

Managing the Health Risks of Climate Change

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hot topics in practice

Northwest Center FOR PUBLIC HEALTH PRACTICE

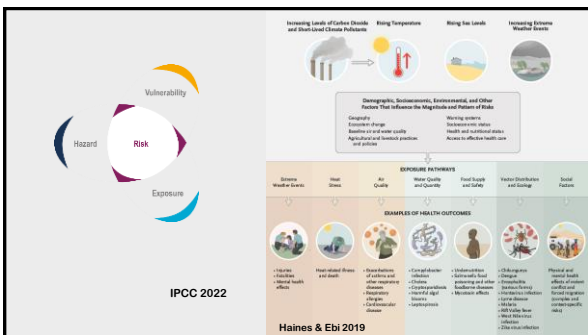
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Question for the Viewers

How would you describe your knowledge of the health risks associated with climate change?

- A. Very familiar
- B. Somewhat familiar
- C. Not at all familiar
- D. Other (please type in chat)

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Key conclusions of the IPCC 2022 chapter on human health

Observed impacts: *climate change is adversely affecting the physical health of people globally and mental health of people in assessed regions*

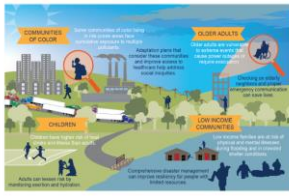
- Extreme heat events
- Vector-borne and zoonotic diseases
- Water and food-borne diseases
- Some mental health challenges
- Health services disrupted by extreme events such as floods

Projected risks

- **Extreme events**
 - Population exposure to **heatwaves**: increase with additional warming, strong geographical differences in heat-related mortality
- **Food-borne, water-borne, and vector-borne diseases**: increase under all levels of warming without additional adaptation
- **Mental health** (including anxiety and stress): increase in assessed regions

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Exposure and vulnerability vary across populations



Heat and Health Equity

- Historically redlined communities (RIPDC) and low wealth communities are often hotter than other neighborhoods.
- Access to cooling centers is more limited in some areas.
- Social and racial justice:
 - Certain populations are more vulnerable to extreme heat and have less access to health care.
 - Socially isolated individuals may have less access to cooling centers.
- COVID-19 protocols reduced the accessibility and effectiveness of cooling centers.
- Discharged conditions are more at risk for heat-related illnesses during power outages.

US NCA4 2018
US NCA5 2023

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2023 significant economic loss events

USD 93 billion disaster losses in 2023

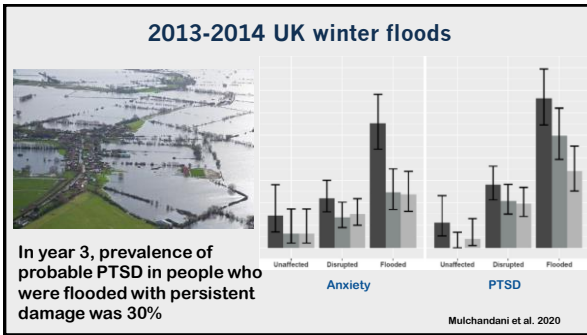
28 separate events

492 direct or indirect fatalities

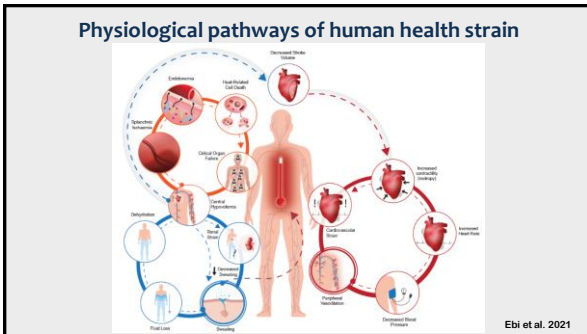
>47,000 died in heatwaves in Europe



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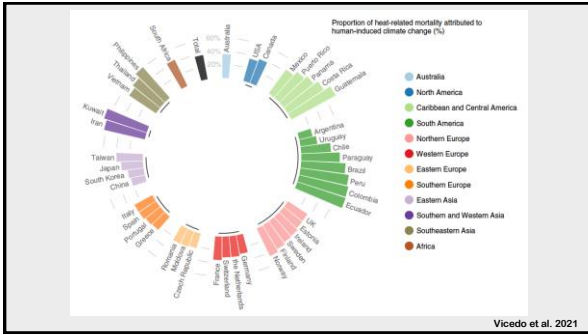
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Exposure of vulnerable populations to heatwaves

