in the United States, at more than double the national average (Hawaii State Energy Office, 2018). Currently, more than half of the state's energy comes from fossil

fuels. However, the government has recently passed ambitious legislation aiming for 100% renewable energy usage by 2045. Harnessing wind power will be of particular importance when working toward this goal. Although wind only accounts for less than a tenth of Hawai'i's total energy production today, there is a potential for wind to satisfy almost all of Hawai'i's energy needs given sufficient investment (Hawaii State Energy Office, 2018). Being a series of islands, Hawai'i is suited for onshore wind generation due to its unique wind patterns and isolated location. As a result, the island

geographical effects on wind generation allows it to be comparable to offshore wind farms with higher wind power densities, without the additional infrastructure costs and construction difficulties.

Our goal is to identify suitable locations for wind farms that can be easily connected to the local power grid to decrease Hawai'i's present reliance on imported fossil fuels. This suitability analysis will first include downloading appropriate datasets for digital elevation models (DEMs), land cover, and additional points of interest (Table 1) into ArcGIS 10.6. Following, we will conduct a multi-criteria evaluation (MCE) with varied weights to determine the most suitable area based on the following factors: distance from roads, wind speed, and slope. Then, we will conduct a least cost path analysis to find the optimal route to connect the wind farm to an existing electricity substation. Lastly, we will perform a viewshed analysis for the chosen windfarm points to determine which farms are the least visible from residential areas. The final sites will be compared with ground truth satellite imagery from Google Maps to determine the sensitivity and accuracy of the analysis.

B. Data and Methodology

As layers were often in different projections, and with islands of Hawai'i occurring in either UTM Zone 4 or 5, we projected the whole project into WGS1984 Mercator, better known as the Web Mercator projection. While Mercator derived projections are usually not preferred for high-latitude areas, Hawai'i's relatively close proximity to the equator means that using a Mercator projection would not result in unacceptable amounts of distortion.

Most of our analysis was done on a vector land use layer, sourced from the State of Hawaii's Planning Division. While we would have preferred to use a 1-5m raster image set as our land use, the file proved too large for our equipment to handle and was thus substituted with the vector layer. This vector set was also used as our base map and provided island shoreline boundaries. Digital elevation models (DEM) (10x10m) were sourced from NOAA. These DEMs consisted of individual files per island, which we then combined into a single reference raster layer using the Mosaic tool. It was then set as the reference raster via the geoprocessing snap raster function.

Other vector datasets included major and minor roads, military zones, and conservation areas. The two road layers were buffered to ensure that they were protected from noise and there was construction and operation space for the wind farm, and subsequently dissolved together to make a single layer. Analysis data included point

maps of electricity substations, electricity transmission main lines, as well as existing wind farms. These datasets were originally sourced as spanning nationwide and were then queried to form a new layer consisting of only those in the state of Hawai'i. We also used a vector layer with average wind speeds at 50m elevation.

Table 1: Data sources

Data Source	Layer
Hawaii State Planning Division	Land Use Land Cover
National Oceanic and Atmospheric Association (NOAA)	Kahoolawe DEM Maui DEM Oahu DEM Hawaii DEM Niihau DEM Molokai DEM Lanai DEM Kauai DEM
Hawaii Statewide GIS Program	Major Roads Minor Roads
United States Geological Survey	Existing Wind Farms
US Dept. of Defense	Military Zones
US Dept. of Energy	Average Wind Speeds
US Dept. of Homeland Security Infrastructure Program	Electric Transmission Lines
US Dept. of Land and Natural Resources	Conservation Zones

Multi-Criteria Evaluation

The criteria we used for our MCE included wind speed, slope, and

distance from roads. These were the most applicable factors from those listed in a countrywide wind farm site

suitability analysis in South Korea (Ali et al., 2017). Distance from electric substations will be addressed in the Least Cost Pathway section, and the distance from populated areas will be addressed in the Constraints section. Each selected criterion was processed for normalization. Wind speed, which displayed wind speed power classes ranging from 1 (Poor) to 7 (Superb), was converted from a vector layer into a raster with 10x10m cell resolution using a linear fuzzy membership function with a hedge level of “somewhat”. Using the DEM, we generated slope profiles using the “Slope” spatial analysis tool, which was then normalized from 0-1, again using a linear fuzzy membership tool with 22 as the maximum and 0 as the minimum. The 22 refers to the slope degree incline that is the threshold for safe wind farm construction, equivalent to a 40% grade, according to

Windpower Engineering (2011). The third factor we considered in our MCE was distance from roads. First, we dissolved our major and minor roads into a state-wide roads layer. Using the Euclidean Distance tool, we created a raster that decreased in value as distance from the road increased. We normalized this layer using the linear fuzzy membership tool as well.

To create the MCE layer, we used the Weighted Sum tool with the three normalized inputs. Ali et al. (2017) provide a breakdown of the weights used in their wind farm suitability analysis, which looked at analytical hierarchy process (AHP) input from five renewable energy experts. We borrowed the values provided for Roads, Wind Speed, and Slope, and distributed the remaining percentages equally amongst the three factors (Table 2 and Figure 3).

Table 2: Weights for multi-criteria evaluation factors

MCE Factor	Redistributed Weights for Hawai'i Wind Farm Analysis
Roads	16.8%
Wind Speed	34.1%
Slope	49.1%

Constraints

There are a number of constraint criteria provided in Baban et al.'s wind farm site suitability analysis in the United Kingdom. We selected factors that were relevant to Hawai'i and modified some buffer distances to accommodate the smaller size of the islands. The woodlands, developed areas, and waterbodies factors were queried from the Land Use Land Cover layer. Additionally, we queried specifically for Protective, Limited, and

Special zone types in the Conservation Subdistrict Zones layer. Our constraint layers were buffered as follows:

- Buffered developed areas (from Land Use Land Cover) to 500m
- Buffered water bodies (from Land Use Land Cover) to 400m
- Buffered woodlands (from Land Use Land Cover) to 500m
- Buffered historic/ecological protective/limited sites (from Conservation District Subzones) to 1000m

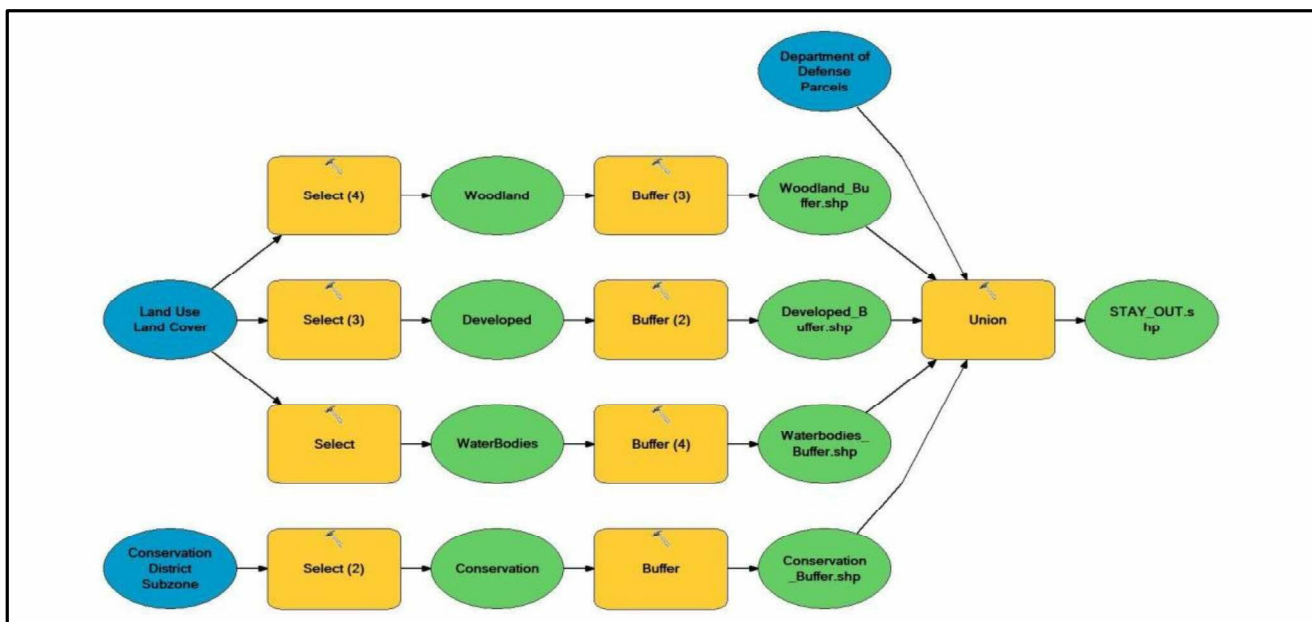


Figure 1: Constraints layer model

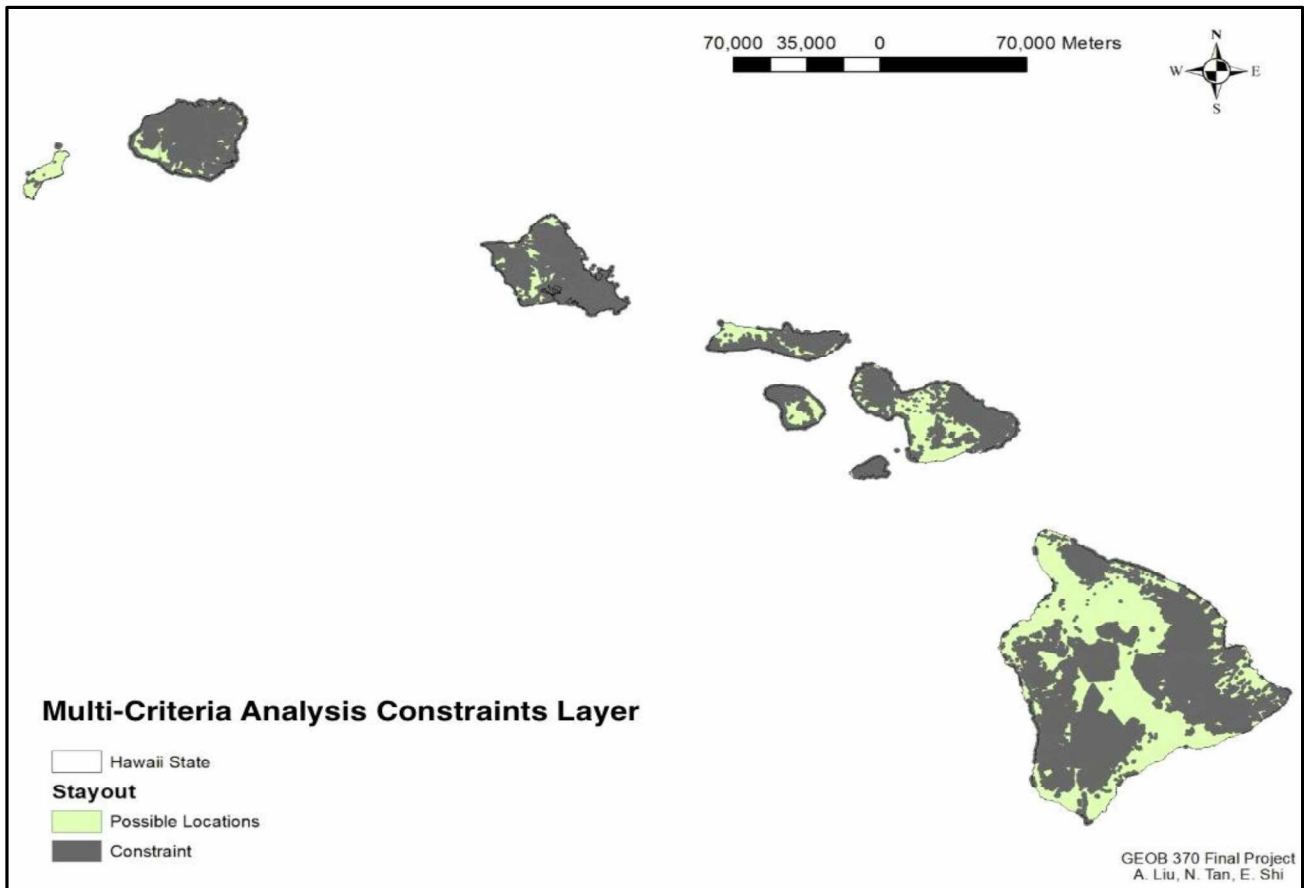


Figure 2: Multi-criteria evaluation constraints layer

Our buffer distances were derived from existing assessments as well as data regarding sonic decay of wind turbine noise (Baban et al., 2001). Finally, these buffered areas were unionized with the Department of Defense military parcels to create one layer of constraints (Figure 2).

