



International Conference on Mountain Cities, Climate Change and Urban Sustainability (November 6 - 8, 2017)

Organized by



Centre for Research in Rural and
Industrial Development (CRRID), Chandigarh



Asia Climate Change Education
Centre (ACCEC), Jeju, South Korea

Supported by



Indian Council of Social Science
Research (ICSSR) New Delhi



Centre for Study of Administration
of Relief (CSAR), New Delhi



Municipal Corporation,
Chandigarh



Department of Environment Studies,
Panjab University, Chandigarh

Conference Proceedings

Knowledge Partners & Associates




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International Conference
Mountain Cities, Climate Change and Urban
Sustainability
(November 6-8, 2017)

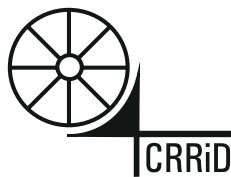
Conference Proceedings

Manoj Kumar Teotia

Conference Coordinator

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Conference Co-Coordinator



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Acknowledgments

The Centre for Research in Rural and Industrial Development (CRRID), Chandigarh successfully organized the International Conference on **“Mountain Cities, Climate Change and Urban Sustainability”** along with a **“Youth Forum for Social & Solidarity Economy, Peace and Urban Sustainability”** from November 6-8, 2017. The International Conference and Youth Forum were part of Chandigarh Climate Meet (first in the series) co-organized jointly by CRRID and the Asia Climate Change Education Center (ACCEC), Jeju, South Korea with the support from Indian Council of Social Science Research (ICSSR), New Delhi and in collaboration with the Centre for Study of Administration of Relief (CSAR), New Delhi; the Municipal Corporation Chandigarh; Department of Environment Studies, Panjab University, Chandigarh and Indian Institute of Public Administration (IIPA)-Haryana Regional Branch; NBCC, New Delhi and Utility Forms Pvt. Ltd., New Delhi which is thankfully acknowledged. We also acknowledge the support from the knowledge partners & associates such as The Working Group 05 of International Sociological Association (ISA) on Famine and Society; The Climate Reality Project India, New Delhi; the Centre for Urban Green Spaces (CUGS), New Delhi; the Association of Professional Social Workers and Development Practitioners (APSWDP), Chandigarh and UN-Habitat. We have the honour of being Conference Coordinators, Editors of the book of abstracts and Proceedings of the Conference. We are grateful for the confidence bestowed on both of us by our institute and other partner institutions in taking independent decisions regarding organization of the conference. We sincerely thank all our collaborators, supporters, resource persons, Chairs and Co-Chairs specially Dr Dai-Yeun Jeong; Dr Harjit Singh Anand, Dr Madhuri Rishi; Dr Rajeev Kumar; Dr G R Chaudhary; Dr G Parsanna Kumar; Dr Rajvir Dhaka; Shri S D Sharma; Shri Aditya Pundir; Shri Rajeev Mathur; Mr Vivek Trivedi; Shri Hitesh Vaidya; Mr Manoj Dabas; Dr K K Bhasin; Dr Purnima Chauhan; Dr H S Gill; Dr P P Balan; Dr Debal SinghaRoy; Dr Ranvinder Singh Sandhu; Dr V N Alok; Dr Sucha Singh Gill; Dr Sukhwinder Singh; Dr Rekha Saxena; Dr Ramesh Madan; Dr Kulwant Singh; Dr Bindu Duggal; Ar Jit Kumar Gupta; Dr Ronald Macatangay; Dr Ashwini Kumar Nanda; Dr Chandan Ghosh; Dr Ashima Banker; Dr Anil Gupta and all the delegates from abroad and India.

We wish to convey special thanks the chief guest of the Inaugural Session Professor T K Oommen, Padma Bhushan awardee and noted Indian Sociologist for delivering

Inaugural Address; Chief Guest of the Valedictory Session Prof. Kaptan Singh Solanki, Hon'ble Governor of Haryana for delivering the Valedictory Address and hosting the Farewell Dinner at Haryana Raj Bhawan; Chief Guest of the Youth Forum Shri Varun Gandhi, Hon'ble Member of Parliament for his special Address and distribution of Awards to the youths and NGOs for their exemplary works on environment and climate change; Shri Manohar Lal, Hon'ble Chief Minister of Haryana for kindly agreeing to give a special talk and host dinner to the delegates (although due to his last minute cancellation he deputed his Cabinet Minister Shri Karan Dev Kamboj, Social Justice & Empowerment (Independent Charge) to address the delegates on behalf of the CM and host the Dinner).

We acknowledge our sincere gratitude to the worthy Chairman of Governing Body, CRRID Professor R P Bambah; Executive Vice Chairman Dr Rashpal Malhotra; Members of the Governing Body Dr S K Mangal; Shri V K Sibbal; Prof Shalina Mehta; the Director General Dr Sukhpal Singh for extending their full support. We are extremely grateful to the Mayor, Municipal Corporation Chandigarh Mrs Asha Kumari Jaswal for her patronage, whole hearted support in mobilizing the institutional and logistic support from various important offices from the region and able guidance.

We sincerely thank the Chair and members of the Conference Patrons/ Steering Committee as well as members of the Organizing Committee who supported us whole heartedly in carrying various tasks related to the conference.

THE CONFERENCE PATRONS/ STEERING COMMITTEE

- Dr Rashpal Malhotra, Executive Vice Chairman, CRRID, Chandigarh (Chair)
- Professor Arun Kumar Grover, Vice Chancellor, Panjab University (PU), Chandigarh
- Mrs Asha Kumari Jaswal, Mayor, Municipal Corporation, Chandigarh
- Dr Sucha Singh Gill, Senior Professor, CRRID, Chandigarh
- Professor Sukhpal Singh, Director General, CRRID, Chandigarh
- Dr Madhuri Rishi, Chairperson, Environmental Studies, Panjab University (PU), Chandigarh

THE ORGANISING COMMITTEE

- Mr Manoj Kumar Teotia, AP, HUDCO Chair, CRRID, Chandigarh and Secretary, Working Group 05 of ISA on Famine and Society (Conference Coordinator)
- Mr Sunil Bansal, Associate Professor and HUDCO Chair Coordinator, CRRID, Chandigarh (Conference Co-Coordinator).
- Dr Dai-Yeun Jeong, Director, Asia Climate Change Education Center, Jeju, South Korea

- Dr Harjit Singh Anand, Centre for Study of Administration of Relief (CSAR), New Delhi and President, Working Group 05 of ISA on Famine and Society
- Dr Rajeev Kumar, Assistant Professor, Department of Environment Studies, PU, Chandigarh
- Dr G R Chaudhary, Assistant Professor, Department of Chemistry, PU, Chandigarh
- Mr Manoj Dabas, Director, Center for Urban Green Spaces (CUGS), New Delhi
- Mr Vivek Trivedi, Founder Secretary General, Association of Professional Social Workers and Development Practitioners (APSWDP), Chandigarh

The contribution of faculty and support staff of CRRID for their assistance and efforts in bringing out the publications of programme schedule, book of abstracts and proceedings and helping in making all the arrangements is also gratefully acknowledged. Our special thanks are due to Dr Pawan Kumar Sharma, Ms Suman Khosla, Mr Hem Thakur, Ms Bindu Sharma, Mr Anirudh Kumar, Ms Anupama Sharma for their whole hearted support and help. We wish to thank all the colleagues and students who worked as Raporteurs (Dr. Neetu Gaur; Dr. Gurinder Kaur; Dr. Vikash Kumar; Dr. Kulwant Singh Nehra; Dr. Vijay K Bodh; Dr. Rohit Kumar; Mr. Anooj; Ms. Muskan Wadhwa; Ms. Neha Kapoor; Ms. Shikha; Ms. Rajneesh), volunteers and the staff at CRRID in supporting the organization of the conference of this scale successfully. In particular the members of sub committees for Registration, Hospitality, Finance/ Accounts, Conference Hall Management/Arrangements, Raporteurs, Guest Houses, Secretarial Assistance/ computer staff/ Power Point/Laptop, Photo state, Media/Press reporting and Library etc.

The theme was crucial in the context of growing challenges of climate change and urgency to achieve sustainable development goals. We are happy with the overwhelming response we received from the delegates from various institutions of India as well as abroad. In a short period we received large number of papers and many of the delegates had shown the willingness to attend the conference despite we could not provide full financial support to several delegates due to financial constraints.

We hope this conference will benefit the policy makers, academicians and other stakeholders. It will also help in addressing the challenges of climate change, adaptation, resilience and achieve sustainable development goals.



Manoj Kumar Teotia
(Conference Coordinator)



Sunil Bansal
(Conference Co-coordinator)

Write-up on the Conference Theme

CRRID, Chandigarh successfully organized an International Conference on "**Mountain Cities, Climate Change and Urban Sustainability**" from November 6-8, 2017 in collaboration with the Asia Climate Change Education Center (ACCEC), Jeju, South Korea; the Department of Environment Studies, Panjab University, Chandigarh, the Centre for Study of Administration or Relief (CSAR), New Delhi and Indian Council of Social Science Research (ICSSR) New Delhi. The UN-Habitat; NBCC; the Working Group 05 of International Sociological Association (ISA) on Famine and Society; the Municipal Corporation Chandigarh; The Climate Reality Project India, New Delhi; the Centre for Urban Green Spaces (CUGS), New Delhi and the Association of Professional Social Workers and Development Practitioners (APSWDP), Chandigarh, were also the knowledge partners.

The conference aimed to deliberate on interlinked topics of mountains and mountain cities, climate change, green growth, eco efficiency, SDGs and urban sustainability. In a changing climate, mountain cities and regions are becoming vulnerable. Mountains provide the world with resources such as water, timber, biodiversity and hydraulic energy and they are at risk (<http://www.fao.org/news/video-clips/2012/mountainday2012/en/>). They also play crucial role in maintaining hydrology, supplying drinking and irrigation water to the habitats in mountains as well as plains through network of rivers, produce hydro energy, control temperature, and support food production and bio diversity in large parts of the world. Mountains and mountain cities are facing various challenges due to rapid and unplanned urbanization, emergence of slums with multiple deprivations, growing number of tourists, depletion of green cover & bio-diversity, lack of adequate treatment of liquid and solid waste, pollution etc. The growing cities and high concentration of urban population seem to contribute to the climate change and fast depletion of natural resources. Mountains provide fresh water to over 50% of the population in the world which is under stress. Mountain habitats are under threat of natural disasters like earth quakes, floods, landslides, glacial lake bursts, cloud bursts, and forest fires. The huge mountain populations face social, economic and environmental issues due to construction of dams and resultant rehabilitation. The risks and vulnerabilities are growing in cities in mountain regions. The occurrence of floods is on rise. Water and air pollution are risking health of the people.

The urban sustainability seems to be at stake due to un-sustainability of mountain cities and habitats. Achieving many of the 17 Sustainable Development Goals (SDGs) will be

particularly challenging for mountain states and cities due to their difficult hilly terrains and weak institutional base along with multiple social and economic vulnerabilities. There is a need to protect mountains and safeguard the interests of mountain people who have unique cultural diversity, indigenous beliefs, climate friendly living environment and traditional wisdom for conservation of ecology and biodiversity and agriculture practices. The conference came up with concrete ideas for better urban future in mountain regions amid the climate change.

Since role of mountains are crucial for addressing many social, economic, environmental concerns cities are facing in hilly areas and even nearby plains, the conference deliberated and discussed the issues, alternatives, innovations and modalities for sustaining the same. The sessions/ papers on different contexts of the theme/s were invited. Collective actions, environmental and social movements in this regard were also discussed. Poverty is a multi-dimensional problem and it is more crucial in mountain regions. Poverty is closely linked with marginalization. The issues emerging in poverty alleviation require extensive discussion and dissemination of good Practices for replication. Participation is another important aspect of urban management and governance in mountain cities and therefore sessions were welcome to discuss emerging patterns of participation in various social, political and economic contexts in mountain regions/ areas. The sessions on various aspects of mountain cities and regions, water and forest management, adaptation, resilience, marginalization, poverty, hunger, food, decentralization in local as well as global contexts were invited and how the same can help in resolving various types of conflicts in the urban societies in mountain regions.

