Addressing Urban Heat Islands for Equitable Climate Resilience

Moderator

Dr. Shaily Gandhi

Speakers

Dr. Virginia Murray

Dr. Thanasis Sfetsos

Dr Juma Rahman

Dr. Bapon Fakhruddin

2nd September 2025 (09:00 – 10:00 CEST)


Global impact of Urban Heat Islands

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Δήμος Αιγάλεω

Heatwave risk assessment for vulnerable communities, Case Study in Egaleo, Greece

Webinar : Addressing Urban Heat Islands for Equitable Climate Resilience

Dr. Athanasios Sfetsos

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Δήμος Αιγάλεω

The Egaleo socio-economic context

Geographical Characteristics:

A densely populated urban municipality located in the metropolitan area of Athens. It features limited green spaces (Aigaleo Grove) and significant urban heat island effects.

Climate and Environmental Challenges:

Extreme summer temperatures, exceeding 40°C, exacerbated by climate change and urbanization. Heatwaves are prolonged and frequent, increasing the likelihood of wildfires and posing serious health risks and economic losses.

Socioeconomic Context:

The area hosts a mix of vulnerable populations, including low-income families, elderly residents and migrant populations who are less equipped to handle extreme weather events. Infrastructure such as public cooling shelters and fire prevention systems is often inadequate for the growing demand.

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The social challenges we address

Energy poverty

Social driven heatwave risk assessment

Citizen engagement and participation

Social care and support services

NBS and greening the city

Datasets & Services Just-CURS Datasets

Datasets

- Monitoring Stations
- GIS
- Static Data
- Climate stations

- Climate data & indicators
- Statistical Data/Data Analysis

- Citizen collected data (through workshops, questionnaires, electronic surveys),
- Community Resilience Indicators

Datasets

- Socio-economic data from EUROSTAT & Hellenic Statistical Service, local studies
- Local GIS
- Static Geographical and Morphological Data
- Local climate and emergency management action plans

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Digital Twins for Just Climate Urban Resilience Service (Just-CURS)

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The project context

Data

Ontology Development for FAIR Data

Knowledge Graph for FAIRification & Data Trackability

Interoperability frameworks

- Technical
- Semantic
- Cross-domain
- Organizational
- Legal

Services

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Working with the community

Join the stakeholder forum

More info at

https://climate-adapt4eosc.eu/stakeholder-forum/

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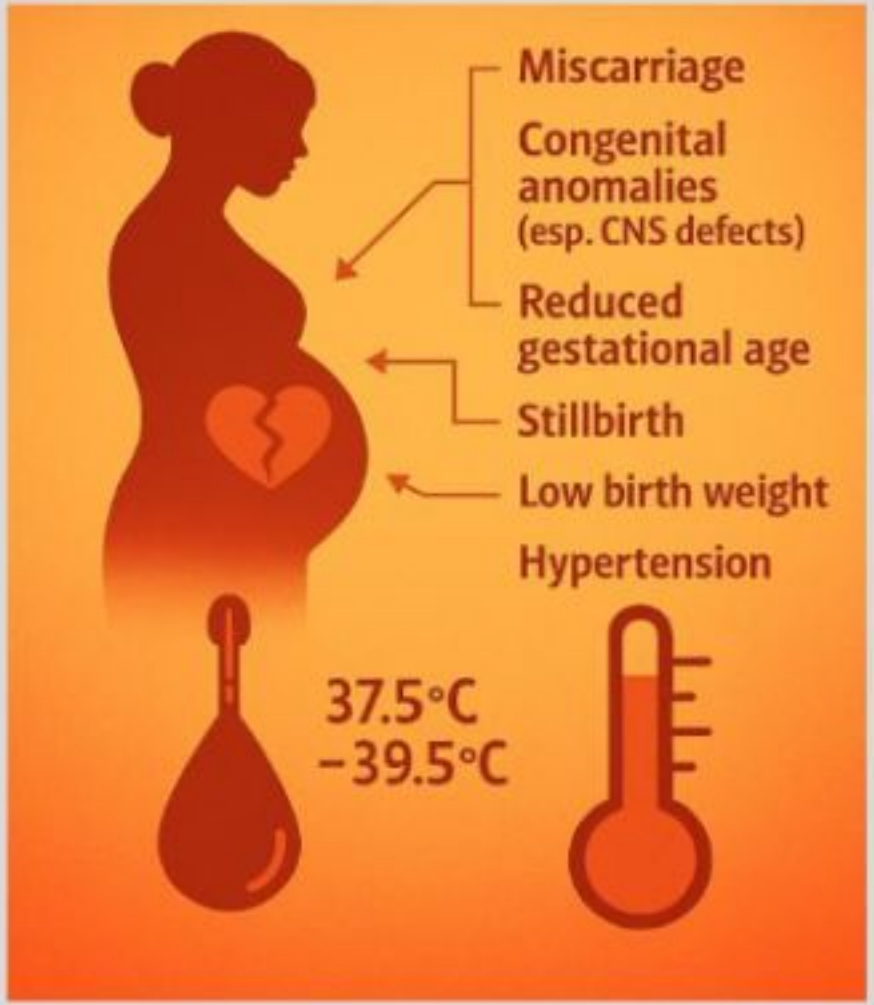
Environmental Heat Stress and Pregnancy- Case Study from Bangladesh

