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The Impact of Climate Change on Infectious Disease Patterns and Management

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ABSTRACT

Climate change, primarily driven by human activities such as fossil fuel combustion and deforestation, is significantly altering global weather patterns and ecosystems. This review explores the multifaceted impact of climate change on infectious disease patterns and management, emphasizing the increased risks to human health. Climate change leads to rising temperatures, altered precipitation, and extreme weather events, which collectively exacerbate the transmission of infectious diseases, including vector-borne, waterborne, and foodborne illnesses. Vulnerable populations, including marginalized communities and those with pre-existing health conditions, face heightened exposure to these health threats. The review discusses the mechanisms of zoonotic spillover, highlighting how habitat disruption and increased human-wildlife interactions facilitate the emergence and spread of infectious diseases. Key examples illustrate the relationship between climate variability and disease outbreaks, such as hantavirus and malaria. Mitigation and adaptation strategies are critically examined, advocating for a comprehensive approach that includes reducing greenhouse gas emissions, enhancing carbon sinks, and implementing policies that promote sustainable land use and public health preparedness. The necessity for international cooperation and a One Health framework is emphasized, aiming to integrate human, animal, and environmental health. As climate change continues to pose unprecedented challenges, this review underscores the urgent need for coordinated action to protect global health and prevent future pandemics.

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INTRODUCTION

Climate change refers to long-term shifts in temperatures and weather patterns. Such shifts can be natural, due to changes in the sun's activity or large volcanic eruptions. But since the 1800s, human activities have been the main driver of climate change, primarily due to the burning of fossil fuels like coal, oil, and gas. Burning fossil fuels generates greenhouse gas emissions that act like a blanket wrapped around the Earth, trapping the sun's heat and raising temperatures. The primary greenhouse gases contributing to climate change are carbon dioxide and methane. These come from using gasoline for driving a car or coal for heating a building, for example. Clearing land and cutting down forests can also release carbon dioxide. Agriculture, oil and gas operations are major sources of methane emissions. Energy, industry, transport, buildings, agriculture and land use are among the main sectors causing greenhouse gases (United Nations, 2025).

Climate change describes a change in the average conditions such as temperature and rainfall in a region over a long period of time. NASA scientists have observed Earth's surface is warming, and many of the warmest years on record have happened in the past 20 years (NASA, 2018).

Climate change is a change in the world's weather systems that occurs over decades. Most of the recent changes in our climate have been brought about by human activity. These changes will have significant consequences for our health, wellbeing and safety.

Effects of climate change include increasing air and sea temperatures, changes in rainfall patterns, more frequent and increasingly severe extreme weather events and sea level rise. Climate change may affect our health and wellbeing through the impacts of extreme events, worsening air quality, changes in the spread of infectious diseases, threats to food and water quality and quantity and effects on our mental health. There are things we can all do now to build our resilience to the effects of climate change and help slow its pace (Better Health Channel, 2021).

According to Pan American Health Organization (2023). Climate change is the biggest global health threat of the 21st century. Health is and will be affected by the changing climate through direct impacts (heat waves, droughts, heavy storms, and sea-level rise), and indirect impacts (vector-borne and airways diseases, food and water insecurity, undernutrition, and forced displacements). As the global climate crisis escalates, its devastating impacts on human health and well-being will also accelerate. No one anywhere around the globe is beyond its reach, though millions of people – notably, women, children, older adults, communities of marginalized identity, displaced persons, people with pre-existing health conditions, and those living in poverty – are among the most vulnerable. Changing climate conditions are altering burdens of disease, including by increasing heat-related illnesses and deaths; shifting the patterns of infectious disease transmission, making deadly disease outbreaks and pandemics more likely; worsening maternal and child health outcomes; and intensifying health impacts from extreme weather events such as floods, droughts, wildfires, and windstorms. Climate change also exerts significant strains on health systems, simultaneously increasing demand for health services while impairing the system's ability to respond. Furthermore, the climate crisis is rapidly deteriorating access to basic human needs such as food security, safe drinking water and sanitation, and clean air. The result, according to new World Bank data, is that a changing climate could lead to excess health costs in low- and middle-income countries of at least US$21 trillion by 2050, equivalent to approximately 1.3% of their projected GDP (World Bank, 2024).

