



The Feeling That We Must Know: Health System Strengthening to Build Resilience to Climate Change in Kiribati and Tuvalu

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**The Feeling That We Must Know:
Health System Strengthening to Build Resilience to Climate Change in Kiribati and Tuvalu**

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The Harvard Medical School

in Partial Fulfillment of the Requirements

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List of Acronyms

ADG	Assistant Director-General
BPC	British Phosphate Commission
BRICS	Brazil, Russia, India, China, South Africa
CFR	Code of Federal Regulations
CO ₂	Carbon Dioxide
COP15	15 th Conference of the Parties to the UNFCCC
DFAT	Australian Department of Foreign Affairs and Trade
DG	Director-General
FAO	Food and Agriculture Organization
G77	Group of 77
GAVI	Global Alliance for Vaccines and Immunization
GCF	Green Climate Fund
GDP	Gross Domestic Product
GEF	Global Environment Facility
HRH	Human Resources for Health
KANI	Kiribati-Australia Nursing Initiative
LDCs	Least Developed Countries
LMICs	Low and Middle Income Countries
NGOs	Non-Governmental Organizations
ODA	Official Development Assistance
PIC	Pacific Island Countries
SIDS	Small Island Developing States
SPC	Secretariat of the Pacific Community
UN	United Nations
UNCED	UN Conference on Environment and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
US	United States
USD	United States Dollar
WFP	World Food Programme
WHA	World Health Assembly
WHO	World Health Organization
WMO	World Meteorological Organization
WWII	World War Two

Abstract

Title: The Feeling That We Must Know: Health System Strengthening to Build Resilience to Climate Change in Kiribati and Tuvalu

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Abstract: In 1993, following on from the UN Conference on Environment and Development (UNCED) in Rio, the World Health Assembly called for coordination between UN bodies and multilateral financial mechanisms to enact a global strategy focused on the intersection of health and the environment. Nearly a quarter of a century later, the World Health Organization has yet to be accredited to any of the UN Framework Convention on Climate Change (UNFCCC) financial mechanisms, and there are no dedicated health funding facilities within the global climate finance architecture. Because the health burdens of climate change are inequitably distributed, with the bulk of the negative consequences felt by poorer countries with negligible carbon footprints, global health delivery will play an integral role in mitigating the inequitable effects of climate change. To do so effectively, the health sector will need to make inroads into capturing some of the resources made available by the burgeoning field of climate finance.

This research entailed participation in a nascent United Nations Development Programme/World Health Organization project entitled 'Building Resilience of Health Systems in Pacific Island LDCs [Least Developed Countries] to Climate Change', one of the first examples of health sector leveraging of climate finance. The project is slated to be rolled out in four of the most resource poor, climate change vulnerable countries in the world: Kiribati, Solomon Islands, Tuvalu, and Vanuatu. The research first utilized the health policy and systems research methodology to delineate instances of health-related initiatives within the existing climate finance architecture. This was then coupled with interviews of 'positive outliers', *viz.* those policymakers and stakeholders who have successfully utilized climate finance for health. Finally, the findings were employed to suggest strategies for the health sector to appropriately leverage climate finance going forward.

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Part 1 - Background Thesis Paper: La colonisation est réussie quand toute cette nature indocile est enfin matée

La nature hostile, rétive, foncièrement rebelle est effectivement représentée aux colonies par la brousse, les moustiques, les indigènes et les fièvres. La colonisation est réussie quand toute cette nature indocile est enfin matée. Chemins de fer à travers la brousse, assèchement des marais, inexistence politique et économique de l'indigénat sont en réalité une seule et même chose^{1,2}

1.1 Climate Colonialism in Small Island Developing States in the Pacific

In 2009, the second of Ioane Teitiota's three children was born in Auckland, New Zealand, colloquially referred to as the 'capital of the Pacific Islands', and the largest Polynesian city in the world³. Calling it a Pacific diaspora would invert the literal meaning of the term, since Pacific peoples are concentrated in Auckland more so than could possibly be the case on the myriad specks of land dispersed throughout the world's largest, most sparsely populated ocean. There are already more Tokelauans and Niueans in New Zealand, for example, than are left on Tokelau and Niue⁴.

Mr. Teitiota moved to Auckland from Kiribati, a string of low-lying coral atolls spread across the central Pacific Ocean, so far-flung it is the only country on earth which spans all four hemispheres. Mr. Teitiota moved to New Zealand because, 'attributable to climate change... [Kiribati now suffers] storm surges, extreme high spring tides, flooding of residential areas, raised floors of residences, depletion of fishing stocks, diminution of arable land, contamination of drinking water by salt water, sewage contamination of water tables, and deterioration of the population's health'⁵, facts noted by the High Court of New Zealand. Mr. Teitiota was in front of the High Court as arguably the world's first

¹ Fanon, Frantz. 2002. *Les Damnés De La Terre*. Québec: l'Université du Québec à Chicoutimi.

² 'A hostile, ungovernable, and fundamentally rebellious Nature is in fact synonymous in the colonies with the bush, the mosquitoes, the natives, and disease. Colonization has succeeded once this untamed Nature has been brought under control. Cutting railroads through the bush, draining swamps, and ignoring the political and economic existence of the native population are in fact one and the same thing'. (Fanon, Frantz. 2004. *The Wretched of the Earth*. New York: Grove Press. p.182.)

³ Fenton, Sabine. 1994. "Bringing Polynesian Languages into the 21st Century: The Le'o O Maui Project." In *Translation and Interpreting: Bridging East and West*, edited by R. K. Seymour and C. C. Liu, pp. 107-111. Honolulu: University of Hawaii.

⁴ *Ibidem*.

⁵ Priestley, John. 2013. "Teitiota V Chief Executive of the Ministry of Business Innovation and Employment." *NZHC 3125*. Auckland Registry: High Court of New Zealand. §§14 & 18.

climate refugee⁶ as he fought deportation, along with his wife and three New Zealand-born children, none of whom had been granted residency or citizenship during their time in the country. In his words: ‘I’m the same as people who are fleeing war. Those who are afraid of dying, it’s the same as me. The sea level is coming up, and I will die, like them’⁷.

But before discussing the disposition of Mr. Teitiota’s case, the greater significance of 2009 for Kiribati should be here noted. It was also the year of the 15th Conference of the Parties (COP15) to the UNFCCC in Copenhagen. COP15 failed to produce any legally binding emissions reductions, and was termed a ‘disaster’ so significant that it called into question the very legitimacy of global governance on climate change⁸. At this conference, Tuvalu – formerly yoked with Kiribati as part of the British protectorate and later colony called the Gilbert & Ellice Islands⁹ - mooted a proposal which would enforce emissions reductions on all countries, limiting warming to 1.5° C. The proposal proved to be so controversial that it was not considered even via an informal consultation process, leading the Tuvaluan representative to lead a walk-out which resulted in a suspension of the conference – an ‘unprecedented’ circumstance¹⁰. Most importantly from the perspective of this thesis, the conference also produced the first instance of the term ‘climate colonialism’ to ever appear in print¹¹. Related concepts such as ‘environmental racism’^{12,13}, ‘environmental discrimination’^{14,15}, and ‘environmental

⁶ Ni, Xing-Yin. 2015. “A Nation Going Under: Legal Protection for Climate Change Refugees.” *Boston College International and Comparative Law Review* 38(2): 329-66.

⁷ McDonald, Tim. 2015. “The Man Who Would Be the First Climate Change Refugee.” London: BBC.

⁸ Bäckstrand, Karin. 2011. “The Democratic Legitimacy of Global Governance after Copenhagen.” In *The Oxford Handbook of Climate Change and Society*, edited by J. S. Dryzek, R. B. Norgaard, and D. Schlosberg, pp. 669-84. Oxford: Oxford University Press.

⁹ The Ellice Islands became Tuvalu; Kiribati is the I-Kiribati gloss on ‘Gilbert’.

¹⁰ Coutts, Geraldine. 2009. “Tuvalu Rep in Copenhagen Spawns Unprecedented Walk-Out.” Canberra: Radio Australia.

¹¹ Gray, Louise and Rowena Mason. 2009. “Copenhagen Summit: Rich Nations Guilty of ‘Climate Colonialism’.” *The Telegraph*. p. 19. London.

¹² Weiskopf, Michael. 1987. “Rights Group Finds Racism in Dump Siting.” *Washington Post*. p. A7. Washington, D.C.

¹³ Smith, Beverley. 1989. “Crees Sue Ministers to Halt Hydro Project in Northern Quebec.” *The Globe and Mail*. Toronto.

¹⁴ Gelobter, M. 1992. “Toward a Model of Environmental Discrimination.” In *Race and the Incidence of Environmental Hazards: A Time for Discourse*, edited by Bunyan Bryant and Paul Mohai. Boulder, CO: Westview Press.

¹⁵ Baechler, Günther. 1999. *Violence through Environmental Discrimination: Causes, Rwanda Arena, and Conflict Model*. Dordrecht, Netherlands: Kluwer Academic Publishers.

oppression'¹⁶ had been used since the late 1980s and early 1990s, but linking the environmental destruction of climate change with Fanon's ideas on colonialism and health was novel, and reflected the overtaking of other environmental, economic, and political factors by the realities of climate change. The term 'climate colonialism' was first used by the Sudanese chief negotiator for the G77 group of nations to describe the unjust and inequitable disparity between historical carbon emissions (primarily by the developed Global North) and climate vulnerability (primarily felt by the Global South).

This thesis will argue that the colonialism of the late 19th century which led to the annexation of Gilbert & Ellice is extant in the climate-related immiseration of its successor countries Kiribati and Tuvalu. The dire circumstances of the I-Kiribati, exemplified by Mr. Teitiota, represent sequelae to a colonialism which is not yet post-.

1.2 The Role of the Health Sector in Climate Change Mitigation

The discourse and machinations concerning climate change have ignored the political and economic existence of the climate vulnerable. This is manifest in how these processes have 'weaken[ed] the supports for healthy life' globally¹⁷, and have done so inequitably: the bulk of the negative consequences of climate change are felt by poorer countries with negligible carbon footprints¹⁸. Because the social determinants of health are so central to health status and equity¹⁹, and because climate change in particular has been implicated in exacerbating the inequitable distribution of these determinants²⁰, the health sector will play an integral role in mitigating the inequitable effects of

¹⁶ Crawford, Colin. 1994. "Strategies for Environmental Justice: Rethinking Cercla Medical Monitoring Lawsuits." *Boston University Law Review* 74(2): 267-326.

¹⁷ World Health Organization. 2003. "Climate Change and Human Health: Risks and Responses." Geneva: WHO.

¹⁸ Blashki, Grant Andrew, et al. 2009. "Primary Health Care Responses to Climate Change." In *Climate Change and Social Justice*, edited by J. Moss, pp. 144-67. Carlton, Victoria: University of Melbourne Press.

¹⁹ Marmot, Michael and Jessica J Allen. 2014. "Social Determinants of Health Equity." *American Journal of Public Health* 104(S4): S517-S19.

²⁰ Costello, Anthony, et al. 2009. "Managing the Health Effects of Climate Change." *The Lancet* 373(9676): 1693-733.

climate change. If health is the human face of climate change, the health sector is an important part of the climate response.

Health vulnerability to climate change is largely concentrated in regions with particular geographic, demographic, epidemiologic, and socioeconomic characteristics. The most vulnerable are countries with lower elevations above sea-level coupled with higher proportions of people living near the coasts, higher annual mean temperatures and extremes of aridity or precipitation, pre-existing food and water security challenges, zoonotic disease reservoirs and endemic vector-borne and arbovirus disease species, and less development/infrastructure or health delivery apparatus²¹. This list is essentially a description of countries located in the Global South. It certainly delineates vulnerabilities characterizing Kiribati and Tuvalu. The unprecedented gains in the Global South over the last 50 years, both in human development and economic well-being, are projected to slow or even be rolled back by climate change²². But as mentioned above, health systems can play an integral role in mitigating these effects. As Kumar and Mukherjee note in their seminal paper entitled *Health as Development*, ‘recogni[zing] the primacy of good health as an essential component of human development... various forms of social protection and insurance need to be encouraged and introduced in order to safeguard the interests of the more vulnerable groups in society’²³. Though this was written over 20 years ago, before the likely health hazards of climate change were well understood, this prescient argument agitates for building health systems and thereby generating sustainable, resilient, equitable development gains for the most vulnerable.

