Climate Crisis Induced Migration: A Global Framework to Minimize and Manage Large-Scale Climate Refugees and Migrants

Bipin Kumar Badri Narayanan[1,2,*], Megan L. Shipman[1,3,*], Liam Foyle[1,3,+], Kaitlin Kharas[1,3,+], Bryn Livingston[1,3,+], Nancy T. Li[1,3,+], Maria Victoria Medeleanu[1,3,+], Luna Taguchi[1,3,+]

[1]Toronto Science Policy Network, Toronto, ON, Canada
[2]University of New Brunswick, Fredericton, NB, Canada
[3]University of Toronto, Toronto, ON, Canada
*Equal contributions towards writing, research, and reviewing
+Equal contributions towards research and reviewing
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Corresponding Author: bbipinkumarb@gmail.com
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Executive Summary: The ongoing climate crisis will force the migration of up to 1.2 billion people by 2050. Since climate displacement has already begun, having policies in place to mitigate predictable issues that will arise from mass migration and safeguard vulnerable populations is essential. We recommend assigning a special "climate refugee/migrant" status to ensure human rights protections for these refugees/migrants. We also propose preventative measures to help reduce climate-related immigration and essential measures to facilitate refugees adapting to new regions. Finally, we recommend strategies to implement a "Loss and Damage" fund for the developing countries most vulnerable to climate-related disasters. These policies address a critical gap in climate migration policy and could inform the upcoming Conference of the Parties (COP 28) of the United Nations Framework Convention on Climate Change (UNFCCC) in Dubai in November 2023.

I. Introduction

The climate crisis is increasingly affecting and upending lives in many lower and middle-income countries (United Nations Conference on Trade and Development 2021) despite lower and middle-income countries contributing fewer greenhouse gas emissions than wealthier countries (Friedlingstein et al. 2020). The climate crisis serves as a 'multiplier' by exacerbating existing risks, such as frequent floods and longer droughts. It also creates new risks like food and water insecurity, contributing to conflict and compounding displacement. The climate crisis is not something that will happen; it is something happening now (Lustgarten 2023). Impacts vary regionally and affect communities differently. For example, in New Zealand, a relatively wealthy and developed country, climate migration can be a "managed retreat" - part of an organized adaptation strategy (Ministry for the Environment 2022). Meanwhile, those fleeing climate-related disasters in Central America struggle to find even temporary shelter on their way to destination countries such as the United States (Linares 2021).

As refugees face multiple drivers of displacement, climate conditions contribute to and exacerbate systemic failures, including poverty, food insecurity, and conflict. By 2050, the number of climate refugees could reach 1.2 billion, and helping this vulnerable mass of people, the

"world's forgotten victims of climate change," will require collective effort (Institute for Economics and Peace 2020; Tetsuji 2021). Faced with an influx of climate migrants, wealthier, less vulnerable destination countries could attempt to restrict climate migration to protect their interests. In Sweden, for example, the minority center-right government faces pressure from the right-wing Sweden Democrats to reduce the number of migrants they accept, citing concerns about migration pushing down wages (Da Silva et al. 2023). At the same time, if we wish to avoid the most catastrophic effects of climate change, including even greater mass migration, mitigating displacement risk through collective efforts will be imperative (Kline 2020).

Recently, Bangladesh successfully mitigated climate-related displacement when cyclones caused floods and increased 53% of farmland salinity (Cordaid International 2021). Farmers could not grow their usual crops, which posed a deadly threat to communities that relied on their agriculture to survive. However, with training from local non-government organizations (NGOs) and support from the Dutch research project "Salt Solution," farmers adapted to the new conditions by growing salt-tolerant crops, including carrots, potatoes, kohlrabi, cabbage, and beets (Cordaid International 2021). Around 10,000 farmers received training, resulting in two to three extra harvests per year.

Bangladesh is also working to prevent existing political refugees from becoming further displaced as climate refugees. More than 900,000 Rohingya refugees from neighboring Myanmar live in refugee camps in Bangladesh (De La Portilla 2021). The United Nations High Commissioner for Refugees (UNHCR) is working with local partners to plant fast-growing trees in camps prone to landslides during monsoons, hoping to stabilize the soil and mitigate the need for further migration.

