

## Session Proceedings

# Climate Adaptive Heat Stress Action Plans for Vulnerable Communities in South Asia

30<sup>th</sup> March 2022



## GOBESHONA Global Conference 2

Exploring **Locally - Led Adaptation & Resilience** for COP27

27<sup>th</sup> March to 1<sup>st</sup> April- 2022

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This document is an outcome of the session jointly organised by Integrated Research and Action for Development (IRADe) & South Asian Meteorological Association (SAMA) at the Gobeshona Global Conference (GGC2) hosted by the International Centre for Climate Change & Development (ICCCAD), 30<sup>th</sup> March 2022.

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## Acknowledgement

We would like to thank everyone who has contributed to the session on “Climate Adaptive Heat Stress Action Plans for Vulnerable Communities in South Asia” at the second Gobeshona Global Conference (GGC2) hosted by International Centre for Climate Change & Development (ICCCAD), on 30th March 2022.

IRADe is thankful to South Asia Meteorological Association (SAMA) for their association in jointly organising this session.

We thank Prof Saleemul Huq, the Director, International Centre for Climate Change and Development (ICCCAD), Mr. Sardar Shafiqul Alam, Coordinator, Urban Climate Change Programme and Country Coordinator, ACCCRN-ICCCAD Bangladesh, Ms. Madiha Chowdhury, Research Officer, ICCCAD for their support in organising this session.

We are thankful to Prof Ajit Tyagi, Senior Advisor IRADe &, Former Director General, IMD, for chairing the session. We express our sincere thanks to Prof. Jyoti Parikh, Executive Director, IRADe for giving inaugural remarks.

We extend our gratitude to our panelist Dr. Vikas Desai, Honorary Director, Urban Health and Climate Resilience Center of Excellence (UHCRCE), Mr. Ramiz Khan, Urban Advisor, Red Cross Red Crescent Climate Centre, Mr. Anup Kumar, Sr. Consultant- Drought and Heat Wave, National Disaster Management Agency, National Disaster Management Authority (NDMA), Mr. Polash Mukerjee, Lead, Air Quality & Climate Resilience, Natural Resources Defense Council (NRDC).

We want to extend our gratitude to our funders, International Development Research Centre (IDRC), and Asia-Pacific Network for Global Change Research (APN), for the support.

Last but not least, we would like to thank our team, Dr. Nimisha Jha, Ms. Moumita Shaw, Ms. Ananya Bhatia, Ms. Yashi Sharma, who supported in organising the session.

Mr. Rohit Magotra  
Deputy Director, IRADe

Prof. (Dr.) Someshwar Das,  
Convener, South Asian Meteorological  
Association (SAMA)

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# 1. Climate Adaptive Heat Stress Action Plans for Vulnerable Communities in South Asia

## 1.1 Background

The IPCC 6th Assessment report has underscored that climate change has already started to impact every corner of the world and its impacts will be severe. Climate change is already causing widespread disruption in every region in the world with just 1.1 degrees C (2 degrees F) of warming. In fact, some impacts of climate change are already too severe to adapt<sup>1</sup>. The World Meteorological Organisation (WMO) consolidated data shows that year 2021 is one of the seven warmest years on record<sup>2</sup>. Future projections of temperature indicate a steady increase across the three periods (2030s, 2050s, 2080s), with anomalies reaching 4-5°C for high emission scenarios by 2080. According to the Global Climate Risk Index 2020<sup>3</sup>, countries in South Asia are among the most vulnerable globally to the impacts of climate change. India, ranked 5<sup>th</sup> in that list and having witnessed consecutive years of highest temperatures between 2015 and 2019, is highly susceptible to adverse impacts from extreme temperatures. Heat stress-induced deaths in 2100 are estimated to be about 85 per 100,000 globally<sup>4</sup> and above 100 per 100,000 in lower-income groups. South Asia, according to the Intergovernmental Panel on Climate Change (IPCC) projections<sup>5</sup>, is likely to experience warming above the global mean. Anything beyond 37.3°C causes severe heat stress in the human body, especially among vulnerable populations. Thus, the efforts to reduce heat stress would have to increase, especially in South Asia, where the temperature is already high compared to other parts of the world. These impacts will be more severe in urban areas due to Urban Heat Island (UHI) effect (CCA, 2016)<sup>6</sup>.