²¹ World Health Organization. 2003. op. cit.

²² Stern, Nicholas Herbert. 2007. *The Economics of Climate Change: The Stern Review*. Cambridge: Cambridge University Press.

²³ Kumar, A. K. Shiva and Vanita Nayak Mukherjee. 1993. “Health as Development: Implications for Research, Policy and Action.” *Economic and Political Weekly* 28(16): 769-74.

Kiribati and Tuvalu each have among the highest health expenditure as a portion of GDP in the world²⁴. Both countries' high vulnerability to climate change caused the UN to defer their graduation from Least Developed Country status²⁵. In both countries, 'history and its erasure are often embodied as bad health outcomes'²⁶, so it is necessary to partially counteract this erasure with an account of the pathway to the present day.

1.3 The day has come when you must choose LIFE or DEATH

For observers of Tuvalu and Kiribati, the climate change iteration of the plunder-environmental devastation-forced migration cycle is imbued with a depressing familiarity. Just over a century ago, these same islands were the collateral damage in the race for the lynchpin of development and progress of that era: phosphates, indispensable for agriculture. Before humans possessed the ability to produce phosphate fertilizers from mined ores, the bulk of commercial-scale phosphate-based fertilizers came from the next richest source of these fertilizers: accumulations of bat and bird droppings²⁷. The small island states of the Pacific were uniquely situated to build up these deposits; migratory birds utilize the islands as rest stops along their peregrinations, and in concert with the resident avian inhabitants, cumulative tons of nutrient-rich droppings have been deposited on the small islands. Over millennia, these deposits were leached of impurities by rain and seawater, and eventually came to comprise the most concentrated source of these vital fertilizers in the natural world.

In the late 1800s, phosphate prospectors came across a motherlode of concentrated phosphate on 'Ocean Island', the British name for Banaba, one of the 33 islands which would become the nation

²⁴ The World Bank. 2014. "Health Expenditure, Public (% of Total Health Expenditure)" [accessed on 13 Nov, 2016]. Available at: http://data.worldbank.org/indicator/SH.XPD.PUBL?year_high_desc=true.

²⁵ United Nations Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States. 2015. "Criteria for Identification and Graduation of LDCs" [accessed on 13 Nov, 2016]. Available at: <http://unohrrls.org/about-ldcs/criteria-for-ldcs/>.

²⁶ Farmer, Paul. 2004. "An Anthropology of Structural Violence." *Current Anthropology* 45(3): 305-25.

²⁷ Beck, J. M. 1955. "The Phosphate Deposits of the Pacific." *1955/101/019086*. Canberra: Department of National Development, Bureau of Mineral Resources, Geology and Geophysics.

of Kiribati. A test shipment of 20 tons of phosphate was promptly sent through to London, establishing both purity and commercial viability. Not even the thinnest veneer of concern for inhabitants of the island or a ‘civilizing mission’ was evinced by early correspondence. The need to claim Banaba was expressly in service of profit and power: ‘I have strong reason to fear that if the deposits prove to be valuable, our German friends may see their way to... step over the line and annex Ocean Island’²⁸. This led the British representative to opine on ‘the most important business in connection with Ocean Island, viz, that of hoisting the British flag’²⁹. The supercargo of the survey ship wrote in his diary: ‘From all I can judge I believe that this place must be something wonderful [and] if Ocean is what I think it is, there is a fortune in it, if not several. We shall know before long. D.V. [*Deo Volente* = God Willing]’³⁰.

Because of the immense wealth that the island represented, Banaba was hastily annexed by the UK on 03 May 1900. The Banabans who had paddled out to greet the British ship were wrongly assumed to be the island’s chiefs or kings. Whether this misunderstanding was disingenuous or not, the fact that no mutually intelligible language was spoken casts doubt on the legitimacy of the agreement signed on the very first day of formal contact – with marks and crosses in place of the signatures of local inhabitants to signify their ceding of sovereignty and the literal loss of the land from beneath their feet. Walter Benjamin’s contention that ‘the origin of every contract also points toward violence’³¹ feels appropriate to invoke here.

This contract gave the Pacific Islands Company Limited the exclusive right to mine phosphate in return for the payment of a royalty of £50 per year for the next 999 years (roughly \$6447 USD per

²⁸ Williams, M. and B. MacDonald. 1985. *The Phosphateers: A History of the British Phosphate Commissioners and the Christmas Island Phosphate Commission*. Carlton, Victoria: Melbourne University Press. p.24.

²⁹ *Ibidem*.

³⁰ *Ibid*.

³¹ Benjamin, Walter. 2004. “Critique of Violence.” In *Selected Writings, Volume 1: 1913-1926*, edited by M. Bullock and M. W. Jennings. London: The Belknap Press of Harvard University Press.

annum in 2016 US dollars). The British received rather good value for money; by 1925 they were taking in over £1,000,000 per year in Australasia alone³² (over \$75,000,000 in 2016 US dollars)³³, which amounted to more than a 2,000,000% return on investment, perhaps an illustration of another Benjamin point: ‘there is no system of possession, regardless of its type, that leads to justice’³⁴.

As with climate change, the original plunder was only the beginning of the story. The Banabans did not initially resist the phosphate mining, on the condition it be accompanied with development work such as the building of houses, a port, and tram lines, along with the requirement that there not be interference with coconut trees or gardens. When this was not honored, they petitioned for compensation for the widespread destruction of their food-bearing trees and garden plots³⁵. When this failed, island-wide unrest resulted, with landowners ‘flatly refus[ing] to part with another square yard of their land unless it was taken by force’³⁶. But tensions were temporarily put on hold with the start of World War I. The German Navy was ensconced in the Pacific, the British were consumed with fighting their war, and Banaba settled into an uneasy peace as phosphate mining was on a temporary hiatus.

Demand for phosphate, and Banaban resistance along with it, rebounded quickly after World War I. The Banabans insisted on a re-negotiation of the exploitative arrangement, under the motto ‘We

³² King, Stacey M. and Raobeia Ken Sigrah. 2004. “Legacy of a Miner’s Daughter and Assessment of the Social Changes of the Banabans after Phosphate Mining on Banaba.” *Islands of the World VIII: Changing Islands - Changing Worlds International Conference*. Kinmen Island (Quemoy), Taiwan.

³³ Nye, Eric W. "Pounds Sterling to Dollars: Historical Conversion of Currency" [accessed on 15 Dec 2016. Available at: <http://www.uwyo.edu/numimage/currency.htm>.

³⁴ Benjamin, Walter. 2003. *The Origin of German Tragic Drama*. Trans. John Osborne. London: Verso. Quoted in Lesch, Charles H. T. 2014. “Against Politics: Walter Benjamin on Justice, Judaism, and the Possibility of Ethics.” *American Political Science Review* 108(1): 218-32.

³⁵ King, Stacey M. and Raobeia Ken Sigrah. 2004. op. cit.

³⁶ Eliot, Edward Carlyon. 1938. *Broken Atoms*. London: Geoffrey Bles.

are not greedy. But we want fair share'³⁷. This request was met not just with refusal, but with threats from the Resident Commissioner of the Gilbert and Ellice Islands colony:

Do you think your lands will not go? Do not be blind. Your land will be compulsorily acquired for the Empire. If there is no agreement who then will know the area of the lands to be taken? If there is no agreement where will the mining stop? If there is no agreement what lands will remain unmined? I tell you the truth—if there is no agreement the limits of the compulsorily acquired lands on Ocean Island will not be known. And your land will be compulsorily acquired... [C]onsider what I have said now that the day has come when you must choose LIFE or DEATH. There is nothing more to say. If you choose suicide then I am very sorry for you but what more can I do for you as I have done all I can. I am your loving friend and father.³⁸

The same year (1927), the Governor-General of Australia dispatched a telegram to the Phosphate Commission baldly asserting that 'As all the phosphate on Ocean Island will eventually be required it appears to Commissioners advisable that steps should be taken to secure another island or islands for the use of the Banabans when Ocean Island is no longer suitable for their habitation'³⁹. This view neatly presages the idea that Pacific peoples will have to emigrate because of climate change, which is coincidentally also Australian in origin⁴⁰. In 1996, the Australian bureau of Agricultural and Resource Economics highlighted the 'appeal' of relocating Pacific peoples in the face of climate change, citing net financial benefits for such a policy⁴¹. This attitude was subsequently reproduced in popular media. In 2001 alone, the *Sydney Morning Herald* reported 21 different times that forced migration from Tuvalu and Kiribati was an inevitability due to climate change. Al Gore's *An Inconvenient Truth* similarly used images of Tuvaluan spring tide flooding to advance a point that affected Pacific peoples 'have all had to evacuate to New Zealand'⁴². This narrative, almost wholly

³⁷ Teaiwa, Katerina Martina. 2015. *Consuming Ocean Island: Stories of People and Phosphate from Banaba*. Bloomington: Indiana University Press. p.144.

³⁸ Teaiwa, Katerina Martina. op. cit. pp.134-135. (Emphasis in original.)

³⁹ Sigrah, Raobeia Ken and Stacey M. King. 2001. *Te Rii Ni Banaba: The Backbone of Banaba*. Suva, Fiji: Institute of Pacific Studies, University of the South Pacific. p.323.

⁴⁰ Mortreux, Colette and Jon Barnett. 2009. "Climate Change, Migration and Adaptation in Funafuti, Tuvalu." *Global Environmental Change* 19(1): 105-12.

⁴¹ *Ibidem*.

⁴² *Ibid*.

non-Pacific in origin, has the insidious effect of excusing the submerging and sundering of entire nations and peoples as somehow expedient or cost effective, and elides the possibility that Pacific peoples ‘lead the kind of lives they value in the places where they belong’⁴³.

1.3.1 Left to work their own sweet will

The Banabans’ struggle against the colonial government reached a crisis point in 1928 when the Phosphate Commission gave itself the authority of eminent domain over ‘any land required for mining if its owners refused to make it available’⁴⁴. Banaban protest measures included women clinging to coconut trees in the face of strip-mining bulldozers. Prisoners from other Gilbert Islands were brought in and forced to serve as constables, tearing the women from their trees under force of arms⁴⁵. This upheaval prompted Colonial officials to set into motion a relocation scheme, beginning with setting aside a block of land on Rabi Island in Fiji (Rabi having itself previously been stripped of indigenous peoples in the late 19th century to clear space for a European-owned copra plantation⁴⁶), and paid for out of the annual royalty. Colonial officials remarked that ‘if only their present distress can be used as a means of persuading them to leave their island home, one of the most awkward problems of the Gilbert and Ellice Islands Colony will have been solved, and the B.P.C. [British Phosphate Commission] can be left to work their own sweet will on Ocean Island until the time when, about 45 years after the end of the war, there will be nothing left but a few limestone pinnacles sticking above the water’⁴⁷. With climate change, this vision of a depopulated island with naught but a few random pinnacles still above water may yet come to pass.

⁴³ Adger, W Neil and Jon Barnett. 2005. “Compensation for Climate Change Must Meet Needs.” *Nature* 436(7049): 328.

⁴⁴ Williams, M. and B. MacDonald. 1985. op. cit. p.238.

⁴⁵ King, Stacey M. and Raobeia Ken Sigrah. 2004. op. cit.

⁴⁶ Connell, John and Gil Marvel Tabucanon. 2016. “From Banaba to Rabi: A Pacific Model for Resettlement?” In *Global Implications of Development, Disasters and Climate Change Responses to Displacement from Asia Pacific*, edited by Susanna Price and Jane Singer, pp. 91-107. London: Routledge.

⁴⁷ Williams, M. and B. MacDonald. 1985. op. cit. p.364.