The conference also discussed the emerging issues and options capturing the full import of the acronym FAMINE (Food insecurity as a consequence of severely diminished purchasing power of vulnerable groups in society, Alienation on account of discrimination based on Caste, Color or Creed; Marginalization on account of severely diminishing real incomes; Inequality based on dysfunctional social systems and travails of the workers in Informal Sector, Negative impact on vulnerable groups of natural calamities & man-made disasters such as civil wars and economic shocks caused by market volatility; & Exclusion from mainstream society based on social and economic ostracization resulting in social conflict, unrest and violence) in the context of the mountain cities, climate change and urban sustainability.

The Contribution of the Conference to the existing body of Research

The existing body of knowledge and research on interlinked issues of mountains cities, climate change and urban sustainability is negligible. No substantive research has been carried on theme of the international conference. CRRID has carried various studies under the series "state of cities in northwestern India", in which it was found that the research on the interlinked issues of mountains cities, climate change and urban sustainability was almost absent and the similarly the data on various parameters and variables was inadequate for policy planning. After review of literature on the theme it was found that environmental infrastructure and services were very poor in mountain regions. The climate change was adding woe to the situation and hence posing questions on urban sustainability was in question.

The focus of the conference was to understand and examine the distinctive trajectories of the spiraling urbanization process in mountain cities and regions in the world and how climate change is likely to affect urban sustainability. In this context what alternatives were emerging to cope with the emerging challenges of climate change in mountain cities and regions to achieve sustainable development goals. It aimed to provoke questions in different contexts vis a vis many of the above aspects is concerned and explore various alternatives to manage the growth and development in juxtaposition with increasing pressure of climate change, inequalities, poverty and social exclusions.

The abstracts were invited in a wide range of areas, including the following:

1. Mountain Cities

- Special Challenges for mountain cities
- Planning, governance and urban management
- Improvement of transportation system
- Strategy on prevention of disasters
- Improvement of educational, cultural and social welfare facility
- Improvement of housing quality, basic services and livelihood
- Green growth of cities- smart innovations and inclusive initiatives
- Addressing urban concerns to promote Social Solidarity Economy (SSE)
- Meeting demands of energy, water and food
- Smart urban development amid globalization, liberalization and privatization

2. Climate Change

- The role of environmental NGOs in response to climate change
- The role of citizens in response to climate change
- The role of enterprises in response to climate change
- How to improve energy efficiency against climate change

- Nature-based approach to climate change
- Critical review of Paris climate change agreement
- Global initiatives-local impact
- Managing river basins and related issues
- Global water governance
- Climate change, water, energy and food: Interlinkages and issues
- Hydro based development in Himalayan and other mountain regions
- Carbon management and green technological interventions
- Natural disaster management

3. Urban Sustainability

- -Achieving SDGs-status, issues and challenges
- Role of cities in sustainable urban development
- How to overcome over-urbanization, growth of slums & poverty
- Eco mobility and environmental refugees
- Challenge of affordable housing
- Urban transportation and environmental pollution
- Improving Eco-efficiency and Green Growth
- Issues and alternatives in water, sanitation, SWM
- Building a sound-material-cycle society through 3 Rs
- Environmentally sustainable transport
- Culture, traditional wisdom and identity

4. Other Important Issues for the sessions

- Collective action and social movements
- Participatory planning
- Rights based development
- Natural resource management-water and forests
- Participation, organizational democracy and self-management
- Climate change, natural disasters and food insecurity
- Social accountability
- Marginalization & deprivation
- Poverty, inequality & exclusion
- Community governance
- Women empowerment

The Conference attracted large number of sessions, papers on many of above themes and subthemes. The scholars from 14 states of India and scholars from 7 countries deliberated on important issues, presented well researched papers and added considerable knowledge to the existing body of research.

Programme Schedule

International Conference on Mountain Cities, Climate Change and Urban Sustainability (November 6-8, 2017)

Venue: Centre for Research in Rural and Industrial Development (CRRID), Chandigarh

DAY -1 : Monday, 6 November 2017	
Registration: 8.30 am – 10.30 am	
Inaugural session: 10.30 am – 11.30 am	
Welcome	: Professor Sukhpal Singh, Director General, CRRID
Introductory Remarks	: Dr Rashpal Malhotra, Executive Vice Chairman, CRRID
Introduction to the conference	: Mr Manoj Kumar Teotia, Conference Coordinator and Mr Sunil Bansal, Conference Co-Coordinator
Chair	: Professor Dai-Yeun Jeong, Director, ACCEC, Jeju, South Korea
Inaugural Address by the Chief Guest	: Professor T. K. Oommen, Padma Bhushan, Former President International Sociological Association (ISA)
Key Note Address	: Dr Harjit Singh Anand, Chairman, CSAR, New Delhi
Vote of thanks	: Professor R P Bambah, Chairman, CRRID
Tea Break: 11.30 am – 12.00 noon	
SYMPOSIUM – I 12 noon to 1.00 pm	
SOCIO-ECONOMIC VULNERABILITIES IN MOUNTAIN CITIES	
Chair: Harjit S. Anand	Co-chair: Purnima Chauhan
Paper presenter	Topic
Purnima Chauhan	A De-globalisation Paradigm for Climate Change Adoption Mitigation, Adaptation with Special Focus on Mountain Areas
H.S. Gill	Mountain Cities and Towns: Limitations & Prospects
Samreen Wani Sanjukta Bhaduri	Socio-economic Impacts of Climatic Change Case Study of Srinagar City
Bipasha Kumar	Disaster Risk in the Mountain Cities: Issues and Concerns
Bhuwan Kumar	Natural Disaster an a Mountain City; A Case Study of Landslides and Floods in Kedarnath Sub-Region of Uttrakhand
P. P. Balan	Local Self Governments in the 12 th Plan in Kerala: A Step Towards Environment Protection
Lunch hosted by Prof. R. P. Bambah, Chairman, CRRID : 1.00 pm to 2.00 pm	

SESSION -1 2.00 pm to 3.30 pm	
CLIMATE CHANGE & ITS IMPACTS: EMERGING TRENDS, ISSUE AND STRATEGIES	
Chair: Dai –Yeun Jeong	
Co-chair: V. N. Alok	
Paper presenter	Topic
Nandkishor More	Climate Agreement: Issues and Possibilities for Developing World
Bhavya Bogra V N Alok	Climate Change and Urban Development : Building Resilience in Indian Cities
Aastha Goyal	The Critical Review of the Paris Climate Change Agreement
Manjushree Mishra	Wetland and Climate Change In Coastal Odisha: The Role of Chilika Lagoon in Addressing Livelihood and Nutrition
Sumit Arora	Climate Change and Sustainable Development: Issues and Challenges in India
Vasavi Singh Mohan Kumar	Gendering Climate Change: Impingement on Women in Hilly Areas
SESSION -2 2.00 pm to 3.30 pm	
AGRICULTURE, IRRIGATION, FOOD SECURITY, NUTRITION AND HEALTH	
Chair: Sucha Singh Gill	
Co-chair: Sukhwinder Singh	
Paper presenter	Topic
Dhanej Thapa	Agriculture and Food Insecurity Nexus: Rural and Urban Dynamics and Adaptive Innovation
Gulshan Kumar	Association of Urbanization, Health Facility and Health Outcome in Jharkhand: A District Level Analysis
Vijay Kumar Bodh Sandeep Kaur	Socio-Economic Impact of Rohtang Tunnel and Proposed Hydroelectricity Dams in Lahaul & Spiti
Youdhvir Singh	Tube-Well- An Irrigation System and its Impact on Ground Water in North India
Harshal Mehta Pradeep Kaushik Urmila Chakraborty Ganga Ram Chaudhary	Zno Nanoadsorbents for Pesticide Removal from Aqueous Solution
Tea Break: 3.30 pm – 4.00 pm	

Youth Forum on Social and Solidarity Economy, Peace and Urban Sustainability - 4.00 pm to 6.00 pm

Chair- Rekha Saxena

Address by Shri Varun Gandhi, Hon'ble Member of Parliament - The Road to Sustainability: Opportunities and Challenges

- 4.00 p.m. Arrival of the Chief Guest Shri Varun Gandhi, Hon'ble Member of Parliament
- 4.05 p.m. Welcome by Professor Sukhpal Singh Director General, CRRID
- 4.10 p.m. Felicitations to the Dignitaries on Dais
- 4.12 p.m. Introductory Remarks by Dr. Rashpal Malhotra, Executive Vice Chairman
- 4.17 p.m. Background of the Conference by the Coordinators (Manoj Kumar Teotia/Sunil Bansal, CRRID)
- 4.22 p.m. Address by Chief Guest Shri Varun Gandhi, Hon'ble Member of Parliament
- 4.50 p.m. Presentations about awardees
- 5.30 p.m. Distribution of Certificates and Awards by the Chief Guest to three Best Inspirational Stories
- 5.50 p.m. Vote of Thanks by Professor R.P. Bambah, Chairman, Governing Body, CRRID
- 5.56 p.m. Interaction with the Press
- 6.10 p.m. Departure of the Chief Guest Hon'ble Member of Parliament Shri Varun Gandhi

Tea Break: - 6.10 pm to 6.30 pm

SESSION -3 6.30 pm to 7.30 pm

NATURAL DISASTER MANAGEMENT, ADAPTATION AND RESILIENCE

Chair: H.S. Gill

Co-chair: Rajvir Dhaka

Paper presenter	Topic
Bishwodev Bhattarai	Earthquake Recovery Efforts in Nepal: Participatory Planning Approach for Resilient Future Community
A. M. Aslam Saja	Risk-Sensitive Development Mechanism to Build Disaster Resilience Communities – Experience from Sri Lanka
Ranish Bhattarai	Analytical study of local resources and Preparation of Local Disaster Risk Management Plan(LDRMP) regarding earthquake in Laharepauwa VDC of Rasuwa district of Nepal
Ar. Shahzad Ahmed Malik	Decoding SDGs from Indian Disaster Management Perspectives
Dhanej Thapa	Deepening Food Insecurity Status of Earthquakes Displaced Households of Nepal: A Post Disaster Analysis
Suresh C. Attri	Enabling Adaptation in Himachal Himalayas : Paving the Way for Gender Responsive Adaptation Local Climate Vulnerability, Capacity Assessment at Village Level

SESSION -4 - 6.30 pm to 7.30 pm	
ENERGY, GREEN GROWTH AND ECO-EFFICIENCY	
Chair: K. K. Bhasin	Co-chair: Maduri Rishi
Paper presenter	Topic
Ganga Ram Chaudhary	Sustainable Techniques for Wastewater Treatment
Rajeev Bansal Neeraj Sharma	Initiatives to Mitigate Impact of Climate Change on Water and Energy by Innovative Use of Technology to Grow more Crop per Drop
Savita Chaudhary Priyanka Sharma	Nanoparticles: Environmental Boon for Extraction of Harmful Pollutants
Deepak Rohilla Savita Chaudhary	Role of Nanoparticles in Environmental Remediation and Climate Change
Kulwant Singh Nehra	Environmental Implications of Subsidised Power Supply for Sustainable Agricultural in Haryana
Welcome Dinner hosted by the Chandigarh Administration - 8.00 pm to 10 pm	
Venue: UT Guest House, Chandigarh	

DAY -2 : Tuesday, 7 November 2017	
SESSION 5 - 9.00 am to 10.00 am	
AIR, WATER AND LAND POLLUTION AND THE EMERGING RISKS	
Chair: Madhuri S. Rishi	Co-chair: Ramesh Madaan
Paper presenter	Topic
Uttam Lal	Urbanization and Water Utilization in the Sikkim Himalaya with Special Reference to Gangtok
Bankerlang Kharmylliem Ngamjahao Kipgen	Institutions in Shillong
Neeru Malik	Black Carbon and other Co-Pollutant Major Hazard for Air Pollution
Jayant Atrya	Impact of Black Carbon on Snow Areas
Ashima Awasthi Madhuri S. Rishi Priyanka	Long Term Variability Assessment in Monthly Mean Respirable Suspended Particulate Matter at Damtal (Kangra), Himachal Pradesh, India
Shivali Panjgotra Madhuri S Rishi Lakhvinder Kaur	Elucidating Seasonal Variability of Volatile Organic Compounds in Ambient Air of Agra City, Uttar Pradesh, India
Tea Break: 10.00 am – 10.30 am	

