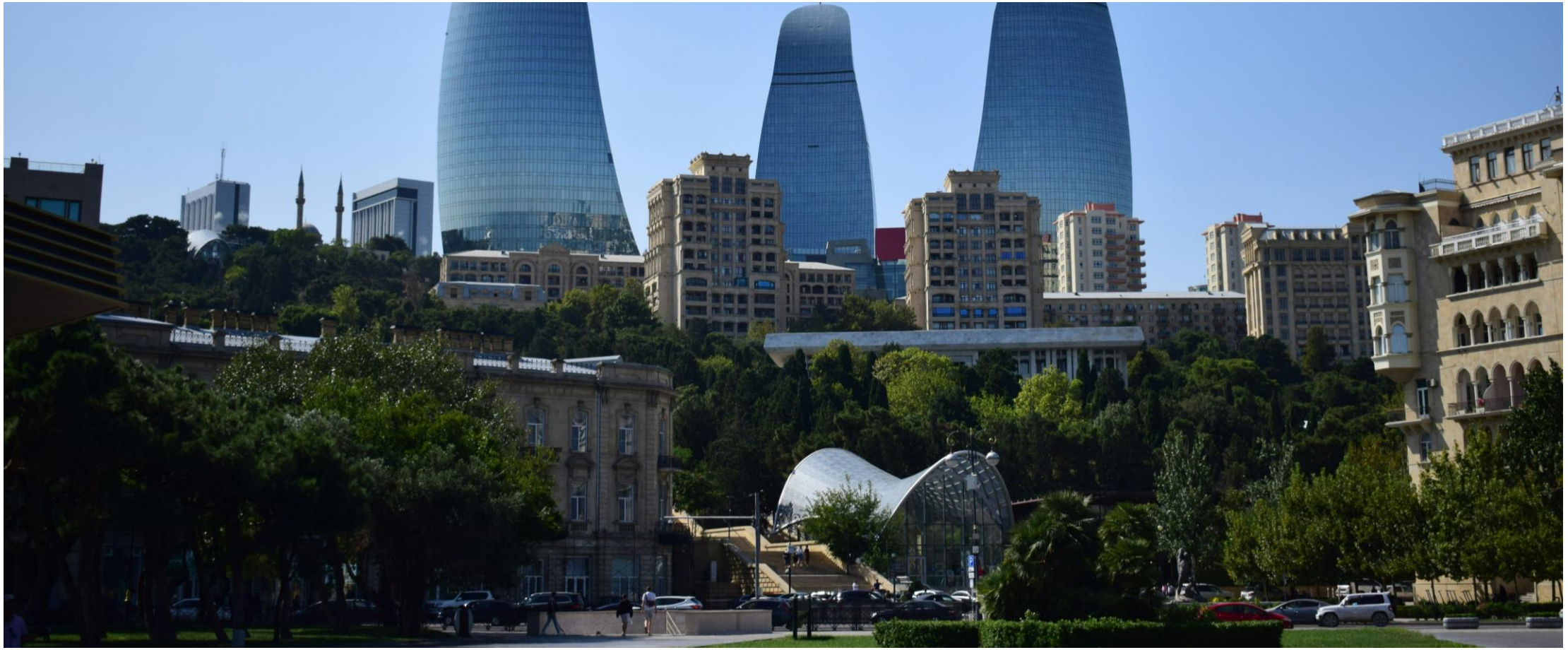
Building heat-resilient cities: sustainable cooling & urban solutions

14 April 2026, 10 – 11:30 CEST



Welcome and opening remarks

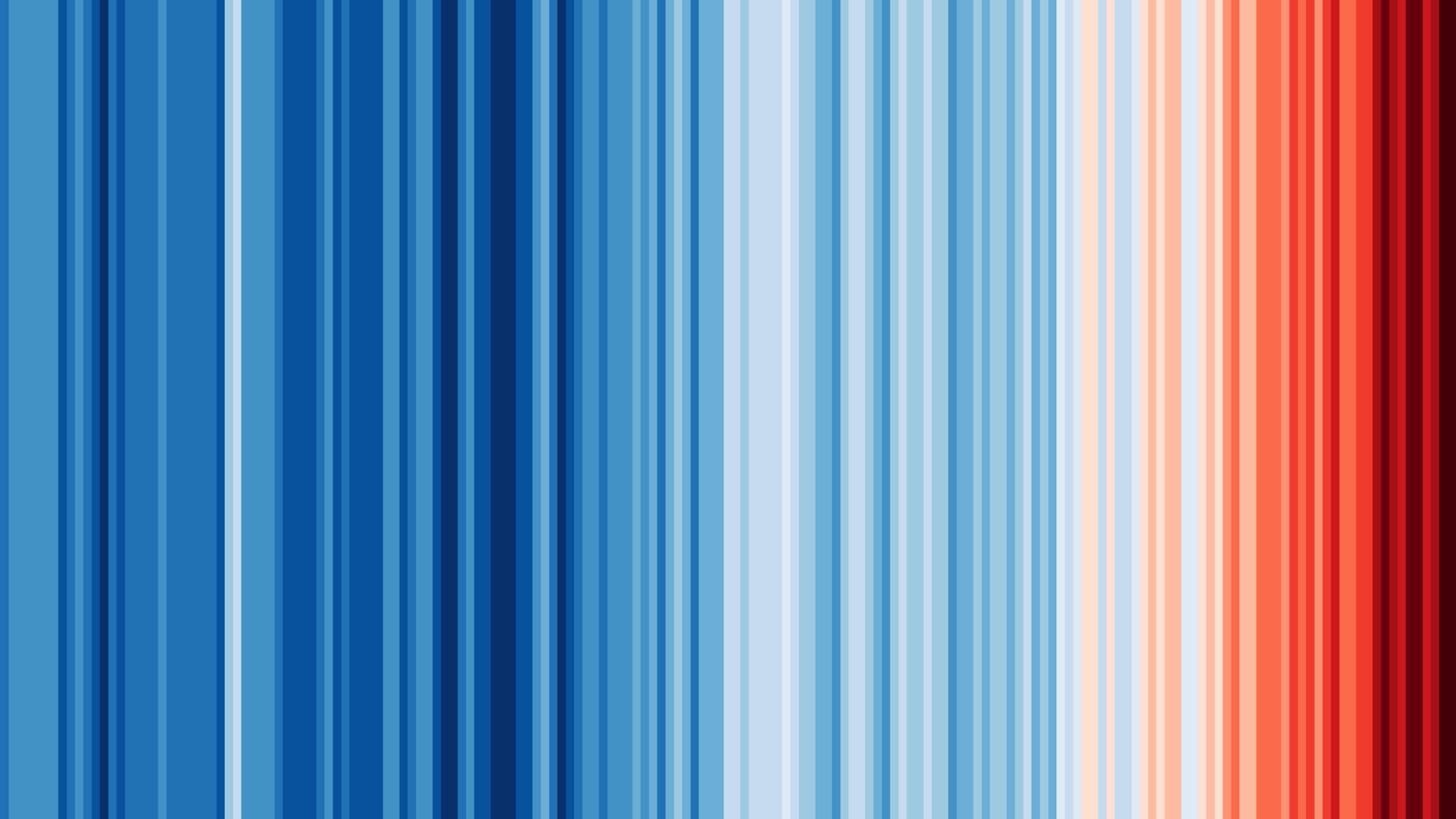
Gulnara Roll, UNEP, Head of Cities and Buildings Unit

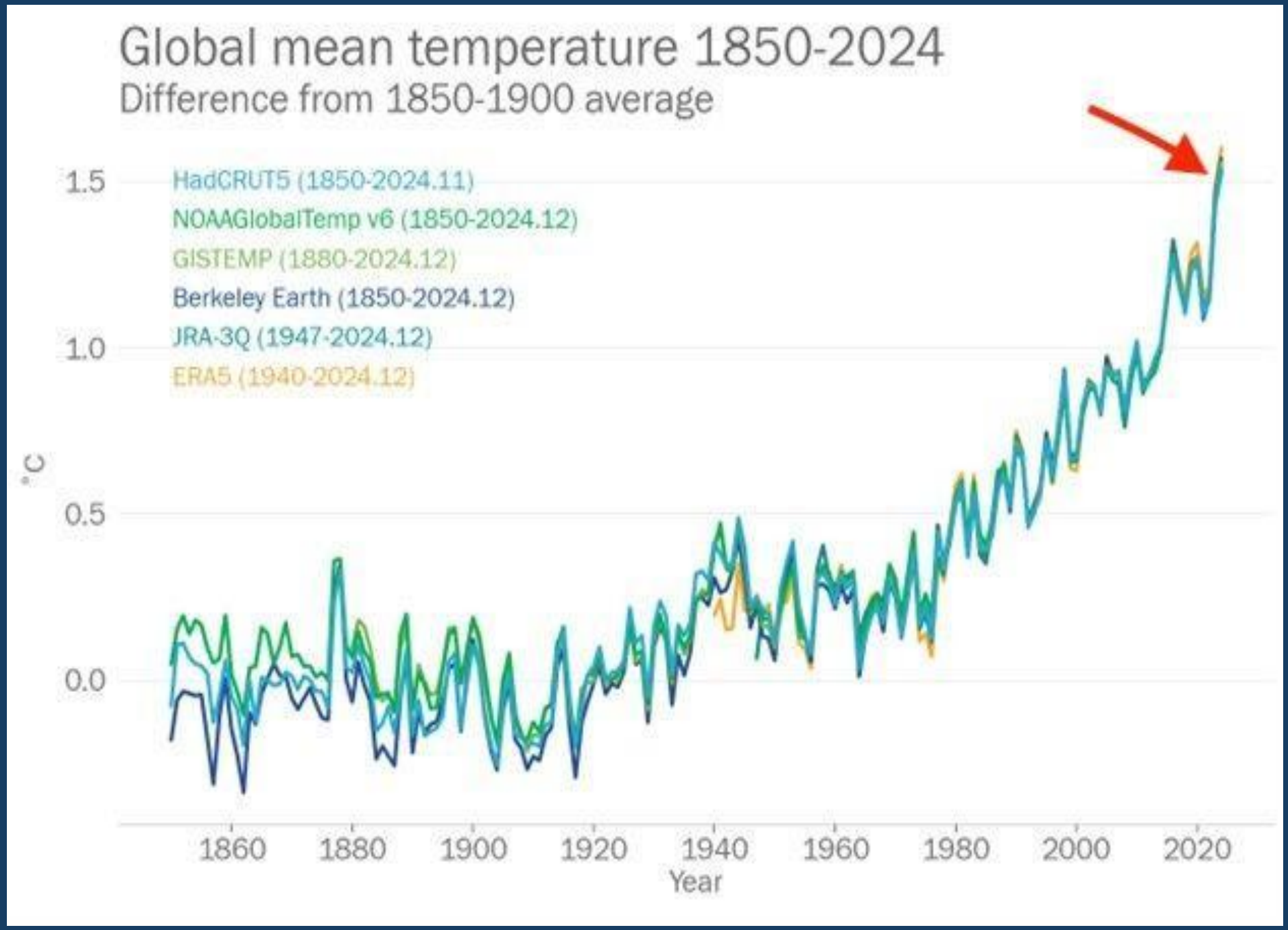
Setting the scene: why heat resilience matters

Dr. Eleni (Lenio) Myrivili, Global Chief Heat Officer for UNEP, UN-Habitat and the Atlantic Council's Climate Resilience Center

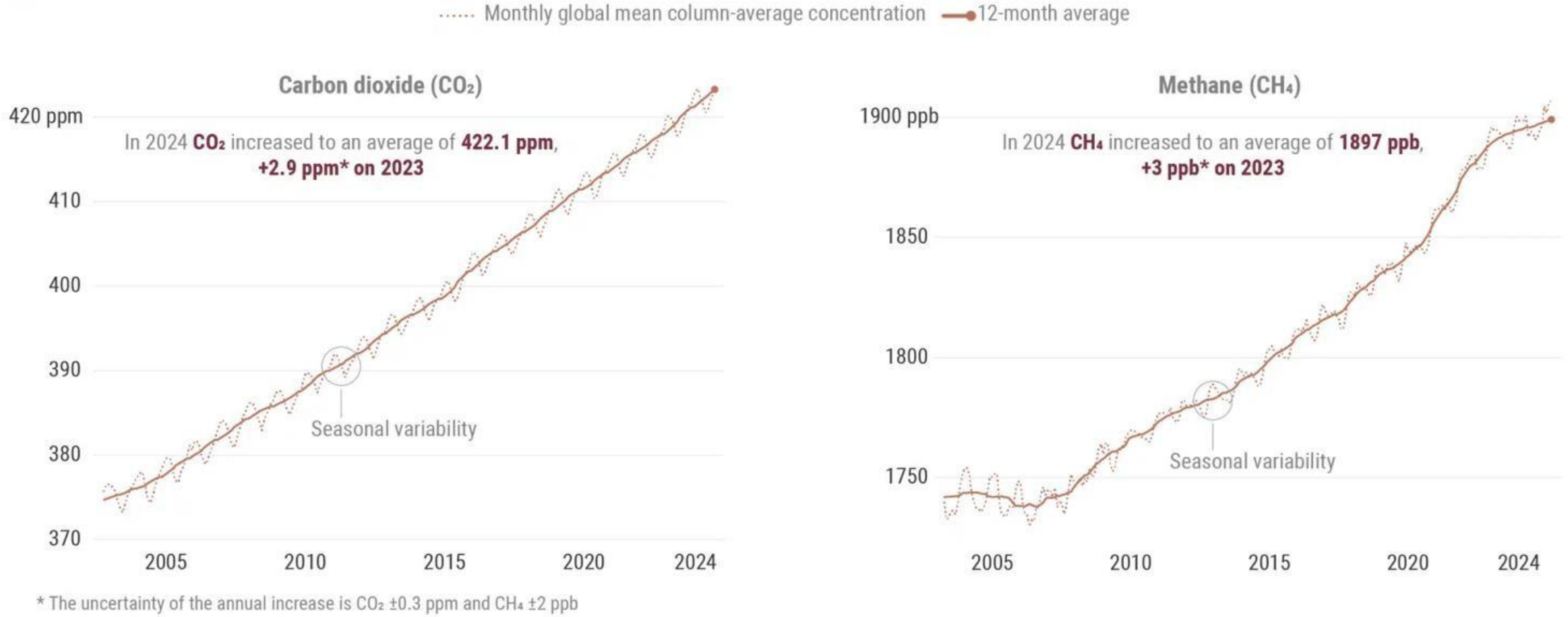
Setting the scene:
why heat resilience matters

Eleni (Lenio) Myrivili
Global Chief Heat Officer for UNEP, UNH, and the Atlantic Council Climate Resilience Center




Global mean temperature 1850-2024
Difference from 1850-1900 average
HadCRUT5 (1850-2024.11)
NOAAGlobalTemp v6 (1850-2024.12)
GISTEMP (1880-2024.12)
Berkeley Earth (1850-2024.12)
JRA-3Q (1947-2024.12)
ERA5 (1940-2024.12)
1.5
1.0
0.5
0.0
°C
1860
1880
1900
1920
1940
1960
1980
2000
2020
Year

Global atmospheric concentration of greenhouse gases



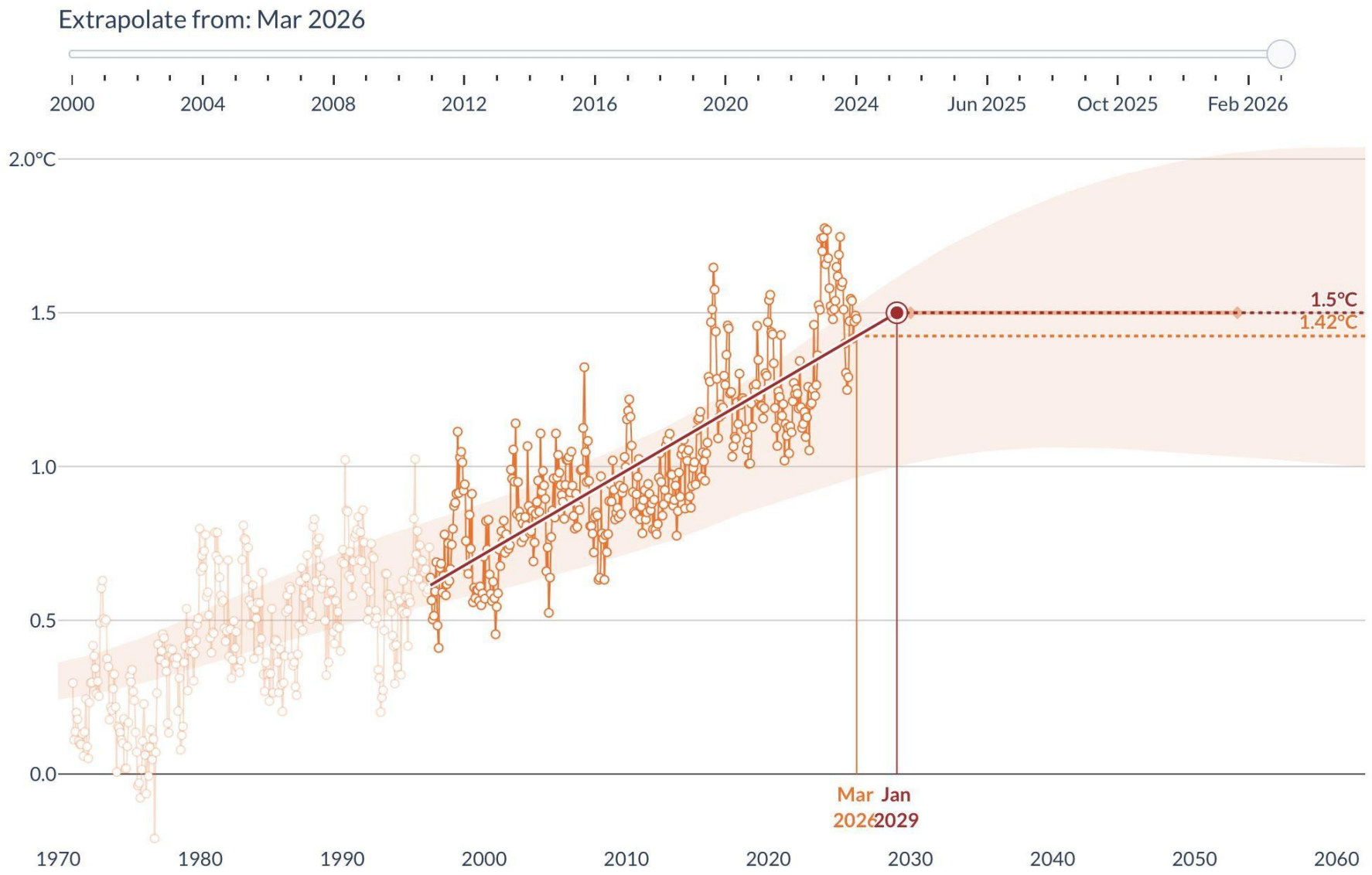
* The uncertainty of the annual increase is CO_2 ±0.3 ppm and CH_4 ±2 ppb

Data: C3S/Obs4MIPs (v4.6) consolidated (2003–2023), CAMS preliminary near real-time data (2024) GOSAT (CH4) and GOSAT-2 (CO2) records. Spatial range: 60°S–60°N over land.
Credit: C3S/CAMS/ECMWF/University of Bremen/SRON

PROGRAMME OF THE EUROPEAN UNION · Copernicus · Climate Change Service · Atmosphere Monitoring Service · IMPLEMENTED BY ECMWF

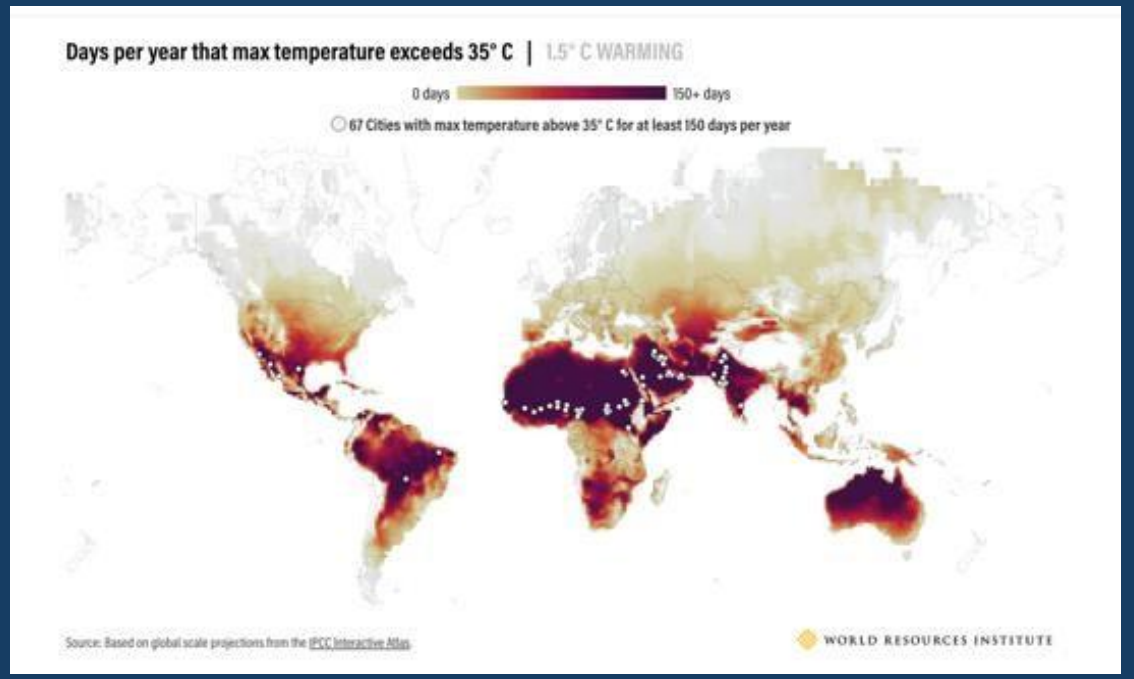
Global warming reached an estimated **1.42°C** in **March 2026**.

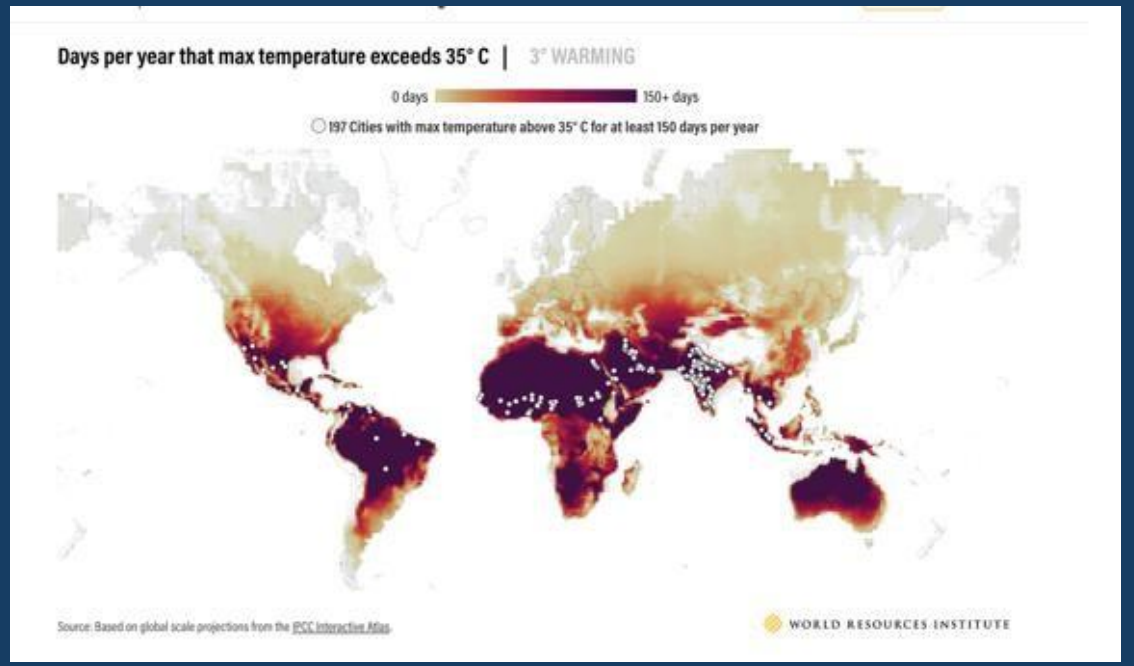
If the 30-year warming trend leading up to then continued, global warming would reach **1.5°C** by **January 2029**.