Against this backdrop of desperate struggle in Banaba, it should be noted that New Zealand, which had quietly been receiving 16% of Banaba's phosphate every year⁴⁸, had become the wealthiest country in the world (as measured by per capita GDP)⁴⁹ – and this in a country with 90% of its export earnings from agriculture⁵⁰. This agriculture was almost entirely dependent on Banaban phosphate: '[t]he growth of production in the 1920s, especially between the years 1925 and 1930, is of special importance in the history of New Zealand agriculture... The principal agent in bringing about this change was superphosphate... The importance of adequate supplies of super[phosphate] being available cannot be overemphasized'⁵¹.

1.3.2 We didn't just ride on the sheep's back. We rode on the back of the Banabans

New Zealanders sometimes comment that the country rode to development on the back of a sheep, though the role of phosphate in generating the biomass which fed the sheep has only latterly been acknowledged. Even harder to admit was the role of Banaba in New Zealand's wealth: 'We didn't just ride on the sheep's back. We rode on the back of the Banabans'⁵². What renders this circumstance even more cruciable is that New Zealand's great phosphate and agriculture-derived wealth led it to inaugurate, in 1938, the world's first nation-wide universal health care scheme outside of the command economies⁵³. It did so with a proclamation from the Prime Minister that 'a new principle has been introduced by this Act: citizens of the Dominion are insuring themselves against the economic hardships that would otherwise follow those natural misfortunes from which no one is

⁴⁸ Williams, Maslyn and Barrie MacDonald. 1985. op. cit. p. 135.

⁴⁹ Bolt, Jutta and Jan Luiten van Zanden. 2014. "The Maddison Project: Collaborative Research on Historical National Accounts." *The Economic History Review* 67(3): 627-51.

⁵⁰ McLintock, Alexander Hare. 1966. "Farming." *Te Ara: An Encyclopaedia of New Zealand*. Wellington: Government of New Zealand.

⁵¹ *Ibidem*.

⁵² Australian Broadcast Commission. 1995. "Banaba - Grief for an Island Home in the South Pacific." *Foreign Correspondent*. Canberra.

⁵³ Porritt, Arthur. 1967. "The History of Medicine in New Zealand." *Medical History* 11(4): 334-344.

immune'⁵⁴. That a country would utilize the mantle of enlightenment principles, public duty, and universality of health needs after having arrived at their wealth by denying the same for others is clearly akin to the 'glaring discrepancy between thought and practice' remarked upon by Buck-Morss⁵⁵.

1.4 *Atuara Buokira* - People crying out. People in extreme plight

For the Banabans, another war intervened before the colonial process could proceed to its logical conclusion, although this time in a manner not expected by either the British or the Banabans: the Japanese invaded Banaba in 1940, leading to an evacuation of colonial authorities. The Banabans endured five years of Japanese occupation, and when the British returned in 1945 intending to complete the forced removal plan, the Banabans 'were ill, demoralized and in no shape to argue... [Fiji] was a daunting change from home... five times wetter, overgrown with jungle... The British Government realize[d] that they were dumping the Banabans on Rabi [Fiji] in the middle of hurricane season'⁵⁶. The Banabans' extremity - after years of colonial plunder, Japanese occupation, a forced relocation via 2,500 kilometer ocean journey to Fiji, torrential rains while living in their allocated canvas tents, and the deaths in the first few months of forty elders and with them much of the island's oral history, authority, and wisdom – became a rallying cry. The Rabi Council of Leaders, the first local government of Banabans in Fiji, recounted their history thus:

When the first Council was established their logo was simply, "Our God, Our Help." And then we got into the time of fighting. We started the struggle for our rights... That was when we changed our motto to: "Banabans' Extremity is God's Opportunity"... Extremity here means tapping at the very end of your struggle into your very last power, your very last endeavor. Extremity, you know, is the point you've reached when you've given it all

⁵⁴ Rockwell, Almon F. 1939. "The New Zealand Social Security Act." Bureau of Research and Statistics - Old-Age Benefits Research Division. Washington, D.C.: Social Security Administration.

⁵⁵ Buck-Morss, Susan. 2000. "Hegel and Haiti." *Critical Inquiry* 26(4): 821-65.

⁵⁶ Barraclough, Jenny. 1975. "Go Tell It to the Judge." London: BBC.

you have, when you cannot go any further... Later on we changed the letterhead again, this time to “Atuara Buokira” – which is actually people crying out. People in extreme plight⁵⁷

Again, the parallels with current climate colonialism are uncanny. In 2014, Kiribati purchased a 20 km² plot of land in Fiji as part of Kiribati’s ‘migration with dignity’ policy in expectation of the climate-driven forced removal from their lands⁵⁸. Again, the events of formal colonialism anticipate the modern form; the following quote would make sense in either 1940 or the present day (in fact, it refers to 1940): ‘For the Banabans, however, the [new] island was less than ideal... they had become unaccustomed to a subsistence existence; their health suffered under the changed climatic conditions’⁵⁹. Given the inequitable health status of relocated (and indigenous) Pacific peoples in New Zealand and Australia⁶⁰, climate-related immigration will almost certainly be accompanied by further negative health consequences.

In the present day, I-Kiribati and Tuvaluans are being deluged by emissions from developed countries, and then told that they must immigrate. In the other direction, both nations challenge the narrative of emigration as justice. Fewer than half of the *Pacific Access* immigration slots in New Zealand for either country have been utilized, suggesting that even in these exemplars for the negative consequences of climate change, ‘people are not eager to leave their homeland’⁶¹.

As it happens, Mr. Teitiota was not successful in fighting deportation from New Zealand, the country which had been so enriched by Banaban phosphate from Kiribati. The High Court noted that, were he to be recognized as a climate refugee ‘at a stroke, millions of people who are facing...

⁵⁷ Shennan, Jennifer and Makin Corrie Tekenimatang. 2005. “One and a Half Pacific Islands: Stories the Banaban People Tell of Themselves.” Wellington: Victoria University Press.

⁵⁸ Caramel, Laurence. 30 June 2014. “Besieged by the Rising Tides of Climate Change, Kiribati Buys Land in Fiji.” *Guardian Weekly* [available at <https://www.theguardian.com/environment/2014/jul/01/kiribati-climate-change-fiji-vanua-levu>].

⁵⁹ Williams, M. and B. MacDonald. 1985. op. cit. p.365.

⁶⁰ Anderson, Ian, et al. 2006. “Indigenous Health in Australia, New Zealand, and the Pacific.” *The Lancet* 367(9524): 1775-85.

⁶¹ Adger, W. Neil and Jon Barnett. 2005. op. cit.

presumptive hardships caused by climate change, would be entitled to protection under the Refugee Convention’⁶². Thus, as a practical matter, the highest emitting countries simply cannot (or will not) afford to address the human costs of their pollution; New Zealand couldn’t see its way to extending its lofty ideals of universal health to the same I-Kiribati whose phosphate had created the wealth which allowed New Zealand’s ‘universal’ health in the first place.

Perhaps most poignantly, the Refugee Convention is premised on individuals fleeing one’s own government, or fleeing non-state actors from whom one’s government has failed to protect. In Mr. Teitiota’s case, his only recourse was to seek refuge with the very actors who have caused the climate change which spurred his need to seek it. He was ultimately unsuccessful in that ‘novel but hopeless’ endeavor⁶³. In the Appeals Court case which preceded his ultimate loss in the High Court, the court noted that because ‘the legal concept of “being persecuted” [as required in the Refugee Convention] rested on human agency’, and since Mr. Teitiota is indistinguishable from his country as a whole because ‘the effects of environmental degradation were faced by the population of Kiribati generally’⁶⁴ and not merely an oppressed minority, the appeal could only fail. The court would have been hard pressed to more succinctly describe structural violence, elsewhere defined as ‘violence exerted systematically - that is, indirectly - by everyone who belongs to a certain social order: hence the discomfort these ideas provoke in a moral economy still geared to pinning praise or blame on individual actors’⁶⁵.

Mr. Teitiota is now back in Tarawa, Kiribati with his wife and children. The well they use is brackish and polluted, and only suitable for washing. All three of his children have skin diseases from

⁶² Priestley, John. 2013. *NZHC 3125*. op. cit. §51.

⁶³ Priestley, John. 2013. “Teitiota v Chief Executive of the Ministry of Business, Innovation and Employment.” *NZHC 3401*. Auckland Registry: High Court of New Zealand. §1.

⁶⁴ Stevens, Lynton Laurence, et al. 2014. “Teitiota v Chief Executive of the Ministry of Business, Innovation and Employment.” *NZCA 173*. Court of Appeal of New Zealand. Wellington. §52.

⁶⁵ Farmer, Paul. 2004. op. cit. p.307.

the dirty water, and suffer from lethargy. If New Zealand and the rest of the phosphate-enriched, carbon-emitting Global North continues to deny its moral debt to Kiribati, it will fall to health systems to take up the slack.

1.5 Climate Finance for Health

But despite the vital role the health sector must play in climate change adaptation, there are currently no dedicated health funding facilities within the global climate finance architecture⁶⁶. Official Development Assistance (ODA) for health, at roughly \$30bn USD⁶⁷ annually, is only four percent as large as global climate finance, at roughly \$714bn USD⁶⁸ annually. Against the backdrop of the relative paucity of funds for health globally, gaps in mobilizing resources and leveraging cross-cutting funding for the health sector take on greater significance⁶⁹. The import of health within the climate domain is recognized by new climate finance mechanisms such as the Green Climate Fund, which was formally modelled on successful global funds for health (e.g. GAVI [Global Alliance for Vaccines and Immunization], The Global Fund)⁷⁰; this recognition has not been sufficiently reciprocated by the health sector.

In 1993, following on from the United Nations Conference on Environment and Development (UNCED) in Rio, the World Health Assembly noted that the delineation of financial mechanisms during UNCED ‘made clear that the success of the follow-up to the conference [in addressing environmental health] would be dependent upon an effective link between substantive action and financial support, and... effective cooperation between United Nations bodies and the multilateral

⁶⁶ Nakhooda, S., C. Watson, and L. Schalatek. 2015. “The Global Climate Finance Architecture: Climate Finance Fundamentals 2.” London: Climate Funds Update, Overseas Development Institute, Heinrich Böll Stiftung North America.

⁶⁷ Schmidt-Traub, G. and J. D. Sachs. 2015. “Financing Sustainable Development: Implementing the SDGs through Effective Investment Strategies and Partnerships.” Paris: Sustainable Development Solutions Network.

⁶⁸ United Nations Framework Convention on Climate Change. 2016. “UNFCCC Standing Committee on Finance: 2016 Biennial Assessment and Overview of Climate Finance Flows Report.” Bonn: UNFCCC.

⁶⁹ Schmidt-Traub, G. and J. D. Sachs. 2015. *op. cit.*

⁷⁰ Green Climate Fund. 2015. “Strategic Plan for the Green Climate Fund (Progress Report).” *GCF/B.11/Inf.07*. Meeting of the Board; 2–5 November 2015; Livingstone, Republic of Zambia: GCF.

financial organizations⁷¹. The Global Environment Facility (GEF) was highlighted as the financial mechanism ‘most appropriate and promising for obtaining resources for the global strategy’⁷², and it was noted that ‘much of the success of the global strategy will depend upon the degree to which WHO can mobilize new and additional financial resources’⁷³.

Seventeen years later, in a 2010 WHO consultation meeting, it was explicitly noted that WHO still needed to initiate the formal process to become an implementing agency for the Adaptation Fund (along with GEF, another of the UNFCCC financial mechanisms)⁷⁴. As of early 2018, The Green Climate Fund, the most recent of these mechanisms, has yet to accredit WHO, although WHO’s sister organizations FAO (Food and Agriculture Organization of the United Nations), UNDP (United Nations Development Programme), UNEP (United Nations Environment Programme), WFP (United Nations World Food Programme), and WMO (World Meteorological Organization) are so accredited⁷⁵. Thus, more than a quarter century after WHO’s first acknowledgment of the import of accessing climate finance, the WHO has not yet directly leveraged climate funds.

With the entry into force of the Paris Agreement, the roll-out of the Green Climate Fund, and the BRICS (Brazil, Russia, India, China, South Africa) New Development Bank’s focus on renewable energy technologies and sustainable development, there is scheduled to be an unprecedented further influx of climate finance in the next five years⁷⁶, even after the threatened retrenchment by the new US administration⁷⁷.