SESSION - 6 10.30 am to 12.00 noon	
ENVIRONMENT MANAGEMENT AND SUSTAINABILITY	
Chair: G. Prasanna Kumar, Vice Chairman, IIPA-HRB Co-chair: Kulwant Singh	
Paper presenter	Topic
Kulwant Singh	Integrated Urban Infrastructure Development for Solid Waste Management: An Indian Scenario
Miguel Andres Guerra	Adopting Design Thinking for Sustainable Infrastructure Planning and Designing
A.N.Gautam	Peri-Urbanization- An Urban Sustainability Challenge in Hill State of Himachal Pradesh, India
Pampa Mukherjee Sunil Kumar	Understanding Urbanization and Development in Mountain Cities: The Story of Pauri in Uttarakhand, India
Karamveer Singh	Environmental Sustainability of Development of Irrigation Resources
SESSION -7 10.30 am to 12.00 noon	
DESIGNING INFRASTRUCTURE, TRANSPORT AND HOUSING TO COPE WITH THE CLIMATE CHANGE	
Chair: R.S. Sandhu Co-chair: Bindu Duggal	
Paper presenter	Topic
Kulwant Singh	Urban Transport Scenario in India: Need for Unified Mobility
Sachna	China is Moving the Mountains Literally: The Dynamics of New Silk Road
Sunita Devi	Microbial Keratinases- An Economic, Eco-friendly and Innovative Approach for Waste Management
Ashima Gupta	Reforming The 'Summer Capital': An Analysis of JNNURM in Shimla
Bhupinder S. Marh	Shimla (Simla): Nostalgia of History and an Enigma of Urban Planning
Gurshaminder Singh Bajwa	Amritsar as a Smart City : A Sociological Analysis
Tea Break: 12.00 noon – 12.30 pm	

SESSION -8 12.30 pm to 2.00 pm	
ECO-ENVIRONMENTAL CONCERNS OF MOUNTAIN CITIES	
Chair: Ar. Jit Kumar Gupta	
Co-Chair: Ronald Macatangay	
Paper presenter	Topic
Chandan Ghosh	Uttarakhand Diaster-2013;Lessons Learnt And Way Forward
Anil Gupta	Resilient And Safe Mountain Cities-Contextualizing Pilot Studies; Reference To Sendai Framework and Prime Minister Agenda 10
Akshaya Kumar Sen	Sustainable Habitat Planning - Putting SDGs into Practice for Hilly Regions
Dai-Yeun Jeong	Green Management of Enterprises as a Response to Climate Change
Raman Solanki Ronald Macatangay	Confinement of Air Pollutants in the Mountain Valley of Chiang Mai: Lidar Profile Measurements
Miguel Andres Guerra Yekenalem Abebe	Decision Support for Flood Risk Assessment and Mitigation Response
 Session- 9 12.30 pm to 2.00 pm 	
POVERTY, LIVELIHOOD, DISPLACEMENT, MIGRATION AND EXCLUSIONS	
Chair: Ashwini Kumar Nanda	
Co-chair: Ganga Ram Chaudhary	
Paper presenter	Topic
Debal K. SinghaRoy	Urbanization of Mountain Space and Indigenous People's Movements for Environment, Identity and Culture
Sudesh Kumar Anindya Jayanta Mishra	Development, Displacement and Poverty Issues: A Sociological Study on Baglihar Dam Project in Jammu and Kashmir
Namrata Singh Panwar Alok Mishra	Exclusion of Migrants and Public Policy in India: Revisiting the Harris-Todaro Model
Sushant Setia	Towards Sustainable and Inclusive Development Through Inclusion of Persons with Disabilities (Pwds) in Higher Education (A Case of Panjab University, Chandigarh): Impediments and Alternatives
Anupama Sharma	Rehabilitation of Slums in Chandigarh and the Emerging Patterns of Livelihood of the Urban Poor
Lunch Break : 2.00 pm to 3.00 pm	

SESSION -10 4.30 pm to 6.30 pm	
SOCIAL DIMENSIONS OF CLIMATE CHANGE: SOCIAL AND ECONOMIC IMPACTS, HUMAN RIGHTS, GENDER AND VULNERABLE COMMUNITIES	
Chair: Chandan Ghosh	
Co-chair: Ashima Banker	
Paper presenter	Topic
Ashima Banker Sandeep Paul	Socially Sustainable Neighbourhoods – Building ‘Part’ to ‘Whole’
Kiniholi Kinimi Nilanjana Dasgupta Sur	Vulnerability and Community Participation in Nagaland
Deepika Gupta	Health of Vulnerable Group: From Millennium Development Goals (MDGs) To The Sustainable Development Goals (SDG’s)
Gunjan Setia	Facets of Deprivation of the Farming Community (The Case Of Indian Punjab): An Analysis of Human Rights Infringement
Jagdish C. Mehta Vandana Sharma	Educational Deprivation of Dalit Women: A Study of Slums in the Union Territory of Chandigarh
Anuradha Jaidka	Social Exclusion of Transgender: Their Educational, Socio-Political and Economic Conditions
Tea Break: 4.00 pm to 4.30 pm	
SESSION -11 4.30 pm to 6.30 pm	
CLIMATE CHANGE GOVERNANCE: ROLE OF LOCAL GOVERNMENTS, COMMUNITIES, NGOS, MEDIA AND OTHER STAKE HOLDERS	
Chair: Anil Gupta	
Co-chair: Siby John	
Paper presenter	Topic
Akhmetianova Rimma Anasovna	Constraints Development of Participatory Budgeting Practices in the Russian Regions (on the example of Republic of Bashkortostan)
S.M.Monirul Hassan Boshumitra Chakma	The State of Symbiosis between Indigenous People and Forest: A Curse of Politics
Parteek Singh Thin Siby John	Status Quo of Tourism in Manali and its Environmental Impacts
Mudasir Yousuf	Conservation Environment and Role of Religion: A Sociological Understanding
Vivek Trivedi Monica Singh	Women Negotiating Change in Urban Community Development by People Participation
Annu Drall	Role of NSS in Swachh Bharat Abhiyan: A Case Study of Panjab University
Dinner hosted by the Hon’ble Chief Minister of Haryana - 8 pm to 10 pm	
Venue: Haryana Niwas, Chandigarh	

DAY -3 : Wednesday, 8 November 2017	
Visit to Capitol Complex - 9.00 am to 11.00 am	
Tea break – 11.00 am to 11.30 noon	
SYMPOSIUM – II - 11.30 am to 1.00 pm	
INSTITUTIONAL FRAMEWORK FOR SUSTAINABILITY IN MOUNTAIN CITIES	
Chair: Dr. Dai-Yeun Jeong,	Co-Chair: Ar. Jit Kumar Gupta
Harjit S.Anand	An Integrated Approach to Urban Sustainability in Mountain Cities
Rakesh K. Gulati	Use of IT And Early Warning System
Manveen	Tackling Socio-Economic Vulnerability in Natural Disaster in Mountain Cities
Harsimran Kaur Pushplata	A Review of Urban Sustainability Tools with Focus on Hilly Regions
Lunch break – 1.00 pm to 2.00 pm	
SESSION -12 2.00 pm to 3.30 pm	
MANAGING URBANIZATION TO COPE WITH CLIMATE CHANGE	
Chair: Debal K SinghaRoy	Co-chair: Rajeev Kumar
Paper presenter	Topic
Jit Kumar Gupta	Indian Options for Managing Global Warming Through Realization and Rationalizing Urbanization
Muhammed Riyas	Urban Local Bodies and State of Service Delivery in India Challenges of Inclusive Urbanization and an Agenda for Better Cities
Namrata Singh Panwar	Challenges of Inclusive Urbanization in India: A Critical Overview of (Bsup & Ihsdp) JNNURM and Lessons for Housing for All
Mridula Sharma	Issues and Alternatives in Water, Sanitation, Swm

Poster Presentations - 2.00 pm to 3.30 pm	
Poster presenter	Topic
Yesbinder Kaur G.R.Chaudhary	Comparative Performance of Bare and Functionalized ZnO Nano Adsorbents for Pesticide Removal from Aqueous Solution
Renu Lata Madhuri, S. Rishi Herojeet RK Konchok D Gagandeep S	Assessment of Environmental Implications of Hydropower Projects in Northwestern Indian Himalayan Region
Preeti Garg Kanika Berwal Bunty Sharma G.R. Chaudhary Gurpreet Kaur	Metalosomes: Fabrication, Characterization and Encapsulation of Dye
Pooja Chauhan Savita Chaudhary	Surface Alterations of Nanomaterials for more Biocompatible and Safer Nanotools
Gurpreet Kaur Mehar Singh GR Chaudhary	A Facile Route for the Synthesis of Co, Ni And Cu Metallic Nanoparticles with Potential Antimicrobial Activity
Moondeep	Simple green and facile synthesis of CuO nanomaterials and their application in ambient removal of water contaminants from waste water
Navpreet Kaur Mehar Singh Varsha Dogra	Fabrication of metallosurfactant based copper oxide nanoparticles and their interaction studies with calf thymus DNA
Teenu	Utilization of surface functional CeO ₂ nanoparticles for unloading chemical and pathogenic character of wastewater
Tea Break: 3.30 pm to 4.00 pm	

VALEDICTORY SESSION 4.00 pm to 5.00 pm

4.00 p.m.	Arrival of the Chief Guest Prof. Kaptan Singh Solanki, Hon'ble Governor of Haryana
4.05 p.m.	National Anthem (Vocal)
4.06 p.m.	Welcome by Professor Sukhpal Singh, Director General, CRRID
4.10 p.m.	Felicitation of the Chief Guest by Smt Asha Kumari Jaswal, Mayor, MCC
4.12 p.m.	Introductory Remarks by Dr. Rashpal Malhotra, Executive Vice Chairman, CRRID
4.20 p.m.	Summary of the Conference by the Coordinators (Manoj Kumar Teotia/Sunil Bansal, CRRID)
4.25 p.m.	Valedictory Address by Chief Guest Prof. Kaptan Singh Solanki, Hon'ble Governor of Haryana
4.55 p.m.	Vote of Thanks by Professor R.P. Bambah, Chairman, Governing Body, CRRID
4.59 p.m.	National Anthem (Vocal)
5.00 p.m.	Departure of the Chief Guest Prof. Kaptan Singh Solanki, Hon'ble Governor of Haryana

Local Tour- 5.00 pm to 7.30 pm

Valedictory Dinner hosted by the Hon'ble Governor of Haryana - 8.00 pm to 10.00 pm

Venue: Haryana Raj Bhavan, Chandigarh

Rapporteurs:

Dr. Neetu Gaur
Dr. Jatinder Singh

Dr. Gurinder Kaur
Dr. Rajeev Answal

Dr. Vikas Kumar
Dr. G R Chaudhary

Proceedings of the Conference

International Conference

on

Mountain Cities, Climate Change and Urban Sustainability

(November 6-8, 2017)

Centre for Research in Rural and Industrial Development (CRRID), Chandigarh



DAY – 1: Monday, 6 November 2017

Inaugural session

A three day international conference on ‘Mountain Cities, Climate Change and Urban Sustainability’ from November 6-8, 2017, was jointly organised by Centre for Research in Rural and Industrial Development (CRRID), Chandigarh and Asia Climate Change Education Center (ACCEC), Jeju, South Korea and supported by the Indian Council of Social Science Research (ICSSR), New Delhi; the Department of Environment Studies, Panjab University, Chandigarh; the Centre for Study of Administration of Relief (CSAR), New Delhi; Municipal Corporation Chandigarh, IIPA-HRB, New Delhi; NBCC, New Delhi; UN-Habitat. It was inaugurated on 6 November 2017 at CRRID, Chandigarh. The International conference was

attended by participants and dignitaries from various states across India and from other countries like Russia, USA, South Korea, Bangladesh, Sri Lanka, Thailand and Nepal.



Mr. Manoj Kumar Teotia, Conference Coordinator, while briefing about the theme of the conference highlighted the need to understand and contextualize the notion of sustainable development while keeping in mind the ways and means to make these more sensitive towards environment and overall ecology. The theme holds crucial relevance given the increasing recognition that cities would play a significant role in coping with climate change. Rapid and unplanned urbanization, depleting green cover, abuse of natural resources, unplanned promotion of tourism, etc. all add to the vulnerability of an already fragile ecosystem, especially in the mountain cities. Hence, in the light of Sustainable Development Goals, it becomes imperative to dwell on the role of cities, development, ecology, climate change and livelihood in a comprehensive and nuanced manner.



Prof. Sukhpal Singh, Director General CRRID, formally welcomed the guests and participants to the seminar. He highlighted the importance of three Ps, that is, People, Planet and Profit in the domain of sustainable development, where the urban cannot be separated from the rural in understanding and implementing of sustainability. Given the fact that the population of India living in cities is only ever going to increase, deliberations on such themes become even more relevant and important. It is thus important to understand these concepts at international, national and regional level, for which this conference happens to be a timely effort and exercise.



