IIA
THE INDIAN INSTITUTE OF ARCHITECTS
INDIA

ARCHITECTS COMMITTEE ON SOCIAL RESPONSIBILITY
ACSR ROUNDTABLE CONFERENCE IN HONG KONG

Organized by
THE HONG KONG INSTITUTE OF ARCHITECTS
14th September 2019 At L Hotel, Causeway Bay, Harbour View, Hong Kong

Manguesh Raghunath Prabhugaonker (Official Delegate)
Sudhir Pillai Balakrishna (Past Chair Person)
T. S. Subbaiah (Member)
Sanjeev N. Bumb (Member)
Senthil Kumar Karunakaran (Member)
VISION
To build a safe and disaster resilient Asia by developing a holistic, proactive, multi-disaster oriented and technology driven strategy through a culture of prevention, mitigation, preparedness and response in partnership with Arcasia.
RESILIENT BUILDINGS

What is a resilient building in the Indian context?

India is divided into 6 broad climatic zones. Resilient buildings are those that are equipped to withstand the vagaries of the weather in their local climate.

A vernacular house in east coast

Framework

1. CLIMATIC ZONES
2. NATURAL & BUILT ENV.
3. NATIONWIDE DISASTERS
4. DISASTER MANAGEMENT
5. EFFECTS ON PEOPLE
6. GOVT. INITIATIVES
7. OUR MISSION

ENVIRONMENTAL RESILIENCE respecting our natural environment and context

DISASTER RESILIENCE to be equipped for the worst while hoping for the best

CLIMATE CHANGE RESILIENT adapting to the need of the hour

ADAPTIVE REUSE to make the most of our limited resources

ACTION PLANS for speedy response

PEACEFUL COEXISTENCE between members of all professions and locals

Approach ......BEYOND JUST BUIDLING REGULATIONS

MOVING TOWARDS SOCIALLY RESPONSIBLE ARCHITECTURE WITH CLIMATE RESPONSIVE DESIGN
With its landmass extending from Kashmir to Kanyakumari and Gujrat to Arunachal Pradesh, India has an extremely diverse range of climatic conditions.

A LAND WITH DIVERSE CLIMATIC CONDITIONS REQUIRES DIVERSE SOLUTIONS
BUILDING TYPOLOGY IN MONTANE CLIMATE

Jammu & Kshmir
SRINAGAR

NATURAL & BUILT ENV.
NATIONWIDE DISASTERS
DISASTER MANAGEMENT
EFFECTS ON PEOPLE
GOVT. INITIATIVES
OUR MISSION
BUILDING TYPOLOGY IN HUMID SUBTROPICAL CLIMATE

PATNABihar
BUILDING TYPOLOGY IN TROPICAL WET AND DRY CLIMATE

KOLKATA

CLIMATIC ZONES
NATURAL & BUILT ENV.
NATIONWIDE DISASTERS DISASTER MANAGEMENT EFFECTS ON PEOPLE GOVT. INITIATIVES OUR MISSION

ARCHITECTS COMMITTEE ON SOCIAL RESPONSIBILITY THE INDIAN INSTITUTE OF ARCHITECTS
BUILDING TYPOLOGY IN TROPICAL WET CLIMATE

KERALA

NATURAL & BUILT ENV.
NATIONWIDE DISASTERS
DISASTER MANAGEMENT
EFFECTS ON PEOPLE
GOVT. INITIATIVES
OUR MISSION
BUILDING TYPOLOGY IN SEMI ARID CLIMATE

BANGALORE

NATURAL & BUILT ENV.
NATIONWIDE DISASTERS
DISASTER MANAGEMENT
EFFECTS ON PEOPLE
GOVT. INITIATIVES
OUR MISSION
BUILDING TYPOLOGY IN ARID CLIMATE

RAJASTHAN

NATIONAL & BUILT ENV.

NATIONWIDE DISASTERS
DISASTER MANAGEMENT
EFFECTS ON PEOPLE
GOVT. INITIATIVES
OUR MISSION
Building types of Jammu and Kashmir

Tak, refers to load bearing masonry piers with infill walls. In many cases these are expressed by a different use of material. The piers may be made of stone and infill walls of brick. Timber runners at each level tie the walls. The infill walls have timber embedded in them to increase their elasticity.

Building types of Patna

Measures currently taken:
- Appropriate orientation
- Insulation of building envelope
- Air locks, balconies, lobbies, verandahs
- Overhangs
- Fins
- Protective tree cover
- Windows and Exhausuts
- Wind towers
- Courtyards
- Water bodies and evaporative cooling methods

Measures currently taken:
- Roof and wall insulation
- Roofs with reflective surfaces
- Ventilated roof construction
- Maximum cross ventilation provided
- Anti-corrosive coatings on materials

Building types of Kolkata
Building types of Kerala

Measures currently taken:
- Roof and wall insulation
- Roofs with reflective surfaces
- Ventilated roof construction
- Maximum cross ventilation provided
- Anti-corrosive coatings on materials

Building types of Bangalore

Measures currently taken:
- Roof and wall insulation
- Air locks, balconies
- Wind barriers, protective tree cover
- Thick walls
- Dehumidifiers and Desiccant cooling
- Ponds for evaporative cooling

Building types of Rajasthan

Measures currently taken:
- Appropriate orientation | Insulation of building envelope | Air locks, balconies, lobbies, verandahs
- Overhangs | Fins | Protective tree cover
- Windows and Exhausters
- Wind towers | Courtyards
- Water bodies and evaporative cooling methods
EARTHQUAKES

COMES WITHOUT WARNING
MASSIVE LOSS OF LIFE AND PROPERTY
ARE WE PREPARED?

