Mapping Livability for Lower Income Housing Typologies in the city of Mumbai.

Document prepared by Kimaya Keluskar- Project co-ordinator, KRVIA

Duration of Course: 3 Months (16 lectures of 100min each)

Project Team*:*

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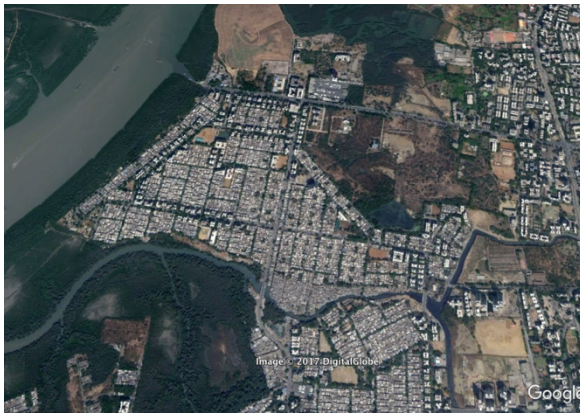
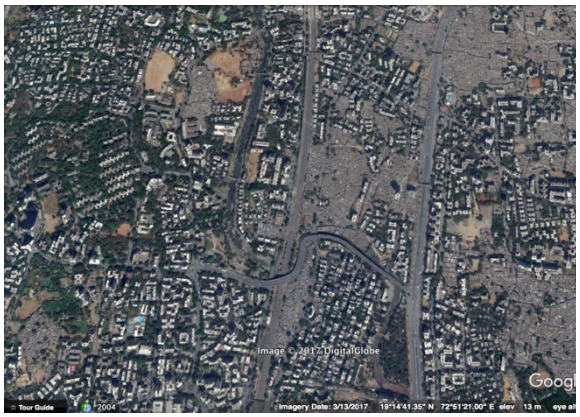
Case Study:



Google Overview of the Gorai site and services scheme



Google Overview of the Dahisar Informal Settlement site

Intent:

The study on engaging with communities to understand various energy flows within a settlement, demand supply ratio and tracing their energy patterns to create efficient systems and help them build energy efficient resilient communities in the world of climate change. In an urban context informal settlements are continuously evolving in their physical condition and communities evolve economically, as they get integrated into the urban economy. They are recipients of as well as contributors to the environmental stresses of the city: urban heat island effect, pollution of the commons of air, contamination and obstruction of open watercourses and subsoil contamination. And yet they also signify the human capacities for survival, adaptation and resilience in the face of such odds. The physical built environment – its materials of construction and the configurations of built and open space, the flows and cycles of energy, water and waste, with the overarching backdrop of Climate Change – seen in relation to the felt needs and human capacities of such communities provides the broad frame for pedagogic research. We should surmise that bottom-up, community-based design strategies could transform these informal settlements into sustainable communities. Indeed, this process may provide a template for low-carbon, environmentally sustainable urban systems that are affordable for a majority of citizens in developing societies. Conducting comparative analysis of liveability in various slum rehabilitation schemes provided by the government. Mainly looking at Informal settlement, PAP housing, Site and Services scheme. Qualitative and quantitative analysis of settlements using environmental meters and tools on site. The module focusses on engaging students on site to understand: 1: Relationship of built form with and individual 2. Impact on energy consumption and livelihood 3. Impact of built environment on health and mortality rate 4. Framing strategies to create building inclusive and resilient communities.

Methodology:

Mapping is conducted under various key indicators listed below which work towards enhancing the quality of life within a neighbourhood.

Students Team:

1. **Basic Needs and Standard of living**

   Income: Capacity to meet basic needs depends on an adequate income

   Housing: Availability of homes, Affordability (price per Sqft), Rental caps within neighbourhood, PG accommodation

   Food: Access to nutritious food (vegetables, meat, poultry, milk), organic market (time and interval), Feasibility study for urban farming

   Mobility: Modes of travel, no of people involved in private car driving, car pools and public transport. Time and fuel cost spend in travelling to work place, Schools & colleges, medical facility and market.