Kolkata, India

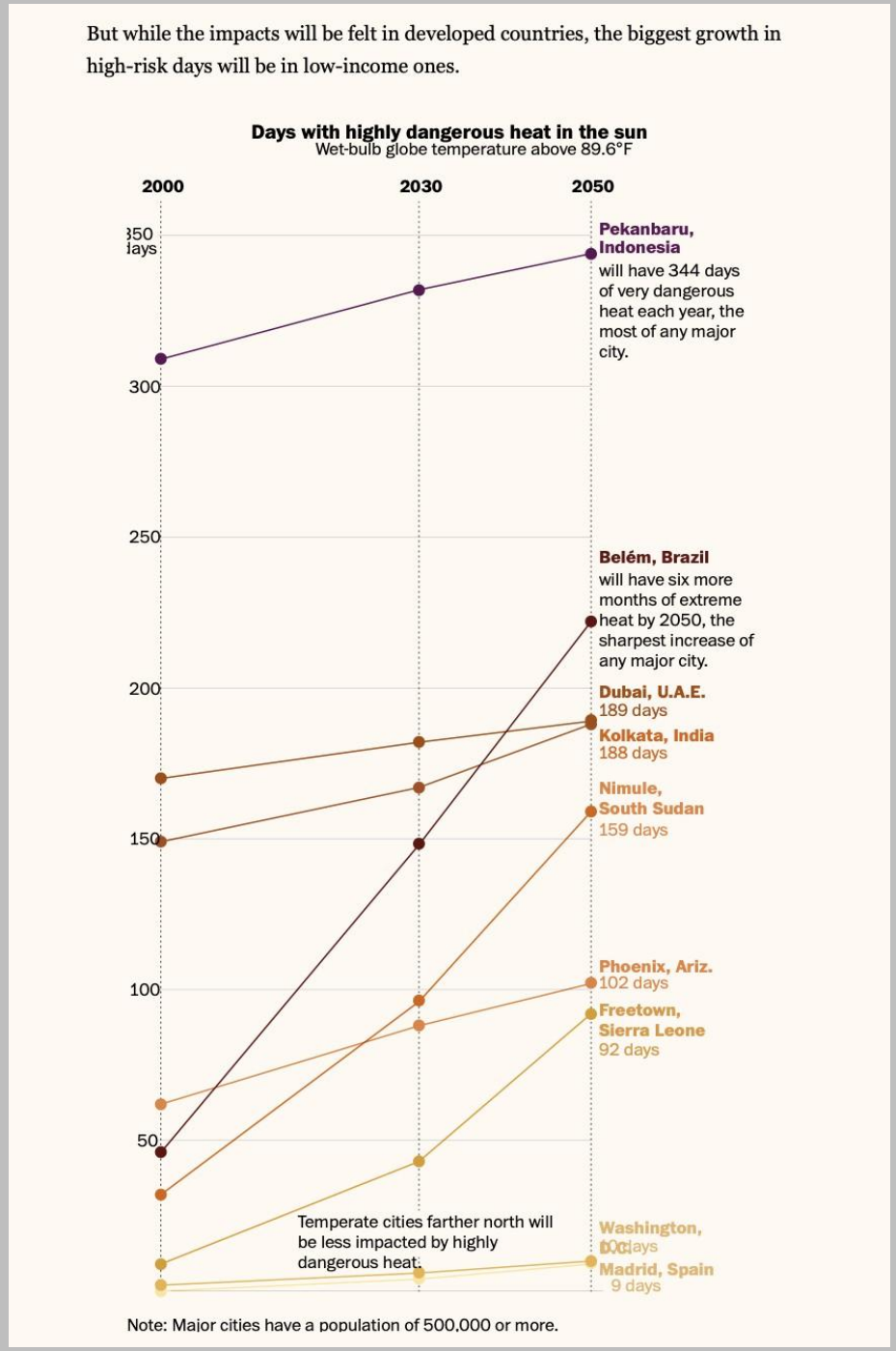
188 days with extreme heat in 2050





Recent s Future Heat

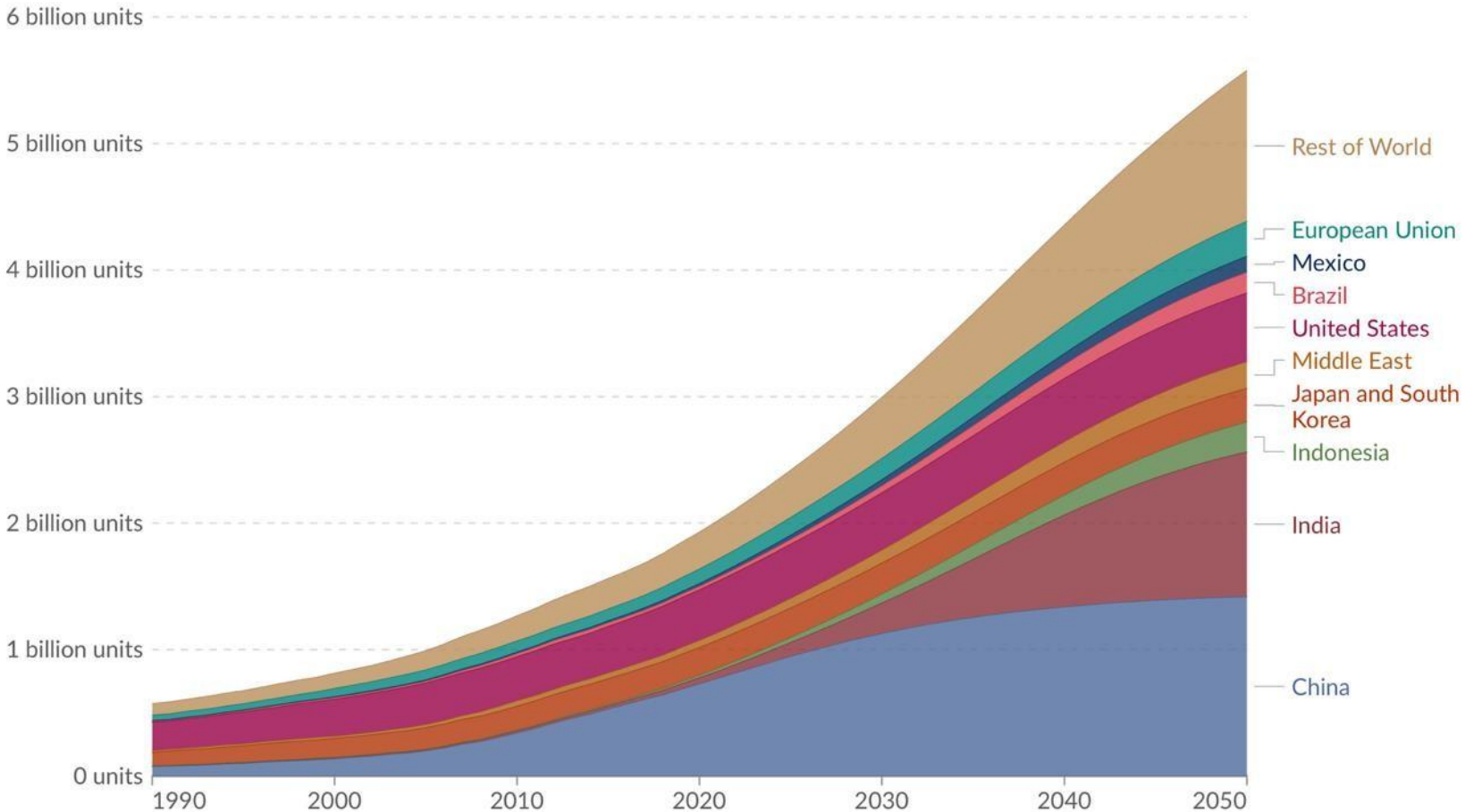
- **Canada, June 2021:** six days - 49,6C immolation of Lytton - $12m – 600 mortality
- **Europe 2022 Heat Deaths (Revised):** Using improved daily mortality data, researchers revised the 2022 estimates upward to 70,066 deaths.
- **Iran, August 2023:** 2 day nationwide shutdown temperatures over 50C
- **Mexico, US Southwest, and Central America, June 2024:** Extremely high temperatures breaking records.
- **Europe 2024 Heat Deaths:** A September 2025 study published in Nature Medicine estimated that 62,775 people died from heat-related causes in Europe between June and September 2024.
- **India, June 2024**: longest heatwave - 48,000 suspected heat stroke cases.
- **Record Highs in Asia:** In 2024, Myanmar set a new national temperature record of 48.2°C, with rampant heatwaves across East Asia from April to November.
- **Central Asia, March 2025:** An unprecedented heatwave occurred, with temperatures running up to 10°C higher than seasonal averages.
- **South Sudan, February 2025:** Extreme heat in this region had severe impacts on vulnerable populations, particularly women.
- **2025 Temperatures:** While 2025 was slightly cooler than 2024 due to La Niña, it was still one of the three warmest years on record, maintaining an intense long-term warming trend.
- **North America (March 2026):** An unusually early and severe spring heatwave developed across the southwestern US.
- **Australia (January 2026):** South-eastern Australia experienced its most severe heatwave since 2019-20, with temperatures exceeding 40°C in major cities.



Projected number of air conditioning units

Figures from 2017 onwards are projections from the International Energy Agency, based on estimated changes in population and income.

Our World in Data



Data source: International Energy Agency (IEA). Future of Cooling.

OurWorldinData.org/energy | CC BY

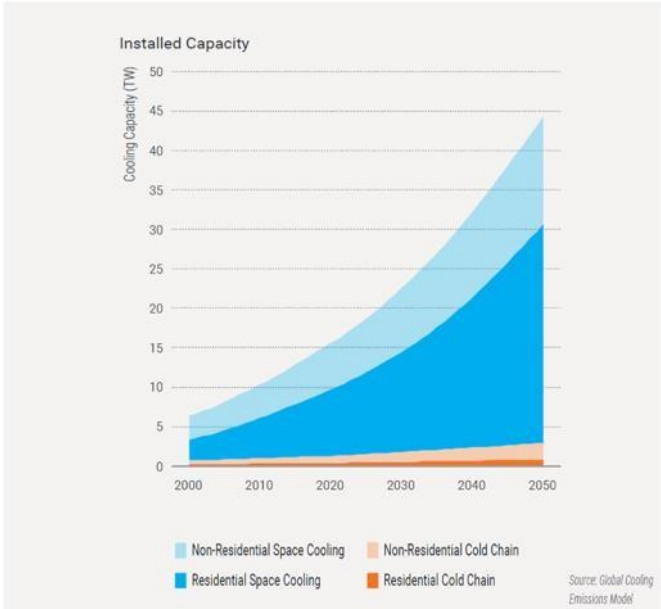
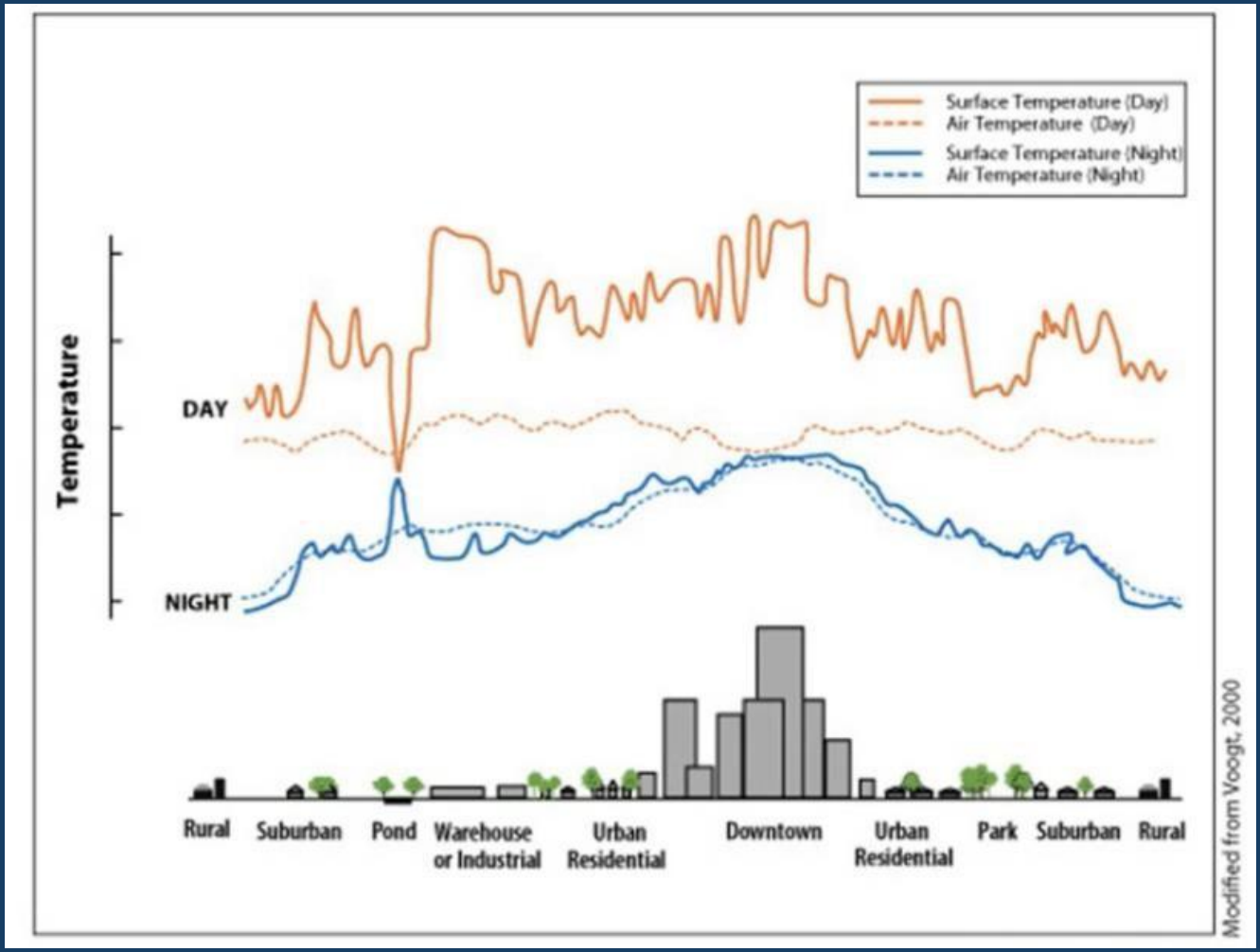


Figure 2-2: **Installed capacity under the BAU Growth scenario, 2000-2050**
Source: UNEP Cool Coalition 2023 Global Cooling Watch Report

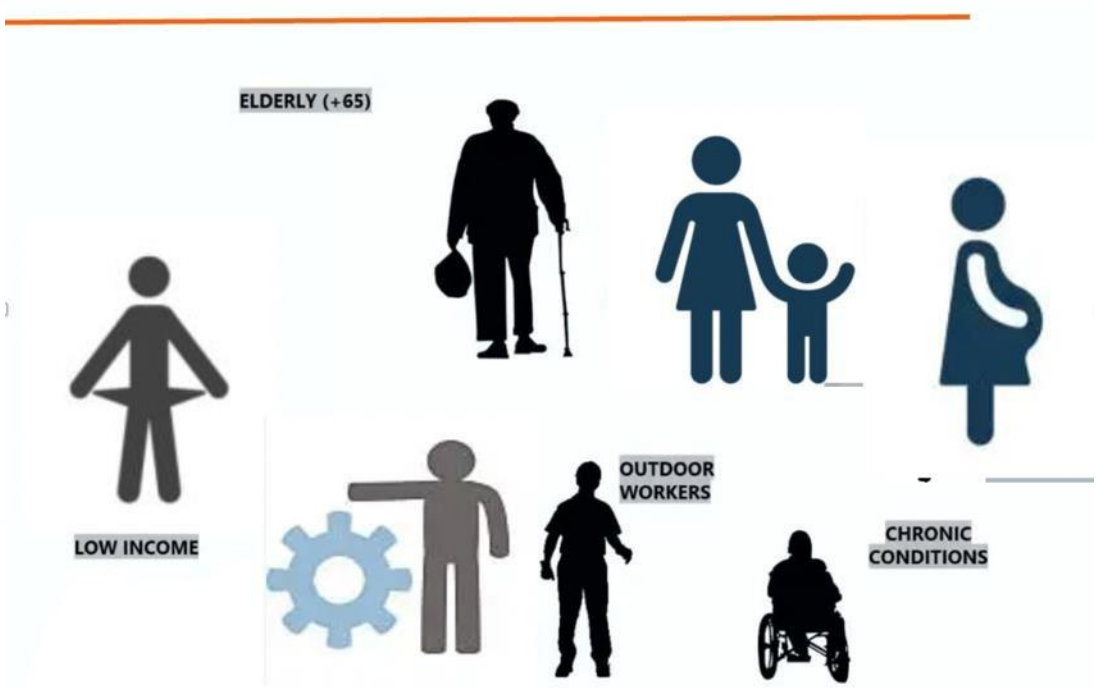
Urban heat is worse

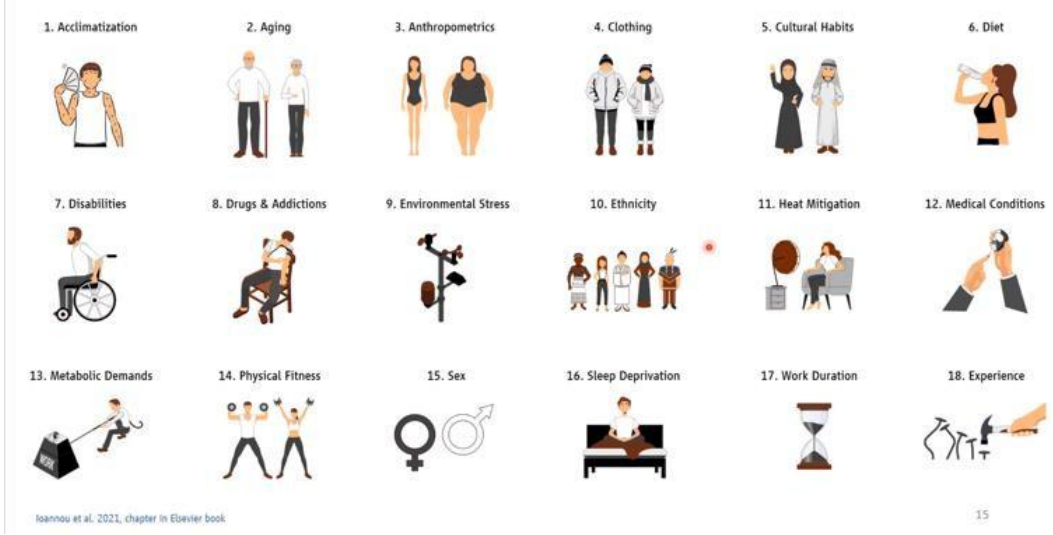


The urban heat has the following effects:

- Highest mortality rates and public health deterioration
- Higher energy consumption
- Economic and productivity losses
- Water shortages
- Food insecurity
- Higher pollution
- Increased community and gender violence
- Extreme stress and loss of urban trees
- Biodiversity loss
- Droughts, wildfires, floods

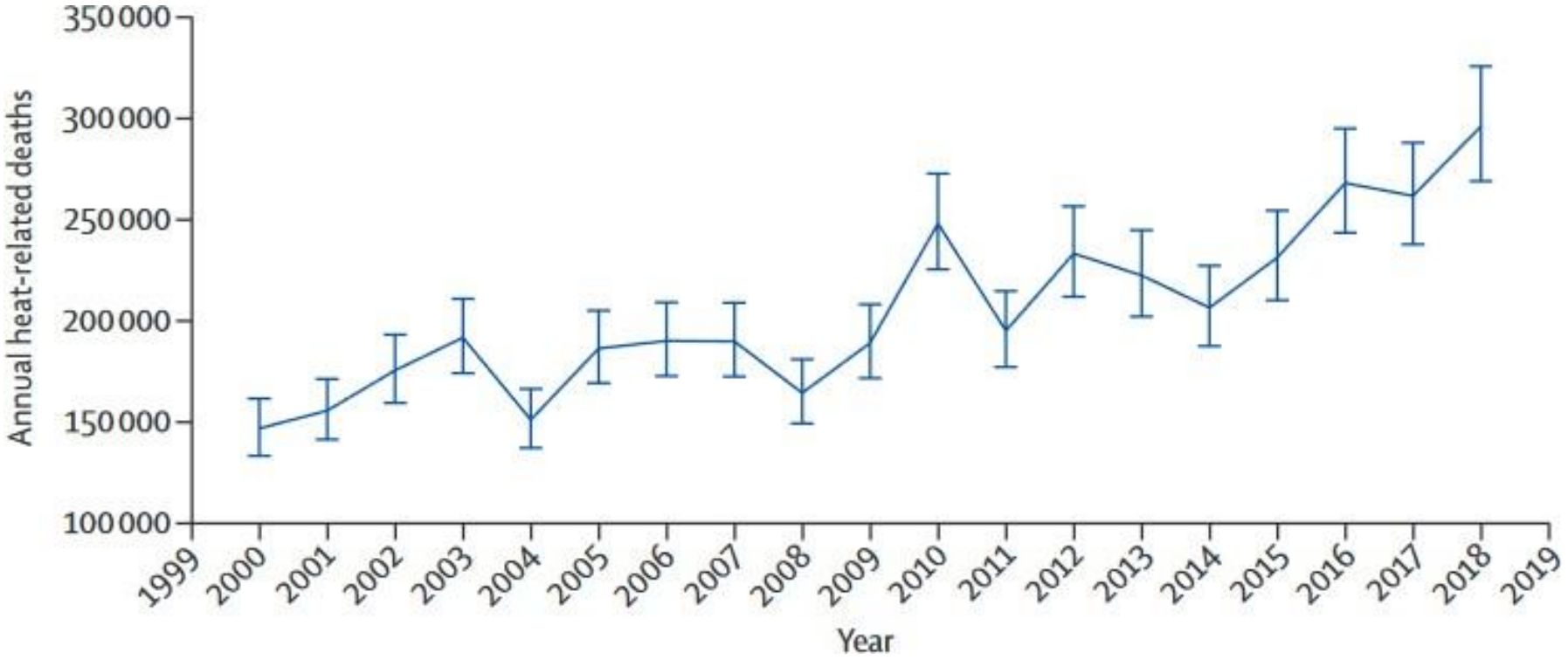
Exposure and Vulnerability





The story of heat is a story of inequality.