Despite success stories like those in Bangladesh, we cannot rely solely on mitigating migration. Many vulnerable populations will continue to migrate because they no longer have easy access to water, food, and sanitation or because of increasingly frequent floods, heat waves, or drought conditions. Migrating is already a reality for millions of climate refugees living on the frontlines of the climate crisis. As the threat of climate change increases globally, the number of refugees will grow exponentially. Therefore, the UN must create a global framework to minimize and manage large-scale climate migration by working with individual governments to guarantee refugee status as a human rights protection for these individuals.

II. Who is a climate refugee?

The term "climate refugee" has been used since 1985 when UN Environment Program (UNEP) expert Essam El-Hinnawi defined climate refugee (CARFMS – ORTT) – also called climate or environmental migrants – as people who have been "forced to leave their traditional habitat, temporarily or permanently, because of marked environmental disruption." However, this definition fails to capture why people have emigrated from an area where climate change may unknowingly be the root cause of greater problems. Several interconnected factors, including food shortages, war, or unrest, may be directly or indirectly attributable to climate change (Huang 2023).

According to the UNHCR report, Global Trends in Forced Displacement 2020 (United Nations High Commissioner for Refugees 2020), ninety-five percent of all conflict displacements in 2020 occurred in countries considered vulnerable or highly vulnerable to climate change. Examples include Syria, Somalia, and Bangladesh. Because of this, Amar Rahman, Global Head of Climate Change Resilience Services at Zurich Insurance Group, a private sector company with extensive research in global risk and sustainability, believes the definition of a climate refugee should apply to a much broader range of people, including "anyone who has been impacted by a disruption in their society that could somehow directly or indirectly be related to short- or long-term change in the environment." (McAllister et al. 2023). This broader definition makes it clearer that individuals displaced indirectly by climate-driven events may still fit the definition of "climate refugee." For example, if crop failure due to increasing soil salinity had displaced the Bangladeshis referenced above, this broader

definition would have helped them claim "climate refugee" status, even though their home was not made directly and acutely unlivable due to unbearable heat or natural disaster.

According to the UNHCR, weather-related events – such as floods, storms, wildfires, and extreme temperatures – have forcibly displaced an annual average of 21.5 million people since 2008. In 1995, rising sea levels submerged half of Bangladesh's Bhola Island, - leaving 500,000 people homeless. Scientists predict Bangladesh will lose 17% of its land by 2050 due to flooding caused by climate change. The loss of land could lead to as many as 20 million climate refugees from Bangladesh (National Geographic 2022). Expanding the scope of climate refugee status would ensure that people displaced due to the effects of natural disasters and long-term changes in climate/environment receive at least the basic human protections given to refugees fleeing war. Creating protections for displaced people would also limit internal/regional conflict as their basic needs are protected.

i. What rights does a climate refugee have?

Currently, climate refugees/migrants lack protected status in international legal frameworks (Climate Refugees, n.d.; The Economist 2018; Martin 2019; International Refugee Assistance Project 2023). A report published in March 2018 by the UN Human Rights Council found that many climate refugees do not fit the definition of "refugees" and, therefore, do not receive basic rights and protections such as access to food, water, housing, education, or protection from deportation. Similarly, a White House report published in November 2021 states that "Current legal instruments to protect refugees "do not readily lend themselves to protect those individuals displaced by the impacts of climate change, especially those that address migration across borders" (Yayboke et al. 2022). The Global Compact for Safe, Orderly, and Regular Migration (adopted by 164 countries—excluding the US—in Marrakech in December 2018) called on countries to make plans to prevent relocating due to climate and to support those forced to relocate. However, these agreements are neither legally binding nor sufficiently developed to support climate migrants ("The Climate Crisis, Migration, and Refugees | Brookings" 2022). The lack of protections is clear when we consider the dangers migrants face: a UN report claims that 50,000 migrants lost their lives during migration between 2014 and 2022 (OHCHR 2023).