Dr. Rashpal Malhotra, Executive Vice Chairman, CRRID gave his introductory remarks. He emphasized on the importance of involving people directly in order to ensure growth, development and protection of the environment in a sustainable manner. He stated that people of the hills have always been protectors of the forest, it is politicians who tend to destroy the human-nature harmony for their personal benefits. He remarked that significance of this conference would be in the concrete contributions that this would make towards understanding sustainable development by promoting a growth pattern that is environmentally sustainable and conducive.



Prof. Dai-Yeun Jeong, Director, ACCEC, Jeju, South Korea, chaired the inaugural session. He stated that the evolution of human society from agricultural to industrial to post-industrial and finally to the information society has always been based upon the relationship between humans and nature. He highlighted that the modern industrial society is a risk society in three major aspects: pollution of nature, promotion of socio-economic development exceeding capacity of nature and anthropocentric perspective of nature. He mentioned that the conference would contribute practical and concrete understanding on relationship between environment and society within the bounds of sustainability.



Prof. T. K. Oommen, Padma Bhushan Awardee and noted Indian sociologist, author and educationist delivered the inaugural address. He oriented his talk within the larger ambit of climate and environment, where he quoted from the UN General Assembly September 2000 resolution that “Prudence must be shown in the management of all living species and natural resources, in accordance with the precepts

of sustainable development. Only in this way can the immeasurable riches provided to us by nature be preserved and passed on to our descendants. The current unsustainable patterns of production and consumption must be changed in the interest of our future welfare and that of our descendants”, which encapsulates the value and principle of sustainability. He highlighted the differences between the homocentric and cosmocentric views on environment, where the former places only the welfare of humans at the center with no thought for ecological welfare, the latter promotes symbiotic relationship between humans and nature which focuses on reciprocity. The move from cosmocentric towards homocentric view has been accompanied by the modernity project where destruction of nature, invocation of high technology, exploitation of natural resources has led to a disconnect between modernity and eco-friendly approaches. He located this shift in the realm of religious values. On the one hand were the Judeo-Christian values which laid foundation of western belief system that treated nature as a resource for benefit of man and where environment is a project of modernity. On the other hand were the Eastern/Indic religions which treated nature as divine and sacred. The acceptance and promotion of the former has increased the vulnerability of ecology and the way out of this lies in the notion of technological pluralism which promotes appropriate technology depending upon the context of usage and requirement. Appropriate technology is a complementary usage of low, intermediate and high level technologies in a nuanced manner. Social sectors applicable in each society must be based upon technology appropriate for that sector. According to him technological pluralism can efficiently look into the problems of mountain cities, environment and sustainability. He ended by stating that the conference would be problem solving in tenor and orientation.



Dr Harjit Singh Anand, Chairman, CSAR, New Delhi gave the keynote address where he focused upon the symbiotic relation between rural and urban through a regional perspective. He presented the scenarios of global warming, climate change, ozone layer depletion in the Antarctic which have caused disasters and calamities ranging from temperature increase, to skin cancers and other diseases, droughts, floods, etc.

directly effecting livelihoods of many people across the world. All these have been a result of imbalance between man and nature. The focus must be on making a successful shift towards environmental sustainability which ensures sustainable planet for future generations, reducing carbon imprint, energy efficiency, enhancing green cover, restoring ozone layer. Sustainable



development must ensure that needs of people are met without compromising the ecology. Mountains, especially the Himalayas are lifeline for billions of people across Asia. Hence, fragile ecosystems as these and sustainable mountain development could be brought on same page through activities like integrated watershed development and by promoting alternative livelihood opportunities and by guaranteeing structural and legislative measures.

Prof. R. P. Bambah, Chairman, Governing Body, CRRID presented the vote of thanks.

Symposium on Socio Economic Vulnerabilities in Mountain Cities

Chair: Dr. Harjit S. Anand

Co-Chair: Dr. Purnima Chauhan



The theme for the first session of the symposium was ‘Socio-Economic Vulnerabilities in Mountain Cities’. This session was chaired by Dr. Harjit S. Anand and co-chaired by Dr. Purnima Chauhan. A total of five papers were presented during this session.



The first paper of the session, titled, ‘A De-Globalization Paradigm for Climate Change Adoption, Mitigation, Adaptation with Special Focus on Mountainous Areas’ was presented by **Dr. Purnima Chauhan**. She highlighted the need to recognize the distinctness of Mountain cities in order to frame policy initiatives targeting their distinct needs. Being two to three times more vulnerable than other areas, mountain cities demand special conservation efforts.

According to her, the smart city initiative of the government could only succeed if it managed to address the concerns of mountain cities. Emphasising the merits of decentralization, she

added that local governments could play an important role in the conservation of nature. She even cited examples from countries like Germany and Singapore, which had implemented innovative programmes pertaining to solid waste management and water recycling and reuse respectively and achieved desired results. However, she cautioned against mindlessly emulating the conservation practices and models implemented by other regions or countries and stressed the need to harness the local wisdom of communities already residing in the mountainous areas. For instance, to address its own solid waste management problem, especially that of finding landfills, Himachal could bank upon the solid waste management model developed and implemented by Manali.



The second paper of the session, titled, ‘Mountain cities and Towns: Limitations and Prospects’ was presented by **Dr. H. S. Gill**. He discussed how mountain cities, today, were reeling under the pressure of over-population and over-congestion which created a need to design cities and towns commensurate with the growing needs of the mountain cities. According to him, COP21, SDGs and HABITAT-III were instrumental in bringing the issue of intensive development of cities to the forefront. This is because intensive utilization of

land was one of the common themes running through these three events. He also highlighted that about forty percent of the housing stock in mountain cities in India was around sixty years old clearly signaling that accommodations in mountainous regions were way past their shelf life and hence in dire need of reconstruction. Another major challenge, according to him, was the need to develop earthquake resistant structures in mountainous regions. For developing earthquake resistant infrastructure for its mountain cities, India could learn from some of the best practices already prevalent in the world and adapt them to suit the needs of its mountain cities. He added that as a step in that direction, HARCO had been documenting some of the best practices of the world and these could serve as the basis for formulating plans for sustainable development of mountain cities. The third paper of the session, titled, ‘Local Self Government in the 12th Plan in Kerala: A Step towards Environment Protection’ was presented by **Dr. P. P. Balan**. He discussed how Kerala, a state which had been experiencing the paradox of high personal hygiene and low



environmental hygiene had initiated measures which proved to be effective in addressing the problems of environmental pollution in the state. It was with the formulation of the 12th plan of Kerala that environmental issues in the state were effectively dealt with. The effective implementation of the plan by the local government in the state enabled it to achieve the goals of preservation of the environment, waste management, preservation of traditional water resources and soil protection. In addition, the

local authorities in the state also carried out environmental awareness programmes, water conservation activities, and afforestation and sanitation projects. As compared to the 10th and the 11th plan, the 12th plan accorded greater financial resources towards environment protection programmes. He concluded once again by emphasising the important role that gram panchayats could play in the protection and preservation of environment.

The fourth paper of the session, titled, ‘Socio-economic impacts of Climatic Change: Case Study of Srinagar City’ was presented jointly by **Prof. Sanjukta Bhaduri and Ms. Samreen Wani**. They emphasised that mountain cities were less like cities and more like towns owing



to their small size, remoteness, fragility and vulnerability. These unique aspects of mountain cities deserved to be considered while formulating plans for their development.



Drawing attention to

the perils of climate change

which included ecological imbalances, disruption of the local habitat and local hydrology, disruption of farming and agriculture and crop failure, they stressed how such changes posed

a threat to the livelihood of people residing in mountainous areas and even led to a loss of their assets compelling them to relocate to other areas. Focussing on the case of Srinagar, the capital city of Jammu and Kashmir, they asserted that the adverse effects of climate change were evident in the form of seasonal and large spatial-temporal variability. Changes in rainfall pattern had rendered Srinagar city more susceptible to floods. As social sustainability, economic sustainability and environmental sustainability were inter-linked, hence, changes in precipitation, hydrological cycle, cropping pattern, forest cover and other adverse environmental changes were impacting the socio-economic life of people in Srinagar.



The fifth paper of the session, titled, ‘Disaster Risk in the Mountain Cities: Issues and Concerns’ was presented by *Ms. Bipasha Kumar*. She discussed how excessive construction and massive development was taking place on steep slopes regardless of their ability to support such development. This unsustainable and unsafe pattern of development could be observed in Shimla, Dehradun, Itanagar and Darjeeling. Reckless construction owing to rapid urbanization had resulted in severe environmental degradation and increased the vulnerability of mountain cities and mountain people. Hence, it was imperative to undertake steps to reduce their vulnerability and enhance their sustainability.

While summing up the key takeaways of the session, Dr. Purnima Chauhan asserted that the infrastructure of mountain cities was not only used by the residents of mountain cities alone but tourists as well, who throng these areas in large numbers. Hence, preserving the Himalayan ecosystem and ensuring the sustainability of its infrastructure was a collective responsibility. Prof. Sanjukta Bhaduri added that mountain cities were in greater need of urban development than even the mega cities.

SESSION 1: Climate Change & Its Impacts: Emerging Trends, Issues and Strategies

Chair: Dr. Dai- Yeun Jeong

Co- Chair: Dr. V.N. Alok



In this session 4 papers were presented. First paper was presented by **Dr. Nandkisor More** on the topic ‘Climate Agreement: Issues and Possibilities for Developing World’. The author highlighted the issues of Paris agreement. The broad objective of the agreement was to limit increase in global temperature to 2⁰C through bringing down greenhouse gas emissions. India ratified the agreement. India plans to reduce its carbon emission intensity to 33-35 per cent by 2030.

A co-authored paper entitled ‘Climate Change and Urban Development: Building Resilience in Indian Cities’ was presented by **Ms. Bhavya Bhogra**. The authors argued that prevailing pace of urbanisation has adversely affected our ecosystem which resulted into increase in global warming and related environmental problems. There is an urgent need for sustainable development to protect our future generations.

Dr. Manjushree Mishra presented the paper on the topic ‘Wetland and Climate Change in Coastal Odisha: The Role of Chilika Lagoon in Addressing Livelihood and Nutrition’. The author pointed out that the loss of coastal wetland has major repercussion in triggering environmental problems that have threat to biodiversity, life and livelihood. The author argued that wetland has abundant scope to meet urgent needs of the society.

Ms. Vasavi Singh highlighted the certain issues of climate change and its impact on vulnerable section of the society, particularly women in her presentation.

The session ended with vote of thanks.

SESSION 2: Agriculture, Irrigation, Foods Security, Nutrition and health.

Chairman: Prof. Sucha Singh Gill

Co-chair: Dr. Sukhwinder Singh



Prof. Sucha Singh Gill

began by emphasising the role of agriculture in the society. He conveyed that agriculture provides the basis of subsistence for the population by production of food and raw materials. According to him, most regions

witness phases of fast developing prosperity followed by a crisis leading to disruptions in the development process or slowdown in economic activity. With this introductory statement he opened the session for presentation and discussion.

The first paper of the session, titled, ‘Agriculture and Food insecurity Nexus: Rural and Urban Dynamics and Adaptive Innovation’ was presented by **Mr. Dhanej Thapa**. The speaker began with a brief introduction on the food availability and food access pertaining to the flow of grains in Nepal. He stressed on the significance of food utilization and nutrition. He further, revealed the rural urban relationship pertaining to poor distribution of food, lack of market and poor transportation. According to him there is no national policy on food grains and food security during national emergency. Land contestation is prevalent in most parts of the Nepal and farmers generally have a rented land. He added for a climate resilient agriculture, farmers adaptation choices must informed by the expected change in climate. Though, Farmers have responded to climatic and socioeconomic drivers to agriculture, which involve a wide range of social, technological, political, environmental adjustments, often in association with a wide range of agricultural stakeholders in the region.

