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| *Panel* **How can city-level Heat Health Action Plans (HAP’s) build local resilience to heatwave risks?** |
| As global temperatures continue to rise, heatwaves are projected to become more frequent and severe, posing serious health risks to populations worldwide (IPCC, 2021). The health consequences of extreme heat have emerged as a significant public health challenge, with evidence showing that higher temperatures (above 30°C) are directly linked to increased hospital admissions and deaths (Ebi et al, 2021). Heat events and their associated health impacts are often underreported in extreme weather and impact databases, and many countries lack comprehensive early warning systems for heat (Kimutai et al, 2022). In contrast with increasing numbers of heat-related reports by European national agencies, underreporting in the Global South often stems from unsystematic reviews by differing NGO’s who remain disconnected from meteorological agencies, and where disaster relief is predominantly focused on related humanitarian crises (such as food insecurity) from heat-related drought, rather than mortality rates and economic loss as a result of extreme heat itself (Harrington and Otto, 2020). While many cities are increasingly incorporating heat health risks into urban planning (21 of the 38 European Economic Area countries currently have Heat Action Plans (HAP’s)), there is a growing need for this evidence to be incorporated into actionable and context-specific HAP’s, especially in the Global South, enabling city authorities, healthcare workers, and communities to effectively respond to the escalating threat.In 2023, the [CLimate Adaptation and REsilience](https://clareprogramme.org) (CLARE) programme—funded mostly (about 90%) by UK Aid through the Foreign Commonwealth and Development Office (FCDO), and co-funded by the International Development Research Centre (IDRC), Canada, launched their Research for Impact (R4I) Opportunities Fund at COP28, which aims to enable the uptake of existing research and evidence to support the needs of decision-makers in Africa and Asia-Pacific in adapting to climate change. Within this context, this session aims to showcase the work of three Opportunities Fund projects focusing on heat health, highlighting city-to-city knowledge exchange. The [Red Cross Red Crescent Climate Centre](https://www.climatecentre.org/) (RCRCCC) is a global climate reference centre working at the intersection of science, policy, and practice to reduce the impacts of climate change and extreme weather events on vulnerable people. It aims to showcase the work of the RCRCCC, which has undertaken locally-led work on the lived experiences of heat health challenges in Latin America, Africa and Asia. Speakers with experience working in cities in Africa and Asia will highlight the stages of development of urban HAP - from the initial development through to successful implementation - offering insight into the lived experiences and risk perceptions of heat, further recommendations on lessons learned following HAP implementation, and highlighting the need to be responsive to ongoing on-the-ground challenges. The panel aims to contribute new knowledge and practice to heat health climate adaptation strategies in urban regions, showcasing actionable steps that will ensure cities worldwide are empowered to become more heat resilient.In Rajkot (Gujarat, India), a Climate Resilient City Action Plan (CRCAP) identified that street vendors, who form an integral part of the Indian economy and contribute over 64% of the country’s GDP (Doda, 2024), are one of the most climate vulnerable communities in the city. India’s current legislation does not recognise the impact of climate change, particularly the effects of heat stress amongst other climate-related hazards, on street vendors, nor does it acknowledge the differentiated gendered impact, where women constitute 40% of the workforce (Umamakeshwari and Arocikam, 2016) and face substantial additional challenges. This CLARE Opportunities Fund intervention demonstrates the steps undertaken to create and implement a Climate Resilient and Gender-Equitable and Inclusive Plan for Street Vending Zones in Rajkot. Speakers from this project will showcase: 1) how heat health is experienced at the local level and in differential gendered ways; 2) how integrating heat health risks into urban planning can strengthen the capacity of municipal authorities responsible for the welfare of these communities; 3) how planning for heat health risks can enhance socio-economic