Exposure to Extreme Heat | Mortality



Global heat-related mortality for populations older than 65 years. Source: Watts et al., 2020

Children huddle around a small desk and mini-fan to take classes remotely as schools were shut amid extreme heat in Tondo district in Manila, Philippines on May 03, 2024. The heat index shot up to 53 degrees Celsius in some parts of the country. Ezra Acayan/Getty Images

- Women work more hours than men: unequal burden of unpaid work
- Work such as caring for children or the elderly is less adaptable during dangerously hot conditions
- Increased rates of intimate partner violence during heatwaves
- Women are more vulnerable to hear stroke and dehydration when pregnant and breastfeeding;
- Women limit their water input lacking access to safe bathroom conditions at work
- For caretakers in informal settlement, more time indoors means prolonged exposure to temperatures significantly higher.
- In sub-Saharan Africa, extreme heat dries water sources, affects food production, and thus increases women's workloads, implying they must walk long distances in the sweltering sun to find water and food.
- In several countries, women and girls are often confined indoors and wear multiple layers of clothing even in extreme heat. These expectations, combined with a lack of safe, shaded public spaces, increase their vulnerability and limit their mobility.

EXTREME HEAT MAGNIFIES EXISTING INEQUALITIES, PARTICULARLY FOR WOMEN AND GIRLS

Extreme heat is a systemic crisis that affects all aspects of society

GLOBAL HEAT HEALTH INFORMATION NETWORK · WORLD METEOROLOGICAL ORGANIZATION · UNDRR UN Office for Disaster Risk Reduction · Global Nation

Natural & Built Environment
Increased risk of fires, poor air quality, water scarcity and drought, flash flooding and cyclones.

Economics & Stability
Extreme heat can add fuel to humanitarian crises, societal instability. and stress democracies, and may drive violence and migration.

Labour
Extreme heat impacts workers and lowers productivity across many sectors.

Education
Extreme heat can cause school closures, and reduces attendance and learning outcomes.

Agriculture
Extreme heat can lead to crop failure and reduced yields, through drought, pests, fire, and wilt.

Health
Extreme heatwaves stress healthcare systems. Exposure to high temperatures increases risk of illness and death, including from some infectious diseases..

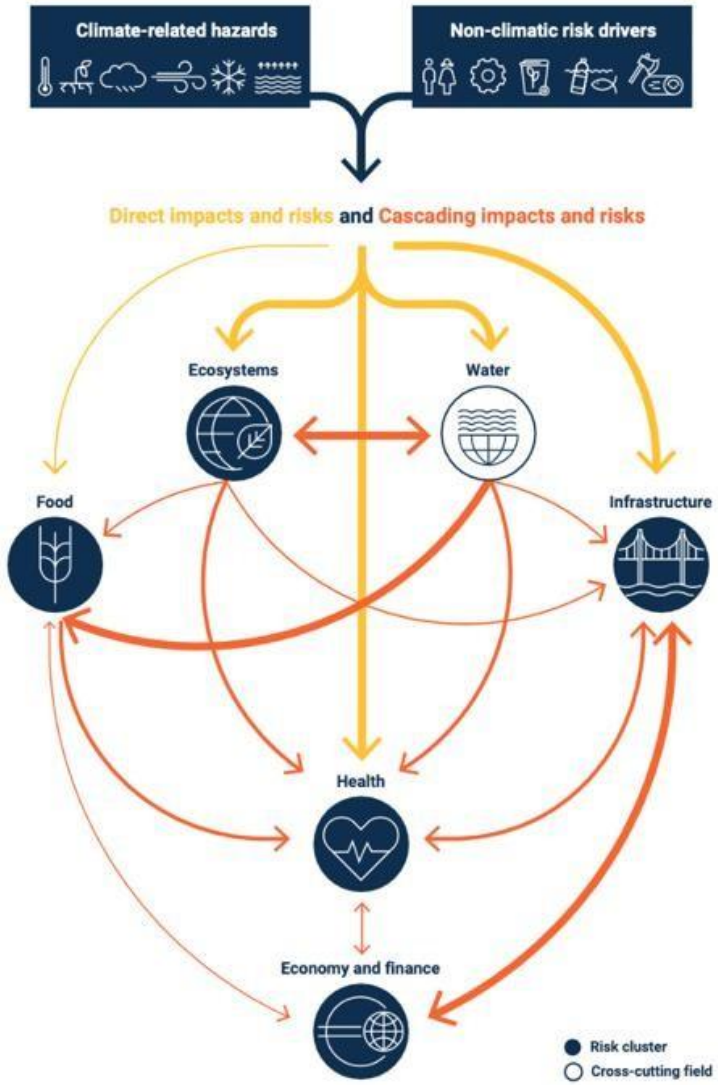
Transport
Extreme heat can disrupt transportation systems and supply chains through impacts to infrastructure and the workforce.

Social services
Vulnerable and poor populations face heightened risk in hot weather, which can place additional strain on social services.

Energy, utilities & technology
Utilities and technology can fail under high temperatures, leaving people without electricity for cooling

ADB

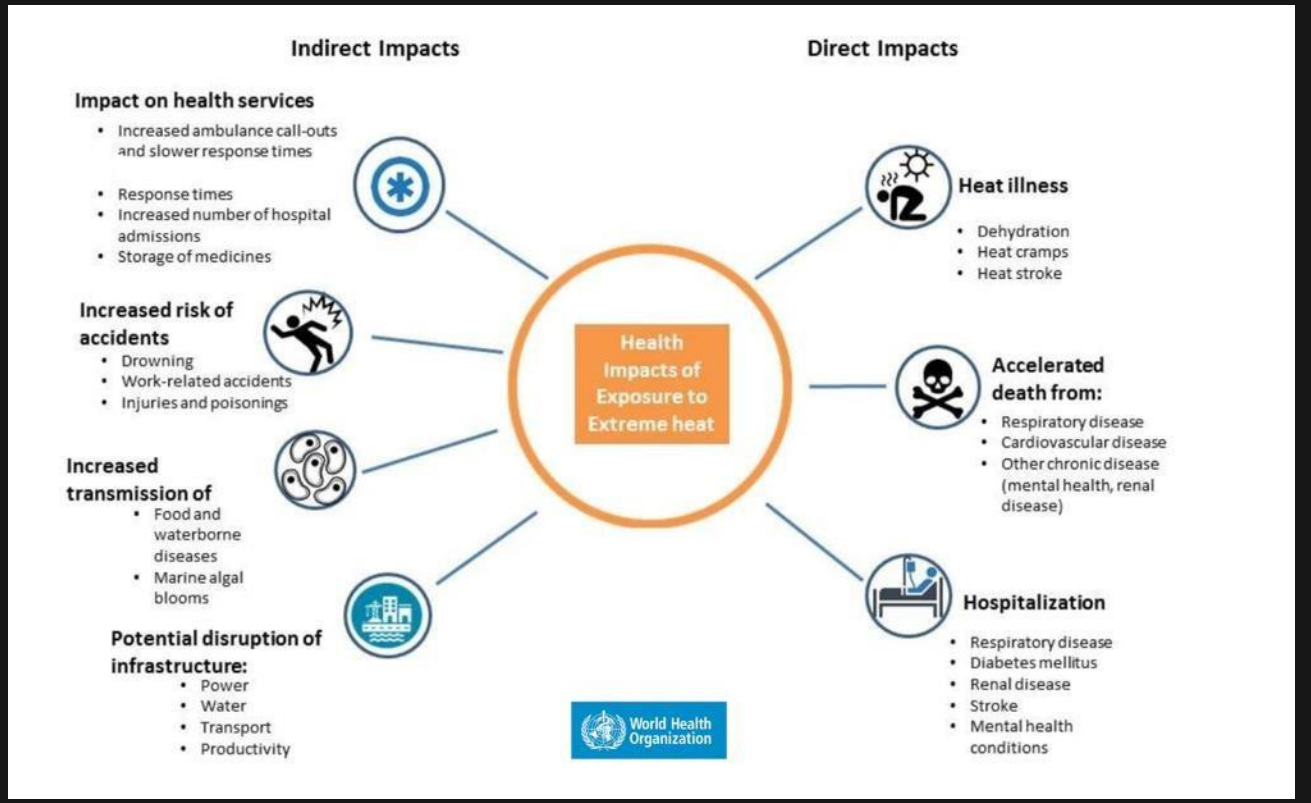
Figure ES.3 Links between risk drivers and the clusters of climate risks assessed



Note: The figure illustrates the interconnections and risk transmission pathways from key climate-related hazards and selected non-climatic risk drivers (on top) via the main climate impacts for five clusters of interrelated risks and the cross-cutting field 'Water'.

Source: EEA.

SYSTEMS APPROACH



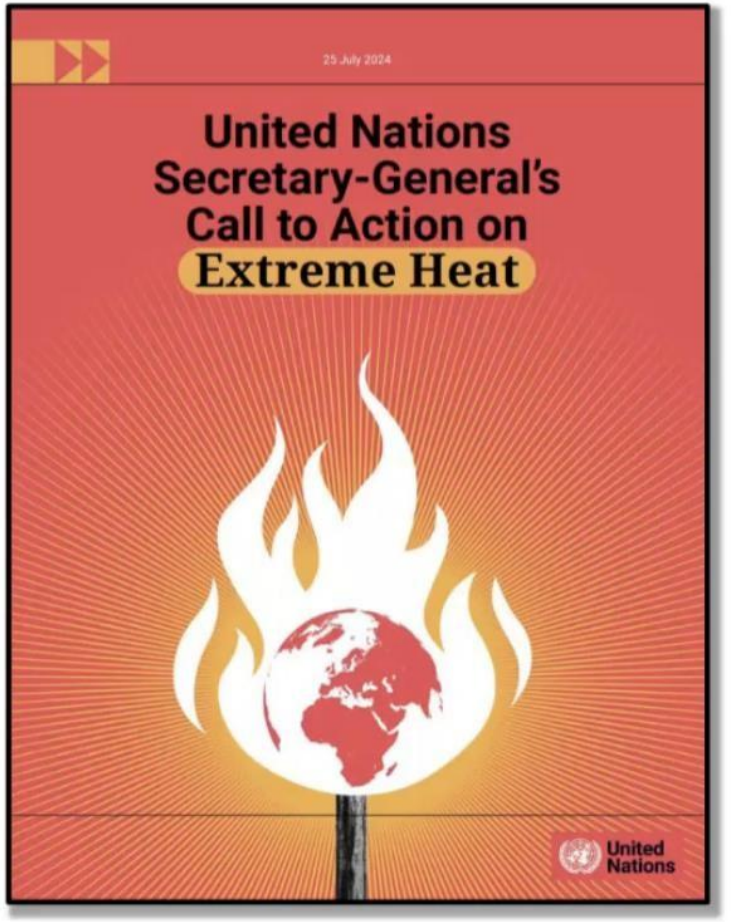
UNSG's Call to Action on Extreme Heat urges us to...

Care for Vulnerable Populations
Countries and communities must protect the most vulnerable people from the impacts of extreme heat, reduce extreme heat risk and build their resilience

Protect Workers
Protect all workers in all sectors through appropriate occupational safety and health measures based on a rights-based approach

Economic and Societal Resilience
Sustainable multi-sectoral and multi-scalar partnerships for development and implementation of heat action plans, strategies and solutions for heat resilience

Limit Temperature Rise to 1.5°C
Accelerate the pace of the just transition away from fossil fuels and scale up investment in renewable energy



Understanding Urban Heat Risks

- Historical and projected climate data
- Indoor and outdoor heat measurements in different areas of the city, including not only remote sensing of land surface temperatures, but also ambient air temperatures
- Current and future trends of land-use patterns, urban density, and use of surface materials
- Heat vulnerability maps including heat risk factors, such as building density, materials, and access to green/blue spaces, and other socioeconomic determinants, such as income, age, education, gender, health, and social isolation
- Community needs assessments targeting the most heat-vulnerable communities and population groups

Resourcing for Urban Heat Resilience

Human and technical resources

- Institutional structure enabling multi-sector/agency coordination and collaboration
- Dedicated staffing and training
- Peer-to-peer knowledge exchange among cities
- Inclusive planning and policymaking processes to address thermal inequities

Financial resources

- Enabling environment for private sector investments in urban heat resilience (real estate, construction)
- Resource mobilization using PPPs, TIF, etc.

Embedding Urban Heat Resilience in Planning and Development

Building codes

- Thermal performance standards for building envelope components
- Efficiency criteria for building systems and equipment
- Cool roof requirements
- Cool surface requirements

Streetscape design guidelines

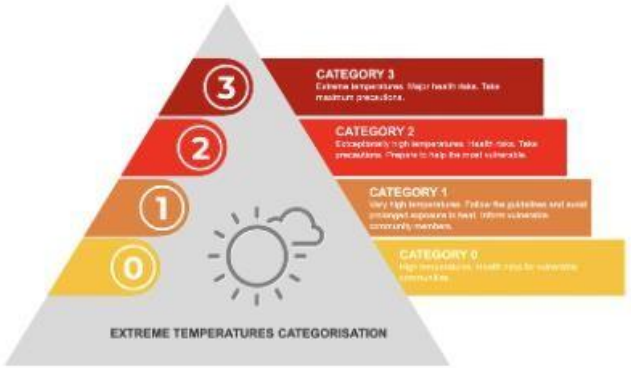
- Recommended species and locations for urban trees and vegetation
- Provisions for shade in seating areas and along walkways
- Seating materials and colors to reduce temperatures

Zoning and land-use regulations

- Building and street orientations to minimize solar exposure
- Incentives for green/blue spaces, such as density bonuses
- Cool/permeable road and surface requirements
- Mixed-use development to increase walkability and use of public transit

Eleni Myrivili serves as the Global Chief Heat Officer for the Atlantic Council's CRC, UNH and UNEP.

Awareness



Preparedness

Re-design

Reducing GHG and enhancing carbon storage

Solutions to reduce vulnerability to climate change

Medellín, Colombia: 36 green corridors that are now 100 green/blue corridors and biodiversity hubs, part of a large strategic naturalization of the city of Medellin. Shading pedestrian walkways is a priority.

Telangana, India: Cool Roof policy mandates for all the government, non-residential, and commercial buildings. Residential buildings with a plot area of 600 sq. yds. or more are also required to have cool roofs, while smaller residential buildings have the option to voluntarily build them.

Amsterdam, Netherlands: 10,000m2 of roof-tops in social housing complexes are turned into smart blue/green roofs to increase Amsterdam's rainwater resilience, reduce urban heat effect and energy consumption at building level

Delhi, India: SEEDS AI model forecasts heat exposure combining satellite imagery and hyperlocal weather data to create risk scores for every home based on roof material.

Freetown, Sierra Leone: Combining community stewardship, digital tools and carbon markets Freetown the Treetown is planting 1million trees by 2024.

TRANSFORM FREETOWN

Paris, France: Paris is a) using the Seine River water to provide "free district cooling," b) greeing the city, and c) co-designing its "school-yards oases"

Seoul, South Korea: Cheonggyecheon stream 5.8 km of water corridor has decreased temperature 3.3°C to 5.9°C compared to a parallel road a few blocks away.

Ahmedabad, India: **The SEWA Extreme Heat Income Insurance a** Micro-insurance that replaces income lost to climate-driven extreme heat for women working in the informal sector.

Incorporating women leaders and their transformational skills into all levels of heat risk mitigation tends to build better-prepared heat-resilient and adaptive communities.

Solutions for heat resilient cities: policies, tools, and approaches

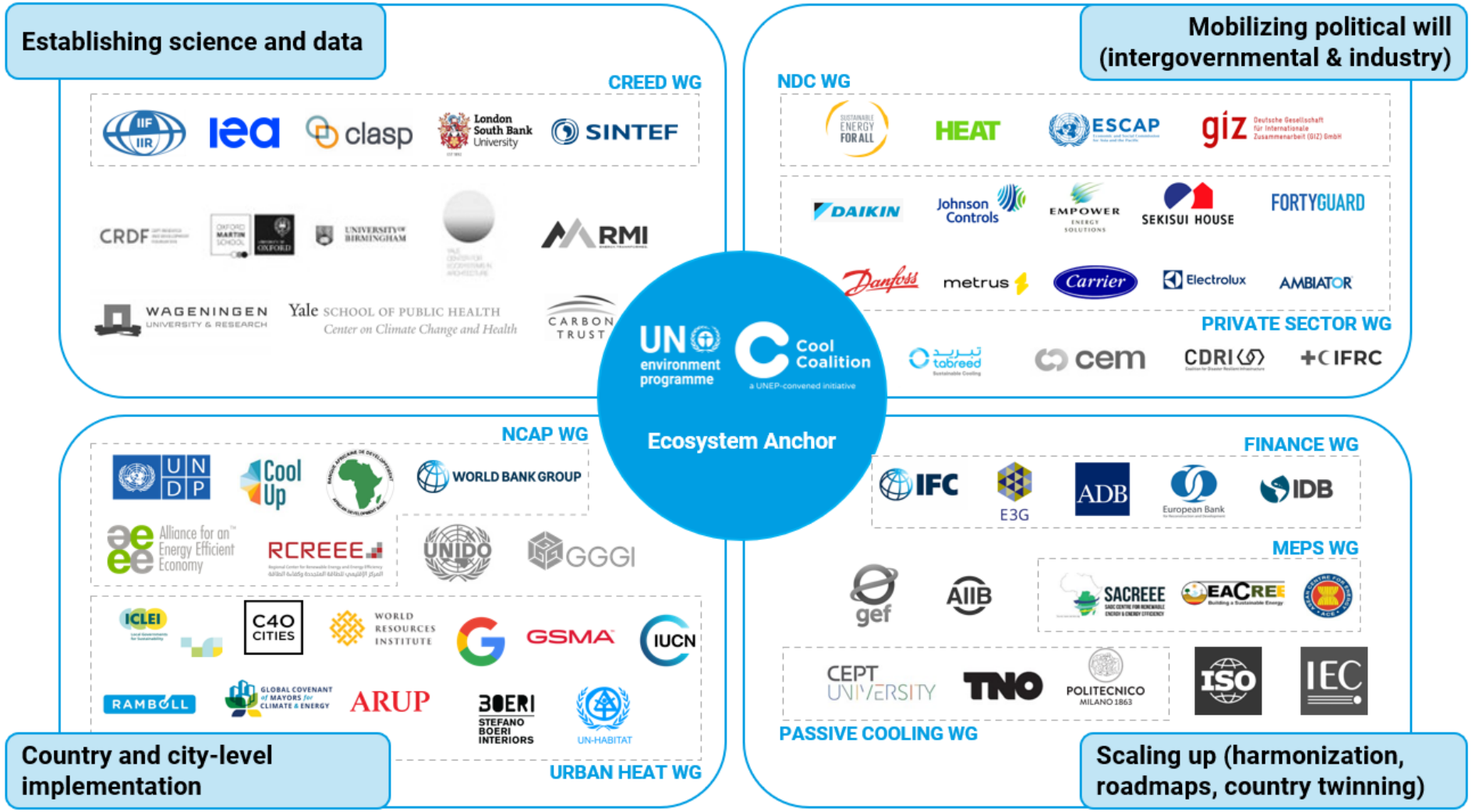
Sustainable cooling and extreme heat

Elsa Lefevre, Programme Management Officer, UNEP

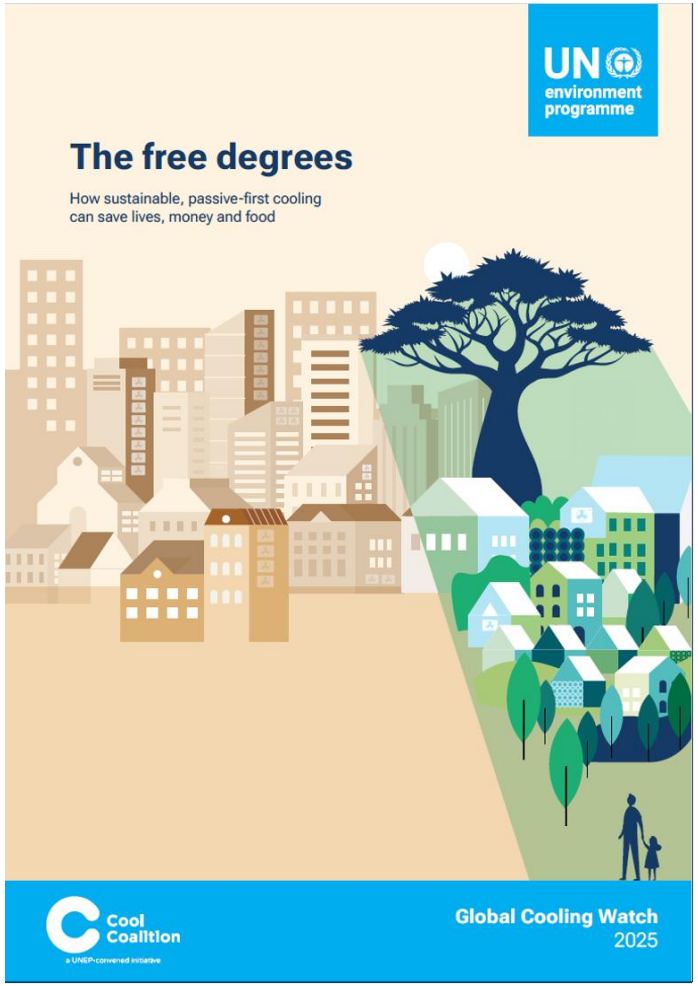

COP30 BRASIL AMAZÔNIA
BELÉM 2025
UN environment programme
Cool Coalition
a UNEP-convened initiative
BEAT THE HEAT
Mutirão contra o Calor Extremo
BEAT THE HEAT
Sustainable Cooling and Extreme Heat in Cities
Webinar: Building heat-resilient cities: sustainable cooling & urban solutions – 14 April 2026
Elsa Lefevre, Programme Manager, Beat the Heat, Subnational Climate Action Unit, UNEP

