

Resilience Approach in Urban Paradigms

Training Needs for Urban Resilience in India

BReUCom Symposium 3

Assessment Report

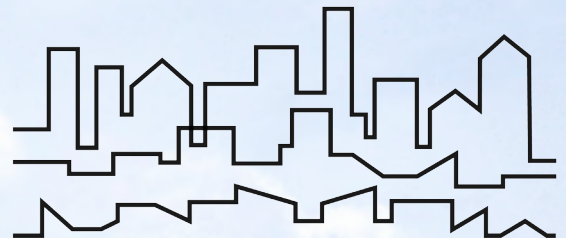
Event comprising of

**Advisory Board Meeting on 2nd Dec, and
Symposium on 3rd and 4th Dec 2019,**

hosted by

**Kamla Raheja Vidyanidhi Institute for Architecture
and Environmental Studies (KRVIA),
Mumbai.**

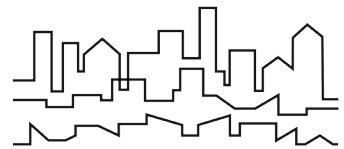
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Building **Resilient** Urban Communities



The symposium was organised as part of the Building Resilient Urban Communities Project, funded by the European Union.

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The third BReUCom symposium titled, 'Resilience Approach in Urban Paradigms: Training Needs for Urban Resilience in India', was held at KRVIA, Mumbai, on 2nd, 3rd and 4th of December, 2019.

The event was held within the framework of the project 'Building Resilient Urban Communities' (BReUCom), funded under the 'Capacity Building in Higher Education' program of EU Erasmus+.

The symposium witnessed participation from:

Indian Institutions of Higher Education

Kamla Raheja Vidyanidhi Institute for Architecture and Environmental Studies, Mumbai
School of Planning and Architecture, Bhopal
School of Planning and Architecture, Vijayawada
National Institute of Technology, Hamirpur

Indian Non-Governmental Organisations

Society for Promotion of Area Resource Centers, Mumbai (SPARC)
Centre for Urban and Regional Excellence, New Delhi (CURE)

European Institutions of Higher Education

Danube University Krems, Austria
University of Twente - ITC, Netherlands

Advisory Board for the BReUCom project

Experts in various fields who delivered lectures over the three days of the Symposium

The three-day symposium was planned as a set of three distinct events:

1. Advisory Board Meeting
2. Exhibition of BReUCom Coursework
3. Symposium to discuss BReUCom project work

Each of the events has been described in detail in the sections that follow.

CONTENTS

1. Agenda and Symposium Schedule

2. Symposium Participants

3. Day 1: Advisory Board Meeting and Reviews

Agenda

Case Study 1: Craft, Culture and Community: Learning Resilience from the Ziro Valley, *SPA Bhopal*

Case Study 2: Community Resilience for Conserving Heritage Values within a Historic Indian Native Town, *KRVIA Mumbai*

Case Study 3: Urban Heat and Spatial Dynamics: Planning towards Climate Resilience, the case of Bangalore, *SPA Vijayawada*

Case Study 4: Climate Resilient Planning and Design for Vulnerable Hill Settlements, a case of Kullu region, *NIT Hamirpur*

Case Study 5: Enhancing Institutional and Community Resilience to Climate Change Impacts in Jodhpur City, *SPA Bhopal + KRVIA Mumbai + ITC Netherlands*

Case Study 6: Marginalised Communities and Climate Change, case of Gazdhar Bandh, *KRVIA Mumbai + SPA Bhopal*

Case Study 7: Climate-resilient Adaptation of Built-form in Hilly Regions through Traditional Wisdom and Best Practices, *SPA Vijayawada + NIT Hamirpur*

Case Study 8: Thermal Comfort Study for Mitigating Heat Stress through Climate Responsive Planning and Design, case study of New Rajarajeswari Peta, *SPA Vijayawada + DUK Austria*

Case Study 9: Socio-Ecological Resilience of Peri-urban Coastal Areas, Climate Change and its impact on Urban Peripheries of Mumbai, *KRVIA Mumbai + ITC Netherlands*

Case Study 10: Enhancing Institutional and Community Resilience to Climate Change Impacts in Jodhpur City, *SPA Bhopal + DUK Austria*

4. Day 2: Symposium

Agenda

BReUCom Coursework Exhibition

Lecture: Political Ecology and the Rhetoric of Resilience, *Shweta Wagh*

Administrative Meeting

Lecture: Transforming M (East) Ward: A Perspective on Resilience, *Amita Bhide*

Site Visit to Bhim Nagar, M (East) Ward, *led by researchers at Tata Institute of Social Sciences (TISS)*

5. Day 3: Symposium

Agenda

Lecture: Resilience in Contested Geographies, *Aneerudha Paul*

Lecture: Representing Resilience, *Rohan Shivkumar*

Lecture: Cities as Hubs of Regional & Global Climate Inequities, *Binti Singh*

Lecture: Towards Building Resilient Communities: Application and Usefulness of Data Informatics, *Arnab Jana*

6. General Feedback from Participants

AGENDA

SYMPOSIUM SCHEDULE

Questions of resilience have become paramount in discourse around urban development over the past few years. There are many unpredictable factors that can adversely affect an urban system in dramatic ways.

As architects and urban planners it becomes imperative for us to develop systems, both tangible and non-tangible to be able to address these, so that the impact of such an event be mitigated as best as it can.

The BReUCom Project hopes to be able to develop pedagogical frameworks and courses that can be introduced in colleges of architecture and planning for students as well as professionals interested in questions of resilience through engagement in multidisciplinary conversations.

The symposium aimed to engage in these very conversations through lectures on the theme of Resilience, by academicians.

The symposium also acted as a platform to discuss case studies by various institutional partners, which become the basis for the development of Courseware and Professional Development Programmes.

Monday, 2 December 2019

09.00	Welcome and Introductory Session
09.30	Case Studies & Discussion (CS1 to CS4)
10.50	Short Break
11.10	Case Studies & Discussion (CS5 to CS7)
13.10	Lunch
14.30	Case Studies & Discussion (CS8 to CS10)
15.10	Short Break
15.30	Closing Session

Tuesday, 3 December 2019

08.00	Exhibition walkthrough and interaction with Masters Students
09.00	Lecture: Shweta Wagh
09.45	Discussion
10.00	Short Break
10.15	Administrative Meeting
11.30	Departure for Site Visit
12.30	Site Visit: M. Ward
	Led by: Amita Bhide

Wednesday, 4 December 2019

09.00	Lecture: Aneerudha Paul
09.45	Discussion
10.00	Short Break
10.15	Lecture: Rohan Shivkumar
11.00	Discussion
11.15	Lecture: Binti Singh
12.00	Discussion
12.15	Lunch
13.15	Lecture: Arnab Jana
14.00	Discussion
14.15	Short Break
14.30	Panel Discussion
15.30	Closing Session
19.30	Joint Dinner

Venue:

Kishinchand Valecha Sabhagrah, Ground Floor, KRVIA, Mumbai.

SYMPOSIUM PARTICIPANTS

The following is a list of the participants at BReUCom Symposium 3, ‘Resilience Approach in Urban Paradigms: Training Needs for Urban Resilience in India’, held at KRVIA, Mumbai :

SPA, Bhopal	CURE, New Delhi	Advisory Board	Student Volunteers
Anand Wadwekar Rama Pandey Saurabh Tewari	Barsha Poricha Samya Rakshit Siddharth Pandey	Neera Agnimitra Farhad Contractor Monto Mani D. Parthasarathy Pradipta Banerji	Daksh Jain Varsha Verma Sharvari Kotkar Rajlakshmi Dubey Kshitija Bhakare Sonali Singh Nitin Parate Gaurav Patil Chandan Challani Kavita Jadon
SPA, Vijayawada	DUK, Austria	Speakers	
Ayon K Tarafdar	Tania Berger Adriana Harm	Shweta Wagh Amita Bhide Aneerudha Paul Rohan Shivkumar Binti Singh Arnab Jana	
NIT, Hamirpur	ITC, Netherlands		
Puneet Sharma	Funda Atun Girgin Javier Martinez		
SPARC, Mumbai	KRVIA, Mumbai		
Maria Lobo	Manoj Parmar Jamshid Bhiwandiwalla Vikram Pawar Sandeep Menon Ankush Chandran		

DAY 1: ADVISORY BOARD MEETING AND REVIEWS

Introduction

The Advisory Board for the BReUCom project consists of experts from various fields who can review the work done by the different Work Packages of BReUCom and provide feedback, suggestions and guidance to improve the quality of work.