The second paper of the session, titled, ‘Association of Urbanization, health Facility and Health Outcome in Jharkhand: A district level analysis’ was presented by **Mr. Gulshan Kumar**. He started his presentation by discussing the sustainable development goals. The

level of urbanisation, housing pattern and health services prevailing in the different districts



of Jharkhand were analysed. He compared the trend of urbanisation in Jharkhand with India and found that the rate of urbanisation was higher in Jharkhand. The level of urbanisation is not equal in all the districts. It ranged from 5 per cent to more than 60 per cent in districts of Jharkhand. He reported that the overall level of urbanisation in the state is 24 per cent. He further disclosed that with increase in the degree of urbanisation household facility and health facility index is also increasing. There is huge inequality in terms of urbanisation, household facility, health facility and

health outcomes at district level. He opined that health facility plays an important role for better health outcome. Several program and policies are introduced to tackle with problems such as smart city, AMRUT, HRIDAY and other programs continues to reduce challenges of urban areas in India.

The third paper of the session, titled, ‘Socio-economic impact of Rohtang Tunnel and Proposed Hydroelectric dams in Lahaul and Spiti’ was presented by **Dr. Vijay Kumar Bodh**. The speaker laid the emphasis on hydropower and describes it as a booming consumer based market in India. He stated that one sixth of the nation’s hydropower is stored in the Himachal Pradesh. Lahaul & Spiti is 121 times the area of Chandigarh but still it has lowest population density in the state. According to him one large dam displaces about 44,000 individuals from their natural ecology. Disrupting a community and then distributing packages of education, health care and employment in the name of development represents no growth. He stated that villages may submerge for the proposed Jispa Dam. The Strategic defence tunnel is 8.80 km long horse shoe tunnel and is anticipated as socioeconomic tool representing development and modernity. He further stated that the tribes in Kinnaur have already faced the negative consequences as Sutlej, the major river is dammed. The speaker concluded by stressing on the need to include sustainable practices in the building of dams.

The fourth paper of the session, titled, ‘ZnO Nanoadsorbents for Pesticide removal from Aqueous Solution’ was presented by **Ms. Urmila Chakraborty**. The speaker reported that the

widespread use of pesticides is degrading soil and water quality and therefore their removal from waste water is the biggest concern. She reported about causative agents of water pollution such as domestic waste, thermal pollution, sewerage, radioactive waste. She further laid the stress on the harmful effects of the water pollution and also elaborated the role of agricultural activities in water pollution. She explained Naphthalene as a bi-cyclic aromatic hydrocarbon and being widely used as pesticide and repellent. The speaker presented a simple microwave synthesis procedure for ZnO particles and used them for adsorption of naphthalene.



The fifth and final presentation of the session, titled, 'Tube well: An Irrigation System and its Impact on ground Water in North India' was presented by **Mr. Youdhvir Singh**. The speaker opined irrigation as one of the most crucial inputs for agriculture. He insisted on the dominant role of ground water in India's agriculture and food security. He further stated that ground water irrigation has increased more rapidly than other sources of irrigation but intensive use of ground water has led to several problems specially the depletion of water table. The speaker concluded that despite the huge significance of ground water irrigation it is heading for a crisis in India and needs urgent understanding and attention.

After the final presentation Professor Sucha Singh Gill opened the session for discussion and queries. **Prof. Shalina Mehta** suggested crucial inputs to the presenters and advised Mr. Gulshan Kumar to check the rate of urbanisation in the tribal areas as Jharkhand is a tribal dominant state. Professor Sucha Singh revealed about the misuse of ground water in paddy crop plantation and he further suggested that instead of paddy crop plantation, crops such as maize which are more suitable for cropping in the region should be encouraged to be

planted. Dr. Sukhwinder Singh Suggested that social impact assessment should be carried out in a proper manner while constructing dams and tunnels and the session was finally closed by these valuable remarks.

Youth Forum on Social and Solidarity Economy, Peace and Urban Sustainability

Address by Mr. Varun Gandhi, Hon'ble Member-of Parliament, on the "Road to Sustainability: Opportunities and Challenges"

Mr. Varun Gandhi was the special guest at the Youth Forum on Social and Solidarity Economy, Peace and Urban Sustainability organised as part of the three day international conference.



Prof. Sukhpal Singh, Director General CRRID, formally welcomed the guests to the special session where he emphasised on the role and importance of social and economic solidarity represented by the NGO and

cooperative sectors which focus on transformation and change for social, economic and environmental sustainability. **Professor Rekha Saxena**, Department of Political Science, University of Delhi Chaired the Session and introduced the Chief Guest.

Special guest of the session, **Mr. Varun Gandhi** through his personal field experiences expounded about the plight of the vulnerable subaltern groups across the country where gross injustices and violations are part of their everyday lives. He stated that fight against inequality is not only important because it highlights the difference in wealth, it is also important because it reflects injustice. He also highlighted on the systemic nexus between police, politics and crime where gullible and vulnerable people are exploited and subjected to gross violations of their basic human rights. He emphasised on the need to make academia more action oriented and where academia becomes part of agitation carrying forward the voice against all forms of injustices across the country. He lauded the role of media for being

proactive in highlighting the cases of corruption, especially environmental violations which adversely impact livelihood of common people and citizen interventions.



Reflecting upon the urban crisis, Mr. Gandhi presented the case study of highly polluted Musi River in Hyderabad. The industrial effluents drained into the river have turned the river water toxic to such extent that the region has become the largest cancer circle in India. He stressed on the need to tackle employment generation and pollution in a sustainable manner.

Mr. Gandhi also remarked at the failure on part of various governments in tackling the issue of pollution and employment. ‘The government fails to be policy heavy, rather has been rhetoric heavy and polemic heavy’ he added. Effective and strong policy measures can serve as a breakthrough. He also mentioned the recent agrarian protests held by Tamil farmers in New Delhi and emphasized on the economic crises in agriculture. Decreasing land holding size is a major factor along with illiteracy among farmers, problems of middleman and lack of heavy investment has kept the farmers at the backstage. He asserted that misplaced agricultural practices, mainly borne out of commercial ventures have led to degradation of land and over-stressed underground water levels.

Mr. Gandhi insisted on comparing the farmer’s demand on loan waiver with the recent and frequent salary hikes awarded to the members of the parliament by the MPs themselves. He questioned the work efficiency of the MPs with figures that suggest that ‘51% of all the laws passed in last 15 years have not been discussed’ and ‘61% of all laws passed have been sent to no Standing Committee’. He opined that the increment of the salary of MPs in the parliament by the MPs themselves is not a fair bargain. Political establishment is not accountable in search for transparency and accountability.

Mr. Gandhi stated that the parliament needs to emerge out from being a place of politics to a place of policy; include new models of debate and discussions in democracy. Poverty, corruption and unaccountability in governance need to be tackled. The effective planning and implementation in 3 sectors viz. Agriculture, construction and tax reforms have the potential to refurbish the Indian economy. The citizens have a crucial role to play in meeting SDG they need to generate the capability to initiate and carry forward modern struggle for equality. Mr. Gandhi concluded the speech on a motivating note, 'this is the country of heroes, whose



hopes may be trampled on but they still have faith and belief in India. They pay through their blood and sweat'. He encouraged each one to 'fight for the poor and those not empowered and we must fight a good fight'.

Six Inspirational Stories were awarded by Mr. Gandhi to youths and other social workers for their work, effort and perseverance for environment, hygiene and protection of climate. **Mr Sunil Bansal**, Conference Co-coordinator read the brief profile of award

recipient's individuals namely Mr Jayant Kumar Atreaya, Mr Rohit Kumar, Mr Mastan



Singh, Mr Vijaypal Baghel, Mr Devender Sura and Mr Gajender Singh and NGOs namely Association of Professional Social Workers and Development Practitioners (APSWDP),



Chandigarh and Navsankalp.

Dr. Rashpal Malhotra, Executive Vice Chairman presented a memento to Mr. Varun Gandhi as a token of appreciation.



Prof. R.P. Bambah proposed the vote-of- thanks and presented a brief recap on the session. Dr. Bambah applauded Mr. Gandhi for the ‘sensitivity towards ground realities’ reflected in

his speech and thanked him for pursuing a fight for the people who are not empowered also for reminding us our responsibilities towards the un-empowered sections.

Session 3: NATURAL DISASTER MANAGEMENT, ADAPTATION AND RESILIENCE

Chairman: Dr. H. S. Gill

Co-chair: Dr. Rajvir Dhaka



In this session 4 papers were presented. First paper was presented by **Mr. Bishwodev Bhattarai** on Earthquake recovery effort in Nepal: Participatory planning approach for resilience future community. He mentioned about the epicenter of nearly 9000 deaths on 25 April 2015. He presented photos of damaged building and presented the data of earthquake on 25 April 2015. Cause of loss and damaged building were identified as plan of building is not good and very limited preparedness activity. For necessary rehabilitation and recovery plan, RRP is the important master plan complied to necessary policies and action in order to be implemented. He gave the Chronology of reconstruction planning in Japan with examples as area of plan, goal of plan. He also showed the current strategy which includes integrate rehabilitation, participatory planning approach which included planning with people not planning for people. He also gave the data of budget estimation.

Second paper was presented by **Mr. A. M. Aslam Saja** on Risk –sensitive development mechanism to build disaster resilience communities experience from Sri Lanka. He told about disasters and their impact in Sri Lanka, flood area and linkage between the three goal agendas and risk sensitive development. He also talked about Community resilience framework seventh plenary session whose Phase-1 step includes the process of developing and Phase-2

process of developing risk sensitive. He defined the difference in CRF implementation. Finally he explained about positive aspects and strengths of risks and disaster management.

Third paper was presented by **Mr. Ranish Bhattarai** on “Analytical study of local resources and preparation of local disaster risk management plan (LDRMP) regarding earthquake in Laharepauwa VDC of Rasuwa District of Nepal”. He talked about the world heritage site in Kathmandu highway collapse and April 2015 Nepal earthquake that killed 9000 people and injured 22000. He analyzed leading factors of earthquake. He gave introduction about research area Laharepauwa of VDC RASUWA, Disaster risk management planning process, ranking of hazard. He explained hazard analysis in Laharepauwa. He gave data about human resource in local level and planning made at local level and management plan was submitted to respective YDC.

Fourth paper was presented by **Ar Shahzad Ahmed Malik** on “Decoding SDG’s Indian Disaster Management Perspectives”. He presented decoding SDGs from Indian disaster management perspective. He also gave current Indian scenario of development from individual policies and five year plan. He talked about disaster management, Indian vulnerabilities, Decoding of SDG (17 SDG and 169 Indicator).

Session 4: ENERGY, GREEN GROWTH AND ECO-EFFICIENCY

Chairman: Dr. K. K. Bhasin

Co-chair: Dr. Madhuri S Rishi



In this session 4 papers were presented. First paper was presented by **Dr. Ganga Ram Chaudhary**. He highlighted sustainable techniques for wastewater treatment which otherwise

get polluted by various harmful dyes. Dyes even at low concentrations, reduce wastewater transparency, oxygen solubility and are often toxic and mutagenic for the aquatic flora and fauna. He further concluded and showed his work about nanoscale adsorbents; especially metal oxide nanoparticles are proving to be the promising alternatives for dyes, pesticides and heavy metals removal from aqueous systems. He interacted with the participants and answer the chemistry related questions in a lucid manner.

Second paper was presented by **Ms. Savita Chaudhary and Ms. Priyanka Sharma** on the topic-“NANOPARTICLES: Environment Boon for extraction of harmful pollutants”. They presented their work selective sensors and their subsequent applications. Combining the theoretical approach with optoelectronic studies, they developed an effective and simple protocol for anionic and cationic sensing.

Third paper was presented by **Mr. Deepak Rohilla** on “Role of Nanoparticles in Environment Remediation and Climate Change”. He presented the overview of nanoparticles and different methods of their synthesis. He threw light on four promising nanomaterials: bulky balls, nanoparticles, carbon nanotubes and quantum dots. He showed the various aspects of environment in which these nanoparticles are helpful. Role of nanoparticles in combating air pollution and water pollution and their role in energy sector. He concluded the talk by showing the methods of combating climate change and reducing pollution with the help of these nanoparticles, which includes harvesting carbon dioxide, cleansing water and accelerating digestion.



Third paper was presented by **Dr. Kulwant Singh** on the “Environment Implication of Subsidized Power Supply for Sustainable Agriculture in Haryana”. He presented his objectives and research methodology in which he had considered 3 districts and 540 households. He examined the sustainability in electricity and ground water use in Haryana. He had presented his findings in the form of data where he had compared the actual and required irrigation. He had also presented the estimates of excess electricity consumption and excess utilization of ground water. By including the problem of water table depletion

and soil degradation, he also showed the responses about environmental impacts of electrical tube-wells irrigations in his talk. He concluded the talk by talking about policy recommendations for the said problem.