The last step in compiling the final MCE layer was to use the Weighted Sum tools with the three-factor MCE and constraints layers as inputs. The three-factor MCE, derived

from the first Weighted Sums analysis, was inputted with a weight of 1, while the constraints layer was inputted with a weight of 0. The purpose of this analysis was to produce one raster map that showed permitted areas with variable levels of suitability for the wind farms, while excluding the constrained areas (Figure 4). A sensitivity analysis was not conducted as we were able to compare our proposed points with ground truth satellite imagery from Google Maps (Figures 9 and 10).

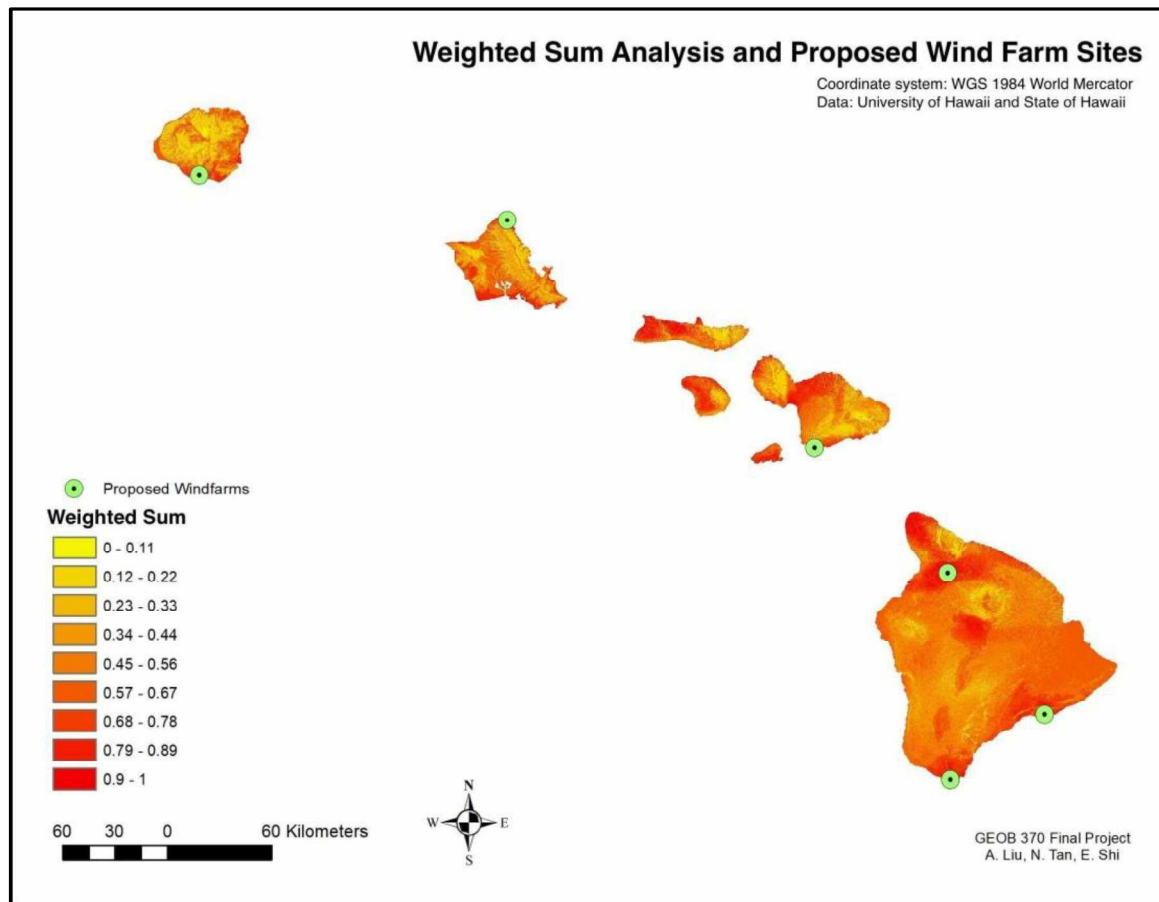


Figure 3: Weighted Sum Analysis and Proposed Wind Farm Sites

Least Cost Pathway

We first formed 14 categories for various cost tiers ranging from 1-200, with 200 being unacceptable for development (Table 3). The values

were added to a new column on the land use layer attribute table called “cost”. Using these cost values, the layer was converted into a raster field with 10x10m resolution.

Table 3: Least cost pathway friction values

Land Use	Cost
Rangeland <ul style="list-style-type: none"> • Low cost • Low impacted population • No established farms 	10

Transitional <ul style="list-style-type: none"> • Low Cost • Unused land zoned for development 	20
Agricultural <ul style="list-style-type: none"> • Low cost • Unobtrusive due to low population 	20
Ornamental Agricultural <ul style="list-style-type: none"> • Low Cost • Presence of large trees and other hazards • Valued for aesthetics 	50
Transport, Communication, & Utilities <ul style="list-style-type: none"> • Low-Medium • Already zoned for utilities & energy 	60
Commercial, Industrial, & Other Urban <ul style="list-style-type: none"> • Medium Cost • Open to development • Already contains other infrastructure • Somewhat intrusive to population 	75
Mining Operations <ul style="list-style-type: none"> • Medium Cost • Degraded land 	80
Residential <ul style="list-style-type: none"> • Medium cost • High population zone 	100
Evergreen Forests <ul style="list-style-type: none"> • Medium-High cost • Difficult due to height of tree canopy 	125
Bare Rock <ul style="list-style-type: none"> • High cost • Difficult to construct tower foundations 	150
Beaches <ul style="list-style-type: none"> • High cost • High value tourist zones 	150
Waterbodies <ul style="list-style-type: none"> • Very high cost • Inaccessible due to water 	200

Various High Activity Zones <ul style="list-style-type: none"> • Very high cost • Misc. buildings 	200
Wetlands <ul style="list-style-type: none"> • Very high cost • Inaccessible due to water 	200

After isolating one proposed wind farm site, we used the land cost raster to create Cost Distance and Cost Backlink layers. These two inputs were used to create a least cost pathway to a nearby electric substation (Table 5 and Figure 6). The substations were selected based on the shortest Euclidean distance to the proposed wind farm site.

Viewshed Analysis

Once the wind farms on a given island were isolated using a definition

query, we used the Viewshed tool to create a visibility raster. This raster was then set partially transparent and overlaid onto the DEM (Figure 5). To quantitatively describe the visibility impact of each proposed wind farm, we used Tabulate Area to find the number of residential cells that could see the farms (Table 4). We assumed that it would not be possible to view the wind farms from another island, so we elected to conduct the analyses by island per site.

C: Results

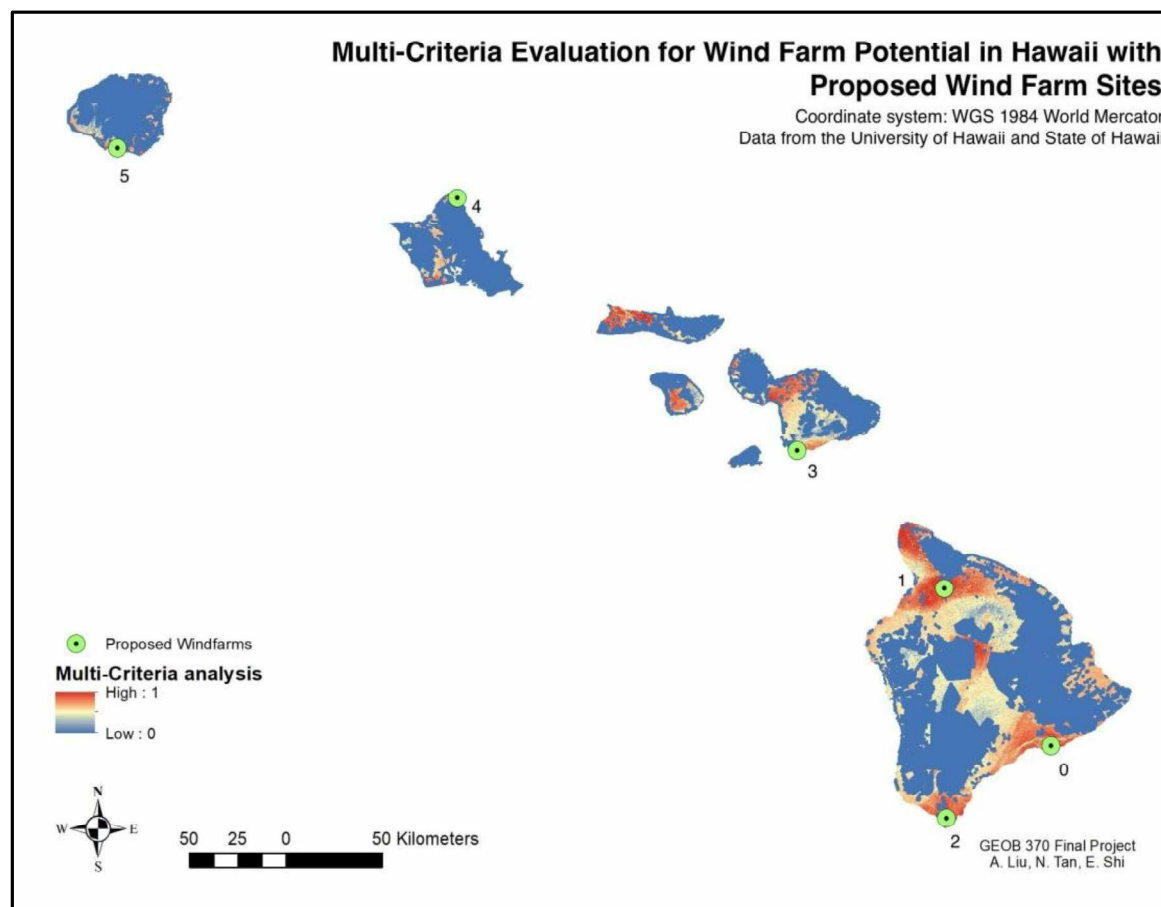


Figure 4: Multi-Criteria Evaluation for Wind Farm Potential in Hawai'i with Proposed Sites

Multi-Criteria Analysis

Based on the output of our MCE analysis, our constraints tended to remove large amounts of ideal land located near shorelines. Generally, the islands of Hawai'i, Maui, and Moloka'i had the largest amounts of usable land. However, certain islands had to be removed from our analysis despite having suitable land cover. Kaho'olawe is closed to all development and is

preserved for indigenous cultural activities, while Ni'ihau and Lāna'i are privately owned. Lastly, Moloka'i was also removed because it did not have any electric substation points for the proposed wind farm sites to connect to. After removing these islands, we focused on Hawai'i, Kaua'i, O'ahu, and Maui for further analysis. In Figure 4, we identified 6 wind farm sites (with reference codes 0-5) located at areas with highest suitability

Viewshed Analysis

For our visibility analysis, we found that our proposed wind farm sites tended to not be extremely visible. In general, each proposed farm appears to only be visible for several kilometres surrounding the immediate vicinity. For the O‘ahu wind farm site specifically, the concentration of visible areas tends to be west of populated

residential areas, with very few points of overlap. For the Hawai‘i 2 and Maui 3 sites, no residential areas would be able to see the farms. This is quite favourable as it implies that construction of a wind farm in that location would create little to no visual disruption for residents in the area, with only a very small percentage of the population being able to see any part of the turbines.