Members

The Advisory Board was nominated by all partner institutions and comprises of the following individuals:

Farhad Contractor

Farhad Contractor has been working on the rejuvenation and revival of ecological systems along with the community for over 25 years. His work spans the entire country. He has worked on world renowned architectural and planning projects and have also been recipient of national as well as international awards. He is also a member in various institutions, government as well as non government and plays an important role in nurturing and strengthening various levels of leaderships. His engagement with BReUCom project includes guiding students from KRVIA and SPA B in their research work on Water Systems in Jodhpur.

Neera Agnimitra

Dr Neera Agnimitra is an academican, with extensive experience in Social Work, Climate and Environmental sustainability, resilience, etc. She is Professor and Head, of the Dept of Social Work at Delhi University. Of particular importance, is her work on Social Work as a response to Disasters. She has extensively studied the role of Resilient Communities in Community Based Disaster Management. She has delivered lectures at various national and international forums, and is an active contributor to many academic journals and publications.

Dr D Parthasarathy

Dr Parthasarathy, is the Professor of Sociology, India Value Fund Chair, at the Dept of Humanities and Social Sciences, in IIT Bombay. He is also an associate faculty with the , Climate Studies Inter-disciplinary Programme at IIT Bombay since 2013. He specialises in the areas of Urban Development Studies, Rural / Agrarian Sociology, Law and Governance, Legal Pluralism, Vulnerability and Adaptation to Climate Change, Gender and Development, Disaster Studies, etc. He has been associated with various national and international institutions in advisory and consultancy capacities, and has been instrumental in various impact assessment initiatives in the city of Mumbai, as well as outside.

Agenda

The Advisory Board Meeting of Symposium 3, held at KRVIA Mumbai, was a platform for the researchers from various institutions to present their Case Studies and receive valuable feedback from the panel of Advisory Board Members.

Dr Manto Mani

Dr Manto Mani, is an Associate Professor at the Indian Institute of Science, Bangalore. Dr Mani's research deals with Sustainability science, an interdisciplinary domain, focusing both on its theoretical basis, and application in architecture (buildings) and design. His Sustainability and Design lab (SuDesi) comprises multi-disciplinary researchers working on diverse areas of sustainability dealing with buildings, renewables, product design and manufacturing. He is an Architect, with a master's degree in Civil Engineering and doctoral specialization in Sustainability, wherein he developed a systems-framework identifying societal attitude as a critical determinant of sustainability.

Dr Pradipta Banerji

Professor Pradipta Banerji is the Head of the Centre for Urban Science and Engineering, Indian Institute of Technology Bombay. Prior to this, he concurrently held the posts of Professor of Civil Engineering at IIT Bombay and at IIT Roorkee. He is known internationally for his developments on Bridge Asset Management using Structural Health Monitoring, especially for the Indian Railways and Network Rail in UK, and Vibration Control of Buildings for Earthquake Ground Motions using innovative strategies. He has also developed technology that has been and is being implemented in India and abroad in the area of disaster resilience and asset management. He has been an advisory and consultant to various International bodies such as the World Bank, UNESCO, etc.

CASE STUDY 1

CRAFT, CULTURE AND COMMUNITY: LEARNING RESILIENCE FROM THE ZIRO VALLEY

SPA BHOPAL

Building Resilience in Urban Communities
A Capacity Building Project funded by European Union

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Case Study **01**



Craft, Culture and Community: Learning Resilience from the Ziro Valley

Authors: Saurabh Tewari, Namperumal Sridharan,
Rama Umesh Pandey, Anand Wadwekar
2019



**School of Planning and
Architecture, Bhopal**
www.spabhopal.ac.in

Craft, Culture and Community: Learning Resilience from the Ziro Valley

Introduction

With the discourse of sustainability as the predecessor and SDGs forming its backdrop, the Urban Resilience discourse has now entered into its third-generation, Socio-Ecological Resilience (UN Habitat, 2017). However, the role of culture still has the potential to be underscored through case studies.

The above position aligns with the emerging inclination of 'resilience thinking' towards acknowledging the plurality and investigating interconnections and interdependencies within and beyond cities. (UN Habitat 2017, pp. 9). At present, as the state of the Resilience Literature is defined through formal structures, agencies and actors; there is an opportunity to put forward the indigenous knowledge systems in the body. With the unique proposition of human and nature interaction, co-existence of formal political structures and traditional tacit anthropological systems, the Ziro Valley from Arunachal Pradesh offers opportunities to look into the Cultural aspects through its integrated practices and continuums, to evolve towards a next paradigm in the Urban Resilience discourse. The local practices of urban agriculture, livelihood systems and worldview, natural resource

consumption, water and forest conservation, cultural conflict resolution offers unique narratives in the part and whole of Urban Resilience systems.

Objective

With the objective to illustrate the resilience principles and systems, grounded in the cultural continuums of Ziro Valley, the case study employs qualitative methods, including the design ethnography and socio-cultural-technical system mapping with field visits and interviews to come up with a rooted and indigenous version of Urban Resilience.

Preliminary Findings

- Unique Human-Nature relationship patterns which have shaped the cultural practices
- The indigenous knowledge systems spans across the scales of design, from designing object to spaces, from cultural rituals to agriculture

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Presentation Video

The case study presentation, followed by the comments of the Advisory Board can be viewed at the following link:

[Click here to play video](#)

CASE STUDY 2

COMMUNITY RESILIENCE FOR CONSERVING HERITAGE VALUES WITHIN A HISTORIC INDIAN NATIVE TOWN

KRVIA MUMBAI

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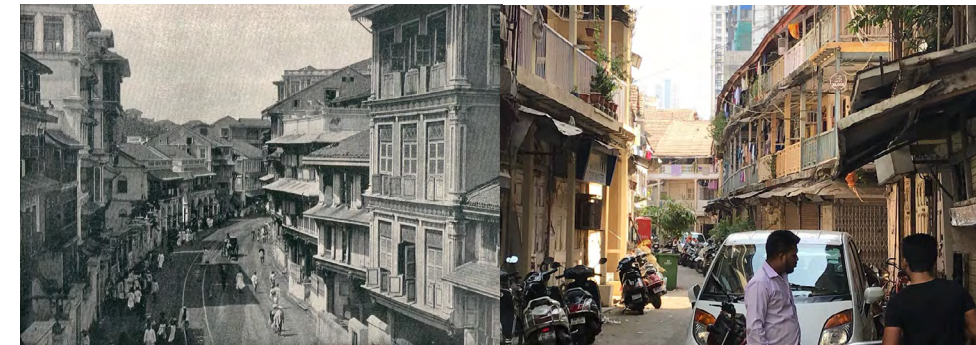
Case Study 02



Resilience in Historic Indian Native Towns

Community Resilience for Conserving Heritage Values Within a Historic Indian Native Town

Vikram Pawar, KRVIA, 2019



Resilience in Historic Indian Native Towns

Community Resilience for Conserving Heritage Values Within a Historic Indian Native Town

Introduction

Resilience amidst communities is a function of its ability to negotiate and overcome chronic stresses and shocks. Historic urban spaces in a rapidly urbanising economy like India are extremely contested and exhibit social as well as spatial stresses. Coupled with these 'natural' stresses, the state developed tools & mechanisms fail to protect the urban fabric or actively abets a biased unreal development model. In this context, methods to develop studied proposals aimed towards safeguarding the cultural identity embedded in built heritage of the historic town is very much required both in people's imagination as well as the state vision.

