

# Principles of Planetary Health



# Principles of Planetary Health

*WILLIAM MONTELPARE AND LAURIE  
MCDUFFEE*



# The Plan for the Sub-committee of Planetary Health

## **Academic Health Institutions Declaration On Planetary Health**



# Overview and Mission of the Planetary Health Program

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# Proposed Table of Contents

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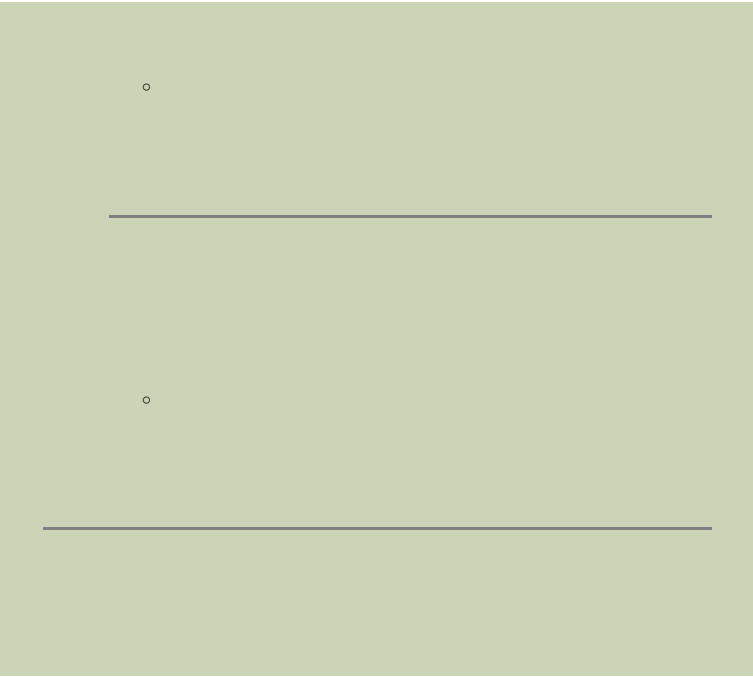
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- 6. 1990年代の日本経済の停滞

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# Planetary Healthcare Pressbook Status Table

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PART I

# PART I: INTRODUCTORY CONCEPTS IN PLANETARY HEALTH

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# What is Planetary Health?



*What is the purpose of this text?*

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## The Geneva Charter for Well-being



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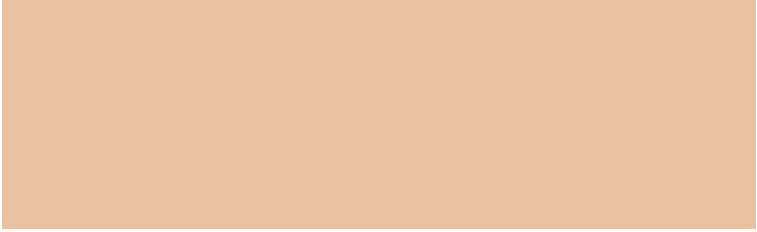
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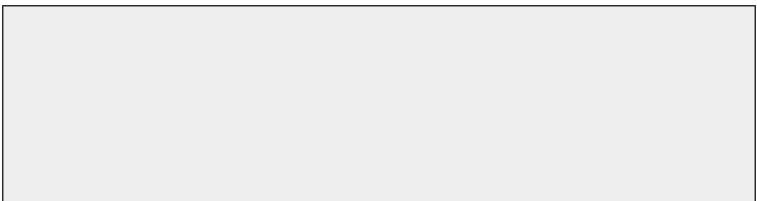
# I. Understanding Planetary Health -- Sharing Space in the Biosphere

**Authors: Grynszpan, D., & Montelpare, W.**

















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# 2. Introduction to One Health

**Authors: Ojha, S., and Kao, K.**



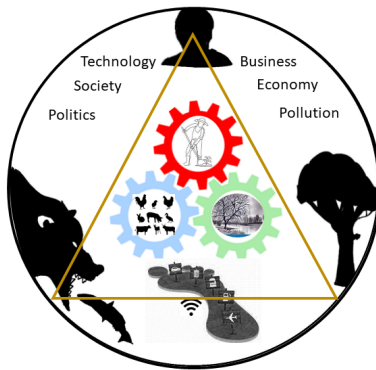


Figure 1. One health is 'Health of Many'. It is composed of health of the humans, animals and the environment. Health is influenced by several peripheral factors.