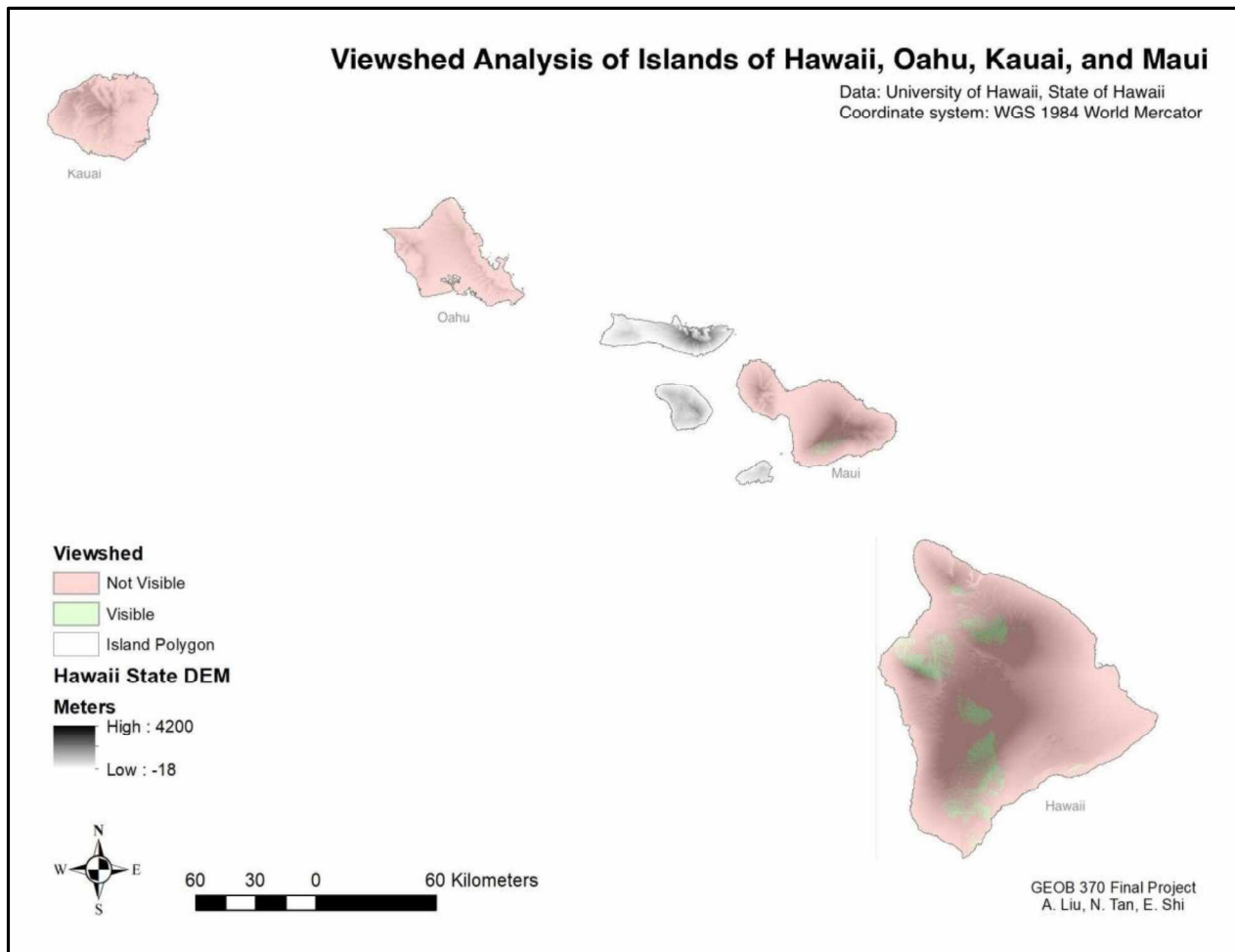


Figure 5: Viewshed Analysis of Islands of Hawai‘i, O‘ahu, Kaua‘i, and Maui

Table 4: Proposed wind farms (with reference codes) and amount of visible Residential cells

Proposed Wind Farm	Visible Residential Cells
Hawai'i 0	117900
Hawai'i 1	4289300
Hawai'i 2	0
Maui 3	0
O'ahu 4	141500
Kaua'i 5	9500

Least Cost Path

Moloka'i did not have electric substations, and could not be included in this analysis. We found that the proposed site at the southern tip of Hawai'i island (the Big Island) had the shortest distance between the proposed site and the nearest electric substation. The next best candidates were the sites located on Kaua'i and

eastern Hawai'i. From our result tables for the Viewshed and Least Cost Path analyses, we found that the Hawai'i 2 site on the southern tip of Hawai'i island is the most suitable site to build a wind farm in the state. The next best places to build the farms are at the Kaua'i and Maui sites. The remaining sites are less preferred as Hawai'i 1 is far too visible to residents while Hawai'i 0 and O'ahu have higher transmission path costs.