The climate crisis is the biggest health threat humanity has ever faced. The World Health Organization predicts an estimated 250,000 additional deaths per year from heat stress, malnutrition, dengue, malaria, and other vector-borne diseases between 2030 and 2050. Climate change has a disproportionate impact on the poorest and most vulnerable communities, exacerbating poverty, displacement, and lack of access to food and clean water. Climate change is affecting human lives and health in numerous ways. It threatens the essential ingredients of good health – clean air, safe drinking water, nutritious food supply and safe shelter – and has the potential to undermine decades of progress in global health.Neglected diseases, including leishmaniasis and sleeping sickness, will spread to new areas, affecting low- and middle-income countries the most. There is a pressing need to prioritize research and development for medicines, vaccines, and diagnostics for climate-sensitive diseases. However, the current medical and pharmaceutical ecosystem focuses on more profitable markets, resulting in inequitable development of and access to these life-saving prevention and treatment tools (DNDI, 2024; World Health Organization, 2019).

Problem Statement:

Climate change is quickly changing the environmental factors that affect how infectious diseases spread, which is causing changes in the distribution, seasonality, and intensity of diseases around the world (Thomson & Stanberry, 2022). Rising temperatures, extreme weather events, and changing rainfall patterns are making vector-borne, water-borne, food-borne, and zoonotic illnesses more likely, especially in areas where health care is limited. Even while there is more and more proof, there is still no complete picture of how climate change affects different disease pathways or how current adaptation techniques deal with these new dangers (Esposito et al., 2023; Ojeyinka et al., 2024). This review fills this gap by looking at the main ways that climate change affects the spread of infectious diseases and judging how well current public health and mitigation efforts work.

Significance of the Study:

This study is important because it shows how climate change is changing the way infectious illnesses spread around the world, including how they spread, where they spread, and the rise of new public health problems. The study offers essential insights for early diagnosis and effective disease control by analyzing the relationships among increasing temperatures, modified rainfall patterns, extreme weather events, and vector ecology.

Objectives of the Research:

- ✓ To evaluate how climate change influences the patterns of infectious diseases.
- ✓ To investigate the mechanisms by which climate change and habitat disruption facilitate zoonotic spillover events, increasing the transmission of pathogens from animals to humans.
- ✓ To assess current mitigation strategies aimed at reducing greenhouse gas emissions and enhancing ecosystem resilience.
- ✓ To explore adaptation strategies that can strengthen public health systems, improve surveillance and response capabilities.

MATERIALS AND METHOD

This review article employs a comprehensive literature synthesis approach to explore the impact of climate change on infectious disease patterns and management. A systematic search of peer-reviewed articles, government reports, and reputable organizational publications was conducted across multiple databases, including PubMed, Scopus, and Web of Science, using keywords such as "climate change," "infectious diseases," "zoonotic spillover," and "public health." Studies published from 2010 to 2024 were prioritized to ensure the inclusion of the most current data and perspectives. The selected literature was analyzed to identify key themes, mechanisms of disease transmission, and case studies illustrating the relationship between climate variables and disease outbreaks. Additionally, mitigation and adaptation strategies were assessed through policy documents and reports from global health organizations. This integrative approach provides a holistic understanding of the challenges posed by climate change to infectious disease dynamics and highlights the need for coordinated action across sectors.

RESEARCH FINDINGS

Climate Variables Influencing Disease Ecology:

The Anthropocene era is characterized by unprecedented human-induced changes to the environment, resulting in the climate crisis and widespread ecological degradation. Currently, up to one million plant and animal species face the threat of extinction, with many at risk within the next few decades. This includes approximately one out of ten of insect species and 40 % of plant species (IPBES, 2019). Uncontrolled greenhouse gas emissions, deforestation, intensive farming, overfishing, and land use changes have all pushed us outside the ecological niche responsible for the thriving of the human species. As outlined by the Intergovernmental Panel on Climate Change (IPCC), current policies are projected to result in a minimum increase in global temperatures of +2 °C, with more recent estimates suggesting an increase of up to +2.9 °C (IPCC, 2023).