In Mumbai, the recent World Heritage tag for the Gothic Architecture and the Art Deco Ensemble prompts one to relook at the status of the communities, their livelihood and their housing within the Inner Fort Precincts as well as the Native Town.

Objective

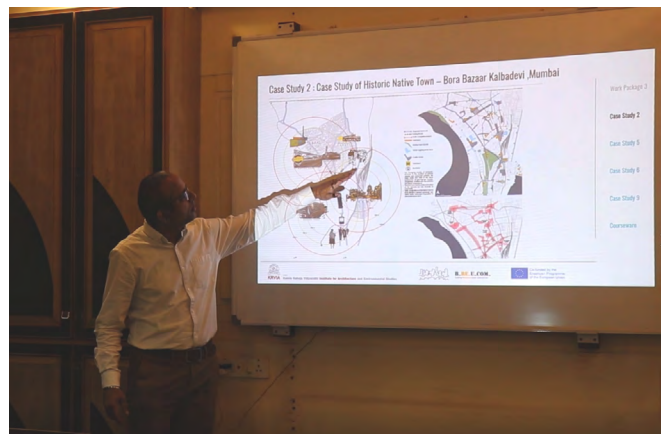
The course intends to identify inherent resiliences of the historic urban communities and develop models to further strengthen them based on the values, interests and aspirations of various stakeholders. The studio also seeks to update and enrich the base data of the housing and livelihood conditions.

Preliminary Findings

- Rich community network across religious, regional identities, food and cultural diversities
- Spirit of Entrepreneurship reflected in the livelihood activities
- Unreal Estate driven Speculative development pressures are not sustainable and resilient solutions. The new high rise typologies are leading to poor quality of urban spaces.
- Lack of empathy towards heritage and myopic vision for a holistic development reflected in the development plan leading to relatively rapid erasure of the identity of the place.
- Lastly the preliminary interactions with stakeholders elicit mix responses ranging from largely despondency to few voices of hope

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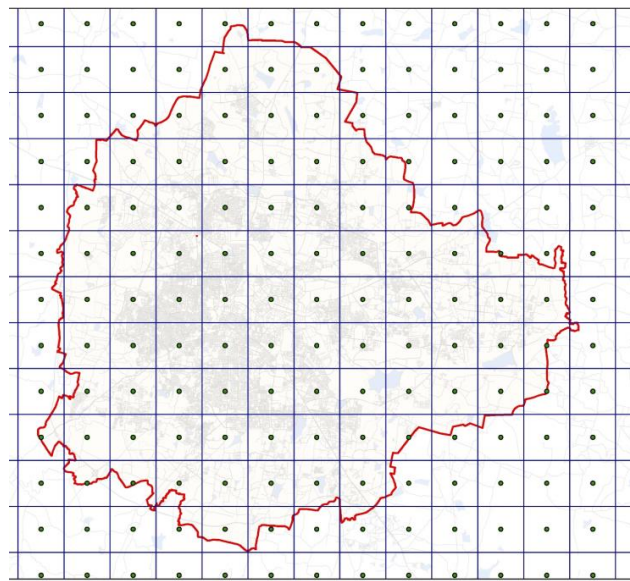
CASE STUDY 3

URBAN HEAT AND SPATIAL DYNAMICS:

PLANNING TOWARDS CLIMATE RESILIENCE, THE CASE OF BANGALORE

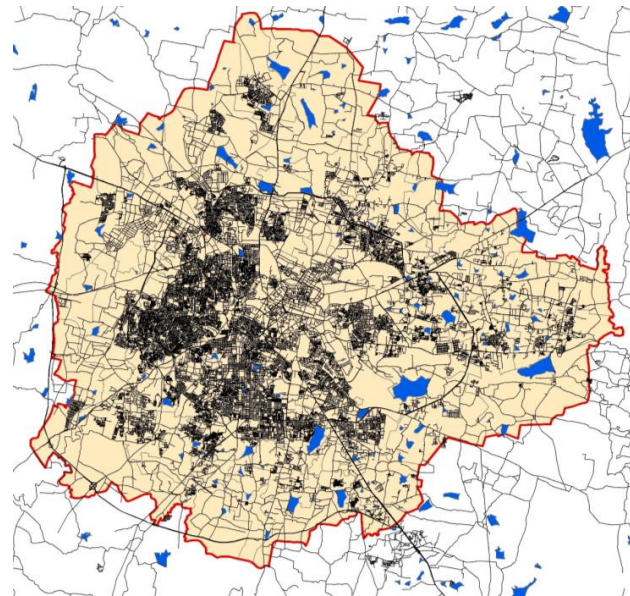
SPA VIJAYAWADA

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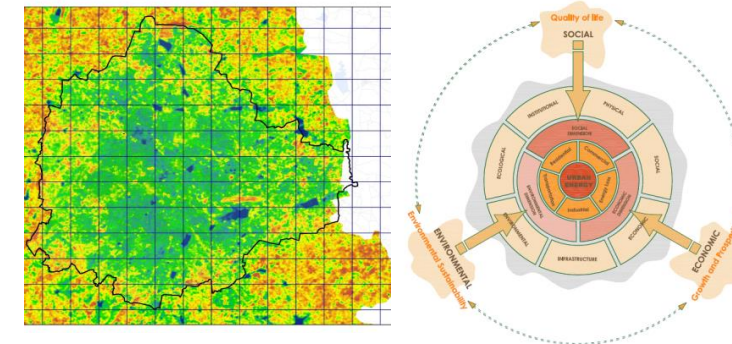
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Case Study 03



Urban Energy and Spatial Dynamics towards Climate Resilience: A Case of Bangalore

Dr. Minakshi Jain; Dr Adinarayanan R; Dr Ayon K Tarafdar; Dr. Faiz Ahmed and Ar. Kartek G. 2019



Urban Energy and Spatial Dynamics towards Climate Resilience: A Case of Bangalore

Introduction

Apart from the menace by industrial emissions, a substantial share of GHG emissions is from the rising energy consumption patterns in cities. As per the IEA's Global have its primary energy demand increase to 4% in 2018, which is 11% of global demand growth. This study attempts to find relation between urban built up, urban green, urban blue and the formation of urban heat stress zones in relation to energy consumption patterns.

Objective

- To explore various dimensions of urban energy consumption and its adverse impact on climate
- To establish the causal linkages between changing urban morphology and energy consumption pattern

Case Status

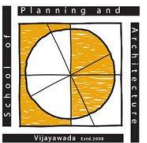
Data has been collected on GIS format for grids of 2 X 2 km for entire Bangalore region for certain control parameters of resilience to heat stress, i.e.;

(i). Population Density (ii). Vegetation Index/Green Cover, (iii) Water Index/ Blue cover, (iv). Built Index/Building Density, (v). Land Surface Temperature (vi) Road Network Density, (vii).Urban Morphology (viii). Paved to unpaved ratio, (ix) Wind characteristics (Meteorological data)

Preliminary Findings

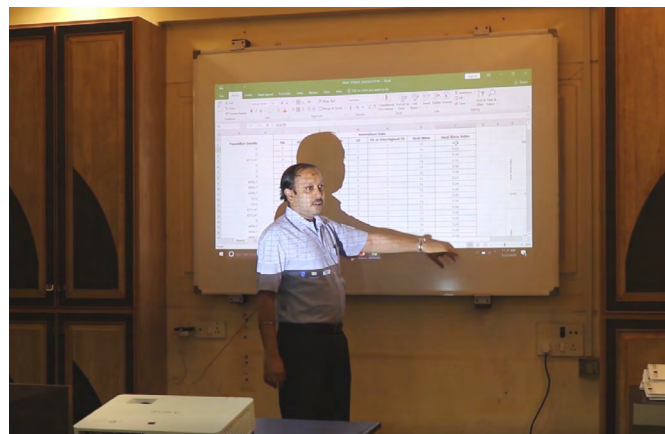
- Heat stress zones are observed to be having proximity relation to high built density with non-residential function compared residential function
- Water and green index are having a positive degree of influence over the spread of the heat stress zones
- Energy consumption patterns of built form and the location of heat zones are being presently analysed