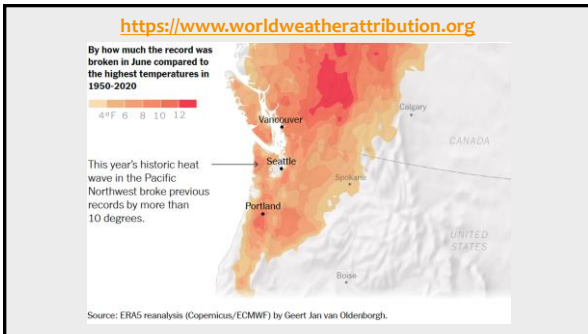
- In 2013-2022, infants (children younger than 1) and people older than 65 years experienced, on average **108% more** heatwave days than compared with 1986-2005
- Compared with 1986-2005, the number of heatwave days increased **94% globally**
 - For infants, an increase of 4.4 days per year on average
 - For adults over 65 years, an increase of 4.8 days per year on average
- Combined with demographic changes, total person-days of exposure increased **134% for infants and 228% for older adults**

2023 Report of the Lancet Countdown

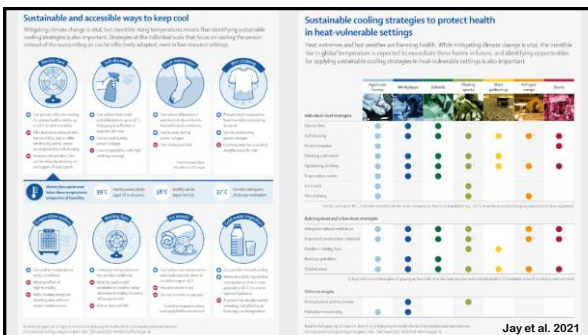
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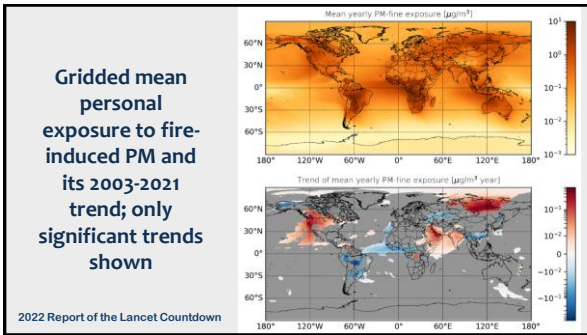
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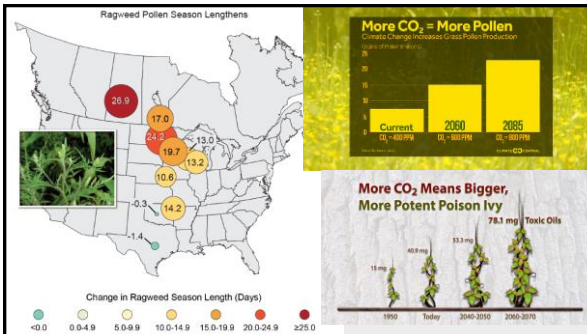
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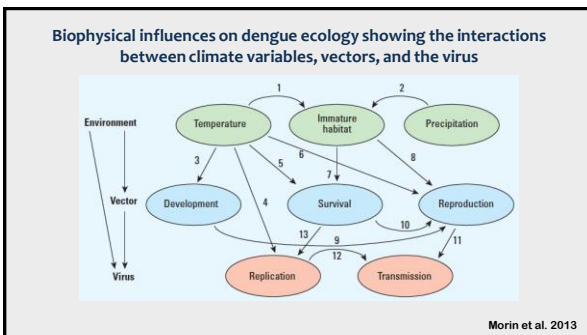
