CLIMATE CHANGE, HEALTH & SMALL ISLAND STATES

WELCOME

Federal Ministry for Economic Cooperation and Development





LUDWIG-MAXIMILIANS-UNIVERSITÄT MÜNCHEN

The One Health Knowledge Café

- The collaborative effort of more than 11 individuals representing CIH partners and alumni
- Represents Asia, Africa, Europe, South and North America
- Brings together the expertise and network of researchers and professionals from various disciplines and countries to enable cross learning, sharing and network building
- Monthly talks, webinars, online courses and discussions
- Supported by LMU CIH through DAAD/Exceed Program, funded by the BMZ

Outline

- Background Pacific region
- Climate crisis impacts in Small Islands Developing States (SIDS)
- Health impacts of the climate crisis
- Conclusions

Our Sea of Islands

- Pacific Ocean is largest ecosystem on the planet; essential for our collective survival, supplies 2/3 world tuna, 80% protein source for Pacific people
- Approximately 10 million people, mostly in Melanesia (PNG, Fiji, Solomons, Vanuatu)
- Median age 21 years
- Pacific people are traditional custodians but ocean under threat from pollution, over-fishing, IUU fishing, climate change, environmental degradation, habitat destruction

A Region of Contrasts

- Geopolitics
- Stagnant economies; educational underachievement, low skills, low incomes,
- Loss of focus, basics ignored e.g water
- Globalisation free trade, commercial determinants, flood of food imports
- Inadequate action on health determinants economic imperatives trump health (NB 2019 PIF Leaders Communique)
- Accountability often unclear

Climate Crisis in Pacific Islands

- Climate crisis is the most important threat to lives and livelihoods of people in the Pacific islands
- Small Pacific Islands contribute <0.03% GHG
- Yes, most islands are facing the negative impacts of the climate crisis
- Some coastal communities face relocation, forced outmigration
- Climate crisis is an effect multiplier makes worse what exists



CLIMATE CHANGE THREATENS YOUR HEALTH

Drought, floods and heat waves will increase.







Vector-borne

diseases, like malaria and dengue virus will increase with more humidity and heat.

Basic necessities will be disrupted...



FOOD Hunger and famine will increase as food production is destabilised by drought.



AIR Pollution and pollen seasons will increase leading to more allergies and asthma.



WATER Warmer waters and flooding will increase exposures to diseases in drinking and recreational waters.

Between 2030 and 2050 climate change is expected to cause 250 000 ADDITIONAL DEATHS PER YEAR due to malaria, malnutrition, diarrhoea and heat stress.



Coastal Population Mapping

Roughly 26% live within 1km of coast, 45% within 5km, 54% within 10km **Without PNG**: 57% live within 1km of coast, 90% within 5km, 97% within 10km



A Vulnerable Region

- Pacific region is highly vulnerable to disasters
- Contributes <0.03% to GHG but suffers most from adverse effects of the Climate Crisis
- World Risk Report has Vanuatu as most at risk
- PNG, Fiji, Solomons, Vanuatu, Tonga among top 15 high risk countries for floods, drought, TCs, earthquakes, tsunamis



Climate Crisis

- Sea level rise; impact on low lying atolls
- Ocean acidification, warming leads to coral bleaching, threatens food security
- Water sources contaminated
- Extreme weather events e.g Cyclone Heta Niue 2004
- Prolonged droughts Micronesia

Recent Disasters & Estimated Costs

Disaster	Disaster Effects USD Million	%GDP
2009 TSU Samoa	124	22
2012 TC Evan Fiji	108	2.6
2013 TC Evan Samoa	203	29
2014 TC lan	na	na
2014 Floods SB	107	9.2
2015 TC Pam Vanuatu	449	64
2016 TC Winston Fiji	900	20
2018 TC Gita Tonga	150	38

Impact of Climate Crisis

- Food security (as a result of ocean acidification, increase in ocean temperature, changing rainfall patterns causing drought and flooding events ...)
- Water security (as a result of salt intrusion, drought, etc.)
- Loss of land (as a result of erosion, sea level rise ..)
- Loss of natural and economic base .. and casualties (as a result of cyclones, flooding and other weather related disasters)
- **Biodiversity loss** (krill, seagrass, bivalves at sea, etc.)
- **Economies** (altered tuna stock migration affecting industrial fisheries, tourism,) with high costs upon small island countries
- Health issues (as a result of rising temperature, sea level rise or weather changes)