Jume Rahman, MBBS, PhD

Women has Disadvantaged Thermoregulation

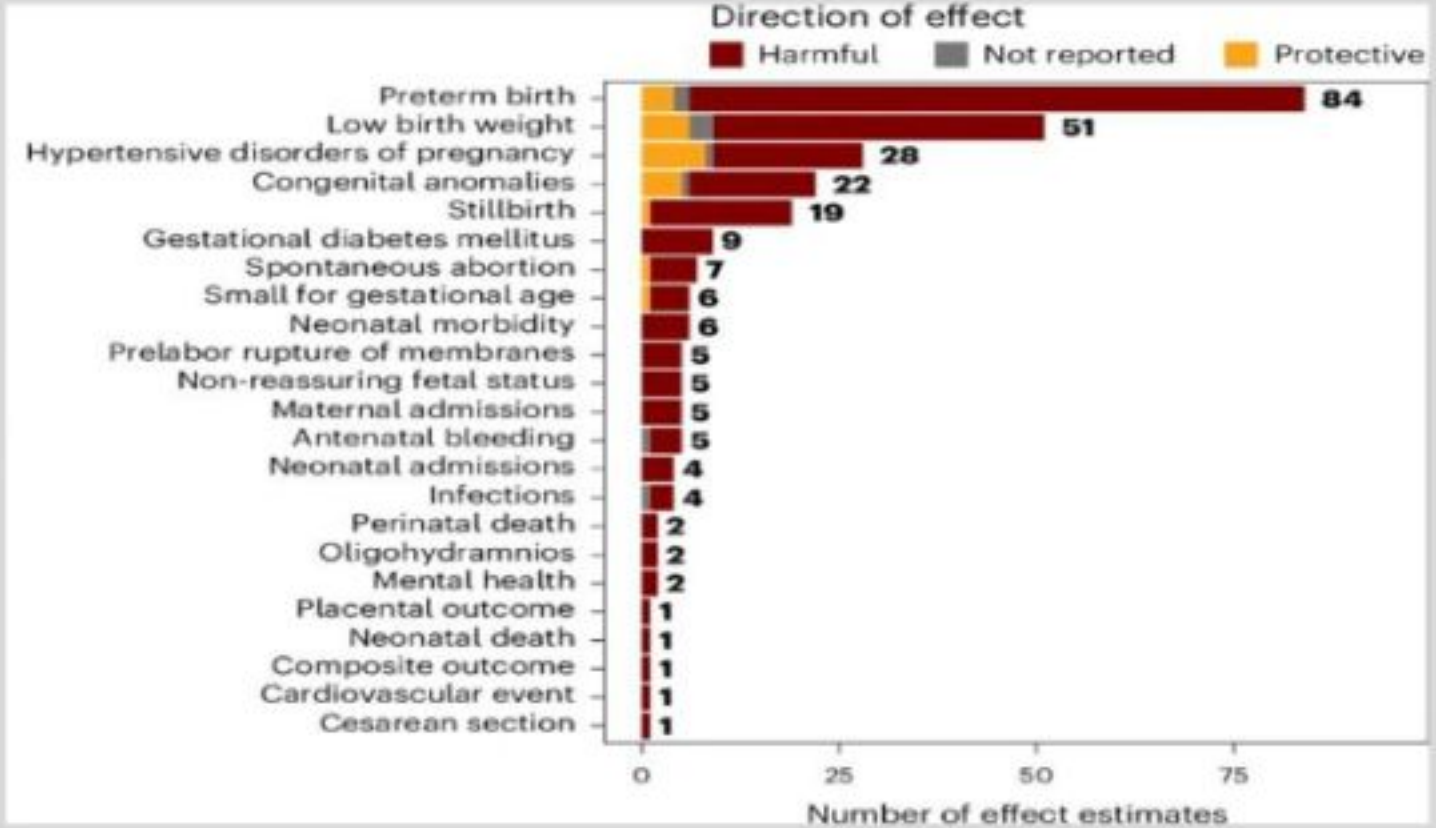
Women sweat less than men

- Lower cardiorespiratory fitness
- Higher metabolic rate
- Higher percent of body fat
- Lower body weight
- Higher surface area-to-mass ratio
- Hormonal cycle (Higher progesterone in luteal phase and pregnancy)



Recent Metanalysis on Heat and Pregnancy Outcomes

- Total **198** studies
- **63.3%** from high-income countries,
- Mostly covered temperate climate zones



