

Milan 2024
28-30 November 2024
HOTEL NHOW MILAN

5th WAidid CONGRESS

IMPACT OF CLIMATE CHANGE ON THE DISTRIBUTION OF INFECTIOUS DISEASES

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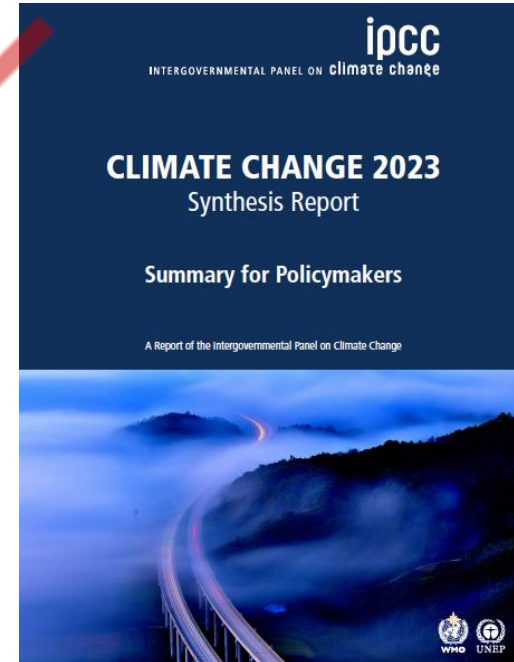
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Climate Change

Climate change is **THE** most significant challenges facing the world today

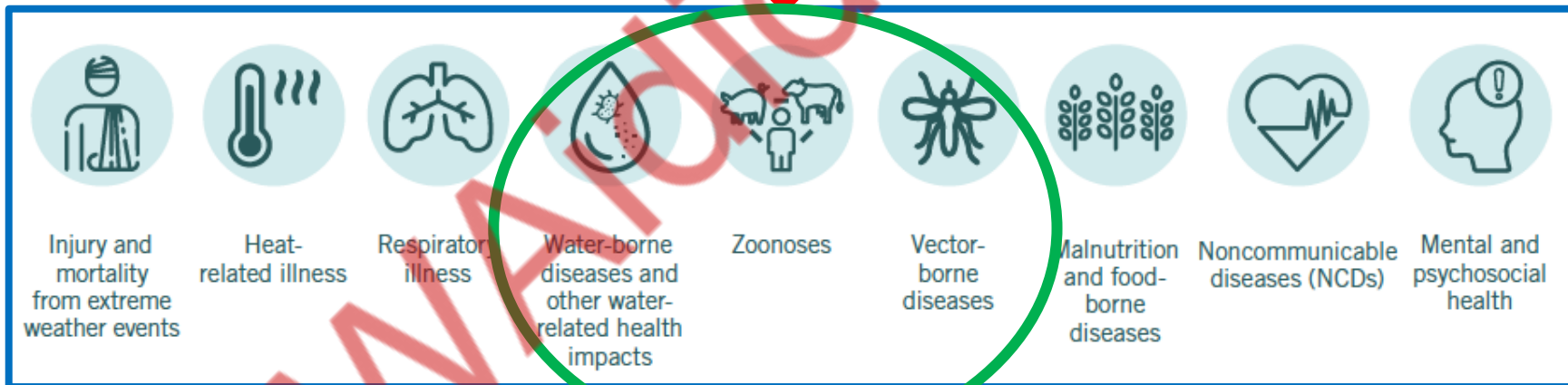
The Intergovernmental Panel on Climate Change (IPCC, a UN Organisation) has extensively documented the physical, social, and economic impacts of climate change, emphasizing that its effects are already being observed in all regions of the world and are expected to worsen

Climate change not only affects ecosystems, weather patterns, and global economies but also has far-reaching consequences for human health



