THE URBAN THINKERS CAMPUS 5.0

WORLD URBAN CAMPAIGN

URBAN THINKERS CAMPUS

REPORT

UTC phase 5.0 event organized by Visvesvaraya National Institute of Technology, Nagpur, India.

TACTFUL

Think innovAte aCT For Urban cLimate-change

Towards Implementation of New Urban Agenda in India

Theme of the event: Urban Heat cross-cutting with COVID-19

In Collaboration with:

India Japan Laboratory

Keio University

IIT Roorkee

RIKA

RESILIENT URBAN PLANNING + DEVELOPMENT

ARISE INDIA

FICCI

IRDR ICoE

Integrated Research on Disaster Risk International Centre of Excellence

irdr rcs Resilient communities & Settlements

Executive Summary

Since “Urban Climate Change’’ issues are one of the main challenges in the cities and often they are being ignored, the main aim of these series of campuses is to continuously discuss this issue in different cities specifically in Asian context and explore the related implementable solutions in the light of NUA and SDGs.

The campus theme focused on socially inclusive and engaging discussions with stakeholders from local government bodies, Civil Society Organisations and Private Sector. The inclusion also focused on informal settlements and the peri-urban areas so as to present a comprehensive solution. The discussions formed the basis of a participatory governance model. The action day challenge brought innovation and technology to present low-cost solutions for UHI in the scenario of COVID-19.

The threats from climate change are now commonly agreed to be inevitable. At the same time, newer insights into the vulnerabilities of urban and rural societies are being experienced due to the current pandemic of COVID-19. In recent times discussions on the city planning & economic performance of cities seem to be dominated by the concerns for managing & responding to the pandemic. A need, therefore, is eminent to address the issues out of ongoing pandemic and climate change together. **The outcome of the campus focuses on the creation of cities which are resilient to climate change and adopt practices which are environmentally safe and sustainable. The key sectors that were addressed included development policy, finance, technology, social innovation. Key challenges and lessons for managing risks from extreme events as adaptation to climate change, uncertainties, long time frame, counterfactual, attribution, measuring success.** Most of the risk assessment and management of extreme events in urban areas are focused on floods and typhoons rather than increase in heat. More evidence is needed to support adaptation to the combined effects of UHI and temperature rise due to climate change. The Urban Thinker Campus targeted the urban climate change issues with central theme of urban heat island and COVID-19 by opening a platform for action-driven discussions.

Administrative speakers dwelled upon ideas proposed by researchers and the researchers heard the challenges faced by administrators in implementation of policies and the current gaps in policy-making. The role of young and youth was emphasized. The campus also motivated the youngsters in the field of testing their solutions through government platforms.

The recent pandemic lockdown played a significant role in changing the behavior patterns of the people and reducing the frequency of transport, industrial activities, and air pollution in many cities across the world, though for a short time frame. A detailed look of the issues at a smaller level, like the city level focusing on the urban heat provides for effective research to fill the gaps. South Asia has the same landscape, same socio-cultural situation and thus they have common issues; so; a common solution can be framed for such cases. Nagpur has some leading examples of e-buses, e-rickshaws, waste segregation and treatment at source, LED street lighting, Air Quality Monitoring Sensors at crucial junctions to combat urban heat.

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KEY RECOMMENDATIONS:

The Urban Thinkers Campus was seen as a platform for stakeholders to come together and build commitments to address the emerging challenges from pandemics like COVID-19 & the Climate Change, particluarly towards UHI effects in cities. The role of youth and young professionals was emphasised. Through various deleberations during the Urban Labs, following actions were proposed:

1. The city level disaster management and development plans should include the localized risk assessment in the context of urban heat. The risk assessment can take the systems approach to include all stakeholders and to account for the cascading impact of the urban heat on the city's development.

2. City Resilience Forum, a platform for the expert urban thinkers to support the local development authorities for Disaster Risk Reduction initiatives, needs to be established for effective resilience planning & mainstreaming climate actions in development plans.

3. The city administration and the educational institutes can collaborate in raising awareness and promoting research in technology focusing on innovation and affordability along with policy innovations.

4. The innovative ideas such as temperature sensors, as proposed under innovation challenge, can be developed further to provide localised heat index with warning system and mitigation actions. This can be disseminated in form of mobile application. Such a database can then be broadened at national level.

5. The Nagpur City Corporation's initiative of promoting cycling through dedicated cycling track can be clubbed with the 'ride and reap' initiative to promote plantation and use of plastic bottles as planters so as to reuse and reduce wastage.

A. BACKGROUND:

The appalling situations from COVID-19 pandemic worldwide compounded with the issues of Urban Climate Change appear to have exaggerated the challenges for city governments & agencies to manage the urban functions & economies. The cumulative risk of the pandemic has added stress to the environment as well as the existing infrastructural support. In this campus, hosted by Visvesvaraya National Institute of Technology (VNIT), Nagpur, India with its partners aimed to find out the existing challenges in India, innovative solutions and the actions that should be taken to move towards the NUA.

The campus main theme focused on the Urban Heat Island (UHI) Phenomenon. The SDGs addressed by this campus are:

The SDGs addressed by this campus are:

1. Goal 3: good health and well-being;
2. Goal 6: clean water and sanitation;
3. Goal 9: Industry, Innovation and Infrastructure
4. Goal 11: sustainable cities and communities;
5. Goal 13: climate action.
6. SDG 17: Partnership for Sustainable Development

The campus theme focused on socially inclusive and engaging discussions with stakeholders from local government bodies, Civil Society Organisations and Private Sector. The discussions during various Urban Labs held as part of the campus also encouraged a participatory governance model for managing the eminent urban risks.

The selected theme for the Urban Campus was the Urban Heat Island with the cross-cutting theme of COVID-19. As known by now, over 90% of COVID-19 cases are observed in urban areas. The urban areas in India also face the problems owing to dense developments and general lack of open spaces. Both these aspects are also held responsible to aggravate the risk of Urban Heat Island (UHI) effect as well as spread of pandemics like COVID-19. The theme catered to enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management. One of the strategies to mitigate the UHI effect is increasing the Green and Blue spaces. Further, the issues of water and sanitation directly impact COVID-19 preventive measures.