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School of Planning and Architecture Vijayawada
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Presentation Video

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CASE STUDY 4

CLIMATE RESILIENT PLANNING AND DESIGN FOR VULNERABLE HILL SETTLEMENTS:

A CASE OF KULLU REGION

NIT HAMIRPUR

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Case Study **04**



Climatic resilient planning and design for vulnerable urban hill settlements

A Case of Kullu region

Inderpal Singh, Puneet Sharma, Aniket Sharma
2019



NIT HAMIRPUR HP
www.nith.ac.in

Climatic resilient planning and design for vulnerable urban hill settlements

A Case of Kullu region

Introduction

Kullu, the headquarters of the district, is situated at an altitude of 1200 mt on the confluence of Savory rivulet and Beas river. Kullu district forms the eastern part of central Himachal Pradesh with its headquarters at Kullu. The valley is known as the “Valley of Gods”, located on the banks of river Beas. The Dev Sanskriti of the valley blends faith, mythology, and history to create and sustain a unique bond between the mundane and the divine.

Objective

To map and document various effects and occurrence of previous climatic disasters in the region

Studying the old and new development pattern to identify the vulnerable regions

To identify various existing approaches and methods (Local and global) for mitigating the adverse impact of cloud burst, landslide and earthquake

To suggest context based planning and design strategy for mitigating the adverse impact of natural disasters in study area

The project shall take up a detailed study of a few settlements in the hilly region of Kullu and Manali to demonstrate the level of current resilience. It should help in identifying the appropriate methods and actions to improve the present condition and reveal the appropriate traditional approaches used in past to survive the impacts of disasters. The study shall explore the new settlement regions with relation to disaster readiness through climatic resilient planning and design strategies.

Preliminary Findings

- Old settlements like Naggar still holds a character of a place which is lost in case of Manali due to the economy push of tourism.
- Urbanism and lifestyle demanding new typology of built masses.
- Land value, sprawl and market forces governing the form, size and shape the development.
- Lack of bye-laws, environmental awareness, and trained professionals is resulting in chaotic development leading to haphazard settlements.
- Change in the mobility pattern, infrastructure, services and the transformation from rural to an urban character has not been addressed by the urban local bodies

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Presentation Video

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CASE STUDY 5

ENHANCING INSTITUTIONAL AND COMMUNITY RESILIENCE
TO CLIMATE CHANGE IMPACTS IN JODHPUR CITY

SPA BHOPAL + KRVIA MUMBAI + ITC NETHERLANDS

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Case Study 05



Water Resilience
In the historic core city of Jodhpur

Jamshid Bhiwandiwalla of KRVIA, Mumbai in collaboration with SPA Bhopal and ITC Netherlands



Water Resilience in the historic core city of Jodhpur
Enhancing Urbanism to Community Resilience in Climate change
related Water Stresses in Urban and Peri-urban areas.

Introduction
Historic cities have survived over centuries based on how they have managed their natural and manmade water systems. Jodhpur has been one such city in the arid region of Rajasthan which exhibits a hierarchical water system that has supported its population over the last 1500 years. These extraordinary water bodies such as manmade tanks, step wells and jhalaras are well integrated in the fabric of the core city to serve its residents till recently when water is served through pipelines putting these extensive water bodies to disuse. Further disinterest of the city residents and pollution have further aggravated the situation thereby leading to excess water, rising water levels and flooding on the onset of rains. This situation of excess water and flooding is tackled by pumping water from most of these water bodies for 12 hours daily into nallahs, whereas the nearby regions are undergoing water shortages and the entire city suffers extensively from heat gains in summers. An excellent example of extreme conditions and mismanagement of natural resources.



Objective
•To assess the sensitivity, adaptive capacity and coping mechanism of communities to water stress in urban areas
•To derive a mechanism for assessing Institutional and community arrangement for enhancing resilience to water stress
•To propose a policy framework as well as spatial strategy for enhancing institutional and community resilience to water stress.

Preliminary Findings
•The five hundred year old settlement is still self sufficient by way of holding of fresh water through its holding ponds, water channels and array of water systems.
•These water systems have been in thorough neglect by way of disuse and pollution thereby leading to excess of water which is leading to excessive flooding in the monsoon and non monsoon months leading to damages and losses.
•Other than using the existing water bodies and systems appropriately, excess water is pumped for 12 hours daily into the nallah whereas water to be used in the city is pumped from kilometers away through the Lift canal which seems very illogical.
•Further the city suffers through the year through excessive heat gains thereby making it difficult for its residents to live comfortably.
•Preliminary awareness and vulnerability surveys of the residents prove that the extensive and well conceived water resources need to be appropriately managed through institutions thereby increasing the resilience of its residents as well as the city.

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CASE STUDY 6

MARGINALISED COMMUNITIES AND CLIMATE CHANGE:

CASE OF GAZDHAR BANDH

KRVIA MUMBAI + SPA BHOPAL

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Case Study **06**



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Marginalized Communities and Climate Change

Gazdhar Bandh

Manoj Parmar, KRVIA in collaboration with SPA Bhopal, 2019



KRVIA
Kamla Raheja Vidyanihi Institute for
Architecture and Environmental Studies
www.krvia.ac.in

Marginalized Communities and Climate Change

Gazdhar Bandh

Introduction

Slums in Mumbai can be seen from various perspectives. Each perspective has its positive side and perhaps huge possibilities in cross learning for it to enable the urban inclusion in planning, policy and practice. The larger question is how new methodologies of research and formats of representation of informal settlements support their recognition in urban design, planning, political and policy-making processes. How could these processes in turn contribute to the sustenance of informal and formal aspects of the urban form.

The Site: Gazdhar Bandh

The formation of Gazdhar Bandh, a large pocket of self-built-sustain model of slums resulted from various parameters. Largely it owes its origin to the generic problem of state body (MHADA) for not being able to provide affordable housing at the city level along with the absence of policy not being able create housing stock for the urban poor. These two issues are coupled with large scale land speculation in the open market and market driven real estate resulting in unaffordable housing in Mumbai.

Quality of life is an idea that is often being discussed in various studies as a response to many issues and complexities that have recently emerged within our cities in the process of transformation. It is also connected with the question of vulnerability and resilience. The city of Mumbai, is vulnerable to projected climate change related disaster within given social, economic and environmental stressed conditions coupled with population growth, informal housing, and unfair land distribution & planning mechanism.

Preliminary Findings

The case study of Gazdhar Bandh reveals the peculiar nature of complexities that are embedded within the site conditions and as compared to other slums in Mumbai. The nature of preliminary findings is as follows:

- ☐ Creation of community living (and land) within the land starved condition of the city displaces the development plan initiatives and state housing inability
- ☐ The creation of Land comes in direct conflict with the fragile ecology at estuary condition.
- ☐ The community has strong economic network with its surrounding and the city. The informality within the city has formal occupational engagement with the city.
- ☐ The overall perspective of resilience requires the study of social- economic resilience and its understanding with ecological resilience and finds the balance.

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CASE STUDY 7

CLIMATE-RESILIENT ADAPTATION OF BUILT-FORM IN HILLY REGIONS THROUGH TRADITIONAL WISDOM AND BEST PRACTICES

SPA VIJAYAWADA + NIT HAMIRPUR

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Case Study **07**



Climate-resilient adaptation of built-form in hilly region through traditional wisdom and best practices

A case of Himachal Pradesh

NITH - Inderpal Singh, Puneet Sharma, Aniket Sharma
SPAV - Dr. Minakshi Jain; Dr Adinarayane R; Dr Ayon K Tarafdar; Dr. Falz Ahmed and Ar. Kartek G.
2019



Climate-resilient adaptation of built-form in Hilly Region through Traditional Wisdom and best practices

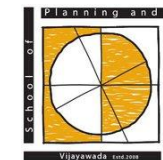
A case of Himachal Pradesh

Introduction

Settlements, which have evolved over centuries in the form of organic spatial pattern, has certain inherent factors that deal with externalities like disasters. In hilly terrains, we often find that unregulated modern urbanisation leading to new urban fabric that is inorganic in nature and not tolerant to environmental requirements of a hilly region resulting severe calamitic incidences of landslides, flash floods and earthquakes in the system. This calls for careful attention and study of the traditional wisdom and techniques used in design of buildings and settlements in hilly terrain.