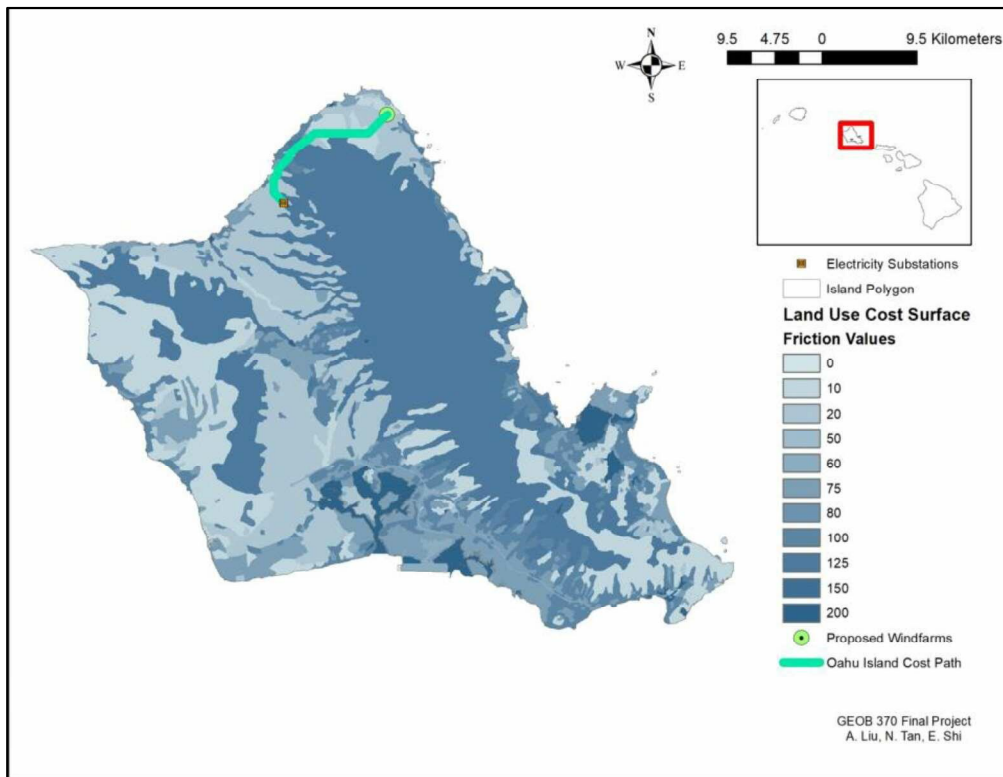


Figure 6a: O'ahu Island Least Cost Path

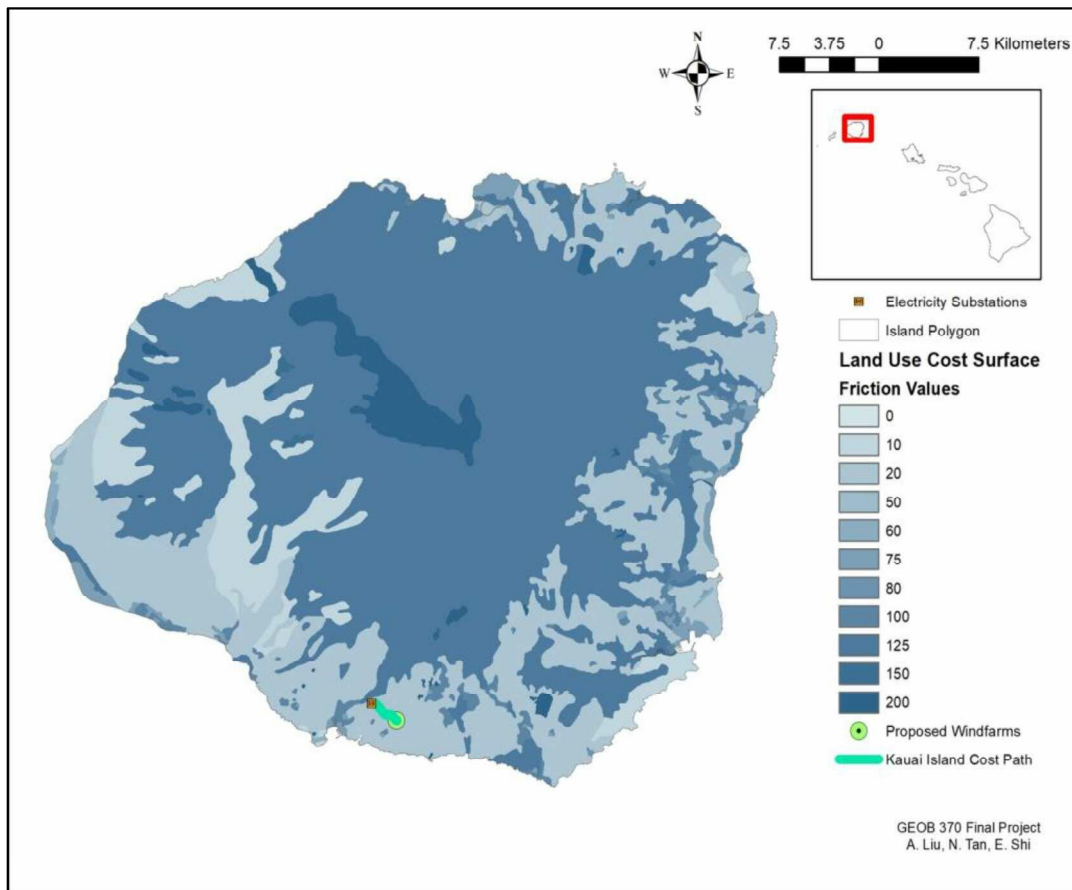


Figure 6b: Kaua'i Island Least Cost Path

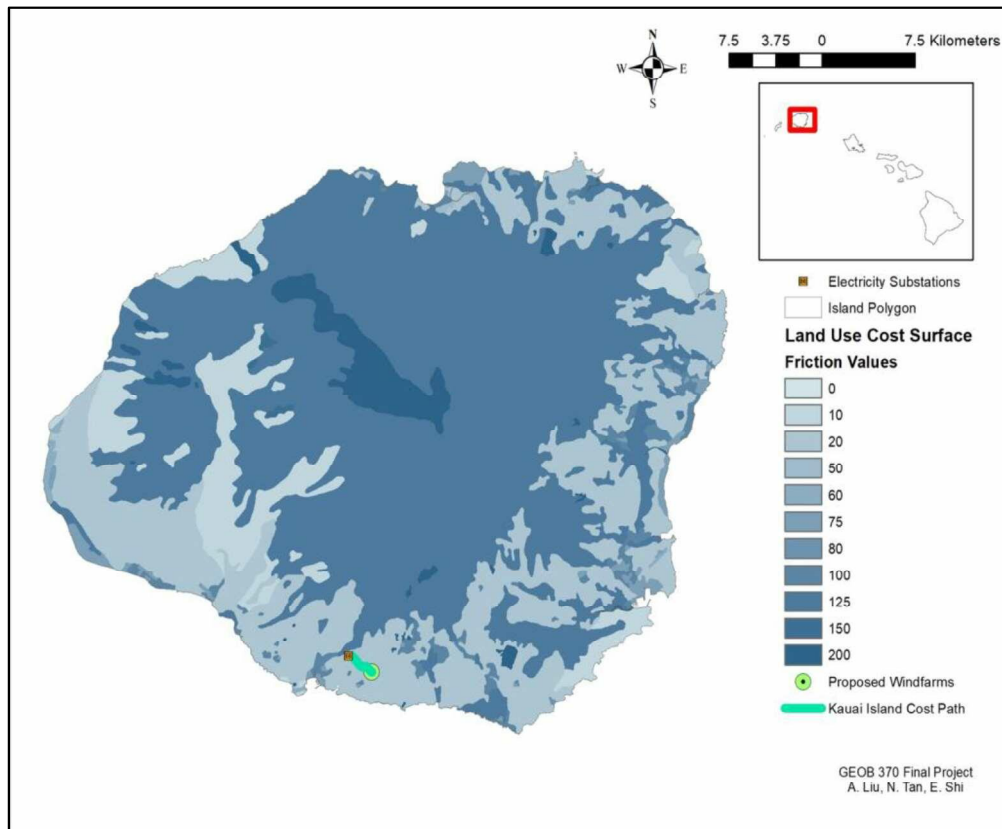


Figure 6c: Maui Island Least Cost Path

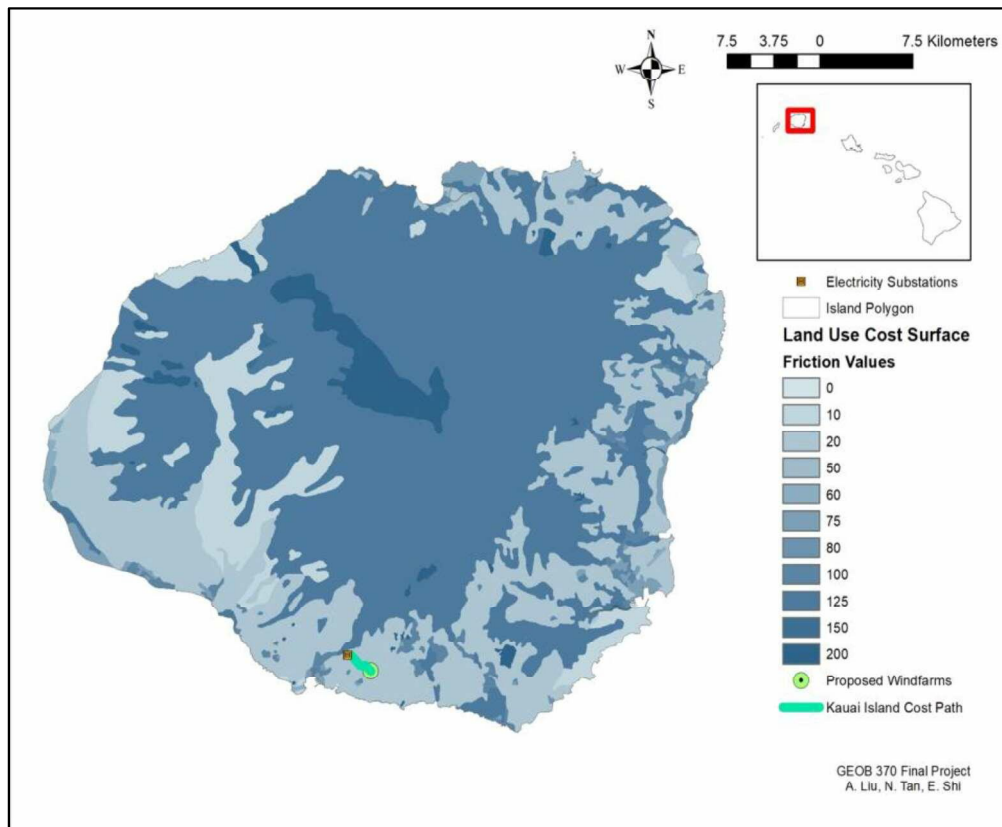


Figure 6d: Hawai'i Island Least Cost Path

Table 5: Proposed wind farms and total cost for each transmission line

Proposed Wind Farm	Cost path
Hawai'i 0	1552159
Hawai'i 1	79886
Hawai'i 2	35421
Maui 3	219515
O'ahu 4	551173
Kaua'i 5	46893

D: Discussion

Data Limitations

One major issue with our data was in the land use layer. This layer served as our base map as well as the source of many of our constraints and our cost friction layer. The land use data, taken from the State of Hawaii's Planning Division, was sourced from aerial photos taken in 1976, making it quite outdated. However, this was the most recent land use data available, and as such the only option we were able to use. Our first choice would have been a more recent 2011 raster from NOAA through the Multi-Resolution Land Characteristics Consortium. This was an ideal dataset as it was a 1 to 5 metre high-resolution raster land cover layer. However, with a file size of 2.5GB, this was beyond the means of our

equipment to process and as such was not a viable option given our time constraints. We were unable to find data detailing culturally sensitive historical zones. The conservation zone layer from the Department of Land and Natural Resources accounts for certain archaeological sites, yet is rather unclear regarding the nature and extent of site coverage. As such, it is unknown whether or not all culturally significant sites were fully accounted for, nor what types of cultural lands are considered. Furthermore, there was no data showing lands with high bird traffic. While we were able to find dedicated conservation zones from the Hawaiian government, there was no data regarding routes used by migratory birds or other transient bird species. Wind farms pose a serious threat to airborne wildlife, especially endemic

birds and bat species, due to tendencies for the animals to collide with the turbine blades (Hutchins, 2017). As Hawai'i lies near the equator, it is a prime resting zone for many avian species that follow long-distance migration pathways (Wetlands International, 1996). With regard to our analysis data, our wind speed raster layer was only available at an elevation of 50m. This places restrictions on the viability of our results, as most wind turbines stand at around 100m or higher. Depending on Hawai'i's climate, this could have drastic effects on wind speed. Certain data layers we used were somewhat ambiguous in format. For example, the land use layer was rather coarse in nature, and while it contained a great variety of object types, some of them were left unlabelled or unknown. However, these unknown areas constituted a minute portion of our analysis focus zone. These areas were ignored and not used as constraints.

Analysis Limitations

One point of limitation would be how the friction values for the least cost path was determined. Most of the values were determined arbitrarily from a background understanding of wind farm mechanics and architecture, as

there was a lack of literature on this topic. For some of the land uses, such as mining sites and bare rock, it could be likely that the friction value could have been lower, as wind farms may need to drill into the ground, thus making bare rock and mining sites suitable as well.

Another limitation would be our relatively imprecise method of selecting wind farm sites. After the MCE was complete, we eyeballed rough points within the suitable areas identified. The use of points to mark the sites means that we were unable to take into account the possible sizes and shapes of the wind farms. However, given our severe limitations on land use data and the fact that existing wind farms were also only available as points, we felt that keeping our proposed sites as vector points was the best option.

If we had more time, a better method to find the true least cost pathway would be to run the analysis on several substations near the proposed site since the routes often change based on land use costs. The true least cost path may have come from a different substation with a greater Euclidean distance. However, the land use costs between the elected

substation and proposed wind farm sites were generally homogenous, so running the additional analysis may not have yielded substantial differences.

Analysis Accuracy

The primary way for us to verify the accuracy of our analysis was to compare our MCE output with the locations of current wind farms. For the most part, we found that current turbines were placed in areas that we designated as high suitability (red) (Figure 7). There were several real-

world turbines that were in areas of high suitability in the first MCE, but were made off limits by our constraints. By classifying the constraints layer by origin, we found that the actual wind farms were built within our Conservation as well as Developed buffer zones (Figure 8). This calls into question the accuracy of these buffers, and whether our researched buffers were appropriate for the state (we had modified the buffers provided by Baban et al.).

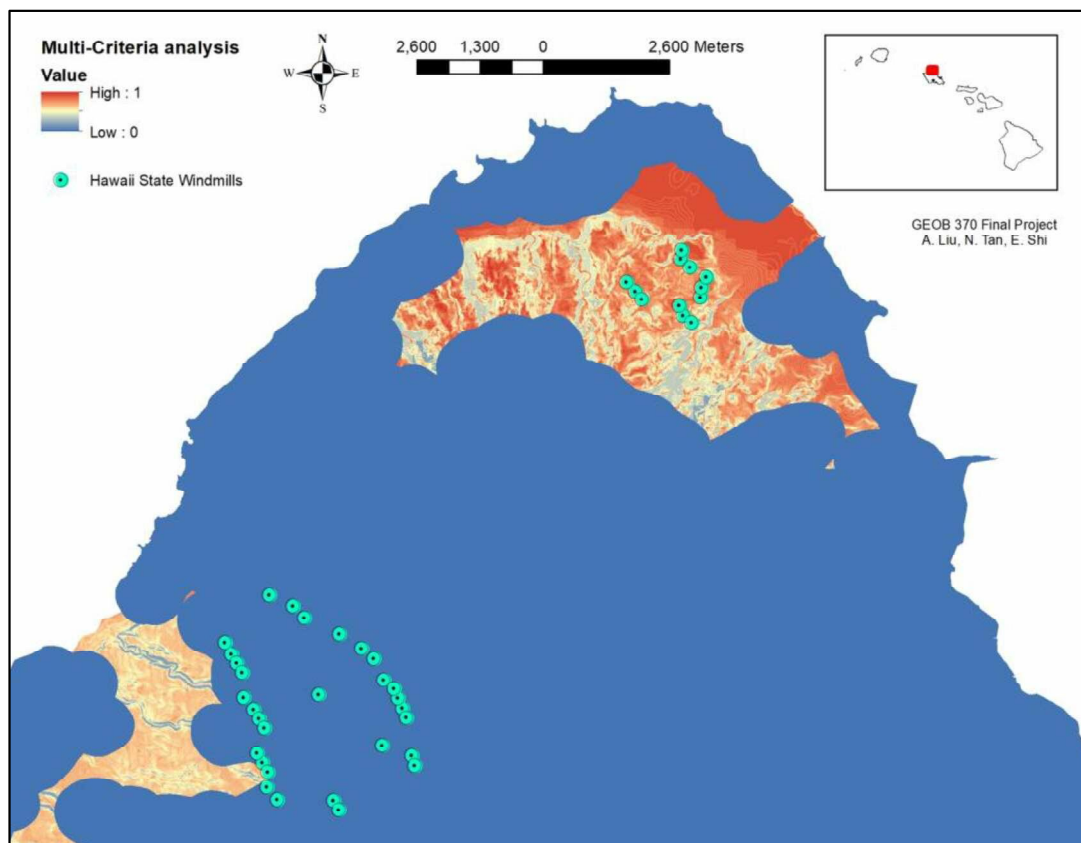


Figure 7a: Existing wind farms on Hawai'i island

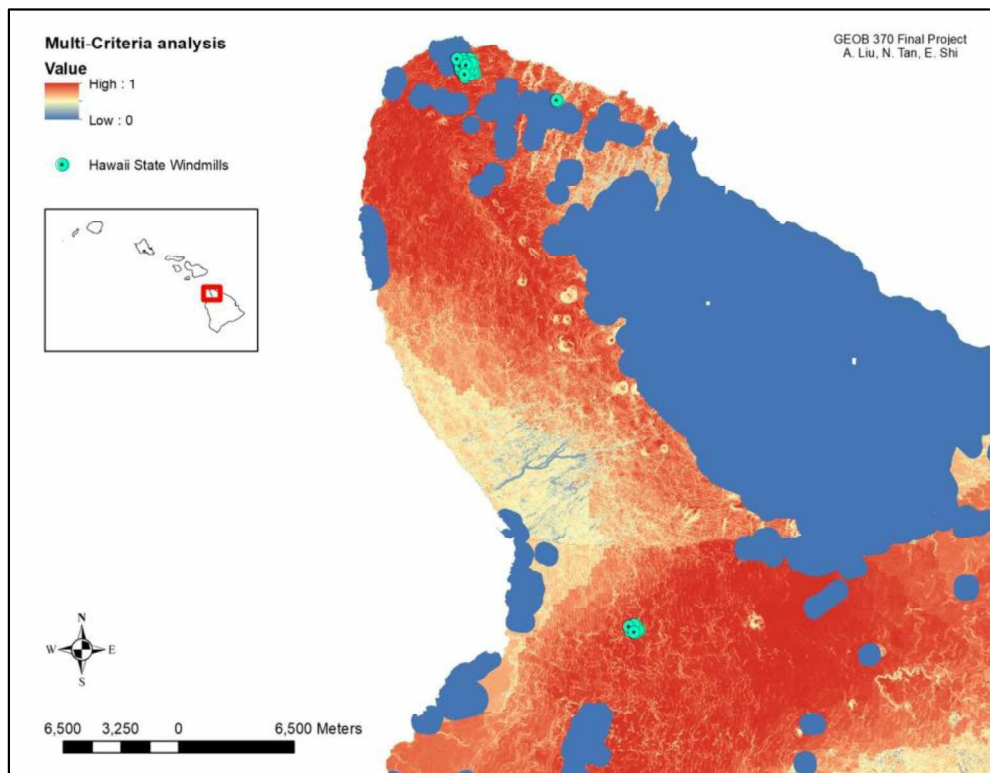


Figure 7b: Existing wind farms on O'ahu

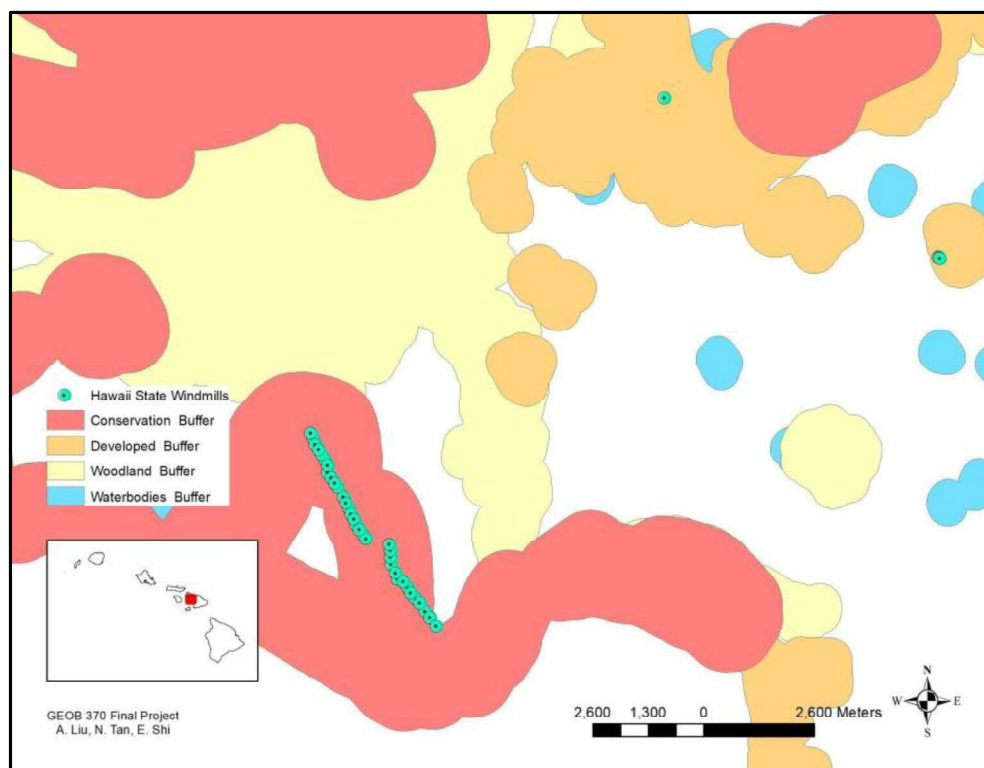


Figure 8: Existing wind farms on northeast Maui island overlaid with classified Constraints layer

A second way we verified our model accuracy was by using ground truth through Google Maps satellite imagery and Street View features to check if the proposed sites were actually feasible in the modern landscape. This ground truth method was used in lieu of a sensitivity analysis of the factor weights.