The heat stress impacts can also be found in other aspects of society such as health, work productivity, and livelihoods of the economically and socially marginalized population, especially women. Thereby creating an imminent need for Climate Adaptive Heat Stress Action Plans for Vulnerable Communities in South Asia.

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<sup>1</sup> <https://www.ipcc.ch/report/sixth-assessment-report-working-group-ii/>

<sup>2</sup> <https://public.wmo.int/en/media/press-release/2021-one-of-seven-warmest-years-record-wmo-consolidated-data-shows>

<sup>3</sup> Global Climate Risk Index 2020, Germanwatch

<sup>4</sup> Climate Change and Heat-Induced Mortality in India, Climate Impact Lab 2019

<sup>5</sup> Fourth Assessment Report (AR4) (IPCC 2007#)

<sup>6</sup> De Sherbinin, A.; Schiller, A., and Pulshiper, A. (2007) The vulnerability of global cities to climate hazards. *Environment and Urbanization*, Vo. 19, issue 1, pp39-64.

The climate-sensitive Heat Action Plans will help the cities in establishing pathways required for heat adaptation by developing strategies for vulnerable groups, building stakeholder capacity, and sharing learning at the regional level.

## **1.2 About the Session**

Integrated Research and Action for Development (IRADe), in association with South Asia Meteorological Association (SAMA) organised a Session on “Climate Adaptive Heat Stress Action Plans for Vulnerable Communities in South Asia” at the second Gobeshona Global Conference (GGC2) hosted by International Centre for Climate Change & Development (ICCCAD) on 30th March 2022.

The session was chaired by Prof. Ajit Tyagi, senior Advisor IRADe & Former Director General, IMD. The inaugural remarks were delivered by Prof Jyoti K. Parikh, Executive Director, IRADe. The thematic presentation was made by Mr. Rohit Magotra, Deputy Director, IRADe and the panelists included Dr. Vikas Desai, Honorary Director, Urban Health and Climate Resilience Center of Excellence (UHCRCE), Mr. Ramiz Khan, Urban Advisor, Red Cross Red Crescent Climate Centre, Mr. Anup Kumar, Sr. Consultant- Drought and Heat Wave, National Disaster Management Authority (NDMA), Mr. Polash Mukerjee, Lead, Air Quality & Climate Resilience, Natural Resources Defense Council (NRDC)

The session was attended globally by 60 plus climate change experts and practitioner’s participants. This session deliberated about the impacts of heatwave on health; economic and non-economic effects on vulnerable communities in South Asia. It also shared tools and options available to build the capacities of the local/State/National governments to manage heatwaves and address the challenges faced in the implementation of the heatwave.



**Prof. Jyoti Parikh, Executive Director, IRADe**

Prof. Jyoti Parikh delivered the inaugural remarks. Welcoming all the speakers and participants to the session, she introduced about IRADe and shared that it is an independent advanced research institute that focuses on effective action through multidisciplinary and multi-stakeholder research to arrive at implementable solutions for sustainable development. She highlighted that the growing impacts of climate induced heatwaves have created a need for Climate Adaptive

Heat Stress Action Plan. She deliberated on various methodologies and approaches, potential adaptive measures like heat adaptive urban infrastructure, nature-based solutions, vernacular architecture, passive cooling techniques, and early warning systems.