Objective

- To explore traditional/vernacular best practices of built-form and its transformation for mitigating climate change impact in hilly region
- To assess the applicability of key design elements and concepts of traditional structures in contemporary planning and architecture



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Case Status: The project shall take up a detailed study of traditional settlements in the hilly region of Dharamshala and shall aim to reveal the reasons why the traditional buildings and settlements have been able to survive the impacts of disasters in the long run that resulted in their heritage status. The study shall explore the new and old viewpoints of the cases of Dharamshala region with relation to design of traditional buildings and historic settlements that are sophisticated with traditional patterns, limited materials and technologies of past.

Preliminary Findings

- Changes in the lifestyle and social structure have forced people to move from old to new construction typology.
- Level of attachment with the native place and the house is lost due to the different work area locations and nuclear family system.
- There exists a strong relationship between every settlement layout and the terrain and slope orientation.
- The built form in each settlement does not hamper the natural terrain forms and hence reduces chances of landslides and instability
- Every settlement is deeply interlinked with and is in synergy with the surrounding open stepped spaces and utilises them for cropping, horticulture and fodder storage

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Presentation Video

The case study presentation, followed by the comments of the Advisory Board can be viewed at the following link:

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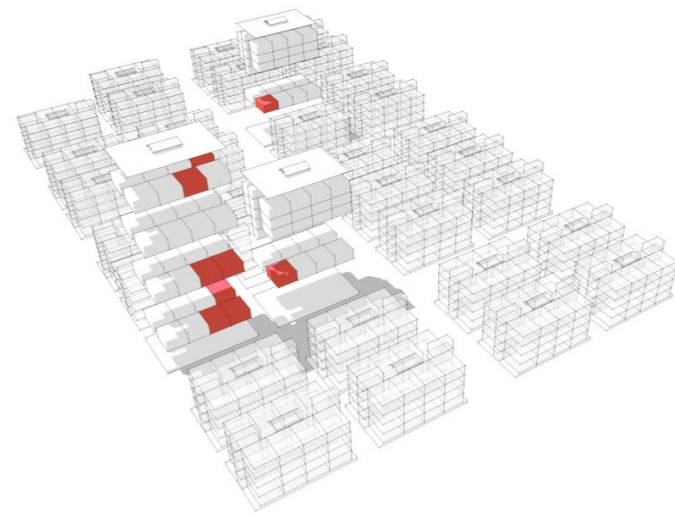
CASE STUDY 8

THERMAL COMFORT STUDY FOR MITIGATING HEAT STRESS THROUGH CLIMATE RESPONSIVE PLANNING AND DESIGN:

CASE STUDY OF NEW RAJARAJESWARI PETA

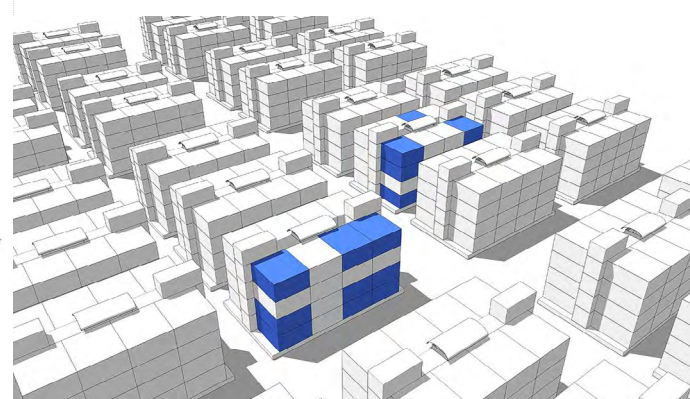
SPA VIJAYAWADA + DUK AUSTRIA

Building Resilience in Urban Communities
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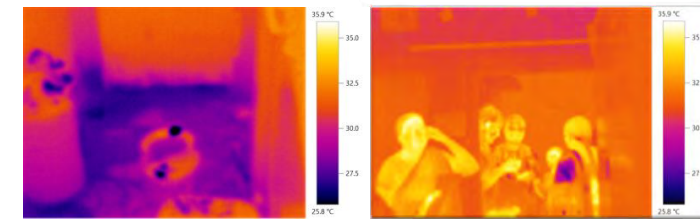
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Case Study 08

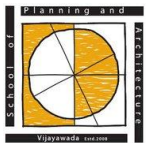


Thermal Comfort study for mitigating heat stress through climate responsive planning: A case study of Vijayawada

SPAV - Dr. Minakshi Jain; Dr Adinarayanane R; Dr Ayon K Tarafdar; Dr. Faiz Ahmed and Ar. Kartteek G.
DUK - Dr. Tanja Berger
2019



Danube University,
Krems, Austria



School of Planning and
Architecture Vijayawada
www.spav.ac.in

Thermal Comfort study for mitigating heat stress through climate responsive planning: A case study of Vijayawada

Introduction

There exists a well established relationship between heatwaves (extremely high temperatures) and human mortality. Despite the prevention measures, heatwaves represent a real risk to vulnerable population. In this case study, the impact of heatwaves in identified case pockets of Vijayawada has been carried-out, by studying the indoor and outdoor thermal conditions, and occupant behaviour. The idea is to demonstrate the relationship between thermal comfort and heat stress indices and evolve simple adaptation strategy for mitigating the adverse impact of heatwaves.

Objective

- To document the local climate, morphological setting, and building physics characteristics of the case area.
- To carryout perception survey of the occupants and record field measurement (temperature/humidity/air flow velocity)
- To assess the existing heat stress condition for demonstrating the relationship between thermal comfort and heat stress indices (PPD, PMV, UTCI) and heat index chart are derived
- To suggest adaptation strategy for mitigating the adverse impact of heatwaves

Case Status

Data has been gathered from a Case Study Area of 65m X 135m in Vijayawada, in terms of meteorological weather data (such as temperature, air flow velocity and humidity), building physics parameters (such as building size, typology, aspect ratio, construction material, WWR), and physical characteristics (such as the envelope) Data has been mapped, and occupant behavior collected through perception surveys and semi structured interviews (on clothing, activity, adaptive strategies etc). Field measurement (with Testo 480) have been taken and design strategies are in process of development.

Preliminary Findings

- Two different scenarios of comfort are emerging, w.r.t. low-rise housing and apartment units.
- Perception of extreme heat conditions and heat-waves are varying based on gender
- Vegetation is playing a crucial role in determining the local microclimate
- Building material and natural ventilation is crucial Indoor air quality seems to be poor, needs quantification, as it may have associated health issues.

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Presentation Video

The case study presentation, followed by the comments of the Advisory Board can be viewed at the following link:

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CASE STUDY 9

SOCIO-ECOLOGICAL RESILIENCE OF PERI-URBAN COASTAL AREAS:

CLIMATE CHANGE AND ITS IMPACT ON URBAN PERIPHERIES OF MUMBAI

KRVIA MUMBAI + ITC NETHERLANDS

Building Resilience in Urban Communities
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Case Study **09**



Socio-Ecological Resilience of Peri-Urban Coastal Areas

Climate Change and its implications on urban peripheries of Mumbai

Sandeep Balagangadharan Menon, KRVIA in collaboration with ITC, University of Twente, Netherlands, 2019



Socio-Ecological Resilience of Peri-Urban Coastal Areas

Climate Change and its implications on urban peripheries of Mumbai

Introduction

"Thirteen of the world's 20 largest cities are located on the coast, and more than a third of the world's people live within 100 miles of a shoreline" (World Bank 2010). Coastal areas face multiple risks related to the climate change crisis and allied bio-geo-climatic variability thus affecting a large population. Vulnerability of coastal areas to climate change is an issue that has gained attention globally. Peri urban areas have peculiarities and challenges which are different from urban cores and these needs to be addressed while dealing with issues of ensuring resilience. They are often characterized by communities whose existence and livelihoods have been traditionally dependent on the environmental resources which are undergoing rapid change with time.