DAY – 2: Tuesday, 7 November 2017

Session 5: AIR, WATER AND LAND POLLUTION AND THE EMERGING RISKS

Chair – Ms. Madhuri S. Rishi

Co-chair: Dr. Ramesh Madan



The First paper of the session, titled, ‘Urbanisation and Water Utilisation in the Sikkim Himalaya with Special Reference to Gangtok’ was presented by *Dr. Uttam Lal*. The paper focuses on the impact of rapid and unplanned urbanisation as well as high tourist influx on availability of water for usage. Sikkim largely being outside the colonial India influence saw the formal emergence of urbanization in recent decades. Rapid urbanization resulted in dramatic changes in the precipitation and water requirement demand. The paper also found that the awareness amongst the inhabitants about the water resource of the city is very low. Domestic and political factors are altering the water demand. Even though domestic tourism peaks in Gangtok in the month of April and May, when precipitation is fairly high, but urbanisation and tourism increases water demand to a level of causing water shortage. The month of October has started witnessing precipitation as well. This climatic change has increased the number of landslides in the area. Natural springs are also shrinking because of

widespread construction. Providing portable water has become difficult with this rapid urbanization and water availability is becoming a challenging task.

The Second paper of the session, titled, 'The sustainable Urban Water future: Role of traditional institutions in Shillong' was presented by **Mr. Bankerlang Kharmylliem** and **Dr.**



Ngamjahao Kipgen. The paper provided a case study of traditional social institutions in management of water availability. Water availability in Shillong is managed by both formal and informal Institutions. The traditional organisations known as *Dorbar shnongs* are based on customs and culture of Khasi tribes. These institutions undertake developmental, welfare, youth development work in addition to water management. The paper takes into account non Municipal area. The study reflects that these traditional institutions could be both efficient and inefficient. The local inhabitants are largely

satisfied by the working of *Dorbar shnongs*. However, the outsider may feel discriminated not only on water management issues but in other matters as well. These traditional institutions are not constitutional bodies. They are generally autonomous bodies guided by unwritten rules. All the *Dorbar shnongs* are independent of each other. This causes mismanagement in water distribution issues at macro level. Various government studies shows that these institutions are capable in bringing about more sustainable future. The paper concluded that in order to tap best of potential of these institutions, all the *Dorbar shnongs* should come together and mobilise the social capital. This simple step will make water management by these traditional institutions more effective.

The third paper of the session, titled 'Long term Variability Assessment in monthly mean Respirable suspended particulate matter at Damtal (Kangra), Himachal Pradesh, India' was presented by **Ms. Ashima Awasthi**, **Dr. Madhuri S. Rishi** and **Ms. Priyanka**. This study focuses on the long-term variability present in monthly mean respirable suspended particulate matter (RSPM) concentration over the Damtal river in Kangra, Himachal Pradesh. The study found that summer months showed positive seasonal variability while negative

variability were observed during the monsoons. In monsoons RSPM gets washed away by water. RSPM concentration is increasing due to mining activity in the area. It concluded that magnitude of seasonal and inter-annual variation have significant contribution in monthly mean of RSPM concentration.

The Fourth paper of the session, titled, Elucidating seasonal variability of volatile organic compounds in ambient air of Agra city Uttar Pradesh was presented by **Ms. Shivalli Panjgotra, Dr. Madhuri S. Rishi** and **Ms. Lakhvinder Kaur**. The study evaluated the seasonal variability of VOCs (benzene, toluene and xylene) in the Agra city of India and also compares the concentration of VOCs in weekdays and weekends during summer and winter season. The data is collected from CPCB for the year 2015. Results show more concentration of the VOCs in winters as compared to summers. This low dispersal of pollutants in winters is due to low temperature and low wind and shallow planetary boundary layer. Elevated concentration of VOCs was observed during weekdays as compared to weekends going to huge traffic. The session ended with vote of thanks.

Session 6: ENVIRONMENT MANAGEMENT AND SUSTAINABILITY

Chair: Dr. G. Prasanna Kumar

Co-Chair: Dr. Kulwant Singh



The theme for the sixth session of the conference was 'Environment Management and Sustainability'. This session was chaired by **Dr. G. Prasanna Kumar** and co-chaired by **Dr. Kulwant Singh**. While briefing the participants about the theme of the session, **Dr. Prasanna Kumar** highlighted its

multi-disciplinary nature. A total of five papers were presented during this session.

The first presentation of the session was made by **Mr. Kulwant Singh**. In his presentation, titled, 'Integrated Urban infrastructure Development for Solid Waste Management: An Indian Scenario', he highlighted that waste management was a key concern for cities and towns alike and this necessitated the development of a strategic framework for solid waste management. He stressed that at present the focus of solid waste management in cities and towns was collection and dumping of solid waste alone. However, mere dumping of solid waste was not a solution to the growing problems of solid waste management. For instance, unscientific use of landfills for dumping solid waste only resulted in leakage and contamination of ground water. He also pointed out the



challenges of solid waste management in India which included lack of segregation of wet and dry waste, poor collection efficiency, inadequate processing and disposal, lack of scientific landfill sites and reclamation of existing landfills. Hence, any solid waste management programme needed to focus on four Rs, namely, reducing, re-using, re-cycling and recovering.

Mr. Kulwant Singh also emphasised that there was no dearth of conversion technologies in India. What was needed was effective utilization of existing technologies coupled with community participation to ensure the success

of waste management programmes in India. He also attempted to drive home the point that 'waste was not waste' as it could be recycled, reused and employed for energy production.

He concluded his presentation by adding that waste in India was a lucrative industry pegged at around \$13 billion and India could reap this potential provided it developed adequate recycling facilities.

The second paper of the session, titled, 'The Impact and Significance of the Informal Car-Share Program in Quito's



Peripheral Dwellers: A “Mirador” Case Study’ was presented by **Mr. Miguel Guerra**. He discussed how dwellers of Mirador, located in Quito’s periphery, lacked access to formal public transport system. To overcome this challenge, the dwellers of Quito came up with an informal car-share program. The informal car-share service provided a necessary transport link that improved people’s capabilities profoundly in terms of job opportunities, education, safety, and additional benefits. A causal link between the car-share system and people’s improved capabilities was discovered. The informal transport service improved people’s lives dramatically and there was an enormous latent demand for the car-share program suggesting that there was room for the program to expand.



The third paper of the session, titled, ‘Peri-Urbanisation- An Urban Sustainability Challenge in Hill State of Himachal Pradesh, India’ was presented by **Mr. A.N. Gautam**. Through his paper, Mr. Gautam attempted to prove the mismatch between the official myth concerning the magnitude of urbanization in Himachal Pradesh and the ground reality pertaining to it. According to him, census figures estimated the level of urbanization in the state to be around 10%, lowest for any state in India. However, these official statistics concealed the actual magnitude of urbanization being experienced by the state over the last three decades and created a false belief that urbanization was not a major concern for the state. He pointed out that urbanization had been taking place in the state in the guise of peri-urbanisation. Peri-urbanisation, according to him, was the result of market forces, consumerism and least awareness about efficacy of spatial planning knowledge and sustainable development. He added that this situation was an outcome of unintentional lapses on the part of governance structures responsible for managing civic affairs. Peri-urban areas, rural planning areas and special areas were eligible to be assigned urban status. Integration of these areas with mainstream urbanisation would reveal the actual level of urbanisation in the state to be much higher than that projected by official statistics. He concluded by recommending the adoption of a regional planning approach and the formulation of a state urban policy to strengthen infrastructure and ensure sustainability of urban settlements in the hill state of Himachal Pradesh.

The fourth paper of the session, titled, 'Understanding Urbanization & Development in Mountain Cities: The Story of Pauri in Uttarakhand, India', co-authored by **Dr Pampa Mukherjee** and **Mr Sunil Kumar**, was presented by Sunil Kumar. In his presentation, he highlighted the development and rapid urbanization taking place in hills. Choice of Pauri was governed by the fact that it was a colonial town, headquarter of the district and Garhwal division and had been the centre of agitation during the Uttarakhand movement. Sunil Kumar analyzed the process of urbanization in Pauri from the perspective of subaltern-urbanization. This is because the focus of subaltern urbanization was on neglected cities and towns. He concluded his presentation by emphasizing the forces responsible for rapid urbanization of Pauri which included rural-urban interaction, educational opportunities and settlement of outsiders. He even added that tourism was yet to emerge as a significant force contributing to the rapid urbanization of Pauri.



The fifth presentation of the session, titled, 'Environmental Sustainability of Development of Irrigation Resources', was made by **Mr. Karamveer Singh**. According to him the environment that we live in and make use of had been stripped off its precious components day by day. The harmful effects of human activity on biophysical environment were evident in rapidly rising global temperatures causing bigger, harder downpours and simultaneously longer and deeper downpours. He stressed how some states in India were experiencing

severe floods while others were battling drought like conditions. He also discussed the problems of air pollution, water pollution, groundwater depletion, water crisis, etc. He concluded his presentation by recommending water conservation during flood season, use of traditional pond system for irrigation, drip and sprinkler system, artificial recharge of groundwater, plantation of more trees and adoption of environment friendly practices to prevent further degeneration of the environment.



The presentations were followed by a question-answer round during which *Mr. A. N. Gautam* was asked if a separate definition of urbanization was needed in case of mountain cities. Mr. A. N. Gautam replied that urban development was a state subject and the role of central government in this area was only of advisory nature. Hence the criterion for urbanisation did not require a change at the central level. Any area declared by the state government as an urban area would be readily accepted by the central government.

While summing up the highlights of the session, *Dr. Prasanna Kumar* added how protecting the environment was the need of the hour and also urged upon the need to cultivate greater self-discipline to achieve this end. He concluded by quoting Mahatma Gandhi who had said, “The earth has enough for everyone’s need but not enough for everyone’s greed.”

Session 7: DESIGNING INFRASTRUCTURE, TRANSPORT AND HOUSING TO COPE WITH THE CLIMATE CHANGE

Chair: Prof. R.S. Sandhu
Co-chair: Dr. Bindu Duggal



First paper was presented by *Ms. Sunita Devi* titled “Microbial Keratinases- An Economic, Eco-friendly and Innovative Approach for Waste Management”. The problem of disposal of poultry by-product was discussed by her as she started with her presentation. It was

highlighted that it is need of the hour to recycle in a technological way. Microbial keratinases are defined as proteolytic enzymes which should be used for biodegradation of keratin. the presentation included pictures showing sample collection sites from different locations of Himachal and degradation of native feathers. Primary and secondary screening of keratinolytic activity was undertaken. Speaker concluded that out of 60 isolates 24 could convert the keratin waste into compost thus, keratin degrading isolates can be used to convert poultry waste into compost.

The second paper was presented by *Ms Ashima Gupta* on the topic “Reforming the 'Summer Capital': An Analysis of JNNURM in Shimla”. Speaker started the presentation by highlighting the fact that major focus on Indian cities have started since Narsimha Rao government and since then there has been consistent rise in mega cities. The speaker focused on two research questions, firstly questioning the assumptions behind the policy and secondly the execution of the policy. Shimla faces number of problems some of them being inadequate basic amenities, disconnected new and old sewerage, transport, tunnels etc. along with these the major problem that Shimla faces is that of land shortage. Also there is lack of data availability. Considering these problems the speaker concluded that assumptions taken under these policies is questionable as Shimla has very different topography and data unavailability has hindered the execution of the policy.

Third paper was presented by *Dr. Bhupinder S. Marh* on the title “Topic-Shimla (Simla): Nostalgia of History and an Enigma of Urban Planning”. Speaker started by pointing out problems of Shimla. Speaker highlighted that Shimla is the least urbanized city but most populated as compared to other towns of the state and the statement was supported by elaborate data. Shimla has very different characteristics from a usual town as it has no natural source of water, not well protected naturally and no sizeable town should be on the ridge but Shimla is an exception. Speaker showed the flip side of Shimla and gave an elaborated view about Shimla listing its problems and unique characteristics.

Dr. Kulwant Singh was the fourth paper presenter on the topic “Urban transport scenario in India: Need for Unifies Mobility”. He started with issues faced by Indian cities related to lack of public transport. New urban agenda and a second look is needed on urban planning and zonal planning related to urban transport. Historically, in Indian cities divisions are made according to need and this has increased mobility issues with cities. India has one of the

longest road network and fastest growing automotive market still the scale of mobility in India dwarves the level of mobility across the world. Where road sector moves 85% of passenger and 65% of freight a multi-level prolonged strategy is needed for successful realization of transport mission with well-defined goals across many dimensions.