The campus aimed to deliberate on issues of reducing the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and biomedical waste management, specifically focusing on COVID-19 waste management. Further, the campus aimed to bring together stakeholders from the government, academic, civil society and the private sector. The use of technology for innovation, information dissemination and risk communication was explored specifically for the upcoming Smart Cities. The issues & approaches highlighted through the Sustainable Developmemt Goals (SDGs) particularly, SDG 3 (Good Health & Wellbeing), SDG 6(Clean Water and Sanitation), SDG 9 (Industry & Innovation), SDG 11 (Inclusive, Safe and Resilient Cities), SDG 13 (Climate Action) and SDG 17 (Partnerships for Sustainable Development) were explored. The campus through its multi-stakeholder partnerships aimed for localization of SDGs through implementation of solutions which are local and unique to the area. The campus's idea on reducing the financial, environmental and public health costs of congestion, air pollution, urban heat island effects radiate with the aims of New Urban Agenda.

B. GOALS OF THE URBAN CAMPUS:

- Strengthen the multi-stakeholder engagement for issues of UHI
- Identify the good practices to reduce, adapt and mitigate the UHI effects.
- Increase awareness of UHI during COVID-19 pandemic and its related preventive and mitigative measures in urban and peri-urban spaces
- Create a platform for stakeholders to come together and build commitments to address the UHI effects.
- Integrate indigenous knowledge on UHI with a scientific perspective
- Bring innovative solutions from youth and young professionals to tackle the UHI effects.
- Localize SDGs related to Urban Climate Change and prepare a roadmap for policy integration on reduction and mitigation of UHI.

C. HIGHLIGHTS OF EMINENT GUEST SPEECH:

"Two most important philosophies that today's urban thinkers need to emphasise are conversion of knowledge into wealth and conversion of waste into wealth."

Hon' Mr. Nitin Gadkari,

Cabinet Minister for Road Transport & Highways and the Minister of Micro, Small and Medium Enterprises, Govt. of India

Need for sustainable development *in urban areas, especially considering the migration of 25-30% rural population to urban areas since independence.*

Public private partnership- *It is easier to find solutions by using government grants but now we need some PPP, BOT type models which will generate income that can be utilized for running smart cities. For example, in Nagpur, the land near flyover of Pardi is facilitating a 3 floor market for fruit and vegetable vendors, so instead of taking food on footpath, with a parking facility available there, the corporation can recover construction cost and generate revenue from that.*
Attracting the public private investment in a smart city project is very crucial.

Conversion of waste to wealth- *Vision and leadership of researchers can bring this idea to life. For example, the sewage water that is being sold to MSEB electricity board of the Government of Maharashtra has 2 components, the sludge and the sewage water.*
Corporation has passed a resolution that they are ready to give that sludge to farmers free of charge however; no one is ready to take it. So for organic farming, we approached NEERI and other consultants and one of them proposed using a culture wherein in the size could be reduced by 30% and by increasing NPK value, the sludge can be used as organic manure and with the 9 bio-digesters, the sewage water can be bifurcated into Methane and CO_2 and this bio-CNG can be generated.

For construction of bitumen roads, 8% plastic or rubber can be used in the mix. So, for PWD or ZP or PMGSY roads if this 8% plastic if given at the rate Rs. 25-30 kilo it doesn't make much difference as the price of bitumen is Rs. 45 per Kilo and if this plastic is supplied to PWD from the 'bachat gats', who buy it for Rs. 10-12-15 per kilo, there won't be any problem of plastic and it would be economical as well.

Gadkariji's vision is to run complete 400 buses of government and cars of mayor and commissioner including our cars and small vehicles on this bio-CNG. Organic waste is the day- to-day waste which is generated at every house, every day. We can get organic manure and bio-fertilizers from this which can be used for kitchen gardens at our homes itself and enjoy the good quality organic produce.

Medical waste generated at hospitals needs to get destroyed at the source itself.

Knowledge into wealth-through innovation, entrepreneurship, science, technology, research, skill and successful practice can help convert knowledge into wealth. Plantation of bamboo trees on a wasteland would be beneficial for the environment and it can be sold as an industrial product as well. Bamboo protects the environment and generates income too.

Construction of low-cost housing- WCL gets sand from a dump which is sold to the government at 1/3rd the market price. The NIT, NHAI, Municipal corporation uses this sand. So, by using fly ash and this sand we can further reduce the cost of construction of houses. For poor people to afford housing, we need to reduce the cost of the house by reducing construction and for 20 years we need a financial model through which they get the loan. We need to formulate a policy by which it will be attractive, lucrative and reasonably affordable. Planning needs to understand the per capita income and the economic growth of an area. If there is no paying capacity, we cannot develop a smart city. So we have to look for simple solutions and poor people's participation.

D. OTHER EMINENT SPEAKERS:

1. **Mrs. Mami Mizutori,** Special Representative of the Secretary-General and Head, UNDRR

Mrs. Mami Mizutori encouraged the Urban Thinkers by emphasizing on involvement of students in disaster risk reduction and mainstreaming youth participation.

"We are facing devastating pandemic, new heights of global heating, and new setbacks in our global goals for more inclusive and sustainable development. The past decade has been the hottest in human history. As we approach the fifth anniversary of the Paris Agreement on climate, the sad truth is that we are using our machines for 62 percent higher now than when the international climate negotiations began in 1990. The serious catastrophes around the world which are further complicated by the worst pandemic in the last 100 years. Heat waves, droughts and wildfires are inevitable in a world that is currently on track. We need to see great levels of ambition in the short term to cut greenhouse gases, if we want to limit global warming by 1.5 degree Celsius, as agreed in the Paris Agreement."
She further congratulated on organizing the series of policy labs.

2. **Dr. Mazlan Othman,** Director Regional Office for Asia and the Pacific, International Science Council, Malaysia

Dr. Mazlan Othman discussed the issues of Urban sustainability in Asia-Pacific though the systems approach to urbanization clearly drawing attention to the fact that no SDG targets have been met in the region with a specific emphasis on irresponsible production and consumption.

She emphasised on the systems of approach they take to solve urban issues. Physical/built systems, social/economic systems, ecological systems are a few to name. She also elaborated how cities are open systems, influencing and influenced by the external world via complex linkages and feedbacks.

Lastly, through her presentation she urged, her finding that we do not have enough data and indicators so see the progresses done in meeting SDGs and as to how the SGDs would be met if we have data conundrum!

3. **Prof Emily Ying Yang Chan,** Director, Collaborating Centre for Oxford University and CUHK for Disaster and Medical Humanitarian Response, China

Dr. Emily Ying-Yang Chan explained the Urban heat & health hazards. She also discussed the experiences during COVID in Hong Kong.

In her conclusion she stressed that research is urgently needed to characterize health needs and patterns to facilitate policy making in the related areas. She also emphasised the importance of impact driven, policy and program research outcomes.

4. **Dr. Rosa T. Perez,** Member of the National Panel of Technical Experts of the Climate Change Commission

Dr. Rosa T. Perez discussed the Urban Heat Stress and Climate Change Issues showcasing the examples from the Philippines.