Starting on Hawai'i island, the southernmost wind farm site (Hawai'i 2) lies on the border of South Point Park, a large open grass area on the cliffside. South Point Park is already home to several dozen wind turbines, meaning that the park is safe for development

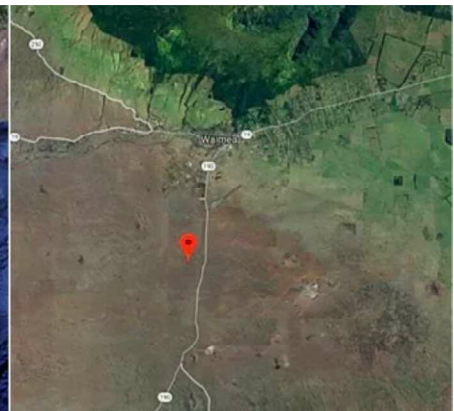
(Figure 9b). As such, the land cover data used in our MCE still remains valid. Our second Hawai'i island farm (Hawai'i 0) on the eastern edge sits just south of Hawai'i Volcanoes National Park. The land there is undeveloped, rocky cliffside. The cliffs face the ocean, meaning that turbines would receive unobstructed sea breeze (Figure 9a). The final potential turbine site (Hawai'i 1) on the island of Hawai'i in the northwest corner sits on elevated lands south of Waimea. The land here is unused and would not provide for any developmental conflicts (Figure 9c).



*Figure 9a: Hawai'i 0
Satellite Image*



*Figure 9b: Hawai'i 2
satellite Image*



*Figure 9c: Hawai'i 1
Satellite Image
Courtesy of Google Maps*

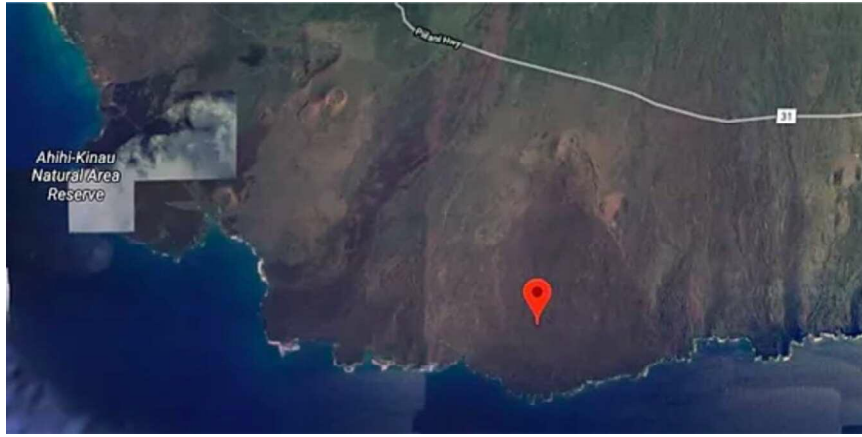


Figure 10a: Maui 3 Satellite Image (Courtesy of Google Maps)

On the island of Maui, our identified site lies on rocky beaches on the southern edge. While the land is completely clear and suitable for development, it is somewhat close to the 'Ahihi-Kina'u Natural Area Reserve. Considering that the reserve was established in 1973, only 3 years before our land use data was created, it is unclear whether the reserve was present in our land use layer and questions the validity of our model buffers. Wind farms already exist on the same stretch of beach, but they are

much farther away from the reserve than our proposed site.

The site on O'ahu lies extremely close to the Kahuku Wind Farm, indicating that our model was fairly accurate in this region. The immediate vicinity has a large amount of development, presumably due to a boom in population and industry occurring after the creation of our land use layer. The site now lies within several kilometres of roads and businesses, including zones for agriculture and commercial fishing.

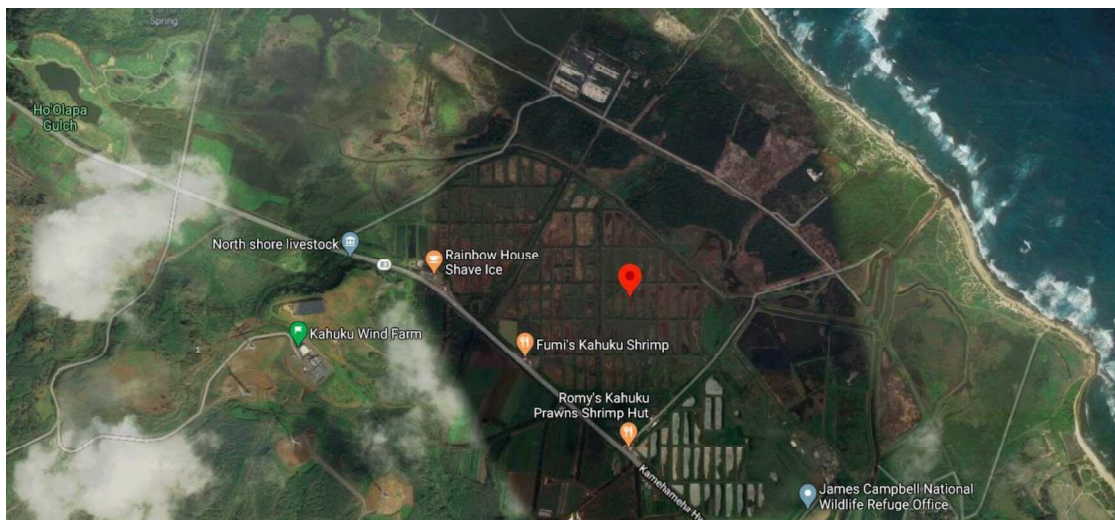


Figure 10b: O'ahu 4 Satellite Images (Courtesy of Google Maps)

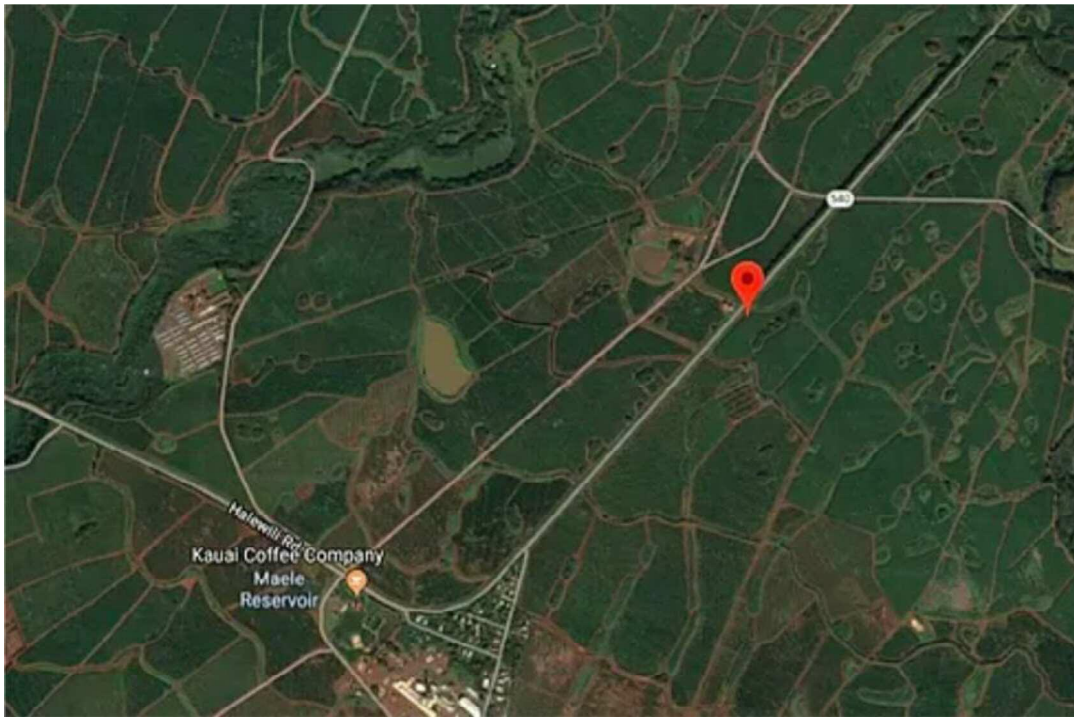


Figure 10c: Kaua'i 5 Satellite Image (Courtesy of Google Maps)

E: Conclusion

Of the six locations initially selected from the MCE analysis, we found that the Hawai'i 2, Kaua'i, and Maui sites were most suitable to construct wind farms due to their limited visual impacts on residential areas and their proximity to electric substations. Given the results of our analysis, it is clear that despite the state's extreme geographic isolation, Hawai'i maintains a great potential for renewable energy generation through wind harnessing. We believe it is crucial that Hawai'i continues to develop and expand its energy production portfolio as it has been doing for the past several years. Although we only selected six

sites for further analysis, our maps indicate that there exists a great deal of additional suitable locations for wind farm construction. Furthermore, with the development of a transforming substation, the island of Moloka'i would also be suitable for use. In regard to future research, it may be worthwhile for the state of Hawai'i to also explore the option of offshore wind farming, as the potential for energy generation is far greater than that of onshore turbines. Although it is estimated that wind alone may be able to completely fulfill all of Hawai'i's energy needs, it is unlikely that this will be the case given the heavy infrastructural and environmental costs of doing so

(Musial et al. 2016, US Energy Information Administration, 2012). We recommend that Hawai'i also look into other forms of clean energy such as hydroelectric wave power and solar power. With enough research, commitment, and investment, Hawai'i has the potential to be on track to meet its 2045 goal of full renewability.

References

Data

City and County of Honolulu, Kauai County, Maui County, Hawaii County. (2014) U.S. Department of Defense.

County of Hawaii Planning Department. (2005) Major Roads - Hawaii County. State of Hawaii.

County of Hawaii Planning Department. (2012) Roads - Hawaii County. State of Hawaii.

County of Kauai. (2008) Roads - Kauai County. State of Hawaii.

Department of Commerce (DOC), National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), Center for Coastal Monitoring and Assessment (CCMA), Biogeography Branch. (2007) Digital Elevation Models (DEMs) for the main 8 Hawaiian Islands. NOAA's National Ocean Service (NOS), National Centers for Coastal Ocean Science (NCCOS).

DLNR/DOFAW, State Land Use Commission. (2011) Conservation District Subzones. U.S. Department of Land and Natural Resources.

Hawaii State Office of Planning. (1976) Land Use Land Cover as of 1976. State of Hawaii.

Hoen, B.D., Diffendorfer, J.E., Rand, J.T., Kramer, L.A., Garrity, C.P., Hunt, H.E. (2018) United States Wind Turbine Database. U.S. Geological Survey, American Wind Energy Association, and Lawrence Berkeley National Laboratory data release: USWTDB V1.2 (October 1, 2018).

