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URBAN PLANNING, GREEN COVER & BIODIVERSITY

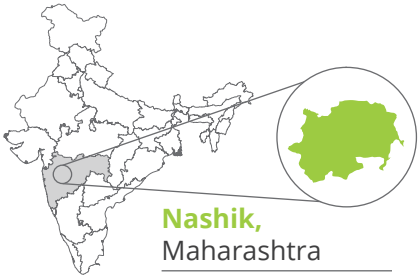
10

A CASE STUDY OF PROTECTIVE MEASURES TAKEN BEFORE, DURING & AFTER THE FLOOD: NASHIK

Project Highlights

- Revision of the Disaster Management Plan to update all the information related to flood preparedness
- Mass awareness and extensive community engagement
- Adoption of city-wide flood precautionary measures

Background



Nashik, Maharashtra

Year of Start: 2019

(Not to scale)

Nashik, the Grape City of Maharashtra, situated on the North-west sides of Maharashtra not only the administrative center and industrial hub of the Maharashtra state but also a popular pilgrimage tourist destination. The district having a population of 61,09,052 makes it the 3rd most populated city of Maharashtra. Considering is geographical location, the city is vulnerable to various kind of hazard like flood, earthquake, fire hazard, drought etc. The affinity towards various natural disaster produce long lasting impacts on human lives, livelihoods and property of the city. In view of this, the District Administration felt the urgency of preparing an emergency response plan in order to minimize the negative impacts of a natural calamity. Thus, the city initiated an important measure of updating the District Disaster Management Plans.

Project Objectives

I. To improve the preparedness measures during flood conditions in the city of Nashik
II. To develop a comprehensive integrated long-term plan for Disaster Management for any climatic conditions
III. To reduce disaster impact on health care facilities, schools, roads, infrastructure etc

Key Stakeholders

Nashik Municipal Corporation & Municipal Disaster Management Cell, District Collector Office, District Disaster Management Cell, Municipal Smart City Development Ltd.

Approach

An integrated approach was adopted to strategize the activities being undertaken to cover the various aspects of preparedness. The plan covered various aspects of preparedness measures before, during and after the flood disaster situation in both rural as well as urban areas of Nashik city. Considering the fact that the city had been experiencing very to very heavy rainfall over the year 2019, the municipal corporation along with its disaster management cell formulated a well-organized and integrated disaster management plan for the city. Disaster risk management component contains, multi-level plan preparation, capacity building at various levels through trainings, community awareness, create resources database with coordination at district administration and line departments, multi sector and multi-disciplinary actions for mitigate disasters with pre-during and post disaster activities, resource mobilization and technical assistance.

Financial Structure of the initiative

- Funding's from State Disaster budget and regular disaster resource from Nashik Municipal Corporation, District Collectorate & Central Governments Smart City Mission Funding
- The Chief Minister of Maharashtra State demanded a special relief package of RS. 4,700 crores for Kolhapur, Satara & Sangli and amount of Rs. 2,105 crores for Kokan, Nashik and some rest of Maharashtra state
- There would be a compensation of Rs. 10,000/- for rural areas and Rs. 15,000/- for urban areas for affected families
- In addition to this, a compensatory amount of Rs. 75,000/- would be given for small businesses that have suffered the respective damages during the flood disaster

Achievements

Benefits

- The development of disaster management plan at an early stage led to increased preparedness for the disaster. All the information about damages, diversions, restoration was shared with the public through press conferences, Twitter, Facebook, etc. ensuring the effective implementation of precautionary measures
- Minimization of infrastructural and human health loss was observed due to extensive preparedness for the floods
- Reduced vulnerability and increased accessibility to food supply during the event of disaster

Co-benefits

- Mass participation and awareness leading to high levels of preparedness to tackle the calamity
- Development of structural changes in buildings of low-lying areas
- Capacity building and skill development of various disaster management teams ensuring the development of efficient and skilled workforce

Success Factors

- Effective unity among various citizens of various religions, places and ages.
- Mass awareness of management systems amongst the various levels of societies for every disaster and other critical conditions.

Limitations

- Lack of communication systems for effective and speedy relief operations
- Alternate road infrastructures are to be constructed in quick time where there submerged roads and other infrastructures in high flood conditions

Future Prospects

Nashik is a city where the normal and high flood situations arises frequently on each and every year. For this, the well organized and well-prepared Disaster management system is necessary. This year's disaster management plan and system has impacted effectively, which can be used a baseline for planning the disaster management initiatives in future.