**Prof. Ajit Tyagi, Senior Advisor, IRADe & Former DG, India Meteorological Department (IMD)**

Prof. Ajit Tyagi introduced and explained that Heat Action Plans need a much more targeted approach as heatwave often results in mortality and impacts people's health, livelihood, and productivity. He highlighted that the heatwave has emerged as a significant weather-related natural hazard. Given ongoing global warming and climate projections, it is critical to assess the increase in temperatures and the associated increase in the severity and duration of heatwaves to initiate necessary mitigation and adaptation measures. He mentioned that the focus now needs to shift to the determination of heat thresholds based on the local capacity and existing geography, especially in South Asian countries. As these countries are highly vulnerable to heat waves because of their geographical location in the tropic and their socioeconomic conditions (as per Poverty and Shared Prosperity Report, 2018, 47 percent of the population is under poverty in South Asia). He further added that within the city, stark temperature differences are observed due to urban heat islands. Therefore, there is a need to identify vulnerable areas and populations and action points can be designed according to local needs especially at the ward level.



**Mr. Rohit Magotra, Deputy Director, IRADe**

Mr. Rohit Magotra highlighted the need to focus on the cross-country approach across South Asia. The templates for developing these plans are available and should be used by the respective decision-making authorities for developing heat action plans. He emphasised on the needs for the development of heat stress thresholds at the district/city/province level, which are essential to issue heatwave alert/early warning. Describing the comprehensive work done by IRADe in designing and developing first ward level heat action plans in South Asia. he shared that IRADe is working on improving the management of heat stress risks in India by helping cities develop spatially differentiated (ward-wise) gender-sensitive Heat Stress Action Plans (HSAPs). The process of development of Heat Action plan includes Heat Stress Impact Research, Thermal Hotspot Mapping,

Evaluation of Climatological Variations in Summers, enabling Stakeholder Engagement, aiding in Capacity Building and Sensitization, Drafting Heat Stress Action Plan, Dissemination, and Outreach Activities. He stated that Heat Action Plan is a powerful tool to arrest the mortality and morbidity due to heatwave. The action plans should focus on capacity building, and health emergency preparedness and should include traditional local knowledge and practices for effective action. He focussed on developing a monitoring mechanism to evaluate the implementation of the Heat Action Plan in short-, medium- and long-term time frame to build city's preparedness, mitigation, and response.

**Presentation link:**

<https://drive.google.com/file/d/1moPdoocmVMQ2HpEVqhHmFjAmSXIEoulq/view>



**Dr. Vikas Desai, Honorary Director, Urban Health and Climate Resilience Centre of Excellence (UHCRCE)**

Dr. Vikas Desai shared the Heat and Health Action Plan experience of Surat city. She stressed the need for local action and a local approach rather than generalising the action points. Taking the example of a coastal city such as Surat, she described that the heat standards need to be localised as during heatwave in addition to the high temperatures, humidity also becomes a critical factor. The national standards can act as guidance but there is a need for a localised approach. She discussed the importance of health services to handle heatwave consequences in both public and private sector at various levels including primary health centres, hospitals and private physicians. She presented that several action points were released by the Surat Municipal Corporation to the hospitals and Urban Health Centre (UHC's) in response to the recent heat waves in Surat. such as Heat index, icepacks, adequate medicines, adequate drinking water and most important maintaining records of the patients. etc. She shared the Surat city's one of its kind surveillance system – Surat Disease Control (SDC) to record day-to-day heatwave related morbidity. It is one of the essential factors in deciding interventions. It involves in total 76 UHCs and 375 private hospitals.

**Presentation Link:** [https://docs.google.com/presentation/d/17JnWOHmiv4gRZUTQO4AX-L1fYYPWZ\\_Sj9/edit#slide=id.p1](https://docs.google.com/presentation/d/17JnWOHmiv4gRZUTQO4AX-L1fYYPWZ_Sj9/edit#slide=id.p1)



**Mr. Polash Mukerjee, Lead, Air Quality & Climate Resilience, Natural Resources Defense Council (NRDC)**

Mr. Polash Mukerjee focused on the need to bring back the traditional solutions, and invest in efficient passive cooling techniques and energy efficiency solutions. He discussed that convergence with local climate actions is essential and it should be integrated into a unified approach to build local-level strengths. He highlighted the use of GIS and Spatial digitisation in analysing the trends. There is a need for spatial representation of the severity and associated risks at city level to understand and plan focused action. Hence, the need to spread outreach to local communities and authorities and proactively involve the media for improved advocacy becomes very important.



