

Climate Change & Heat Stress

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Background

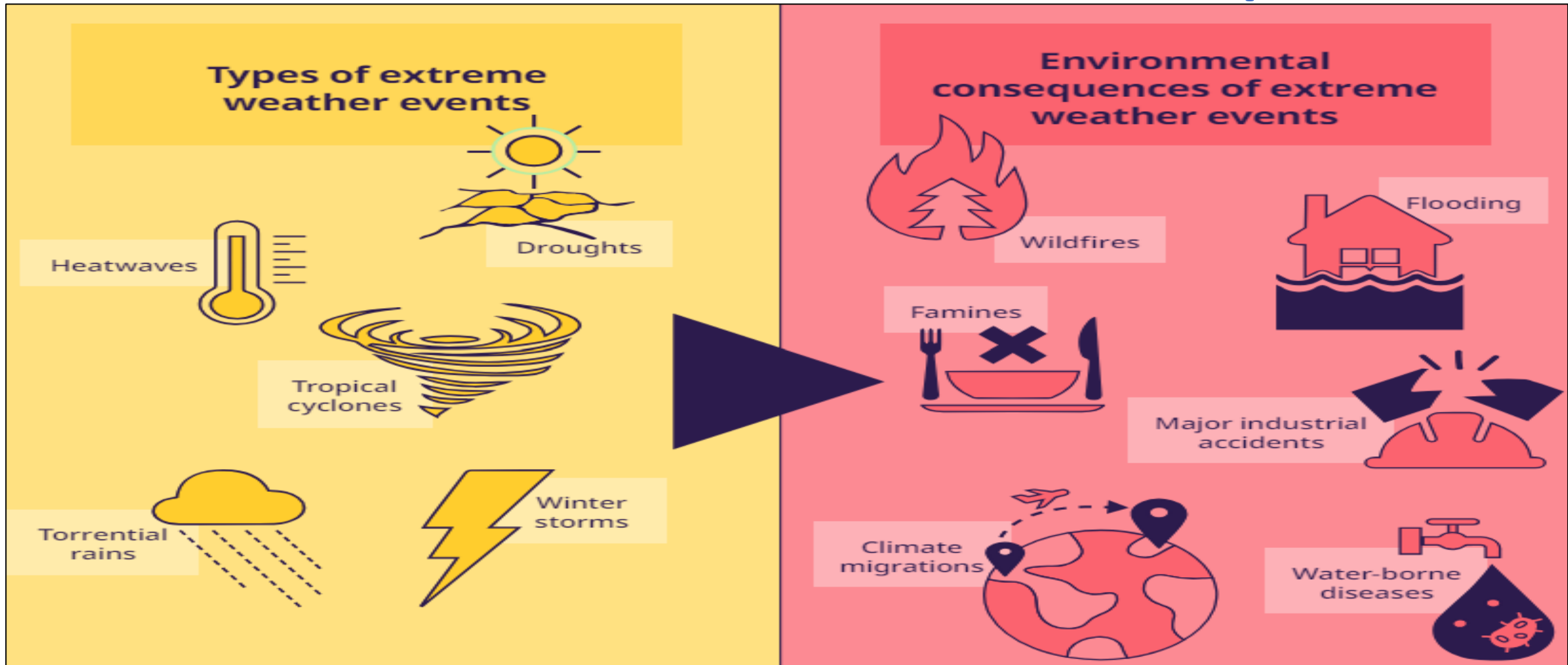
- Heatwaves will intensify in duration, frequency and magnitude
- Heat stress threat to livelihoods and health of the working population
- In 2023, 3.4 billion persons at work*
 - 2 billion work in the informal sector#
 - Africa - 85.8% informal; 68.6% in the Arab States; 68.2% in Asia and the Pacific; 40% in the Americas and 25.1% in Europe and Central Asia#
- Agricultural and construction workers expected to be worst affected by heat stress (mainly outdoor workers and in the informal sector)
- Levels of heat in the tropics and sub-tropics are already high
- Zoonotic diseases (especially vector borne) on the increase**
- Heat stress incidents in workers will affect overburdened health facilities

* <https://www.statista.com/statistics/1258612/global-employment-figures/>

https://www.ilo.org/global/about-the-ilo/newsroom/news/WCMS_627189/lang--en/index.htm