She showcased the example of the Metro Manila area which comprises 16 cities and one municipality in context of heat health risk index. She also elaborated on the heat index, its corresponding temperature, and warning levels and impacts. Later she discussed the coping methods for heat issues provided by the department of labor and employment, Republic of the Philippines which included steps like staying indoors, preferably on lower floors, wearing light-colored clothes, drinking plenty of water, and eating small meals more often in the long term the government has programs like the National Greening Program, mainstreaming CCA and DRR into comprehensive land use planning and more.

E. PROGRAM OF THREE DAYS:

Moderator: Prof. Sameer Deshkar, Assistant professor, VNIT

Urban Lab 1 (Inaugural Session)

	Segment	**Division**
1	Welcome Remarks	Prof. P. M. Padole, Director at VNIT, Nagpur
2	Orientation Speech	Prof. Rajib Shaw, Professor and Director, India Japan Lab, Keio University, Japan and Co-Founder RIKA India
3	Special Address	Mrs. Mami Mizutori, SRSG and Head, UNDRR
4	Chief guest address	Hon' Mr. Nitin Gadkari, Cabinet Minister for Road Transport & Highways and the Minister of Micro, Small and Medium Enterprises, Govt. of India
5	Vote of Thanks	Prof. V. S. Kapse, Head, Dept. of Architecture & Planning, VNIT, Nagpur

Moderator: Dr. Ranit Chatterjee, RIKA India

Urban Lab 1 (Technical Session)

		Introduction to Speaker	**Presentation**
6	Dr. Mazlan Othman, Director Regional Office for Asia and the Pacific, International Science Council, Malaysia	1 mins	10 mins
7	Dr. Emily Ying-Yang Chan Director, Collaborating Centre for Oxford University and CUHK for Disaster and Medical Humanitarian Response, Hong Kong, China	1 mins	10 mins
8	Dr. Rosa T. Perez, Member of the National Panel of Technical Experts of the Climate Change Commission, Philippines	1 mins	10 mins
	Discussion/ Q&A		
	Lab 1 Conclusion		

Moderator: Prof. Sameer Deshkar, Assistant professor, VNIT

	Segment	**Division**
1	Session Introduction	
2	Keynote Speech	Mr. Ram Joshi, Additional Commissioner, Nagpur Municipal Corporation, Nagpur

		Introduction to Speaker	**Presentation**
3	Mrs. Norliza Hashim, Chief Executive in URBANICE Malaysia, Ministry of Housing & Local Government, Kuala Lumpur, Malaysia	1 min	10 mins
4	Dr Rajshree Kotharkar, Professor at Dept. of Architecture & Planning, VNIT, Nagpur	1 min	10 mins
5	Dr Akhilesh Surjan, Associate Professor at Charles Darwin University, Darwin, Australia	1 min	10 mins
6	Dr Anjula Gurtoo, Professor at Department of Management Studies, Chairperson, Centre for Society and Policy, Indian Institute of Science, Bangalore	1 min	10 mins
7	Dr Shiva Ji, Asst. Professor at Department of Design and Department of Climate Change Indian Institute of Technology Hyderabad, India	1 min	10 mins
	Discussion/ Q&A		
	Lab 2 Conclusion		

Moderator: Dr. Parisa Kloss, Executive Director of RUPD GbR, Bonn, Germany

	Segment	**Division**	
1	Session Introduction	Dr. Parisa Kloss, RUPD GbR, Bonn, Germany	
2	Key Note Address	Smt. Buveneswari S., Hon' Chief Executive Officer, NSSCDCL	
		Introduction to Speaker	**Presentation**
3	Mr. Jürgen Baumann, Program Head of Sustainable Urban Transport for Smart Cities in India, GIZ India	1 mins	10 mins
4	Prof. Khairul Nizam Abdul Maulud Head, Earth Observation Centre (EOC), Institute of Climate Change, the National University of Malaysia	1 mins	10 mins

5	Dr.Harshit Lakra, Asst Professor at Department of Architecture & Planning, IIT, Roorkee Dr. Ajanta Goswami, Asst. Prof. at Dept. of Earth Science, IIT, Roorkee	1 mins	10 mins
6	Mrs. Alokananda Nath, Technical Expert at GIZ India	1 mins	10 mins
7	Prof. Kamal Murari, Asst. Professor at School of Habitat Studies, Tata Institute for Social Sciences, Mumbai	1 mins	10 mins
	Discussion/ Q&A		
	Lab 3 Conclusion		

	Segment	**Division**
1	Welcome and introduction of Panelists	
2	Urban Lab Summaries	Dr. Ranit Chatterjee, RIKA, India
3	Initial Remarks by the Panelists	5 mins each
4	Open forum	
5	Session conclusion	
6	Feedback from participants	
7	Valedictory note	

Panelists

	Speakers
1	Mrs. Sri Sofjan, Senior Program Advisor and Strategist UN-Habitat Advisory Group on Gender Issues (AGGI), Huairou Commission
2	Mrs. Vaishali Nandan, Project Head, Climate Smart Cities, GIZ India
3	Mr. Radhakrishnan B., Municipal Commissioner, Nagpur
4	Prof. Rajib Shaw, Professor and Director, India Japan Lab, Keio University, Japan and Co-Founder RIKA India
5	Mr. Pradeep Khatiwada, Chair, UINSPIRE Alliance

F. SUMMARY OF EACH DAY:

Day 1

The first day started with a welcoming session by Prof. P. M. Padole, Director at VNIT, Nagpur and presentation of the campus agenda by Moderator Prof. Sameer Deshkar, Assistant Professor VNIT, Nagpur. A keynote speech was delivered by the Chief Guest, Hon' Mr. Nitinji Gadkari, Cabinet Minister for Road Transport & Highways and the Minister of Micro, Small and Medium Enterprises, Govt. of India, wherein he highlighted the need for employing Public Private Partnerships and BOT models for sustainable development and emphasized on revenue generation by combining ecology with economy to attract investments. He also discussed the issues relating to management of waste at source, especially the bio-medical waste and further detailed how waste can be used as a resource and provide economic solutions to the lower classes of the society. In conclusion, he called for conversion of knowledge into wealth and waste into wealth for smart development, emphasizing that a poor man's participation, economically viable solutions and maximum comfort to people by and large *are* key factors for smart development.