Lakhoo, D.P., Brink, N., Radebe, L. *et al.* A systematic review and meta-analysis of heat exposure impacts on maternal, fetal and neonatal health. *Nat Med* **31**, 684–694 (2025). https://doi.org/10.1038/s41591-024-03395-8

Study Design

- Dhaka, Bangladesh (30⁰C; relative humidity >40%.)
- 27 women (18–40 yrs)
- Measurements:

– Tympanic temperature (infrared ear thermometer)

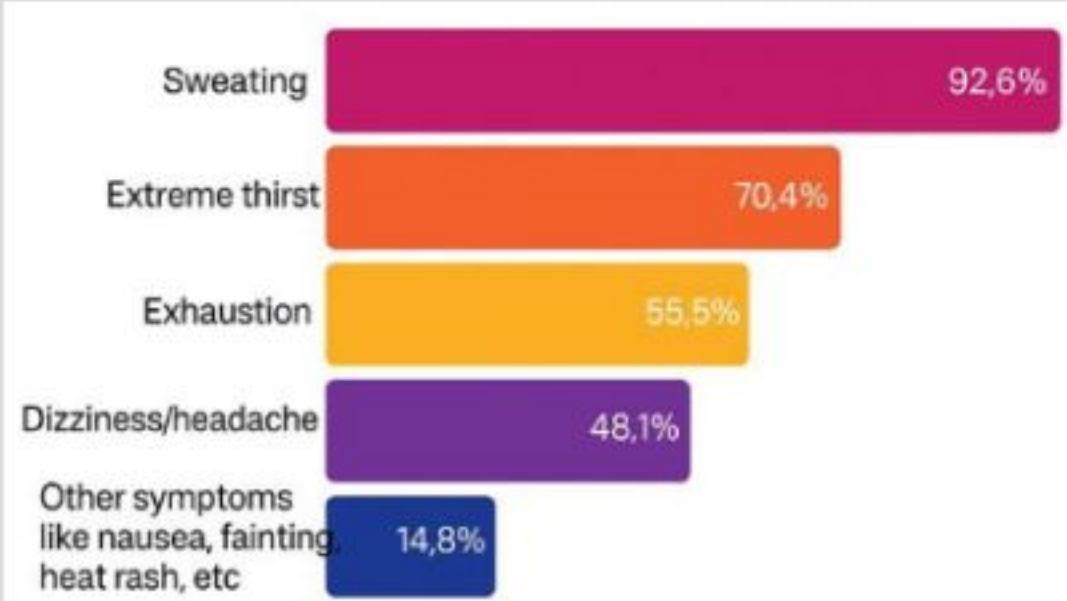
– Workplace temp & humidity (Lascar Data Logger)