⁷¹ World Health Organization. 1993. “WHA46/1993/REC/1 Forty-Sixth World Health Assembly Resolutions and Decisions Annexes.” Geneva: WHO. p. 85.

⁷² *Ibidem*.

⁷³ *Ibid.*

⁷⁴ World Health Organization. 2010. “Essential Public Health Package to Enhance Climate-Change Resilience in Developing Countries.” Geneva: WHO.

⁷⁵ Green Climate Fund. 2016. “List of Accredited Entities.” Incheon, South Korea: GCF.

⁷⁶ Buchner, B., C. Trabacchi, F. Mazza, Abramskiehn, and D. Wang. 2015. *op. cit.*

⁷⁷ Shankleman, Jessica. 2016. “World’s \$100 Billion Climate Pledges May Survive Trump Era.” *BloombergBusinessweek*. New York: Bloomberg.

This thesis will argue that the expansion of climate finance represents a vital opportunity for the health sector to take up a role in climate change adaptation commensurate with its importance. In light of the failures of other means of protection for the people of Kiribati, such as the Refugee Convention, this thesis will argue that the health sector will need to take up a more active role in addressing the social determinants of health affected by climate change.

In other domains, strategies alternately termed ‘bundling’⁷⁸, ‘co-benefits’⁷⁹, and ‘multiple spheres’⁸⁰ have been utilized to leverage climate funds for related uses such as biodiversity and early warning systems. In parallel, catastrophe bonds and the Pandemic Emergency Facility of the World Bank utilize tools from the finance and securities domains to address acute health crises⁸¹. This thesis will argue that analogous approaches should be used by the health sector for building functional health systems in climate change vulnerable countries such as Kiribati. The current, unsatisfactory position of health delivery vis-à-vis climate finance motivates the research question: how can the existing climate finance architecture be mobilized to meet the public health challenges of climate change?

Notwithstanding the promise of the co-benefit model, there has been virtually no inquiry within the academic literature into how the health sector has leveraged climate finance⁸², and neither have there been strategies elaborated for how to do so in future. The World Health Assembly called on the WHO Director-General to cooperate with UN funds, programs, and specialized agencies in order to respond to climate change, but did not propose a dedicated funding mechanism for climate impacts on

⁷⁸ Wendland, Kelly J., Honzák, Miroslav, Portela, Rosimeiry, et al. 2010. “Targeting and Implementing Payments for Ecosystem Services: Opportunities for Bundling Biodiversity Conservation with Carbon and Water Services in Madagascar.” *Ecological Economics* 69(11): 2093-2107.

⁷⁹ Nakhooda, S., C. Watson, and L. Schalatek. 2015. op. cit.

⁸⁰ Sovacool, B. K., A. L. D’Agostino, H. Meenawat, and A. Rawlani. 2012. “Expert views of climate change adaptation in least developed Asia.” *Journal of Environmental Management* 97: 78-88.

⁸¹ Bennett, Michael and International Bank for Reconstruction and Development - World Bank. 2015. “Opening the Catastrophe Bond Market to Developing Countries.” In *State of Green Economy Report*, pp. 169-73. Dubai: UNDP, Dubai Carbon.

⁸² World Health Organization. 2009. “Protecting health from climate change: global research priorities.”. Geneva: WHO.

health, or put forth a framework for leveraging existing climate funds for health⁸³. In essence, the health sector is saddled with an unfunded mandate to address the public health sequelae of climate change. In the absence of a climate fund for health, efforts by the health sector to address climate change will require programs which are well enough informed about the climate finance architecture to utilize the bundling/co-benefit/multiple sphere model to access funds.

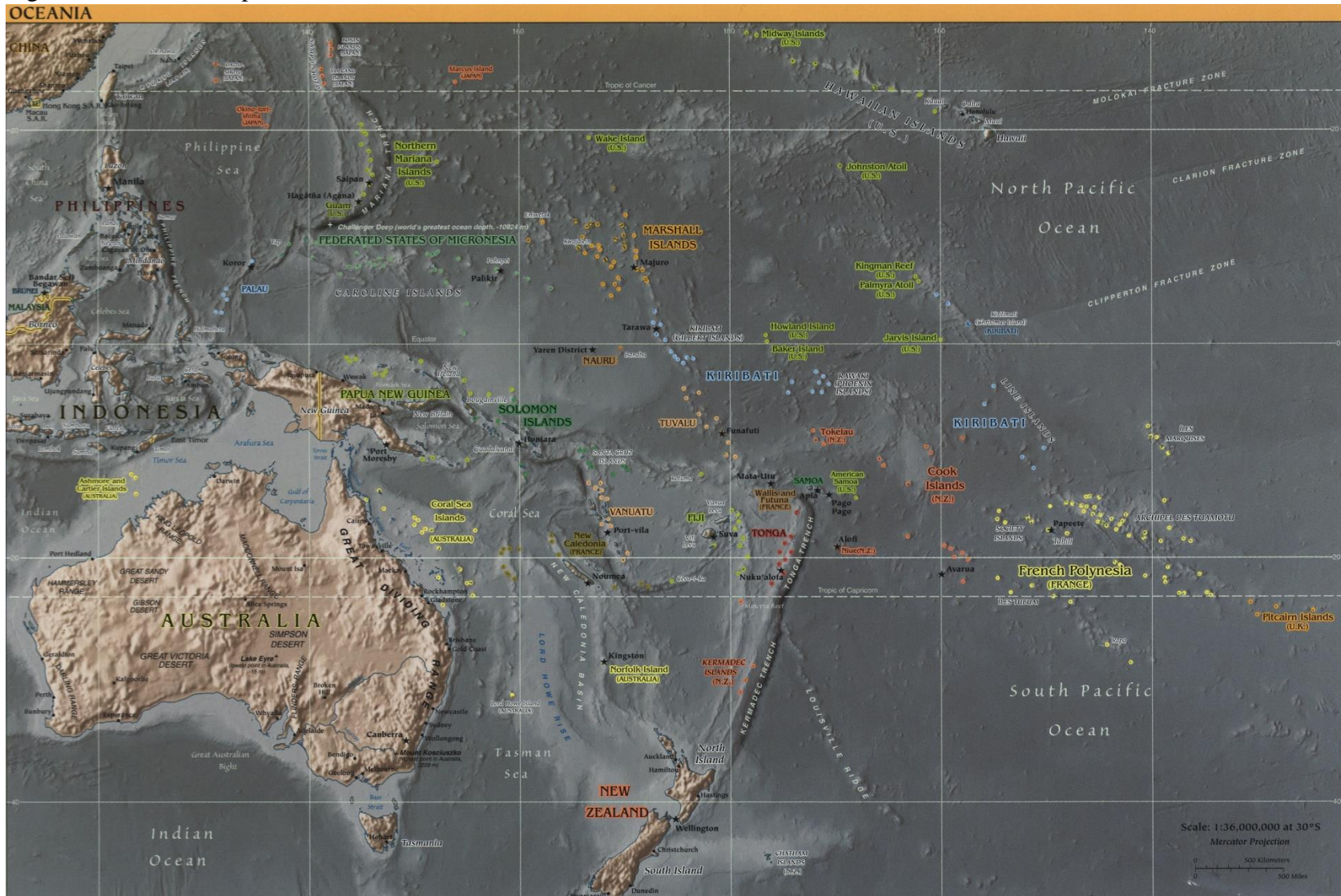
Addressing the research question will entail participation in a nascent UNDP/WHO project entitled 'Building Resilience of Health Systems in Pacific Island LDCs [Least Developed Countries] to Climate Change', the first WHO initiative funded by a UNFCCC financial mechanism (GEF) rather than via health or development funds⁸⁴ to address national-level health system challenges from climate change. Perhaps as a testament to the WHO's laggard status and continuing failure to achieve accreditation to GEF, UNDP is standing in as the implementing partner for this project, although the participation of WHO is an encouraging intermediate step. The initiative will take place across four Pacific countries: Kiribati, Solomon Islands, Tuvalu, and Vanuatu, four of the most 'exquisitely vulnerable' and 'extremely susceptible' national health systems in the world to climate change⁸⁵. These countries are all near the center of the map on the subsequent page.

⁸³ World Health Assembly. 2008. "Climate change and health." *WHA61.19*. World Health Organization. Geneva: WHO.

⁸⁴ Global Environment Facility. 2015. "Building Resilience of Health Systems in Pacific Island LDCs to Climate Change" [accessed on 24 Sep, 2016]. Available at: <http://www.thegef.org/project/building-resilience-health-systems-pacific-island-ldcs-climate-change>.

⁸⁵ World Health Organization. 2015. "Human Health and Climate Change in Pacific Island Countries." WHO Regional Office for the Western Pacific (WPRO). Manila: WHO. p.14.

Figure 1 – Oceania Map



⁸⁶ United States Central Intelligence Agency. 2000. "Oceania - 802697ai (R02111) 4-00." Washington, D.C.: CIA.

Climate change represents an unprecedented global challenge, which requires global institutions, particularly the UNFCCC financial mechanisms, to solve. Climate finance represents an unusual, if tardy and partial, recognition by developed countries that a more equitable, habitable world benefits all. Coming on the heels of centuries of colonization and plunder, climate finance is an opportunity to reverse the pattern of development-as-extraction.

Lessons about the intersection of health, development, justice, and climate change - with the added complexity of climate finance – are relevant to all four participant countries, as well as developing countries across the Global South. They represent the frontier for a new approach to health system strengthening based on an equitable, ethical, global climate financial architecture. It is an opportunity to reimagine global health in the face of climate change, using a Rawlsian lens of ‘justice as fairness’, which will serve as the theoretical underpinning for the rest of this thesis.

Rawls has special relevance for the intersection of health and justice in the realm of climate change. His *Theory of Justice* is the most frequently cited philosophical work in the health equity literature⁸⁷, while simultaneously serving as a philosophical basis for climate finance via the concept of intergenerational equity in environmental decisions⁸⁸ and ‘atmospheric justice’⁸⁹.

Rawls’ theory stems from two interrelated principles of justice. The first is that all persons ‘have an equal right to the most extensive scheme of equal basic liberties compatible with a similar scheme of liberties for others’⁹⁰. The second is that when unavoidable inequalities arise, they are to be arranged in a manner which maximizes the standing of the worst off.

⁸⁷ Williams, Alan and Richard Cookson. 2000. “Equity in Health.” In *Handbook of Health Economics*, edited by A. J. Culyer and J. P. Newhouse, pp. 1863-1910. London: Elsevier. p.1867.

⁸⁸ Norton, Bryan G. 1989. “Intergenerational Equity and Environmental Decisions: A Model Using Rawls' Veil of Ignorance.” *Ecological Economics* 1(2): 137-59.

⁸⁹ Vanderheiden, Steve. 2008. *Atmospheric Justice: A Political Theory of Climate Change*. London: Oxford University Press.

⁹⁰ Rawls, John. 1999. *A Theory of Justice: Revised Edition*. Cambridge: Belknap Press. p.53.

Rawls' philosophy has particular resonance in the Pacific because of its role in shaping his philosophy. He was raised as a devout Episcopalian who expected to enter the seminary, but had entirely abandoned his beliefs by the end of his WWII service in the Pacific⁹¹. As a result, he sought a defensible moral code based on reason rather than doctrine, and arrived at it via a thought experiment. Rawls imagined a veil of ignorance regarding one's original position, and wondered about the resulting - but *a priori* - rules for a hypothetical just society that one would belong to; what rules can one agree to without advance knowledge about one's capacities, characteristics, year of birth, and so forth? The two rules he proposes above serve as the starting point for operationalizing justice and fairness in social, economic, political, and environmental arrangements.

In this construction, climate colonialism is judged unacceptable 'because it violates constraints that would be imposed on all generations by a chooser who is ignorant regarding the generation he will inhabit... [A]ny decent culture must be capable of passing on an undefiled earth to all future generations'⁹². Most importantly for this thesis, this construction serves as a framework for true post-colonialism in the four LDCs in the Pacific.