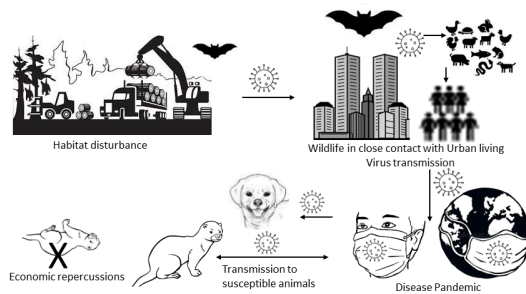


Figure 2. SARS-CoV2 (COVID-19): A Domino effect of disturbance of ecosystem. Deforestation prompted bats living in wild to explore urban animal markets. Bats transmit SARS CoV-2 through an intermediate animal to the world. Humans transmit the virus to household pets and the susceptible mink population, eventually shutting down the mink farming industry.

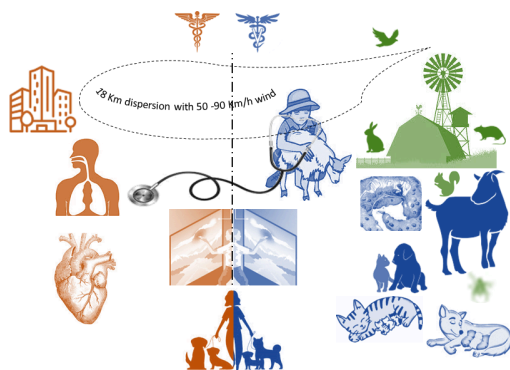


Figure 3. Q fever:- Human:Animal:Environment - Interface





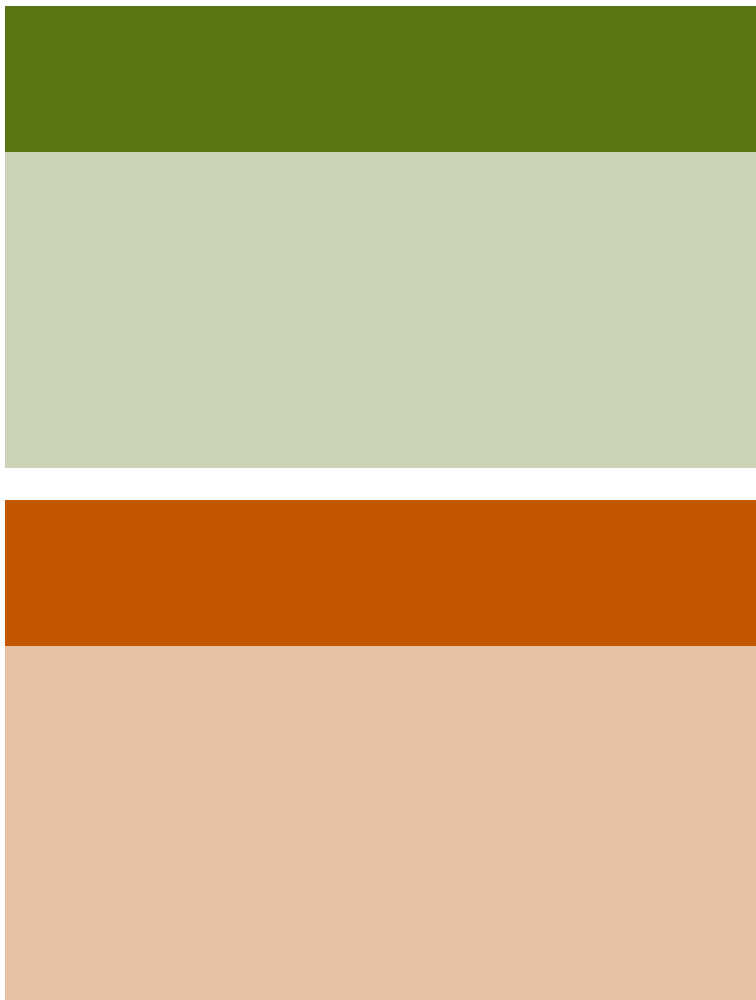







# 3. Defining ECO-Health

**Authors: Sarkar, A., & Atkinson, S.**



# Introduction

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**Nature as therapy; What is the importance of biophilia to human health?**

Understanding the evolution of our relationship with nature.