**Mr. Anup Kumar, Sr. Consultant- Drought and Heat Wave, National Disaster Management Agency, National Disaster Management Authority (NDMA)**

Mr. Anup Kumar's presentation highlighted that India is experiencing a growing trend of heatwave where the number increased from 9 states to 23 states from 2015 to 2019. This is mainly due to various reasons, including inadequate data, insufficient institutional mechanism, and lack of real-time information to tackle the risk. He shared that Heat Actions Plans have effectively brought down the Heatwave related mortality through capacity building and health emergency preparedness for practical actions. NDMA has proactively been involved in reducing the heatwave effects such as seasonal outlook advisory, cool roofing, sensitization, and special advisories.

**Presentation link:**

<https://docs.google.com/presentation/d/1IF9MVbPPWhZdJdWODNDkgHIR4zgtPYET/edit#slide=id.p1>



**Mr. Ramiz Khan, Urban Advisor, Red Cross Red Crescent Climate Centre**

Mr Ramiz Khan shared the work done by Red Cross Red Crescent Climate Centre in the cities of Nepalgunj in Nepal; Rajshahi, and Dhaka in Bangladesh. Sharing concerns about the rising heatwave in the regions, he emphasised that identifying the heat threshold, hotspot mapping at the ward level, and the vulnerable groups helps develop an effective Heat Action Plan. It also supports in prioritising critical actions based on the identified locations and vulnerable populations in the city. He shared that a policy brief was shared with key stakeholders to disseminate project's key messages. A special Heat Communication Guide was also developed for the cities to help build a key understanding of the targeted groups. For this purpose, IEC materials were developed in the local languages that suggested local solutions.

**Presentation Link:**

[https://docs.google.com/presentation/d/1MS35Q-LjeYrNGB\\_es7iNudk72Z-Mg\\_e8/edit#slide=id.p1](https://docs.google.com/presentation/d/1MS35Q-LjeYrNGB_es7iNudk72Z-Mg_e8/edit#slide=id.p1)

The session concluded with a Vote of Thanks by Ms Nimisha Jha, Senior Research Analysts, IRADe.

