

COMMUNITY PARTICIPATION FOR CLIMATE CHANGE ADAPTATION: PARTICIPATORY APPROACH FOR PLANNING AND DESIGN OF COASTAL GREEN BELTS IN BATTICALOA

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ABSTRACT

Coastal green belts are considered as an appropriate solution to mitigate the adverse impacts of natural coastal hazards on human lives and properties in the context of climate change. Yet, Coastal green belt practices are criticized at many occasions due to the ignorance of local community at the planning and designing stages. In this context, the need of participatory approach to plan and design the coastal green belts is important. This research paper explains such methodology that was tested in five sites of Batticaloa to design and plan a coastal green belt by adapting participatory approach. The study concluded that adopting the participatory approach facilitates the development of best design solutions and expedites planning of the greenbelt with the consensus of all stakeholders of the site to adapt climate change.

Key words: *Community participation, climate change adaptation, participatory approach, coastal green belt*

1. INTRODUCTION

1.1 Climate Change, Vulnerability, Adaptation and Resilience

Climate Change is defined as statistically significant variation in either mean state of the climate or in its variability, persisting for an extended period, typically decades or longer (Intergovernmental Panel on Climate Change, 2001). Climate change could severely exacerbate the impact of natural hazards, disaster and extreme weather. In this context, vulnerability is a function of the character, magnitude, and rate of climate variation to which a system is exposed, its sensitivity, and its adaptive capacity (Mahanama, 2010). Therefore, vulnerability is the degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change. Adaptation, initiatives and measures to reduce the vulnerability of natural and human systems against actual or expected climate change effects is needed to create resilience, the ability of a social or ecological system to absorb disturbances while retaining the same basic structure and ways of functioning, the capacity for self- organization, and the capacity to adapt to stress and change. A system with adaptation measures is more resilient to damage in case a severe event takes place.

1.2 Participatory Approach to Create Coastal Greenbelts to Adapt Climate Change

Coastal greenbelt is a strip of natural or artificially created coastal vegetation designed to prevent coastal erosion, and mitigate the adverse impacts of natural coastal hazards on human lives and property. It is a country specific and site specific entity defined in relation to risk factors and vulnerability to coastal hazards (IUCN- Sri Lanka, 2007). Expert studies after tsunami in 2004 indicates that coastal green belts have reduced the vulnerability of local communities (Danielson et al, 2005). Functional values of the coastal green belt includes, act as a barrier- wind, salt, spray, soil erosion, natural calamities, increase the scenic value, shade and recreation, and support the socioeconomic bases of the local communities (Mathiventhan, 2009). Previous studies on coastal green belts criticizes the ignorance of local community ideas and the conflicts between the different stakeholders -due to the multiple interests - at the planning and designing stages (Ali, 2008). When considering the participatory approach to develop coastal greenbelts, IUCN- Sri Lanka, 2007, emphasizes the importance of expert consultation and the local community and the representatives of community based organizations and highlight the significance of community participation in planning and successful implementation of greenbelt restoration activities.

1.3 Need of a Coastal Green Belt in Batticaloa City Based on Participatory Approach

Batticaloa city, located in the eastern coast of Sri Lanka consists of a 12 km shoreline. Temperature data analysis of last 40 years in Batticaloa city has revealed a temperature increase of 0.4-0.5 °C during last two decades compared to previous two decades. Rainfall analysis revealed a monsoon rainfall increase of 28% and 15%-20% of total population were vulnerable to 1.14 m sea level rise in 2040 (Abenayake, et al. [1]). Jayasingham and Mathiventhan [2], in his study on the present green belt in Batticaloa district, with special reference to the city area stated the success rate of the present green belt project of the city is only 50-60%. This success was due to protection for crops in the inland areas from salt spray, burning effect and strong winds and protection of the households from household metal and electronic item corrosion and sand accretion over the erosion rates. Idea flowing sessions by participating different stakeholder groups, community representative and local governing bodies in Batticaloa city suggested the redesign of a green belt for 12 km coastal stretch. Therefore, it is needed to participate local community and the stakeholders to accommodate their interest in the design to improve the social acceptance and enhance proper planning in the greenbelt.

2. RESEARCH OBJECTIVE

The research problem of the study was the social and ecological issues of the present green belt of Batticaloa city and demolish of 40-50% of the planted trees of it due to the natural or manmade reasons in the context of climate change and vulnerability to climate change in Batticaloa city. Lack of awareness and coordination among different stakeholders and the local community, inadequate protective measures, poor planning and management were identified as common reasons for the low success rate (50%- 60%) of the existing green belt in Batticaloa [2]. Based on this, the objective of this research was to study the applicability of participatory approach to plan and design of coastal greenbelt in Batticaloa.