Further, an Orientation Speech by Prof. Rajib Shaw, Professor and Director, India Japan Lab, Keio University, Japan and Co-Founder RIKA India called attention to risk related issues and uncertainty due to climate change further discussing the heatwave in urban areas followed by water issues and urban rural differential water stress. He also shared the three key points - Smart Governance addressing the Urban-Rural Partnerships and collective resilience; Educational awareness involving voluntary work and Technology focusing on innovation and affordability by presenting examples from Japan.

Special address by Mrs. Mami Mizutori, Special Representative Secretary General and Head, UNDRR encouraged the Urban Thinkers by emphasizing on involvement of students in disaster risk reduction and mainstreaming youth participation. She also discussed the heat waves as a hazard which impacts health, productivity and environment beyond physician damages highlighting the need for leveraging abilities of researchers to support resilience planning.

This inaugural session was concluded by Vote of thanks from Prof. V. S. Kapse, Head, Dept. of Architecture & Planning, VNIT, Nagpur followed by the technical session.

The second half continued with Urban Lab 1 titled as 'Challenges for Managing Urban Climate Change' with the introductory remarks by the moderator Dr. Ranit Chatterjee, RIKA India. The key speakers mainly focused on themes of Urban Heat Island effects touching upon the COVID-19 pandemic and existing challenges.

The first presentation by Dr. Mazlan Othman, Director Regional Office for Asia and the Pacific, International Science Council, Malaysia discussed the issues of Urban sustainability in Asia-Pacific though the systems approach to urbanization clearly drawing attention to the fact that no SDG targets have been met in the region with a specific emphasis on irresponsible production and consumption. She also stated that the region is regressing in resilience to disasters. Lastly, she discussed the issue of data conundrum, the unavailability of data which makes it difficult to come up with clear conclusions.

Further Dr. Rosa T. Perez, Member of the National Panel of Technical Experts of the Climate Change Commission discussed the Urban Heat Stress and Climate Change Issues showcasing the examples from the Philippines. She also presented the key challenges and lessons for managing risks from extreme events as adaptation strategies and long-term solutions for climate change closing with the remarks that more evidence is required to support adaptation to combined effects of UHI and temperature rise.

The concluding presentation for the technical session by Dr. Emily Ying-Yang Chan Director, Collaborating Centre for Oxford University and CUHK for Disaster and Medical Humanitarian Response, China detailed the Urban heat & health hazards and shared the experiences during COVID in Hong Kong. She emphasized the need for urgent research in facilitating policy making in the areas of health which can be achieved through cross-disciplinary collaboration.

The second Urban Lab of the TACTFUL Day-1 sessions dealt with the topic "Research & Practices for managing impacts of Urban Heat & COVID-19 in Urban Areas". COVID-19 and Climate change are well described as global threats today. The recent pandemic lockdowns played a significant role in changing the behavior patterns of the people and reducing the frequency of transport, industrial activities, and air pollution in many cities across the world, though for a short time frame.

The lab session highlighted the advances in understanding and responding to the positive and negative impacts of the pandemic, emerging cross cutting issues, and approaches that could possibly be interwoven into climate change resilience strategies. The session briefed on some key lessons for cities in Asia Pacific from COVID-19 together with emerging and innovative approaches towards addressing climate change, urban heat island, heat vulnerability assessment, and adaptation & mitigation techniques in built areas and urban resilience strategies.

The urban lab 2 of TACTFUL Day-1was on 16.00 hours on 9th of December 2020 with the keynote address of Mr. Ram Joshi, Additional Commissioner of Nagpur Municipal Corporation. He highlighted the plight of the migrating labour class during the lockdown and difficulties faced by them in reaching their homes and after losing their jobs in cities. Owing to a very unique situation of the Nagpur city in central India that is traversed by transportation routes connecting East-West & North-South parts of the country, a large force of migrants were witnessed by the city. The focus of the local authorities was to extend the daily life support in addition to the medical assistance to these migrants along with other civic issues. According to Mr. Joshi, during the summer time, when the peak temperature rose to around 43^0-45^0 C, it became difficult to provide help to people, or relocate them. But eventually, with constant efforts they were successful.

He also addressed that there is a need to complete the health pyramid, as Nagpur is already fortunate to have the apex medical institute- AIIMS and by including various levels of health facilities. He quoted examples of national health missions and women health workers. He also stated that he realised this need for completion of the health pyramid for better health security while working closely with the governmental organisations regarding the COVID issues.

Mrs. Norliza Hashim who is the Chief Executive in URBANICE Malaysia, Ministry of Housing & Local Government, Kuala Lumpur, Malaysia, enlightened the attendees with the situation in Malaysia. She threw light on the important statistics of COVID in the country and the ways how Malaysia always sticked to the SGD goals. She also addressed the issue of COVID- 19 in highly urbanized areas of the nation, where 78.9% of people are living in urban areas.

Most importantly, she highlighted the 'COVID-19 Bill 2020' passed in Malaysia, for temporary measures and for the coordination amongst the ministries. This bill will remain active for 2 years or till the situation requires.

She stated that the key challenge Malaysia is facing currently is unemployment and few agencies and ministries are addressing this issue thereby making efforts to improve the economy as well. There are inclusive economy recovery plans for the revival of economy and ecosystems together, she stated.

She also mentioned due to living in confined spaces, emotional stress still remains a challenge and they are actively looking into it. She agreed with Mr. Ram Joshi on the improvement of environmental conditions during lockdown, which possibly is the only positive thing out of the pandemic. As Nagpur has witnessed cleaner lakes, Malaysia has also seen clearer water bodies in the greater Klang valley and other areas.

She also focused on low carbon development in urban planning and their commitment to carbon emission reduction. Currently 52 local governments have signed for the LCCP program. She highlighted 7 key challenges-

1. policies and direction,
2. implementation and execution,
3. funding and financing,
4. low carbon development in urban planning,
5. community participation,
6. Capacity, capability and readiness
7. Data for GHGs recovery

She concluded by mentioning that urban thinkers campus is a great platform for discussing global urban issues and for common solutions.

The third speaker of the session was Dr Rajshree Kotharkar, Professor at Dept. of Architecture & Planning, VNIT, Nagpur. She provided a detailed look of the issues at a smaller level, like the city level focusing on the urban heat, research and gaps, and how policy and practices can be embedded.

She threw light on the chronology and nature of actions taken for urban heat island. In the 20th century the responses were only in the form of warning systems but now all over the world there are different levels of action plans. One such model action plan is Heat Health Action Plan HHAP, by WHO.

She also urged that considering similarities in landscape, socio- cultural situation, and urban issues in South Asian countries, a common framework for managing adversities could be formulated for these regions.

She presented crucial data of heat waves measurement using various indices across many south Asian cities. She also focused on granularity of the data.