Source: Case received from the city

http://www.uniindia.com/flood-over-4-000-moved-to-safety-in-nashik/west/news/1692955.html
https://timesofindia.indiatimes.com/city/nashik/Flood-alert-for-low-lying-areas-for-second-day/articleshow/53501390.cms
https://www.irjet.net/archives/V6/i4/IRJET-V6I4916.pdf

11

TOWARDS A GREENER SOCIETY: REJUVENATION OF NEIGHBORHOOD PARK OF THANJAVUR

Project Highlights

- Increased green cover and enhanced the aesthetics of the neighborhood park
- Improved the overall condition of the park which facilitated an increase in the footfall and its usability by local residents
- Improved the lighting facilities in the park region thus imbibing the sense of security among the local residents

Background

Neighborhood parks are considered as the lifeline of a locality as they yield numerous benefits and co-benefits. A park with an area of 1282 sq. km is situated in the west side of Thanjavur city in Tamil Nadu. The park is one of the prominent facilities of the area and is divided in three segments housing a children park with compound wall, which is in a dilapidated condition and cannot be used. The other segments are mainly used for informal parking of four wheelers, trucks and buses and thus, inhibit effective utilization of the facility by local residents. This triggered the local residents and municipal corporation to devise a project to rejuvenate the neighborhood park.

Thanjavur,
Tamil Nadu
2019
(Not to scale)

Project Objectives

I. To improve the facilities in the park
II. To develop the park in such a way that residents can spend their leisure

Key Stakeholders

Thanjavur City Municipal Corporation; Near-by residents of the area

Approach

The initiative aimed to redevelop and improve the overall aesthetic value of the neighborhood park in one of the localities of Thanjavur. An integrated approach involving pre-assessment as well as redevelopment was undertaken in order to improve the condition of the park. The key activities included:

- Assessment of the existing condition of the park in order to identify the requisites for improving the quality of the park
- Stakeholder consultations: Extensive involvement of the local residents in order to identify the facilities that need to be provided in the park
- Development of a comprehensive plan of action incorporating all the aspects identified through pre-assessment as well as residents consultations
- Development of financial plan and proposal for the project and implementation of the proposed plan through active participation of municipal corporation and local residents

Financial Structure of the initiative

- Cost of the project is Rs.1.30 Crore
- This is service oriented and no revenue is expected

Achievements

Benefits

- Increased green cover leading to improvement in the overall aesthetics and quality of environment
- Increased the accessibility to various play equipment for the children of the locality, thus increasing the attractiveness of the parks
- Enhancement in the park infrastructure, i.e., park furniture, water fountains etc.
- Improvement in the lighting facilities in and around the park

Co-benefits

- The practice of dumping garbage has been avoided, thus reducing the environmental and human health impacts
- The encroached portion of land has been reclaimed
- The enhancement of the quality of parks has increased the probability of indulging in physical activities and hence provide immense health benefits
- Improvement in the overall air quality of the locality

Success Factors

- Active participation of local residents for improving the conditions of the park
- Increased usage of the park facilities by local residents and children
- Intensive mass awareness and involvement with municipal corporations and other local level government agencies

Limitations

Size and location of the park, i.e., small surface area and vicinity to the road side hinder the expansion and optimum usage of the park to gain the intended benefits

Future Prospects

Effective utilization of the improved green area facilities at local levels will meet the expectations of all the residents including senior citizens and children which will pave way for large scale transformations of these neighborhood parks in the city.

Source: Case received from the city

12

GREEN THANE: TOWARDS A SMART GREEN CITY

Project Highlights

- Increase in the green cover and regeneration of degraded forest land of Thane City
- Conservation of the fast depleting bio-diversity of Thane City
- Restricting further erosion of soil and hence reducing landslides in the hilly areas around Thane city
- Adoption of methods to restrict the loss of fresh water due to runoff during the rainy season in this degraded forest lands and in turn recharging the water table in the high-water scarcity areas of the City
- Generating employment to the tribal youths in these areas
- Involvement of Citizens, NGOs, students, etc. in the plantation program and creating awareness regarding the importance of environment conservation

Background

Thane city located near Mumbai in the state of Maharashtra, is a rapidly growing city due to extensive immigration and urbanization. In view of this, there has been fast depletion of green spaces within the city as well as on its outskirts. Tree Census carried out in the year 2011 recorded 4, 55,070 of trees in the city, but in order to cope up with the fast growing concretization, Thane Municipal Corporation planned a drive of planting 5 Lakh trees in 3 years starting from 2015. Considering the scarce availability of land within the city, degraded forest land was identified within the city limits for the plantation drive in association with the Forest Department.