Climate Crisis

- Climate Change affects entire determinants of health; social, economic, environmental – food we eat, water we drink, weather we experience
- Climate Change is an "Effect Multiplier" aggravates existing health risks e.g post disaster disease outbreaks usually from pre-existing threats, aggravates access to preexisting gaps in access to water and sanitation
- **Preparedness is critical** integrate health issues into CC adaptation policy

Sanitation and Water Access (New Data JMP 2017)



Sanitation (JMP 2017)

Sanitation Coverage (%)



Water Supply (JMP 2017)

Drinking water coverage (%)





CLIMATE CHANGE AND PACIFIC ISLAND FOOD SYSTEMS

THE FUTURE OF FOOD, FARMING AND FISHING IN THE PACIFIC ISLANDS UNDER A CHANGING CLIMATE











Higher air and sea temperatures will affect livelihoods

Wetter wet seasons and drier dry seasons will affect agriculture

More catastrophic rainfall and droughts will threaten the local people

Sea level rise will cause severe flooding and erosion



Fresh water supplies will be contaminated by sea water



Fish will be driven away because of higher water temperatures



Corals will be killed as the ocean becomes warmer and



More violent tropical cyclones will decimate the

Food security

- Coastal fisheries harvest could decline by 50% by 2100 due to overfishing, pollution, ocean acidification, indirect effects on habitats; coral reefs, mangroves etc
- Offshore stocks expected to increase, move further east higher catches in Polynesia, lower in Melanesia
- Sea level rise have direct effects on low lying atolls through loss of land, erosion, salt water intrusion
- Ocean acidification impact on coral reefs, bleaching

Aboviral Outbreaks and Circulation

- Pacific region is particularly vulnerable to climate change
- Intensification of travel and trade in the region combined with climate change pose great risks for spread of arboviral diseases in the region
- Climate change and double burden of NCDs and CDs are considered health security risks as they place immense pressure on fragile health systems; having adverse effect on ability to prepare and respond to emerging threats

Aboviral Outbreaks and Circulation

- A total of 76 newly reported arboviral infection (Dengue fever, Chikungunya and Zika) outbreaks and circulation recorded in the Pacific between January 2012 and August 2018
- 49 newly reported dengue outbreaks
- For the first time since 1970, all 4 dengue serotypes were circulating in the region in 2012
- **12** newly reported Zika virus outbreaks
- **15** newly reported chikungunya outbreaks



circulation in the Pacific, 2012 - 21 August 2018

Number of newly reported arboviral infection outbreaks and

Source: Pacific Community (SPC) Epidemic Intelligence System Database

Aboviral Outbreaks and Circulation

Dengue Fever: a growing public health problem in the Pacific

Number of newly reported dengue fever outbreaks and circulation



Source: Pacific Community (SPC) Epidemic Intelligence System Database

- 49 newly reported dengue fever outbreaks and circulation were recorded in the region between January 2012 and August 2018,
- In 2012, the four serotypes of dengue fever virus (DENV-1, DENV-2, DENV-3 and DENV-4) were circulating in the Pacific for the first time in a given calendar year. This occurred again in 2016 and 2017.



Regional Policy Responses to climate crisis

- WHO Initiative on Climate Change and Health in Small Islands Developing States 3rd Global Conference Meeting Nadi 2018
- Partnership with UNFCCC and Fiji COP23
- Launched WHA 2018
- Four Strategic Lines of Actions; Empowerment, Evidence, Implementation and Resources

Conclusions

- Climate crisis is a critical existential threat to Pacific communities
- Miniscule contributors to GHG but most adversely affected by the impacts of the climate crisis
- Climate crisis affects food, water, air, habitats
- Climate crisis is an 'effect multiplier'
- Effective action is urgently needed Paris Agreement

Tackling Climate Change, Advancing Planetary Health: Lessons from the Philippines

Renzo Guinto, MD DrPH

Chief Planetary Doctor, PH Lab Associate Professor of the Practice of Global Public Health Inaugural Director, Planetary & Global Health Program, St. Luke's College of Medicine, Philippines



Planetary Health



Our patients? PEOPLE and PLANET

Anthropogenic Change and Human Health





(Myers, 2017)

Planetary Boundaries









Health impacts are unfairly distributed



Cumulative emissions of greenhouse gases, to 2002

WHO estimates of *per capita* mortality from climate change, 2000

Map projections from Patz et al, 2007; WHO, 2009.