She also spoke about UHI magnitude and LULC change and synergy between them. Her findings are that diagnosis and and mitigations according to that diagnosis are missing. For cities of similar population, size and character, model frameworks can be framed for south Asian cities. These can act as guidelines for policy makers.

Lastly, she shared morphology based mapping to club zones of similar microclimate. The study was based on Stewart and Oak classification. She concluded with a comparison of existing policies national and local level in major cities.

Dr. Akhilesh Surjan, associate professor at Charles Darwin University, Australia discussed about the heat waves in Australia. He highlighted the WHO estimates for Australia that by 2050, there would be at least 605 additional deaths in Australia and NZ by heatwaves. He emphasised that the health impacts of COVID-19 are well known but those of climate change are less so. As the globe warms, humans are experiencing increasing heat emergencies, wildfires, severe weather, trouble with food yields and potential for novel infectious diseases and that we have to 'multi-solve', i.e., manage COVID 19 and climate change at the same time.

Dr Anjula Gurtoo, Professor at Department of Management Studies, Chairperson, Centre for Society and Policy, Indian Institute of Science, Bangalore, discussed the 'Newer perspectives' of climate change, global warming and COVID-19. She focused mainly on the discourse shift in climate change domain from being a scientific phenomenon to perception led movement, human caused problems to political agendas and political causes, sceptics versus the scientific community, adaptation and mitigation.

Day 2

Day 2 of the Urban Thinkers Campus started with **Lab 3** wherein the theme was "Showcasing **the urban climate change initiatives in Asia**". The good practices were showcased from different parts around India and Asia with an aim of learning from their cases and identifying the existing gaps.

Dr. Parisa Kloss, RUPD GbR, Bonn, Germany coordinated the session introduction and proceedings and the technical session began with a keynote presentation by Mrs. Pranita Umredkar on behalf of Smt. Buveneswari S. CEO, NSSCDSL on 'Nagpur Smart City - Climate Resilient Action Planning' wherein she detailed the initiatives taken by the Municipal Corporation for designing a comprehensive action plan for Nagpur city to deal with the issues of mobility, environment, governance and smart living. She highlighted the key projects taken up in Nagpur by putting forth the examples of E-buses, E-rickshaws, Waste segregation and treatment at source, LED street lighting, Air Quality Monitoring Sensors at crucial junctions to name a few. She also mentioned about the participation of Nagpur in

MoHUA's Street for People challenge to promote walkability by introducing vehicle free zones. Further, she discussed the future plans for Nagpur as Model Solar City and Nag River Pollution abatement Plans for the city's river concluding with the concept for Urban Biodiversity Map of Nagpur.

In line with the presentation, the Program Head of Sustainable Urban Transport for Smart Cities in India, Mr. Jürgen Baumann from GIZ also emphasized particularly on Integrated Sustainable Urban Transport Systems for Smart Cities, and presented the Case studies from Odisha, Tamil Nadu and Kerala (India) which were supported by GIZ in order to speed-up construction of sustainable transport infrastructures and integrate various modes for seamless travels. He discussed how global partnerships can provide a support at different levels for capacity building against the physical implementation.

Prof. Khairul Nizam Abdul Maulud, Head, Earth Observation Centre (EOC), Institute of Climate Change, the National University of Malaysia discussed about Energy Consumption and Spatial Assessment of Energy Efficiency in Malaysia and how the country is employing renewable energy technologies and assessment methods (GIS Models) as a solution to excessive Energy consumption and resultant GHG Emissions.

Contrary to the technical details, Dr.Harshit Lakra, Asst Professor at Department of Architecture & Planning, IIT, Roorkee discussed about leveraging knowledge institutions in addressing Urban Agendas, Climate Change and building resilience at local level showcasing the projects taken up by IIT Roorkee with youths and young population. She also highlighted the role of Higher Education Institutes and Partnerships with Community and Urban Local Bodies in engaging locally for knowledge transfer.

Dr. Ajanta Goswami, Asst. Prof. at Dept. of Earth Science, IIT, Roorkee discussed a project on assessment of surface heat island variations across different climatic zones, an empirical study over 150 Indian cities which showed temporal trends of variations in day and night temperatures due to urban heat and that at times night temperatures are more than day temperatures in some cities due to the activities contributing to UHI.

Climate Smart City Projects by GIZ were showcased by Ms. Irina Riehle, Advisor, Climate Smart Cities Project and Mrs. Alokananda Nath, Technical Expert at GIZ India wherein the city regional and national level projects in India were discussed for explaining initiatives of participatory planning through urban design thinking methods. Implementation and capacity development and assessment frameworks for climate smart cities (CSCAF) were also detailed out in this presentation.

In their concluding presentation, Prof. Kamal Murari, Asst. Professor at School of Habitat Studies, Tata Institute for Social Sciences, Mumbai and Dr. Shreya Banerjee discussed the Heat exposure in India and how the resident psyche influences the creation of pockets of Urban Heat through a case study of Dharavi, Mumbai.

Day 3

Day 3- Plenary session

Day 3 started with the plenary session which was moderated by Ranit Chatterjee, co-founder of RIKA. First part of the session consisted of presentations for the innovation challenge by the participants and in the later part there was a brainstorming panel discussion. The introductory remarks were given by Mr. Radhakrishnan B. He began with saying that urban issues and challenges are a topic priority for the government as well as all the stakeholders of the society. He emphasized when we say 'urban' it involves the infrastructure as well as the living environment we offer to the residents and the upcoming generation. India is a developing economy, and it is bound to grow vibrantly on account of the targets and the kind of democracy & government India has. But while doing so, it is important that the SDGs go hand in hand. Urban think tanks are the best way for inclusive growth and every city must have discussions of the current issues by organizing such innovation rounds. Time and again they should work as a bridge between citizens and the urban local bodies.

Prof. Rajib Shaw threw light on the fact that each and every idea is important, although at a preliminary stage, it can bloom if provided a platform. He also elaborated on the importance of youth participation. He recalled the remarks quoted by Hon. Mr. Nitin Gadkari- "transforming knowledge to wealth, waste to wealth". Prof. Rajib Shaw believes knowledge transformation, innovation and public-private partnership is important. Synergy between the stakeholders is vital and the traditional knowledge needs to be clubbed with the innovations.

G. KEY LEARNINGS:

The campus was seen as a platform for stakeholders to come together and build commitments to address the UHI effects. Speakers from Administration deliberated upon ideas proposed by researchers and the researchers received insights into the challenges faced by administrators in implementation of policies and the current gaps in policy-making. The role of young and youth was emphasized. The campus also motivated the youngsters in the field of testing their solutions through government platforms.