Supporting mental health through nature prescribing

Physician advocacy.

Foundations of nature as therapy in clinical practice.

# 4. Climate Change

*Climate Change*

**Authors: Wang, X., Kinay, P., Farooque, A.**









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PART II

# PART 2: UNDERSTANDING THE INTERFACE BETWEEN HUMANS AND ANIMALS

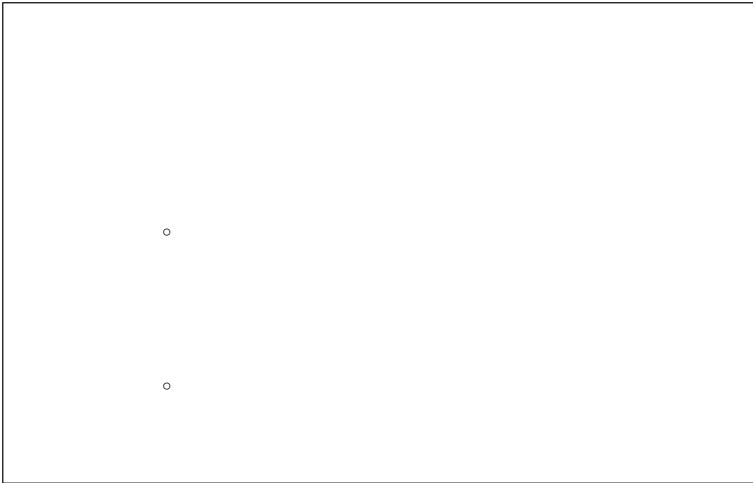


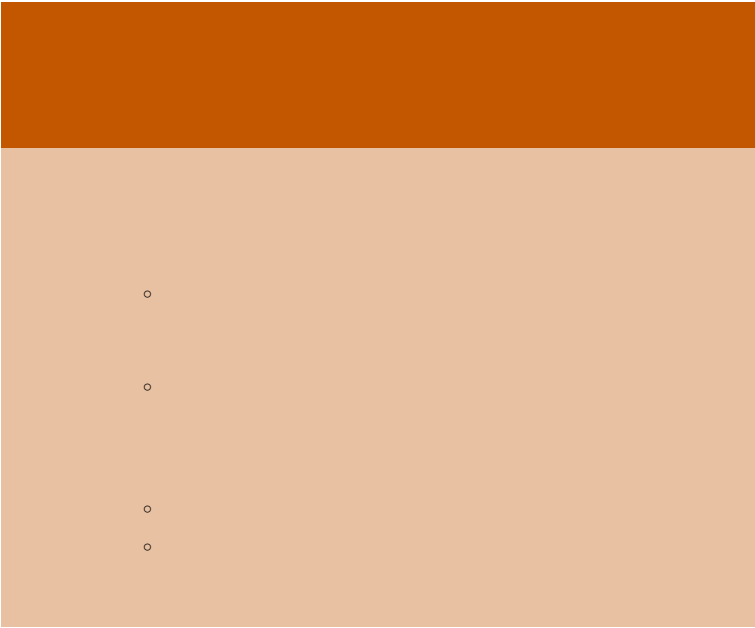
**Human – Animal Relationships**



# 5. Understanding the interface between humans and animals

**Authors: Cusack, L., Hurnik, D., Kao, K., & McDuffee, L.**







## *Preface*

## **Human Interaction With Wildlife**

## **Loss of Biodiversity**







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WHAT IS BIODIVERSITY?

**Nature-based solutions in the fight against climate change | Thomas Crowther | TEDxLausanne from (Nature-based solutions in the fight against climate change | Thomas Crowther | TEDxLausanne – YouTube)**



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## Human Interaction with Companion Animals

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# 6. Climate Change and Wildlife

**Authors: Cusack, L.**



# 7. Planetary Health and Food Animal Production

**Authors: Hurnik, D.**

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**History of Animal Agriculture**











# 8. Issues in Biodiversity

**Authors: Kao, K.**

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**Loss of Biodiversity**







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WHAT IS BIODIVERSITY?

