"Ensuring that the health of a child born today is not defined by a changing climate"
2018 & 2019 U.S. Policy Briefs

2018 Lancet Countdown on Health and Climate Change Brief for the United States of America

November 28, 2018
The Five Working Groups of the Lancet Countdown
Key Messages of the 2019 Report

"The life of every child born today will be profoundly affected by climate change...

Without accelerated intervention, this new era will come to define the health of people at every stage of their lives.”
"A second path—which limits the global average temperature rise to “well below 2°C”—is possible, and would transform the health of a child born today for the better, right the way through their life."

Key Messages of the 2019 Report
Key Messages of the 2019 Report

"An unprecedented challenge demands an unprecedented response.

It will take the work of the 7.5 billion people currently alive to ensure that the health of a child born today is not defined by a changing climate.”
Climate Change Harms the Health of Children

Climate change poses risks to children throughout their development. Here we present a few examples of how climate change harms health from before birth to adolescence.

Figure: 2019 US Brief

Unequal Vulnerabilities and Health Burdens - Now and in the Future
2019 U.S. Policy Brief Focus

Unequal Vulnerabilities and Health Burdens - Now and in the Future

Figure: 2019 US Brief
Headline Finding:
220 million additional vulnerable people exposed to extremes of heat in 2018 – 11 million more than the previous record set in 2015
Headline Finding:
In 2018, 133 billion of potential work hours were lost due to rising temperatures – 45 billion hours more than in 2000.
Headline Finding:
Loss of 64.7 million potential labor hours in 2018.

Southern U.S. states lost 15-20% of possible daylight hours in July 2018.
Headline Finding:

152 out of 196 countries saw increases in populations exposed to wildfires from the early 2000s to present day. India alone experienced an annual daily population fire exposure increase of 21 million.
Headline Finding:

Almost 70% of global cities surveyed and 2/3 of U.S. cities in 2018 are actively developing or have completed a comprehensive climate change risk or vulnerability assessment.

54% of the global cities expected climate change to seriously compromise their public health infrastructure.
2.4: Spending on Adaptation for Health and Health-Related Activities - Global

Headline Finding:

In 2018, global health adaptation spending increased by 11.2%, reaching 5% of total climate change adaptation spending.
Headline Finding:
The carbon intensity of the global energy system has remained flat since 1990.
3.1.1: Carbon Intensity of the Energy System - U.S.

Headline Finding:
The carbon intensity of the U.S. energy system reached a record low of 53.3 tCO2/TJ in 2016 (most recent year of data).

Figure: 2019 US Brief
Headline Finding:
In 2018, renewable energy accounted for 45% of growth in electricity generation, with 27% of growth coming from wind and solar.
Headline Finding:

In 2016 there were 2.9 million premature deaths due to ambient PM$_{2.5}$ pollution, with global mortality remaining stagnant.

More than 440,000 premature deaths are estimated to be related to coal burning.
Headline Finding:
In 2016 there were 64,000 million premature deaths due to ambient PM$_{2.5}$ pollution.

~ 8,600 premature deaths are estimated to be related to coal burning.
Headline Finding:
Of the global total emissions in 2016, the healthcare sector contributed 4.6%.
Headline Finding:
In 2018, fossil fuel consumption subsidies increased to US$427 billion – over a third higher than 2017 levels, and over 50% higher than 2016 levels.
U.S. Brief Policy Recommendations - Mitigation

- Rapidly Reduce GHG Emissions
- Commit to Decarbonization
- Enable Healthier Lifestyles to Reduce Carbon Emissions
U.S. Brief Policy Recommendations - Adaptation

- Invest in Evidence-based Adaptation & Improved Surveillance
- Increase Resilience by Strengthening Health Systems
Thank you

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THE LANCET
ACTIONS ON CLIMATE CHANGE:
THE LARGEST DISEASE PREVENTION OF OUR TIMES?

Webinar for the
Consortium of Universities for Global Health
January 31, 2020

Professor Jonathan Patz, MD, MPH
University of Wisconsin-Madison
Health effects of climate change

Temperature Rise
Sea level Rise
Hydrologic Extremes
  Droughts
  Floods
  Fires

CLIMATE CHANGE

Urban Heat Island Effect
  Heat Stress
  Heart attacks

Air Pollution & Aeroallergens
  Respiratory diseases: COPD & Asthma

Vector-borne Diseases
  Malaria
  Dengue
  Hantavirus
  Zika

Water-borne Diseases
  Cholera
  Cryptosporidiosis
  Campylobacter
  Leptospirosis

Water resources & Food supply
  Malnutrition
  Diarrhea
  Toxic Red Tides

Mental Health & Environmental Refugees
  Forced Migration
  Overcrowding
  Human Conflicts
The United Nations Intergovernmental Panel on Climate Change (IPCC) released this new report Oct. 8, 2018

To stabilize at 1.5°C warming, we’ll need to:

Cut emissions from burning fossil fuels (& cutting rainforests) **by 45% by the year 2030**, and be net carbon-zero by 2050. That’s SOON !!!
Greta Thunberg to US Congress on climate change: 'Wake up'

The Swedish teen activist tells US politicians to 'listen to scientists' and enact strong measures on climate change.
Could Combating Climate Change be cost-free?