Investigating the relationship of the health sector to climate finance carries us into the eddies and backwaters of a financial system which is unusually arcane and diffuse. It is not generally traversed by the health sector, let alone by public health practitioners in least-developed countries. There are myriad sources of climate finance but no central clearinghouse; there are a dizzying range of implementing agencies, institutional partners, co-financers, technical experts, finance and securitization requirements, civil society groups, and national/regional/inter- governmental authorities involved – none of whom have a roadmap for leveraging climate funds, whether for health or otherwise. This research highlights four countries who are, in essence, positive outliers: national

⁹¹ Rawls, John. 2010. *A Brief Inquiry into the Meaning of Sin and Faith*. Cambridge: Harvard University Press.

⁹² Norton, Bryan G. 1989. op. cit. p.137.

governments who have successfully tapped into climate finance for health system strengthening. All four have done so despite the residuum of colonialism and resulting lack of wherewithal and external support, and they are doing so against a backdrop of increasing climate chaos. If they succeed, I believe it will serve as an exemplar of, to use Paulo Freire's phrase, 'overcoming limit-situations'⁹³. If the *Building Resilience of Health Systems in Pacific Island LDCs to Climate Change* project is successful, health system strengthening in Kiribati might serve to mitigate some of the climate-related harms to Mr. Teitiota and his family. More broadly, such an enterprise might shift our relationship to the environment from Fanon-esque domination and extraction to something more just and representative. At its best, 'democracy is neither a form of government nor a social expediency, but a metaphysic of the relation of man and his experience to nature'⁹⁴. Successfully leveraging climate finance for health system strengthening in the four LDCs in the Pacific could well serve as a necessary but insufficient precondition on the path towards achieving this democratic, post-colonial metaphysic.

⁹³ Freire, Paulo. 2000. *Pedagogy of the Oppressed*. New York: Bloomsbury Academic.

⁹⁴ Dewey, John. 1978. "Maeterlinck's Philosophy of Life." In *The Middle Works, 1899-1924, Volume 6: 1910-1911*, edited by J. A. Boydston, pp. 123-35. London: Feffer & Simons.

Part 2 - Paper Intended for Publication: 'The feeling that we must know'

2.1 Introduction

The Small Island Developing States (SIDS) in the Pacific serve as exemplars of the international and scientific community's consensus that climate change is both 'the defining issue for public health in the 21st century'⁹⁵ and 'the most systemic threat to humankind'⁹⁶. Kiribati and Tuvalu are the two lowest lying LDC-SIDS in the Pacific; for them, climate change 'not only threaten[s] the health and well-being of the population, but also the very existence of [these] island nation[s]'^{97,98}. But it has also been argued that this 'representation of climate change in SIDS is a discursive formation that limits understanding and action to address the interests of people living in islands'⁹⁹, not least by decreasing policy options for national governments trying to balance the niceties of domestic health policy with the requirements of international climate governance.

For Kiribati and Tuvalu, this peril operates on multiple axes: merely discussing 'compensation for loss and damage remains a "red line" for industrialised countries'¹⁰⁰. This is a long-standing red line, referenced in different form by the US Senate's 1997 Byrd-Hagel Resolution, passed by a vote of 95-0, rejecting ratification of the Kyoto Protocol because it 'could result in serious harm to the United States economy, including significant job loss, and trade disadvantages, increased energy and consumer costs, or any combination thereof'¹⁰¹. This was an argument resurrected by US President

⁹⁵ Chan, Margaret. 2016. "Keynote Address at the Human Rights Council Panel Discussion on Climate Change and the Right to Health." Geneva: WHO.

⁹⁶ Sengupta, Somini, 29 Mar 2018. 'Biggest Threat to Humanity? Climate Change, U.N. Chief Says'. *New York Times*. [Accessed on 10 Apr 2018]. Available at: <https://nyti.ms/2GkG215>.

⁹⁷ World Health Organization and United Nations Framework Convention on Climate Change. 2017. "Kiribati Climate and Health Country Profile [Draft]." Geneva: WHO.

⁹⁸ World Health Organization and United Nations Framework Convention on Climate Change. 2017. "Tuvalu Climate and Health Country Profile [Draft]." Geneva: WHO.

⁹⁹ Barnett, Jon and John Campbell. 2010. *Climate Change and Small Island States: Power, Knowledge, and the South Pacific*. London: Earthscan.

¹⁰⁰ Kreienkamp, Julia and Lisa Vanhala. 2017. "Policy Brief: Climate Change Loss and Damage." London: University College London Global Governance Institute.

¹⁰¹ Byrd, Robert C. 1997. "S. Res. 98 [Report No. 105-54] - Expressing the Sense of the Senate Regarding the Conditions for the United States Becoming a Signatory to Any International Agreement on Greenhouse Gas Emissions under the

Donald Trump when he cited a belief that the Paris Agreement would result in ‘massive legal liability if we stay in’ as a justification for US withdrawal¹⁰². Nonetheless, failing to press for such a mechanism on the part of vulnerable SIDS would mean that ‘the present legal framework for addressing climate change [would] thus lack[the] liability dimension that is critical to ensuring that people and countries already suffering the negative consequences of climate change are compensated’¹⁰³. Similarly, a failure to plan for probable future climate-induced migration and/or refugee-hood exposes countries like Kiribati and Tuvalu to increased economic vulnerability and compounds local environmental pressures in the near term¹⁰⁴. Simultaneously, however, ‘if foreign investors and aid agencies believe that islands have no future then they may cease to invest in them, which is likely to undermine capacity to adapt to climate change’¹⁰⁵. In the same vein, efforts by government officials to implement community-based adaptation strategies, e.g. through the use of stakeholder consultations in climate change planning, may inadvertently spark social processes such as a ‘social amplification of risk in which public perceptions of risk are intensified’, thereby increasing emotional distress and impinging on mental health¹⁰⁶. At the same time, ‘[i]t is a long-recognized moral hazard of overemphasizing the utility of adaptation that it can deter action on tackling the root cause of climate change’¹⁰⁷. As such, Kiribati and Tuvalu confront multiple, interwoven, complex, foreign-in-origin difficulties when undertaking what would otherwise be straightforward health system

United Nations Framework Convention on Climate Change.” United States Senate. Washington, D. C.: 105th Congress (1997-1998).

¹⁰² Trump, Donald J. 2017. “Statement by President Trump on the Paris Climate Accord.” Washington, D.C.: Government of the United States of America.

¹⁰³ Cullet, Philippe. 2007. “Liability and Redress for Human-Induced Global Warming: Towards an International Regime Climate Change Liability and the Allocation of Risk.” *Stanford Environmental Law Journal* 26A(1): 99-122.

¹⁰⁴ Milan, Andrea, et al. 2016. “Tuvalu: Climate Change and Migration - Relationships between Household Vulnerability, Human Mobility and Climate Change.” Bonn: United Nations University Institute for Environment and Human Security.

¹⁰⁵ Barnett, Jon and John Campbell. 2010. op. cit. p.170.

¹⁰⁶ Fritze, Jessica G., et al. 2008. “Hope, Despair and Transformation: Climate Change and the Promotion of Mental Health and Wellbeing.” *International Journal of Mental Health Systems* 2(1): 13.

¹⁰⁷ Church, Jonathan. 2018. “When the Ice Melts.” *London Review of Books* 40(7).

functions such as health workforce planning and health leadership/governance¹⁰⁸. These perils complicate the landscape of public health responses to climate change, and highlight the constrained options available to governments in Kiribati and Tuvalu.

Against this backdrop, two noteworthy internationally-led initiatives on climate change and health in Kiribati and Tuvalu are currently being inaugurated. The first is a GEF-funded project entitled *Building Resilience of Health Systems in Pacific LDCs to Climate Change*, with UNDP serving as the GEF-accredited agency and WHO the executing partner. The second is the WHO Director-General's *Special Initiative on Climate Change and Health in Small Island Developing States*, as part of the WHO's 3rd Global Conference on Climate Change and Health, launched in the Pacific in March of 2018. Both of these initiatives represent natural experiments at the interface of national-level health system responses to climate change and the international climate governance regime, and suggest a research question with relevance for health system responses to climate change in resource-constrained environments. The broadest/simplest form of this research question is: what consequences stem from the use of climate finance for health system strengthening? Leveraging climate finance for health system strengthening is a relatively novel approach, with unique institutional requirements which have been criticized as particularly difficult to satisfy for LDC-SIDS; the Tuvaluan Prime Minister Enele Sopoaga noted that accessing climate funds entailed 'paperwork higher than the sea level in Tuvalu'¹⁰⁹. Health system engagement with international climate governance has therefore been limited, and is replete with entanglements and complications such as those outlined above. Health system constraints, limited institutional capacity for addressing climate change vulnerability, and the added complexities of harmonizing national-level health responses with

¹⁰⁸ World Health Organization. 2010. "Monitoring the Building Blocks of Health Systems: A Handbook of Indicators and Their Measurement Strategies." Geneva: WHO.

¹⁰⁹ Sopoaga, Enele. 2015. "Address by the Rt Hon. Enele Sopoaga MP, Prime Minister of Tuvalu to the Commonwealth Parliamentary Association." London: CPA UK.

international climate governance all compound the underlying vulnerability of Kiribati and Tuvalu to the public health consequences of climate change. At the same time, Pacific peoples are widely heralded as expert navigators¹¹⁰, a skill particularly well-suited for a perilous journey such as climate change adaptation. Similarly, ‘Pacific Island societies have historically had a range of practices that made them resilient to climate extremes’¹¹¹, with a long history of resourcefulness and resilience to environmental, socio-political, and economic hazards^{112,113,114}. As such, the two countries’ experiences with health system strengthening in the face of climate change can potentially yield lessons for other Pacific countries, LDCs, SIDS, LMICs, and the wider world.

2.2 Methods

In an attempt to synthesize these lessons, the health policy and systems research approach was employed, beginning with a desk review of relevant documents from the I-Kiribati and Tuvaluan health systems, coupled with related literature in the form of published papers, peer-reviewed journal articles, government reports, and works produced by international health and/or climate governing bodies. The desk review of documents was supplemented with qualitative primary data collection, which was conducted in the form of key informant interviews. Because of the logistical complications of securing IRB approval across multiple international jurisdictions, interviewees were selected under two criteria. First, per US Health and Human Services guideline 45 CFR 46, Subpart A, §46.101 (3)(i), interviews wherein ‘the human subjects are elected or appointed public officials or candidates for

¹¹⁰ Howe, Kerry Ross. 2006. *Vaka Moana - Voyages of the Ancestors: The Discovery and Settlement of the Pacific*. Auckland, New Zealand: David Bateman.

¹¹¹ Barnett, Jon. 2001. “Adapting to Climate Change in Pacific Island Countries: The Problem of Uncertainty.” *World Development* 29(6): 977-93.

¹¹² Grossman, Zoltán and Alan Parker. 2012. “Asserting Native Resilience: Pacific Rim Indigenous Nations Face the Climate Crisis.” Corvallis, OR: Oregon State University Press.

¹¹³ Farbotko, Carol and Heather Lazrus. 2012. “The First Climate Refugees? Contesting Global Narratives of Climate Change in Tuvalu.” *Global Environmental Change* 22(2): 382-90.

¹¹⁴ Lazrus, Heather. The Governance of Vulnerability: Climate Change and Agency in Tuvalu, South Pacific. “2009.” In *Anthropology & Climate Change: From Encounters to Actions*, edited by Susan A. Crate and Mark Nuttall, pp. 240-49. Walnut Creek, CA: Left Coast Press.

public office’ are exempted from the IRB processes spelled out under the *Basic HHS Policy for Protection of Human Research Subjects*¹¹⁵. Second, under the University of the South Pacific’s *Summary of Procedures for Research Permits* in the Pacific, for research which ‘only requires consultations/interviews with relevant institutions’ and which are not experimental, interventional, or anthropological in nature, no research permit is required¹¹⁶. As a result, interviewees were selected from the cohort of elected and appointed public officials at relevant institutions in Kiribati and Tuvalu. Interviews were conducted using a semi-structured interview guide, wherein respondents were asked questions regarding their experiences in addressing the public health consequences of climate change, the process of leveraging climate finance, and lessons learned. Interviews were audio recorded for accuracy, and were subsequently transcribed. Interview transcripts were then examined using a content-focused analytical process (with myself as the sole coder), where the health system- and climate finance-specific themes that emerged from interviews, informed by the preliminary desk review of documents, were utilized to identify codes, organize data, and ultimately synthesize a more coherent narrative.