Mr. Gurshinder Singh Bajwa presented a paper on “Amritsar as a smart city: A sociological analysis”. The talk was mainly concerned with issues faced by people of Amritsar. Once a green belt enjoyed by people has now turned into congestion, traffic related issues, urbanisation, slums etc. Healthy environment has now turned into chaos in the city. Clean water, sanitation, digital divide is an issue in the city. Major urban policies ignore the needs of slums. Smart city project also includes all the urban needs except for slums. People centric needs are ignored and because of deadline issues were selected only which were previously noted by the officials. The divide between policy and implementation should be corrected in order to regain the smart Amritsar city.

Session 8: ECO-ENVIRONMENTAL CONCERNS OF MOUNTAIN CITIES - I

Chairman: Ar. Jit Kumar Gupta

Co-chair: Dr. Ronald Macatangay



The first paper of the session, titled, ‘Uttarakhand Disaster – 2013; Lessons Learnt and Way Forward’ was presented by **Dr. Chandan Ghosh**. The speaker started the presentation by displaying an audio video on earthquake resilient buildings. The speaker reported that 90 per cent of the city building flout safety norms. He also displayed the before and after earthquake photograph of the Rawlakhachatri, Bhuj and showed how the monument disappeared after the earthquake. The speaker insisted on the X bracing in the buildings architecture which

takes care of sheer forces due to earthquakes. The speaker also insisted on the use of geo-tubes for coastal protection. He stated that in the mountain region we can store and regulate the surplus water with use of these geo-tubes. The speaker also displayed photographs of hill construction showing tilt. He added that making roads in hills and retaining the cut slopes is a common solution but it should be cost effective having long term performance. For this the speaker suggested a simple means of planting textile grass to protect the slopes. The speaker is of the view that Vetiver grass which is widely present in India could be used for canal lining which serves as a permanent solution and is also cost effective. The speaker further talked about the bridge abutment stabilisation with the help of hydro seeding.

The second paper of the session, titled, 'Resilient and Safe Mountain Cities Contextualising Pilot Studies; reference to Sendai framework and Prime Minister Agenda 10' was presented by **Dr. Anil Gupta**. The speaker spoke about the ecological footprint and happiness. He pointed that higher quality of life has higher quality of ecological footprints. The speaker proposed the land as a limiting factor. He further described land as central and dynamic system. The speaker raised some of the key issues such as tourism/livelihood, waste management, land and drainage, infrastructure, natural hazards and earthquakes. The speaker talked about the paradigm shift in disaster management. The speaker conveyed that the National Disaster Management plan is aligned with the Sendai Framework for Disaster Risk Reduction. The speaker further talked about the training modules such as Environmental Legislation for Disaster Risk Management, Flood Disaster Risk Management, Geo-informatics Application in Chemical Risk Management. The speaker laid the stress upon the



indigenous knowledge for Disaster risk management.

The speaker further reported that the Climate Resilience Framework can be understood by understanding vulnerability and building resilience.

The third and final paper of the session, titled, 'Sustainable Habitat Planning- Putting SDGs in to Practices for Hilly Regions' was presented by **Dr. Akshaya Kumar Sen**, the speaker showed the trend of urbanisation in India. He conveyed about the consequences of increasing urbanisation in hills such as land and housing shortage, lack of parking

space and vulnerable climate change. The speaker laid the stress on Sustainable Development Goals particularly on the Goal 11 which is about making cities and human settlements inclusive safe, resilient and sustainable. The speaker laid the emphasis on regional planning approach, facilitating urban land supply, integrated land use with transport planning and planning for public spaces. The speaker suggested that incorporating regional level plans with trans-boundary cooperation will help putting Sustainable Development Goals in to practice for hilly regions. He added that addressing climate risk opportunities in mountains and financing Himalayan region concern and increase investments in the hilly and mountain regions will help the cause. The speaker further reported the implication of recent urban initiatives in India for hilly regions such as development of smart cities, AMRUT, PMAY, Swachh Bharat Mission and RURBAN mission. The speaker concluded by giving suggestions for suitable habitat planning which includes promoting systematic urban planning, promoting compact urban form, reorienting planning approach and planning for public space.

Dr. Harjit S. Anand proposed the discussion of the session during the tea break and the session ended with vote of thanks.

Session 9: POVERTY, LIVELIHOOD, DISPLACEMENT, MIGRATION AND EXCLUSIONS

Chair: Prof. Ashwini Kumar Nanda

Co-chair: Dr. Ganga Ram Chaudhary



In this session 4 papers were presented. First paper was presented by *Mr. Sudesh Kumar* on ‘Development, Displacement and Poverty Issues: A Sociological Study on Baglihar Dam Project in Jammu and Kashmir’. He talked about displacement and poverty issues. He said that displacement is the biggest consequences of development projects. It creates poverty among displaced people as they lose their land, home, income sources, natural resources, etc.

it directly affects the social life of people. It has been seen that most of the people live under impoverishment because the state government only provides monetary compensation and then leaves them alone. Nobody bothers about the social life after displacement. Women, children and youth are the most badly affected by the displacement. Children are suffering from health and education problems. The morbidity and mortality rate has increased among displaced people due to the psychological depression, lack of good nutritional food, and lack of basic facilities, lack of source of income. There are a number of social problems among displaced youth due to the loss of income sources, social relation, loss of kinship system, marriage problems, unemployment etc. Study observed that development projects are beneficial for the certain section of the society and become a disaster for the marginalized section of the society. In the absence of rehabilitation and resettlement policy, affected people will always face threat for survival of their life.

Second paper was presented by *Ms. Namrata Singh Panwar* presented on 'Exclusion of Migrants and Public Policy in India: Revisiting the Harris-Todaro Model'. When HT Model was introduced in development economics, it vibrated many strings. It was new celebrated model and many countries thought that they finally got a development model which can guarantee the success. But as time goes off, the new researches surfaced which proved that the direction provided by HT Model is not the realistic one. It is just a technical construction which overlooked many other factors which can affect the equilibrium. It ignored some basic concepts like agglomeration externalities, urban land market, rural urban linkages etc, which can change the direction of whole policy framework. New developments came with new arguments in favor of migration. Migration not only helps in development of urban sector but also initiate development in rural sector. Indirectly it generates capability in the poor left behind which help them to overcome the developmental constraints.



Third paper was presented by **Dr. Sushant Setia** on ‘Towards Sustainable and Inclusive Development Through Inclusion of Persons with Disabilities (PWDs) in Higher Education (A Case of Panjab University, Chandigarh): Impediments and Alternatives’. He talked about some solutions which came up towards the end of the interviews with each of the respondent emphasized upon the need of ramps, lifts, screen reading softwares, four-wheeler free campus, computerization of the processes as far as possible, sensitized behavior of the university staff towards the PWD students, maintenance of the foot paths, limiting the number of railings in the hostels and the university markets, increasing the number of e-rickshaws in campus and ensuring the availability of e-rickshaws on the very gates of the hostels, renovation of the floors where required, creating ramps instead of footsteps in front of lifts in girls hostels, tactile pavements, staircase with smaller steps, adequate washrooms/toilets were the major solutions and requirements suggested by the respondents. Thus conclusively, a ray of hope in the form of the ‘Equal opportunity cell’ had come up but the morale of the students and infrastructural standards of the buildings as well as availability of study material when compared to the ranking and societal esteem of the name of Panjab University were found grossly inadequate and non-justifiable.



Session 10: SOCIAL DIMENSIONS OF CLIMATE CHANGE: SOCIAL AND ECONOMIC IMPACTS, HUMAN RIGHTS, GENDER AND VULNERABLE COMMUNITIES

Chair: Dr. Chandan Ghosh

Co-chair: Dr. Ashima Banker



First paper on ‘Sustainable Neighborhoods – Building ‘Part’ to ‘Whole’ was presented by **Dr. Ashima Banker** and **Dr. Sandeep Paul**. **Dr. Ashima Banker** presented the paper. She highlighted the concerns on urbanization and emanating problems with urbanization. The cities are growth engines for any national but they have a flipside to it, she asserted. The presentation poses serious questions on the idea of city planning with respect to ecological, environmental and social sustainability. The study makes an observation that social sustainability has remained to the extent of being a namesake component in larger planning. The study emphasises on imbibing social sustainability at large and smaller levels. The study aims to look at smaller level of social sustainability with the help of an innovative studio group. As a result layers of neighborhood residing within clusters around Ahmadabad have been studied. The study concluded with the assertion that level of social interaction and accessibility are crucial to maintain a sustainable urban landscape. Linking physical design principle to social sustainability can create meaningful places for people.



Second paper on 'Facets of Deprivation of the Framing Community (The Case of Indian Punjab): An Analysis of Human Rights Infringement' was presented by **Dr. Gunjan Setia**. She presented a detailed case study of agrarian crisis in rural Punjab. She started the presentation by throwing some light on the need to develop a holistic and sustainable farming sector for the betterment of farmers. The shift in agricultural practices from farmer owned to commercial farming has led to the decline in agriculture in Punjab. Commercialization in agriculture has been problematic. After Green

revolution, the political scenario tends to neglect the concerns of farmers and the peasants. As a consequence they transformed from subsistence to commercial agriculture. Punjab agriculture has shifted into global market putting new stress in the rural economics and land resource. Focusing on the issue of farmer suicides she insisted that the neo liberal regime has acted as a catalyst to push farmers' suicides in rural Punjab. The study has identified 20 factors responsible for promoting and aggravating the socio-economic circumstances of suicide. Economic marginalization, landlessness, drug addiction etc have been listed as the major factors. Problems in demographic grounds also aggravated the suicides. Absence of necessary support system and psychological factors has also been a crucial factor along with the failure of government has been quoted as major factors. She concluded by emphasizing the human rights violation in Punjab and added that agrarian sector need not be ignored.

The third paper on Educational Deprivation of Dalit Women: A Study of Slums in the Union Territory of Chandigarh by **Dr. Jagdish C. Mehata** and **Ms. Vandana Sharma**. Ms. Vandana Sharma presented the paper. The study considers women, dalit and slum dwelling poor women to be the most deprived section current Indian society. The study examines government policies and administrative efforts in promoting education that are free and compulsory to all. Education for all has been studied in detail and the effects of the policy have been examined in the study area. The role of education has been stressed in the study for the upliftment of women and deprived sections. Causes of educational deprivation of dalit women in Chandigarh have been appropriately examined and appropriate solution has been suggested. Language, dressing, peer group bullying in schools have been found to be major

inhibitory factors limiting the poor girls from attending schools. Guidance and counselling has been identified as major driver of social change.

Session 11: CLIMATE CHANGE TO GOVERNANCE: ROLE OF LOCAL GOVERNMENTS, COMMUNITIES, NGOS, MEDIA AND OTHER STAKEHOLDERS

Chair: Dr. Anil Gupta

Co-chair: Dr. Siby John



The first paper on ‘Constraints Development of Participatory Budgeting Practices in the Russian Regions (on the example of Republic of Bashkortostan)’ was presented by *Dr Akhmetianova Rimma Anasovna*. The paper provided a glimpse of the system of local self-government in Russia and the associated problems. Effectiveness of local self-government and municipal administration in Russia has been highlighted. Local initiative programmes have played a crucial role in improving the infrastructure facilities. The successful model in Russia derives some inspiration from the local self-governance concepts practiced successfully Kerala. *Kudumbshree* in Kerala has been sought out as a role model in the local self-governance in Russia. She stressed on developing new paradigm of management in Russia, that is based on a large scale socio-cultural interaction of subject and object management. She also insisted that research has a crucial role to play in developing new models of governance.

The third paper on ‘The State of Symbiosis between Indigenous People and Forest: A Curse of Politics’ was presented by **Dr. S. M. Monirul Hassan** and **Dr. Boshumitra Chakma**. In this paper, they emphasized on the importance of forests in daily lives of the inhabitants of Chittagong. They also pointed at the development activities being carried out in the valley. Hydroelectric projects in the valley have been a major threat to the forest resources and several other development activities have been posing serious ecological threats to the community. Indigenous communities have been acted drastically. Also, the consequences on socio-economic lives of the indigenous people have been emphasised. They discussed anthropological and ecological approaches have been implemented as the theoretical framework of the study. The authors stressed on the need to conserve forest ecosystem to tackle the issues of environmental consequences.



