



# 6<sup>TH</sup> INTERNATIONAL CLIMATE CHANGE ADAPTATION CONFERENCE

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Pre-Conference Day: 4 Oct 2021

## Session Proceedings

Impacts of Heat Stress and Its Management

5<sup>th</sup> October, 2021



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## Acknowledgement

We would like to thank everyone who has contributed to the session on "Impacts of Heat Stress Management in South Asia" at the 6th International Climate Change Adaptation Conference hosted by The Energy Research Institute (TERI), 5th October 2021.

IRADe is thankful to the session collaborator Global Heat Health Information Network (GHHIN) and also Ms Suruchi Bhadwal for her help to conduct the session.

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We are thankful to Executive Director, IRADe Prof Jyoti K Parikh and distinguished speakers Dr Judith, Dr SC Bhan, Mr Ramiz Khan, Mr Christian Siderius and Ms Neha Bharti

Last but not least, we would like to thank IRADe team, who supported organizing the session.



Mr Rohit Magotra  
Deputy Director, IRADe

## Workshop Agenda

### Impacts of Heat Stress and its Management

Session time allocation		
Role	Speaker	Time (in min)
Chair	<b>Prof. Jyoti Parikh</b> , Executive Director, Integrated Research and Action for Development (IRADe) (IRADe)	5
Co-Chair	<b>Dr Judith</b> , <b>World Education News Reviews (WENR)</b>	5
Speaker	<b>Rohit Magotra</b> , <b>Integrated Research and Action for Development (IRADe)</b> Topic: Climate Adaptive Heat Action Plans for Vulnerable Communities	12
Speaker	<b>S C Bhan</b> , <b>India Meteorological Department, IMD</b> Topic: Managing Heat Stress in India: Early Warning, Mitigation and Adaptation Plans	12
Speaker	<b>Ramiz Khan</b> , <b>Red Cross Red Crescent Climate Centre</b> Topic: Global perspectives on heat risks and management	12
Speaker	<b>Christian Siderius</b> , <b>World Education News Reviews (WENR)</b> Topic: Piloting of a Rural Heat Stress Warning System	12
Speaker	<b>Neha Bharti</b> , <b>The Energy Research Institute, TERI</b> Topic: Managing Heat Stress during the Lockdown	12
<b>Concluding remarks &amp; Q&amp;A</b>		20
<b>Total min</b>		<b>90</b>

Integrated Research and Action for Development (IRADe) successfully conducted a Session on "Impacts of Heat Stress Management in South Asia" at the 6th International Climate Change Adaptation Conference hosted by The Energy Research Institute (TERI), 5th October 2021. The session was supported by The Energy Research Institute(TERI)

The session was chaired by Prof Jyoti K Parikh, Executive Director, IRADe, Co-chaired by DR Judith from WERN. The speakers included Dr Subhash Chander Bhan, Scientist, IMD, Mr Rohit Magotra, Deputy Director, IRADe, Ramiz Khan, Red Cross Red Crescent Climate Centre, Christian Siderius, WENR, Neha Bharti, TERI

**Chair:**

1. Prof. Jyoti Parikh, Executive Director, (IRADe),
2. Dr Judith (WENR)

**Panelists:**

1. Ramiz Khan
2. Rohit Magotra
3. S C Bhan
4. Christian Siderius
5. Neha Bharti

# Impacts of Heat Stress and its Management

## Background

IPCC's Fifth Assessment Report indicates that the last 50 years have witnessed a hike in the frequency of hot days, nights and heatwaves globally. Future projections of temperature indicate a steady increase across the three periods (the 2030s, 2050s, 2080s). According to the Global Climate, Risk Index 2020, countries in South Asia are among the most vulnerable globally to the impacts of climate change. Heat stress-induced deaths in 2100 are estimated to be about 85 per 100,000 globally and above 100 per 100,000 in lower-income groups. In addition to their profound impacts on health, heatwaves also pose significant economic and non-economic impacts affecting livelihoods and productivity. Impacts of heat stress are more severe in urban areas due to Urban Heat Island (UHI) effect (CCA, 2016). Majority of the world's population will live in cities by 2050.

The need of the Hour: In order to help cities and the vulnerable population to adapt to heat stress, it is important to develop climate-adaptive heat stress action plans and incorporate nature-based solutions. Climate adaptive heat stress plans and strategies for South Asian cities will prevent mortality as well as reduce economic and non-economic impacts of heat stress.

## About the Session

The session was chaired by **Professor Jyoti Parikh**, Executive Director IRADe. She along with her co-chair Dr. Judith (WENR) welcomed all speakers and participants to the session. She briefly mentioned IRADe's work in multiple cities across the country where urban climate vulnerability assessments were undertaken. She talked about the importance of acknowledging the increasing number of heat degree days, nights and heat waves in action towards adaptation especially in the countries of South Asia. She added that the effects of heat induced climate extremes would be worse in the region owing to poverty, lack of infrastructure and appliances such as fans, ACs and coolers. Such impacts would also be felt in urban areas where residents would be exposed to the effects of Urban Heat Islands.