The UNEP-led Cool Coalition

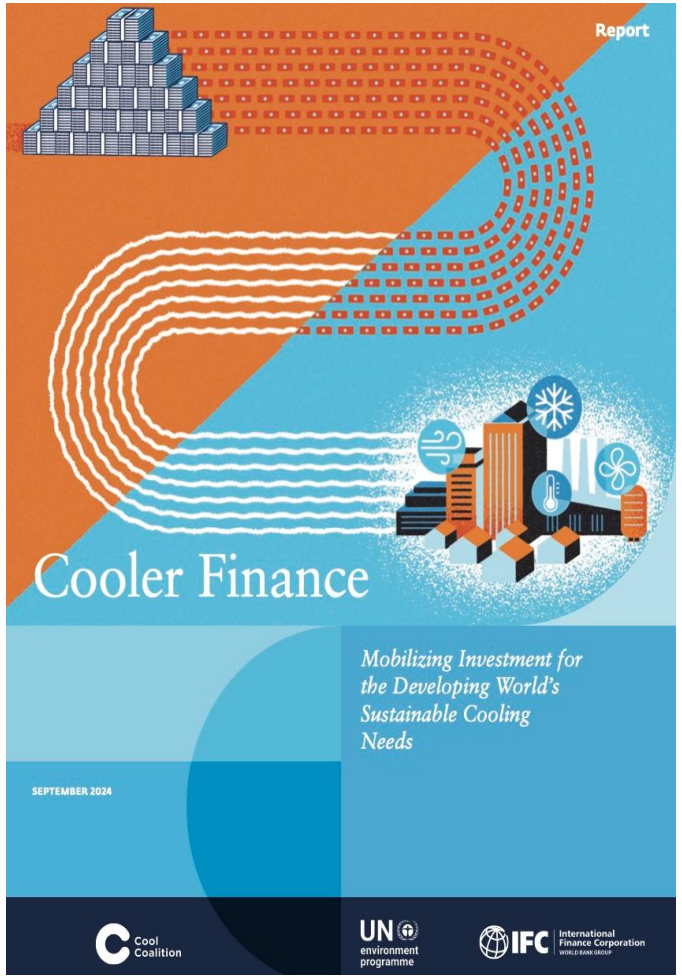
- Launch of the Cool Coalition as a **Transformative initiative** of the 2019 UN Secretary General's Climate Action Summit

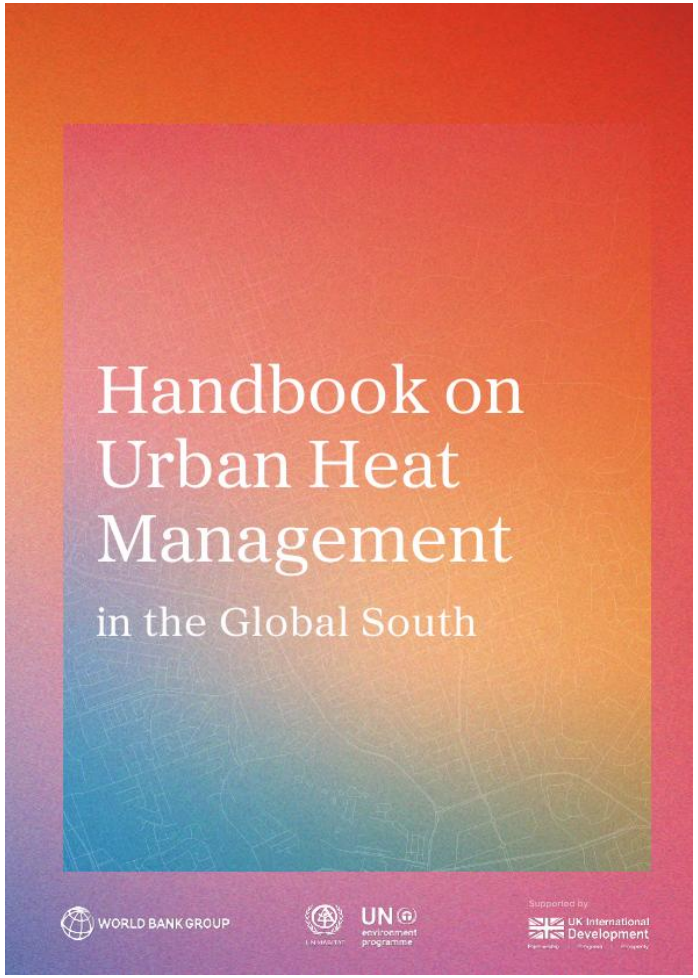


Establishing science and data



Totality of Cooling Emissions + policy and tech pathway



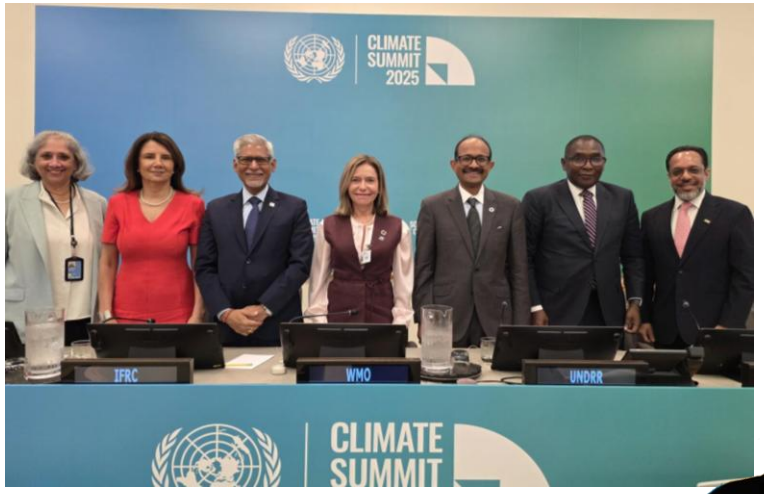


Underpins Global Cooling Pledge, Enabling Environment, International Finance

Mobilizing political will

Global engagement and political advocacy to secure commitments grounded in science

> We commit to maintaining a high level of ambition to systematically implement the **Global Cooling Pledge** and strengthen relevant existing initiatives delivering sustainable cooling in order to achieve both climate mitigation and adaptation.
>
> **G7 Ministerial Meeting**
> Climate, Energy and Environment
> **Joint Communiqué**



> We must respond [to extreme heat] by massively increasing access to low-carbon cooling; expanding **passive cooling** – such as natural solutions and urban design; and **cleaning up cooling technologies** while boosting their efficiency.
> **UNEP** estimates that, together, these measures could protect **3.5 billion people by 2050**, while slashing emissions and saving consumers $1 trillion a year.

António Guterres United Nations Secretary-General
Call to Action on Extreme Heat, July 2024

From commitment to delivery

74 Countries | 225 Cities

- **Global Cooling Pledge launched (19 commitments)**
- **Political mandate established** at COP

PHASE 1
PLEDGE ESTABLISHMENT

- **Focal Point activation** 25–30 countries
- **Ministerial 2024** convened
- Initial country coordination underway

PHASE 2
ACTIVATION

- **First focal point meeting**
- **Ministerial 2025**
  - Extreme Heat Communiqué adopted
  - Intergovernmental Committee on Cooling (IGCC) established
- **Beat The Heat launched**
  - 220+ cities
  - 100+ partners

#BEAT THE HEAT
Beat the Heat operationalises the Global Cooling Pledge, turning commitments into scalable cooling action.

PHASE 3
INSTITUTIONALISATION IMPLEMENTATION PHASE

NOW MOVING INTO DELIVERY

Moving political commitment into implementation

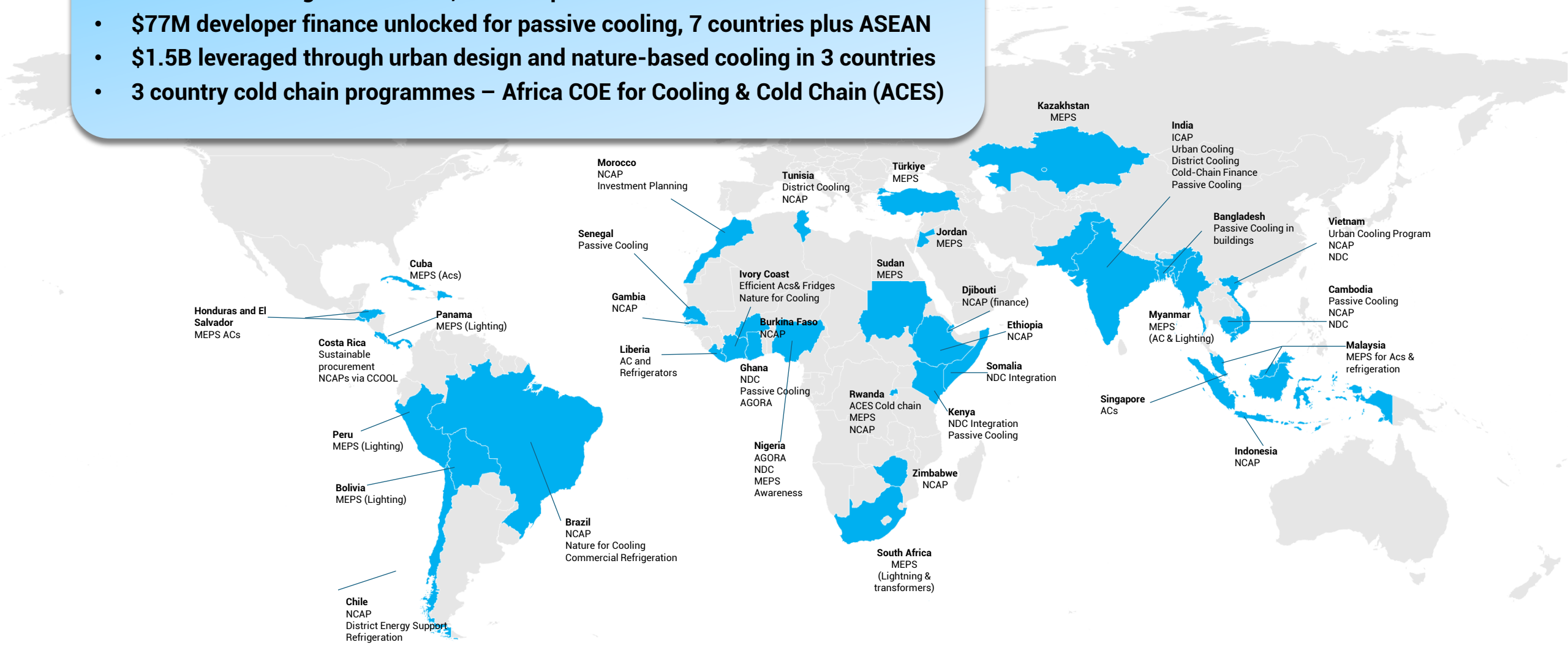
- **IGCC convenes** to set delivery priorities
- **EPIC solutions** scaled through structured request cycles
- **Appliance Manufacturer Platform** established
- **Implementation underway** in priority countries

PHASE 4
PLEDGE DELIVERY

2023 — 2024 — 2025 — 2026+

Supporting implementation

- 40 NCAPs & NDCs supported
- 32+ countries aligned on MEPS, labels & procurement standards
- $77M developer finance unlocked for passive cooling, 7 countries plus ASEAN
- $1.5B leveraged through urban design and nature-based cooling in 3 countries
- 3 country cold chain programmes – Africa COE for Cooling & Cold Chain (ACES)



Beat the Heat Implementation Drive to accelerate local action

More is needed to accelerate implementation at the local level.

What did we do:

🌎 Together with the COP30 Presidency we launched **Beat the Heat** Implementation Drive at COP30 in Belem end of 2025.

This ***mutirão*** – collective effort – mobilized 230+ cities, 70+ countries and 100+ public, private, and civil-society partners

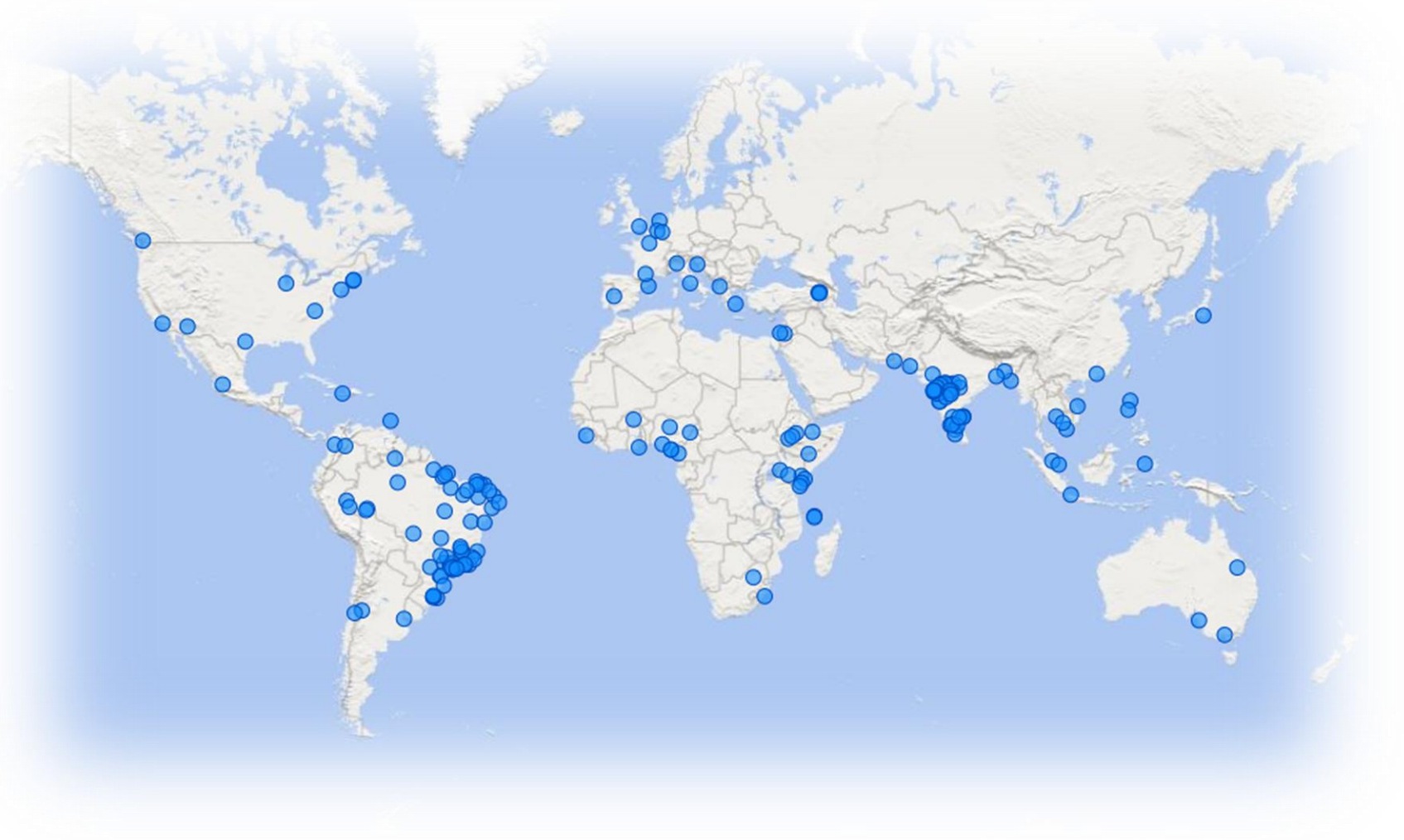
Countries, cities and regions commit to work in a **multi-level effort** to:

1 **Conduct urban heat island assessments and prepare action plans**: identify hotspots; integrate heat actions into urban plans or climate strategy

2 Implement **nature-based solutions, and passive cooling** projects and policies

3 Procure low-GWP and **high-efficiency cooling technologies** in public buildings; design building codes.

230+ Cities joining forces to **Beat the Heat**



100+ Partners

Driving the mutirão

100+ Partners

Driving the Mutirão

Example: Urban Action & Nature-based Solutions in India

- Prepared **National Methodology for Urban Heat Assessments** with Indian academia (CEPT)

- Tested by UNEP and CEPT in 11 cities over 2 years with local partners
  - demonstrated impact - **linking rising heat** with **action on cooling** in cities and buildings.
    - Chennai masterplan: 3°C urban temperature reduction; 30% less heat deaths; 20% cooling demand avoided (45% when combined with passive in buildings)
  - unlocked subnational finance and policy action:
    - Tamil Nadu state declares heat as a disaster
    - **Green Schools Scheme** – immediate impact on 297 schools, 148,320 students – growing to 350,000 schools

- Commitments from states and cities to **use, test and deploy these solutions in 60 cities** with local academia and government budgets

- Methodology integrated into **National Framework for Heat Action Plans** under National Disaster Management Authority
  - UNEP further testing in 12 cities with national government for cross-ministry buy-in

Next Steps: City-level implementation

Supporting 220+ cities from 41 countries committed to the Beat the Heat Implementation Drive to advance the Global Cooling Pledge through a proven delivery model.

1 Build-up Local Knowledge

Heat-risk mapping and hotspot analysis to inform urban design, nature-based and passive cooling solutions, supported by practical guidance and tools for city practitioners.

2 Demonstrate Impact

Targeted city-level pilots to show measurable reductions in heat risk, energy demand and emissions, creating replicable models to be scaled-up.

3 Unlock National Finance and Scale

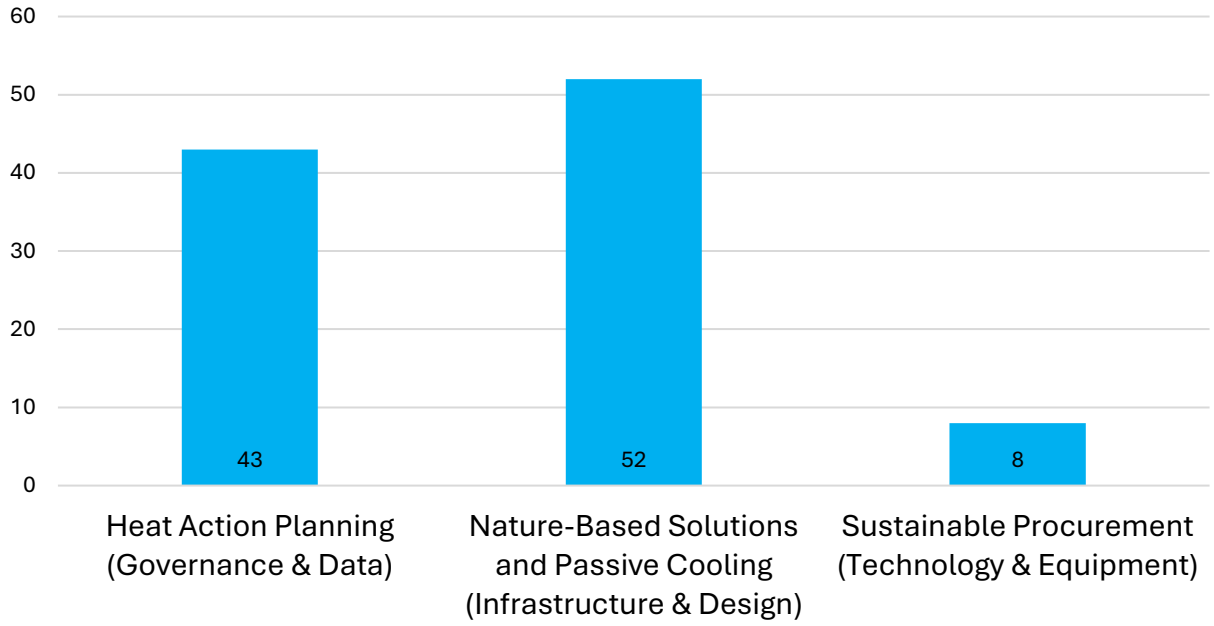
Finance mobilised through national disaster funds, affordable housing programmes and intergovernmental transfers to scale urban heat resilience.

+ GEF Nature for Cooling project in Cote d'Ivoire, Cambodia and Brazil. Development of heat assessment and planning tool.

+ Upcoming UNDA project "Clean Air, Health and Urban Heat: Building Future-Ready and Integrated Urban Policy Frameworks in Central Asia" (USD 700,000) to support Almaty, Bishkek and Tashkent with integrated extreme heat and air quality planning

Next steps: opportunities for collaboration

- Ongoing needs assessment survey with participating cities - analysing results
- Matchmaking with partners – building on their offers, their tools
- Development of country specific engagement plans
- Additional cities can engage through the 50 Cities at 50°C
- Development of targeted proposals using this framing



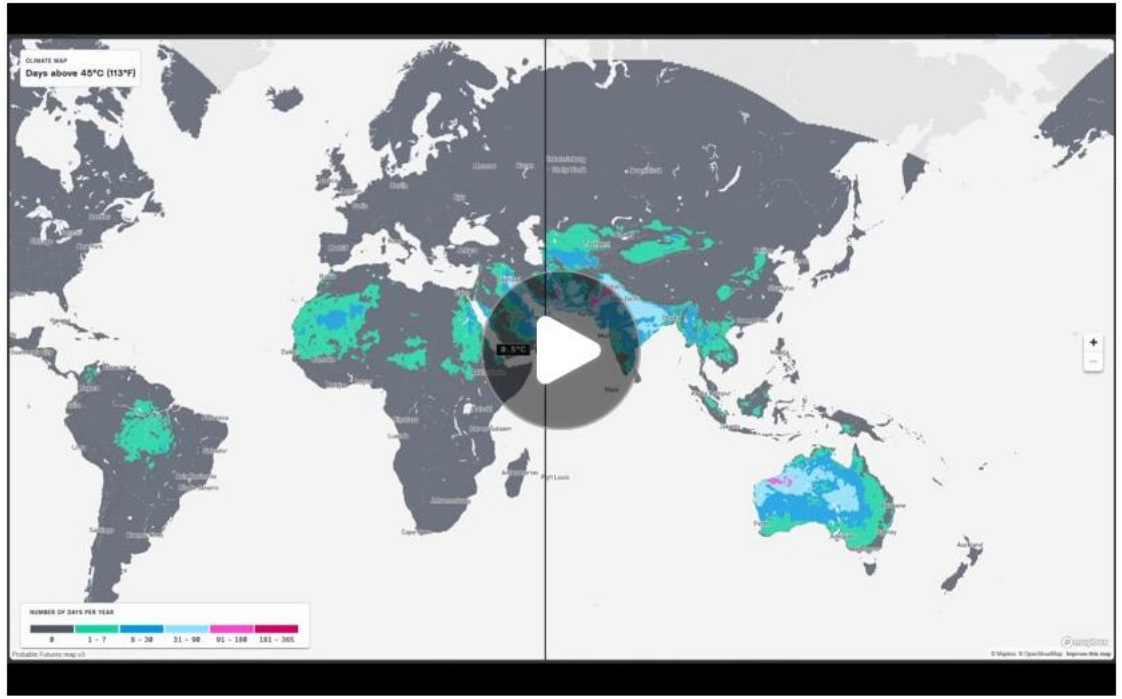
51% of survey respondents prioritize support for nature-based solutions and passive cooling.

UN environment programme

#BEAT THE HEAT

50 CITIES AT 50°C

50@50 mobilises **50 cities** to develop and deliver **comprehensive heat action plans** that protect people, infrastructure, and economies as temperatures climb toward **50°C realities**.



Levels of engagement

HIGH

Preparedness & Planning

Commit to a structured heat planning exercise (6–18 months). With support from the City of Paris and global partners.

MEDIUM

Public activation

Host a World Environment Day event, campaign or solutions showcase on heat resilience.

LIGHT

Awareness and storytelling

Join the global campaign through coordinated communications and storytelling.