The fourth paper on ‘Staus Quo of Tourism in Manali and its Environmental Impacts’ was presented by **Dr. Parteek Singh Thind**. The author enlisted all the tourist activities and sites around Manali region and focussed on the ecological impact of floating population and vehicular pollution on the snow deposits around Manali region. The author calculated the carbon deposit that has been found to be responsible for quick melting of snow. The melting of snow has been found to cause major ecological changes in the region. The author highlighted on NGT ban on vehicular traffic and proposed remedial framework to meet the future challenges of tourism, development and increasing population stress.

The fifth paper on ‘Conservation Environment and Role of Religion: A sociological Understanding’ was presented by **Mr. Mudasir Yousif**. *Mudasir* Yusuf presented an argument that religion can play a crucial role in creating environmental awareness and sensitizing people to follow environmental friendly practices. His study highlighted

theoretical frameworks from the works of Emile Durkheim, Max Weber and Gilbert. He said that religion can be used as a mobilising medium in environmental protection. The presentation ended on an affirmative note that environmental capital can help in building mitigation measures in tackling problems of the future.



The sixth paper on Women Negotiating Change in the Urban Community Development by People Participation was presented by **Mr. Vivek Trivedi** and **Dr. Monica Singh**. Authors on emphasized on the role of women in promoting and negotiating positive change in the community. A convergence model has been used in involving more women participation to bring in desirable changes. An urban model of community development has been used along with the most anticipated Kerala model. The initiative has played a centrifugal role in widening societal cohesion and leading socio-economic upliftment of urban poor. Association of women and capacity building of women has played a crucial role in creating a wide network of women volunteers. Women have acted as catalyst of social change in the model. The authors focused on financial inclusion of poor and linking livelihood of the poor. As a result awareness, skill building, community development and volunteering have emerged as major outcomes of the project.

The seventh paper on 'Role of NSS in Swatch Bharat Abhiyan: A case study of Panjab University' was presented by **Ms. Annu Drall**. The study was carried using a participatory-observation approach in DAV College in Chandigarh. The author highlighted the role of youth in nation building as a link between needs of society. Also, the policies and civil society action, social consciousness has been emphasised time and again.

Day- 3: Wednesday, 8 November 2017

Symposium- 11.30 am to 1.00 pm

INSTITUTIONAL FRAMEWORK FOR SUSTAINABILITY IN MOUNTAIN CITIES

Chair: Dr. Dai-Yeun Jeong

Co-Chair: Ar. Jit Kumar Gupta



The theme for this symposium was “Institutional Framework for sustainability in mountain cities”. The first presentation of this symposium was presented by **Dr. Harjit S. Anand** on ‘An Integrated Approach to Urban Sustainability in Mountain Cities’ in which he talked about environment sustainability that is using the earth resources for habitat, economic activities and transportation in such a manner that coming generations inherit a cleaner, healthy and more sustainable planet. It is about reducing the carbon imprint, increasing energy efficiency, recycling waste water, segregating and recycling garbage. According to him sustainable cities should be characterized by a “unique significance “each letter of the word “significance” implies a specific characteristic of sustainability. He highlighted about “global warming” that is average increase in the temperature of the atmosphere that if left unchecked can cause pervasive natural disasters and extinction of some species. And global warming has also been identified as a major threat to bio diversity. The key areas of concern are power plants, industrial plants, motor vehicles, agriculture, and animal husbandry, transportation heating and cooling.

The second paper of this symposium was presented by *Ar. Jit Kumar Gupta* titled “India Options for Managing Global Warming through Realization and Rationalizing Urbanization”.



He came up with the idea of global warming as a climate change –becoming a distinct global reality. Climate change known to have local footprints with global impact. According to him cities are materialization of humanity’s noblest ideas, ambitions and aspirations but when not planned or governed properly, can be repository of society’s ills. The concept of Indian urbanisation plays a important role because they are areas of future concentration of population and also a provider of large employment. He said that India Urban Awakening: Building Inclusive

Cities (April, 2010) report projects that by 2030, 70% GDP and 80% revenue generated by cities. The main urbanisation issues are impact of local and global environment and alter the quality of life. He concluded by saying that solution lies in making cities more sustainable by changing options for city planning and by avoiding *metropolitization* and by rationalizing the pattern of city growth.

Session 12: MANAGING URBANIZATION TO COPY WITH CLIMATE CHANGE

Chair: Prof. Debal K SinghaRoy

Co-chair: Dr. Rajeev Kumar



The theme for the sixth session of the conference was ‘Managing Urbanization to cope with Climate Change’ and the session was chaired by **Prof Debal K. SinghaRoy** and co-chaired by **Dr. Rajeev Kumar**. In this session 3 papers were presented.



The first presentation of the session was made by **Ms. Harsimran Kaur**. In her presentation, titled, ‘A Review of Urban Sustainability tools with Focus on Hilly Regions’ she highlighted that the urban sustainability assessment tools are useful and effective means for creating and monitoring of sustainable urban development. The review of most widely used urban sustainability assessment tools concluded that some aspects such as

infrastructure and resource development are consistently given higher points/weightage in most of the rating tools, whereas some other aspects site considerations and business and innovations are given very less weightage. The study highlighted the overlap between various dimensions of sustainability in urban sustainability assessment tools and hence, a list of common indicators which were not covered in the assessment tools was established for the future studies to cover the sustainable urban development and provide a way for planners and developers to develop framework for local sustainability indicators. Context specific significance to different categories/items and indicators is likely to be more appropriate especially in context of environmentally sensitive areas to ensure the appropriateness (ensuring hill stability, prevention of environmental degradation, ensuring climatic comfort/energy efficiency, improving quality of life, ensuring visual compatibility) in the context of urban hill settlements like Himalayan hill areas of India.



The second paper of the session, titled, ‘Urban Local Bodies and State of Service Delivery in India Challenges of Inclusive Urbanization and an Agenda for Better Cities’ was presented by **Mr. Muhammed Riyas**. Speaker started the presentation by highlighting the fact that a city is said to be inclusive if it includes all sections of the society be it rich, poor, different ethnicities, children, and olds, etc. in the developmental process. In other words, make everybody part of the process of urbanization. The following are the suggestions that can ensure better service delivery and thereby

reduce the increasing exclusion in the urbanization process. Prioritize basic services such as water, sanitation in the delivery of the municipalities. The higher level governments like state and union must help the municipalities to discharge these functions. Cross-subsidization can be implemented to provide water to the weaker sections of the society. It will ensure the well-off will be disincentive from the wastage of water. Service charges can be imposed to reimburse the cost of delivery, in turn, sustain the delivery. Urban slums are worse in term of the availability of water. Area-specific plans should be introduced to cater to the differential demands. Central and state government can incentivize the municipalities to do these by altering performance grants. Since water is not an urban issue, a holistic and integrated blueprint has to be prepared for equitable conservation distribution of water. Conservations include protection of the existing water resources, rationalizing the usage, recycling and reusing the water along with ensuring just availability of the water especially for the poor sections of the society.

The third paper of the session, titled, ‘Challenges of Inclusive Urbanization in India: A Critical Overview of JNNURM (BSUP & IHSDP) and Lessons for Housing for All’ was presented by **Ms. Namrata Singh Panwar**. Speaker started the presentation by highlighting that since the decade of 70s the nature of Indian urbanization is shaped by the neoliberal policies backed by the private capitalism. Urban amenities, labour reforms and services are reshaped to benefit the corporate houses and in the process urban poor, migrants and slum



dwellers are excluded from the process of development. By learning from the lessons of JNNURM, housing for all mission and any other mission for urban poor should recognise that cities are like close integrated circuits where we need skilled and unskilled labour, migrants, informal sector workers, vendors, labour unions and blue collared job workers. So the fabric of urban development should contain all the groups of society and should adhere to their needs and aspirations. The

urban planning paradigm is required to fit into the 'right to city' framework.

Poster Presentations

Following poster presentations were made in this session:

- **Ms. Yesbinder Kaur** and **Dr. G.R.Chaudhary** presented on "Comparative Performance of Bare and Functionalized Zno Nano Adsorbents for Pesticide Removal from Aqueous Solution".



- **Ms. Renu Lata, Dr. Madhuri, S. Rishi, Mr. Herojeet RK, Ms Konchok D and Mr. Gagandeep S** presented on “Metalosomes: Fabrication, Characterization and Encapsulation of Dye”
- **Ms. Preeti Garg, Ms. Kanika Berwal, Mr. Bunty Sharma, Dr. G.R. Chaudhary and Dr. Gurpreet Kaur** presented on “Metalosomes: Fabrication, Characterization and Encapsulation of Dye”.
- **Mr. Pooja Chauhan and Dr. Savita Chaudhary** presented on “Surface Alterations of Nanomaterials for more Biocompatible and Safer Nanotools”.
- **Ms. Gurpreet Kaur, Mr. Mehar Singh and Dr. G.R. Chaudhary** presented on “A Facile Route for the Synthesis of Co, Ni And Cu Metallic Nanoparticles with Potential Antimicrobial Activity”.
- **Mr. Moondeep** presented on “Simple green and facile synthesis of CuO nanomaterials and their application in ambient removal of water contaminants from waste water”.
- **Ms. Navpreet Kaur, Mr. Mehar Singh and Ms. Varsha Dogra** presented on “Fabrication of metallosurfactant based copper oxide nanoparticles and their interaction studies with calf thymus DNA”.
- **Mr. Teenu** presented on “Utilization of surface functional CeO₂ nanoparticles for unloading chemical and pathogenic character of wastewater”

Valedictory Session

Address by Chief Guest Prof Kaptan Singh Solanki, Hon’ble Governor of Haryana



Prof. Kaptan Singh Solanki, Hon’ble Governor of Haryana was the Chief Guest and other dignitaries namely **Dr. Rashpal Malhotra**, EVC, CRRID, **Prof. Sukhpal Singh**, Director General, CRRID, **Smt. Asha Kumari Jaswal**, Mayor, Municipal Corporation Chandigarh and **Prof. R. P. Bambah**, Chairman

Governing Body, CRRID were present in the valedictory session. The Hon’ble Governor in his valedictory address stressed upon the need to be sensitive towards environmental issues and to focus upon sustainable ways and methods of development which simultaneously take



into account common lives and nature. He expounded on the need to protect earth and to make it fit for human habitation. He opined that good quality of social life depends upon good quality of environment. Hence, it becomes imperative to maintain a suitable environment. He highlighted the importance and significance of the initiative taken by the Government of India like Smart Cities Project and Swachh Bharat Mission to ensure quality of environment.



He also applauded CRRID and the coordinators for organizing this topical international conference, the theme of which holds immense significance in the face of rapid urbanization, climate change and global warming. Mr. Manoj Kumar Teotia, Conference Coordinator, presented the summary of the proceedings of the conference over the span of three days.

The session ended with a vote of thanks by Professor R P Bambah.

Some Glimpses from the Conference



1. Release of Book of Abstract and Programme schedule



2. Presentations by Delegates



3. Study visit to the Capitol Complex



4. Dinners hosted by the Governor Haryana; The Chief Minister Haryana; UT Administration and Lunch hosted by the Chairman Governing Body, CRRID.

List of Delegates

A. Indian Delegates

Sl. No.	Name of Delegate	Designation and Contact detail
1.	Prof. Kaptan Singh Solanki	Hon'ble Governor of Haryana, Chandigarh
2.	Ms. Asha Kumari Jaswal	Mayor, Municipal Corporation Chandigarh
3.	Mr. Varun Gandhi	Member of Parliament (MP), Government of India, New Delhi
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115.	Dr. Rashpal Malhotra	Executive Vice-Chairman, CRRID
116.	Prof. Sukhpal Singh	Director-General, CRRID
117.	Dr. Sucha Singh Gill	Former Director General, CRRID and Senior Professor, Research and Coordination, CRRID
118.	Mr. Manoj Kumar Teotia	Conference Coordinator, Assistant Professor, CRRID Chandigarh
119.	Mr. Sunil Bansal	Conference Co-Coordinator, Associate Professor, CRRID Chandigarh
120.	Dr. Aswini Kumar Nanda	Professor, CRRID Chandigarh
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129.	Dr. Jatinder Singh	Assistant Professor, CRRID Chandigarh
130.	Mr. Sanjay Gupta	Secretary, CRRID Chandigarh
131.	Mr. Sandipan Sharma	Accounts Officer/Financial Advisor(Acting),CRRID Chandigarh
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