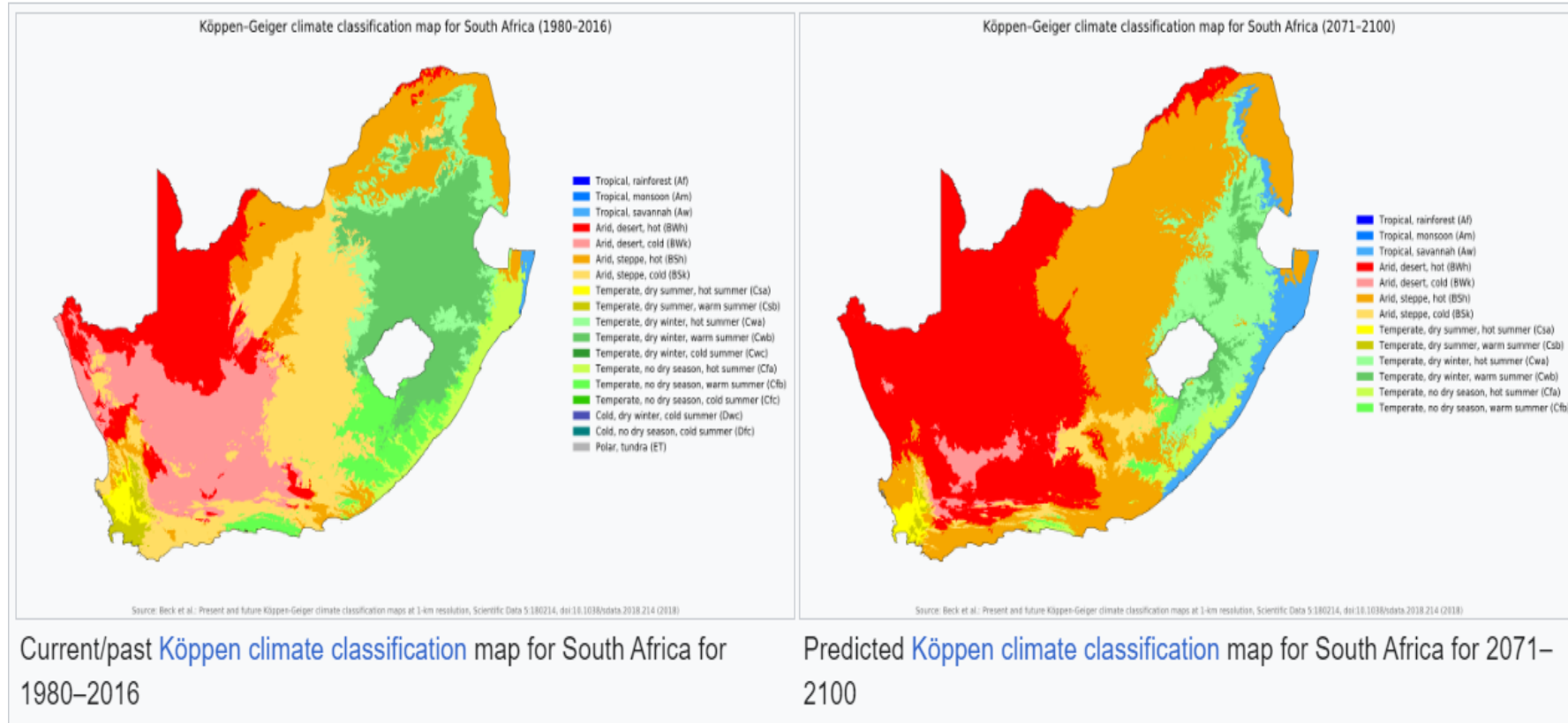
** <https://researchoutreach.org/>... Jeanne M. Fair. April 30. 2020

Extreme weather events and their consequences



Ensuring safety and health at work in a changing climate. ILO. 2023

Climate Change Impact



https://en.wikipedia.org/wiki/Climate_change_in_South_Africa

Increasing Levels of Carbon Dioxide and Short-Lived Climate Pollutants



Rising Temperature



Rising Sea Levels



Increasing Extreme Weather Events



Climate change: a multi-dimensional threat to Occupational Health & Safety

Demographic, Socioeconomic, Environmental, and Other Factors That Influence the Magnitude and Pattern of Risks

Geography
Ecosystem change
Baseline air and water quality
Agricultural and livestock practices and policies

Warning systems
Socioeconomic status
Health and nutritional status
Access to effective health care

EXPOSURE PATHWAYS

Extreme Weather Events

Heat Stress

Air Quality

Water Quality and Quantity

Food Supply and Safety

Vector Distribution and Ecology

Social Factors

EXAMPLES OF HEALTH OUTCOMES



- Injuries
- Fatalities
- Mental health effects



Heat-related illness and death



- Exacerbations of asthma and other respiratory diseases
- Respiratory allergies
- Cardiovascular disease