Some governments, including the US, Canada, and European countries, also lack a legal definition of "climate refugees/migrants" in their laws and practices, resulting in no protected status as refugees. Because the climate crisis and many related causes of emigration do not fall under those protected by the 1951 Refugee Convention, this gap in refugee protection must be addressed. Therefore, the United Nations, COP, individual countries, their governments, and legal bodies must redefine the term "climate refugees/migrants," considering conditions caused by climate change as a threat to human rights and recognizing the deadly threat that climate refugees face, even if that threat is less immediate than the dangers that refugees fleeing war face. The UN should standardize a broad and inclusive definition for climate refugees that guarantees basic rights and is agreed upon by most stakeholders. Once defined, individual countries can modify their definitions to be more specific within their own legal frameworks as long as they maintain inherent human rights protections.

III. Reducing displacement through climate resilience

One possible way of addressing migration is to mitigate factors that cause it in the first place. Though many causes may force people to migrate from their homelands when dealing with the effects of the climate crisis, the primary reasons for displacement are access to clean water, sufficient food sources, and access to sanitation. Therefore, creating policies to increase economic opportunity, developing or providing technology to effectively manage water, improving and adapting agricultural practices, i.e., by growing more resistant crops, such as in Bangladesh, and improving access to innovative sanitation technologies would help reduce or prevent migration from affected areas.

A successful example of climate adaptation is "green reintegration" strategies. Green reintegration practice involves combining environmental and climate considerations into reintegration programming to 1) facilitate the reintegration of returning migrants through developing various initiatives that contribute to climate change adaptation and disaster risk reduction and 2) to reduce forced out-migration resulting from the negative impacts of climate change ("Mainstreaming Environmental and Climate Considerations into Migrants Reintegration Programming").

The UN International Organization for Migration (IOM) initiated one such project in Senegal where they trained emigrants on sustainable farming in areas ("Migration and Environment: Making the Case for Sustainable Reintegration" 2022) with changing conditions and then had them return with new economic and agricultural skills. Increased training and knowledge allowed areas that were becoming untenable to be reutilized in changing conditions. Ultimately people who initially left could resettle in their land. However, such solutions require heavy investments and research, which are not widely available in these developing countries.

IV. How do we fund these initiatives?

At COP27 in November 2022, a breakthrough agreement was reached to provide "Loss and Damage" funding (The United Nations Climate Change Conference 2022) for vulnerable countries hit by climate disasters. Details of the new funding arrangements were not decided, but countries agreed to establish a 'transitional committee' to modes of operationalizing them at COP28 in Dubai. Countries also agreed to operationalize the Santiago Network for Loss and Damage (Santiago Network) to provide technical assistance to vulnerable developing countries. Technical assistance refers to knowledge, research, technical training, and various resources and technology required for adapting to the adverse climate crisis effects. Offering technical assistance is a significant first step in acknowledging that the people and countries least responsible for climate change are affected first and most severely. The COP27 agreements are considered significant progress, with countries agreeing to pursue the global goal of adapting, improving resilience amongst the most vulnerable populations, with a conclusion on climate finance for developing countries expected at COP28.

As per the 2015 Paris Climate Agreement, developed countries agreed to provide $100 billion per year to developing countries to assist them in mitigating the effects of the Climate Crisis and adapting to it. Despite intentions, significant financial planning, follow-through, and punitive measures must improve for countries that fail to contribute.

Annual contributions towards the Loss and Damage fund should be calculated based on factors, such as historical carbon emissions, current per-capita emissions in the country, and government subsidies to fossil fuel companies. A recent report shows that the G20 poured more than one trillion dollars into fossil fuel subsidies despite COP26 pledges, according to the International Institute for Sustainable Development (IISD) think tank (Laan et al. 2023).

For example, the weight of these factors should be distributed such that a government contributes 40% based on the amount of fossil fuel subsidies they pay, with governments contributing at least half of their current fossil fuel subsidies, 40% based on historical emissions, the total amount calculated based on the amount of fossil fuel subsidies, and countries with per-capita emissions greater than two tons paying the remaining 20% based on the current per-capita emissions. The contributions should double and be revised and recalculated every five years, ensuring that countries shifting their economies towards renewable energy sources faster are incentivized, not penalized. This methodology would ensure that countries that have historically contributed significant emissions to build their economies pay a fair share to help developing countries make their green transition. Moreover, we recommend that developing countries such as China, Saudi Arabia, Indonesia, India, etc., are factored in as well since they are contributing significantly towards the current increase in carbon emissions. Using this methodology would also force the governments to reduce their fossil

fuel subsidies and shift the amounts towards renewable energy solutions, thus expediting their transition to renewable fuels.