DAILY COMMUTE IS DISRUPTED

CLIMATIC ZONES
NATURAL & BUILT ENV.
NATIONWIDE DISASTERS
DISASTER MANAGEMENT EFFECTS ON PEOPLE
GOVT. INITIATIVES
OUR MISSION

EARTHQUAKES OVER TIME

Mangesh Prabhugaonker Official Delegate
(INDIA ACSR COMMITTEE)
CYCLONE FANI: A CATASTROPHE IN ODISHA
OVER 1 MILLION PEOPLE EVACUATED
879 MULTIPURPOSE CYCLONE SHELTERS IN ODISHA

CYCLONE VAYU - THE WEST COAST OF INDIA
300,000 EVACUATED

VAYU FANI

HOMES FOR THE EVACUEES? NEW, OLD?

Mangesh R. Prabhugaonker
Official Delegate
(INDIA ACSR COMMITTEE)
Water level had crossed the maximum storage capacity of reservoirs of 24 out of the state’s 58 dams, forcing officials to release the water by opening the sluice gates, including three of the Idukki reservoir.

Other states affected adversely:
- Gujarat
- Madhya Pradesh
- Maharashtra
- Karnataka
- Odisha
- Goa
- Tamil Nadu
- Andhra Pradesh
- Punjab

How many floods till we take a stand?
LANDSLIDES
BLOCK HIGHWAYS
PEOPLE BURIED
UNDER RUBBLE
VEHICULAR MOVEMENT
DISRUPTED

LACK OF RETAINING WALLS?
POOR INFRASTRUCTURE
OR FLAWED DESIGN?
WHO IS TO BLAME?
HUMANITY AT THE RECEIVING END

Devastating loss of life and livelihood

Who is to be blamed for failure of structures?

What can architects do?

What is our social responsibility?

SHELTER IS A BASIC HUMAN NEED

Respecting A HOME with socio cultural CONNECT with the place

NEED TO SUCCESSFULLY MEET HUMANITARIAN NEEDS AND PROTECT THE VULNERABLE AFTER DISASTERS.
APPROACH
A holistic and integrated approach towards disaster management with emphasis on building strategic partnerships at various levels.

The themes
- Community based DM, including integration of the policy, plans and execution.
- Capacity development in all spheres. Multi-sectoral synergy.
- Consolidation of past initiatives and best practices.
- Cooperation & Coordination with agencies at National and International levels.

WHAT IS OUR RESPONSE TO THESE DISASTERS?
A DIRECTION FROM STATE POLICIES?

ARCHITECT’S RESPONSIBILITIES TOWARDS OUR PEOPLE

CHOICES & RISK
OBJECTIVES with framework
PROMOTING A CULTURE OF PREVENTION, PREPAREDNESS AND RESILIENCE AT ALL LEVELS THROUGH KNOWLEDGE, INNOVATION, AND EDUCATION IN SUSTAINABLE CONSTRUCTION
Encouraging mitigation measures in building construction based on technology, traditional wisdom and environmental sustainability.

Vernacular homes in Arunachal Pradesh (left, prone to flooding) and in Kashmir (right, earthquake prone) have been built over the years with in-depth knowledge of resilient construction techniques.

Mainstreaming disaster management into the Architecture education, civil developmental and town planning process.
- Ensuring efficient mechanism for identification, assessment and monitoring of disaster risks.
- Ensuring efficient response and relief with a caring humanitarian approach
- Undertaking reconstruction as an opportunity to build disaster resilient structures and habitat for ensuring safer living.

Focus on delivering durable, more permanent housing solutions post disasters for a dignified and safe shelter the residents can call home.
URBAN FLOODING

CHILDREN’S / HEALTH - FUTURES ARE SEVERELY IMPACTED BY DESTRUCTION, IMPROPER DESIGN, UNSAFE CONSTRUCTION WORSENS THE SCENARIO

ANY DELAY IN RELIEF, DELAY IN CONSTRUCTION OF TEMPORARY HOMES ADDS TO THE AGONY

BY CONTINUING WITH CURRENT TRENDS, CAN WE RECONCILE WITH THIS?

IMPROPER INFRASTRUCTURE, DRAINAGE PATTERNS…WHERE IS THE ACCOUNTABILITY?

