# Chapter 5
# Environmental Research:
## Democratic Republic of the Congo


## ABSTRACT

*Focusing on the Democratic Republic of the Congo (DRC), this chapter explores the intersection of environmental degradation, zoonotic spillover, and health system fragility. It synthesizes research on deforestation, mining, and biodiversity loss as drivers of infectious disease emergence, including Ebola and Nipah-like viruses. The chapter advocates for integrated surveillance systems that combine environmental data with health records, positioning EHR interoperability as a tool for early warning and cross-sectoral response.*


## INTRODUCTION

The Democratic Republic of the Congo (DRC) is the largest country in Sub-Saharan Africa (SSA) and has a land mass comparable to Western Europe. The DRC is exceptionally favored with precious natural resources such as cobalt and copper and has the second-largest rainforest in the world. Although the DRC has a wealth of natural resources, it is plagued with many challenges related to water and foodborne illnesses (indexmundi, 2020).

In 1972, Alfred Crosby Jr coined the phrase *Columbian Exchato* which describes the transfer of plant and animal disease between Europe, Africa, and the Americas dating back to Columbus' voyages in 1492 (Horgan & Netchev, 2022). The world has changed exponentially since 1492; however, the threat of food and waterborne illnesses persists and presents environmental health concerns in low-to-middle-income (LMICS) African nations, specifically the Democratic of the Congo (DRC). Foodborne diseases (FBDs) are infections and pathogens derived from unsafe food and water (Grace, 2023). FBDs globally cause disease outbreaks and impose health, economic, and social burdens on LMICS that often lack medical, technical, and

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financial resources to develop and sustain efficient pandemic response programs (Carter, 2024).

In 2015, the World Health Organization (WHO) estimated that numerous global and regional diseases develop from 31 food and waterborne sources and traced 1 out of every 10 illnesses to contaminated food or water (Grace, 2023). Inadequate funding, poor public health infrastructure, and resource shortfalls in LMICs increase susceptibility risks and are ideal for outbreaks as environments substantially impact a disease's ability to infect, survive and proliferate (WGU, 2020a). Carter (2024) opined that unless addressed at the international level, local disease outbreaks in LMICS will continue to develop into multinational pandemics. Current local disease surveillance and data-sharing systems are inefficient in combating multinational outbreaks. Disease outbreaks are a global problem and require global solutions.

On September 15, 2015, the United Nations identified 17 opportunities to improve the quality of life, safety, health, and well-being of 8.4 billion global citizens; it also labeled the objectives of the Sustainable Development Goals (SDG). The SDGs are 17 agendas with 169 deliverables to address interconnected social, economic, and environmental challenges (Ravn Boess et al., 2021). Sweden, Denmark, and Finland are making significant progress and have achieved three-quarters of the objectives (Carter, 2024). Sweden, Denmark, and Finland are wealthy and developed nations with a plethora of accessible resources. However, many Low-to-middle-income countries (LMICs) struggle to improve their quality of life and remain at risk for disease outbreaks and pandemics. Although for centuries, wars have ravaged and wreaked havoc across nations and regions, the disease has taken more lives than all the world's wars combined (Norrie, 2016). In addition to Sweden, Denmark, and Finland, many developed nations have made significant progress in SDG accomplishment, how LMICs such as the Democratic Republic of the Congo (DRC) struggle with poverty, health, and sanitation and their causation to disease outbreaks (Mufungizi et al., 2024). UN SDGs 1,3,6, & 8 (No poverty, Good Health, Clean water, and Decent work & economic growth) are interrelated and influence environmental health. In a 2016 report, the WHO revealed that 23% of all deaths are associated with air pollution, poor sanitation, radiation exposure, and other environmental threats (Egbende et al., 2023). The purpose of this research is to call to action to address poor environmental health that leads to outbreaks due to water contamination and food safety in the Democratic Republic of Congo (DRC).

## DRC: WATER CONTAMINATION AND FOODBORNE ILLNESSES

In 2010, the World Health Organization stated that 31 million disability-adjusted life years (DALYs) were attributed to 31 hazards from food and waterborne diseases