**Nature-based solutions in the fight against climate change | Thomas Crowther | TEDxLausanne from (Nature-based solutions in the fight against climate change | Thomas Crowther | TEDxLausanne – YouTube)**





# 9. Human Interaction with Companion Animals

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**Human Interaction with Companion  
Animals**

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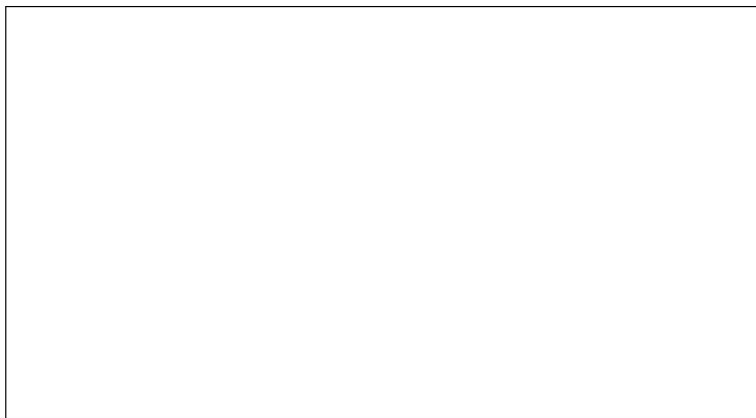






PART III

# PART 3: SUSTAINABILITY ISSUES IN CLIMATE CHANGE



# Sustainability Issues in Climate Change and the need to recognize climate justice

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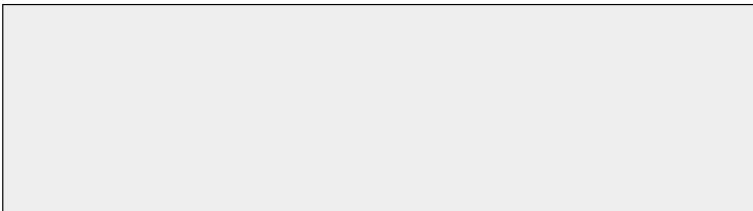
# 10. Food Security and Climate Change

**Authors: Wahl, M.,**



## **I. What is food security?**

### **Climate Change and Food Systems in Canada**



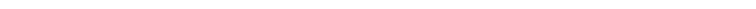




**2.**

# II. Water Security and Climate Change

**Authors: Hilda Swirsky**





Impacts on water security Groundwater resources represent more than 90% of fresh water and up to 40% of drinking water. (United Nations 2006).



An interactive H5P element has been excluded from this version of the text.

You can view it online here:

<https://pressbooks.library.upei.ca/planetaryhealth/?p=693#h5p-9> One of the Sustainability Development Goals, the UN is striving to achieve by 2030 is Sustainability Goal #6, the goal of ensuring availability and sustainable management of water and sanitation for all. This goal of having universal and equitable access to safe and affordable drinking water for everyone is especially critical and essential when the impacts of climate change include the unpredictability of changing

precipitation patterns including seasonal redistribution and changing times, duration and properties of precipitation and reduced snow cover and rapid loss of glaciers melting, increasing risks of floods and drought and changes to the availability of fresh water and the health of our oceans. (Martin & Volt, 2019)

Canada's rate of climate warming is among the highest in the world resulting in rising sea levels, rapid warmth of water temperatures in cold regions and therefore unpredictable guides to reliable water availability and unreliability of warming water temperatures, decreasing or increasing rainfalls and extreme weather events such as sudden, severe storms, flooding, drought and mudslides, freezing rain and ice storms and therefore adapting and mitigation will impact whether or not we meet Sustainable Goal #6. (Martin & Void, 2019, Schuster-Wallace, Sandford, Merrill, 2019, Berry et al, 2014).

Climate change challenges to water security: There could be decreased access to available food as oceans become more acidic impacting shellfish and their ability to build shells which will also threaten vast fisheries. (Fisheries and Oceans Canada. Video). As we see already, this can result in increasing food costs as food security is impacted. (Marshman, Blay-Palmer & Landman

(2019).