## **2. Key Messages Emerging from the session**

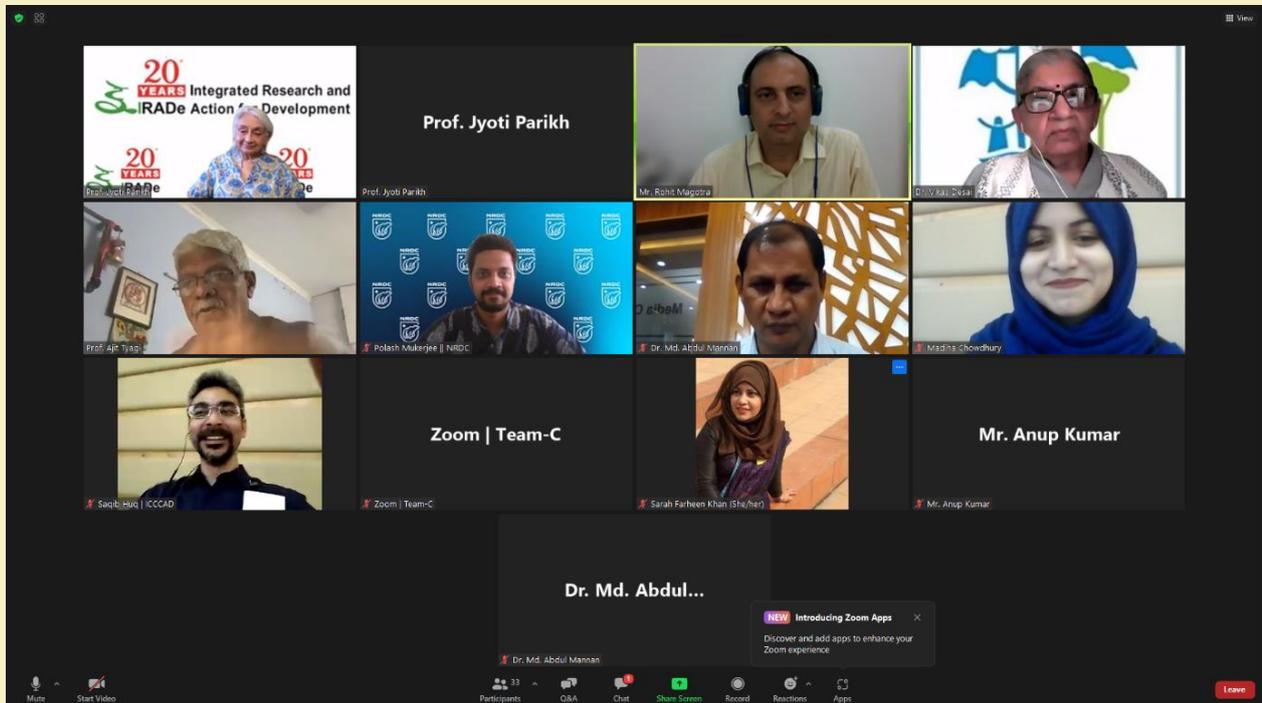
1. With rising in maximum and minimum temperatures, heat waves have become frequent in South Asia. This region is highly vulnerable to heatwaves, especially for the vulnerable groups such as urban poor, women, infants, children, senior citizens, and people with co-morbidity. Heat Action Plans for the South Asian Countries are an important adaptation measure which South Asian countries should prioritise. The templates for developing these plans are available and should be used by the respective decision-making authorities for developing heat action plans.
2. Heat Stress Thresholds need to be developed at district/city/province level which are important to issue early heatwave alert.
3. HAPs need local actions and local approaches as heat thresholds vary between intercity and intra city. Within the city, stark temperature differences are observed due to urban heat islands. There is a need to identify vulnerable areas and populations and accordingly design action points according to local needs.
4. The networks like the South Asian Heat Health Information Network (SAHHIN) should be strengthened within the region for capacity building, collaboration, and knowledge exchange for adaptation and mitigation interventions in South Asia.
5. Heatwave action plans should have a focus on capacity building, and health emergency preparedness and should include traditional local knowledge and practices for effective action.
6. The heat affects mortality and affects the livelihood, productivity and health of individuals. The data collection of its effect needs to move beyond the category of mortality and morbidity. It is observed that even with the increasing instances of heat waves, there is no streamlined platform reflecting the heat mortality. The data on total mortality is still extrapolated to calculate the extreme heat effects. There is a need for a more targeted approach to measure and understand the gravity and take respective measures in the field.

## **Annexure**

### **Session Agenda**

<b>Time of Activity (in hrs)</b>	<b>Facilitator/Team members</b>	<b>Description of Activity</b>
14:30-14:40	Prof. Ajit Tyagi, Senior Advisor, IRADe & Former DG, India Meteorological Department (IMD)	Session Chair
14:40- 14:45	Prof. Jyoti Parikh, Executive Director, IRADe	Inaugural Remarks
14:45-15:05	Mr. Rohit Magotra, Deputy Director, IRADe <b>Topic:</b> Climate Adaptive Heat Stress Action Plans for Vulnerable Communities in South Asia	Thematic Presentation
15:05-15:15	Dr. Vikas Desai, Urban Health and Climate Resilience Center of Excellence (UHCRCE) <b>Topic:</b> Locally led Actions to mitigate heat stress (PPT)	Panelist
15:15-15:25	Dr. Md. Abdul Mannan, Meteorologist, BMD & member of South Asian Meteorological Association (SAMA)	Panelist
15:25-15:35	Mr Anup Kumar, Sr. Consultant- Drought and Heat Wave, National Disaster Management Agency, National Disaster Management Authority (NDMA) <b>Topic:</b> Heatwave Management in India	Panelist
15:35-15:45	Mr.Polash Mukerjee, Lead, Air Quality & Climate Resilience, Natural Resources Defense Council (NRDC) <b>Topic:</b> “HAPs and the way forward: Offering perspectives and lessons from NRDC ’s work in the area in India and elsewhere	Panelist
15:55-16:05	Mr. Ramiz Khan, Urban Advisor, Red Cross Red Crescent Climate Centre  <b>Topic:</b> Tools we have developed for heat actions in the region	Panelist
16:05-16:30	Prof. Ajit Tyagi, IRADe	Q & A Moderation