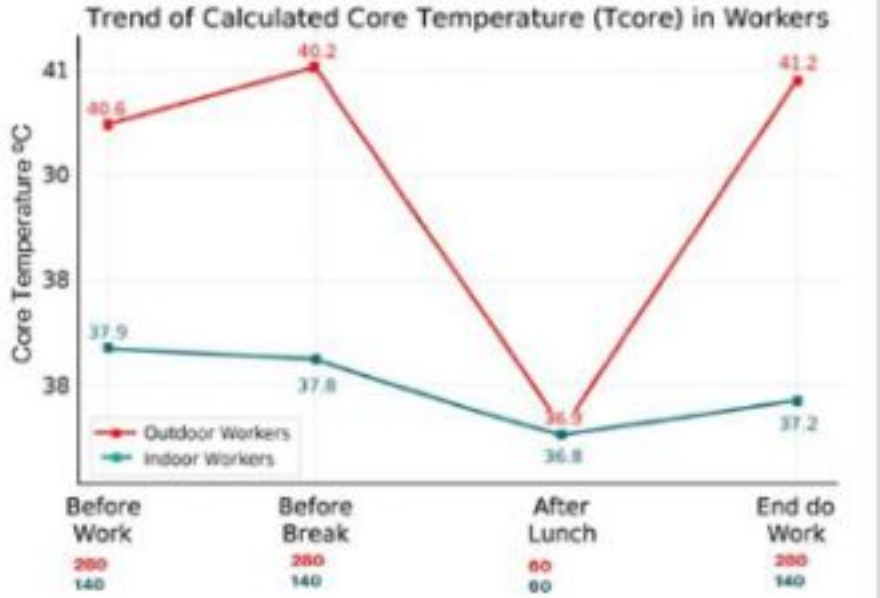
- Metabolic rates: model of human heat balance by Prof Richard de Dear.

Photo credit: [illegible]

Key Findings

Heat significantly affected their work hours (88.8%)





Recommendations

Adrienne Arsht-Rockefeller Foundation Resilience Center. (2023, July 26). *The scorching divide: How extreme heat inflames gender inequalities in health and income.* https://reliefweb.int/report/world/scorching-divide-how-extreme-heat-inflames-gender-inequalities-health-and