Climate Change risks for human health

Climate Change



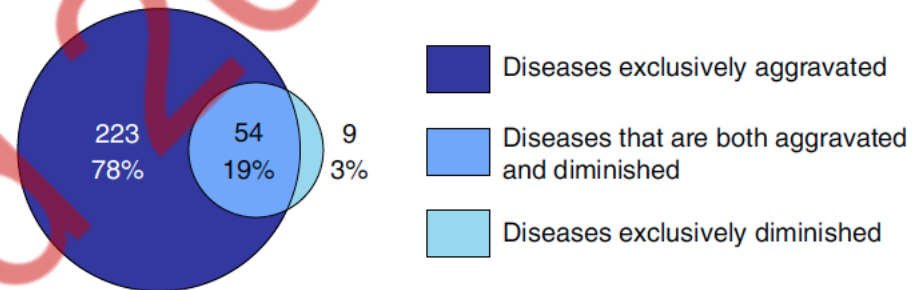
Climate-sensitive infectious diseases

Many infectious agents, vector organisms, reservoir species, and pathogen replication rates are sensitive to climatic conditions affecting the incidence, seasonal transmission, and geographic range of vector-borne diseases

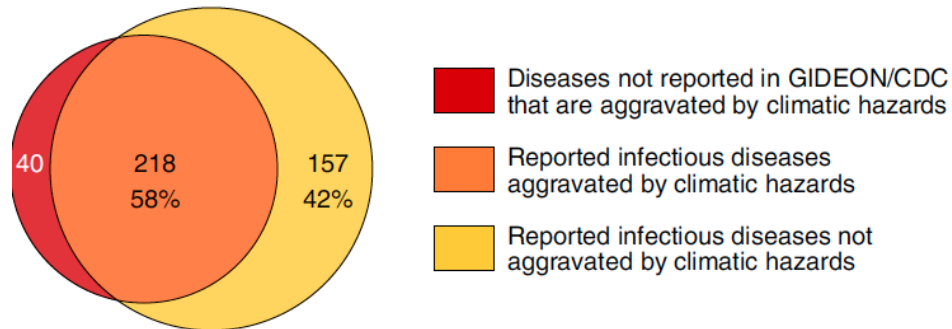
Over half of the known human pathogenic diseases can be aggravated by climate change

Diseases influenced by climatic hazards

Nature Climate Change, 2022



Subset of diseases aggravated by climatic hazards compared with all reported infectious diseases



Climate change and other factors influencing pathogen distribution

The distribution and abundance of disease vectors and the transmission of the infections that they carry, are influenced both by changes in climate and by trends such as human population growth and migration, urbanisation, land use change, biodiversity loss and public health measures

Each of these may increase or decrease risk, interact with climate effects and may contribute to the emergence of infectious diseases

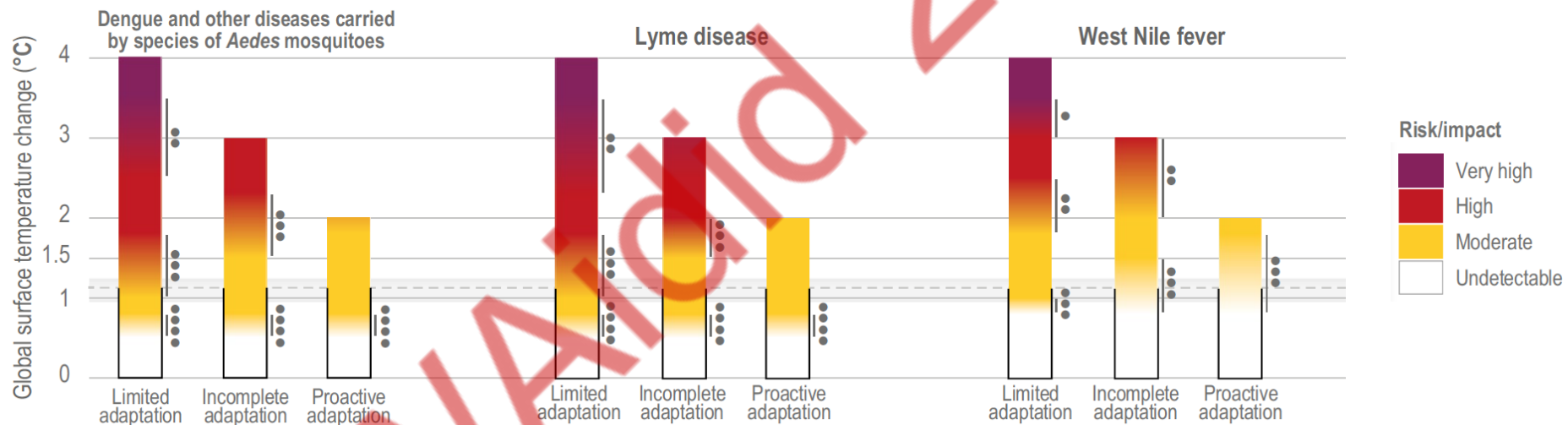
Examples of climatic hazards influencing pathogen distribution

