

Assessment of socio-economic vulnerability based on a relationship between Urban Development and parameters of Physical-environmental, socio-economic and socio-cultural liability cum affordability thresholds in residential Cluster of West Bengal.

Cases: from 1 Mega Core City-region; 2 large towns; 2 small towns; and a rural region: Kolkata Metropolitan Region (KMR)

Broad Area

- Planning and Policy
- Habitation and Maintenance

Need for the Study in the Context of Future of Cities

The impact of Climate Change on socio-economic vulnerability and livelihood of communities can be assessed in various ways. A key approach is to sequentially measure composite indices of liveability and affordability subject to short-term and long-term impacts of climate change on built-environmental settings. The outcome of this research will culminate in mitigation strategies of re-designs and physical-adaptation of built-environmental settings.

On the one hand, the causal linkages between the parameters of liveability and affordability, as two key indicators of vulnerability and livelihood and the extents of loss in built environmental setting will be assessed. On the other hand, the study will conduct analyses of social responses of affected communities to arrive at the orders/scales of vulnerability. Techniques like probability distribution models assessing the thresholds of vulnerability, analytical hierarchy processes for determining choice of mitigation through community governances, and GIS techniques to assess the built-environmental settings will be used.

Keywords: Orders/ scales of socio-economic vulnerability and livelihood; indices of liveability and affordability; variation in socio-economic responses; built-environmental re-design and adaptation

Objective and Scope of work

Basic research correlating impact factors of Climate change on Socio-economic vulnerability of affected communities and the aspiration levels of such communities with regard to levels of present and future livability and affordability is of paramount importance. The present research will establish an approach to assess the impact of Climate Change on socio-economic vulnerability and livelihood of affected communities based on such correlations.

The problem of assessment of socio-economic vulnerability and livelihood is to directly arrest indicators that will best reflect them. In this study, a composite index of liveability and affordability has been earmarked as such indicator Lesser are the indices, higher is the degree of vulnerability and its detrimental impact of community livelihood. In this study, a three-point scale will be used to earmark the levels of socio-economic vulnerability (SEV):

- First-order SEV – having a devastating impact of climate change indicators; point-of-no-return; requirement fresh rejuvenation and mitigation procedures on socio-economic liveability and affordability resuscitation policies an emergency footing.
- Second-order SEV – partially devastating; having a low to moderate opportunity of return-to-normalcy; execution of partial socio-economic liveability and affordability resuscitation policies.
- Third-order SEV – minor disorder; possibility of long-range and slow-paced community liveability and community affordability up-gradation procedures.

Objectives

The study will be three-phased based on fulfilling the three objectives:

Objective one: Developing a methodology to assess current situation in liveability of communities based on parameters of impact of climate change on the built-environmental setting and associated livelihood. Loss in usable built-environmental spread, losses in urban-rural sprawl and their contiguity, loss of usable green-belts and water-bodies for livelihood are some significant parameter

Objective two: Developing a subsequent methodology to assess the current situation of affordability based on parameters of socio-economic vulnerability. Levels of affordability of basic services and utilities will be used here.

Objective three: Formation of a composite index and liveability and affordability based on the base map of three-orders of SEV and suggest strategies of intervention and mitigation, accordingly

Methodology

At the outset, the study area will be finalized with the targeted communities and their built-environment. A set of base maps (Map Group I) earmarking the level of Climate change in the study area will be formed based on available data (work done on basis of GIS applications and RS data).

Subsequently, the steps to the study will be completed, which will be three-phased:

First, the tasks in respect of objective one, which will assess current situation in liveability of communities based on parameters of impact of climate change on the built-environmental setting and associated livelihood. Loss in usable built-environmental spread, losses in urban-rural sprawl and their contiguity, loss of usable green-belts and water-bodies for livelihood are some significant parameter Lesser the Liveability index based on these parameters, higher is the degree of SEV (Socio-economic vulnerability). The study will extract social-response data based on community surveys and overall reconnaissance surveys of targeted areas.

Analytical techniques based on assessed eigenvalues, of parameters, matrixing of parameters, principle component analyses and analytical hierarchy processes will be used to earmark the cut-off 'thresholds' of liveability based on available secondary data and validating primary data.

Secondly, the tasks in respect of objective two for assessing the current situation of affordability based on parameters of socio-economic vulnerability. Parameters reflecting SEV levels of affordability of basic services and utilities will be used here. Analytical techniques based on probability distribution models will be used to earmark the cut-off 'thresholds' of affordability based on available secondary data and validating primary data.

Thirdly, the tasks in respect of formation of a composite index and liveability and affordability through delineation of a second set of maps (Map Group II) earmarking the three-orders of SEV will be created.

Finally, the two sets of maps will be collated, compared to suggest strategies of intervention and mitigation based on a) impact assessment and b) social responses / aspiration levels of targeted communities trying to adapt to climate change.

Outcome/ Deliverables

The parameters of liveability and affordability assessment will constitute the basic working elements of research that will best reflect the orders of socio-economic vulnerability and its impact on livelihood. Lesser the composite Affordability-cum-Liveability index based on these parameters, higher is the degree of SEV (Socio-economic vulnerability).

For instance, in case of objective one, some work elements are:

- Loss in usable built-environmental spread,
- losses in urban-rural sprawl and their contiguity,
- loss of usable green-belts and water-bodies for livelihood

Team Composition

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