COP30
BRASIL
AMAZÔNIA
BELÉM 2025
UN
environment
programme
Cool
Coalition
a UNEP-convened initiative
BEAT
THE
HEAT
Mutirão contra
o Calor Extremo
BEAT THE
HEAT
Thank you

Assessing urban heat vulnerability utilising the Multilayered Vulnerability Assessment Tool

Raghav Anand, Cities and Climate Change Expert, UN-Habitat

Building Heat-Resilient Cities: Sustainable Cooling and Urban Solutions

Presentation by: Raghav Anand (UN-Habitat CCUE Section)

Date: 14 April 2026

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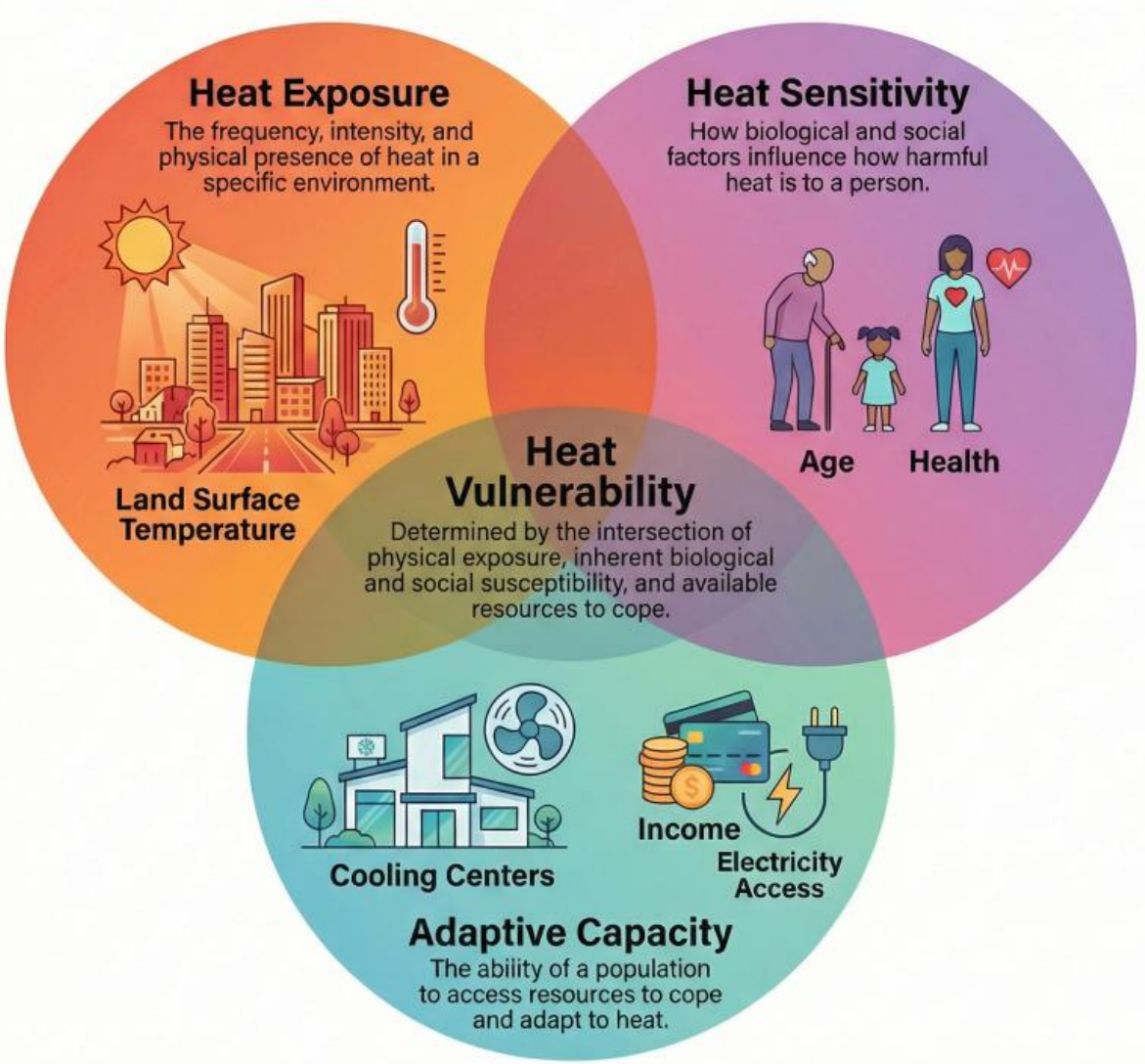
The problem...

Within the same city, poorer neighbourhoods can be ~4 degrees Celsius warmer. Heat risk is shaped by inequality as much as climate!



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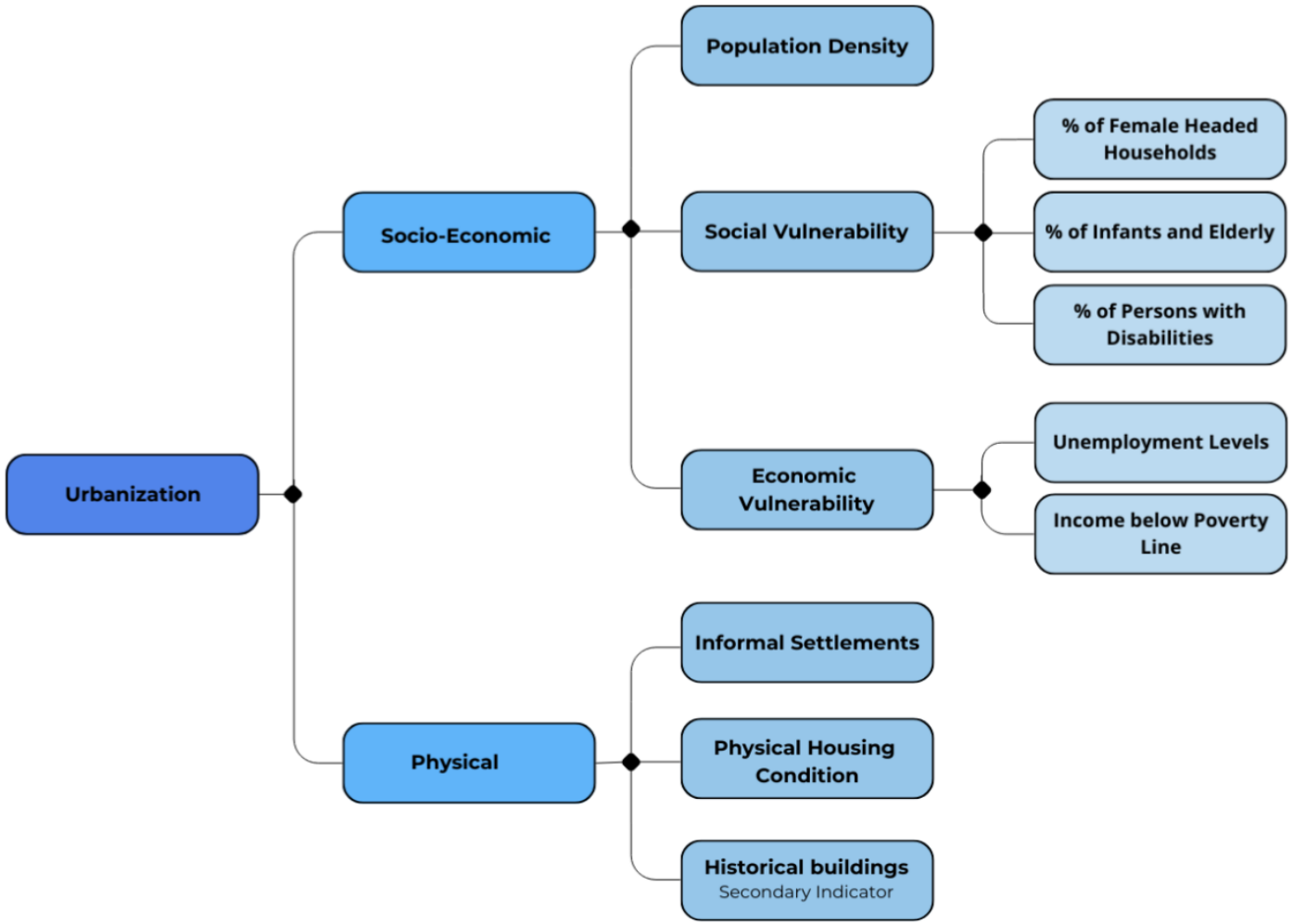
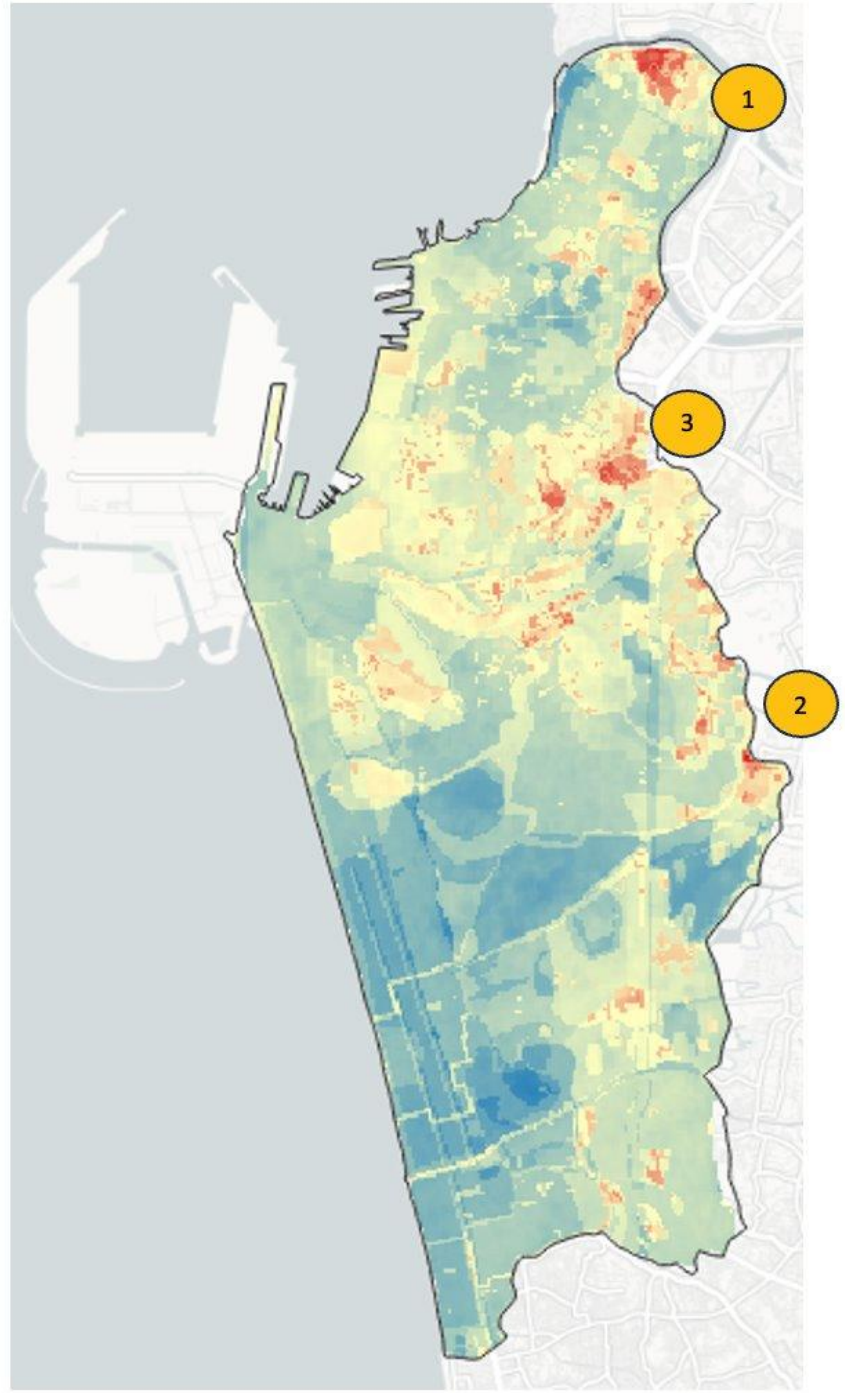
MVA: Heat is A Systems Problem Where Risks Converge





Solutions must be Multilevel, Intersectional, and Collaborative. Ex: Lao PDR RISE-UP

Stakeholder consultation in preparation for the AF project in Laos © UN-Habitat

Partners:

Ministry of Public Works and Transport, Ministry of Natural Resources and Environment, Provincial Departments of Public Works and Transport, Departments of Natural Resources and Environment

Achievements:

Local:

- Climate risk and vulnerability assessments + action plans for **3 provinces, 8 districts and 189 settlements**

Sub-regional:

- **Improved basic services** + health outcomes + established **local capacities**

National:

- **National Climate Risk and Vulnerability Assessments + increased institutional capacities of the national government**

MVAs diagnosed the problem and communicated it. Stakeholder engagement and co-creation were then key to unlocking scalable solutions.

Solutions Already Exist

Coordination is the missing piece of the puzzle

- Technical and socio-economic
- Inter and Intra-agency communication
- Co-creation and long-term sustainability of solutions
- Leveraging institutional history, trust, relationships

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Shifting Contexts: What's Shaping Urban Heat Action Now?

Intensifying Climate Extremes	Integration + Implementation	Interagency Delivery	Multilevel Action	Catalytic Finance
• El Niño • 1.5 breached in 2024	• Funders programmatic priorities changing (ex: GEF-9) • Political shifts - 'resilience'	• Greener Cities Partnership • Nairobi Rivers Project • GHHIN (WMO + WHO)	• Urban Content of NDCs • SDG Localisation • Sustainable Cities IP	• Investment-ready projects outcomes • Capacity Building across partners

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Resources

- Handbook on Urban Heat Management in the Global South
- RISE-UP MVA Handbook
- UNEP Beat the Heat Implementation Drive
- Global Heat Health Information Network
    - Mapping Extreme Heat Action Profiles within the UN System

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Thank you!

Reach out at raghav.anand@un.org to explore collaboration opportunities or even just brainstorm

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Upcoming Global Guidance on Heat Health Action Plans and reducing heat at local and sub-regional levels

Vladimir Kendrovski, Technical Officer for Climate Change and Health WHO

Preview of the second edition of the WHO

Heat-Health Action Plan guidance towards reducing heat at local and sub-regional levels

Dr Vladimir Kendrovski

WHO European Centre for Environment and Health, Bonn, Germany

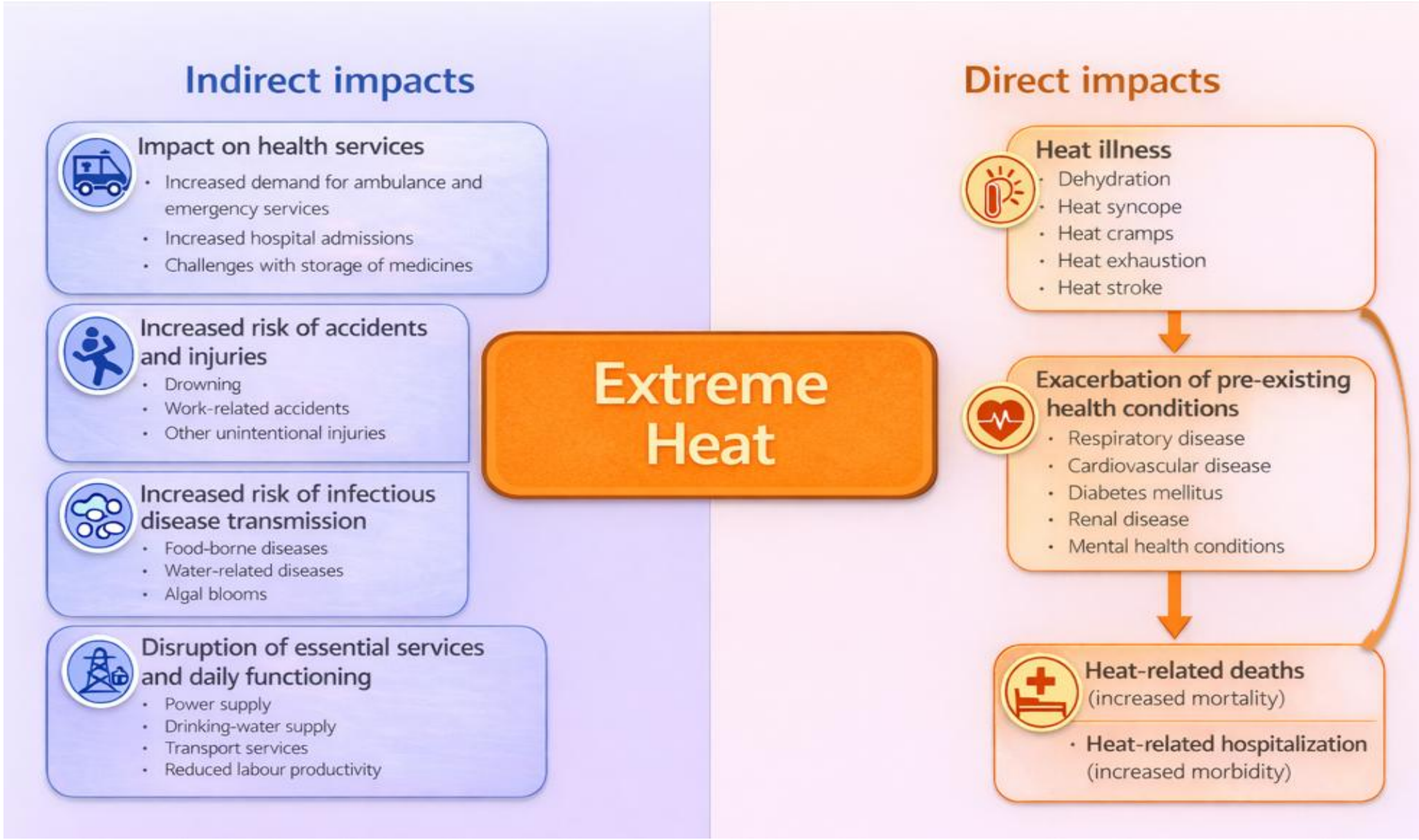
14 April 2026

World Health Organization

European Region

Health impacts of extreme heat

World Health Organization
European Region



Levels of people-centred heat exposure reduction

World Health Organization

Level 5: **Regional to global level**

- Regional mitigation of heat islands
- Intersectoral action on heat and health
- Cross-border action against heat
- Climate change adaptation
- Climate change mitigation

Level 4: **Urban level**

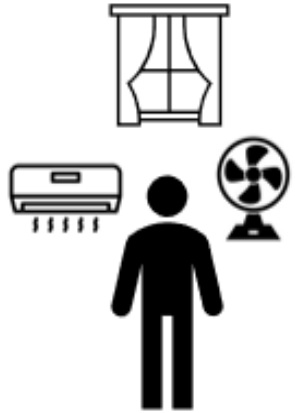
- Outreach vulnerable groups
- Urban greening / blue spaces
- Street shading
- Housing quality and regulations
- Heat reduction urban surfaces
- District cooling
- Urban form and structure
- Heat refuges/cooling shelters
- Work/school schedules and calendars
- Mass events heat protection

Level 3: **Building level**

- External shading
- Cool/green roofs and facades
- Air conditioning (community)
- Ventilation
- Insulation
- Heat load reduction
- Architectural solutions
- ...

Level 2: **Room/dwelling level**

- Internal Shading and Window Treatments
- Heat source reduction
- Air conditioning (individual)
- Ventilation
- ...

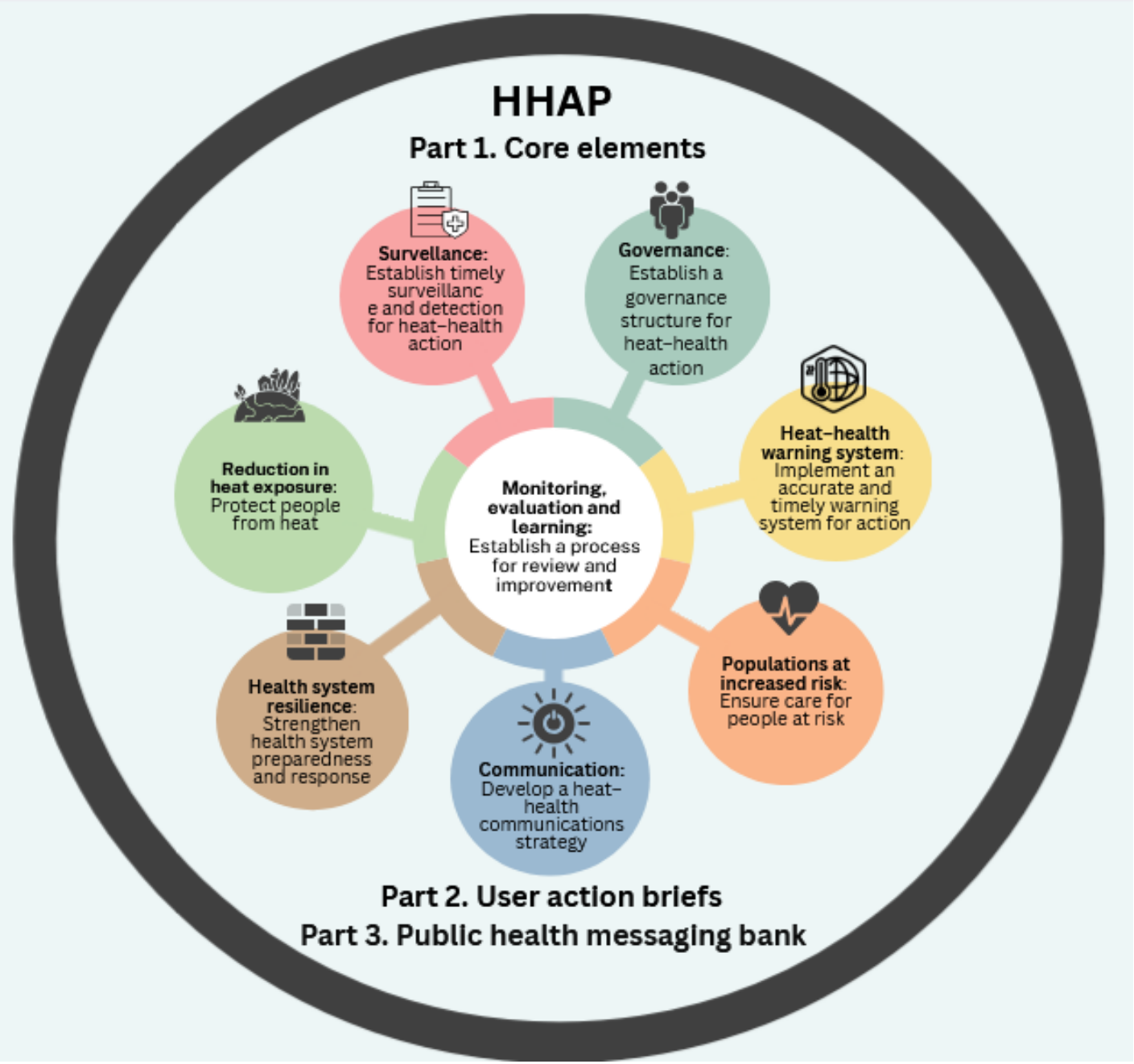


Level 1: **Personal level**

- Behaviour
- Hydration
- Personal cooling
- Electric fans
- ...

Source: Martinez GS, Camarasa C, Kazanci OB. People-centered cooling: protecting health against hazardous heat, from the person to the planet. Int J Biometeorol. 2025

The HHAP framework



World Health Organization
European Region

Why Heat-Health Action Plans matter?

- Prevent avoidable deaths
- Protect the populations at increased heat-health risk
- Enable early action
- Reduce the burden on the health system
- Proactive planning is cheaper and more effective than a reactive response
- Foster cross-sector coordination

Key Strategies for Heat Resilient Cities

World Health Organization
European Region

Protect People First — Reduce extreme heat exposure to protect health & save lives.