- Campylobacter infection
- Cholera
- Cryptosporidiosis
- Harmful algal blooms
- Leptospirosis



- Undernutrition
- Salmonella food poisoning and other foodborne diseases
- Mycotoxin effects



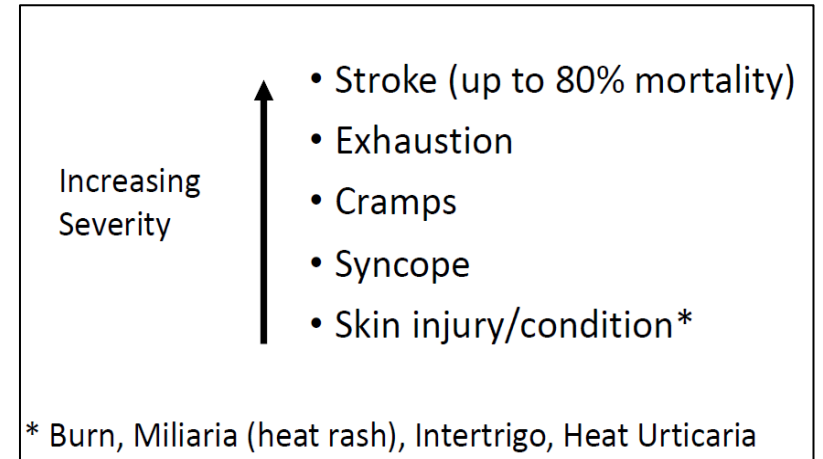
- Chikungunya
- Dengue
- Encephalitis (various forms)
- Hantavirus infection
- Lyme disease
- Malaria
- Rift Valley fever
- West Nile virus infection
- Zika virus infection



Physical and mental health effects of violent conflict and forced migration (complex and context-specific risks)

Heat is an occupational health & safety hazard

- Excessive workplace heat is a well-known occupational health & productivity danger
- High body temperature or dehydration causes
 - Heat exhaustion
 - Heat stroke
 - In extreme cases – DEATH
- Protective actions through slow work pace or to limit hours of heat exposure will affect productivity & economic output
- By 2030, heat stress will reduce total working hours by 2.2% and global GDP by USD 2,400 billion*



* https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_712011.pdf

**Job factors
and
environment**

- Hot temperature
- High Humidity
- Poor ventilation, air movement
- Indoor heat sources
- High physical demand
- Poor PPE and clothing worn

**Personal
Factors**

- Medication
- Pregnancy
- Existing health concerns and previous heat related illnesses
- Aged workers
- Unacclimatized
- Dehydration
- Obesity

**Heat
Related
Illness**

<https://www.canada.ca/en/employment-social-development/services/health-safety/reports/thermal-stress-work-place.html>

The impact of heat stress on labour productivity by region

Percentage of working hours lost due to heat stress under a 1.5°C scenario, 2030



Source: ILO (2019) "Working on a warmer planet: The effect of heat stress on productivity and decent work". Estimates based on ILOSTAT and the HadGEM2 and GFDL-ESM2M climate models (RCP2.6 climate change pathway, which envisages a global average temperature rise of 1.5°C by the end of the century).

Who is affected?

- Inside / indoor workers with poor or non-existent climate control
 - Exposure to heat & humidity
- Outdoor workers (weather exposed)
- Workers moving across different climates (extreme heat / cold)
- Workers whose roles expose them to situations of extreme heat
- Vulnerable workers
 - Agriculture
 - Informal sector
 - Temporary workers
 - Migrant workers

Why are workers at risk?

- They are often the **first to be exposed** to the effects of climate change
- Exposed for **longer durations** and at **greater intensities**
- Increased metabolic (body) heat from **physically demanding conditions**
- **Insulated or impermeable** protective clothing
- Exposed to conditions that the general public can **choose to avoid**
- Sectors that lack safe and healthy working conditions or social protection such as **informal or precarious work**
- *Workers often experience physiological heat strain which is often not recognized*

Náfrádi B. ILO. 2023

Factors additional to heat stress

- Air temperature
- Radiant heat
- Humidity
- Wind

Average of 1% increase in occupational injuries for every 1 degree C above 20.9°C (69.6° F)