Objective

To understand and illustrate systems and methods involved in ensuring socio-ecological resilience of peri urban communities of the global south using various techniques of documentation (both digital and analogue) and analysing the effects of climate change related transformations on three peri-urban land-water edge settlements of Mumbai each with a distinct relationship with the water's edge- Coastal Edge settlement, Settlement on an estuarine island, a settlement on the Riverine Floodplain.

The focus of the study centres on the threatened communities, their vulnerable habitats and their environment dependent livelihoods which may be affected adversely by the frequent and erratic climatic events. The study intends to explore possibilities of imagining methods for coping and adaptation to these climate related changes.

Preliminary Findings

The case study sites are unique in their physical geographic locations, communities inhabiting those areas and the way the communities and settlements interact with the larger landscape:

- ☐ The unprecedented urban growth of Mumbai Metropolitan Region in the last 30 years had an impact in all the three sites. There has also been a steady migration of workers from inland regions.
- ☐ The increase in the pace of urbanization (the unregulated and ill-informed choices) have made them more vulnerable to the increased frequencies and intensities of climatic events.
- ☐ The recent developments in all the three sites ignore the natural processes of the site.
- ☐ These communities are also vulnerable to everyday threats and hence the idea of resilience needs to take this aspect into consideration.

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Presentation Video

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CASE STUDY 10

ENHANCING INSTITUTIONAL AND COMMUNITY RESILIENCE TO CLIMATE CHANGE IMPACTS IN JODHPUR CITY:

SPA BHOPAL + DUK AUSTRIA

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Case Study **10**



Enhancing Institutional and Community Resilience to Climate Change Impacts in the Jodhpur City

Heat Stress

Authors: Namperumal Sridharan; Rama Umesh Pandey; Tania Berger
2019



SPA Bhopal
www.spabhopal.ac.in

Enhancing Institutional and Community Resilience to Climate Change Impacts in the Jodhpur City

Heat Stress

Introduction

Rising temperatures due to climate change is leading to heat stress and need remedial actions in designing and planning of built spaces at all scales of city planning to reduce the stress. The spatial exposure to heat risks due to design and planning of built spaces is becoming well understood, but practices which increase the resistivity towards the hazard or the relative vulnerability of communities are not yet influencing decision making and not being reckoned. Heat stress in the arid and semi-arid climatic zones of India is getting aggravated with time. Communities in these places have been managing and coping up with the stress effectively.

Jodhpur, a historic city located in semi-arid climatic zone, confronting heat stress due to worsening built fabric to contest heat wave conditions has been selected for enhancing urban resilience. The proportion and layout of open spaces and built mass along with usage of material and construction technology shows variations in city core to peripheral wards.

Objective

A comparative study of 'marginalized communities' managing heat stress in core city wards with the peripheral wards was conducted and is assessed for

the sensitivity, adaptive capacity and coping mechanism of communities to heat stress for arriving at strategies to enhance resilience. Institutional arrangements to cope up with the stresses at various levels was also analysed to suggest suitable mechanism for enhancing institutional resilience for informed decision making.

Preliminary Findings

- All interviewees have observed changes in climatic conditions and have been experiencing impacts, specifically in the form of increased heat wave all over the city.
- The expenses on electricity have increased in the last few years and the households in peripheral areas are paying up to INR 5000/- per households in a month.
- Air pollution in the residential areas within the vicinity of the industrial area is affecting the health of people

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Presentation Video

The case study presentation, followed by the comments of the Advisory Board can be viewed at the following link:

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DAY 2: SYMPOSIUM

Agenda

Day 2 of the BReUCom symposium, held at KRVIA, Mumbai, comprised of a set of three important events:

- The opening of the BReUCom Coursework Exhibition. The exhibition was hosted in AV2, First Floor, KRVIA, Mumbai, and was open from 2nd Dec to 5th Dec.
- Set of lectures delivered by experts in different fields, one of which was hosted at M Power Library and Study Center, Govandi East, followed by a site visit to M (East) Ward.
- Administrative Meeting to discuss various operational concerns, in the presence of all partners.



The symposium is organised as part of the Building Resilient Urban Communities Project, funded by the European Union.

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Tuesday, 3rd Dec



Co-funded by the Erasmus+ Programme of the European Union

Resilience Approach in Urban Paradigms

Training Needs for Urban Resilience in India

Kamla Raheja Vidyaniidhi Institute for Architecture & Environmental Studies, Mumbai



www.breucom.eu

08.00	Exhibition walkthrough and interaction with Masters Students	
09.00	Lecture: Shweta Wagh	<i>Political Ecology and the Rhetoric of Resilience</i>
09.45	Discussion	
10.00	Short Break	
10.15	Administrative Meeting	
11.30	Departure for Site Visit	
	Lecture: Amita Bhide	<i>Transforming M (East) Ward: A Perspective on Resilience</i>
	Site Visit to M. Ward	



Schedule: Day 2

BReUCom Coursework Exhibition



USM's Kamla Raheja Vidyaniidhi Institute for Architecture & Environmental Studies

The symposium is organised as part of the Building Resilient Urban Communities Project, funded by the European Union.

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Building Resilient Urban Communities



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Exhibition of course work conceptualized and conducted as part of BReUCom, a European Union's Erasmus + Program in the field of Capacity Building in Higher Education.

The exhibition will be open from 2nd Dec to 5th Dec.

Venue: AV 2, First Floor, KRVIA



Co-funded by the Erasmus+ Programme of the European Union



Exhibition Poster



DAY 2: SYMPOSIUM

Lecture: Political Ecology and the Rhetoric of Resilience

Shweta Wagh



Lecture Presentation

In her lecture, Conservationist and Activist Shweta Wagh critiqued the superficial interpretation of Resilience that governmental bodies and other players in the urban development paradigm tend to adopt, in their blind chase of "development", which more often than not, do more harm than good. Such an approach ignores critical social and ecological parameters, to enable capital intensive development, which benefits only a few and leaves communities and ecologies vulnerable.



Presentation Video

The lecture, and ensuing discussion can be viewed at the following link:

[Click here to play video](#)

Feedback from partners

SPA V

Presentation was informative and thought provoking. It brought out the inherent lapses and lacunae in embarking upon development path without evaluating ecosystem services and their valuation.

NIT H

Critical analysis of the role and impact of government policies on the coastal reclamation in Mumbai. Detailed view of ecological, economic and social integration all along Mumbai coastline. Stressed on the need for more awareness among government officials and implementing agencies.

DUK

Advocacy for marginalized groups in dynamic urban developments can be a substantial goal for academic work; it requires thorough data collection and presentation to substantiate claims of the concerned groups in the face of ULBs, authorities and local politicians.

ITC

The presentation had a critical look into resilience as the concept may divert attention to structural changes. As it is part of the neo-liberal agenda it may shift attention from radical transformation. Excellent initiative: Collective for Spatial Alternatives (<https://csaweb.org>) "The Collective for Spatial Alternatives (CSA) is an association of urban researchers, academics, professionals and community organizers involved in spatial and environmental research and planning. CSA is committed to finding alternatives to 'slum' clearance, redevelopment and urban renewal programs to support communities resisting and looking for ways to influence and author their own environments."

CURE

The lecture was interesting in that it showed how government bodies tend to prioritise construction activities over ecological concerns, since it thinks large-scale construction activities are synonymous with development. The speaker is connected with the Collective for Spatial Alternatives, a group which has worked in advocacy against coastal reclamation in Mumbai, which ignores the fragile ecosystem of the shoreline and the livelihoods of artisanal fishermen. The speaker elaborated on how the authorities go to great lengths to enable 'development', neglecting reports submitted by concerned scientific organisations.