Act Across Sectors — Strong leadership & cross-sector collaboration.

Prevent Heat, Don't Just Manage It — Urban planning, green spaces & nature-based solutions.

Adapt Cooling to Context — Tailored cooling solutions for local needs.

Improve Buildings — Retrofitting & passive cooling indoors.

Design Cooler Cities — Green infrastructure & urban shading.

World Health Organization
European Region

Thank you

For more information, please contact:

WHO European Centre for Environment and Health, Bonn, Germany

Dr Vladimir Kendrovski
kendrovskiv@who.int

Q&A and discussion

Implementation:
Regional Case Studies and Good Practices

Extreme heat risk governance and management in Central Asia

Samal Bekmaganbetova, Programme Manager for DRR and Urban Resilience in Central Asia, UNDRR

Extreme heat risk governance and management in Central Asia

Samal Bekmaganbetova
Programme Manager for DRR
and Urban Resilience Actions in Central Asia
Regional Office for Europe and Central Asia

IBC on Environment and Climate Change
Building heat-resilient cities: sustainable cooling & urban solutions

samal.bekmaganbetova@un.org
14 April 2026

UNDRR
UN Office for Disaster Risk Reduction

EXTREME HEAT RESILIENCE AT SCALE

- ASSESS GOVERNANCE MATURITY – identify strengths and gaps across leadership, response and collaboration.
- FOMENT INTEGRATED DECISION-MAKING – across health, environment, energy, agriculture, transportation, urban planning + other sectors and scales.
- DRIVE INVESTMENT – to address systems failures and vulnerabilities, generate demand for heat-risk informed public and private investment.
- PLAN FOR HEAT ACTION – build strong, cross-sector Heat Action Plans.
- DRIVE IMPLEMENTATION – setting enabling governance arrangements for integrated decision-making, investment and action; for replication and scale-up.
- DE-RISK INVESTMENT PORTFOLIOS - strengthen country ownership, simplify project preparation and appraisal, reduced project preparation costs and improve investment-cycle efficiency.
- STIMULATE MARKETS – address market failures, create enabling conditions for private sector heat-resilience investment at scale.

GLOBAL HEAT HEALTH INFORMATION NETWORK

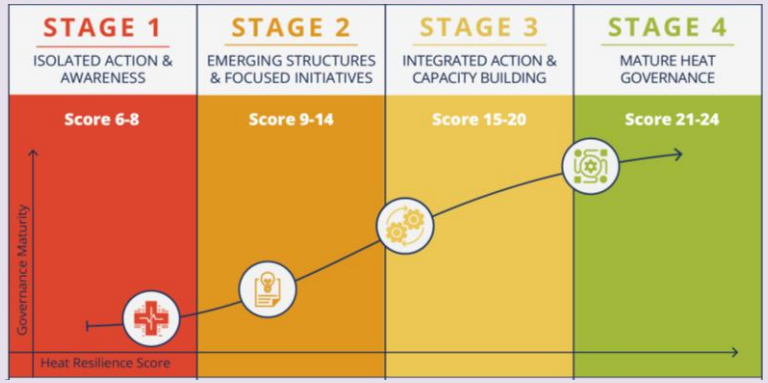
UNDRR
UN Office for Disaster Risk Reduction

WORLD METEOROLOGICAL ORGANIZATION

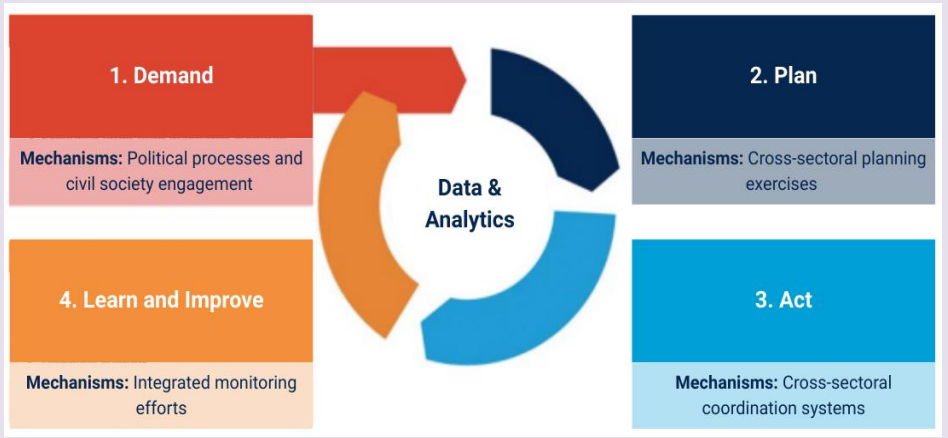
Duke
NICHOLAS INSTITUTE *for* ENERGY, ENVIRONMENT & SUSTAINABILITY

Extreme Heat Risk Governance and Investment

1. Maturity model for heat risk governance



2. Operationalizing heat risk governance



3. Heat action planning

1. Stakeholder mapping
2. Define your heat risk
3. Vulnerability assessment & Risk Mapping
4. Coordination
5. Prevention, Mitigation, Adaptation & long-term planning
6. Integration
7. Preparation & EW
8. Response
9. Implementation

[More information on Toolkit and Governance here.]

Alignment of national, sub-national and sectoral policies and plans

Regional Engagements

Flames of Change (reports)

- Innovating heat and wildfire governance for inclusive communities,
- On disability inclusion in disaster risk reduction and prevention
- Urban action on extreme heat across Europe and Central Asia
- Urban Extreme Heat Risk Management - Resource Package
- Children and youth at the forefront of tackling urban heat

Disaster Resilience Scorecard:

Addendum for Extreme Heat Risk Management

Kazakhstan's case

Astana:

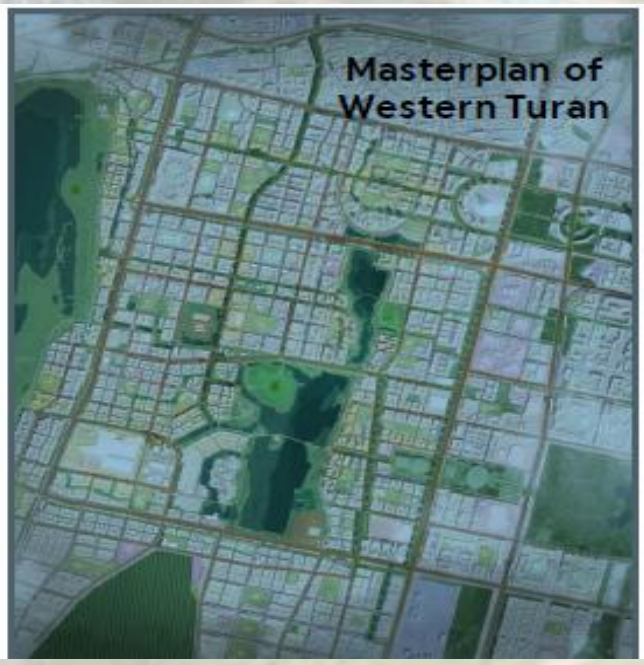
Several assessments in 2021-2024

1st Resilience Hub of MCR2030 in Central Asia - 31 March 2026

Clear vision to combat heatwaves

Recommendations incorporated into city development plans

General city plan changed accordingly



Principles for addressing urban heat through inclusive urban planning

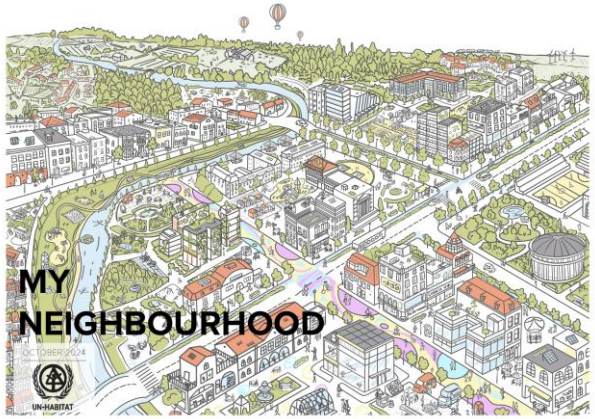
Salvatore Fundaro, Programme Management Officer,
UN-Habitat

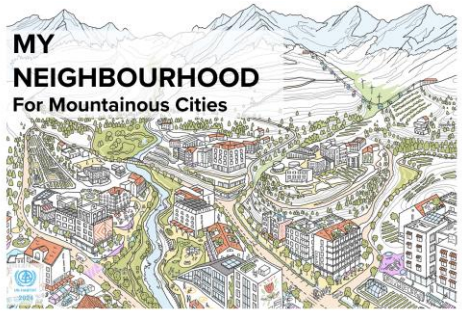
UN-HABITAT

Building heat-resilient cities: sustainable cooling & urban solutions

UN-Habitat work

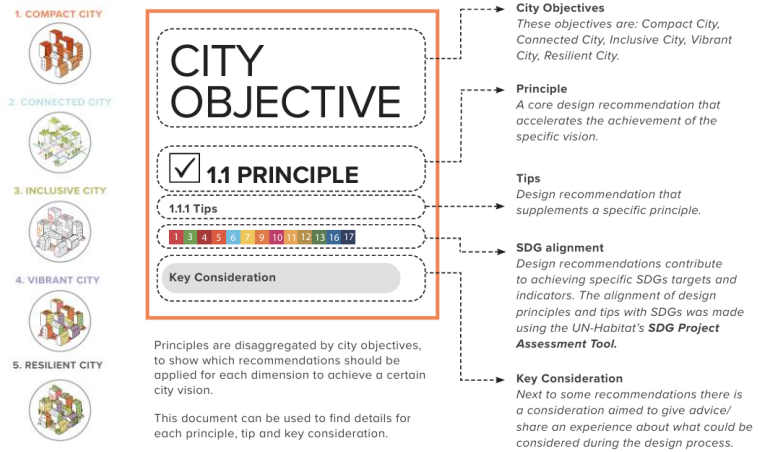
Key UN-Habitat publications on **planning** and **design** for heat-resilient cities

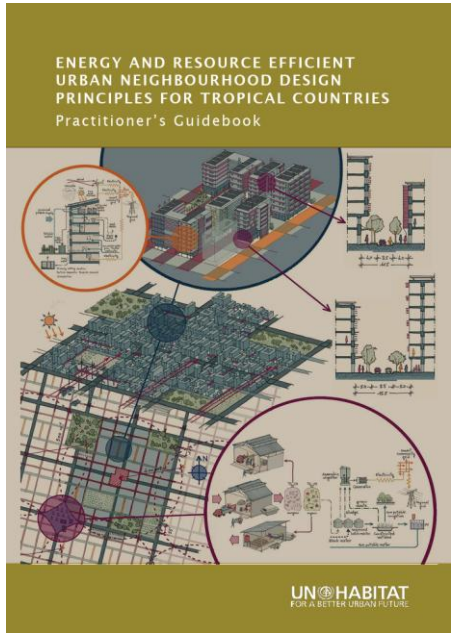




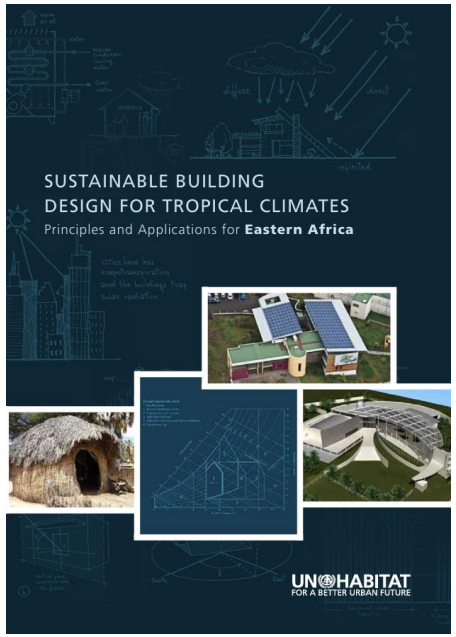
https://unhabitat.org/my-neighbourhood

My Neighborhood illustrates the sustainable planning and design principles for our cities and neighbourhoods.
It provides a check list for governments and practitioners toward an integrative approach to city planning and design, to achieve the five main city objectives: **compact city, connected city, inclusive city, vibrant city, resilient city**.



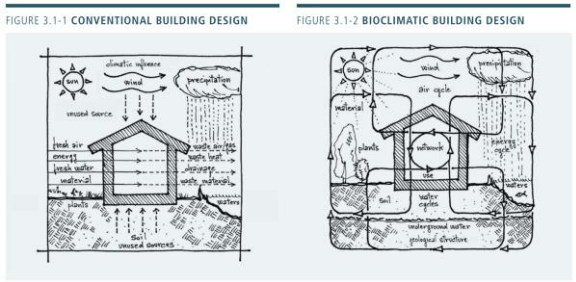


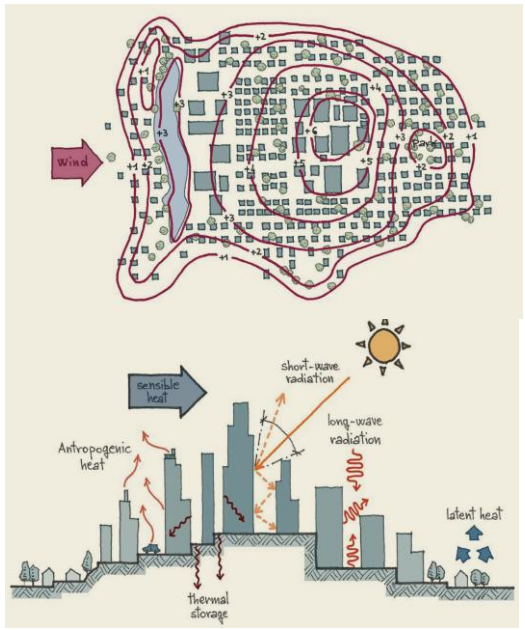
https://unhabitat.org/energy-and-resource-efficient-urban-neighbourhood-design-principles-for-tropical-countries



https://unhabitat.org/sustainable-building-design-for-tropical-climates

The **Neighbourhood** and **Building Design** guidebooks for tropical countries provide key recommendations and principles for efficient **urban** and **architectural** design in tropical climates.





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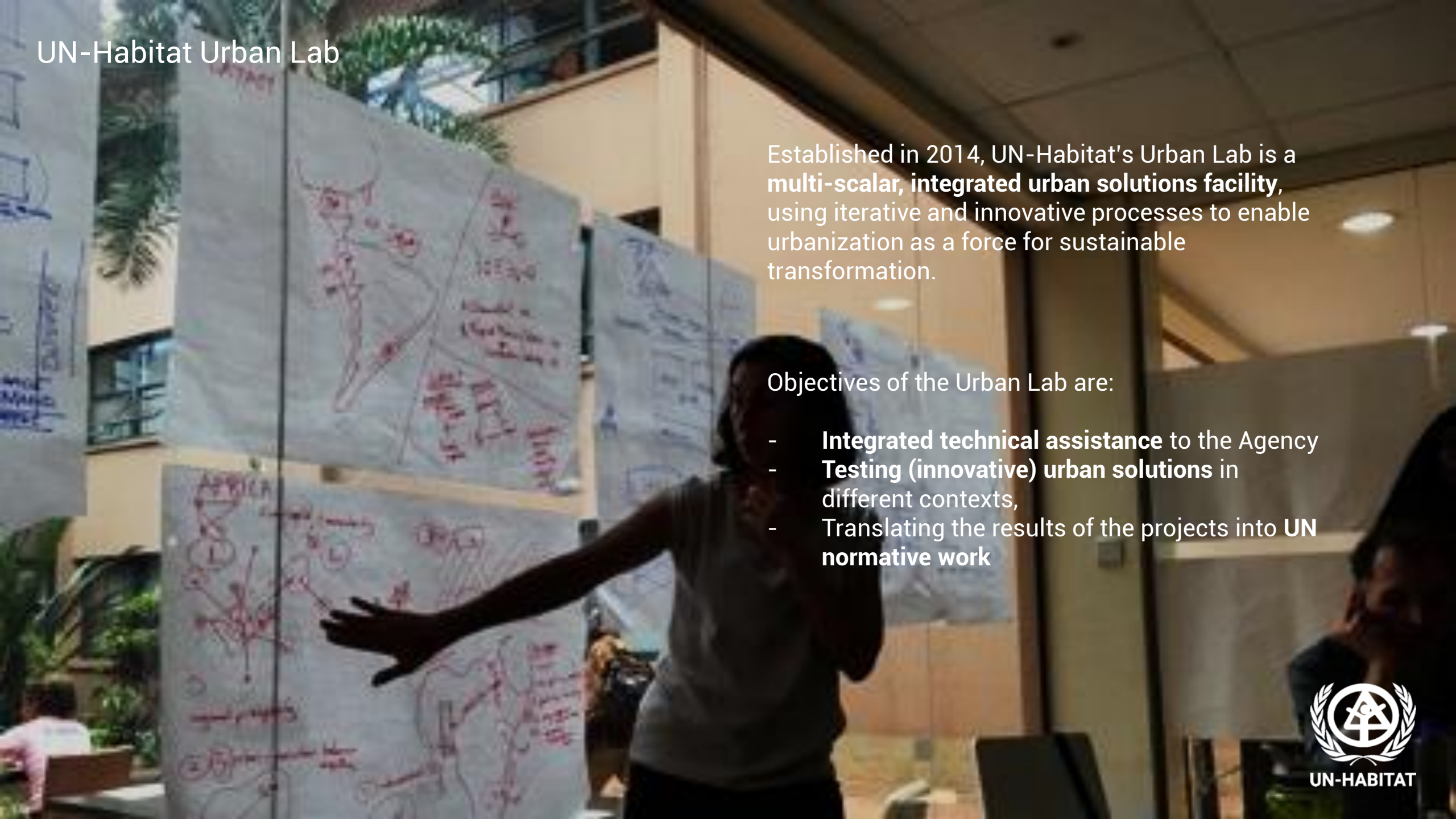
UN-Habitat Urban Lab



Established in 2014, UN-Habitat's Urban Lab is a **multi-scalar, integrated urban solutions facility**, using iterative and innovative processes to enable urbanization as a force for sustainable transformation.

Objectives of the Urban Lab are:

- **Integrated technical assistance** to the Agency
- **Testing (innovative) urban solutions** in different contexts,
- Translating the results of the projects into **UN normative work**

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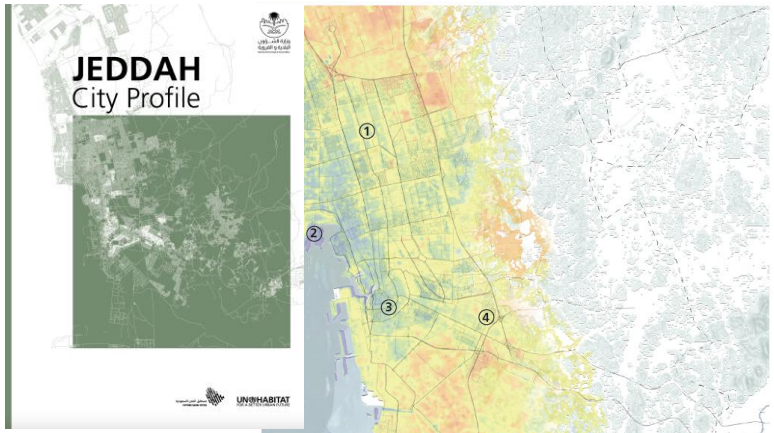
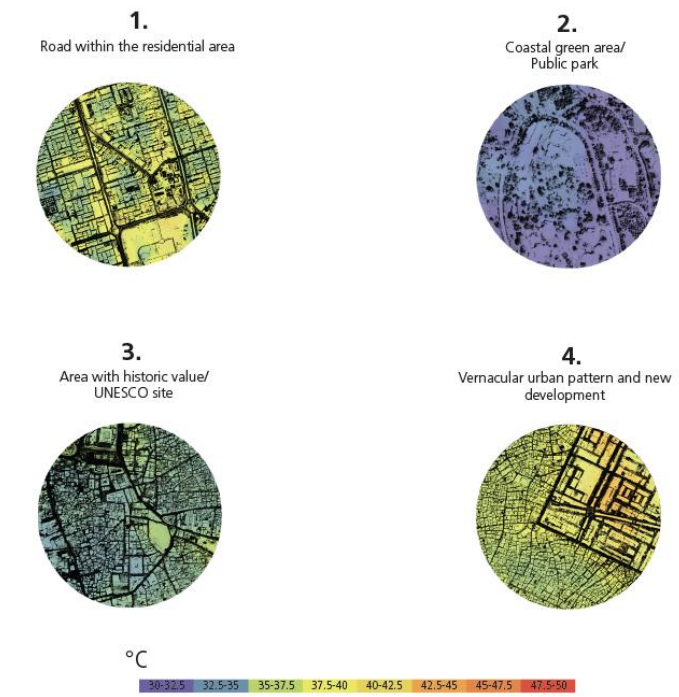
UN-Habitat work in Saudi Arabia

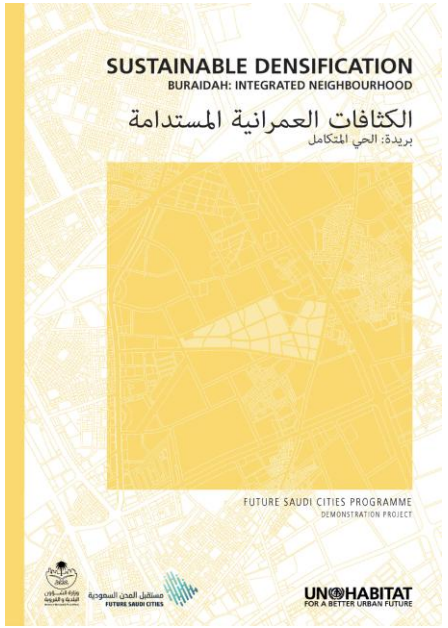


https://unhabitat.org/jeddah-city-profile

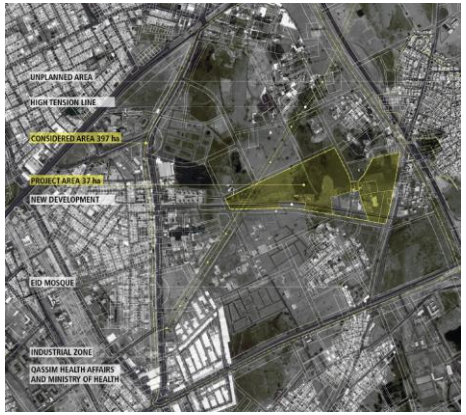
Fig. 43. Urban heat island effect and relation to the existing urban pattern implication on climatic factors