Philippines



- at the heart of planetary health



(Yusuf & Francisco, 2009)




Philippines typhoon recovery, complicated by coronavirus concerns



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INQUIRER

'Ma, just let go... Save yourself' Hy Ch Tap

Honday, November 11, 2013

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Worst disaster to hit PH

PREPARE

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SCIENTIFIC METHOD -

Ocean levels in the Philippines rising at 5 times the global average

Globally, sea levels are going up, but there are big regional differences.

SHALINI SAXENA - 2/19/2016, 9:00 PM



Salinity and Health

Drinking Water Salinity and Maternal Health in Coastal Bangladesh: Implications of Climate Change

Drinking Water Salinity and Raised Blood Pressure: Evidence from a Cohort Study in Coastal Bangladesh Salinity in Drinking Water and the Risk of (Pre)Eclampsia and Gestational Hypertension in Coastal Bangladesh: A Case-Control Study

Association between salinity and hospital admission for hypertension: an ecological case–control study in the Mekong Delta Region in Vietnam

Salinity and Miscarriage: Is There a Link? Impact of Climate Change in Coastal Areas of Bangladesh - A Systematic Review

Modeling the Relationship of Groundwater Salinity to Neonatal and Infant Mortality From the Bangladesh

Demographic Health Survey 2000 to 2014

Impact of Salinity on Infant and Neonatal Mortality in Bangladesh

Drinking Water Salinity, Urinary Macro-Mineral Excretions, and Blood Pressure in the Southwest Coastal Population of Bangladesh

The City of Manila Could be Underwater by 2050 if Climate Change Isn't Stopped





Climate change will impact Philippines' ability to feed its people

Mitigating effects of climate change to PH fisheries



Climate Change and Mental Health



(Laurence, et al., 2021)



Are we ready to build health systems



that consider the climate?

(Adapted from Mayhew, et al., 2013)



21st century health systems in the era of planetary health

Universal

Leaving no one behind Beyond borders & citizenship

High-value

Good outcomes, quality & safe Affordable & responsive

Climate-smart

Climate-resilient, disaster-ready Low carbon, green sustainable

Pandemic-resistant

Detects early, responds quickly Resources ready, better recovery



Local Health System Responses to Climate Change



Determinants of Local Health System Adaptive Capacity to Climate Change



UHC, climate action & health equity

UHC is an adaptation measure





Establishing a community for planetary health in the Philippines



LOCAL COMMUNITIES



In the Frontlines of Planetary Health

LET'S FLATTEN THIS CURVE TOO









Advancing the health of people and planet



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https://slmc-cm.edu.ph/academics/global-health/

"Climate Change, Health and Small Island States"

Sowing the seeds for an agricultural revolution

Pamela Bapoo-Dundoo National Coordinator GEF Small Grants Programme - UNDP Mauritius' disaster risk profile by the <u>Global</u> <u>Facility for Disaster Reduction and</u> <u>Recovery</u> highlights that flooding is the second largest risk after cyclones, causing 20 per cent of the direct economic losses associated with disasters.

Most of these costs arise from damage to people's homes.

But climate change is not the only risk driver. Rapid urbanization on formerly agricultural land has strained the national drainage system and increased the occurrence of flash floods, destruction of housing, infrastructure and crops, and putting the population at risk of vector and water borne diseases.



Industrial agriculture has promoted monoculture in Mauritius. This has reduced biodiversity, changed the behaviour of pests and pathogens, deteriorated soil biology; and reduced climate resilience in agricultural production systems.

Let's be clear about chemicals in agriculture

Pesticide is a POISON. Pesticide poisoning can occur via breathing, drinking or eating, or through the skin or mucous membranes. The symptoms resulting from acute poisoning may range from fatigue, dizziness, nausea and vomiting, to respiratory and neurological effects that may be life-threatening. Chronic, and even low-level exposure to pesticides has been linked to cancer, birth defects, and damage the nervous and the functioning of the endocrine system.

http://www.fao.org/newsroom/en/news/2004/51018/index.html

L'Institut National de la Santé et de la Recherche Médicale (INSERM) published its latest Collective Expert Review on the Health Effects of Pesticides on 30 June 2021

Through a critical analysis of the international scientific literature, the 2021 Collective Expert Review takes stock of what we know about the links between exposure to pesticides and human health. It looks at neuropsychological and motor development disorders in children, cognitive disorders, anxiety and depression in adults, as well as neurodegenerative diseases and cancers in people of any age. Respiratory health, thyroid diseases, and endometriosis are also discussed. All in all, the multidisciplinary group of researchers analyzed over 5,300 documents.