Student Team:

2. **Health and Wellness**

   Sourcing health post data for the ward (Source: MCGM)

   Physical Health: Illness suffered, Study patterns of illness with weather changes, event occurrence etc. Access to open playgrounds, Gymkhanas or parks

   Mental Health: Stresses in different age group, physical and mental growth of children

   Mapping community involvement in periodic health check ups, counsellor discussions, vaccination for kids, Blood donation camps, fumigating open gutters, dense vegetated are pre and post monsoon, Municipal visits to check areas of threats e.g. stored dirty water and pest control measures at building and unit level (type of pest control – Chemical or gel).

   Water tank cleaning and maintenance: Interval and mode of cleaning.

Student Team:

Environment and Sustainability

Land Use and Ecology: Area of built and unbuilt, open space per tenant, mapping natural potential resources like wells, water bodies, dense/ sparse vegetation, birds, butterflies or any ecosystem that exist on site.

Waste, Water, Sewage:

Map the sources and unit quantification of each.

Journey of water from the point it enters site, its usage and its state when it leaves the site.

Terraces and Surface run offs during monsoon.

Feasibility for RWH (Rain Water Harvesting).

Mapping ground water table and its condition. Water test to be conducted to understand COD (Chemical Oxygen demand) and BOD (Biological Oxygen demand composition).

Assessing present method of segregation if any. Quantifying each and mode of process to be evolved to upcycle waste depending on its composition and source.

Transportation: Projected carbon footprint for Co2 emissions exclusively for travelling *(data to be derived from Standard of living team)*

Energy and Climate:

Map unit consumption of electricity: Reading electricity bills in co relation with time of usage for AC (Air Conditioner), Kitchen Appliances, recreational/work stations, artificial lights, heating water and ionising/filter potable water.

Thermal comfort and visual comfort readings in common areas and habitable spaces for units at ground level, topmost level and intermediate levels. (Strategies on the basis of form and design of buildings)

Feasibility study for solar water requirement, Outdoor light requirement, roof top urban farming

Mapping adaptive techniques used on site to mitigate climate change

Design Mapping – WWR (window Wall Ratio), Orientation, access to daylight, U value calculation with respect to solar radiations, wind direction and precipitation.

Student Team:

3. **General Demographics:** Mapping population under different age groups and general aspiration of each age group
4. **Education and Learning**

   Access and proximity to Play schools, Primary / secondary education, libraries.

Student Team:

5. **Community and Belonging**

   Crime and Safety: Mapping incidences within the neighbourhood, police patrolling during early morning and mid night hours. Dingy spooky places around and within neighbourhood. Occurrence of violent incidences. Fire compliant for neighbourhood safety. Disaster management plan for evacuation during occurrence of natural calamity (earthquake, floods, fire etc.)

Diversity and Cohesion: Young adults group (Mandals), woman organisation, senior citizen group

Municipal Roles and Responsibility: Times and interval of picking up garbage, Cleaning and maintenance for storm water drains, pedestrian access to pavement. Signal and crossing over at heavy traffic junction, Maintenance of water and sewage lines, Quality of roads leading to the neighbourhood and within neighbourhood.

Volunteering: community engagement to enhance the existing neighbourhood

6. **Art and Culture:**

   Mapping cultural programs and facilities, Activities like sports and art competition for kids. Festivals (time and interval)

Activities involved:

- Field study for data collection
- Data analysis and inferences
- Community Participation workshop
- Dissemination Workshop within various key stake holders (Presenting the study to the community and Government bodies.

Tools and Instrument for Energy Mapping:

Refer to Environmental Equipment document (*compiled under BINUCOM, Erasmus Plus fund Project in collaboration with KRVIA*).

Deliverables: Holistic report on Strategic Implementation Planning (SIP) along with Economic feasibility of the proposal design by the team for creating sustainable resilient neighbourhoods within the city of Mumbai.