Most of the risk assessment and management of extreme events in urban areas are focused on floods and typhoons rather than increase in heat. More evidence is needed to support adaptation to the combined effects of UHI and temperature rise due to climate change. Systems approach with physical/built systems, social/economic systems, ecological systems has been highlighted to solve urban issues. Research is urgently needed to characterize health needs and patterns to facilitate policy making in the related areas. The example of heat index with its corresponding temperature and warning levels and impacts is an important coping methods for heat issues provided by the department of labor and employment, in Philippines.

The recent pandemic lockdown played a significant role in changing the behavior patterns of the people and reducing the frequency of transport, industrial activities, and air pollution in many cities across the world, though for a short time frame. A detailed look of the issues at a smaller level, like the city level focusing on the urban heat provides for effective research to fill the gaps. South Asia has the same landscape, same socio-cultural situation and thus

they have common issues; so; a common solution can be framed for such cases. Morphology based mapping can be used to club zones of similar micro climate.

Nagpur has some leading examples of e-buses, e-rickshaws, waste segregation and treatment at source, LED street lighting, Air Quality Monitoring Sensors at crucial junctions to combat urban heat. Solutions like Integrated Sustainable Urban Transport Systems for Smart Cities were presented. The discussion on Energy Consumption and Spatial Assessment of Energy Efficiency in Malaysia and how the country is employing renewable energy technologies and assessment methods (GIS Models) provides an example of a solution to excessive Energy consumption and resultant GHG Emissions. Climate Smart City Projects by GIZ were showcased as another example of good practice.

H. WINNING ENTRIES OF INNOVATION CHALLENGE:

Three selected entries from the 22 entries received, were presented by the respective participants.

1. ADDRESSING "URBAN HEAT ISLAND" EFFECT THROUGH TECHNOLOGY

Team: Sanket Nimbalkar (Team Lead), Aayushi Godse, Kajal Rakhecha, Kamal Agrawal, Rachana Patil, Sheewani Patle

ABSTRACT

Due to Rapid Urbanization, Urban heat is increasing in the cities. We need to take measures to control it. But first we need to address the problem properly to come up with a suitable solution.

PROBLEM STATEMENT

Currently, the temperature data of a particular area is not very easily available for Urban planners, Urban designers, Policy makers, students or common man. The temperature information that is available on platforms like Google weather is the average temperature of the city. Our Goal is to make the temperature data easily available for Urban planners, Policy makers Urban designers, Architects, Landscape designers etc. so that they can design for reducing urban heat. Spreading awareness about the increasing urban heat among common man is very important. Hence our idea is to create an application that provides information about accurate temperature of any place. This goal can be achieved by installing sensors at particular intervals at stationary points in the city like street lights and Traffic signals that can collect temperature data of that area. The temperature data obtained further will be integrated with the GIS dataset, and the output will be in the form of thematic maps of temperature data.

HOW WILL IT WORK?

So as to obtain a long-term, granular data of temperature variation we can attach the temperature sensor at required height, at regular intervals.

There are some drawbacks of application of Remote

Sensing viz:

1. Expensive method especially when analyzing smaller areas.
2. Requires a special kind of training to analyse the images.
3. The information provided by remote sensing

So, our aim is to overcome these drawbacks with the help of 3 stages in which our solution will be implemented:

Stage 1. Measuring the temperature with the help of sensors installed

Stage 2. Management Information System (MIS) will process the data

Stage 3. Data is published for the end user through mobile application.

SCALABILITY

Scalability of the temperature mapping depends on the area covered by the sensors. According to the range of the sensor, the sensor is placed on a stationary object like street light, traffic signals to generate maps. The sensor could be Gravity-12c BME280 (Environmental Sensor). Firstly, the sensors were placed on a neighborhood level, after the successive results it could be replicated and implemented all over the city.

BUSINESS MODEL

The target group of the App will be the Town planners, Policy makers, Architects, Builders, and Developers etc. It will help them to decide the location of open spaces/ water bodies or to implement any other schemes to reduce Urban heat. The App will also target the General Public (especially youth) to make them aware about the urban heat & it's related issues so that it may affect their behavior towards adopting sustainable techniques to reduce urban heat.

The revenue will be generated through Advertisements, by providing paid App for Town planners, Policy makers, Architects, etc. with advanced features which will help them in the designing process.

The App can be sponsored by Government bodies or owned by Private companies (Under monitoring of Government body) or Public Private Partnership (PPP) Model can also be implemented as well. We can integrate with Softwares like ArcGIS, Revit, SketchUp and AutoCAD to help designers and planners to choose materials and design the space of the building accordingly.

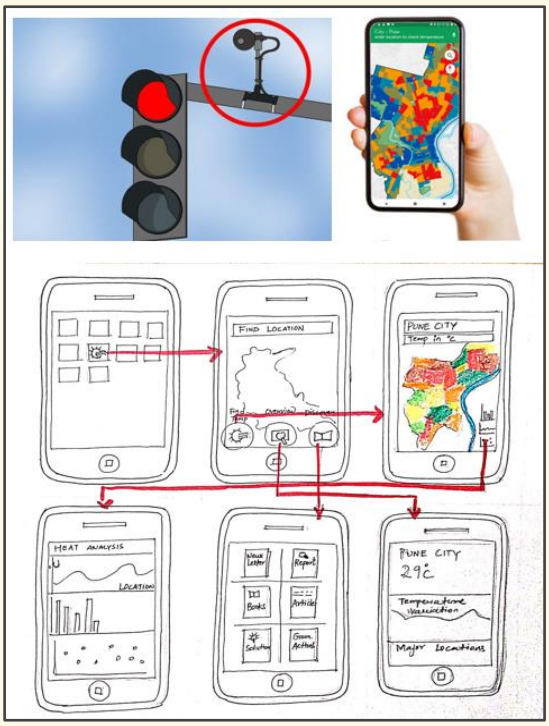

Image 1- ADDRESSING "URBAN HEAT ISLAND" EFFECT THROUGH TECHNOLOGY

2. RIDE AND REAP

Team members: Manika Ekka, Anjali Khalkho, Ankita Beck, Mary Toppo, Megha Baxla

ABSTRACT

In today's world urbanisation cannot be stopped or paused so as the efforts in saving our environment. The urban areas face most environmental changes which need to be controlled.

Ride and Reap are two different aspects joined to form a campaign. Ride is choosing bicycles over motor vehicles contributing to sustainable development by saving fuel ,reducing production of greenhouse gases, reducing air and noise pollution also setting an example in using greatest of all alternate energies the human muscle power which is a boost to body fitness.