security, leading to improved working conditions and strengthened gender, equality and inclusion outcomes; and, 4) how heat-responsive urban plans have the potential for replication and scale-up in areas facing similar threats.In Narayanganj (Bangladesh), the city’s geographical location, its rapid urbanisation and its industrial activities contribute to a unique microclimate, exacerbating heat stress amongst its inhabitants. The expansion of Narayanganj’s built environment contributes to the rise of urban heat islands, posing significant risks to public health, infrastructure, and the local economy. In 2024, the hottest year on record with an average temperature of 40°C, more than 450 patients were admitted in the city’s hospitals, despite the overall capacity of available government hospital beds being limited to 500 spaces. In addition to the constraints on public health infrastructure, the city’s Climate Risk and Vulnerability Assessment (CRVA) revealed that Narayanganj’s steadily increasing temperatures have led to the intensified concentration of pollutants in water resources, further contributing to public health risks. As a result, with support from the CLARE Opportunities Fund, the Narayanganj City Council (NCC) is developing a comprehensive Heat Action Plan (HAP) that will increase the city’s urban heat adaptation strategies, with a particular emphasis on safeguarding vulnerable groups. Speakers from this intervention will highlight: 1) how HAP’s can prioritise measures to protect vulnerable groups through access to cooling resources, education on heat safety practices, and support services during extreme heat events; 2) the necessity of establishing early warning protocols and mechanisms; 3) how green infrastructure initiatives, urban planning and design guidelines can reduce the urban heat island effect; and how 4) HAP’s can include both soft measures (capacity building and awareness-raising) and hard measures (infrastructural and technological interventions) to ensure collaboration between local health services, governance agencies and stakeholders.In Nairobi (Kenya), a groundbreaking study by Kumutai et al (2022) was the first to identify and assess the thresholds for heatwave impacts in three Kenyan cities (Nairobi, Kisumu, and Mombasa), noting that rising temperatures in Nairobi are contributing to a surge in heat-related illnesses and deaths. The city’s exposure to these risks is amplified by the rapid expansion of informal settlements, which grew by 32% in 2019, intensifying the urban heat island effect. Further, studies show that extreme heat (surpassing 30°C for at least 10 consecutive days) in Kenya affects not only human health but also agriculture and livestock (Scott et al, 2017). While the 2022 study can now be used by the Kenya Meteorological Authority to issue heat advisories, and by local authorities to warn residents of heat-related health risks, the Nairobi County Government expressed the need to develop an effective HAP to protect public health. This CLARE Opportunities Fund project will highlight how a city-to-city knowledge exchange (in this case, between Nairobi and Rajkot (which has successfully implemented a HAP)) can enhance urban resilience against climate-related heat health hazards. Speakers from this project will showcase: 1) the methods currently being used for heat health planning in urban areas of similar scale; 2) how to identify, integrate and implement a successful HAP; and 3) offer guidance on identifying heat risks that can be utilised by urban planning stakeholders globally, providing recommendations for developing an effective HAP. Video clips will share learnings from the study tour, where Nairobi County Government officials visited Rajkot to observe the successful implementation of a HAP first-hand. **References**Doda, I. (2024, August 2). *The street vendor act in India: What is still to be achieved for women vendors.* Streetnet International. <https://streetnet.org.za/2022/08/25/the-street-vendor-act-in-india-what-is-still-to-be-achieved-for-women-vendors/>Ebi, K. L., Capon, A., Berry, P., Broderick, C., de Dear, R., Havenith, G., Honda, Y., Kovats, R. S., Ma, W., Malik, A., Morris, N. B., Nybo, L., Seneviratne, S. I., Vanos, J., & Jay, O. (2021). Hot weather and heat extremes: health risks. *Lancet (London, England)*, *398*(10301), 698–708. [https://doi.org/10.1016/S0140-6736(21)01208-3](https://doi.org/10.1016/S0140-6736%2821%2901208-3)Harrington, L.J., Otto, F.E.L. (2020). Reconciling theory with the reality of African heatwaves. *Nat. Clim. Chang.