GREEN CLIMATE FUND

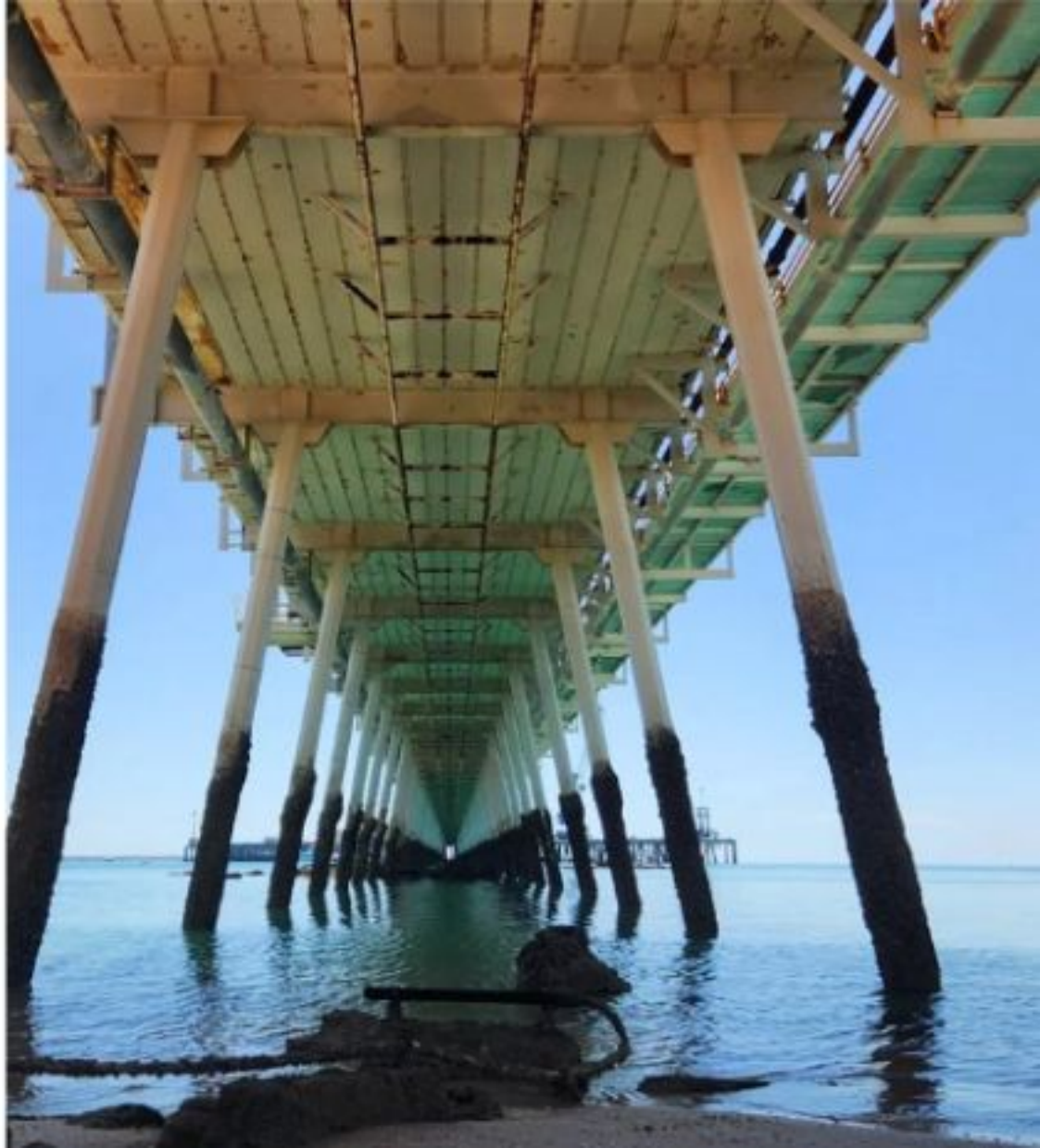
Green Climate Fund

Addressing Urban Heat Islands for Equitable Climate Resilience

Bapon Fakhruddin, PhD

Co-Chair, FAIR-DRR, CODATA

Water Sector Lead, GCF



What makes us unique

GREEN CLIMATE FUND

COUNTRY-DRIVEN

- Readiness programme supports country planning
- GCF programming is aligned with country priorities

A RANGE OF FINANCING INSTRUMENTS

- leverage blended finance
- Piloting support for new financial structures

RISK-TAKING, PATIENT CAPITAL

- accept higher risks to support early-stage project development & innovations to catalyse climate finance