NEED FOR A FRAMEWORK TO PENALISE THOSE RESPONSIBLE FOR NEGLECT?
GOVERNMENT OF INDIA DISASTER MANAGEMENT INITIATIVES

- DISASTER MANAGEMENT ACT
- NATIONAL POLICY ON DISASTER MANAGEMENT
  (NPDM)
- NATIONAL PLAN FOR DISASTER MANAGEMENT
- NATIONAL ACTION PLAN ON CLIMATE CHANGE
- NATIONAL EARTHQUAKE RISK MITIGATION PROJECT
- NATIONAL CYCLONE RISK MITIGATION PROJECT
- INTEGRATED COASTAL ZONE MANAGEMENT PROJECT
- NATIONAL FLOOD RISK MANAGEMENT PROJECT
- NATIONAL LANDSLIDE RISK MITIGATION PROJECT

WHERE DO ARCHITECTS COME IN?

NATIONAL BUILDING CODES & ITS PRINCIPLES
GUIDELINES
MEET CHALLENGES POSED BY NATURAL CALAMITIES
USE OF STATE OF THE ART AND CONTEMPORARY PRACTICES WITH SUSTAINABLE
SHORT TERM Temporary Livelihood Options and Socio-Economic Rehabilitation

- Generate temporary livelihood options for the affected community
- Ensure that the assets, infrastructure and amenities created are hazard resistant, durable, sustainable, and cost-efficient.

LONG TERM Provision of Intermediate Shelters

- Where extreme weather conditions can be life-threatening or when the period of stay in temporary shelters is likely to be long and uncertain, construction of intermediate shelters with suitable sanitary facilities should be undertaken to ensure a reasonable quality of life.
- The design of such shelters should be eco-friendly and in consonance with local SOCIO cultural framework.

Pre-fab homes at under 25000INR ($350 approx.)
were provided in Kerala by Bengaluru based ‘Project Vision’
Can be installed by 2 persons in 2 hours
I IA HELPS OUT IN KERALA!

A NEW HOPE…
LOW COST HOUSING

Impact on critical infrastructure
1. Landslides and floods have caused damage to at least 10,000km of roads, hampering humanitarian access.
2. The power has been shut down in some of the affected areas.
3. Destruction of infrastructure was also reported, most notably a concrete bridge was completely destroyed, leaving almost 3,500 people completely isolated and impossible to access.
4. 54,000 homeless, at least 400 dead.
Elevated houses on steel frames are proposed for the flood affected areas. The idea is to avoid relocation of the inhabitants during flooding. The Foundation is of RCC, Footing kept 4’ below the existing ground level, to ensure proper anchorage into the ground. The superstructure is made of steel and aerated concrete panels 1X3m, to make the structure as light as possible. The structure is so designed that it can be prefabricated and erected at the site within 30days. Ensured that the superstructure is sturdy enough to take calamities like flooding, Earthquake etc.
CONSTRUCTION PROCESS COMPLETE IN 30 DAYS

PLANS FOR 1 & 2BHK

EXCAVATION

PLINTH BEAM

STEEL FRAMEWORK

FOOTING

HUMANE LIVING CONDITIONS

PROVIDING SPEEDY RELIEF IN TIMES OF NEED

Manguesh R. Prabhugaonker Official Delegate (INDIA ACSR COMMITTEE)
ROLE OF ARCHITECT...AS A SOCIAL RESPONSIBILITY

RESILIENT HOUSING PRE CRISIS, AFFORDABLE HOUSING POST CRISIS

Making Architecture sustainable & Resilient to climatic responses / disasters.
Planning for individual building / with people and community
Time to view emerging built form keeping resiliency in mind beyond just regulations /legislations
Explore and strategize the character of architectural language --through built environment and innovative construction techniques w r t Building materials for the future
Sensitizing the stake-holders in terms with governance, legislation and regulation with active involvement and risk awareness INSTEAD OF JUST STATISTICS

World Architecture Day
7th October 2019
How can architects contribute to the realisation of affordable housing for all Readaptive use?

RESILIENT BUILDINGS
RESILIENT COMMUNITY
RESILIENT ENVIRONMENTS
RESILIENT HERITAGE

Measures we can take as ARCHITECTS SHORT TREM measures LONG TERM GOAL

MAKE HUMAN SETTLEMENTS SAFE, INCLUSIVE, RESILIENT AND SUSTAINABLE

Mangesh R. Prabhugaonker Official Delegate (INDIA ACSR COMMITTEE)

“ARCHITECTURE... HOUSING FOR ALL 2022 ”INDIA
VISION
To build a safe and disaster resilient Asia by developing a holistic, proactive, multi-disaster oriented and technology driven strategy through a culture of prevention, mitigation, preparedness and response in partnership with Arcasia

Framework.
SOCIALLY RESPONSIBLE ARCHITECTURE, CLIMATE RESPONSIVE DESIGN, PEOPLE CENTRIC........towards Resilient Architecture in Natural & Built Environment

a way forward at ARCASIA ........................................lets make a RESILIENT ASIA