The impact of the climatic and ecological degradation on disease emergence is multifaceted. Deforestation, for instance, not only reduces biodiversity, but also forces wildlife into closer contact with human populations, facilitating the transmission of zoonotic diseases. Climate change exacerbates these effects by altering the habitats of disease vectors, such as mosquitoes and ticks, thereby facilitating the spread of vector-borne diseases into new regions. As a consequence, diseases such as malaria, dengue, and Zika virus have expanded into new geographical regions (IPCC, 2023). Additionally, climate change increases both the frequency and intensity of extreme weather events, such as floods, droughts, and hurricanes, which contaminate water sources and compromise WASH practices (UNICEF, 2024). Thus, in crisis situations, overcrowded resettlement camps for both refugees, returnees of internally-displaced people (IDP) create the ideal environment for the spread of waterborne diseases like cholera. Human migration, often a direct consequence of climate disasters, further complicates the epidemiological landscape. Additionally, all these conditions further exacerbate antimicrobial resistance (AMR), which threatens to undermine much of the progress of modern medicine. Furthermore, as recognized by the United Nations. Climate change acts as a "threat multiplier," exacerbating the impacts of factors like poverty, loss of livelihoods, and tensions over dwindling resources, potentially leading to conflict (Segala et al., 2025).

Vector-Borne Diseases and Climate Change:

Climate is one of the factors that affects vector-borne diseases. Vectors, such as fleas, ticks, and mosquitoes, are creatures that carry and spread illnesses. Warmer weather, along with other factors such as lifestyle and healthcare access, can increase a person's risk of vector-borne infections. Climate impacts the spread of vector-borne diseases. These diseases are transmitted by fleas, ticks, and mosquitoes carrying pathogens that cause illness. Vector populations and disease distribution depend on climate (CDC, 2024).

Vector-borne diseases are transmitted by haematophagous arthropods (for example, mosquitoes, ticks and sandflies) to humans and wild and domestic animals, with the largest burden on global public health disproportionately affecting people in tropical and subtropical areas. Because vectors are ectothermic, climate and weather alterations (for example, temperature, rainfall and humidity) can affect their reproduction, survival, geographic distribution and, consequently, ability to transmit pathogens. However, the effects of climate change on vector-borne diseases can be multifaceted and complex, sometimes with ambiguous consequences. In this Review, we discuss the potential effects of climate change, weather and other anthropogenic factors, including land use, human mobility and behaviour, as possible contributors to the redistribution of vectors and spread of vector-borne diseases worldwide (de Souza & Weaver, 2024).

Warming temperatures affect the behavior, physiologic characteristics, and life history of both vectors and pathogens as well as the abundance and behavior of reservoir hosts and definitive hosts. The interactions among temperature, vector, and pathogen can change the risk of human-to-human disease spread and of spillover to humans from reservoir hosts. Thermal performance curves illustrate how temperature affects the physiological traits of pathogens, vectors, and reservoir hosts, which in turn determine the rate of disease spread in a susceptible population. These curves are commonly used to predict the potential effects of rising temperatures resulting from climate change on vectorvector-bornese systems.[7] Curves for individual components of a disease system must overlap in order for transmission to occur. Thermal adaptation, acclimation to a warming climate, or both can potentially shift thermal performance curves and thermal tolerance limits, with important implications for expansion of the geographic range of certain diseases. Depending on their ability to adapt, vectors may no longer carry certain pathogens or may carry new ones as climate-mediated ecosystem changes bring different pathogens, vectors, and reservoir and human hosts together. The Intergovernmental Panel on Climate Change reported with high confidence that the prevalence of vector borne diseases has increased in recent decades and that the prevalence of malaria, dengue, Lyme disease, and West Nile virus infection in particular are expected to further increase during the next 80 years if measures are not taken to adapt and strengthen control strategies (Thomson & Stanberry, 2022).

Waterborne and Foodborne Diseases:

For many foodborne diseases, the environment plays an important role in transmission. As climate change increasingly affects global temperatures and weather events, the risks of transmission will increase. Read on to understand why, and what can be done to limit these risks. Foodborne diseases, or foodborne illnesses, are caused by eating or drinking something infected by a pathogen, like a bacteria or virus, such as unpasteurised (raw) milk, undercooked or parasite-infected meat, or raw fruits and vegetables that are contaminated with faeces from an infected animal or person. The World Health Organization (WHO) estimates there are 600 million cases of foodborne diseases and 420,000 associated deaths each year. And climate change is increasing the risk. Some common types of foodborne diseases include: Salmonella infection, Campylobacter infection, Listeria infections and E. coli infection. These diseases often have symptoms like diarrhea, vomiting, stomach cramps and fever. In more severe cases, foodborne illness can cause life-threatening conditions such as kidney failure, neurological disorders or chronic arthritis (*How Climate Change Affects Foodborne Diseases | News*, 2024).