Recently, Hurricane Fiona has been a devastating example of the threat to coastal communities becoming a reality when it arrived in the Maritimes on September 23d and 24th 2022, This is only one incident of the destruction and damage that could more frequently take place because of climate change. Parts of Prince Edward Island, Nova Scotia and Newfoundland were all affected after it had travelled from Puerto Rico. Cape Breton in Nova Scotia and Port Aux Basques in Newfoundland were hit the hardest. As of October 20, the Canadian Red Cross has provided emergency shelter to 1200 individuals and registered more than 95,000 households impacted by the hurricane (Canadian Red Cross, 2022). Nova Scotia's Emergency Management Office reminded Nova Scotians that floodwaters have also impacted food safety and that drinking water coming from untreated, non-municipal water sources such as lakes, rivers and streams should boil their water before consuming it. (Government of Nova Scotia, Emergency Management Office, September 24th).

CTV News Atlantic reported that the Insurance Bureau of Canada stated that this is the most costly extreme weather event recorded in

Atlantic Canada affecting high risk flood areas and flood plains. Initial insured damage is recorded at \$660 million (CTV Atlantic October 19th, 2022)

As sea levels rise and arctic ice melts providing the possibility of Arctic passages, there will be an additional risk to our peace and security as opposing countries may decide to weaponize water as is currently being done in the Ukraine. Which populations will be impacted the most: children, pregnant women, seniors, Indigenous people, low socioeconomic populations and people with chronic illnesses \*\* Climate justice removed from here For example, in this water rich country of Canada: The Council of Canadians still reported 34 long term drinking water advisories on reserves (Safe Water for First Nations): Retrieved October 20, 2022 from <https://canadians.org/fn-water/> Indigenous populations stewardship in water security

The policy brief Indigenous people, water, & climate change (2020) pinpoints that Indigenous populations are custodians to many fragile, important water ecosystems and headwaters where they live. They see water as a living entity and have a powerful ethical connection to water stewardship built on their social-cultural values.

We can learn from their traditional knowledge about climate resilience and how women keep the traditional ecological knowledge and they deserve to be respected.

Water insecurity:

Affects food security as waters become warmer and there are also fluctuations in agricultural yields and the stress on agriculture. Warmer water temperatures also increase the growth of toxic blue-green algae that kills off marine life.

(Martin & Vold, 2019)

Role of Physician:

Physicians and nurses, as the two biggest health care providers, have a critical and collaborative role to play in advocating for the Sustainability Development Goals including the goals that link with water security such as food security, health and well-being, gender equity and climate action. As respected leaders who work in interdisciplinary communities, actions for equitable planetary health are priorities.

Powerful actions include being a committed, influential consumer and voter buying products and voting for Planetary Health.

Physicians share and convey their knowledge of Planetary Health to patients, the public, politicians, faith groups, academics and emphasize the vital importance of Planetary



Health.

Caring, empathetic culturally sensitive physicians are aware of the impacts of climate changes on a patient's mental, physical, spiritual and economic insecurities especially if there is grief and loss of their home, their forced change in residence and livelihood.

Physicians assist pregnant women to keep adverse birth outcomes to a minimum for example< recommending and encouraging that they get enough rest since getting enough rest is difficult to do. (Howard, Rose, Rivers (2018)

Physicians can enlighten everyone about the importance of emergency preparedness and direct the public and our colleagues to local resources such as local farms and contributions to local food security especially if patient and family are climate migrants who have been displaced and lost everything because of an extreme weather event.

Physicians can learn, understand and teach climate science in order to educate the public, our patients and our governments in calling for meaningful actions and in the importance of community-building and a community response. Collectively, physicians can join an organization such as the Canadian Association of Physicians for the Environment and support actions for a

healthy planet such as writing letters to the editors or signing petitions.

Physicians can keep track of the spread of diseases due to climate change such as West Nile Virus spreading northward

Physicians can learn and incorporate Indigenous values into their environmental work.

Physicians will be dealing with a high percentage of mental health traumas and distressed communities when dire climate change events has drastically impacted their mental health and well-being becoming a risk amplifier disrupting important supports for good mental health.