Using this methodology, total contributions to the Loss and Damage fund would greatly exceed the 100 billion dollars promised by developed countries in the 2015 Paris Climate Agreement and would agree with the G-20 Leaders declaration in 2023, which states that USD 5.8-5.9 trillion will be required in the pre-2030 period for developing countries to reach net zero by 2050 (Koshy 2023b). However, the amount would still be less than the annual 4-6 trillion dollars of investments required to address the climate crisis, according to the Sharm el-Sheikh Implementation Plan (UNFCCC 2022). Using this methodology would ensure increasing costs due to inaction are considered; as the costs to combat the climate crisis increase each year we delay addressing the issue.

V. Accountability and implementation

At COP27, a 'new collective quantified goal on climate finance' in 2024, considered developing countries' needs and priorities. The Sharm el-Sheikh Implementation Plan (UNFCCC 2022) agreed on at COP 27 highlights a global transformation to a low-carbon economy; however, it requires annual investments of at least four to six trillion dollars. Delivering such funding will require the current financial system and structures such as the World Bank, IMF, etc. to transform swiftly and comprehensively. Processes, governments, central banks, commercial banks, institutional investors, and other financial actors may also need to engage.

Current trends indicate that this financing will not be met. According to the 2015 Paris Climate Agreement, developed countries jointly agreed to mobilize 100 billion USD annually by 2020. Since this money has yet to materialize, leaders of developing countries have shown skepticism about the success of these initiatives. Thus, the United Nations and COP should establish accountability measures for both developing and developed countries to ensure the success of these initiatives.

i. How can accountability be established?

We need to ensure that the world and individual countries reduce their carbon footprints and that we do not cross 1.5 degrees Celsius above the pre-industrial levels, as we have already reached the 1.1 degrees Celsius mark (McKay et al. 2022).

To ensure developed countries reduce their carbon footprint and contribute to the Loss and Damage fund, those that fail to meet their commitments should be obligated to contribute more toward the fund than initially agreed upon. Similarly, the longer developed nations fail to reduce their carbon footprint, the more they ought to contribute towards the Loss and Damage fund.

For example, say country A is supposed to contribute ten billion dollars per year towards the Loss and Damage fund, but it failed to reduce its emissions by 10% in a year. In the first year, they would have to contribute 20% more to the Loss and Damage fund, i.e., two billion, for a total of twelve billion. For subsequent years, the country's additional increase to the Loss and Damage fund will be calculated as a percentage by which the country has failed to reduce its emission target multiplied by factors of two and the total number of years since the mechanism was established. Under this system, if country A continues to miss its emissions targets by 10% every year, its additional contribution towards the Loss and Damage fund would double every five years as the severity of the climate crisis increases. Developed countries' base contributions towards the Loss and Damage fund are expected to increase to combat the growing severity of the climate crisis.

Similarly, developing countries that meet their goals of reducing carbon emissions and successfully mitigate and adapt to the effects of the climate crisis should receive additional funding, calculated using the same method used for developed countries to speed up their transition towards a sustainable low-carbon economy.

This mechanism acts as a "carrot and stick" to developed countries as they aim to minimize their contributions to the Loss and Damage fund.