3. METHODOLOGY

The method of study was as of figure 1. The steps of this method are:

(1). Precedence Studies: Literature-based detailed review on the best practices to integrate climate change adaptation in

city development plans with special reference to green belts and participatory approach.

In this step, the green belts were studied based on its evolution, international experience of green belt design, coastal green belts, mandates of successful green belt design and vulnerability of Batticaloa city to climate

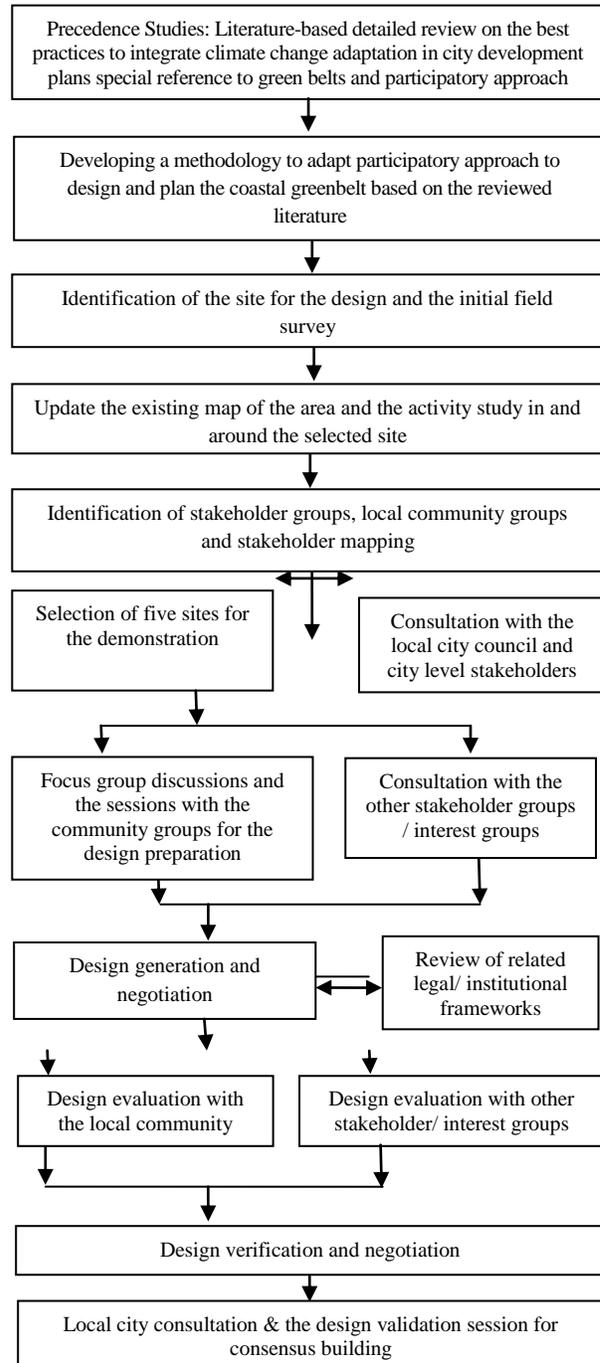


Figure 1: Developed methodology to adapt participatory approach to plan and design coastal green belt of Batticaloa

change. Furthermore, literatures were gathered on the existing green belt of Batticaloa and on the city profile.

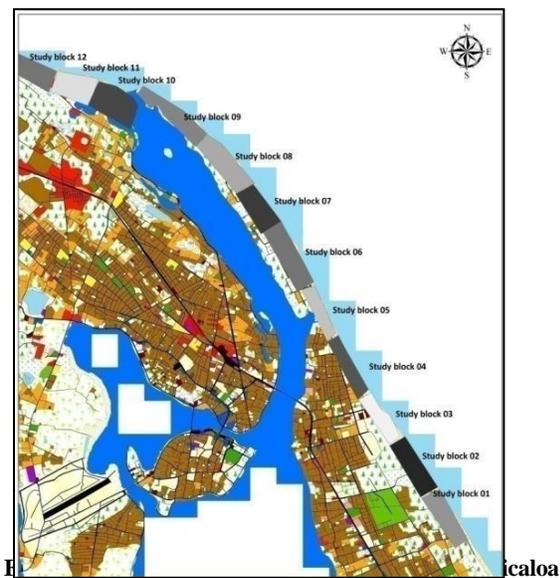
(2.) Developing a methodology to adapt participatory approach to design and plan the coastal greenbelt based on the reviewed literature.

To adapt participatory approach, a method was developed and adapted in the coastal green belt of

(3.) Understanding the context of the study area and map the key issues, needs and the stakeholders to familiarize with the coastal belt by profiling of the coastal vegetation and stakeholder mapping. The study was done by dividing the coastal belt to 12 blocks of 1 km stretch.