(Lawrence, Thompson et al, 2022). Symptoms may include post-traumatic stress, grief from devastating losses of homes, livelihoods, friends and having to start all over again and may not even have clean water to drink. ( McCue, D. 2018). Patients may have eco-anxiety, eco-paralysis or solastalgra. (Albrecht 2011). Striving to provide a respectful, secure place for discussion of water challenges that impact everyone, the University of Saskatchewan's Virtual Water Gallery has been a Global Water Funded pilot project that scientifically addressed past, current and future water challenges by combining both science and art in a safe, inclusive, considerate and collaborative space for discussions between

scientists, artists, and the general public. The outcome of this gallery space resulted in creative art pieces designed by the artists in a variety of media exhibited for all to see, to interact with and to converse about water challenges.(Arnal, Pomeroy et al, 2020).

### Conclusions

To achieve the UN's Sustainable Development Goals, respected, knowledgeable physicians, who are leaders and role-models, will unite in interdisciplinary collective, collaboration actions, speaking out as agents of change and advocacy, teaching and caring for patients and their communities and interacting with decision-makers in continuing necessary conversations and actions to achieve the human right to have equally accessible, secure clean water.

References: Libby Porter, Lauren Rickards, Blanche Verlie, Karyn Bosomworth, Susie Moloney, Bronwyn Lay, Ben Latham, Isabelle Anguelovski & David Pellow (2020) Climate Justice in a Climate Changed World, Planning Theory & Practice, 21:2, 293-321, DOI: 10.1080/14649357.2020.1748959

# 12. Sustainable Healthcare Delivery

**Reshef-Kalogirou, M., and Campbell, A.**





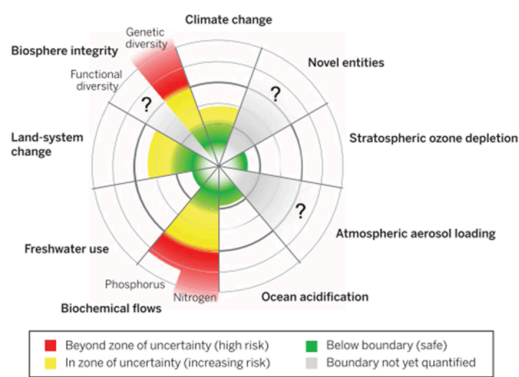
## **Section 1: The importance of practicing sustainable healthcare delivery**

### **Background**

#### **Healthcare Emissions**

# Theoretical Models

## Systems Thinking Theory



## What is Sustainable Healthcare?



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# 13. Anti-Microbial Resistance and Food Safety

**Authors: Daley, P.**

Introduction











PART IV

PART 4: PLANETARY  
HEALTH IMPACT ON  
HUMANS



The Physician and Planetary Health





# 14. Planetary Health and Infectious diseases

**Authors: Grynszpan, D., & Russell, R.**





# 15. Effects of Climate Change on Mental Health

Nettan, A., & Fenech, A.,

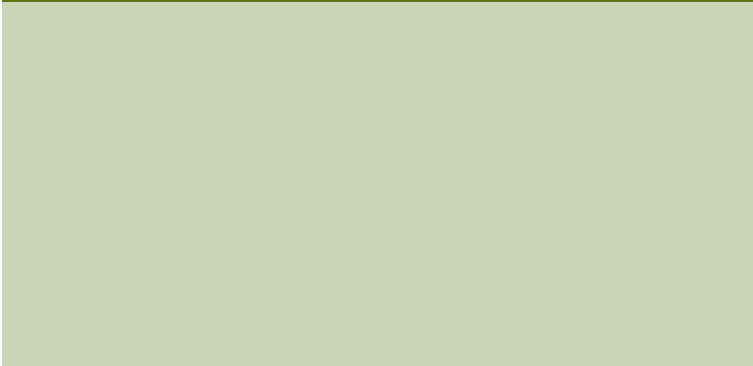
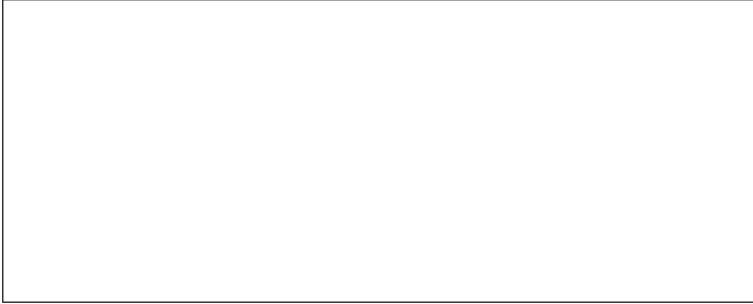