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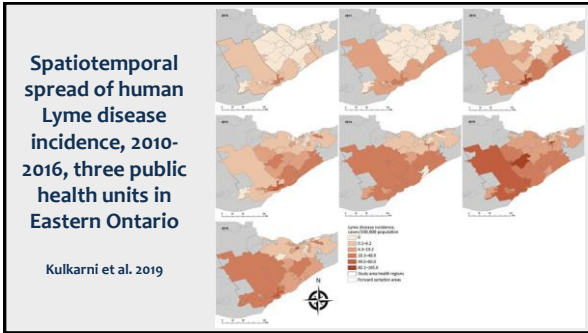
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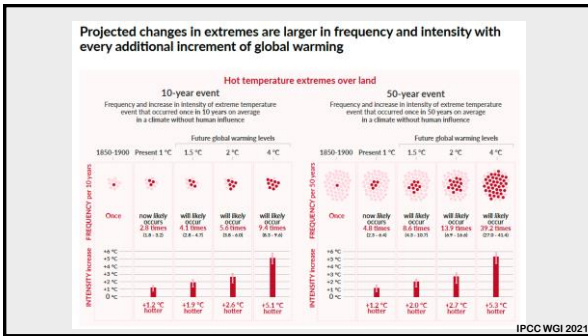
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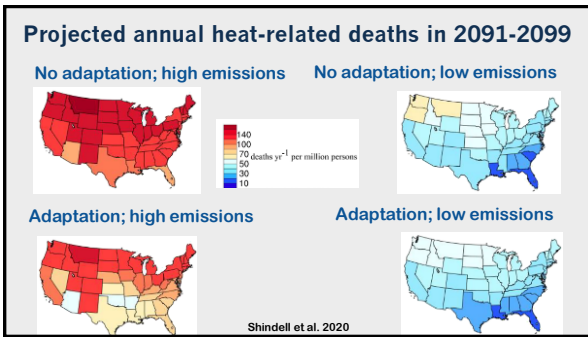
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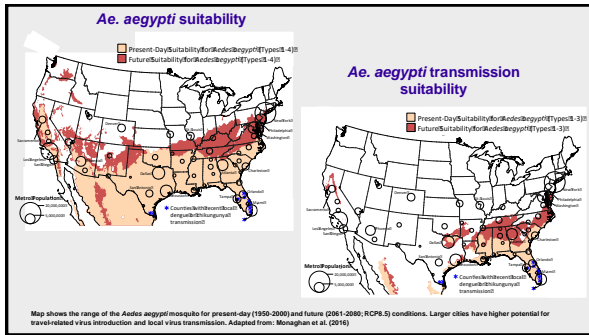
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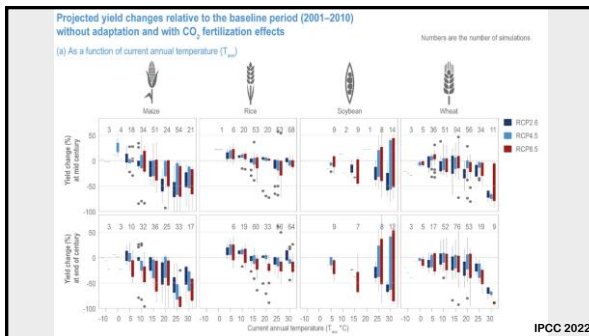
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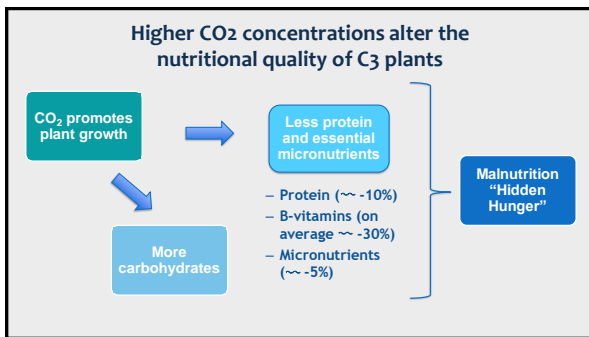
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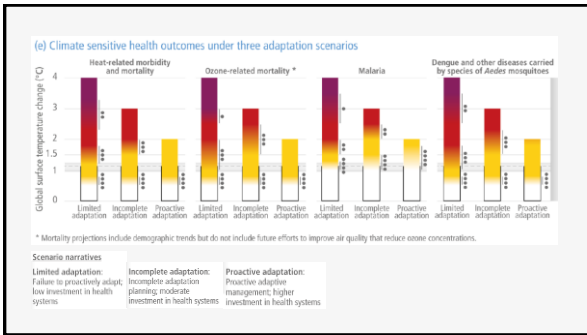
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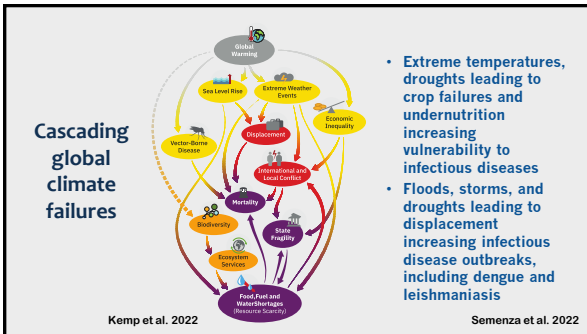
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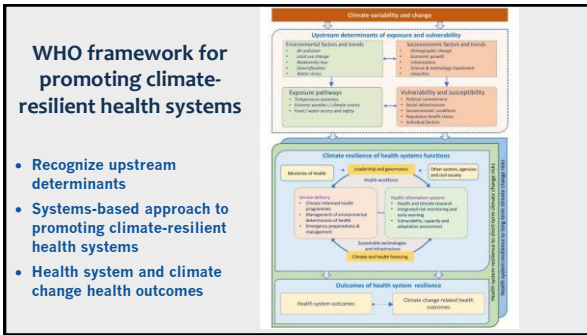
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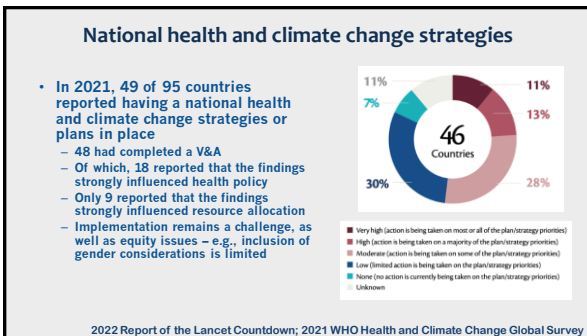
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- Effective adaptation options include
- Strengthening the resiliency of health systems
 - Protect against exposure to climate hazards, particularly for those at highest risk
 - Heat Action Plans that include early warning and response systems
 - Improve access to potable water, reducing exposure of water and sanitation systems to flooding and extreme weather and climate events, and improving early warning systems
 - For mental health, improve surveillance, access to mental health care, and monitoring of psychosocial impacts from extreme weather and climate events
 - Integrated adaptation approaches that mainstream health into food, livelihoods, social protection, infrastructure, water and sanitation policies
- ** Major constraint is limited investment