2.3 Results

From the series of interviews, a trio of inter-related themes coalesced: asymmetry, a ‘barb in the tail’, and spreading fatalism. These themes have important consequences for the prosecution of interventions attempting to bolster climate change resilience in health systems in Kiribati and Tuvalu, and suggest directions for further research.

¹¹⁵ United States Department of Health & Human Services Office for Human Research Protections. 2009. “Code of Federal Regulations Title 45; Public Welfare; Part 46: Protection of Human Subjects - §46.101 (3)(i).” Washington, D.C.: HHS OHRP.

¹¹⁶ University of the South Pacific Research Office. 2016. "Summary of Procedures for Research Permits" [accessed on 11 Apr, 2018]. Available at: https://research.usp.ac.fj/?page_id=415.

2.3.1 Asymmetry

The first key theme that emerged from both the literature review and interviews related to asymmetry, which is perhaps best illustrated by the case of Henderson Island, part of the Pitcairn Islands British Overseas Territory in the South Pacific. Henderson Island possesses a variety of asymmetry that verges on homily. It is an uninhabited UNESCO World Heritage site 5,000km from the closest major landmass¹¹⁷. Owing to its extreme isolation and relatively limited resource base, it has long resisted human habitation, and as a result it boasts some of the few flightless bird species in the eastern Pacific region to survive human predation¹¹⁸. But the island's characteristic South Pacific remoteness has not protected it from anthropogenic despoliation. A confluence of factors, including its topography and surrounding ocean currents, have resulted in an unprecedented accumulation of refuse washing onto its shores. Its beaches are saturated with the highest reported density of litter anywhere on the planet, up to 671.6 items of debris per square meter¹¹⁹. Henderson's position astride the South Pacific gyre, the current which conjures the rubbish vortex known as the South Pacific garbage patch, means that it – and its fellow remote islands in the Pacific – have become 'reservoirs for the world's waste' (*Ibidem*).

The asymmetry between contribution and consequence, between culpability and vulnerability, is mirrored in the domain of climate change and health. The IPCC notes that, on average, people in the small island states of the Pacific 'produce approximately one-quarter of the CO₂ emissions attributable to the average person worldwide. Expressed another way, the Pacific islands region as a whole accounts for 0.03% of the global emissions of CO₂ from fuel combustion despite having

¹¹⁷ International Union for Conservation of Nature and Natural Resources. 1988. "World Heritage Nomination - IUCN Summary." 487: *Henderson Island (United Kingdom)*. Gland, Switzerland: IUCN.

¹¹⁸ Weisler, Marshall I. 1995. "Henderson Island Prehistory: Colonization and Extinction on a Remote Polynesian Island." *Biological Journal of the Linnean Society* 56(1-2): 377-404.

¹¹⁹ Lavers, Jennifer L. and Alexander L. Bond. 2017. "Exceptional and Rapid Accumulation of Anthropogenic Debris on One of the World's Most Remote and Pristine Islands." *Proceedings of the National Academy of Sciences* 114(23): 6052-55.

approximately 0.12% of the world's population'¹²⁰. The Pacific's minuscule contribution to climate change underscores the disproportionality in consequence. In essentially every reckoning, Pacific peoples are more vulnerable to the health consequences of climate change than is commensurate with their contribution to it. The WorldRiskIndex has eight Pacific countries in its list of the top 15 highest risk countries in the world¹²¹, along axes of exposure to natural hazards, vulnerability (e.g. food security, infrastructure), and coping and adaptive capacities. The Structural Vulnerability to Climate Change Index lists four Pacific countries among the 13 most vulnerable¹²², along axes of recurrent and progressive physical 'shocks', including sea level rise, over aridity, rainfall, and temperature. Ten of the 14 most vulnerable countries in the Environmental Vulnerability Index are in the Pacific region¹²³, along axes of weather and climate, geology, geography, resources and ecosystem services, and human populations. (For reference, Pacific nations comprise roughly 10% of the world's countries.) This steady drumbeat of technical assessments attempting to quantify the Pacific's high vulnerability to climate change is, if anything, a lagging indicator of the lived experience of Pacific peoples over the past few decades. As Anote Tong, the former President of Kiribati laments, '[s]o far away, so isolated – we thought we were so isolated that we would be immune from the tribulations of this world. But no, in spite of our isolation, here we are, subjected to the global phenomenon of climate change'¹²⁴. The sense of urgency felt by Pacific peoples stemming from these tribulations has resulted in a clear call for a rapid, forceful health sector response to the burgeoning calamity of climate change, but Pacific

¹²⁰ McCarthy, James J., et al. 2001. "Climate Change 2001: Impacts, Adaptation, and Vulnerability - Contribution of Working Group II to the Third Assessment Report of the Intergovernmental Panel on Climate Change." Cambridge: Cambridge University Press. p.867.

¹²¹ Bündnis Entwicklung Hilft – Gemeinsam für Menschen in Not. 2017. "WorldRiskReport: Analysis and Prospects 2017." Aachen, Germany: BEH. p.17.

¹²² Guillaumont, Patrick and Catherine Simonet. 2011. "Designing an Index of Physical Vulnerability to Climate Change." *B18*. Clermont-Ferrand, France: Fondation pour les Études et Recherches sur le Développement International. Data available at <http://www.ferdi.fr/sites/www.ferdi.fr/files/idi/SVCCI-site.zip>.

¹²³ Kaly, Ursula, et al. 2004. "The Environmental Vulnerability Index (EVI) 2004." *SOPAC Technical Report 384*. Suva: South Pacific Applied Geoscience Commission. pp.321-23.

¹²⁴ Rytz, Matthieu. 2018. "Anote's Ark." Montréal: EyeSteelFilm.

peoples have had to take unprecedented measures to ensure that the subject was on the WHO's radar, and their efforts to address the issue have been beset with blowback.

2.3.1.1 A History of Pacific Efforts to Place Climate Change on the Health Agenda

The first ever WHO workshop on climate change and health, which took place in Samoa in 2000, came about as a result of the efforts of Dr. Sione Tapa, who was the first Tongan to gain a university qualification in medicine¹²⁵ and served as Minister of Health in Tonga from 1970 to 1996, as well as being elected President of the World Health Assembly in 1977. It was also held up as a clear example of the asymmetry theme in interviews. As with all Ministers of Health, attending WHO functions was a frequent requirement of his office. When WHO is the convener of a function, invitees are paid a per diem to cover the expenses of their attendance, and Dr. Tapa had been so reimbursed while he held office. It has become a part of WHO lore that Dr. Tapa considered these per diems as held in trust, and saved the funds in a special account throughout his tenure. Upon retiring, he contacted his counterparts at WHO and informed them of the existence of these savings, and noted his desire to return them to WHO to effect further programming, with the caveat that the funds had to be used to undertake a climate change and health initiative in the Pacific¹²⁶. Though the findings from the workshop that was held as a result of Dr. Tapa's donation were fed into a draft Pacific Islands Framework for Action on Climate Variability and Change¹²⁷, it took another 14 years before WHO convened its first global conference on health and climate. In the background to this global conference in 2014, it was noted

¹²⁵ Lātūkefu, Sione. 1993. "The Pro-Democracy Movement in Tonga." *The Journal of Pacific History* 28(3): 52-63.

¹²⁶ Campbell-Lendrum, Diarmid. 2018. "Session 6: Component 4 of the Initiative – Resources – Facilitating Access to Climate and Health Financing Mechanisms Such as the Green Climate Fund and the Global Environment Facility for Climate-Resilient Health Systems of Pacific Island Countries. Opportunities to Access Climate Funds for Building Climate Resilient Health Systems: WHO." Nadi, Fiji: WHO.

¹²⁷ World Health Organization Regional Office for the Western Pacific. 2000. "Report: Workshop on Climate Variability and Change and Their Health Effects in Pacific Island Countries." *RS/2000/GE/04(SMA): (WP) EUD(O)/ICP/HSE/006-E*. Manila: WHO.

without irony that ‘[s]ince 2008 the World Health Organization has shown leadership in raising awareness of the threats posed by climate change to health’¹²⁸.

During the 12th Pacific Health Minister’s Meeting in 2017, a biennial meeting of Ministers of Health from all 21 Pacific Island countries and territories, the Tuvaluan Minister of Health issued a challenge to WHO, owing to the fact that it does not have a representative resident in Tuvalu:

I also suggest that the presence of WHO in each small island state is vital. Not only have they been in the bigger countries, we need them also in places like Tuvalu. At least on a representative level, so that they understand, so that they live in a country vulnerable to climate change, so that when we are talking about ‘there will be a tidal wave coming’, they will be there to witness, they feel it... Come to a country where they are vulnerable to climate change, and then see for yourself whether you are safe or not, so they can feel it – it’s the feeling that we must know.¹²⁹

This challenge does not come from a place of antipathy or cynicism; Tuvalu is a country so enthusiastic about the WHO and its mission that it issued a series of postage stamps in 2013 commemorating the WHO’s 65th anniversary. But there is a barb in the tail of the alarms that Pacific health leaders have been sounding, and it was recurrent enough that it amounted to a second theme.

2.3.2 The Barb in the Tail

The ‘barb in the tail’ theme takes at least two forms. The first form is via a subtext of futility detectable in recent communications by Pacific health leaders, *viz.* that the delay in responding to the gathering storm of health impacts due to climate change might mean that resulting onslaughts may overwhelm the defenses that Pacific peoples – and health/development partners – are able to mount. This subtext is cloaked in the duality that health strategists in Pacific countries must engage in when planning resilience activities, stemming from the conflict between a) projections that the islands may become uninhabitable within the lifespan of health interventions, and b) the knowledge that funds for

¹²⁸ World Health Organization. 2014. "Who Conference on Health and Climate: Background" [accessed on 18 Mar, 2018]. Available at: <http://www.who.int/globalchange/mediacentre/events/climate-health-conference/2014/about/en/>.

¹²⁹ Manuella, Hon. Satini Tulaga. 30 Aug 2017. "Session 5: Climate Change and Health." Rarotonga, Cook Islands.

health interventions on soon-to-be-abandoned-islands will not be forthcoming from international funders. The second form of the barb relates to the knowledge that climate chaos is likely to ultimately lead to major consequences for developed countries as well, and that a desultory response to the public health consequences of climate change in Pacific countries increases health and security threats worldwide. These will be discussed in turn.

2.3.2.1 Subtext of Futility

The subtext of futility stems at least in part from a realization that ‘some amount of future warming is inevitable even in the unreasonably optimistic scenario of an abrupt halt to fossil-fuel emissions’¹³⁰. This ‘committed warming’ is estimated as having a 32% risk of exceeding, all by itself and even absent *any* future emissions, the 1.5°C aspirational limit discussed in the Paris Agreement, and a 13% risk of exceeding the 2.0°C threshold by 2100 (*Ibidem*). Pacific leaders are cognizant that even if the most optimistic 1.5°C target is somehow reached, it is still likely to result in ≈0.75m of sea level rise by 2100¹³¹, which is likely to significantly impinge on habitability long before the islands are fully submerged.

This was given voice in the foreword to the Kiribati National Framework for Climate Change and Climate Change Adaptation, where then-President Tong asserted the following:

Kiribati has known for some time that the impacts of climate change will no doubt render it uninhabitable in the future. The science has been quite clear for some time now and new and emerging science is only confirming that the unthinkable is going to happen - while it is both a poignant and difficult issue - all the more so because of the emotional implications attached to it, it is also a call for us as a nation to be most diligent in our effort to be prepared for the unthinkable and for what lies ahead of us in the face of climate change.¹³²

¹³⁰ Mauritsen, Thorsten and Robert Pincus. 2017. “Committed Warming Inferred from Observations.” *Nature Climate Change* 7: 652-56.