Honolulu Land Information System (HOLIS), C&C of Honolulu. (2015) Major Roads - Oahu (Honolulu County). State of Hawaii.

Honolulu Land Information System (HOLIS), C&C of Honolulu. (2019) Roads - Honolulu County. State of Hawaii.

Maui County. (2018) Roads - Maui County. State of Hawaii. Major Roads - Oahu (Honolulu County).

National Renewable Energy Laboratory. (2009) Hawaii Wind 50m height. U.S. Department of Energy data release: (May 4, 2009).

Oak Ridge National Laboratory (ORNL), Los Alamos National Laboratory (LANL), Idaho National Laboratory (INL), National Geospatial-Intelligence Agency (NGA) Homeland Security Infrastructure Program (HSIP) Team. (2019) Electric Power Transmission Lines. U.S. Department of Homeland Security.

Oak Ridge National Laboratory (ORNL), Los Alamos National Laboratory (LANL), Idaho National Laboratory (INL), National Geospatial-Intelligence Agency (NGA) Homeland Security Infrastructure Program (HSIP) Team. (2019) Electric Substations. U.S. Department of Homeland Security.

Literature

Ali, S., Lee, S.-M., & Jang, C.-M. (2017). Determination of the Most Optimal On-Shore Wind Farm Site Location Using a GIS-MCDM Methodology: Evaluating the Case of South Korea. *Energies*, 10(12), 2072. doi: 10.3390/en10122072

Baban, S., Parry, T. (2001). Developing and applying a GIS-assisted approach to locating wind farms in the UK, 24(1), 59-71. doi: 10.1016/S0960-1481(00)00169-5

Hawaii State Energy Office. (2018). Hawaii Energy Facts & Figures . Hawaii Energy Facts & Figures . Honolulu, HI. Retrieved from https://energy.hawaii.gov/wp-content/uploads/2018/06/HSEO_2018_EnergyFactsFigures.pdf

- Hutchins, M. (2017, May 9). Understanding the Threat Wind Energy Poses to Birds. Retrieved from <https://abcbirds.org/wind-energy-threatens-birds/>
- Musial, W., Heimiller, D., Beiter, P., Scott, G., & Draxl, C. (2016). 2016 Offshore Wind Energy Resource Assessment for the United States. Golden, CO: National Renewable Energy Laboratory.
- US Energy Information Administration. (2012). Electric Power Monthly (Vol. Feb 2012). Washington, DC.
- Wetlands International. (1996). Asia-Pacific Migratory Waterbird Conservation Strategy: 1996-2000. Wetlands International - Asia Pacific, Kuala Lumpur, Publication No. 117, and International Waterfowl and Wetlands Research Bureau - Japan Committee, Tokyo. 41 pp.
- Windpower Engineering. (2011, April 11). Designing wind farms for max output. Retrieved from <https://www.windpowerengineering.com/designing-wind-farms-for-max-output/>.

Queer Diasporas: Queerness, National Identity, and the Geopolitics of Queer Migration

by: HENRIQUE FERNANDES

As of March 2019, same-sex consensual relations are still criminalized in seventy countries around the world, four of which consider the offense punishable by death (ILGA, 2019). In addition to criminality, LGBTQ+ individuals must also contend with harassment and prejudice from their peers, even barring them from employment, housing, and access to state services such as medical treatments. As a result, queer individuals tend to migrate to more accepting countries, in the hope of establishing a 'safe haven' for themselves. Although they escape the political homophobia of their country of origin, queer individuals face new challenges in adapting to their new environments and encountering the same homophobia from their fellow diasporic communities. This paper uses case studies of Russia and Uganda to analyze the ways in which queer individuals are excluded from the state and an idealized idea of a nation, and how they continue to be excluded once they migrate to other countries.

As of March 2019, same-sex consensual relations are still criminalized in seventy countries around the world, four of which consider the offense punishable by death (ILGA, 2019). In a world where queer acceptance is still highly uneven, LGBTQ+ people often migrate to less hostile environments to flee sexuality-based persecution, fabricating a notion of a territorial 'safe haven' for queer people. More accepting places such as the United States, Canada, and Western Europe have recently offered a space of refuge for queer people fleeing a national and cultural context of violence against homophobia. This essay engages with the concept of "Queer Diaspora" (Fortier, 2001, p. 407) to analyze the intersectionalities of queerness, national identity and migration through the lenses of geopolitics and queer theory. I will argue that, while queer migrants are forced to flee their countries after being ostracized from society due to political homophobia, their lives do not automatically improve after migration as they still have to navigate a new environment and the diasporic

communities from their place of origin. This essay will analyze “Queer Diaspora” (Fortier, 2001, p. 407) as a transcalar phenomenon by looking at national, regional and global trends of LGBTQphobia and migration. By drawing mainly from advocacy and media reports providing personal accounts and interviews, this essay will examine how queer people navigate the public and private spheres of their lives in the context of migration resulting from sexuality-based persecution.

Russia and Chechnya

In April of 2017, Novaya Gazeta, a Russian independent newspaper published a detailed report of personal accounts of Chechen gay men who had been detained and tortured in secret camps by the quasi-independent ultra-conservative Russian Republic (Amnesty International, 2017). When questioned about these incidents, Ramzan Kadyrov, Chechnya’s strongman leader, exclaimed:

“This is nonsense. We don’t have those kinds of people here. We

don’t have any gays. If there are any, take them to Canada.” (Taylor, 2017, para. 2)

This is a prime example of how leaders of ultra-conservative nation-states utilize the rhetoric of political homophobia as a means of building a fixed, immutable, cohesive national identity. In this scenario, the state continuously engages in a process of “othering”² and “bordering”³ queer individuals, processes whereby LGBTQ+ citizens are immediately shunned to the margins of society and outcasted from the public sphere. Since LGBTQ+ individuals subvert the national identity categories and cultural markers strictly defined and reinforced by the state (e.g. sexual and gender normativity and certain expected behaviours), queerness is automatically perceived as incompatible with national identity. This exclusion then becomes constructive of a nation’s ‘idealized’ identity. Consequently, this also prevents queer individuals from engaging with the state since the high level of homophobia and sexuality-based persecution prevents them from

² Transforming a difference into otherness so as to create an in-group and an out-group. (Staszak, 2008, p. 01)

³ The use of spatial strategies of exclusion through the creation of boundaries. As such, a

spatialized processes of ‘othering’ that come to express sharp distinctions between entities (LeBillon, 2019).

accessing state resources (such as medical treatment and HIV medication) and can lead to job and housing insecurity. Ultimately, the rhetoric of political homophobia excludes LGBTQ+ people from the nation and the state.

The queer individual then becomes an outcast, a person who can only exist outside of the nation-state. In effect, this process of weaponizing homophobia as a political tool to create a national identity incompatible with queerness can be clearly seen in Vladimir Putin's government in Russia. Since 2013, Russia has adopted a discourse of political homophobia (on the basis of protecting 'traditional family values') to restrict the social, political, and biological freedoms of queer Russians (Khazan, 2014). In 2013, the Russian federal government passed a 'propaganda law', which supposedly was created to prevent children and youth from "being exposed to the 'normalization' of sexual minorities" (Human Rights Watch, 2014a). The law cites pedophiles and homosexuals in the same sentence, characterizing both as equal under the umbrella of "sexual minorities" (Human Rights Watch, 2014a). In essence, this signifies the 'othering' of queer individuals in Russia: not only are they portrayed as

'perverted', pedophilic, and dangerous, but are also depicted as being against 'traditional family values of Russian society', (and therefore against Russian society as a whole). In addition to equating pedophilia and homosexuality, the vagueness of the law means that demonstrations of affection in public, and especially during protests, can be considered 'gay propaganda' and thus punishable by law. Ever since the law was passed, Russia has experienced a crackdown of LGBTQ+ activist groups, as their work, (whether it be a protest in public or educational materials posted on the internet) is considered propaganda (Chan, 2017). In cases where queer people are open about their identities in a professional setting, they have also been fired from their jobs (CNN, 2013). Local Russian activists and the NGO Human Rights Watch also indicate that the law has emboldened violent vigilante groups that target, torment, and torture queer Russians (Luhn, 2013). Although homosexuality itself is not criminalized in Russia, this anti-propaganda law then creates social borders between queer individuals and Russian society and public life, thus ultimately 'bordering' them to the margins of society and casting them out of the public sphere. By engaging in processes of bordering, the Russian

nation-state reinforces notions of Russian national identity and creates a bounded social space for Russians, one in which queer people are not allowed to belong. The message is clear: queerness is depicted as incompatible with Russian national identity.

In a context where the nation-state ostracizes queer people from society and queer identity is made to be incompatible with nationality, queer people might resort to migration in order to flee from sexuality-based persecution. Nevertheless, this experience is entirely different from other migration narratives due to its unique circumstances. While migrants or refugees might flee their country for financial or security reasons (in the case of economic crisis or civil war, respectively), vulnerable queer individuals often migrate to try to find a 'queer safe haven'. In other words, queer people in hostile environments might feel forced to migrate to try to fabricate and reinforce a notion of a spatial, territorial 'safe haven' (i.e. a place where they will suffer less prejudice). The phenomenon of queer migration is then a 'homecoming': unlike several other stories of migration, in this case, 'home' is a destination, rather than an origin (Fortier, 2003, p. 1). Authors have also

referred to this as 'homing desires', which essentially means the "longing to belong" or desire for a sense of place or "home" (Frontier, 2001, p.1), which is not provided to queer migrants in their country of origin.

To illustrate, I shall use the example of Denis Davydov, an HIV-positive gay man from Russia who sought asylum in the United States (them., 2017). Before moving to the United States, Denis reports having been harassed, attacked, and also struggling to gain access to HIV medication as it would 'out' him, therefore placing him in a position of danger before his family and Russian society (them., 2017). Conversely, after moving to the United States, Denis reports feeling the freedom of expressing his sexuality without having to worry. In addition to that, he has also been put on HIV-medication and joined a network of other HIV-positive men living in San Francisco. While this is clearly a stark contrast compared to his quality of life in Russia, it highlights important dynamics in queer migration stories - that is, that queer individuals might use migration as an identity-building tool. Once they arrive at their new destination, they not only feel free to completely fulfil their identity, but also gain new political, social, and biological freedoms. As they navigate

through society as a queer person with way less repercussions than in their home countries, they are then free to allow their queer identity to not only be expressed in private, but also in the public sphere. Additionally, queer migrants are also granted freedom of assembly and association, as they are then able to join LGBTQ+ support networks and organize politically for their rights. And lastly, they gain biological freedom and autonomy as they are able to access HIV/AIDS medication and hormone therapy medicine (in the case of transgender individuals). In light of their newfound freedoms, it is reasonable to suggest that queer migrants use migration as an identity-building tool through which they build new senses of 'home' and 'belonging' and reinforce spatial notions of a 'queer safe haven'.

Despite the clear improvements in the quality of life of queer migrants after migration (at least with regards to their sexuality), there are still hurdles to be overcome. After all, the queer migrant is still a migrant. This means that they oftentimes still endure the consequences of having to navigate a new society as a queer outsider, which includes a constant negotiation of their identities: while they feel 'at home' to express their queerness, readapting to a new country will oftentimes entail the

foregoing of aspects of their previous nationality (such as language, food, culture, and mannerisms). On the other hand, they will not necessarily be able to reconnect with those traditions through engaging with their own diasporic communities in their new host country because of fears of homophobic violence and discrimination. This dynamic can be seen in the stories of Russian gay men fleeing to Germany, where they still suffer discrimination within/by their own diasporic communities.

The story of queer Russian diasporic communities which found refuge in Berlin display these dynamics. Quarteera is an association of LGBTQ Russian-speakers based in Berlin that was established in order to create a safe space for queer Russians (Mole, 2018). This is because, according to them, even after migrating to a different country, they were still facing discrimination from Russian diasporic communities in Berlin. While the members of this organization attempted to create ties with the other Russian diasporic communities, the "shared homeland orientation and sense of Russianness were insufficient to create a sense of 'we'" due to the lingering homophobia of the other Russian diasporic communities (Mole, 2018). At the same time, however,

feeling free to express their queerness in non-Russian settings was still not enough to build a sense of 'home' and 'belonging'. The solution then was the creation of Quarteera, which provides Queer Russians with a safe space to combine and exercise their national and sexual identities. It also further reinforces the idea that political homophobia can be used to construct non-heterosexuals as 'outside of the nation'. Since political homophobia has been ingrained in the idea of the 'nation', this dynamic transcends territorial borders. The fabricated incompatibility of queerness with a certain national identity (in this example, Russian) continues to be perpetuated by diasporic communities outside of their country of origin and thus accompany queer refugees to wherever they migrate.