* **10**, 796–798. <https://doi.org/10.1038/s41558-020-0851-8> IPCC. (2022). *Climate Change 2022: Impacts, Adaptation and Vulnerability*. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Retrieved from [https://www.ipcc.ch](https://www.ipcc.ch/)Kimutai, J., Nying’uro, P., Harrington, L., Oghera, W., Otto, F. (2022). *Identification of local heat thresholds and related health impacts: The case of Nairobi, Mombasa, Kisumu Cities in Kenya.* American Red Cross and the Global Disaster Preparedness Center (GDPC).Scott, A. A., Misiani, H., Okoth, J., Jordan, A., Gohlke, J., Ouma, G., Arrighi, J., Zaitchik, B. F., Jjemba, E., Verjee, S., & Waugh, D. W. (2017). Temperature and heat in informal settlements in Nairobi. *PloS one*, *12*(11), e0187300. <https://doi.org/10.1371/journal.pone.0187300>Umamakeshwari, P. & Arocikam, K. (2016). The women street vendors’ contribution for the maintenance of their families. *Indian Journal of Applied Research, 6(4)*, 105-108. |
| **INDIVIDUAL PANELLIST CONTRIBUTION**  **Moderator Details** **Full Name:** Grace O’Donovan **Organisation:** SouthSouthNorth (SSN) **Bio sketch:** Grace O’Donovan is a Project Manager at the CLARE R4I (Research for Impact) Hub at SouthSouthNorth (SSN). She manages the CLARE R4I Opportunities Fund, driving the uptake of existing research in climate adaptation and resilience projects across Africa and Asia-Pacific.  **Panellist 1** **Full Name:** Roop Singh **Organisation:** Red Cross Red Crescent Climate Centre **Bio:** Roop Singh is the Head of Urban and Attribution at the Red Cross Red Crescent Climate Centre. She has over ten years of experience as an interlocutor between scientists and disaster risk management practitioners, and currently leads on the RCRCCC’s work on heat risk.   **Panellist 1 Contribution:** **Introduction** The impacts of extreme heat are deadly, on the rise globally, and preventable. Often called the ‘silent killer,’ heatwaves have killed thousands of people in recent years, and although they are frequently the deadliest disasters, there is a large gap in awareness, planning and action to reduce heatwave impacts (Walton et al, 2021).  A lack of risk perception, both by the public and in some cases, leaders, is resulting in inadequate preparedness for current and future heatwave risks; especially in tropical and sub-tropical regions where it is relatively warm year-round. Heatwave risks are further magnified in cities, where temperatures are hotter than rural areas due to the urban heat island effect, and hit hardest among the most vulnerable such as older people, people living in slums and informal settlements, outdoor workers, people with pre-existing health conditions etc. As the frequency and intensity of heatwaves continue to rise, due to climate change, it is crucial to reduce near- and long-term risk through proactive actions such as early warning system strengthening, heat action planning, urban greening, and urban planning. If we fail to adapt to rising temperatures, the IPCC has warned of a regional tipping point in places where adaptive capacity is low, creating urgency for action.  **Objectives** To build climate resilience of urban communities to extreme heat through expanding risk knowledge and strengthening local action. Our work builds a foundation of practice and knowledge which can be learned from and scaled.    **Methodology** With a focus on secondary cities exposed to extreme heat, three intervention approaches are being leveraged to reduce risk: 1. Increasing individual and household risk perception:

The project has conducted surveys and focus group discussion on individual risk perception to determine individual strengths and barriers to heat action and identify behaviour change strategies to expand action. This “bottom up” approach to risk perception is critical to developing more targeted approaches to encourage self-protective behaviour during episodes of extreme heat.  Based on those findings, the project will develop a public awareness raising campaign in collaboration with local government officials and local media partners.  1. Strengthening early warning, early action for extreme heat:

To provide households with advanced warning of potential heat events, the project will also partner with National Meteorological and Hydrological Services (NMHS) and local government officials to expand coverage of heat early warning systemsoperated by the nationally authorised entities. Where heat alerting systems do not currently exist, local university research capacity will be leveraged to analyse past public health impacts via statistical analysis to identify thresholds for when heat becomes dangerous. Where excess mortality thresholds are already known and paired to temperature forecasts in a heat alerting system, efforts to tailor CAP messaging for the city level will be the starting point.  1. Developing city Heat Action Plans informed by risk analysis:

City local governments, local Red Cross Red Crescent branches and coalition partners, are working together to develop and test heat action plans to help turn early warning into early action, plans will include actions specific to the unique vulnerabilities of affected populations such as older individuals, mobility needs and people with pre-existing health conditions.   **Findings** Extreme heat is threatening human health, well-being, and disrupting social life. Risk perception studies indicate that participants have experienced a range of health issues such as: skin rashes, dehydration, kidney stones, increases in violence, heart and lung-related issues. Even when people recognize the risks of heat, practical and financial barriers prevent them from taking action. For those of low socio-economic status, adaptation measures are driven by economic feasibility.  For others, structural barriers such as lack of water or consistent electricity play a large role in adaptation to extreme heat.  Social barriers such as descriptive social norms, but also high workload and daily quotas also play a role in mediating behavior. At the same time, focus group discussions revealed that governments and decision-makers continue to greatly underestimate the threat of extreme heat, even as public concern rises. All of these aspects must be taken into account when developing messaging and policy around extreme heat.   **Panellist 2** **Full Name:** Joyce Kimutai **Organisation:** Kenya Meteorological Department & Imperial College London **Bio:** Joyce Kimutai is a Climate Scientist affiliated with Kenya Meteorological Services and Centre for Environmental Policy, Imperial College London. Joyce works at the nexus of climate and policy, with her research focusing on understanding the role of anthropogenic climate change in extreme weather and climate events to enhance climate risk awareness and inform policy and practice.    **Title of Presentation 2** Urban Heat Risks: Towards a Collaborative Heat Action Plan for Nairobi City     **Panellist 2 Contribution**:  **Introduction** In a warming world (with 2023/4 recorded as the hottest years on record), heatwaves are becoming more frequent and intense, posing significant health risks globally (IPCC, 2021). Rising temperatures and heat waves have been directly linked to increased heat-related illnesses, aggravation of chronic and pre-existing conditions (eg., worsening of cardiovascular, respiratory, and kidney diseases), increased hospital admissions, mortality (Ebi et al., 2021). In Kenya, a study by (Kimutai et al., 2022) identified heatwave impact thresholds for Nairobi, Kisumu, and Mombasa, enabling the Kenya Meteorological Department to issue heat advisories. Nairobi is already experiencing rising temperatures that exacerbate heat-related illnesses and mortalities, particularly among vulnerable groups such as those in informal settlements, pregnant women, infants, people with disabilities, and those with pre-existing conditions. Informal settlements, which grew by 32% in 2019, intensify the urban heat island effect. While Nairobi’s average temperatures range from 23.8°C to 25.6°C, heatwave events exceeding 30°C for five consecutive days have been recorded, correlating with increased hospital visits, admissions, and deaths (Kimutai et al., 2022) Yet, heat events and their associated health impacts often go undocumented and underreported, with many African national meteorological services lacking heat early warning systems (Harrington and Otto, 2020). To address this, strategies must evolve into comprehensive heat health action plans to equip city authorities, healthcare professionals, and citizens to respond effectively to warnings. African and Kenyan cities can learn from other global south cities that have successfully implemented heat action plans, enhancing public health protection and urban resilience.   **Objectives** To increase the climate adaptative capacity of Nairobi County through the creation of a Heat Action Plan, showcasing city to city learning in Rajkot, India, where a HAP has been successfully implemented.     **Methodology** The presentation will highlight a peer learning exchange approach that involves: * Knowledge Sharing: Discussing the methods currently being used for heat health planning in urban areas with similar contexts.