DAY 2: SYMPOSIUM

Lecture: Transforming M (East) Ward: A Perspective on Resilience

Amita Bhide



Lecture Presentation

The lecture focused on the marginalisation of poor and vulnerable communities spatially, to the peripheries of the city. These peripheries are also the most ecologically vulnerable areas of the city, being subjected to apathy and neglect by the state in the process of development. This intersection of marginalised communities and ecologically vulnerable areas creates a plethora of urban issues that require careful understanding and innovative ways of tackling these issues.



Presentation Video

The lecture, and ensuing discussion can be viewed at the following link:

[Click here to play video](#)

Feedback from partners

SPA V

Site visit and interaction gave clarity on the helpless plight of the slum dwellers regarding poor sanitation and water issues. It also gave ideas about the positive outcomes of having the literary and community centre and the gradual rise in awareness on health and sanitation.

NIT H

The visit to M Ward and discussion with Amita Bhide emphasized on the mindset of the government with respect to this zone. It explained how marginalized communities are pushed to specific zones. Environmentally vulnerable zones are the most neglected areas in city development, and even basic services are not available for sections of society inhabiting such zones. Migration and its impact on such neglected areas was also a matter of concern.

DUK

Not only can local power elites strive to concentrate “unwanted” people in specific areas of a city but also “unwanted” functions.

Site Visit:

People demonstrate considerable persistence in encroaching: in this particular case, they themselves repeatedly pay for garbage to serve as landfill despite being removed again and again. Local politicians use them as vote banks, laying water pipes before elections and removing them afterwards.

ITC

Inequity and unequal wealth distribution are one of the main threats for residents in Mumbai as it is reflected in the living conditions at which residents of M Ward are exposed as compared to the most affluent ward in Mumbai.

CURE

Amita Bhide emphasized on the intersection between the socially excluded and environmental vulnerability, explaining how the impoverished, and the marginalized are pushed to the city's periphery in M ward, and inhabit one of the low-lying, vulnerable areas. The site visit revealed the plights faced by the inhabitants of the M Ward, and their struggles against the establishment to procure water. The takeaway is that the government needs to strengthen the agricultural sector urgently, to put an end to distress-migration, which is increasing the population in environmentally vulnerable areas.

DAY 2: SYMPOSIUM

Site Visit: Bhim Nagar, M (East) Ward

Following the lecture by Amita Bhide, the site visit to Bhim Nagar in M (East) Ward, enabled the participants to observe first-hand, the various inadequacies in basic services and quality of life, faced by marginalised communities inhabiting ecologically vulnerable peripheries. Interaction with locals also supported an understanding of the various coping mechanisms adopted by the communities to continue living in such harsh conditions.



Administrative Meeting

The Administrative Meeting witnessed the discussion of different operational concerns regarding the project. The concerns discussed, and the outcome are listed below:

1. The setting up of a separate Project Portal for BReUCom OCWs and PDPs:

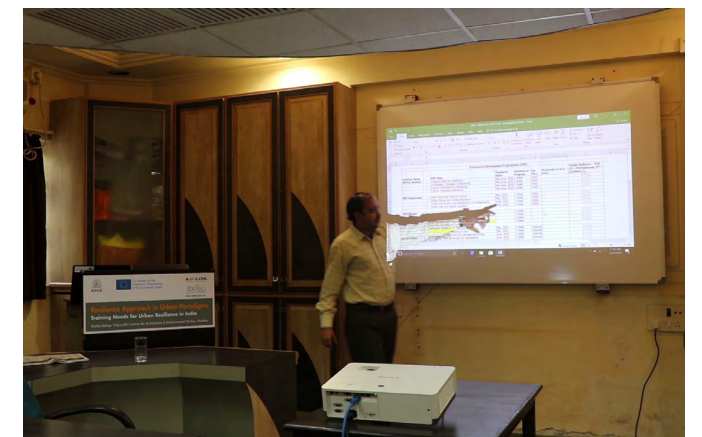
In order to host information about the various courses formulated under the BReUCom project, conduct online courses, allow payments, etc., a separate project portal in the form of a website was proposed by the NGO partners. Various aspects such as the finances required for the portal, continuance of such a portal after the project term of 3 years and requirements for the portal were discussed.

2. Proposed Professional Development Programmes (PDPs):

The various PDPs proposed by the partner institutions were discussed. The discussion included the PDP titles, tentative dates, duration of the programmes, proposed fee structure and the target audience for each PDP. In particular, concerns about the proposed fees for PDPs were discussed, as well as those related to the target audience.

3. The possibility of setting up a corpus fund for BReUCom, for the future:

Since many of the activities related to OCWs and PDPs would require funding after the project duration, the possibility of setting up a corpus fund, maintained by the fees charged from PDP participants was discussed.



Agenda

The lectures were as follows:

- Resilience in Contested Geographies, *Aneerudha Paul*
- Representing Resilience, *Rohan Shivkumar*
- Cities as Hubs of Regional & Global Climate Inequities, *Binti Singh*
- Towards Building Resilient Communities: Application and Usefulness of Data Informatics, *Arnab Jana*

Representing Resilience

Rohan Shivkumar

Towards Building Resilient Communities: Application and Usefulness of Data Informatics

Arnab Jana



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Wednesday, 4th Dec



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09.00	Lecture: Aneerudha Paul	<i>Resilience in Contested Geographies</i>
09.45	Discussion	
10.00	Short Break	
10.15	Lecture: Rohan Shivkumar	<i>Representing Resilience</i>
11.00	Discussion	
11.15	Lecture: Binti Singh	<i>Cities as Hubs of Regional & Global Climate Inequities</i>
12.00	Discussion	
12.15	Lunch	
13.15	Lecture: Arnab Jana	<i>Towards Building Resilient Communities: Application and Usefulness of Data Informatics</i>
14.00	Discussion	
14.15	Short Break	
14.30	Panel Discussion	
15.30	Closing Session	



DAY 3: SYMPOSIUM

Lecture: Resilience in Contested Geographies

Aneerudha Paul



Lecture Presentation

The presentation, which included the studio works of Masters Students at KRVIA, and the various issues of resilience they have engaged with over the semesters. It highlighted the different conflicts that arise between different stakeholders in these urban settings and the effect of such conflicts on the socio-ecological fabric of the place.



Presentation Video

The lecture, and ensuing discussion can be viewed at the following link:

[Click here to play video](#)

Feedback from partners

SPA V

The case studies done gave interesting pictures of conflicts arising at local level due to different stakeholders having different development objectives leading to situations of flooding, water logging, vanishing green cover and damage to properties during monsoon. Development particularly residential without analysis of ecological implications can be damaging, was well exemplified.

DUK

Urbanization does not take place in a vacuum – it is the changing usage of agricultural (fertile) land. Thus contestations over land arise, especially with traditional farming communities unwilling to give up their lifestyle. Where water bodies are encroached and filled up, these do not simply disappear. Rather, they tend to be the first areas to be flooded in case of heavy rainfalls.

ITC

Excellent work done by KRVIA students, showing the struggles of communities in the Vasai River Basin and the transformation of the natural landscape (change in land cover). Developers and the local government, seem to ignore natural conditions. Some of the developments like “Global City” are related to informal urbanization practices.

CURE

This included presentations of the studio works of master’s students. The presentation elucidated how students have developed a framework to understand the intersections of various perspectives to understand resilience, and developed proposals which contribute to better-lasting sustainability and resilience.

SPARC

This session gave an overview of the work undertaken in Vasai-Virar as part of the urban design studio thus explaining how this place has become the epicentre of development and history and how it led to urbanization. Three zones were the key to this –Plantation, Green and Urbanization. It was interesting to see how development can also harm the communities at different levels –for instance, shipping corridors are a threat to the fishermen, concretization of lakes/ponds can actually lead to flooding, vulnerabilities with regards to flora and fauna etc. The key takeaway was –how to convince stakeholders to commit to strategies of resilience.