High temperatures, altered precipitation patterns and extreme weather events can directly impact the distribution, transmission and persistence of pathogens in the environment, influencing the incidence and spread of climate-sensitive infectious diseases. People can get infected via ingestion of contaminated water or food, skin contact, or inhalation of water droplets. Infection risks are associated with viruses such as norovirus, rotavirus and hepatitis A; bacteria such as toxin-producing *E. coli*, *Salmonella* spp. and *Campylobacter* spp.; and *Cryptosporidium* spp., causing parasitic infections.

Sporadically, leptospirosis, shigellosis, giardiasis and Legionnaires' disease infections occur (ECDC, 2021). Different pathogens can cause various diseases that trigger gastro-intestinal symptoms or skin infections. Also cyanobacteria (mostly in freshwater), algae (in marine waters) and Vibrio bacteria (in brackish or marine water) can be harmful when humans are in contact with their toxins via skin contact, via accidentally ingested contaminated bathing water, or via infected drinking water or seafood. These pathogens can cause wound, skin and eye infection, allergy-like symptoms, gastrointestinal diseases, liver and kidney damage, neurological disorders and cancer (Melaram et al., 2022; Neves et al., 2021).

More frequent and intense flooding may heighten exposure to pathogens from contaminated water or debris, which can contain animal faeces or carcasses, sewage and surface run-off. Standing water post-flood creates new zones for pathogen exposure, which may also contaminate cultivated crops (Weilnhammer et al., 2021). Disruption of potable water supplies may result in improper hygienic practices or contamination of water sources and contribute to the transmission of diseases, especially from private wells. Also, in post-flood cleanup efforts and temporary shelters, where the high density of displaced people and disruption of healthcare may facilitate the spread of infectious diseases, infection risks are raised (ECDC, 2021). Post-flood disease outbreaks, particularly via contaminated food and water, can escalate mortality rates by up to 50% in the first year following a flood (Weilnhammer et al., 2021). Throughout Europe, several flood-related disease outbreaks and cases have been reported (e.g., leptospirosis cases linked to cloudburst event in Copenhagen in 2011. cryptosporidiosis outbreak among children after flooding in Germany in 2013 (Gertler et al., 2015), gastrointestinal and respiratory diseases after pluvial flooding in the Netherlands in 2015 (Mulder et al., 2019).

Droughts can worsen water quality, promoting pathogen growth and increasing heavy metal and pollutant concentrations. Water scarcity may force cuts in public water supply and the use of untreated water for irrigation, elevating the risk of foodborne diseases such as STEC (Semenza et al., 2012). Moreover, an insufficient supply of water may lead to lower hygienic standards in the food-processing industry and cause an increased risk of foodborne diseases (Bryan et al., 2020; Water and Food-Borne Diseases — European Climate and Health Observatory, 2025).

Zoonotic Spillover and Habitat Changes from Climate Change:

Climate change and habitat loss are significant drivers of zoonotic spillover, posing substantial risks to human and animal health. Addressing these interconnected challenges requires urgent action, including reducing greenhouse gas emissions, preserving natural habitats, and implementing comprehensive One Health strategies. By understanding and mitigating the factors that contribute to zoonotic spillover, we can better protect global health and prevent future pandemics. Zoonotic diseases, which are infections that spread between animals and humans, are an increasing threat to global public health, biodiversity, and economic stability (Ojeyinka et al., 2024). Climate change, driven by human activities, is altering ecosystems and increasing the risk of zoonotic disease emergence and transmission (Edward et al., 2024). Habitat loss, driven by deforestation, urbanization, and changing land use, further exacerbates these risks by increasing contact between humans and wildlife.

Climate Change and Habitat Disruption:

Climate change causes significant disruptions, including rising temperatures, altered precipitation patterns, and more frequent extreme weather events (Edward et al., 2024). These changes lead to:

1. Shifts in Species Distribution: Climate change forces animals to migrate from their natural habitats, creating new interactions between wildlife and human-inhabited areas (Borham et al., 2025).

2. Habitat Loss and Fragmentation: Deforestation and land-use changes reduce biodiversity and disrupt ecosystems, increasing the likelihood of zoonotic spillover events (Esposito et al., 2023).