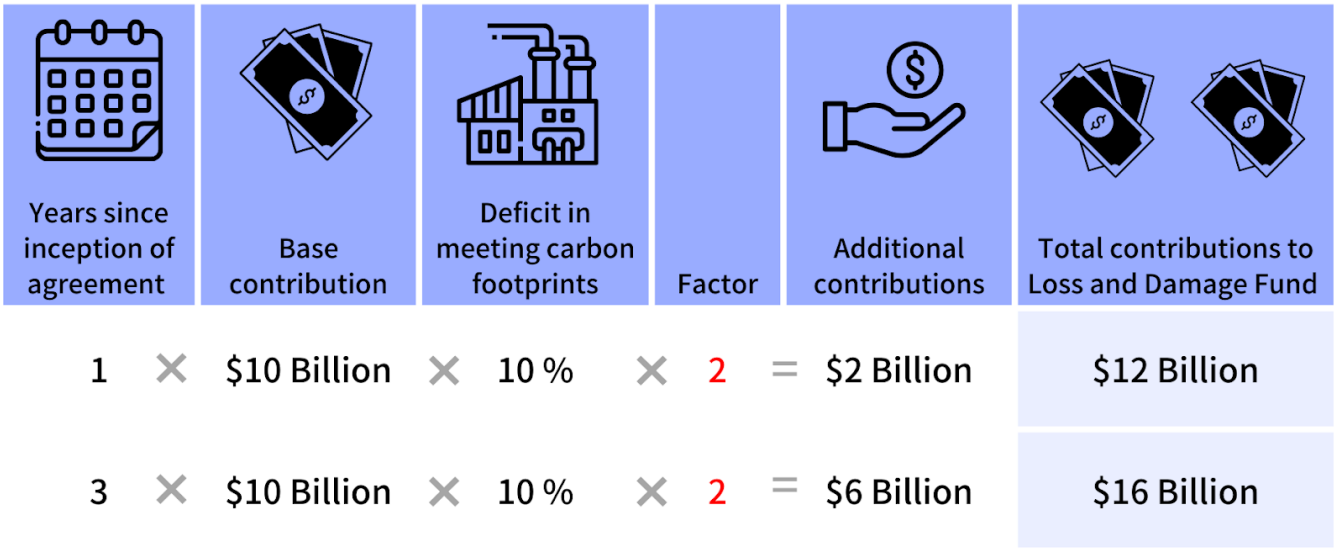

Figure 1: Example calculation of additional contributions towards the Loss and Damage Fund.

Here, the "carrot" represents the potential reward for countries meeting their emissions targets. The "stick" represents the potential consequences for countries that fail to meet their targets, i.e., contributing more to the Loss and Damage fund.

For developing countries, this framework provides an incentive to reduce their carbon footprint and speed up their transition to a sustainable low-carbon economy, as the faster they reduce their carbon emissions, the quicker they receive additional funding to help in their transition to a low-carbon economy.

ii. How does this address the problem of climate migration?

Importantly, we cannot prevent climate migration altogether, as some populations have no option but to leave as the consequences of climate change upend their lives; therefore, our best option is to reduce the number of climate refugees/migrants.

To ensure climate refugees/migrants successfully integrate into their societies, host/developed countries should create integration programs for climate refugees/migrants to help them adapt to new environments. This would involve aspects of health, housing, employment, and other facets of resettlement. Public health initiatives need to be in place to help prevent disease from spreading, including educating refugees/migrants about diseases they may be unfamiliar with within their new region, alongside vaccination campaigns (Rikani, Frieler, and Schewe 2022). Adequate and affordable housing must be available, and policies must also be in place to identify work qualifications.

A significant hindrance to integrating refugees/migrants is that host countries often do not recognize skills acquired in their countries of origin. Thus, they need more skill-specific economic opportunities. Usually, this is a problem for people fleeing civil war or facing political persecution, as their country of origin or local institutions may not cooperate. However, this might not necessarily be true for climate refugees/migrants. Developed countries accepting climate refugees/migrants should also ensure new climate refugees/migrants are trained according to their employment standards and ensure they understand cultural and social practices, thus facilitating integration and contribution to the economy.

The United Nations and developed countries should also establish a uniform international framework for recognizing climate refugees/migrants' qualifications, skills, and experience. This would streamline integration, thus reducing the processing backlog and easing multiple countries' immigration systems.

As developed countries provide developing nations the necessary funding to address climate

crisis effects, they can continue accessing clean water and resources to improve agricultural and sanitation practices, making them less vulnerable to climate crisis consequences. As the vulnerability of developing countries is reduced, the need for migration decreases, thus reducing climate migration.

We can use the similar "carrot and stick" accountability mechanism used for contributions towards the Loss and Damage fund to address the inevitable issue of climate refugees/migrants. We recommend that developed countries failing to meet the carbon emissions targets consider accepting more climate refugees/migrants from vulnerable countries' populations. Developed countries such as Canada, Germany, and others can utilize this as an opportunity, as many face a worsening demographic crisis and a shortage of skilled workers (Mallees 2022; The Local 2023). Developed countries should ensure climate refugees fully integrate into their societies and succeed in their new homes.