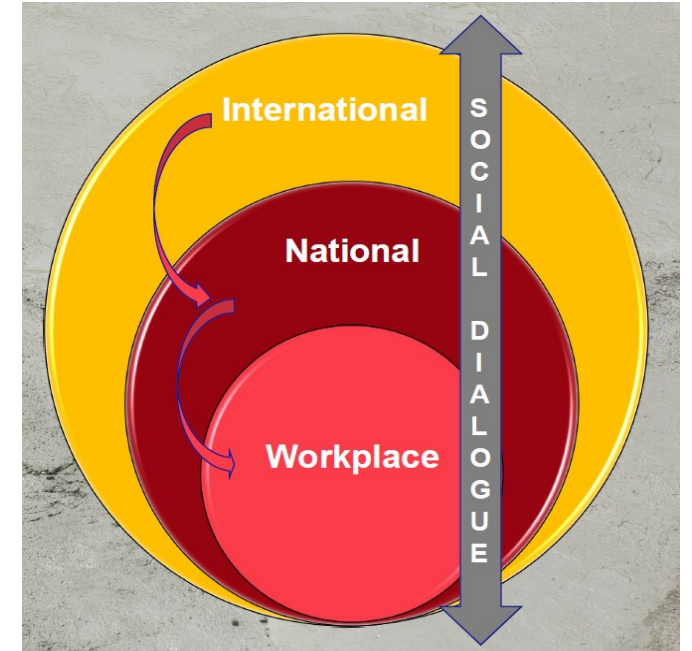
<https://www.citizen.org/article/heat-stress-the-cost-of-inaction/>

Heat stress exacerbates inequality

- Precarious living conditions and precarious working conditions compound the risks of many workers especially workers in the informal sector and those working outdoors
- Heat stress affects habitability of regions and may contribute to internal and external migration of workers

What must we do?

- At an individual level
 - Stay cool
 - Stay hydrated
 - Stay informed
 - Take rest breaks
- Strengthen initiative of the NEDLAC to take into consideration climate change, heat stress and workers health – concerted action involving trade unions, employers and governments and technical experts at national and workplace levels
- Further work needed
 - Climate change adaptation & mitigation affecting workers
 - Economics of lost productivity, decreased work efficiency and health care
 - Special interventions for outdoor workers and informal sector workers
- Qatar banned outdoor work (10am to 3.30pm – 1 June to 15 Sept); Cyprus with restricted working hours (temperature > 35 degrees C)



Interventions

- Social dialogue involving labour unions, employers and government on adaptation and mitigation of heat stress
- Awareness amongst occupational safety & health professionals of heat stress on workers and prevention, care and support activities for an affected worker; awareness amongst workers
- Conduct health (hazard) risk assessments in workplaces; identification and medical assessment of vulnerable workers
- Access of workers to drinking water, rest breaks, curtailment of high exposure work hours, acclimatization, bio-physical monitoring, personal protective equipment and information sharing
- Engineering solutions for cooling of indoor workplaces
- Preparedness planning across the health sector to cover emergency and care responses for affected workers (and communities); new or re-built infrastructure take account of climate threats
- Indirect interventions include macro policy, fiscal and regulatory interventions and shifts of economies to non-outdoor work in certain sectors and use of modernized agricultural technologies
- The special needs of vulnerable workers need to be considered

Cross Cutting Themes

- Climate change and mental health
- Climate change and gender
- Climate change and older persons
- Biodiversity conservation
- Sustainable agriculture and food security
- Water management and access
- Renewable energy and electrification
- Climate adaptation and resilience building

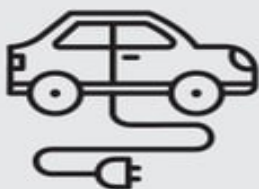
Ensuring safety and health at work in a changing climate. ILO. 2024

Building Climate Resilience

MITIGATION

ACTION TO REDUCE EMISSIONS THAT CAUSE CLIMATE CHANGE

Sustainable transportation



Clean energy

Energy efficiency



Water conservation



New energy systems



Local food



Education



Complete communities



Urban forest

ADAPTATION

ACTION TO MANAGE THE RISKS OF CLIMATE CHANGE IMPACTS

Disaster management & business continuity



Flood protection



Infrastructure upgrades

Challenges

- Extreme weather not seen as a health issue
- Uncertainty on how to approach quantifying the risk to the enterprise
- Silo model / vertical responses of agencies / enterprises, unclear roles and responsibilities and un-coordinated approaches
- Lack of database / clearing house for good practice and evidence-base for interventions
- Inadequate public policy discussions with minimal legislative changes
- “It’s too big to tackle” – will need sectoral and cross-cutting assessments and interventions

Leave no worker behind...



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