¹³¹ Schaeffer, Michiel, et al. 2012. “Long-Term Sea-Level Rise Implied by 1.5 °C and 2 °C Warming Levels.” *Nature Climate Change* 2: 867-70.

¹³² Office of Te Beretitenti - Republic of Kiribati. 2013. “National Framework for Climate Change and Climate Change Adaptation.” South Tarawa: Government of Kiribati. p.2.

It is a sentiment mirrored by Tuvalu’s Minister of Health, when he questioned the wisdom of climate finance in service of a 1.5° rise in temperature: ‘So what is the approach for climate change? Are we going to continue and give financing for resilience assistance to Small Island Developing States, knowing that 1.5[°] might not be enough, for Tuvalu to disappear?’¹³³

2.3.3 Spreading Fatalism

The final theme that emerged from the interviews relates to the knowledge that, although the Pacific is likely to feel the consequences sooner than much of the developed world, runaway climate change threatens all of humanity. Between the likely effects of climate change on migration, health security, increasing range and fecundity of insect vectors, increasing frequency and intensity of the most severe extreme weather events, and food/water security pressures, the problems already being seen in Kiribati and Tuvalu are likely to be reproduced in the Global North. It is a sentiment described by former President Tong when asked about the utility of mitigation efforts against an assumed backdrop of migration out of Kiribati:

What’s the point? Well, we need to survive. I think we are owed that by the international community. What you’re saying is, ‘why are we participating in the whole process?’. We will need adaptation funding, we need resources in order to be able to build our resilience. But I think what you’re saying is ‘why argue for 1.5°, 2° or whatever it says?’. Well, I think it’s important to do that because what is going to happen to us is going to be the fate of the rest [who] will follow.¹³⁴

The appeal to self-interest has not yet effected significant changes on the part of the nations responsible for the other 99.7% of CO₂ emissions, but the warning that nature will repay and outlast human folly is worth noting.

Prior to its infamy as having the world’s most sullied beaches, Henderson Island was best known as the temporary refuge for shipwrecked sailors from the whaling ship *Essex*. In late 1820, the *Essex* –

¹³³ Manuella, Hon. Satini Tulaga. 30 Aug 2017. “Session 5: Climate Change and Health.” Rarotonga, Cook Islands.

¹³⁴ Rytz, Matthieu. 2018. op. cit.

while seeking that era's environmentally destructive hydrocarbon (whale oil) - was rammed and sunk by a sperm whale, and the remaining crew managed to reach Henderson in the ship's whaleboats after a month on the open ocean. The survivors resupplied on the island before leaving for South America. Their accounts made it into the press and became the basis for *Moby Dick*, which takes up the humans vs. nature theme in a manner which still has relevance for the Pacific. In Chapter 105, Melville makes a prediction about cetacean survival that is a useful foil for the climate change circumstance:

[C]oncerning these last mentioned Leviathans, they have two firm fortresses, which, in all human probability, will forever remain impregnable... [H]unted from the savannas and glades of the middle seas, the whale-bone whales can at last resort to their Polar citadels, and diving under the ultimate glassy barriers and walls there, come up among icy fields and floes; and in a charmed circle of everlasting December, bid defiance to all pursuit from man¹³⁵.

As climate change sees the melting of the 'icy fields and floes', and since December is the height of the austral summer and the beginning of the cyclone season in the Pacific, the 'charmed circle of everlasting December' probably doesn't ring true for readers in Kiribati and Tuvalu. But Melville concludes his disquisition on whale survival with the following, more prescient prediction:

Wherefore, for all these things, we account the whale immortal in his species, however perishable in his individuality. He swam the seas before the continents broke water; he once swam over the site of the Tuileries, and Windsor Castle, and the Kremlin. In Noah's flood he despised Noah's Ark; and if ever the world is to be again flooded, like the Netherlands, to kill off its rats, then the eternal whale will still survive, and rearing upon the topmost crest of the equatorial flood, spout his frothed defiance to the skies¹³⁶.

2.4 Discussion

It is a cruel irony that the same wake-up calls by Pacific peoples which are evidently necessary to spur a global health response could then be used as evidence against the utility of such a response. Nonetheless, this is the circumstance that obtains when contingency planning – which in the Kiribati case includes a 'Migration with Dignity' backstop – leads to officials with adaptation programs

¹³⁵ Melville, Herman. 2001. *Moby-Dick, or, the Whale*. New York: Penguin Classics. p.528.

¹³⁶ Melville, Herman. 2001. op. cit. p.529.

operative in Kiribati expressing ‘concerns that the high-profile public statements about migration would undermine efforts to raise international funds’¹³⁷ for health infrastructure.

This duality can, in some cases, still be planned around, and may amount to a productive challenge to global health practitioners to generate nimble, creative, strategic interventions that have utility in *both* the short-term ‘stay and fight’, and long-term ‘Migrate with Dignity’ scenarios. In the first place, both countries already do undertake ‘dual-use’ health initiatives in many areas, and these are worthy of highlighting. At the same time, neither Tuvalu nor Kiribati are the first island countries to suffer a slow-motion, depopulating environmental disaster, and lessons from analogous situations might offer useful templates for action. These will be discussed in turn.

Finally, it should be noted that a person’s (or a people’s) health – be it good or poor – is essentially a moveable feast, insofar as it is portable and (largely) remains with them if they are uprooted. This consideration agitates for health interventions whether or not a population is expected to maintain the same residence.

2.4.1 ‘Dual-Use’ Health Sector Interventions

One example of such ‘dual-use’ health interventions relates to human resources for health, sometimes abbreviated as HRH. Beginning in 2006, the Australian Department of Foreign Affairs and Trade (DFAT) funded the Kiribati-Australia Nursing Initiative (KANI), which provided scholarship assistance to 30 I-Kiribati per annum to become Bachelor’s-accredited Registered Nurses through Griffith University – a public research university in Queensland, Australia. Explicitly stated within the program’s Priority Outcome 2, relating to workforce skills development, was the aim ‘to support young I-Kiribati women and men (16-24 years) with recognised qualifications to access employment

¹³⁷ Donner, Simon D. and Sophie Webber. 2014. “Obstacles to Climate Change Adaptation Decisions: A Case Study of Sea-Level Rise and Coastal Protection Measures in Kiribati.” *Sustainability Science* 9(3): 331-45.

and training opportunities domestically and abroad'¹³⁸. Training young I-Kiribati as nurses has clear utility in addressing the country's 'critical shortage of skilled health workers' which includes a heavy reliance on retired staff to fill nursing positions for lack of adequate nurse training¹³⁹. At the same time, a global nursing shortage – particularly in high-income countries with aging populations - means that nursing is among the most highly sought-after skills in the places where I-Kiribati might emigrate to. Thus, nurse training is one potential 'dual-use' health intervention in the Kiribati/Tuvalu case.

This isn't to say that such a proposition is free from trade-offs. As of 2013, when DFAT commissioned an independent review of KANI, it was found that the members of the first cohort of 30 I-Kiribati nursing trainees had the following disposition: two had deferred entry and were not counted further; 16 had completed all of their training, 11 of whom were working in Australia's health sector, three were still looking for work in Australia, and two had returned to work in Kiribati; five further students had not yet completed all studies, of whom three were continuing studies in Australia and two had transferred to the Kiribati School of Nursing; five students dropped out of nursing training entirely and had returned to Kiribati with no qualifications. Thus, out of the 28 counted trainees, only two became formally-qualified nurses working in Kiribati within seven years, with another two engaged in completing their studies in Kiribati¹⁴⁰. Though DFAT's Priority Outcome 2 references upskilling for domestic employment, and though only two of 30 trainees had become nurses in Kiribati within seven years, the DFAT review recommended that all future training of nurses should be done 'with the view to labour migration', with a 'development impact... measurable in PIC [Pacific Island Countries] through increased remittances and decreased population pressure on scarce island resources' (*Ibidem*). For these sorts of interventions to not simply become a mechanism for immediate brain drain, bilateral

¹³⁸ Shaw, Lea, et al. 2014. "Kani Independent Review." *AidWorks Initiative Number: ING466*. Canberra: DFAT.

¹³⁹ World Health Organization Regional Office for the Western Pacific. 2014. "Human Resources for Health Country Profiles: Republic of Kiribati." Manila: WHO/WPRO.

¹⁴⁰ Shaw, Lea, et al. 2014. "KANI Independent Review." *AidWorks Initiative Number: ING466*. Canberra: DFAT.

aid organizations will have to avoid the temptation of utilizing HRH initiatives as merely a safety valve for their own health worker shortages, and will have to prioritize health workforce training whose benefits accrue to climate vulnerable countries first. In any case, KANI was defunded by DFAT from 2014, but similar HRH initiatives, based on KANI, have been proposed by other NGOs¹⁴¹.

Another possible ‘dual-use’ intervention relates to mobile infrastructure. For example, the use of hospital ships in humanitarian aid, disaster response, and civic assistance has a long history, dating back at least two centuries¹⁴². Their use throughout the Pacific, including in Kiribati for short-term deployments, has also been the subject of study¹⁴³. The single largest budget line item in the *Building Resilience of Health Systems in Pacific LDCs to Climate Change* project (mentioned in the previous chapter) relates to moving the National Referral Hospital in Honiara, Solomon Islands inland from its current location hard up against a rapidly-eroding shoreline, and ‘climate-proofing’ its replacement. This is a luxury not enjoyed by Tuvalu or Kiribati, where there is insufficient land and higher ground, and a semi-permanent hospital ship could plausibly be of service. Such an approach would clearly have a greater degree of logistical complications (and resulting expense) than a land-based health care facility on high ground, but it may be the least-worst option in the lowest-lying Pacific islands, particularly when viewed against the backdrop of increasing the likelihood of funding because of such a ship’s potential re-use elsewhere.

That said, the existence of some potential ‘dual-use’ health interventions is clearly not a panacea. Wider health system functioning in both countries depends to a significant extent on infrastructure – both ‘hard’ and ‘soft’ – which can’t easily serve both scenarios. Countries and their

¹⁴¹ Da Yu Project. 2017. “Education-Based Migration to Limit the Impact of Climate Change on Island States.” Boston: MIT Climate CoLab.

¹⁴² Smyth, James Carmichael. 1796. *An Account of the Experiment Made at the Desire of the Lords Commissioners of the Admiralty, on Board the Union Hospital Ship, to Determine the Effect of the Nitrous Acid in Destroying Contagion, and the Safety with Which It May Be Employed*. London: J. Johnson.

¹⁴³ Licina, Derek Joseph. 2013. “Rendering Mercy in Timor-Leste: The Role of U.S. Navy Hospital Ships in Strengthening Partnerships” *School of Public Health and Health Services*. Washington, D.C.: George Washington University.

development partners are going to have to make painful decisions on trade-offs to address the public health consequences of climate change in low-lying SIDS.

2.4.2 The Role of the Health Sector in Depopulating Environmental Disasters

Perhaps the next closest analogue for the Tuvalu/Kiribati climate change case can be found in two different island evacuations stemming from volcanic activities. The first being Niuafu'ou, the northernmost island in Tonga, which was entirely evacuated following a major eruption in 1946; the second being Montserrat, a Caribbean island and British Overseas Territory in the Lesser Antilles chain, which was $\frac{2}{3}$ evacuated following an eruption in 1995.

Niuafu'ou is one of several Tongan islands with volcanic activity, although it is the only one that has been evacuated for such activity in living memory. Eruptions of varying severity, from crop- and village-destroying lava flows with fatalities to minor ash plumes without significant human consequences, took place in 1853, 1912, 1929, 1935, 1936, and 1943. Despite these intermittent hardships and the ominously frequent backdrop of natural disaster, 1,300 people still lived on the island as of 1946, when a massive eruption coupled with earthquakes moved the ground by 30-40 feet, leading to widespread devastation. Though several villages were still intact and the food supply was largely undamaged, government facilities were entirely destroyed, and a Government Evacuation Ordinance was passed making migration compulsory. Even prior to the eruption, as a remote island in a developing country with a small population, far from the national capital, Niuafu'ou suffered from expensive goods, limited infrastructure, and a 'lack of efficient medical services and equipment'¹⁴⁴. Nevertheless, evacuees – who had been resettled en masse on 'Eua, a slightly better-off island closer to the Tongan capital - railed against the evacuation and petitioned to move back almost immediately, owing to '[s]evere antagonisms' which developed between 'Eua residents and the newcomers

¹⁴⁴ Rogers, Garth. 1981. "The Evacuation of Niuafu' Ou, an Outlier in the Kingdom of Tonga." *The Journal of Pacific History* 16(3): 149-63.