3. Ecological Imbalance: Changes in predator-prey relationships and overall biodiversity can result in the proliferation of disease vectors and reservoirs (Balan & George, 2025).

Zoonotic Spillover Mechanisms

Zoonotic spillover, the transmission of pathogens from animals to humans, is facilitated by several mechanisms influenced by climate change and habitat disruption (Ojeyinka et al., 2024).

- **Increased Human-Wildlife Contact**: As habitats shrink, animals venture into human settlements in search of food and shelter, increasing the risk of pathogen transmission (Ojeyinka et al., 2024).
- **Environmental Encroachment**: Deforestation and construction in forest areas increase human interaction with diverse species, driving spillover events (Ellwanger & Chies, 2021).
- **Vector-Borne Disease Expansion**: Climate change expands the geographic range of disease vectors like mosquitoes and ticks, spreading diseases such as malaria, dengue fever, and Lyme disease to new areas (Ojeyinka et al., 2024).

Case Examples

- **Hantavirus Pulmonary Syndrome**: The emergence of hantavirus in the southwestern United States was linked to climate variability affecting rodent populations (Ojeyinka et al., 2024).
- **COVID-19**: While direct links between climate change and COVID-19 are still being investigated, climate change is expected to increase human intrusion into animal habitats, potentially leading to more zoonotic infections.
- **Rift Valley Fever and Malaria in Africa**: Climate change promotes the survival and spread of vectors, increasing the risk of these vector-borne diseases (Balan & George, 2025).

Mitigation and Prevention Strategies:

Addressing the rising threat of zoonotic spillover requires a multifaceted approach:

1. Reducing Greenhouse Gas Emissions: Mitigating climate change is crucial to reducing habitat disruption and altering species distributions (Irakoze Mukamana & Kiu Publication Extension, 2024).

2. Sustainable Land Use: Promoting sustainable land-use practices can help preserve natural habitats and reduce human-wildlife contact (Balan & George, 2025).

3. Surveillance and Early Detection: Improving surveillance systems and using rapid diagnostic tests can facilitate early detection of outbreaks.

4. One Health Approach: Integrating human, animal, and environmental health through collaborative efforts can enhance preparedness and response to zoonotic threats.

5. International Cooperation: Global cooperation and resource sharing are essential for addressing the transnational challenges posed by zoonotic diseases (Esposito et al., 2023).

Policy and Mitigation Strategies:

Addressing climate change requires ambitious and sustained action at all level. By implementing a mix of effective policies, promoting technological innovation, and fostering behavioral changes, we can mitigate emissions, adapt to the impacts of climate change, and create a more sustainable future Addressing climate change requires a two-pronged approach: mitigation and adaptation. Mitigation focuses on reducing greenhouse gas (GHG) emissions and enhancing carbon sinks. Adaptation involves adjusting to the effects of climate change, both current and anticipated. Effective climate action necessitates a combination of policy instruments, technological innovation, and behavioral changes (Harris & Roach, 2021).

Mitigation Strategies:

Mitigation strategies aim to limit the greenhouse gases in the atmosphere that cause climate change (United Nations, 2022; Wikipedia Contributors, 2019). Key approaches include:

1. **Reducing Greenhouse Gas Emissions**:
    - **Renewable Energy Transition**: Replacing fossil fuels with clean energy sources like solar, wind, hydro, and geothermal power is crucial. California, for example, has made significant strides in generating electricity from renewable sources.
    - **Energy Efficiency**: Improving energy efficiency in buildings, transportation, and industry can significantly reduce energy demand and emissions.
    - **Fuel Switching**: Transitioning to less carbon-intensive fuels, such as natural gas or biofuels, can offer short-term emission reductions.
    - **Electrification**: Encouraging the use of electricity in sectors like transportation and heating, especially when powered by renewable sources, can lower emissions.
2. **Enhancing Carbon Sinks**:
    - **Afforestation and Reforestation**: Planting trees and restoring forests can increase the amount of CO2 absorbed from the atmosphere.

- **Sustainable Land Management**: Implementing practices that enhance carbon storage in soils, such as conservation tillage and cover cropping, can help sequester carbon.
- **Blue Carbon Ecosystems**: Protecting and restoring coastal ecosystems like mangroves, salt marshes, and seagrass beds can sequester large amounts of carbon.