AN OPEN, PARTNERSHIP ORGANISATION

- over 200 Accredited Entities and delivery partners

BALANCED ALLOCATION

- targeting 50 50 allocation between mitigation & adaptation

How GCF Finance Project

GREEN CLIMATE FUND

5. Dynamic Policy-Innovation Engine

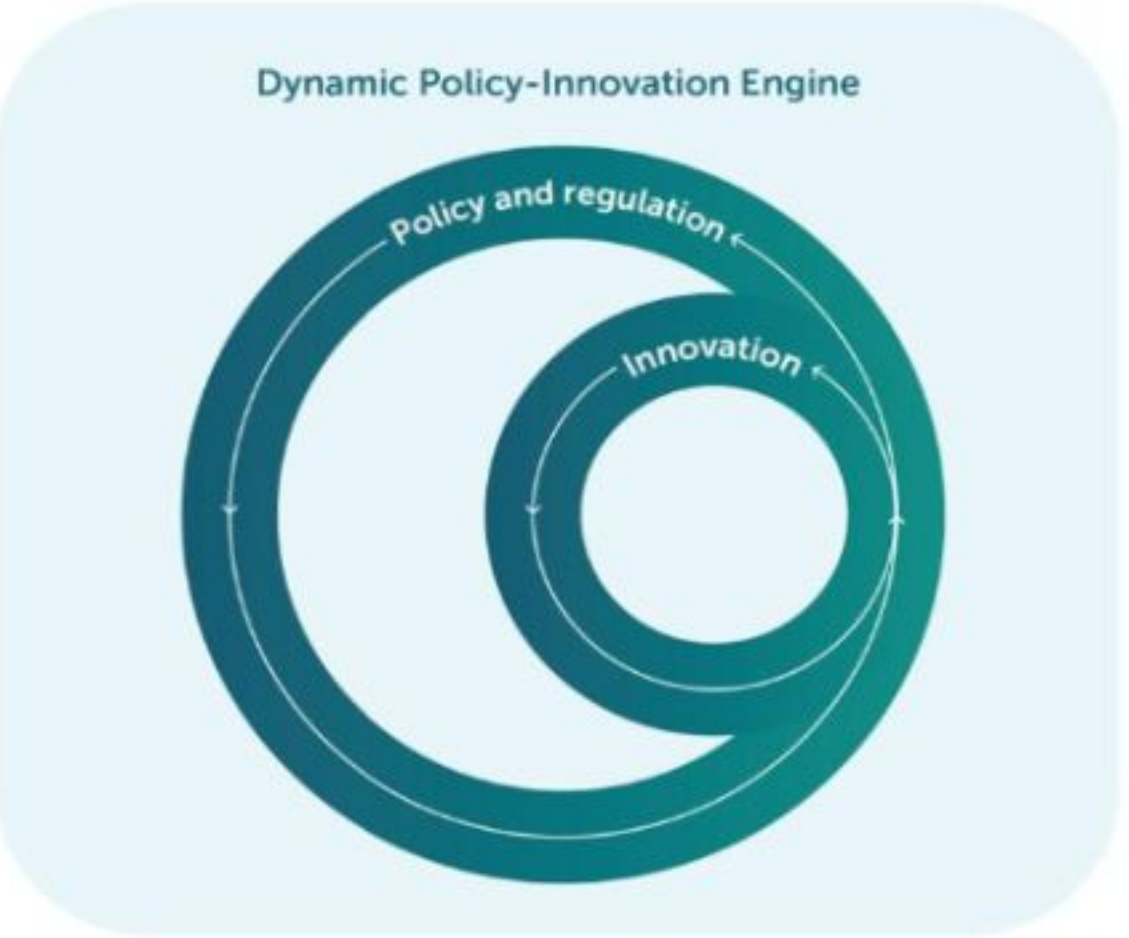
Collaborative Policymaking →

Incubators and Scaling up →

Collaboration and Co-creation →

Incentives and Regulations →

Science, Engineering and Technology Integration →



INSPIRE more
climate **ACTION**

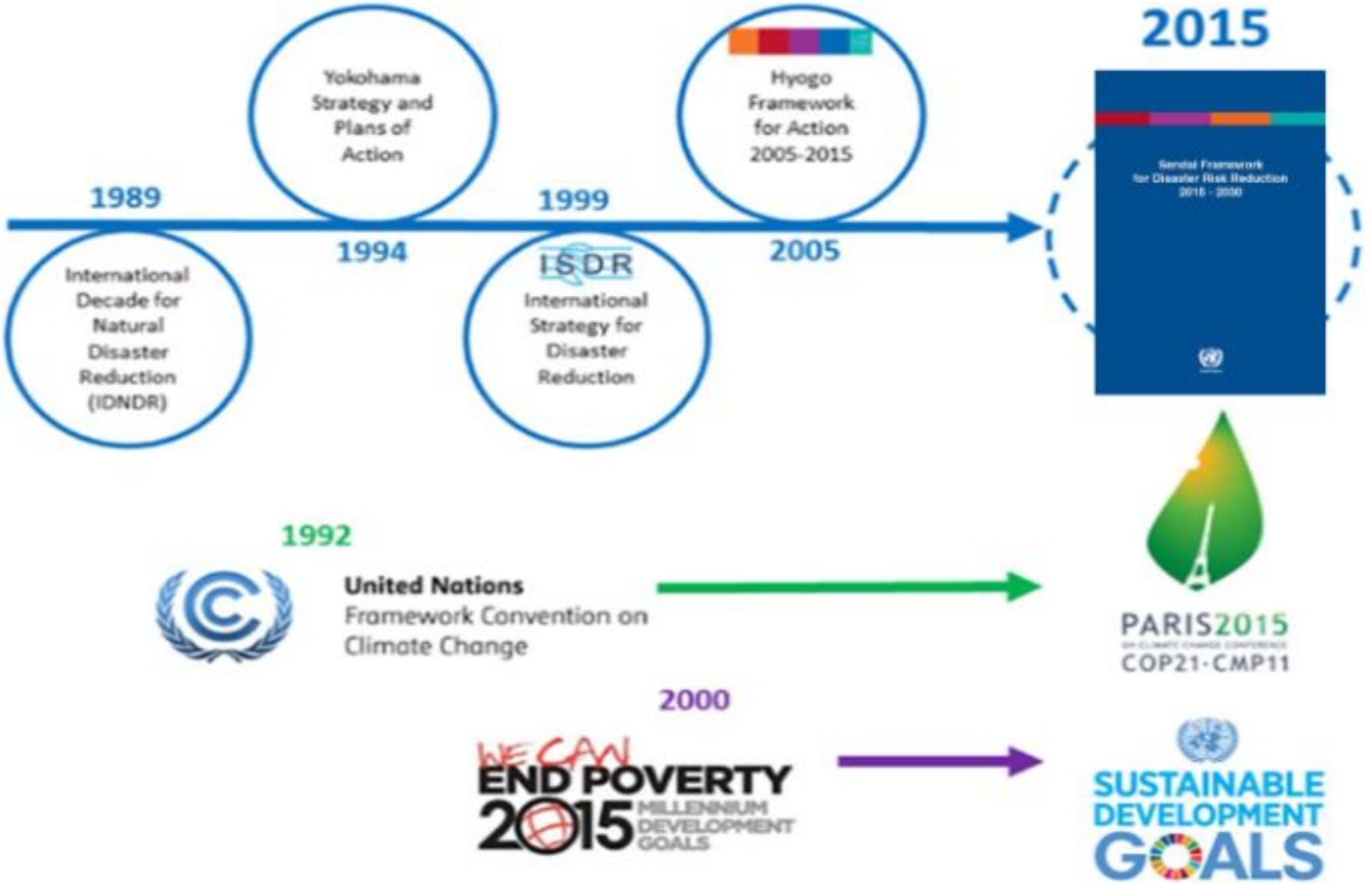
Extreme Heat as a Global Risk: Policy, Science, and Action for Urban Resilience

Dr. Virginia Murray

Athens is among many cities suffering extreme heat. High temperatures and strong winds caused wildfires in Greece in 2023. **Photo:** Unsplash / Anasmeister

The IPCC Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation

ipcc
INTERGOVERNMENTAL PANEL ON climate change


1989
International Decade for Natural Disaster Reduction (IDNDR)
1994
Yokohama Strategy and Plans of Action
1999
ISDR
International Strategy for Disaster Reduction
2005
Hyogo Framework for Action 2005-2015
2015
Sendai Framework for Disaster Risk Reduction 2015 - 2030
1992
United Nations
Framework Convention on Climate Change
PARIS2015
COP21·CMP11
2000
WE CAN
END POVERTY
2015 MILLENNIUM DEVELOPMENT GOALS
SUSTAINABLE DEVELOPMENT GOALS

Under EMBARGO until 12:30 p.m. EDT on Thursday, 25 July 2024

United Nations Secretary-General's Call to Action on Extreme Heat

United Nations

Extreme heat: Impacts

489,000
heat-related deaths occurred 2000–2019 each year, more than from tropical cyclones

12%
About 12 per cent of all food produced is lost due to a lack of cooling

Triple
The installed capacity of cooling equipment globally will almost triple by 2050

80 million
Working hours equivalent to 80 million full-time jobs could be lost due to heat stress by 2030

9.1%
An annual 1°C increase in temperature leads to a 9.1 per cent increase in poverty