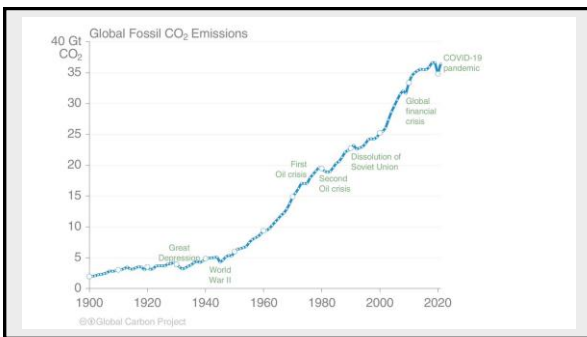
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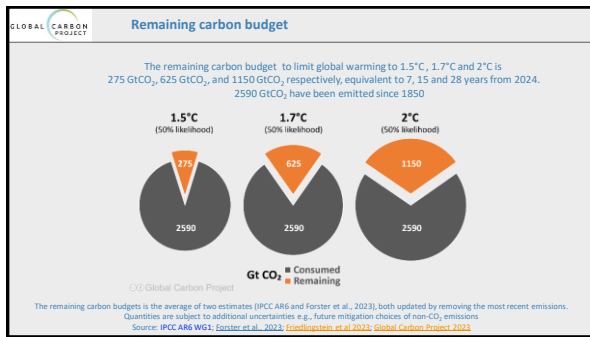
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<p>ENERGY</p> <p>Health benefits that arise from reduced air pollution: \$136 billion annually from avoided health care costs and lost productivity.</p> <p>Mitigation measures that:</p> <ul style="list-style-type: none"> Improve energy efficiency Change the energy system structure Expand renewable energy use <p>\$236.8B annually from avoided health care costs and lost productivity</p>	<p>AGRICULTURE</p> <p>Health benefits that arise from reduced air and noise pollution and increased physical activity: \$106 billion annually from avoided health care costs and lost productivity.</p> <p>Mitigation measures that:</p> <ul style="list-style-type: none"> Reduce livestock density and improve feed efficiency Improve pasture-based systems Change the crop mix Improve nitrogen use efficiency Reduce soil erosion Reduce or avoid diesel fuel production Reduce diesel engine idling Improve agricultural machinery <p>\$7,000 billion annually from avoided health care costs and lost productivity</p>	<p>BUILDINGS AND CITIES</p> <p>Health benefits that arise from reduced air pollution, improved air quality, and more efficient buildings, compact cities, and more green and blue infrastructure: \$55 billion annually from avoided health care costs and lost productivity.</p> <p>Mitigation measures that:</p> <ul style="list-style-type: none"> Improve building energy efficiency Improve energy efficiency and affordable public transport, services, and infrastructure Improve walkability and public infrastructure Improve use of blue and green building solutions <p>\$55.8B annually from avoided health care costs and lost productivity</p>
<p>INDUSTRIAL</p> <p>Health benefits that arise from reduced air and noise pollution: \$22.3B billion annually from avoided health care costs and lost productivity.</p> <p>Mitigation measures that:</p> <ul style="list-style-type: none"> Reduce emissions intensity Improve energy efficiency Improve waste management Improve air quality Reduce fuel use Improve air quality Improve air quality <p>\$2.1B billion annually from avoided health care costs and lost productivity</p>	<p>TRANSPORT</p> <p>Health benefits that arise from reduced air and noise pollution and increased physical activity: \$18 billion annually from avoided health care costs and lost productivity.</p> <p>Mitigation measures that:</p> <ul style="list-style-type: none"> Improve road design and infrastructure Improve public transport Improve air quality Improve air quality Improve air quality <p>\$25.03B billion annually from avoided health care costs and lost productivity</p>	<p>NATURE-BASED SOLUTIONS</p> <p>Health benefits that arise from improved air quality, improved air quality, and increased physical activity: \$106 billion annually from avoided health care costs and lost productivity.</p> <p>Mitigation measures that:</p> <ul style="list-style-type: none"> Improve air quality Improve air quality Improve air quality Improve air quality Improve air quality <p>\$106 billion annually from avoided health care costs and lost productivity</p>