Uganda and Sub-Saharan Africa

The African continent today stands out as one of the most hostile places for LGBTQ+ people in the world. According to the International Lesbian, Gay, Bisexual, Trans, and Intersex Association (ILGA), as of 2019, thirty-two of Africa's fifty four nations have laws that criminalize and punish consensual same-sex relations (ILGA, 2019 p. 197). There are several different reasons for the wave of state-

sponsored homophobia that sweeps up the African continent. As pointed out by scholars of African history and culture, the most prominent are: colonial legacies, a strong religious influence, and political homophobia as a nation-unifying agenda. Africans are among the most religious people in the world. Around 93% of Sub-Saharan Africans have been found to be either Christian (63%) (Pew Research Center, 2011) or Muslim (30%) (Masci and Desilver, 2017). The vast importance of religion in the continent has a negative effect on LGBTQ+ rights and acceptance as most religious texts view homosexuality and gender diversity as problematic. In addition, the hostility towards sexual and gender diversity in Africa also stems from a legacy of colonial anti-sodomy (a term often used to describe sex among men) laws. More than half of the countries with legal criminalization of homosexuality are former British colonies, where British colonial administrators introduced laws against sexual "unnatural acts" and fostered homophobic views in African society by the introduction of Christianity (Hairsine, 2019, para. 8). Lastly, the political homophobia expressed by African leaders is rooted in a notion that homosexuality is 'un-African' or somehow an import from the West.

Although there is a vast body of research documenting the broad spectrum of sexual and gender diversity in pre-colonial Africa (see *Boy-Wives and Female Husbands* (Murray and Roscoe, 1998)), many African leaders still insist on declaring that homosexuality is not (and never was) a part of African culture. For instance, Zimbabwe's long-term leader Robert Mugabe stated that homosexuality is "un-African" and a "white disease" (Hairsine, 2019, para. 19). On the same note, Uganda's president Yoweri Museveni also declared that homosexuality is a "western import" (Hairsine, 2019, para. 20). That being considered, it is simplistic and reductionist to attribute the homophobic stances in African countries solely to religion and colonial legacies

In this section, I will analyze Uganda as a case study to discuss the plight of queer refugees and political homophobia as a nation-building tool in Africa. Uganda is one of the most hostile countries towards LGBTQ+ individuals in the African continent. Similar to Russia, Uganda also consistently engages in an agenda of political homophobia that establishes gender and sexual diversity as 'un-African' and thus constructs an idealized national Ugandan identity

that excludes queer individuals on the basis of their LGBTQ+ identities. The climate of strong political and societal repression of queer people in Uganda gradually escalated during the 2010s. In the beginning of the decade, the *Rolling Stone*, a newspaper in Kampala, published the names and photographs of one hundred gay Ugandans (Gettleman, 2019, para. 01). David Kato, an openly gay man and outspoken activist in Uganda was on this list and was violently murdered shortly after (Gettleman, 2019, para. 02). In 2014, the country made international headlines for tabling the Anti-Homosexuality Act, a bill that would essentially make homosexuality punishable by death (in contrast with the previous punishment, life in prison) (Amnesty International, 2013, para. 01). Although the bill was eventually annulled due to a legal technicality (Smith, 2014, para. 01), consensual same-sex conduct remains illegal and punishable by life imprisonment under Uganda's penal code. Amidst the uproar caused by the Anti-Homosexuality Act (which Uganda parliamentarians have considered re-introducing in 2019), activists and local non-profit organizations have documented the ongoing increase in the persecution of queer Ugandans and limitation of their rights and

freedoms. Over the years, there have been various instances where LGBTQ+ people and activists were either arrested on charges of gay sex (Berger, 2019, para. 01) (and subjected to invasive and forced anal exams) or killed (Human Rights Watch, 2019, para. 01). As political homophobia constructs an idea of 'Ugandan national identity' as incompatible with homosexuality, queer Ugandans are left out of the construction of the nation and perceived as 'less African' and westernized.

In addition, the state-sponsored homophobia also means that queer Ugandans are rendered unable to access state resources and exist authentically within the state as their identity jeopardizes things such as housing, education and job security. Due to the fears of having their identities discovered by the government and the public, LGBTQ+ people in the country often do not report homophobic hate crimes to the police and struggle with accessing medical services such as HIV/AIDS treatment (Human Rights Watch, 2014b). The criminalization of homosexuality in Uganda also further marginalizes queer individuals and their access to state resources as it criminalizes the activity of local NGOs that advocate for more rights and

distribute HIV/AIDS medication under "promotion of homosexuality" (Human Rights Watch, 2014b, para. 11). Throughout this process, queer Ugandans are then continuously othered, bordered, and left to the margins of society as they are also constructed as external to the state.

In light of the precarious state of LGBTQ+ rights and acceptance in Africa, several queer Africans apply for political asylum in Canada, the US, and Western Europe. While their quality of life improves significantly after migrating, Ugandan queer refugees still report difficulties in their new host countries such as racism and not being able to work and provide for themselves during an extremely long asylum-seeking process (VOA News, 2014). It is important to note, however, that for the majority of cases reported, Canada, the US, and Western Europe only represent a third-place settlement. Due to the financial hurdles and difficulties with applying for sexuality-based asylum from within Uganda, several Ugandans end up fleeing to neighbouring Kenya instead. Nevertheless, they are still unable to work in Kenya due to their refugee/asylum-seeker status and often have to resort to living in large slums and working informal, low-wage jobs (Cuddihy, 2016, para. 16).

Moreover, they still endure high degrees of homophobia in their new host communities in Kenya (Cuddihy, 2016, para. 15). In this scenario, queer Ugandans still endure several legal, political, and biological struggles as they navigate their diasporic experience in the new host country.

The stories of 'queer migration' have often been told as a 'homecoming' - the queer individual, troubled by political, social, and biological restrictions imposed by their nation-state, flee to a different country to find a life of happiness, freedom, and liberation. Nevertheless, this is not always the case. By going beyond traditional narratives of 'queer migration', this essay highlights the roots of migration based on sexuality-based persecution as the ostracizing of queer individuals to the point where non-heterosexuals are seen as outside of the nation and the state. At the same time, political homophobia is used as a centripetal force that pulls conservative national identity and society together, it is a centrifugal force that expels non-heterosexuals from the public spheres

and depicts them as 'outside of the state'. The homophobia that is so embedded in the idea of a national identity, then further troubles queer migrants even after migration as they come to interact with diasporic communities. Moreover, it is also important to acknowledge that queer refugees also continue to suffer to other degrees of homophobia in the new host communities. All in all, it shows that queer migration is not the perfect solution to queer individuals facing sexuality-based persecution. As argued by other queer and diaspora scholars, traditional depictions of this topic can also reinforce "racialist scripts of U.S. 'progressiveness'/Third World 'backwardness'" (Luibhéid et al, 2005, p. 65) and pose challenges to queer migrants who have to undergo derogatory procedures to try to 'prove their sexuality' to asylum offices (Singer, 2015). More research is thus needed to assess the advantages and difficulties of sexuality-based migration and bridge the gaps of knowledge of queer diaspora in a post-migration context.

References

- Amnesty International. (2013). *Uganda: Anti-Homosexuality Bill must be scrapped*. Amnesty International. Available at: <https://www.amnesty.org/en/latest/news/2013/12/uganda-anti-homosexuality-bill-must-be-scrapped/>.
- Amnesty International. (2017). *Russian Federation: Men suspected gay abducted, tortured or killed*. Available at: <https://www.amnesty.org/en/documents/eur46/6023/2017/en/> (Accessed: 10 November 2019).
- Berger, Miriam. (2019). *Uganda arrested 16 LGBTQ activists. Here's where else gay rights are a battleground in the world*. The Washington Post. Available at: <https://www.washingtonpost.com/world/2019/10/26/uganda-arrested-lgbtq-activists-heres-where-else-gay-rights-are-battleground-world/>.
- Chan, S. (2017). *Russia's 'Gay Propaganda' Laws Are Illegal, European Court Rules*. London: The New York Times. Available at: <https://www.nytimes.com/2017/06/20/world/europe/russia-gay-propaganda.html> (Accessed: 09 November 2019).
- CNN. (2013). *Russian Journalist Comes Out on Air*. CNN. Available at: <https://www.cnn.com/videos/world/2013/08/13/ctw-russian-journalist-comes-out-on-air-cnn> (Accessed 09 November 2019).
- Cuddihy, Martin. (2016). *Escaping Uganda: Gay refugees forced to flee persecution*. ABC News Australia. Available at: <https://www.abc.net.au/news/2016-11-29/gay-refugees-flee-uganda/8074964>.
- Fortier, A-M. (2003) *'Making home: queer migrations and motions of attachment'*. Lancaster: Department of Sociology, Lancaster University. Available at: <http://www.lancs.ac.uk/sociology/papers/fortier-making-home.pdf> (Accessed 10 November 2019).

Fortier, A-M. (2001) *“Coming home”: Queer migrations and multiple evocations of home*. European Journal of Cultural Studies, 4(4), pp. 405–424.
doi:10.1177/136754940100400403.

Gettleman, Jeffrey. (2011). *Ugandan Who Spoke Up for Gays Is Beaten to Death*. The New York Times. Available at:
<https://www.nytimes.com/2011/01/28/world/africa/28uganda.html>.

Hairsine, Kate. (2019). *Why is homosexuality still taboo in many African countries?* Deutsche Welle. Available at <https://www.dw.com/en/why-is-homosexuality-still-taboo-in-many-african-countries/a-51528737>.
(Accessed 28 Feb 2020).

Human Rights Watch. (2014a). *License to Harm: Violence and Harassment Against LGBT People and Activists in Russia*. Printed in United States of America: Human Rights Watch. Available at:
<https://www.hrw.org/report/2014/12/15/license-harm/violence-and-harassment-against-lgbt-people-and-activists-russia> (Accessed: 10 November 2019).

Human Rights Watch. (2014b). *Uganda: Anti-Homosexuality Act's Heavy Toll*. Human Rights Watch. Available at
<https://www.hrw.org/news/2014/05/14/uganda-anti-homosexuality-acts-heavy-toll>.

Human Rights Watch. (2019). *Uganda: Brutal Killing of Gay Activist*. Human Rights Watch. Available at:
<https://www.hrw.org/news/2019/10/15/uganda-brutal-killing-gay-activist>.

ILGA (The International Lesbian, Gay, Bisexual, Trans and Intersex Association). (2019). *State-Sponsored Homophobia 2019*. ILGA World. Available at:
<https://ilga.org/ilga-launches-state-sponsored-homophobia-2019>.

ILGA. (2019). *ILGA Launches State-Sponsored Homophobia Report 2019*. New Zealand: ILGA. Available at: <https://ilga.org/ilga-launches-state-sponsored-homophobia-2019> (Accessed 10 November 2019).

Khazan, O. (2014). *How Russian Prudishness Produced an Anti-Gay Law*. The Atlantic. Available at: <https://www.theatlantic.com/international/archive/2014/02/how-russian-prudishness-produced-an-anti-gay-law/283945/> (Accessed: 10 November 2019).

LeBillon, Philippe. (2019). *Introduction to Political Geography – Glossary*. Lecture Material at the University of British Columbia.

Luibhéid, E., Cantú, L. & Project Muse. (2005;2001). *Queer migrations: sexuality, U.S. citizenship, and border crossings*. Minneapolis: University of Minnesota Press. doi:10.5749/j.cttt4g7

Lunh, A. (2013). *Russian anti-gay law prompts rise in homophobic violence*. Russia: The Guardian. Available at: <https://www.theguardian.com/world/2013/sep/01/russia-rise-homophobic-violence> (Accessed 09 November 2019).

Masci, David and Desilver, Drew. (2017). *World's Muslim population more widespread than you might think*. Pew Research Center. Available at: <https://www.pewresearch.org/fact-tank/2017/01/31/worlds-muslim-population-more-widespread-than-you-might-think/>.

Mole, R. C. M. (2018) “*Identity, Belonging and Solidarity among Russian-speaking Queer Migrants in Berlin*.” *Slavic Review*. Cambridge University Press, 77(1), pp. 77–98. doi: 10.1017/slr.2018.11.

Murray, Stephen O. and Roscoe, Will (Eds.). (1998). *Boy-Wives and Female Husbands: Studies in African Homosexualities*. New York: St. Martin's Press.

Pew Research Center. (2011). *Global Christianity – A Report on the Size and Distribution of the World's Christian Population*. Pew Research Center. Available at:
<https://www.pewforum.org/2011/12/19/globalchristianityexec/>.