Reap is reusing the used bottles (glass or plastic) , disposable earthen cups as planters for indoor plants such as creepers, Ivy plants, CAM plants also promoting kitchen gardening as the building dwellers do not have access to the ground. Plants growing in reusable planters in water do not need much care and maintenance is also easy. Painting of the planters will increase its aesthetic values. It will also be a curriculum for children and artists interested in paintings.

The campaign suggests riding bicycles over motor vehicles on weekends (Saturdays and Sundays) .Riding the bicycle even for a few hours will be of immense benefit. Then people can upload their pictures or videos in the Ride and Reap page on social media Accounts (Facebook and Instagram) as a contribution towards saving the environment thereby becoming a member. Then they will receive plants in the reusable planters and a certificate

of appreciation for their participation in the campaign. The plants for giveaways will be shared from one's own garden which proves to be of low cost or no cost. As a contribution, members can donate plants and share about Ride and Reap concept. People who do not have bicycles but are interested can request for the plants or use the cycle from the government chartered cycle scheme.

When the members will increase there will be experience and knowledge sharing sessions regarding flower gardening, kitchen gardening, medicinal plants and plant care. Competitions (essays, paintings, best out of waste) and exhibitions at monthly intervals will be organised for all the age groups.

The main objective of this campaign is "SPREADING GREENERY, SPREADING IDEA and SPREADING KNOWLEDGE". Therefore, the campaign will prepare everyone not only for the present challenges in context to urban climate change but will also be a prior solution to curb the environmental issues in future.

Image 2- RIDE AND REAP

3. URBAN HEAT REDUCTION BY ZEOLITE IMPROVED CEMENT MADE FROM FLY ASH

Team: Saumyajeet Mukherjee, Rhythm Aich

ABSTRACT

Urban areas worldwide have a significantly higher temperature than its surrounding areas. This is caused by a lot of issues like dark, heat absorbent surfaces, pollution from vehicles, industries and poor wind circulation. The speed and scale of urbanisation are only worsening the situation. One of the major causes of urban heat is the increase in the amount of CO2 in the atmosphere which is a major greenhouse gas. This CO2 traps heat and increases the overall temperature. This solution aims to lower the amount of CO2 in the atmosphere.

This solution aims to produce zeolite improved cement (which absorbs CO2) and manufacture it from a particulate waste matter, fly ash, which itself is a major environmental pollutant. Fly Ash is a suspended particulate matter that is a byproduct of coal-fired power plants and many other industries. It is the cause of many pulmonary health hazards. There is a worldwide problem disposing of this fly ash waste and this solution also targets this issue. The primary raw material in this solution, fly ash, can be sourced easily and inexpensively from nearby thermal power plants, brick kiln industries, and even cement

industries themselves. This fly ash will be processed to make zeolite which will be further incorporated in the cement manufacturing process as supplementary cementing material.

The cost of zeolite synthesized from fly ash is proven to be approximately one-fifth of the cost of '13X Zeolite' commercially available in the market. Apart from absorbing CO2, zeolite has other benefits for cement like

- It increases the compressive strength of cement.
- Zeolite enhances the durability of conventional concrete by reducing concrete permeability and mainly by improving resistance to the alkali-aggregate reaction.
- It can be properly used as an SCM in normally consolidated concrete, considering environmental protection and sustainable development.
- Absorption of CO2 by zeolite has been proven to increase the strength of cement over time.

The theory that zeolite can be produced from fly ash and that cement produced from zeolite absorbs CO2 has already been proven by multiple research papers. Even CO2 absorbing cement is used in some countries. But the zeolite that is mainly used is natural zeolite which is expensive. This solution will be incorporating these two ideas into one. This idea is now in its conceptual stage and further experimentation will be needed.

This solution focuses on making use of a waste to make a valuable product that has major environmental and economic benefits. So this solution aims to reduce urban heat by making use of another waste that is already a major environmental pollutant, thus helping to tackle two problems at the same time. This can be of major benefit in many countries where urbanisation and sustainability need to go hand in hand.

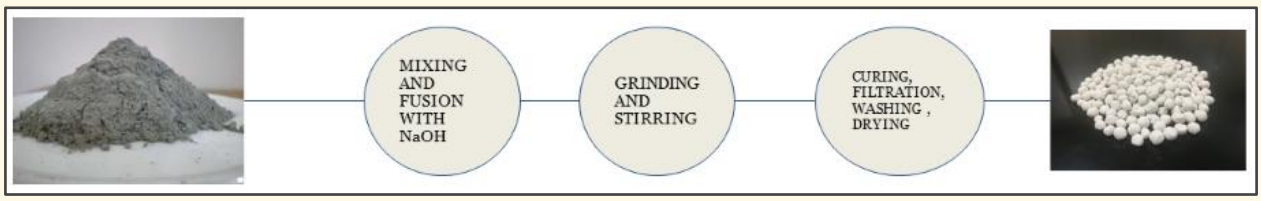

Image 2- URBAN HEAT REDUCTION BY ZEOLITE IMPROVED CEMENT MADE FROM FLY ASH

I. MEDIA:

(Media Clippings..)


THE URBAN THINKERS CAMPUS 5.0
WORLD URBAN CAMPAIGN
URBAN THINKERS CAMPUS
Website: shorturl.at/adquL
Hosted by: Visvesvaraya National Institute of Technology, Nagpur (MH) India
#UTC_INTACT
Urban Heat with the cross-cutting theme of COVID-19
DAY 1- URBAN LAB 1
Challenges for Managing Urban Climate Change
Date: Wednesday, 09 December 2020
Time: 2:00PM -:3:30PM IST
TACTFUL
Think innovate a CTI for Urban climate-change
Towards Implementation of New Urban Agenda in India
Urban Lab 1(Inaugural Session)
Chief Guest
HON' MR. NITIN GADKARI,
Cabinet Minister for Road Transport & Highways and the Minister of Micro, Small and Medium Enterprises, Govt. of India
Special address
Mrs. Mami Mizutori,
SRSG and Head, UNDRR
Orientation speech
Prof. Rajib Shaw,
Professor and Director, India Japan Lab, Keio University, Japan and Co-Founder RIKA India
Convenor
Prof. Sameer Deshkar,
Assistant Professor at Dept. of Architecture & Planning, VNIT, Nagpur
Patron
Prof. P. M. Padole,
Director at VNIT, Nagpur
Principal convenor
Prof. V. S. Kapse,
Head, Dept. of Architecture & Planning, VNIT, Nagpur
Urban Lab 1 (Technical Session)
Moderated by:
Dr. Ranit Chatterjee,
RIKA India
Speakers:
Dr. Mazlan Othman,
Director Regional Office for Asia and the Pacific, International Science Council, Malaysia
Dr. Emily Ying-Yang Chan
Director, Collaborating Centre for Oxford University and CUHK for Disaster and Medical Humanitarian Response, Hong Kong, China
Dr. Rosa T. Perez,
Member of the National Panel of Technical Experts of the Climate Change Commission, Philippines
The lab 1 highlights the major concerns in Asia Pacific with respect to climate change with focus on urban heat mitigation. existing development scenarios having bearance on urban climate, factors that accentuate Urban Heat Island (UHI) effects, policy implications, further responses and strategies necessary for urban climate change resilience, emergent concepts like Green Recovery, Urban-Rural Nexus and the like shall be touched upon in this session.
UTC Registration Link: shorturl.at/hpxKO
Innovation Challenge Registration: shorturl.at/dhjJ5