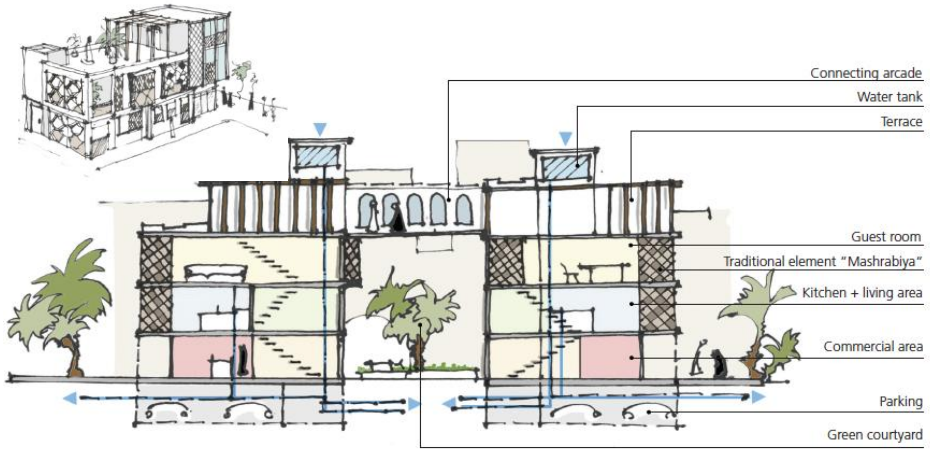


UN-Habitat work in Saudi Arabia



https://unhabitat.org/sustainable-densification-buraidah-integrated-neighbourhood





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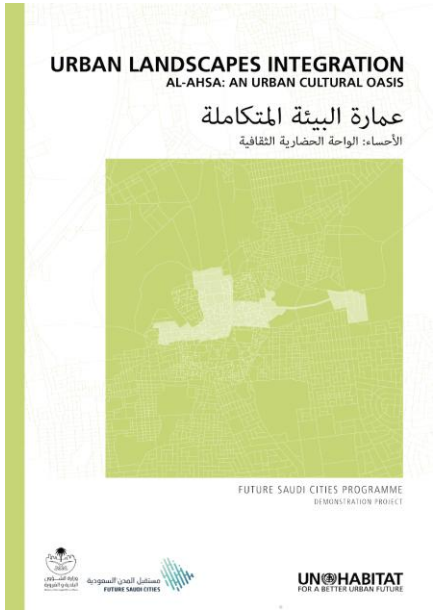
UN-Habitat work in Saudi Arabia



https://unhabitat.org/urban-landscapes-integration-al-ahsa-an-urban-cultural-oasis

Fig. 24. Proposed green spaces by UN-Habitat

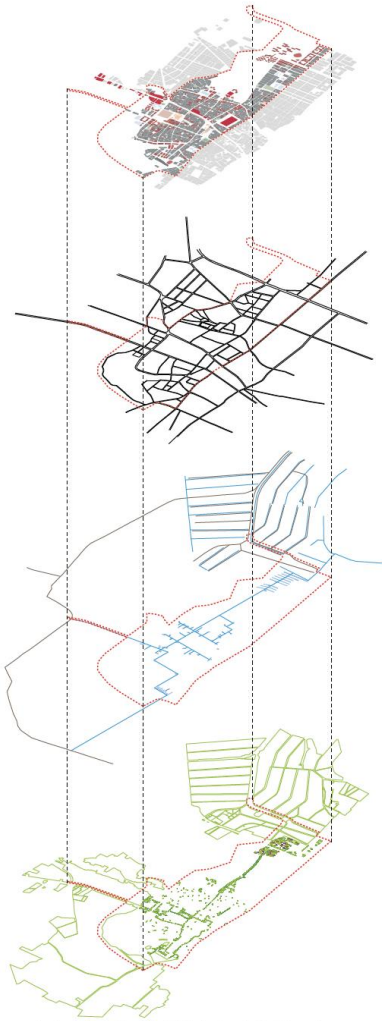
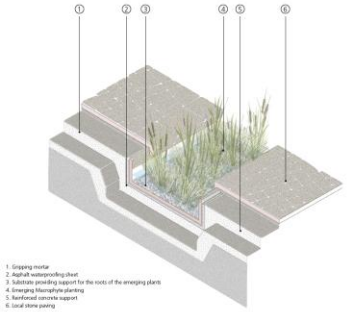
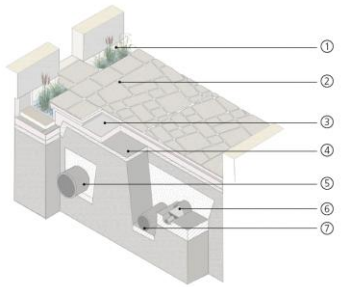


Fig. 29. Overlay of the green space, water channels, roads and built infrastructure in the intervention area





rizontal submerged flow with Macrophytes
al stone paving
pping mortar
dhalt waterproofing membrane
erwater overflow control
wage infrastructure
incipal water supply system

10. Example of phytoremediation channel detail: narrow linear canals found within the historic fabric that use horizontal submerged flow technology. The detail is developed referring to Banyoles old town public space project (MIAS Architects / Tectonica 30)

Reference pictures for the public space

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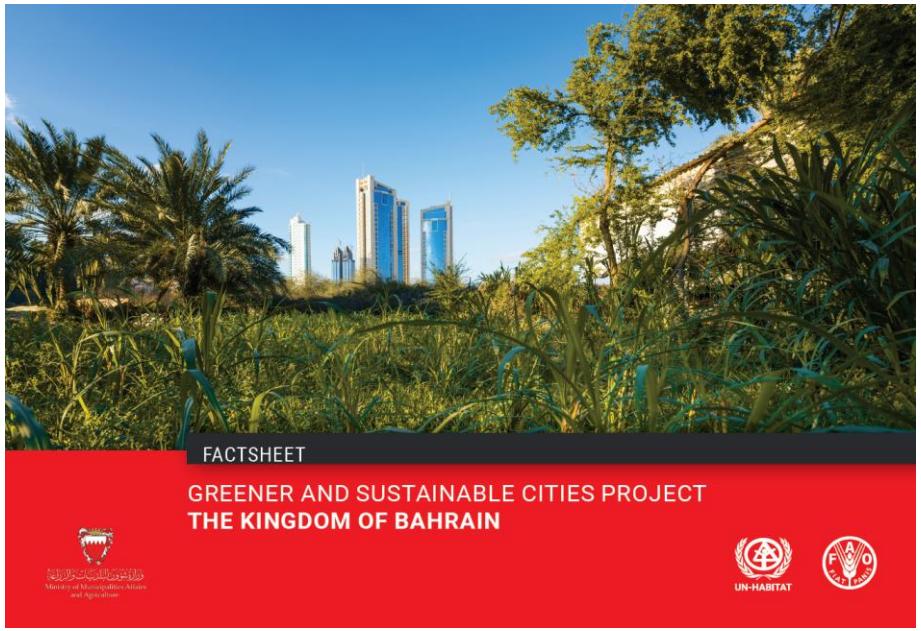
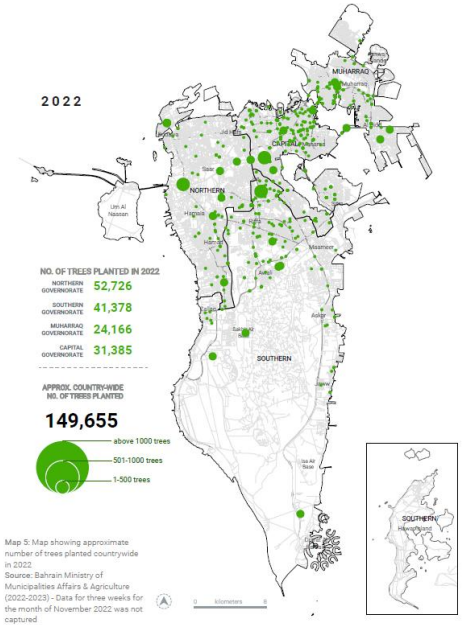
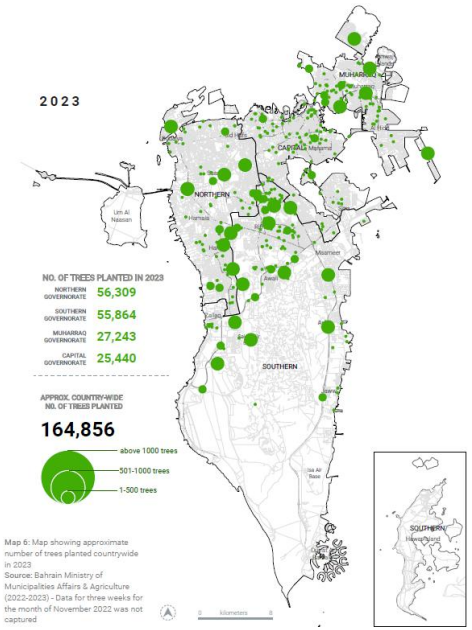
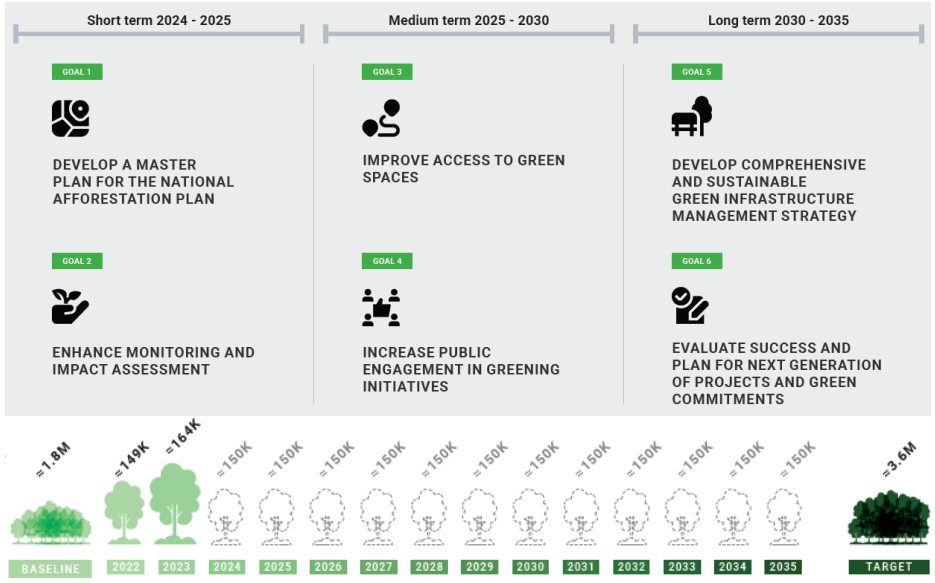
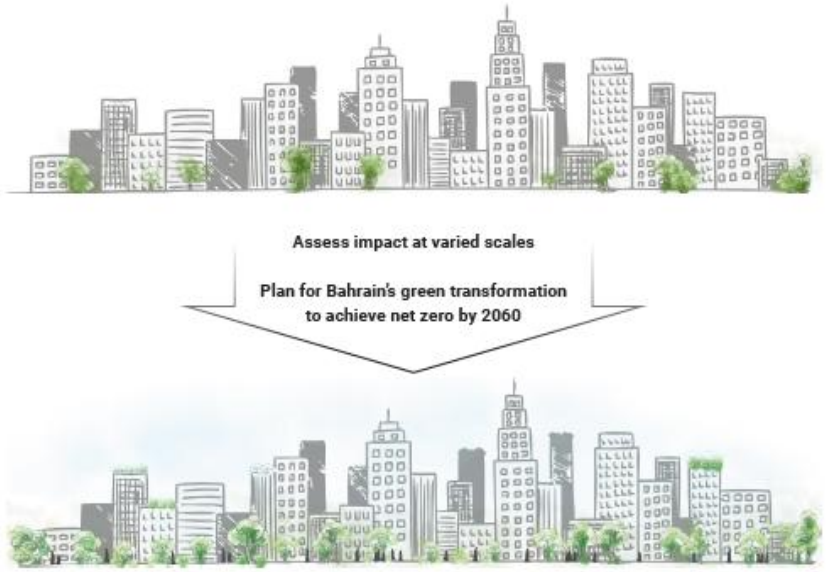
UN-Habitat work in Bahrain - Greener and Sustainable Cities Project











- Assessment of greening initiatives + public spaces
- Recommendation for achievement of a sustainable Bahrain by Bahrain by horizon 2035 (short, medium and long term strategies and goals)

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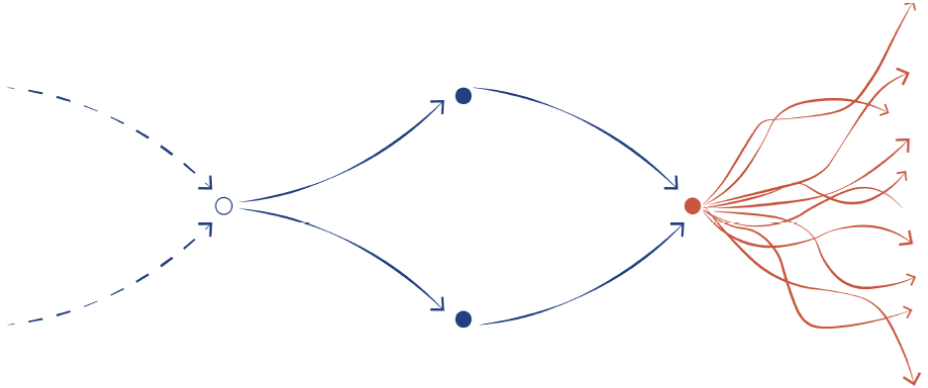
UN-Habitat work in Nairobi - Cool Waters Project for Nairobi Rivers



INPUT
Training, Facilitation, Community engagement

OUTPUT
Maps, Plans, Proposals

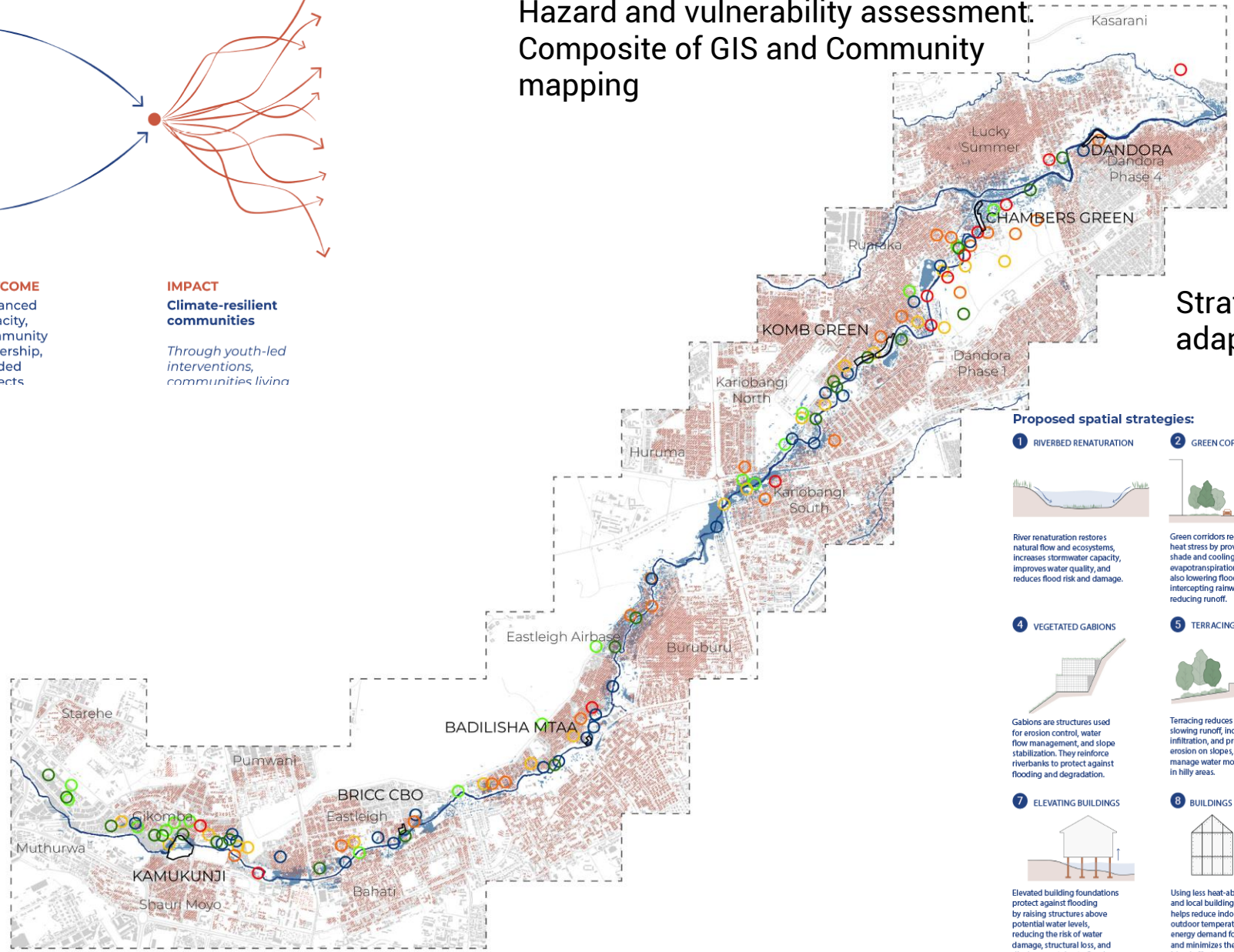
OUTCOME
Enhanced capacity, Community ownership, Funded projects

IMPACT
Climate-resilient communities

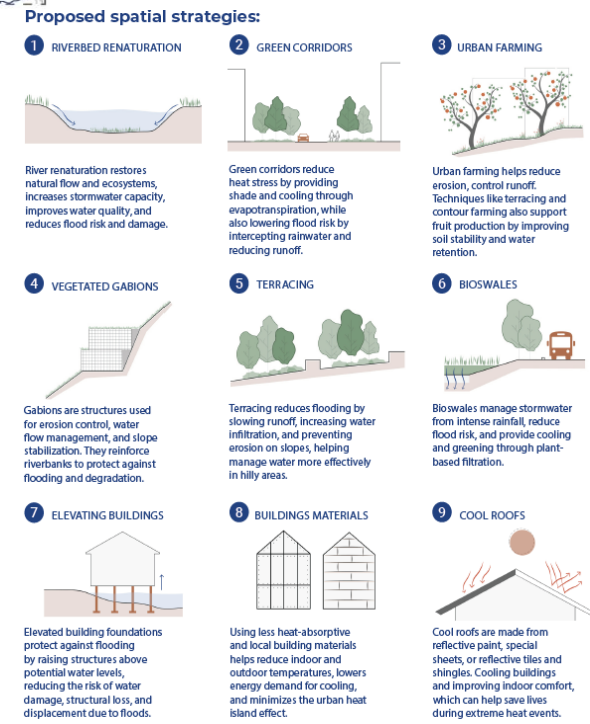
Through youth-led interventions, communities living

Spatial analysis + Community mapping

Hazard and vulnerability assessment. Composite of GIS and Community mapping



Strategies, NBS and adaptation plans



Thanks!

UN HABITAT
FOR A BETTER URBAN FUTURE

Cool Up Program in Türkiye

Meral Mungan Arda, Portfolio Manager, Climate Change and Environment, UNDP Türkiye

Cool Up
Upscaling Sustainable Cooling

Upscaling Sustainable Cooling

Meral Mungan Arda
Climate Change and Environment Portfolio Manager
UNDP Türkiye
14 April 2026

The Cool Up programme

Upscaling sustainable cooling

Funding:

Duration: December 2020 – January 2027

MENA countries face a range of energy challenges against the visible effects of **climate change** due to rapidly growing urbanisation and heavily strained energy infrastructure.

In the region, **cooling** constitutes a major source of energy consumption, and it is expected to grow further.

The Cool Up programme promotes accelerated **technological change** in cooling demand reduction, and early implementation of the **Kigali Amendment** and Paris Agreement in **Egypt, Jordan, Lebanon** and **Türkiye**.

Challenges

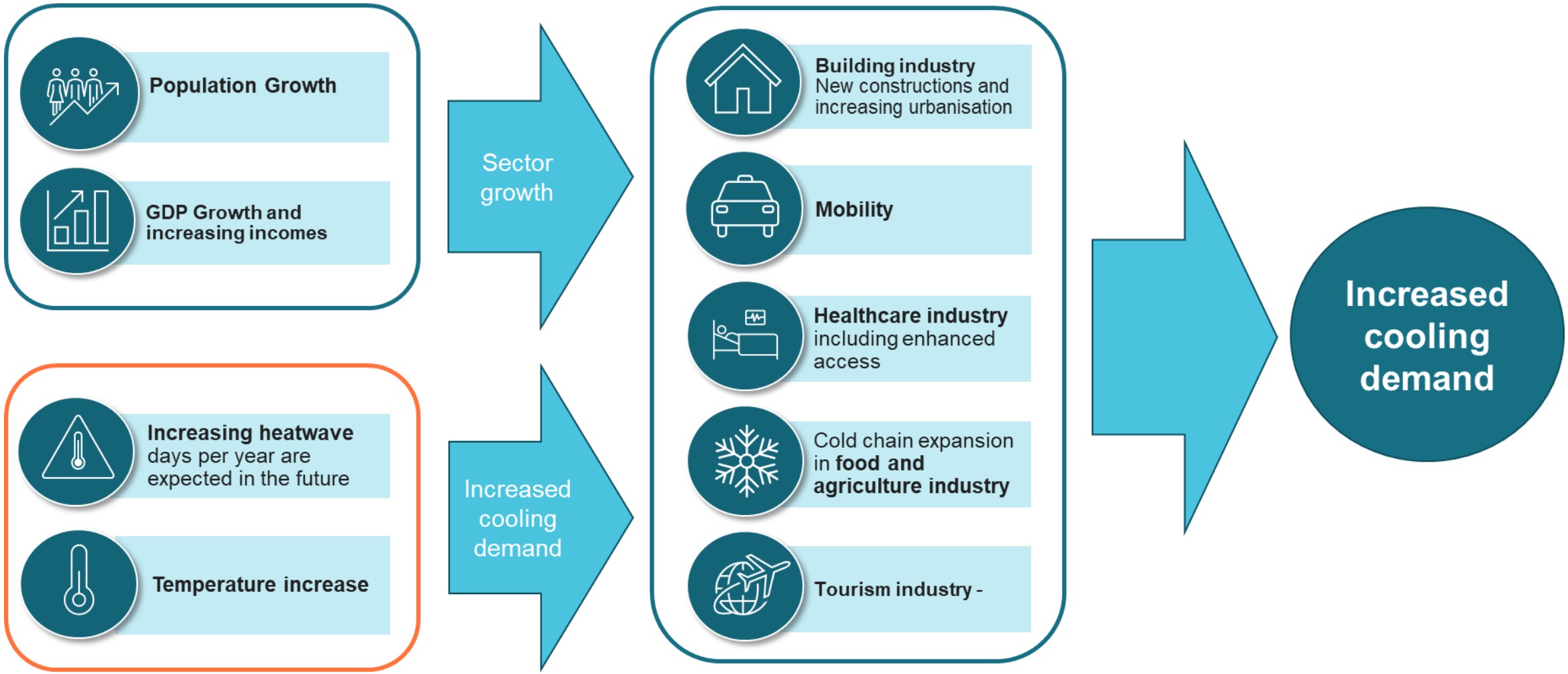
- Rapidly growing cooling & final energy demand
- Structural energy sector challenges

Regional multiplicators for learning between countries, in the region and beyond

Impacts

- Add to ongoing efforts for building efficiency, climate mitigation and adaptation
- Strong political and working-level network
- Market conditions enabled
- Cooling demand is reduced
- Policy and regulatory environment is strengthened
- Improved cooling appliance operation, training and awareness
- Promote accelerated technological change and early implementation of the Kigali Amendment to the Montreal Protocol and the Paris Agreement.