They take a closer look at the six adult diseases for which a strong presumed link has been established with occupational exposure to pesticides



COMMUNITY ACTION GLOBAL IMPACT



GEF Small Grants Programme

- Established in 1992, the year of the Rio Earth Summit, the GEF Small Grants Programme embodies the very essence of sustainable development by "thinking globally acting locally".
- The programme provides grants of up to \$50,000 directly to local communities for projects in
 - Biodiversity
 - Climate Change Mitigation and Adaptation
 - Land Degradation and Sustainable Forest Management
 - International Waters





SGP Mauritius Portfolio To date

BASIC STATS	TOTAL AMOUNTS	AVERAGE AMOUNTS
Number of Projects	189	
Total Amount in Grants	6 374 971 USD	33 730 USD
Total Amount of Cash Co-financing	7 762 320 USD	41 070 USD
Total Amount of Kind Co-financing	5 850 274 USD	30 954 USD
		72.024.1165

Total Amount of Co-financing

13 612 594 USD

72 024 USD







To decrease agricultural chemicals and enhance resilience to climate change, the GEF Small Grants Programme has pioneered sustainable agricultural practices over the last 26 years in Mauritius.

With increasing determination we started with composting, then pioneered organic farming and agricultural systems such as agroforestry or agroecology

Association Kinouété – "Sustainable Waste Management Practices at Petit Verger Prison"

- Sustainable
 management of waste at
 Petit Verger Prison
 through waste
 segregation and
 composting
- Increased rehabilitation and employability for 25 detainees
- 500 families and 1000 community members sensitized on wastes segregation
- Income generation through sales of compost for the prison and detainees.



IN collaboration with foundation ressources et nature (FORENA) Income Generation through Sustainable Agricultural Practices

- Empowering retrenched lowincome group of women, street children, fishers in production of organic crops (vegetables, spices, medicinal plants)
- Pioneered the first Organic Certifications by Eco-Cert.
- Contributed to the Organic farming Bill to be proclaimed



Conservation of Agro-biodiversity - Medicinal Plants and Vegetables Aiming at Organic Certification (Eco-Cert) Providing income for unemployed women through sustainable agricultural practices Union Park Women Association - Foundation Resources et Nature 2010







Integrated Pest Management Lemon yellow grease traps for leaf miners



CropLife (Mauritius) - "Decreasing POPs Through Management of Empty Pesticide Containers in the Republic of Mauritius"

- Safe disposal of 20,000 triple rinsed empty pesticide containers
- Reduction in Persistent Organic Pollutants and safer use of chemicals.
- 1000 farmers to be directly trained in triple rinsing and proper disposal of used containers


Le Vélo Vert Association - "Developing Sustainable Agriculture Through Knowledge Sharing And A Distribution Platform"

- Delivery of organic vegetables through development of an effective distribution platform
- Reduction in the use of chemicals and promotion of safe agriculture.
- Income-generation for 10 farmers
- Creation of 10 to 20 direct green jobs







CLIMATE CHANGE

In Mauritius, farmers and their lands have been considerably affected by the effects of climate change in the past few years. The damage caused to crops by torrential rains has been estimated at 80% in some regions, with a significant impact on the availability and price of local vegetables

However it remains very hard to convince farmers to change their practices

Crops after heavy flooding April 2021 Plaine Sophie, Mauritius



Surprisingly, not much has yet been done to build resilience against the changing climatic conditions, and local growers keep cultivating the land in the same way as they did before. Many of them remain unaware that simple techniques like contour farming would reduce the amount of topsoil and seeds that are washed away during heavy rains.



In 2018, we brought in Dr. Georges Felix from Puerto Rico and University of Coventry to train farmers in the context of an SGP funded project: "Increasing Farmers Resilience to Climate Change by Adopting and Agroecological Approach".



With the support from the private sector we are introducing an innovative drainage system called bioswales which help regenerate ecosystem services

GEF SMALL GRANTS PROGRAMME UNITED NATIONS DEVELOPMENT PROGRAMME

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CLIMATE CHANGE, HEALTH & SMALL ISLAND STATES

Thank you!

If you have any queries, contact: <u>wandinilutchmun@lrz.uni-muenchen.de</u>

Find more information about our activities on: www.cih.lmu.de

Federal Ministry for Economic Cooperation and Development





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