Solving the global climate crisis: the greatest health opportunity of our times?
Action on climate change: Opportunities for Health

Energy Sector

**Air pollution:** ~7 million premature deaths/yr. (~1 in 8 deaths/yr.)

(Global Burden of Disease report, 2015)

Food Systems

Cardiovascular risk from high meat diet.

Transportation

**Physical inactivity:** 5.3 million premature deaths/yr.

(Lee et al. 2012)
Cost of cleaner energy: 
$< 30/ \text{tCO}_2$

Benefits of cleaner energy: 
$\$200*/ \text{tCO}_2$

WHICH NUMBER IS BIGGER???

(* Range: $50$ to $380$)

For E. Asia, co-benefits are 10 to 70 times greater

West et al. 2013
Evolution of Solar Energy . . .

✓ THE WHOLESALE PRICE OF SOLAR PHOTOVOLTAIC (PV) PANELS ($/WATT) HAS DROPPED BY 99% SINCE 1977.

Solar and wind energy prices dropped 80% and 30%, respectively, in past 7 yrs.
“...existing Renewable Portfolio Standards in the ‘Rust Belt’ region generate a health co-benefit of $94 per ton CO2 reduced in 2030, or 8¢ for each kWh of renewable energy deployed in 2015 dollars.”

Dimanchev et al. 2019

*Figure 3.* Costs and benefits of RPS and CO2 pricing scenarios in 2030 relative to No RPS (central results).
Co-benefits: Food and Agriculture
Diet and GHG Emissions

Data from Scarborough et al. 2014

Graph showing the mean carbon dioxide equivalents per day for different diet types and meat consumption levels.

- Diet Type: Meat consumption levels are divided into four categories: ≥100, 50-99, <50, Fish, Vegetarian, Vegan.
- The x-axis represents meat consumption in grams per day (g/d), and the y-axis represents mean carbon dioxide equivalents per day (kg).
Environmental advantages of insects

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![Diagram showing environmental advantages of insects](image)

Courtesy: Prof. van Huis
Metro sapiens

Terminology by Jason Vargo
(former Nelson Inst. Post-doc)
What’s wrong with this picture?
How we design our cities & neighborhoods influences health behaviors.
U.S. transportation contributing to sedentary lifestyles

- 60% of American adults do not meet minimum recommended levels of physical activity.
- In 2016, obesity rates in the U.S. climbed to 40% in adults, 18% in children.
- 600,000 Americans die of heart disease every year.

Centers for Disease Control and Prevention (CDC), 2017

40% of trips by car are less than 2 mi (~3 km)

US Dept. of Transportation
The benefits of physical activity go far beyond just burning calories.

Contracting muscles are factories of beneficial anti-cancer and cardiovascular disease chemicals, and a boosted immune system generally.

Pedersen and Febbraio 2019
Mitigation & Adaptation via Urban Green Space

- Depression, stress & anxiety reduction
  
  Beyer et al. 2014
  (Milwaukee-based study)

- Neighborhood social cohesion and reductions in crime and violence
Association between risk of developing any psychiatric disorder and childhood green space across urbanization levels.

Kristine Engemann et al. PNAS 2019;116:11:5188-5193

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PNAS
Health Organizations

Medical Society Consortium on Climate and Health

Global Climate and Health Alliance (UK) – with a US Chapter

Health Care Without Harm / Global Green & Healthy Hospitals

PSR and others

- 5 million health professionals
- 17,000 hospitals & health centers
Regardless of one’s views on climate change science, we can all support:

- Clean air from low-carbon energy
- Healthier plant-based diets
- Safe routes to schools
- Physically fit children & adults from cities designed for people, not just cars
- Reduced stress, depression and anxiety
Climate Change is a HEALTH issue....a low-carbon society offers enormous HEALTH OPPORTUNITIES ...  

Step #1: Talk about it and spread the word

Google: “Jonathan Patz, TEDx”

THANK YOU!

Twitter: @jonathanpatz
2019 Lancet Countdown: Opportunities to Improve Health through Climate Action

Q&A

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Thank You