Bowen & Workman 2022

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Co-benefits – early health gains from wise climate moves

Shifting 5% of short urban car trips to bicycles in New Zealand would save annually

- 22 million liters of fuel
- 116 deaths due to increased physical activity (vs. 5 extra road crash deaths)
- \$200 million in health costs

ANZJPH 2011

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Health co-benefits of clean energy in Wisconsin

- Wisconsin relies on externally-sourced fossil fuels for energy production
- Conversion to in-state clean energy sources:
 - Creates jobs (162,000 net)
 - Increases state GDP (5%)
 - Reduces GHG emissions (valued at \$4.6b)
- Results in substantial health co-benefits (valued at \$21.1b) by reducing air pollution

COWS | BUILDING THE FUTURE
 Wisconsin Opportunity to Increase Energy Production, The Economic and Health Benefits of 100% In-State Energy Production
 David Hahn, CMR, University of Wisconsin - Madison
 Kaye Gander, CMR, University of Wisconsin - Madison
 November 9, 2021

Presented to Rick Michals, Coordinator of the Office of Sustainability, La Crosse County, Wisconsin
 Summary

Wisconsin has a current (2016) energy producing deficit of \$14.4 billion. This deficit in production makes the state 20th in total net fossil fuel resources, relative to total fuel, in the entire Wisconsin economy. Transitioning to in-state energy resources could bring dollars and jobs back to the state of Wisconsin. Current primary energy consumption is 112 TeraWatt-hours (TWh) (100,000,000 kWh) of energy used annually (2017), produced out of state and paid for by the state of Wisconsin. Current primary energy consumption is 112 TWh annually, and we use energy in 2019 that (2018 value 87%) is transported in an external energy resource. Wisconsin's transportation resource consumption is 68.9 TWh, which is 61% of the total energy use (112 TWh). This 68.9 TWh is also transported by Wisconsin's four largest utilities, which have the highest efficiency of utility companies, possibly for vehicle and heating. 100% in-state production could thereby create an additional 162,000 net jobs and a 5% increase over the current 127,000 net jobs in Wisconsin. Electricity provides an excellent example of in-state production of current power. At an estimated cost of \$0.04 per kWh of energy (1¢/kWh) (2019), Wisconsin, with increased investment in energy efficiency, the relatively a decrease in annual energy expenditure from \$11.1 billion to \$10.4 billion (6.4% decrease). The additional revenue generated is \$1.0 billion. This additional revenue (state GDP by \$1.0 billion, or nearly 1% to state energy) is projected to increase given the increase in electricity expenditures to \$10.0 billion plus GDP of 1.0 billion from the new jobs. The additional revenue could be used to offset added costs for the most difficult sectors to transition to in-state energy resources. Social and environmental benefits include reductions in carbon dioxide (CO₂) emissions valued at \$4.6 billion and air pollution exposures valued at \$21.1 billion in avoided human health impacts. Therefore, the energy shift considered in this report could increase average life expectancy by 0.36 years (0.38% life expectancy) on the life cycle of the population. The economic benefits (valued at \$1.0 billion) can be further valued by the generation of additional jobs in a transition to clean energy. Employment impacts include impacts to other state, transportation, power, price stability, reliability and grid performance impacts, regional climate change, water quality, and more job production related health impacts. Many of these impacts would be increasingly positive for Wisconsin. The economic, social, and health co-benefits of in-state energy production suggest the representation of policy to drive such a transition.

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Economic benefits of avoided cases of child health outcomes attributed to the U.S. Regional Greenhouse Gas Initiative by county, 2009 to 2014

Benefit Category (Dollars)
\$0 - \$15,000
\$15,000 - \$30,000
\$30,000 - \$45,000
\$45,000 - \$100,000
\$100,000 - \$21,085,403

Perera et al. 2020

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The extent to which current and future generations will experience a hotter and different world depends on choices now and in the near-term

IPCC 2023

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COP28 UEA Climate and Health Declaration

- Place health at the heart of climate change
 - Deliver on the Paris Agreement
- Accelerate the development of climate-resilient, sustainable, and equitable health systems
 - Accelerate phase out of fossil fuels
 - Deliver on promises of US\$ 100 billion annually in finance
- New finance commitments announced, including US\$ 300 million from the Global Fund, US\$ 100 million from the Rockefeller Foundation, and GBP 54 million from the UK government
 - Pledges totaled about US\$ 1 billion

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A Chat with Dr. Kristie Ebi



Sue Grinnell



Dr. Kristie Ebi

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QUESTIONS?



To ask a question, please click the  icon in the Zoom toolbar to open your Q&A Pod.

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Resources

Climate Change 2023: Synthesis Report
Intergovernmental Panel on Climate Change
<https://www.ipcc.ch/report/ar6/syr/>

2023 Report of the Lancet Countdown on Health and Climate Change
The Lancet
<https://www.lancetcountdown.org/2023-report/>

NCAS
The Fifth National Climate Assessment
<https://nca2023.globalchange.gov/>

2021 WHO Health and Climate Change Survey Report
World Health Organization
<https://www.who.int/publications/i/item/9789240038509>