Singer, D. (2015). *How do you prove you are gay? A culture of disbelief is traumatising asylum seekers*. The Guardian. Available at:
<https://www.theguardian.com/commentisfree/2015/nov/24/gay-asylum-seekers-sexuality-home-office> (Accessed 10 November 2019).

Smith, David. (2014). *Uganda anti-gay law declared 'null and void' by constitutional court*. Available at:
<https://www.theguardian.com/world/2014/aug/01/uganda-anti-gay-law-null-and-void>.

Staszak, Jean-François. (2008). *Other/Otherness*. Kitchin, Rob and Thrift, Nigel (Eds.) International Encyclopedia of Human Geography. Oxford: Elsevier. Available at: <https://www.unige.ch/sciences-societe/geo/files/3214/4464/7634/OtherOtherness.pdf>

Taylor, A. (2017). *Ramzan Kadyrov says there are no gay men in Chechnya — and if there are any, they should move to Canada*. The Washington Post. Available at:
<https://www.washingtonpost.com/news/worldviews/wp/2017/07/15/ramzan-kadyrov-says-there-are-no-gay-men-in-chechnya-and-if-there-are-any-they-should-move-to-canada/> (Accessed: 10 November 2019).

them. (2017). *A Gay Russian Asylum-Seeker's Struggle in America* | them. Available at: <https://www.youtube.com/watch?v=WZVz2JdLCy4> (Accessed 09 November 2019).

VOA News. (2014). *Fleeing in Fear: Gay Africans Seek Asylum in US* (VOA On.... Available at: <https://www.youtube.com/watch?v=sd6gMJx2x3U&t=199s>

Trail Six Editors

Olena Poburko

Olena is a student with a passion for geography in her last year of the Honours History with International Relations program. She is currently in the process of writing her honours thesis focusing on a 1930s Ukrainian photographer - one of the first female travel photographers ever! When she is not working at the bookstore or hard at work on her thesis, Olena can be found reading yet another Scandinavian crime novel, trying to learn Swedish or daydreaming about her next trip. Her dream destination? New Zealand! Olena's future career aspirations include working with NGOs or in academia.

River Walter

Michele (River) Walter is a fourth-year Geography major in the Environment and Sustainability stream. Her research interests include political ecology, economic geography, and feminist geography. During her undergraduate degree, River has published her self-directed research project in Trail Six, participated in a natural resource studies semester on Haida Gwaii, and been a research Assistant for Karen Bakker (Water Governance) and Michelle Daigle (Indigenous Food Sovereignty). Upon graduation, River hopes to pursue graduate studies at the intersection of geography, politics, and social justice. During her free time, she enjoys kayaking, working on her social venture, and reading a good book.

Elana Shi

Elana is a third-year Geography major in the Geographical Sciences program. She is particularly interested in biogeography and GIS and aspires to work in conservation and sustainability efforts in the future. She joined Trail Six to engage in the field of geography and learn about what her peers are working on. In her time off, she volunteers with the Pacific Spirit Park Society in Vancouver and various organizations back home in Honolulu.

Jennifer Lipka

Jennifer Lipka is a fourth-year Geography student at UBC majoring in Environment and Sustainability. Her academic interests are in biogeography, GIS and pollinators! She is interested in learning about the relationships between plants and pollinators and how they are affected by environmental pollution,

climate and land use change. She received an NSERC award to conduct collaborative research with Dr. Juli Carrillo and Dr. Dominique Weis in summer 2019. Currently, she is a work-learn student in the Plant-Insect Ecology and Evolution Lab.

Daanish Sayani

Daanish is a third-year undergraduate student pursuing an Honours in Geography with a minor in Sociology. His academic interests tend to fall within urban, economic, and political geography, but he is currently interested in critical geographies of higher education and knowledge production.

Enoch Lam

Enoch is a third-year Geography (Environment and Sustainability) student. He is passionate about clean technology, sustainable development, and innovative solutions that can be implied in our day-to-day lives, as we strive to address the issue of climate change. He enjoys being inspired and learning new things, good food, going out, and following the NBA.

Cheza De Los Santos

Cheza is a fourth-year Political Science major, minoring in Human Geography. She is interested in issues of urban, political and social geography. In her free time, she enjoys reading and swimming. She is excited to work with the Trail Six team this year and read everyone's submissions!

Mary Kristen

Mary Kristen is a fourth-year Geography major concentrating in Environment and Sustainability. She is especially interested in the opportunities of using GIS to analyze data and make more informed decisions when tackling environmental issues. After graduation she would love to do field work and is interested in exploring how different ecosystems store carbon. Additionally, Mary hopes to explore opportunities for combining indigenous knowledge and science with western sciences. Apart from her studies, Mary loves skiing, climbing, and biking in beautiful British Columbia. She also loves riddles so if you see her around the geography building, feel free to put her riddle skills to the test.

Henry Kwan

Henry Kwan is in his fourth year and studying Environment and Sustainability here at UBC. His main interest in this program lies in migration, economics, and GIS. World news has always fascinated him, particularly politics. It's no surprise that Henry picked Geography as his field of study. Some of Henry's favourite hobbies include listening to music, hiking, and travelling. He recently came back from Japan after finishing his last school term in 2019. Henry is in his final year of studies at UBC and he hopes to make the best out of it.

Kia Green

Kia is a Political Science and Human Geography double major, expecting to graduate this May! Her academic interests lie in political philosophy, European geopolitics, as well as sustainability. Kia's non-academic hobbies include playing intramural and urban-rec soccer; she also really enjoys listening to and playing all different genres of music. During her time at UBC she has been involved with the GSA in her second year and went on exchange to Amsterdam in her third year. Kia is planning on moving to New York after graduation and is excited to see where life takes her.

Phoebe DeLucco

Phoebe is a Geography student in her last year, majoring in Environment and Sustainability and minoring in Urban Studies. She grew up in various countries in East and Central Africa and owes her interest in geography, and fascination for different cultures, customs, languages, foods, etc., to her nomadic upbringing. Her interests include reading, writing, art, cities and transportation, travelling, and videos of unlikely animal friends. After graduation, Phoebe plans to expand on her Urban Studies minor and possibly pursue a masters in Sustainable Urban Planning in hopes of one day planning a sustainable city in the Global South.

Sara Hill

Sara is in her third year of her Geography degree (Environment & Sustainability), and is interested in pursuing teaching, and environmental education. Her passions outside of the classroom include baking bread, being fascinated by dinosaurs, and pretty much anything that will get her outside. She is so excited to be part of Trail Six this year!

Shira Sanghvi

Shira is a third-year student who grew up in Oakland, California on Ohlone land. She is currently completing a degree in Geography, as a part of the Environment & Sustainability program, and Creative Writing. Her academic interests center around issues of environmental justice. Outside of the classroom, she can be found reading, folding origami, hiking, and making and listening to music.

Authors

Max Kittner

Max Kittner is a third-year human Geography major and urban studies minor. Raised in the Washington, DC area, he has been riding the Metro since before he could remember. From a family of artists, Max found his niche dreaming of fictional cities and drawing their maps, distracting him from the struggle of fifth-grade math. Little did he realize that his distractions in class would drive a passion for urbanism, planning and transport.

Sean Cameron

Sean is a fourth-year Geography student majoring in Environment and Sustainability and is a Policy Research Assistant for the UBC Environmental Policy Association. He aims to pursue a career in public policy and sustainable development, where he aspires to amplify the voices of marginalized communities in the fight against climate change. His goal is for future environmental policies to work to reduce social and economic inequities, and to lift up all members of society. Sean is a podcast enthusiast, and in his spare time can be found cooking or basking in the sun, depending on the day's weather.

Alana Davies

Alana Davies is a UBC student graduating in May 2020 with a Bachelor of Arts in International Relations and Human Geography. Born and raised in Vancouver, she hopes to pursue a diplomatic career in Canada's foreign service. She spent most of 2019 in Ottawa working as a co-op student for Global Affairs Canada, where she plans to return upon graduation. Her geographic interests include Canadian regional identities, urban planning, Canada-US security and defence

cooperation, and multinational corporations. In her spare time, she enjoys choir, cooking, travelling, and improving her French and Spanish.

Marianne Carre

Marianne Carre is a Dual Degree student of Sciences Po Paris (France) and UBC (Canada). Marianne was born in Nîmes, Languedoc Roussillon, France. Imbued with her natal French and her maternal Spanish cultures, she grew up on the Mediterranean Coast. There, she developed a sense of place and belonging which she thinks influenced both her Academic and professional choices. Marianne is undertaking a dual Bachelor of Arts in Political Sciences and Geography where she studies the issues and governance of mobility equity, spatial and environmental justice. She is also passionate about cinema and filmmaking. Creating a bridge between her various centre of interests, Marianne directs short-movies and documentaries dealing with issues related to accessibility and spatial (in)equalities.

Angela Liu

Angela is a third year student majoring in Geography: Environment and Sustainability with a minor in Environmental Sciences. She is passionate about biodiversity conservation, ecology, and science communication, and had the opportunity to bring these interests into her work at the Beaty Biodiversity Museum. She hopes to one day contribute to this body of knowledge in her own research endeavors. Outside academics, she enjoys listening to audiobooks, bingeing movies, and pushing her lactose intolerance to its limits.

Anna Kaveney

Anna Kaveney is in her final year in the Faculty of Land and Food Systems, majoring in Global Resource Systems. Her program combines focuses on studies of Latin America and environmental science. She is particularly interested in hydrology, glaciology and geomorphology. Outside of academics, Anna enjoys rock-climbing, skiing, making visual art and playing music.

Henrique Fernandes

Henrique Fernandes is a fourth-year student studying International Relations at the University of British Columbia. Originally from Brazil, he is interested in

studying and researching about climate change politics, international climate diplomacy, queer politics, and human rights. In the past, he has attended UN climate change and sustainable development conferences as a youth delegate for the British Columbia Council for International Cooperation and worked for the UBC Climate Hub. All in all, Henrique is really excited to have his research published on the Trail Six Journal and also very grateful for this opportunity.

Hannah Sarchuk

Hannah Sarchuk is a fourth-year student at UBC, finishing a B.A. in Geography (Environment & Sustainability) and Political Science. Her current academic interests include public policy, international organisations and urban sustainability. Hannah moved to Vancouver from her hometown of Toronto, and recently returned from a semester abroad at the University of Amsterdam. Outside of class, you can find her at a local brunch spot, running by the beach, or on campus walking between club meetings. After graduating in May, Hannah aspires to work internationally for a non-profit organisation or political institution.

Editor-In-Chief

Nigel Tan

Nigel is a fourth year Geography student majoring in Environment and Sustainability who is proud to have worked on Trail Six for two years. Fascinated with renewable energy and sustainable development, he was drawn to geography due to its integration of politics, economics, and the environment. Beyond academia, Nigel enjoys reading the news and cityscape photography.

Layout & Design

Matt Campos

Matt is a third-year Human Geography major from a quiet suburb near Boston in the United States. In high school, he loved going to the city with his friends, exploring the avenues, culinary delights and beautiful ocean views that Boston had to offer. He continues to channel his passion for cities and community development by taking classes in urban studies and political geography. Specifically, his interest lies in how the balance of power between stakeholders in

cities can drive innovation in cities but also perpetuate social problems like racism and discrimination. Outside of his academic activities, Matt works as a development and sponsorship assistant for UBC's Faculty of Applied Science. In his spare time, he enjoys writing short stories, exploring the Vancouver food scene, and going on relaxing runs in the park.

Alicia Sun

Alicia is a fourth-year student majoring in Visual Arts. Originally starting out as a Human Geography major, she recently changed her degree to visual arts in pursuit of her passion for digital art. In her practice, she questions what it means to be a human or machine, bridging the gap between the two by making data visualizations (such as graphs and maps) more visually compelling. During her free time, you can catch her working at UBC Geering Up Engineering Outreach, playing with her cat, or cooking. She is excited to apply her knowledge of graphic design to help the Trail Six team publish this year's edition.

Faculty Acknowledgements

Dr. Geraldine Pratt (Department Head)

Dr. Trevor Barnes

Dr. Michele Koppes

Dr. Philippe Le Billon

Dr. Brian Klinkenberg

Dr. Loch Brown

Maria Cervantes

Peter de Montmollin



TRAIL SIX: UNDERGRADUATE JOURNAL OF GEOGRAPHY
VOLUME 14: 2019-20

© UBC GEOGRAPHY STUDENTS ASSOCIATION, MARCH 2020