She invited **Dr. SC Bhan** from IMD to present his views on Heat Stress in India, Early warning mitigation and adaptation plans. He reinforced the IPCC finding stating that temperature related extreme events have increased in 41 of the 45 inhabited regions across the globe. He discussed temperature trends at the global and country level. He explained the role of heat related extreme events in droughts, urban heat islands, wildfires, loss of livelihoods and decrease in industrial productivity. He discussed the impacts of heat waves on mortality and morbidity, effect of extreme heat on air quality. He explained how extremely high temperatures increases ozone levels which in

turn affects NOX levels. Such changes in temperatures also has a bearing on the cost of health and life insurances and increases pressure on healthcare systems. He discussed the impact of extreme temperatures on other types of disasters such as droughts, the impact of heatwaves on livelihoods, impacts on agriculture as well as other sectors such as tourism. To ward off the impact of increasing temperatures, it is important to build resilience. He then added that building resilience to heat had primarily 4 components: heat wave Early Warning Systems (EWS), heat action plans, green roofing and cool pavements and pursuing energy efficiency. He discussed that the EWS issue a heatwave forecast in the end of February which sets the ball rolling at this stage. This forecast is then revised in March or April. These EWS help in notifying people advance for heatwaves. He then discussed the heat management system in the country. This involves preparing a heat action plan, designing EWS, dealing with heat related illness and roles and responsibilities for managing a heatwave. He concluded his presentation by summarizing the initiatives of the GoI in tackling heatwaves.

Dr. Bhan was followed by **Mr Rohit Magotra** from IRADE. He started his presentation by discussing the threat of extreme heat and its impact on health and the economy. He presented examples of heatwaves in the past years and how in some regions heat waves caused forest fires and loss of bio diversity. He discussed how there was an increase in temperature and in humidity which translates into a higher wet bulb temperature. He quoted several examples from developed and developing countries which have witnessed increase in heat extremes in the recent years. He briefly talked about the components of an effective heat action plan (EWS, public awareness, capacity building of healthcare professionals and reducing heat exposure promoting adaptation). He then presented his study which involved assessing the vulnerability of Rajkot to extreme heat and consequently developing a heat action plan for the city. The study involved identification of current and future hotspot scenario in the city. A vulnerability mapping for the marginal, elderly and working population was also undertaken. The study also highlighted productivity and livelihood losses due to rising temperatures. Such changes may also trigger reverse migration in the city. This plan led to the adoption of the heat action plan which tries to minimize impacts by issuing heat wave warnings by 0.5 degree, setting up water points and distribution of ORS kits and having rapid response teams ready at the city.

**Mr. Ramiz Khan** from Red Cross Red Crescent Society, took over the discussion. He too started his presentation by highlighting findings from the IPCC report which warned of a local tipping point and the need to enhance adaptive capacity to increase temperatures. He presented findings of their study on Global Perspective on Heat Wave Management. The presentation highlighted findings related to heat thresholds and hotspot mapping in Nepalgunj in Nepal and Rajshahi in Bangladesh. Heat thresholds in both the study areas was identified in terms of extreme events (maximum daily temperature) and impact limits (Heat Index). Additionally, Mr Khan discussed some

findings of a heat action plan feasibility study for Dhaka. He shared links for accessing additional resources for partitioners as well as CSOs available on the website.

The next presenter in the session was **Christian Siderius** from WOTR on Rural Heat Stress Warning System. In rural areas working outside in the sun is increasingly becoming a concern. He discussed the agro met advisory system developed for farmers which is complemented by a heat warning systems. He mentioned how the study is still in progress and is attempting to understand the best possible way to communicate this information to the people. Additionally, it also aims to strengthen the scientific evidence of heat exposure in rural areas and its impact on productivity and health.

The last presenter of the session was **Ms Neha Bharti** from TERI. She discussed findings from the study titled Reducing Health risk of rising temperatures in South Asia. She talked about the study methodology. As part of the study respondents were asked about the usage of electronics such as coolers and ACs vis a vis their incomes. It was found that there was a higher use of ACs among masses belonging to higher income groups. Likewise, energy/electricity consumption and expenditure also showed a direct relationship with income. Electricity consumption was found to be particularly high during the period where employees were working from home. Furthermore, findings of the study also revealed that the COVID 19 lockdown had led to an increase in energy consumption and energy expenditure in Delhi NCR.

The above session came to an end with **Dr. Judith** thanking all participants and speakers for partaking. She also thanked the organizers for providing a platform to discuss the implications of increasing temperatures.

**Quotes:**

*“Heat stress is no longer a silent killer. The adverse effects of temperatures extremes and their adverse effects on health are being recognized and considered to be key elements of climate action plans.”*– Rohit Magotra, IRADE

*“Building resilience to heat primarily has 4 components: setting up heat wave early warning systems, designing and implementing heat action plans, green roofing & cool pavements and lastly pursuing energy efficiency.”* – Dr. SC Bhan, IMD