(*Ibidem*). By 1950, a first wave of seven had returned to Niufo'ou, followed by another 120 the year after. There are 650 people resident on Niufo'ou today; the volcano remains active, but there have been no further eruptions on the scale of the 1943 incident.

The Niufo'ou story has clear parallels with climate change, but few of these parallels are encouraging. Perhaps most notably, evacuees considered their marginally improved health and material circumstances on 'Eua (which has one of Tonga's four hospitals, while Niufo'ou has none¹⁴⁵) to be outweighed by the animosity and antagonism of the new island's existing residents – and this in a circumstance with no ethnolinguistic or nationalistic entanglements.

The Montserrat case was slightly slower moving, but with similar consequences. Montserrat's Soufrière Hills Volcano began erupting in 1995, but the capital city wasn't reached by rock- and mudflows until 1997. By 1996, an Exclusion Zone was created and a voluntary relocation package was mooted, at which point about ⅔ of the island's population emigrated, with about ⅓ relocated to shelters on a less-affected portion of the island. When the capital city was finally destroyed in 1997, it became clear that relocations would be long-term, and government-wide initiatives were put in place to reflect a more permanent emigration/relocation strategy. One consequence of the depopulation for remaining Montserratians was the 'knock-on effect to essential services as overall demand for services decreased, reducing the number of staff required at their facilities. Overall, the emigration of the population outweighed the reduced staffing needs, leaving a shortage of skilled staff in essential services'¹⁴⁶. As a result of the reduced demand from a decreasing population, specialist services within the health sector were decreasingly viable, and '[r]esident specializations were lost because their costs could not be justified for the small population base' (*Ibidem*).

¹⁴⁵ World Health Organization Regional Office for the Western Pacific. 2014. "Human Resources for Health Country Profiles: Tonga." Manila: WHO/WPRO.

¹⁴⁶ Sword-Daniels, V., et al. 2014. "Chapter 26: Consequences of Long-Term Volcanic Activity for Essential Services in Montserrat: Challenges, Adaptations and Resilience." *Geological Society* 39: 471-88.

More important for the purposes of this thesis, the upheaval embodied by the natural disaster and depopulation pathway has consequences for all parties. Though there appear to be few cases of silicosis or other chronic conditions from exposure to the eruptions in Montserrat, the social and economic disruption caused by the evacuation increased susceptibility or otherwise accelerated a number of disease processes, including depression, psychological disturbances, interpersonal violence, physical and mental abuse, and injuries¹⁴⁷ - and these effects were common to both those who stayed as well as those who emigrated.

Depopulating islands are left with unpalatable choices, and existing health system functions will predictably, if not linearly, be negatively impacted by emigration. The safety valve in Montserrat for the initial decrease in health sector capacity was an incentive scheme for people from poorer Caribbean countries to immigrate; this strategy is likely not viable in the Kiribati/Tuvalu climate change case without significant subsidization via climate finance.

There are no painless responses to the conundrum of climate change in Kiribati and Tuvalu. Dual-use health strategies and the opportunity for careful planning of staged emigration can mitigate some of the negative consequences of climate change; unplanned mass migration and incoherence around climate change strategies (e.g. via indecision on the adaptation/migration axis) will likely result in poorer health outcomes.

2.4.3 An Advantage Enjoyed by Pacific Small Island Developing States in Leveraging Climate Finance for Health

Despite the considerable difficulties inherent to effecting global change, particularly from their base in far-flung, impoverished, previously-colonized, low population small island developing states, Pacific health leaders have managed to press one very recent advantage in the international arena. It

¹⁴⁷ Avery, J. G. 2003. "The Aftermath of a Disaster: Recovery Following the Volcanic Eruptions in Montserrat, West Indies." *West Indian Medical Journal* 52(2): 131-35.

happens to be an advantage with great import for the domain of climate finance and health in SIDS. From its founding in 1948, the WHO's Director Generalship was awarded via 'quiet horse-trading among major nations, sometimes involving accusations of bribery'¹⁴⁸. The 2017 election, however, was conducted under reformed rules with a single vote by each World Health Assembly member state on a ballot of openly-campaigning candidates. The principle of one nation, one vote has major advantages for the 13 World Health Assembly member states in the Pacific region, and for SIDS globally. For the WHA overall, mean/median populations for member states are 38,377,113 and 8,644,144 respectively; for Pacific WHA member states, the mean/median populations are 189,039 and 100,600 respectively. As a result, Pacific countries in specific, and SIDS overall, banded together as a disproportionately important bloc under the new WHA voting rules, and extracted concessions in the form of favorable policy positions by their preferred DG candidate.

Following his campaign visit to the WHO Western Pacific Regional Office, then-candidate Dr. Tedros Adhanom Ghebreyesus listed '[s]upporting national health authorities to better understand and address the health effects of climate and environmental change' as one of his five manifesto priorities, and referenced '[e]xtreme climate events threaten[ing] the health and wellbeing of people across the world, particularly those in the Small Island Developing States' when queried on the three biggest threats to health globally. Dr. Tedros was the only one of the six candidates to campaign on an explicit climate and SIDS platform¹⁴⁹.

Though WHO does not release the final voting breakdown, leaked voting totals had Dr. Tedros winning with 133 votes in the third round¹⁵⁰. If all 39 WHA-member SIDS voted for him, this would

¹⁴⁸ McNeil Jr., Donald G. 04 Apr 2017: "The Campaign to Lead the World Health Organization". New York Times, p.D1.

¹⁴⁹ Horton, Richard and Udani Samarasekera. "WHO's Director-General Candidates: Visions and Priorities." *The Lancet* 388(10056): 2072-95.

¹⁵⁰ Ravelo, Jenny Lei. 2017. "The Next WHO Director-General Is Tedros Adhanom Ghebreyesus" [accessed on 20 Mar 2018]. Available at: <https://www.devex.com/news/the-next-who-director-general-is-tedros-adhanom-ghebreyesus-90330>.

represent nearly a third of the votes required for victory with only 0.8% of the world's population. This may represent one of the few asymmetries of power where the advantage accrues to LDCs in the Pacific.

After Dr. Tedros was elected as DG in May of 2017, and upon assuming office in July of 2017, WHO took three related actions with relevance for Pacific SIDS endeavoring to address the public health consequences of climate change. First, the WHO belatedly undertook an application to the Green Climate Fund. Though its application cannot be fast-tracked since WHO was not previously accredited to any of the UNFCCC financial mechanisms, the application itself is a vital first step in leveraging climate finance for health in Pacific SIDS. Second, an Assistant Director-Generalship for Climate and Other Determinants of Health was created, the first time an ADG-level position for climate change has existed within the WHO structure. The appointee is Dr. Joy St. John, formerly the Chief Medical Officer for Barbados – a clear nod to SIDS. Finally, the WHO inaugurated a ‘Special Initiative on Climate Change and Health in Small Island Developing States’ as part of the WHO’s 3rd Global Conference on Climate Change and Health, kicked off in the Pacific on 15-16 March 2018, timed to coincide with the validation workshop for the nascent *Building Resilience of Health Systems in Pacific LDCs to Climate Change*. This launch was the first time an ADG has ever visited the Western Pacific Regional Office Division of Pacific Technical Support, and represented the ADG’s first mission travel since taking office. Her presence signaled a strong commitment at WHO to address the public health consequences of climate change in the Pacific (and SIDS generally), and should perhaps be seen as the fruition of efforts by Dr. Tapa and his colleagues to get climate change and health onto WHO’s agenda. The *Building Resilience of Health Systems in Pacific LDCs to Climate Change* project will be the largest climate change and health project yet undertaken. It will be a challenge on many levels, including for the four Pacific LDCs who now need to address the backlog of

climate-sensitive health risks which weren't effectively addressed previously. This project will also challenge WHO, which has not previously served as an implementing agency and will therefore need to make up for lost time. WHO's current General Programme of Work conceptualizes its core functions as providing leadership, shaping agendas, disseminating knowledge, setting norms and standards, articulating policy options, providing technical support, and monitoring health trends¹⁵¹. These are clearly fundamental to functioning health systems, but cannot by themselves arrest a looming juggernaut like the public health consequences of climate change. This makes projects such as the one in Kiribati and Tuvalu important as both an exemplar for other endeavors to utilize climate finance for health in the most vulnerable countries, and as a vital catalyst for WHO's maturation as an intergovernmental organization capable of bringing to bear its particular expertise where it overlaps with climate change.

2.5 Conclusion: Novel but Not Hopeless

The potential utility that climate finance represents for the health sector cannot be ignored, but it will take a great deal of effort to ensure that these initiatives do more than merely manage poor health outcomes stemming from climate change, but rather leverage climate finance to catalyze true resilience. The health sector has only begun to interface with the climate sector, and both will need to grapple with unfamiliarity, proprietariness, and institutional inertia in creating a basis for cooperation. At the very least, WHO will need to complete its accreditation to the GCF and promote health concerns within intergovernmental climate change fora, thereby fulfilling its role in 'us[ing] evidence and influence to secure more positive health outcomes'¹⁵² therein. It should also be acknowledged that

¹⁵¹ World Health Organization. 2014. "Twelfth General Programme of Work: Not Merely the Absence of Disease." Geneva: WHO.

¹⁵² World Health Organization. 2014. "Twelfth General Programme of Work: Not Merely the Absence of Disease." Geneva: WHO. p.40.

health is only one of the domains affected by climate change, and therefore some climate change sequelae are beyond the sole purview of the health sector and will require further cooperation still.

In a slightly different SIDS/colonial context, Abbé Guillaume-Thomas Raynal sounded a word of caution about the limited capacity of people and island ecosystems to bear exploitation:

Que dis-je ? Cessons de faire entendre la voix inutile de l'humanité aux peuples & à leurs maîtres : elle n'a peut-être jamais été consultée dans les opérations publiques. Eh bien ! Si l'intérêt a seul des droits sur votre ame [sic], nations de l'Europe, écoutez-moi encore. Vos esclaves n'ont besoin ni de votre générosité, ni de vos conseils, pour briser le joug sacrilège qui les opprime. La nature parle plus haut que la philosophie & que l'intérêt¹⁵³

Climate finance could ultimately be leveraged as a reparative measure for some of the damages already being suffered by Kiribati and Tuvalu, but even this small measure of justice is tinged by a barb. Just as Mr. Teitiota was forced to seek refuge with the very actors who have caused the climate change which spurred his need to seek it, Kiribati and Tuvalu must apply to the financial mechanisms funded by these same actors for succor. To its credit, the *Building Resilience of Health Systems in Pacific LDCs to Climate Change* project has succeeded in accessing GEF funding suggests that such an approach may be novel but not hopeless.

Pacific SIDS are essentially the first test of the world's climate adaptation and mitigation mechanisms, and health is the human face of climate change. If climate-resilient health systems in Pacific SIDS hold, if the rest of the world does right by the Henderson Islands of climate change, it will go some way towards remedying a major injustice. If not, nature speaks in louder tones than philosophy or self-interest.

¹⁵³ [In order to overturn the edifice of slavery, to what tribunal shall we carry the cause of humanity? Kings, refuse the seal of your authority to the infamous traffic which converts men into beasts. But what do I say? Let us look somewhere else. If self-interest alone prevails with nations and their masters, there is another power. Nature speaks in louder tones than philosophy or self-interest.] Raynal, Guillaume-Thomas. 1780. *Histoire Philosophique et Politique Des Établissements [sic] et du Commerce des Européens dans Les Deux Indes - Tome Troisième*. Genève: Jean-Léonard Pellet. Translation from Beard, John R. 1853. *The Life of Toussaint L'ouverture, the Negro Patriot of Hayti*. London: Ingram, Cooke, and Co.

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