DAY 3: SYMPOSIUM

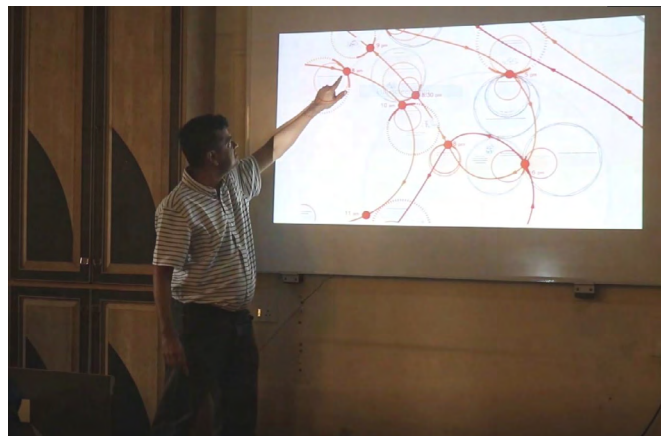
Lecture: Representing Resilience

Rohan Shivkumar



Lecture Presentation

The lecture engaged with the idea of representation, and how the representation of the urban condition can and does affect the interpretation of the issues, and the strategies one formulates to deal with such issues. Through various examples, the lecture highlighted the ability of various mediums to bring out different aspects of urban studies.



Presentation Video

The lecture, and ensuing discussion can be viewed at the following link:

[Click here to play video](#)

Feedback from partners

SPA V

The presentation gave an alternate perspective to resilience as a concept, particular in the context of design and settlement patterns. It questioned the prevalent premises with a different view to look at resilience and whether our approaches are right to evaluate the same at local level.

DUK

Before being able to intervene in spatial settings, planners, designers and architects first and foremost need to learn tools and methods which help them to understand what is actually taking place in a given environment on a daily basis and all those facets which constitute people's lived reality of space.

ITC

Very good presentation showing that there are different forms of representations including comics and narratives. These forms of representation were evident in the masters student's exhibition walkthrough. It raised important questions like - Is Dharavi "vernacular architecture"? How does politics influence space?

CURE

The lecture showcased the exploration of various representation techniques used by students to document the existing socio-physical conditions of settlements. The speaker brought to notice the interesting case where alternative modes of representation had changed perceptions and broadened understanding about informal communities among government officials.

SPARC

The lecture touched upon representing resilience –how the project is represented and what it leads to, how one represents resilience through space, story and rituals. The talk also emphasised on the relationship of the institutional building with the city through Mapping and Representation studio by the students. Take away from the presentation was that representation can be done at different levels using various methods that produce outcomes and can involve the participation of decision makers at the local, state and national level.

DAY 3: SYMPOSIUM

Lecture: Cities as Hubs of Regional & Global Climate Inequities

Binti Singh



Lecture Presentation

The lecture departed from the usual format of presentations, instead taking the form of a group reading of a chapter titled the same, authored by the expert. The reading dealt with the disproportionate consumption of resources, and the climatic effects of such consumption, between the global north and south. Various other aspects of Inequities harbored in cities was also touched upon.



Presentation Video

The lecture, and ensuing discussion can be viewed at the following link:

[Click here to play video](#)

Feedback from partners

DUK

Albeit it is well known we should not lose sight of the fact that there is a decisive injustice at the root of anthropogenic climate change: while some, especially in the Global North, consume energy and resources quite disproportionately, others, mainly in the Global South, are mostly exposed to the consequences of global warming. The question thus arising is whether those at the receiving end will endure endlessly.

ITC

The Global North has the biggest share / responsibility for climate change. In the context of liberalization, privatization and globalization, Are "smart cities" in India a solution for resilience? Who benefits from those smart enclaves?

CURE

The speaker explained how disparities and inequalities exist in the modern world, and in cities. She emphasized on gender as a parameter to understand inequality. The lecture covered topics such as income-inequality, inequality in living conditions and consumption, and emissions. The talk ended with an interesting debate on the position of conflict in society.

DAY 3: SYMPOSIUM

Lecture: Towards Building Resilient Communities: Application and Usefulness of Data Informatics

Arnab Jana



Lecture Presentation

The lecture engaged with the application of big-data in objective analysis of living conditions, environments, etc. It also highlighted the use of contemporary technologies such as mobile communication and social media to tackle issues of resilience.



Presentation Video

The lecture, and ensuing discussion can be viewed at the following link:

[Click here to play video](#)

Feedback from partners

ITC

Clear example of socio-economic determinants of health. Slum dwellers relocated to multi-story apartment buildings with inadequate separation between towers and minimum ventilation have high incidence of tuberculosis.

CURE

This speaker presented three studies, the first of which revealed the efficiency of simple interventions (such as an exhaust fan) in providing a healthier living condition among the residents of rehabilitated urban communities. This study had also taken up two types of layouts, which resulted in a difference in health conditions of inhabitants. The other two studies covered the use of social media data in post-disaster relief operations and handling public opinion.

SPARC

This session was useful in a way that it talked about the use of social media and thoughts of the public on certain issues. The focus of the presentation was also on health issues faced by people post relocation because either the design of the buildings are not right or there is no sufficient light, air, ventilation on the site, and how these could be resolved or lessened through small interventions.

GENERAL FEEDBACK FROM PARTICIPANTS

SPA V

Interesting mix of case studies, lectures and interactive sessions that can intellectually help to evolve the content of the project.

NIT H

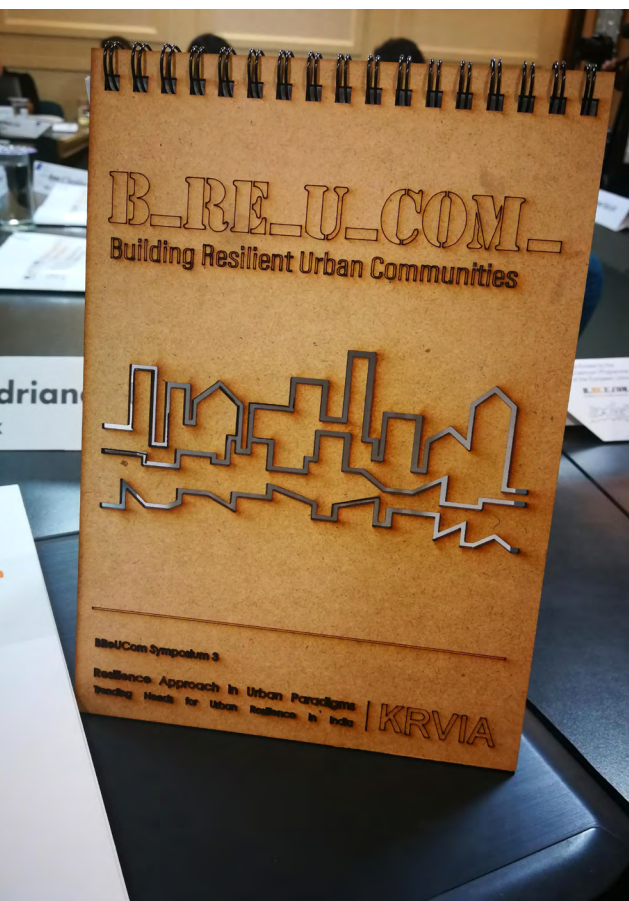
Very interactive and advisory board comments will shape the outcome of case studies in a structured manner.

DUK

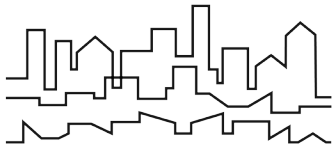
For the profession of urban planners, designers and architects it is of uttermost importance to learn to observe and analyze space and its usage to discern its meaning to different social groups. Only based upon such assessment can they start to act, especially if they decide to act, draft and conceive on behalf and WITH marginalized urban groups.

CURE

Very informative event and the field visit was interesting.



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