* Adapting Best Practices: Identifying and integrating successful HAP implementations from other cities into Nairobi’s heat health planning, which can be scaled in other cities.
* Guidance and Recommendations: Offering guidance on identifying heat risks specific to Nairobi County and providing recommendations for developing an effective HAP that is both context-specific and can be adapted for use in other urban areas.

  The approach will be showcased in this presentation by featuring lessons learned from a virtual seminar with consultants on their experiences with developing and implementing HAP’s in Indian cities; a short video capturing the city to city knowledge exchange study tour, where Kenyan officials visited Rajkot, India to observe the implementation of a HAP first-hand; and key findings from this exchange, and its dissemination with relevant Nairobi County stakeholders, will be shared.   **Findings** Research in Nairobi City has demonstrated a positive correlation between high temperatures and hospital admissions, as well as a delayed effect of heat on mortalities (Kimutai et al., 2022). A proposed heatwave definition for issuing alert warnings suggests a daily maximum temperature of 32°C or higher for three or more consecutive days in Nairobi. These thresholds, along with additional strategies, will inform the development of a guidance note for heat-health action plans. The plan will outline trigger protocols and response measures to enhance Nairobi’s adaptation and resilience to extreme heat events.  **Panellist 3** **Full Name:** Patricia Nyinguro **Organisation:** Kenya Meteorological Department & Imperial College London **Bio:** Patricia Nying’uro is a climate scientist and researcher affiliated to the Kenya Meteorological Department and the Oescheger Center for Climate Research. She works at the Science-Policy interface making science and research actionable and relevant for implementation and policy development. Current research is on the impacts of climate change on health with heat and nutrition as proxies.  **Panellist 3 Contribution:** Patricia is a co-lead on the “Urban Heat Risks: Towards a Collaborative Heat Action Plan for Nairobi City” project and presentation, and will speak to the information provided under Panellist 2’s contribution.  **Panellist 4** **Full Name:** ​Bedoshruti Sadhukhan​     ​​​     ​​​     ​​ **Organisation:**​ ICLEI South Asia​ ​​**Bio:**​     ​​ ​​​Bedoshruti Sadhukhan has 20 years of experience in the field of environment and climate resilience. She has worked in several countries of South Asia on sustainable development, environmental resource management, climate resilience, adaptation, vulnerability and risk assessment, water and waste management supporting multiple local governments to prepare climate action plans that look at urban service delivery and social inclusion. She has also worked on environmental justice, environmental impact assessment and public participation in decision making, tribal and housing rights.​​ **Title of Presentation 4** ​​Urban heat action plans - A tale of two cities​​     ​  **Panellist 4 Contribution:** **Introduction** South Asian countries face the double whammy of rapid urbanization and a changing climate that is forcing its cities to develop in conditions of unprecedented high temperatures and erratic rainfall patterns. According to the IPCC Sixth Assessment Report, the frequency and intensity of heat extremes will continue to increase with increasing global warming levels, even if global warming is stabilized at 1.5°C. ​​**Objective**​     ​​​​ ​​​To support local governments in inclusive and participatory planning for heat stress and heat waves using urban planning and design that uses nature-based solutions.​​​​  ​​**Methodology**​​​ ​​​​A comparative presentation will be made regarding the methodology used in the two cities of Rajkot and Narayanganj. The different components of assessment of temperature data, mapping, and stakeholder engagement will be analysed to identify good practices. ​​​​​  **Findings** ​​​​The presentation will highlight the need for planning for heat waves and high temperatures, but also identify existing opportunities of urban planning and greening that exist in the cities that can reduce the impacts of heat. The impacts of heat on various urban systems - such as water, drainage and waste-water systems - will be discussed in terms of service delivery particularly for the urban poor and marginalised communities. ​​​​​   |