Drivers of Cooling Demand



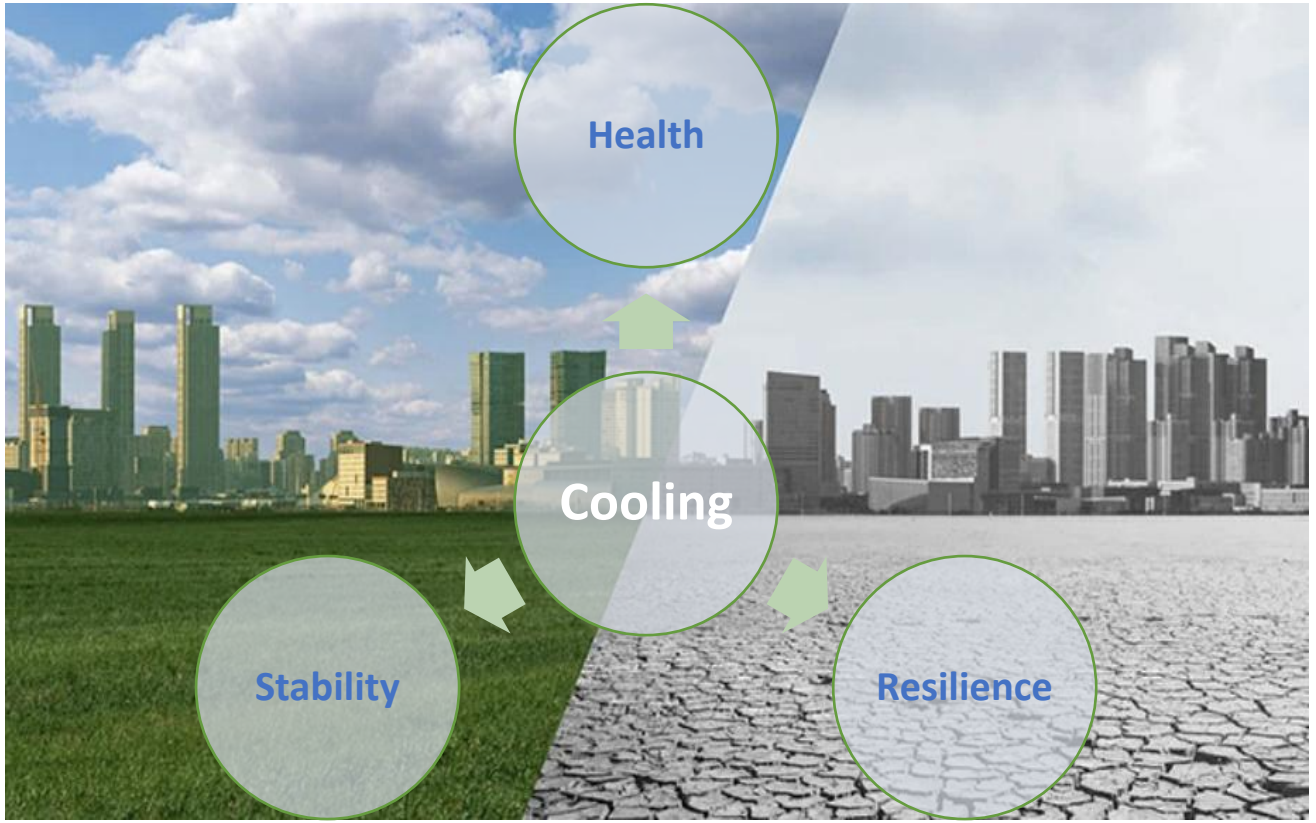
Cooling at the Core of Heat Resilience

- In July 2024, the UN Secretary-General launched a global **Call to Action on Extreme Heat**, urging urgent, coordinated efforts by governments, industries, and communities to address rising temperature risks and their impacts

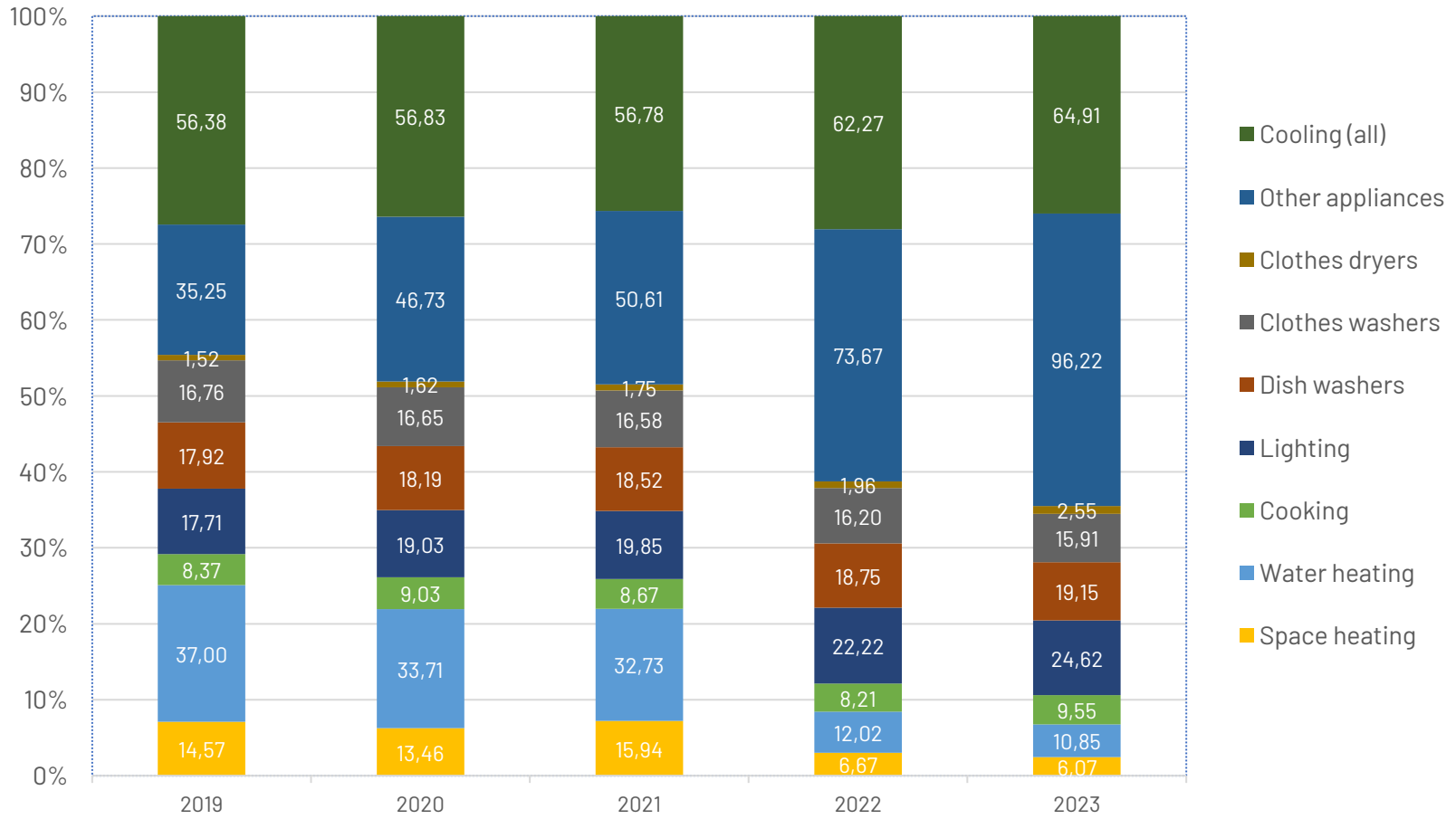
- Extreme heat increasing in frequency and intensity

- Cooling demand expected to triple by 2050

  *Global cooling-related emissions reached approximately **4.1 billion tons of CO_2 equivalent**, accounting for about **7.1%** of total global greenhouse gas emissions (~57.4 billion tons); without additional measures, these emissions are projected **to rise to 9 billion tons by 2050***



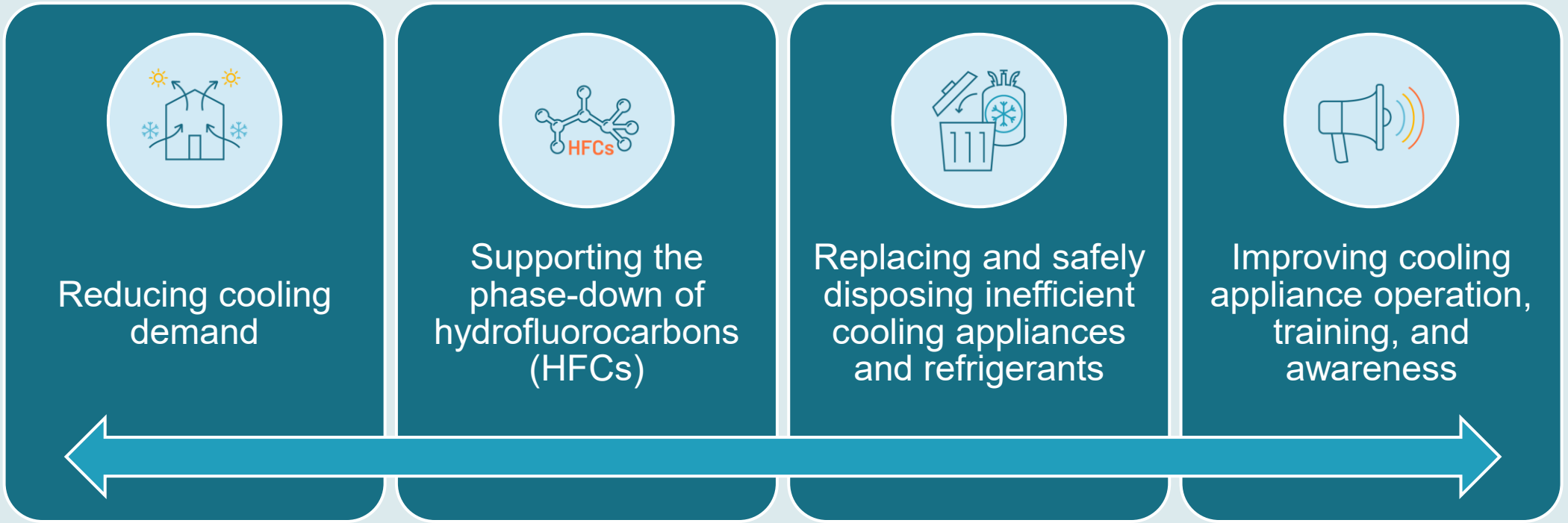
Electricity Consumption Share in Residential Building in Turkiye



Cooling consistently represents the largest share of energy use among appliances, accounting for over half of total consumption.

International Energy Agency, 2025, "Data and Statistics" https://www.iea.org/data-and-statistics/data-product/world-energy-statistics

Four pillar approach to sustainable cooling



This approach is supplemented by setting up **implementation-focused industry partnerships** and **building hands-on capacity to enable local and regional stakeholders**. Findings of replicable **demonstration projects** are used to disseminate knowledge.

Cool Up Programme

Policy: Support implementation of **Paris Agreement** (through NDCs) and **Kigali Amendment** objectives

Finance: Develop financial models to boost **sustainable cooling**

Technology: Enable **natural refrigerants** and **energy efficient solutions** to mitigate the rising cooling demand

Four partner countries as action hubs:

Cool Up supports to facilitate sustainable transition in Türkiye

Policy

- National Cooling Action Plan
- Trainings for Policy-makers

Finance

- Awareness & Trainings
- Product development

Technology

- ToT & Technical Trainings
- Demonstration Projects

Cool Up

A Key Output – National Cooling Action Plan

- The first government document to provide a holistic approach to tackling **the environmental, social, and economic challenges** associated with a rising cooling need.

- A strategic framework designed to address the growing demand for cooling in Türkiye while supporting the country's **net zero and climate resilience** goals

- A comprehensive roadmap to meet this demand by promoting energy-efficient technologies and low- Global warming potential (GWP) refrigerant-based cooling systems.

Through the adoption of climate-friendly refrigerants and the encouragement of innovation in cooling technologies, the NCAP aims to reduce GHG emissions and ensure equitable access to affordable and sustainable cooling for all segments of society.

NCAP – Intervention Areas

Cool Up

Technology Showcase

- Propane (R290) based solution in the supermarket / retail sector
  - ➢ *Plug-in dairy cabinets*
- Real time monitoring of energy efficiency and cooling performance

- ✓ Low investment cost
- ✓ High replicability potential in the sector / significant market influence
- ✓ Substantial environmental benefits compared to conventional systems in terms of global warming and energy efficiency.

22 ton CO2e GHG emission saving per year for one store (compared to conventional R404A

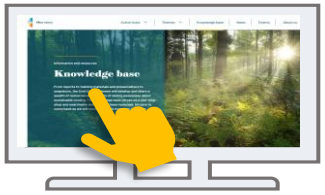
~ 30.000 stores in Turkiye (discount-markets)

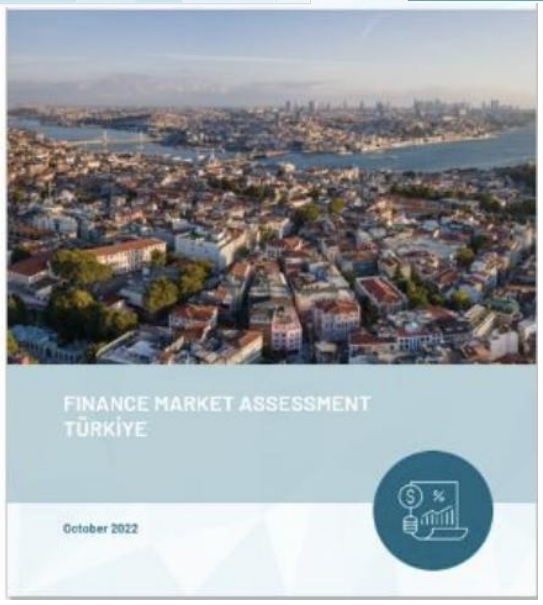
➔ *660.000 tons of CO2 eqv GHG saving potential annually in Turkiye*

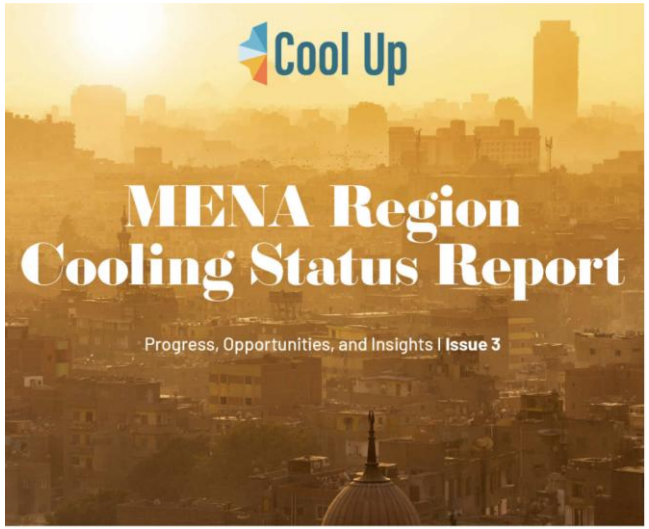
Cool Up

Guidehouse Frankfurt School of Finance & Management German Excellence. Global Relevance. Öko-Recherche ILK DRESDEN UNDP RCREEE LCEC IDG Co.

https://bit.ly/CU-knowledge



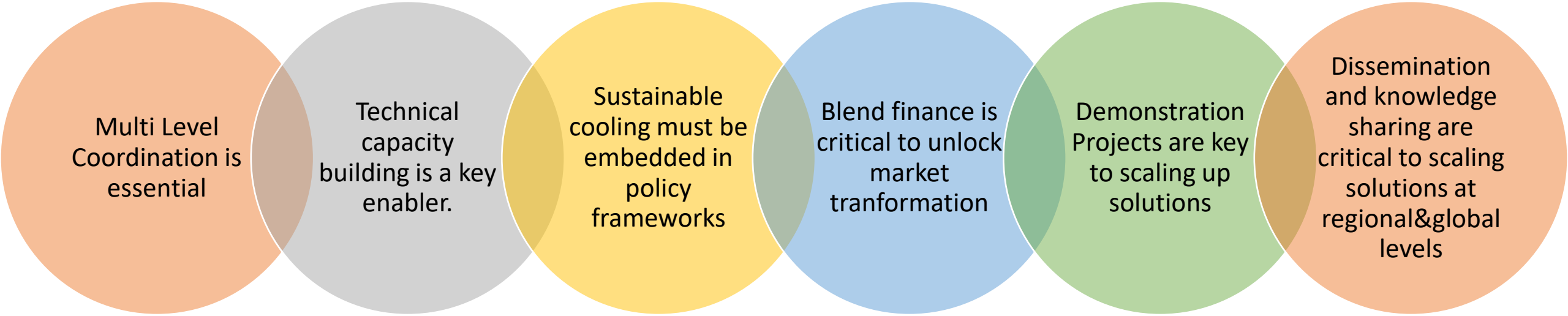




Cool Up

Key Lessons Learned

Sustainable cooling is not just a technology shift: it is a systemic transformation that connects climate action, economic resilience, and human well-being.



Nature-based solutions and agrifood systems approaches

Jeet Mistry, Forestry Officer, FAO

Food and Agriculture Organization of the United Nations

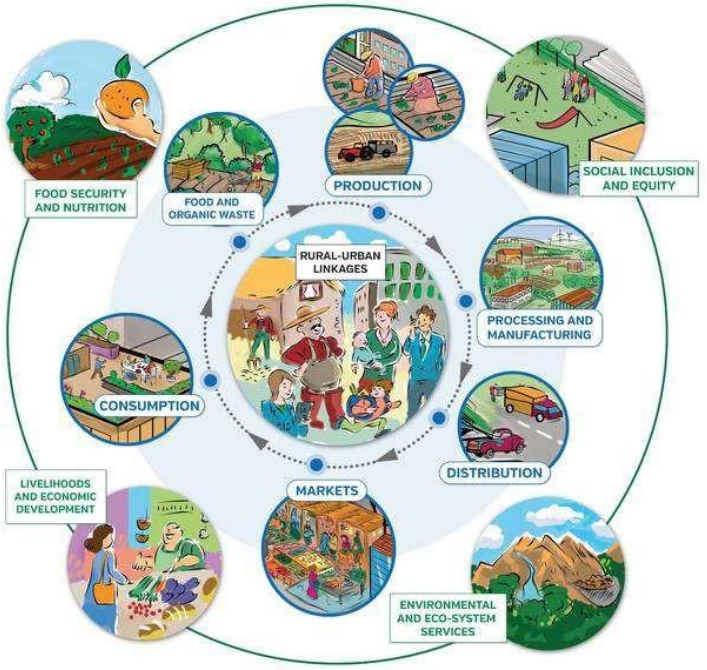
FAO GREEN CITIES INITIATIVE

Delivering Heat Resilient Cities through FAO's Green Cities Initiative

Jeet Mistry, Forestry Officer, FAO

FAO, Urban Food Systems Transformation and Urban Heat

- Urban and peri-urban areas are the frontlines of agrifood system change, as the local level is where transformation is most **urgent**, **visible**, and **actionable**.
- By 2030, FAO aims to improve the lives of +**50 million people** by supporting at least **30 flagship cities** to transform how their food systems are governed, financed, and managed.
- The **FAO Green Cities Initiative** contributes to delivering this ambition by **improving food security, nutrition,** and mobilizing **urban greening solutions** to meet urban challenges such as **Urban Heat**



FAO Green Cities Initiative

Launched in 2020 by the FAO Director-General during the UN General Assembly

Mission

Improve the health and well-being of people in **1000 cities by 2030** while actively addressing urbanization challenges.

Integrated Approach

Urban nature — *Agrifood systems* — *Resources cycle* → ***Nexus***

FORESTRY

AGRICULTURE

BIOECONOMY

FAO GREEN CITIES INITIATIVE

How GCI addresses Urban Heat in Practice

Global GCI Network

Knowledge & Innovation

Technical Assistance

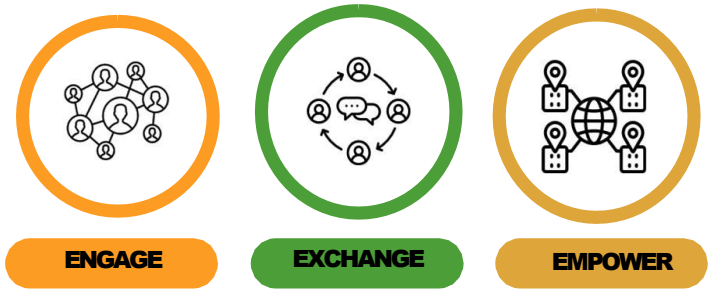
Partnership & Advocacy

- **Expanding urban tree cover**
  Cooling solutions, restoring ecosystems, supporting biodiversity
- **Integrating food production into urban spaces**
  School gardens, agroforests and urban agriculture
- **Improve air quality through trees and green spaces**
  Reducing pollution and enhancing urban environments
- **Supporting cooler and safer public spaces**
  Reducing heat exposure, especially for vulnerable groups
- **Enhancing liveability through climate-responsive planning**
  Improving comfort and urban heat resilience

FAO Green Cities Network

Promotion of integrated solutions and strategies across three core areas:

- Urban and Peri-Urban Forestry
- Urban and Peri-Urban Agriculture
- Sustainable Bioeconomy



FAO GREEN CITIES INITIATIVE NETWORK

SCAN FOR MORE & JOIN THE NETWORK!

Green Cities Initiative Case Studies

Côte d'Ivoire (Abidjan)

Food waste valorization into **biofertilizers** through **black soldier fly larvae**

Namibia (Eenhana)

Forestry and horticultural seedlings, nursery and **greenhouse** established

Sri Lanka (Colombo)

Training on **vermicompost** and **hydroponic** systems in for school gardens

Mongolia (Ulaanbataar)

Green urban oasis established across public sites and schools

Jordan (Amman)

Hydroponic greenhouses and **tree nursery** establishment

Dominica (Roseau)

National reforestation and beautification pro ject with **community engagement**

Spotlight on the Green Urban Oases Programme

- Turn dryland cities into **"green urban oases"** to strengthen resilience to climatic heat, food and economic crises and promote biodiversity
- **Ulaanbataar, Mongolia –** 2680 trees planted cross Urban Oases sites (public spaces and schools)
- **Amman, Jordan –** rehabilitation of Omar Al-Faisal park with 355 native carob trees and establishment of urban green houses and green roof technologies
- Engaged decisionmakers at all levels and inspired other cities to take action




Urban Heat Resilience in Europe

- FAO GCI's ***Urban Forests: A Global Perspective*** publication showcases urban forests and their contribution to multiple benefits, including **climate adaptation** and **urban heat resilience**
- E.g. The 93 km² **Danube-Auen National Park,** Austria, shows how large-scale urban forests can directly contribute to urban heat resilience
- Preserving and integrating large, connected green-blue systems within and around cities is not only about conservation, but a powerful strategy to **reduce urban heat** and enhance overall **urban resilience**

The Danube-Auen National Park

Thank you

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FAO Green Cities Initiative | FAO | Food and Agriculture Organization of the United Nations

Q&A and discussion

Closing remarks and next steps

Dario Liguti, Director, Energy, Housing & Land Management Division, UNECE