## Session Photograph



## Session Flyer



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Exploring Locally Led Adaptation & Resilience for COP27

### CLIMATE ADAPTIVE HEAT STRESS ACTION PLANS FOR VULNERABLE COMMUNITIES IN SOUTH ASIA

30th March 2022

2:30 PM-4:30 PM (IST)/ 04:00 AM-06:00 AM (CST)/ 09:00 AM-11:00 AM (GMT)

#### INVITED PANELISTS



**Dr Jyoti K Parikh**  
Executive Director, Integrated  
Research for Development  
(IRADe)



**Prof. Ajit Tyagi,**  
Former Director General,  
Indian Meteorological  
Department (IMD)



**Dr. Vikas K Desai**  
Honorary Technical  
Director Urban Health and  
Climate Resilience Center  
of Excellence (UHCRC)



**Mr Rohit Magotra**  
Deputy Director, ,  
Integrated Research for  
Development (IRADe)



**Mr Anup Kumar Srivastava**  
Senior Consultant, National  
Disaster Management  
Authority (NDMA)



**Mr. Polash Mukerjee**  
Lead, Air Quality &  
Climate Resilience ,  
Natural Resources  
Defense Council (NRDC)



**Dr. Md. Abdul Mannan**  
Meteorologist, BMD,  
Member South Asian  
Meteorological Association  
(SAMA)

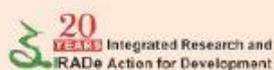


**Mr Ramiz Khan**  
Urban Advisor - Red  
Cross Red Crescent  
Climate Centre

#### Registration Link:

[https://us06web.zoom.us/webinar/register/WN\\_KLCY0hAqTKGdIXZQrKhQtw](https://us06web.zoom.us/webinar/register/WN_KLCY0hAqTKGdIXZQrKhQtw)

Conference Link: <https://conference.gobeshona.net/>



## **About CoE**

IRADe Centre of Excellence (CoE) addresses critical issues related to Urban development and climate resilience in India. It works towards capacity building, raising awareness, research training, integrating various urban development efforts and documenting best practices and policy level prescriptions. It has undertaken rapid vulnerability assessment of 20 cities, devised roadmap for mainstreaming climate and disaster resilience components in the smart city development plans of 10 cities, and piloted urban climate vulnerability index. It has developed hazard vulnerability and critical infrastructure maps for 12 cities, enabling planners and decision makers devise city disaster management strategies and resilience action plans. Dedicated towards strengthening city health resilience, IRADe CoE is actively working on developing climate adaptive Heat Stress Action Plans, Early Warning system for Dengue and Air Pollution Action Plans. Research conducted here helps various ministries and aid agencies.

## **About IRADe**

IRADe is an independent advanced research institute that aims to conduct research and policy analysis to engage stakeholders such as government, non-governmental organizations, corporations, academic and financial institutions. Energy, Climate Change, Urban Development, Poverty, Gender Equity, Agriculture and Food Security are some of the challenges faced in the 21st century. Therefore, IRADe research covers these, as well as policies that affect them. IRADe's focus is effective action through multidisciplinary and multi-stakeholder research to arrive at implementable solutions for sustainable development and policy research that accounts for the effective governance of techno-economic and socio-cultural issues. Learn More: [www.irade.org](http://www.irade.org)

## **About SAMA**

South Asian Meteorological Association (SAMA) is a non-profit scientific society of nine south Asian countries including Afghanistan, Bangladesh, Bhutan, India, Maldives, Myanmar, Nepal, Pakistan and Sri Lanka engaged in promoting regional cooperation in the field of meteorology and allied sciences. For More details: <https://southasianmet.org/>

## **Contact Us**

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