80 million students
More than 80 million students are impacted by worldwide school closures due to heat in 2024

Extreme heat: Solutions

98,314
Scaling up heat health warning systems in 57 countries alone can save about 98,314 lives per year

$361 billion
Occupational safety and health measures can save $361 billion a year in medical and other costs

$1 trillion
Reducing cooling energy demand can cut electricity bills for end users by $1 trillion in 2050

unsg_call_to_action_on_extreme_heat_for_release.pdf

GLOBAL HEAT HEALTH INFORMATION NETWORK

World Health Organization

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Temperatures Rising: A Call to Action on Extreme Heat at WHA78

Published: June 17, 2025

Global Heat Health Information Network

On the sidelines of the 78th World Health Assembly, The Rockefeller Foundation, Wellcome and the Global Heat Health Information Network (GHHIN) hosted a packed side event on extreme heat. The message? It's time to act.

The event, "Temperatures Rising: Preparing and Protecting for Extreme Heat," brought together 20 expert speakers to discuss wide-ranging and urgent issues, touching on public health, community resilience, science, and policy, with the shared objective of advancing coordinated action on heat to save lives and livelihoods.

Temperatures Rising: A Call to Action on Extreme Heat at WHA78 | Global Heat Health Information Network

GHHIN is working with a wide range of partners to build a global community around extreme heat:

- sharing knowledge, supporting regional hubs, and creating the tools needed to turn science into action.
- Heat health early warning systems, improved public communication, and better access to climate data

Stocktake Report: Heat action across United Nations Entities and International Organizations

July 2025

Stocktake report - Heat in the UN a

An Assessment of Heat Action Plans: Global standards, good practices and partnerships

Assessment of Heat Action

Climate change and workplace heat stress

technical report and guidance

WHO, WMO issue new report and guidance to protect workers from increasing heat stress

UNDRR-ISC Hazard Information Profiles 2025 update

International Science Council

Hazard Information Profiles (HIPs): 2025 version | UNDRR

MH0xxx › METEOROLOGICAL and HYDROLOGICAL / Temperature-related

Heatwave

Definition

A heatwave is a marked, unusual period of hot weather over [illegible] persisting for at least two or three consecutive days and nig[illegible] hot period of the year based on local climatological conditio[illegible] thermal conditions recorded above given thresholds (WMO [illegible] 2015).

Reference

WMO and WHO, 2015. Heatwaves and Health: Guidance on Warning-System Develo[illegible] Meteorological Organization (WMO) and World Health Organization (WHO). [illegible] development. Accessed 16 May 2025.

Annotations

Synonyms

Not identified.

Additional scientific description

[illegible]

Metrics and numeric limits

[illegible]

[illegible]

Key relevant UN convention(s) / multilateral treaty(ies) / Frameworks

United Nations Framework Convention on Climate Change (UNFCCC) (UN General Assembly, 1994).

Sendai Framework for Disaster Risk Reduction (UNDRR, 2015).

United Nations Convention to Combat Desertification (UNCCD, 1994).

Examples of hazard drivers, impacts, and risk management

Hazard Drivers: [illegible]

Impacts: [illegible]

Multi-hazard Context: [illegible]

Heatwave (MH0501)

[illegible]

Monitoring: [illegible]

[illegible]

Risk Management: [illegible]

[illegible]

References

Boyle, C., [illegible] et al., 2018. [illegible] urban [illegible]. Environmental Science & Technology. Available from: [illegible] Accessed 16 May 2025.

Bureau of Meteorology, 2025. Heatwave service for Australia. Available from: [illegible] Accessed 16 May 2025.

China Meteorological Administration, 2012. Weather warnings: Heatwave. Available from: [illegible] Accessed 16 May 2025.

Environment and Climate Change Canada, 2018. [illegible] Accessed 16 May 2025.

Global Heat Health Information Network, 2020. Understanding heat. Available from: [illegible] Accessed 16 May 2025.

Government of India, 2020. Forecast demonstration project (FDP) for improving heatwave warning over India. [illegible] Accessed 16 May 2025.

KMA, 2019. [illegible] Available from: [illegible] Accessed 16 May 2025.

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