3. **Carbon Capture and Storage (CCS)**:
    - **CCS Technologies**: Capturing CO2 from large point sources, such as power plants and industrial facilities, and storing it underground can prevent emissions from entering the atmosphere.
    - **Direct Air Capture (DAC)**: Deploying machines to remove CO2 directly from the atmosphere is a promising but still developing technology. (National Wildlife Federation, 2019).
4. **Policy and Market Mechanisms**:
    - **Carbon Pricing**: Implementing carbon taxes or cap-and-trade systems can create incentives for businesses and individuals to reduce emissions. British Columbia's carbon tax is an example of this.
    - **Regulations and Standards**: Setting emission standards for vehicles, buildings, and industries can drive technological innovation and reduce pollution.
    - **Subsidies and Incentives**: Providing financial support for renewable energy, energy efficiency, and other low-carbon technologies can accelerate their adoption.
    - **Eliminating Fossil Fuel Subsidies**: Removing subsidies for fossil fuels can help level the playing field and encourage investment in cleaner alternatives.

Adaptation Strategies:

Adaptation strategies focus on adjusting to the current and future effects of climate change (UNDP, 2024). Key approaches include:

1. **Infrastructure Development**:
    - **Climate-Resilient Infrastructure**: Designing and constructing infrastructure that can withstand extreme weather events, such as floods, heatwaves, and storms.
    - **Green Infrastructure**: Utilizing natural systems, such as wetlands and urban forests, to provide ecosystem services and enhance resilience.
2. **Ecosystem-Based Adaptation**:
    - **Habitat Restoration**: Restoring degraded ecosystems can enhance their ability to provide essential services, such as flood control and water purification.
    - **Wildlife Corridors**: Creating corridors to connect fragmented habitats can help species adapt to changing climate conditions.
3. **Early Warning Systems**:
    - **Advanced Monitoring**: Developing and improving early warning systems for extreme weather events can help communities prepare and respond.
    - **Risk Communication**: Effectively communicating climate risks to the public can empower individuals and communities to take proactive measures.
4. **Adaptive Management**:
    - **Flexible Strategies**: Implementing adaptive management approaches that allow for adjustments based on new information and changing conditions.
    - **Community Involvement**: Engaging local communities in adaptation planning can ensure that strategies are tailored to their specific needs and circumstances.
5. **Policy and Planning**:
    - **National Adaptation Plans (NAPs)**: Developing comprehensive strategies to address climate risks and integrate adaptation into national policies.
    - **Climate Risk Assessments**: Conducting thorough assessments of climate vulnerabilities can help prioritize adaptation efforts.
    - **Land Use Planning**: Implementing land use policies that reduce exposure to climate risks, such as sea-level rise and wildfires.

CONCLUSION

In conclusion, the impact of climate change on infectious disease patterns presents a profound challenge to global health systems and public safety. As temperatures rise and weather patterns shift, the dynamics of disease transmission are increasingly influenced by environmental changes, leading to the emergence and re-emergence of infectious diseases. Vulnerable populations bear the brunt of these impacts, highlighting the urgent need for targeted interventions. Addressing these interconnected challenges requires a multifaceted approach that encompasses both mitigation and adaptation strategies. Reducing greenhouse gas emissions, enhancing carbon sinks, and promoting sustainable land-use practices are essential to curbing the effects of climate change. Additionally, strengthening health systems through improved surveillance, early detection, and community engagement will enhance resilience against future outbreaks. The implementation of a One Health framework, which integrates human, animal, and environmental health, is vital for developing comprehensive solutions to the threats posed by climate change. International collaboration and resource sharing are crucial in fostering effective responses to the transnational nature of infectious diseases exacerbated by climate change. As we navigate this complex landscape, it is imperative that policymakers, researchers, and communities work together to build adaptive capacity and prioritize public health. By taking decisive action now, we can mitigate the impacts of climate change on infectious diseases and safeguard the health of current and future generations.

RECOMMENDATIONS

1. Make monitoring systems stronger so that they can find climate-sensitive infectious illnesses sooner.
2. Put policies in place that lower greenhouse gas emissions and encourage the usage of renewable energy.
3. Keep natural areas safe so that people and animals don't interact as much and diseases don't spread from animals to people.
4. Use a One Health strategy that connects the health of people, animals, and the environment.
5. Raise public awareness and knowledge about the health implications of climate change.
6. Encourage countries to work together to deal with the hazards of infectious diseases that cross borders.
7. Encourage infrastructure that can handle climate change and health system strategies that can change.

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