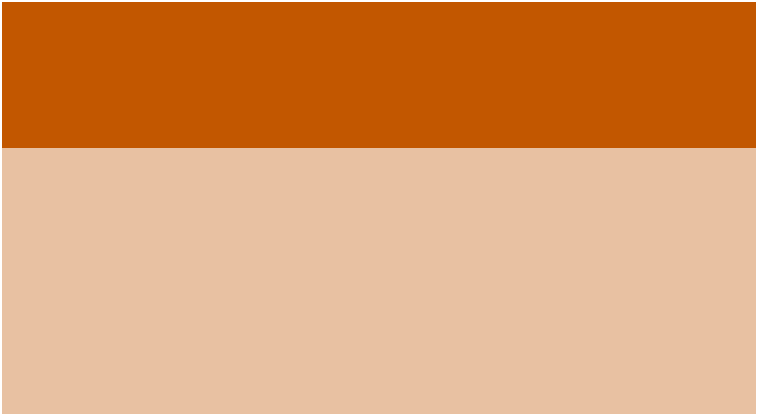
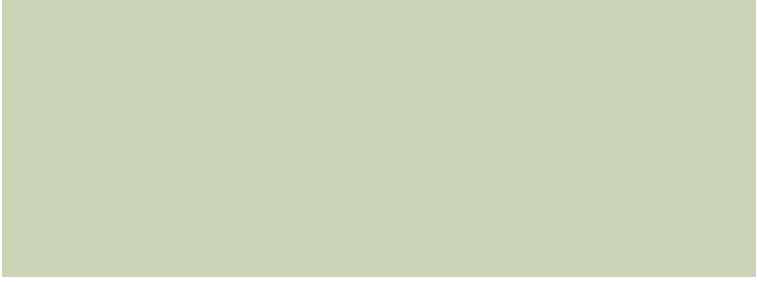


# Introduction

# 16. Human development and health from a planetary health perspective

**Authors:** Grynszpan, D., Kao, K., & Montelpare, W.





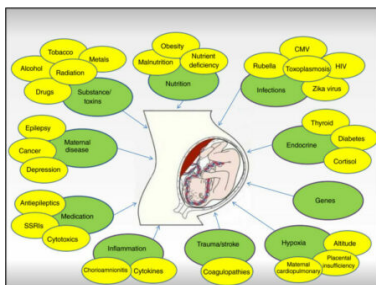
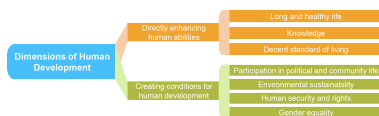
*Understanding the Importance of Human Development on Planetary Health*

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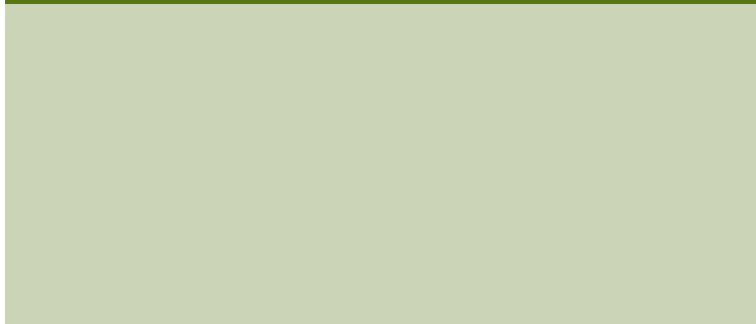
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# 17. Antimicrobial Resistance and Food Safety

**Authors: Daley, P., MD MSc FRCPC DTM+H**







PART V

# BIBLIOGRAPHIES







# Supplemental Information for Chapter 7

*Suggested supplemental material (Chapter 7)*

LAURIE MCDUFFEE



# Bibliography Chapter 1

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# References for Chapter 4: Climate Change