In this step, stakeholder groups & local community, the activity pattern, present condition and users on each study block were identified and a plant inventory for the coastal stretch was developed with consultation of experts on field. Stakeholder mapping, activity survey and the field reconnaissance survey techniques were used to perform these activities.

The 12 study blocks are as Figure 2.



Source: Survey Department (2008)

(4.) Selection of five sites for the application of participatory approach, by circulating the findings of the 3rd step among city level / regional level key stakeholder institutions that has a say in the coastal areas and adaption of Delphi technique to select the sites according to stakeholder preference.

The key stakeholder institutions identified in the previous step are the Forest Department, Coast Conservation Department, Central Environment Authority, Department of Fisheries, Disaster Management Centre, Coast Conservation Department, Batticaloa Municipal Council and Manmunai North DS division. The criteria used to select the 5 sites are, presence of vegetation cover, activity

pattern and the vulnerability to natural disasters. Participant rating values were used to select these sites using the above criteria.

(5.) Generation of design solutions by participating 35- 40 locals from each site by using focus group discussions.

These groups represented the women, fisheries community, children, local businessmen and the elderly communities of the given site. At this step, the participants were asked to draw the design solutions in papers and finally in a common board. The process was facilitated by a landscape architect. A separate session was conducted with key city level stakeholder institutions for their ideas of these designs emphasizing on individual institutional interest and the prevailing legal framework.

(6.) Evaluation of the different design alternatives. A second community session was held based on multi criteria analysis.

This was done to integrate stakeholders and local community to transparent decision making process and create awareness to recognize dimensions and alternatives of the designs. The participants evaluated the designs in terms of climate change protection, economic development, social environment and the nature (ecology) reflecting on attributes of the green belt

(7.) Design verification by organizing 10-12 participated group discussions.

At this stage, to verify the designs, local community based organization representatives were invited to these discussions.

(8.) Design validation by discussing and facilitating consensus building between the institutional stakeholders and local community groups.

The researchers facilitated the consensus building between the institutional stakeholders and local community groups with the presence of the local city council at this stage.

4. RESULTS

The results of this study are the developed participatory approach to plan and design coastal greenbelts. The community perception on multipurpose coastal greenbelts was an important finding of this study. The community in the selected five sites had physical access to the existing green belt. With the prevailing social issues in the existing green belt [2], the community in these sites believed the proposed green belt as a way to gain social access to the coastal belt. This was depicted with the proposals of community to establish children parks, seating arrangements and visually permeable tree line. In spite of the physical access, social accesses for these sites were considered important by all stakeholders.

The local communities of two out of the selected five sites wanted their park accessed by others. The

rationale behind this was that it can stimulate the informal commercial activities for the locals. In contrast to this, the other three sites (two sites with majority of Muslim ethnic community) wanted their public spaces not to be accessed by others. The fisheries community on every site wanted to use the green belt to facilitate their livelihood. The most important fact of these findings was all the suggestions of the community were within the prevailing legal framework and regulations of the coastal areas.

These proposals didn't increase the community vulnerability to natural disasters. Furthermore, selecting the tree species, planting method and the spacing of greenery too was important in this study. Different stakeholders of these sites emphasized in different plant species and spaces. Generating common consensus between these stakeholders was significant in this research. Sense of ownership of local communities was vital in developing these designs of greenbelts and maintaining them. The management of the greenbelts was handed over to the Community Based Organizations in respective sites. CBO's under the coordination of Grama Niladhari (GN) had a rotation management system to look after the sites by undertaking tasks on implementation stage, maintenance and benefits sharing in the long run. CBO leaders negotiated with key stakeholders during the validation session on responsibilities and tasks. Finally, adopted participatory approach was a knowledge sharing method and a positive externality. The outcome of the Multi Criteria Assessment that was carried out at the design alternative evaluation reveals the enhancement of the knowledge of local community during the participatory process. This process empowered local communities on decision making.

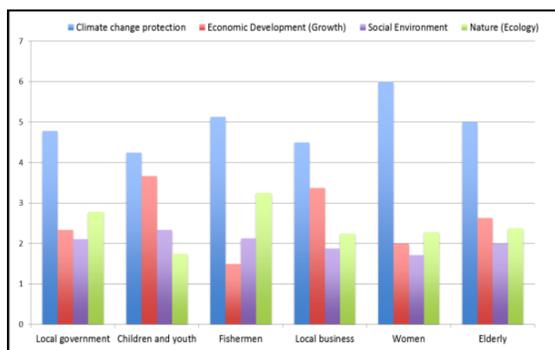


Figure 3: Weighting of major elements of the design of multipurpose green belt (Thiruchchendur site)

5. CONCLUSION

The study concluded that adopting the participatory approach facilitates the development of best design solutions and facilitates planning of the greenbelt with the consensus of all stakeholders of the site to adapt climate change.

6. ACKNOWLEDGMENT

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