Warming and precipitation change are associated with range expansion and reproduction rate of vectors such as mosquitoes, ticks, fleas, birds and mammals implicated in outbreaks by viruses, bacteria, and protozoans (including e.g. dengue, chikungunya, plague, Lyme disease, West Nile virus, Zika, and malaria)

Drought causes the congregation of mosquitoes and birds around remaining water sources facilitating the transmission of West Nile virus

Habitat disruptions caused by warming, drought, heatwaves, wildfires, storms, floods and land cover change are also associated with pathogens outbreaks

Climate and risks for human health due to some infectious diseases

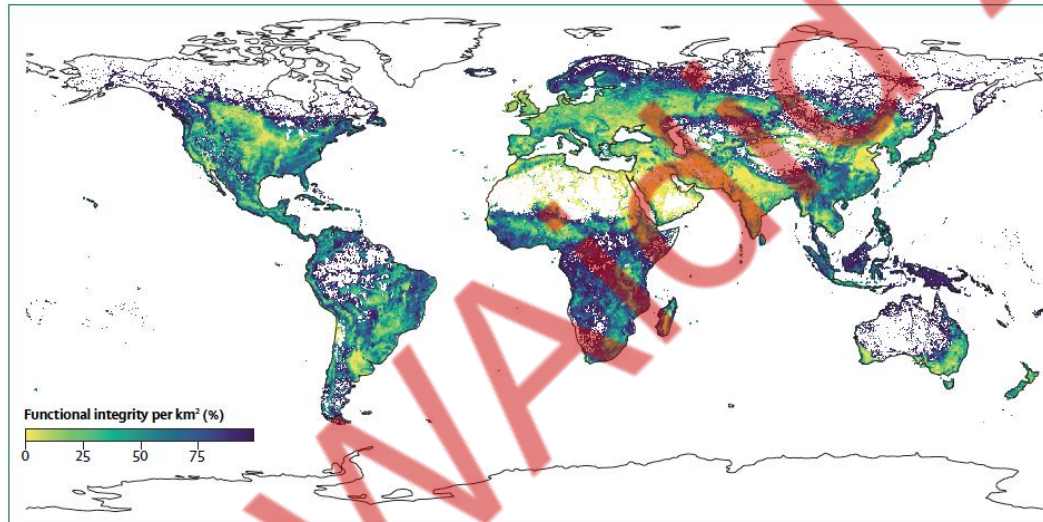


Further efforts needed

While the conclusion that climate change can affect pathogenic diseases is relatively well accepted, the extent of human vulnerability to pathogenic diseases affected by climate change is not yet fully quantified and concerted efforts of the physical climate and life science researchers are urgently needed

The One Health paradigm

Recognising that the health of humans and ecosystems are closely linked, One Health aims at an interdisciplinary approach to improve human health promoting environmental sustainability



The lower the functional integrity of ecosystems, the lower the likelihood that nature's contribution to people (ecosystem services e.g., pollination, **pest and disease control**, water quality regulation, soil protection, natural hazards mitigation) will be provided

Thank you!

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