VI. Conclusion

With global temperatures expected to breach 1.5°C above pre-industrialized levels by 2028 (Harvey 2023), we must prepare for people migrating to escape the effects of the climate crisis. In 2022, 70% of refugees came from regions suffering from climate shocks and extreme weather conditions (UNHCR 2023).

International bodies such as the UN, COP, IOM, etc., and national governments must expand the term "climate refugees," protecting these vulnerable populations against human rights threats and establish an internationally recognized framework for valuing climate refugees' skills, qualifications, and experiences to facilitate integration into host countries. Developed countries might consider this an opportunity to address skilled labor shortages caused by demographic changes (Mallees 2022; The Local 2023).

An effective strategy to aid vulnerable populations in countries most affected by climate crises is to help them adapt to changing climatic conditions. One method is providing training and resources, improving their resilience to climatic threats, and reducing their need to leave their home countries. Developed countries failing to reduce emissions should be responsible for additional contributions beyond the COP27 Loss and Damage fund to help fund resilience efforts in vulnerable countries in the global south.

Critically, international, multilateral mechanisms to manage climate crisis-induced migration are lacking. By establishing the necessary policies and mechanisms to fund climate adaptation and mitigation and defining a framework for accepting climate refugees/migrants, we can better manage the active and growing climate migration concern while upholding the human rights of those most affected.

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Bipin Kumar Badri Narayanan is a Master's student studying Computer Science at the University of New Brunswick. He enjoys writing science policy memos and working in a team to develop evidence-based proposals on various topics such as AI, Privacy, Climate Change, Immigration, and Post-secondary education. Bipin Kumar has been the External Affairs Director at the Toronto Science Policy Network, a student group dedicated to engaging the community in the science-policy interface. He also works as a government relations coordinator at the University of Regina Students Union (URSU). He also volunteers with the Canadian Science Policy Centre(CSPC) and Support Our Science(SOS).

Megan Shipman has a Ph.D. in neuroscience and works as a postdoctoral fellow in the Department of Psychology at the University of Toronto. She researches the impact of diet and inflammation on voluntary and automatic behavior. She is interested in utilizing science and current research to inform policy.

Liam Foyle is a Master's student in the Department of Chemical Engineering and Applied Chemistry at the University of Toronto. A member of Elizabeth Edwards' lab, Liam, focuses on the bioremediation of recalcitrant fluorinated pollutants named PFAs. Liam is interested in science outreach, communication, policy, and environmental issues.

Kaitlin Kharas is a Ph.D. candidate researching pediatric brain cancer biology at SickKids and the University of Toronto. She is strongly interested in evidence-informed decision-making, scientific literacy, and supporting graduate student education. She is the former Co-President of the Toronto Science Policy Network.

Bryn Livingston is a Ph.D. candidate in the Department of Laboratory Medicine and Pathobiology at the University of Toronto. She is studying recurrent mutations and their functions in pediatric brain cancer medulloblastoma. Bryn is a 2023-2024 Co-President of the Toronto Science Policy Network, a student group dedicated to engaging the community in the science-policy interface. She is also interested in science communication and is a volunteer presenter with the Canadian Cancer Society Research Information Outreach Team (RIOT). Bryn is exploring career options in science communication and writing.

Nancy T Li is a Ph.D. candidate in the Department of Chemical Engineering and Applied Chemistry at the University of Toronto. Nancy is a member of the McGuigan lab, and she is studying novel engineered tissue models of pancreatic ductal adenocarcinoma for high-throughput and high-content investigation of disease progression, therapeutic resistance, and recurrence. Nancy is interested in scientific communication, outreach, and mentorship.

Maria Victoria Medeleanu is a Ph.D. candidate at the Department of Physiology (Respiratory Platform) at the University of Toronto and SickKids Hospital, studying how early-life exposures affect immune development and pediatric asthma. Maria is also deeply interested in public health policy and is receiving a Collaborative Specialization in Public Health Policy at the Dalla Lana School of Public Health. She is the 2023 Co-president of TSPN, dedicated to developing a platform to engage in evidence-informed science policy.

Luna Taguchi is a Ph.D. student in the Department of Ecology and Evolutionary Biology at the University of Toronto. She is studying the evolution of infectious disease, with a particular interest in using mathematical models to understand how simultaneous infection of different pathogen strains can determine infection outcomes. She is interested in science communication and evidence-based public health policy.