THE URBAN THINKERS CAMPUS 5.0
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URBAN THINKERS CAMPUS
Website: shorturl.at/adquL
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#UTC_INTACT
Urban Heat with the cross-cutting theme of COVID-19
DAY 1- URBAN LAB 2
Research & Practices for managing impacts of Urban Heat & COVID-19 in Urban Areas
Date: Wednesday, 09 December 2020
Time: 3:45 PM - 5:15 PM IST
TACTFUL
Think innovate a CTI for Urban climate-change
Towards Implementation of New Urban Agenda in India
Key Note Speech
Mr. Ram Joshi,
Additional Commissioner, Nagpur Municipal Corporation, Nagpur
Speakers:
Mrs. Norliza Hashim,
Chief Executive in URBANICE Malaysia, Ministry of Housing & Local Government, Kuala Lumpur, Malaysia
Dr Rajshree Kotharkar,
Professor at Dept. of Architecture & Planning, VNIT, Nagpur
Moderated by:
Prof. Sameer Deshkar,
Assistant Professor at Dept. of Architecture & Planning, VNIT, Nagpur
Dr Akhilesh Surjan,
Associate Professor at Charles Darwin University, Darwin, Australia
Dr Anjula Gurtoo,
Professor at Department of Management Studies, Chairperson, Centre for Society and Policy, Indian Institute of Science, Bangalore
Dr Shiva Ji,
Asst. Professor at Department of Design and Department of Climate Change
Indian Institute of Technology Hyderabad, India
Urban lab 2 highlights the advances in understanding and responding to the positive and negative impacts of the pandemic, emerging crosscutting issues, and approaches that could possibly be interwoven into climate change resilience strategies. The session briefs on some key lessons for cities in Asia Pacific from COVID-19 together with emerging and innovative approaches towards addressing climate change, urban heat island, heat vulnerability assessment, adaptation & mitigation techniques in built areas and urban resilience strategies.
UTC Registration Link: shorturl.at/hpxKO
Innovation Challenge Registration: shorturl.at/dhjJ5


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Hosted by: Visvesvaraya National Institute of Technology, Nagpur (MH) India
#UTC_INTACT
Urban Heat with the cross-cutting theme of COVID-19
DAY 2- URBAN LAB 3
Showcasing the urban climate change initiatives in Asia
Date: Thursday, 10 December 2020
Time: 3:30 PM - 5:00 PM IST
TACTFUL
Think innovate a CTI for Urban climate-change
Towards Implementation of New Urban Agenda in India
Moderated by:
Dr. Parisa Kloss,
RUPD GbR, Bonn, Germany
Key Note Speech
Smt. Buvaneshwari S.,
Hon' Chief Executive Officer, NSSCDCL
Speakers:
Mr. Jürgen Baumann,
Program Head of Sustainable Urban Transport for Smart Cities in India
Prof. Khairul Nizam Abdul Maulud
Head, Earth Observation Centre (EOC), Institute of Climate Change, the National University of Malaysia
Ms. Alokananda Nath,
Technical Expert at GIZ, India
Dr. Ajanta Goswami,
Asst Prfesor at Dept. of Earth Science, IIT, Roorkee
Dr. Harshit Lakra,
Asst Professor at Department of Architecture & Planning, IIT, Roorkee
Prof. Kamal Murari,
Asst. Professor at School of Habitat Studies, Tata Institute fo Social Sciences, Mumbai
Urban lab 3 highlights the urban climate change initiatives in Asian cities with an emphasis on the innovative and resilient solutions to tackle the challenges of convergent issues.
With an aim to virtually showcase the proposed urban solutions in a clear structured Road Map, Action Plan, Roles and Responsibilities, Commitments and Priority Actions to act as tools for SDGs and New Urban Agenda (NUA) implementation, good practices will be discussed from different cities around the world to learn from their cases and identify the existing gaps and the way forward forurban India.
UTC Registration Link: shorturl.at/hpxKO
Innovation Challenge Registration: shorturl.at/dhjJ5


THE URBAN THINKERS CAMPUS 5.0
WORLD URBAN CAMPAIGN
URBAN THINKERS CAMPUS
Website: shorturl.at/adquL
Hosted by: Visvesvaraya National Institute of Technology, Nagpur (MH) India
#UTC_INTACT
Urban Heat with the cross-cutting theme of COVID-19
DAY 3
Plenary session
Date: Friday, 11 December 2020
Time: 3:30 PM – 4:40 PM IST
TACTFUL
Think innovate a CTI for Urban climate-change
Towards Implementation of New Urban Agenda in India
Panelists:
Mr. Radhakrishnan B.,
Municipal Commissioner, Nagpur
Mrs. Sri Sofjan,
Senior Program Advisor and Strategist UN-Habitat Advisory Group on Gender Issues (AGGI), Huairou Commission
Prof. Rajib Shaw,
Professor and Director, India Japan Lab, Keio University, Japan and Co-Founder RIKA India
Moderated by:
Dr. Ranit Chatterjee,
RIKA India
Mrs. Vaishali Nandan,
Project Head, Climate Smart Cities, GIZ India
Mr. Pradeep Khatiwada,
Chair, UINSPIRE Alliance
The plenary would overview the discussions that took place during the previous Urban Labs and elaborate on the emergent challenges and avenues for innovation in urban heat mitigation & COVID-19 management in Asian cities.
The key sectors that would be addressed include development policy, finance, technology, social innovation.
As an outcome of the session, an outline of the action plan for addressing urban heat challenges in Asian cities and localisation of SDGs & NUA would be formulated.
UTC Registration Link: shorturl.at/hpxKO
Innovation Challenge Registration: shorturl.at/dhjJ5