Mumbra -
Diva, Thane,
Maharashtra

2015-2018

(Not to scale)

Project Objectives

I. Regeneration of degraded forest land within the city limits
II. Plantation of local forest tree species on all the areas identified for the plantation drive
III. Restricting soil erosion in identified hilly areas
IV. Minimization of fresh water wastage and adoption of techniques to ensure ground water recharge to minimize water scarcity problems in the city

Key Stakeholders

Garden Department and Tree Authority, Thane Municipal Corporation

Approach of Green Thane initiative

The project was planned with an initiative to resolve the issue of fast depleting green spaces due to the ever-increasing urbanization of Thane city as per the following criteria:

- Identification of big open spaces for plantation within the city limits due to scarcity of land in association with the forest department

- A large patch of degraded forest land located in the hilly regions in Mumbra and Diva city was taken on lease from the forest department for 7 years
- A tri-party agreement was made between the Forest Department, Thane Municipal Corporation and Forest Development Corporation of Maharashtra for the plantation project
- Distribution of free saplings to the Local leaders, NGOs, Citizens, schools and colleges within the city limits to ensure mass plantation initiatives across the city
- Extensive campaigns, media as well as community engagement drives to increase mass-awareness levels about the initiative: Local leaders and celebrities were also involved in the plantation drive
- Adoption of techniques like Nala bunding, mulching, etc. for the conservation of water in order to make it available for a longer time for the plants, as well as check dams for helping the water to percolate in the soil and recharge the water table in that area
- Geo tagging of the planted trees with the help of GIS/GPS technology
- Maintenance of the plants for 5 years by FDCM of the plantation carried out on Forest land which involves watering of plants, weeding, replacing dead plants with new, etc.
- Generation of employment opportunities for local tribal youth

Financial Structure of the initiative

Project was funded through the annual budget of Thane Municipal Corporation

Achievements

Benefits

In 1st year 2015, total 49,638 no. of trees has been planted.

In 2nd year 2016, total 1,61,554 no. of trees has been planted. Out of which a record of 76,496 no. of trees were planted in a single day on 1st July 2016.

In 3rd year 2017, total 2,88,810 no. of trees has been planted. Out of which a record of 82,870 no. of trees were planted in a single day on 1st July 2017.

In the year 2018, total 1,19,000 trees has been planted, out of which 50,000 were mangroves.

More than 6 lakhs were planted within a period of four years in the Thane city limits involving local leaders, celebrities, NGOs, students, citizens, on degraded forest lands, roadsides, reservation plots. dividers, etc.

Co-benefits

- Creation of employment for the local tribal people during the plantation process and maintenance period of the project

Success Factors

- Strong and stable leadership of Forest Development Corporation of Maharashtra
- Intensive campaigning and mass involvement for the drive

Limitations

- A total of 600 ha of land was made available on lease but due to intense degradation only 400 ha could be used for plantation
- Water availability a problem due to hilly areas

Future Prospects

- Inclusion of local species of fruits, flower trees in the plantation drive will help to conserve and regenerate the depleting Bio diversity in Thane City area
- Plantation of fruit trees and flower trees can become permanent source of income for the tribal youths
- Increase in the green cover can help to reduce the pollution in Thane city

Source: As received from ICLEI, South Asia

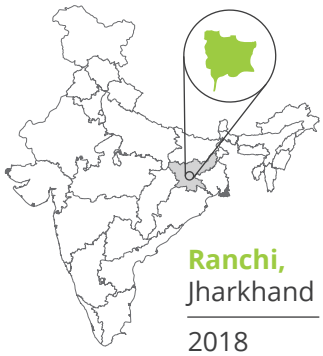
13

URBAN DESIGN GUIDELINES FOR RANCHI

Project Highlights

Developing the Urban Design Guidelines focusing on

- Creating a vibrant, safe, inclusive and sustainable city to live and work in for citizens
- Integrating city's ecological assets with the built environment thus ensuring sustainability
- Incorporating sustainable technologies and materials in building designs while leveraging natural elements
- Developing suitable strategies for climate resilience, and incentivizing the same



Ranchi, Jharkhand

2018

(Not to scale)

Background

Ranchi is one of the 100 smart cities under the Smart City Mission and as part of the proposal, it has proposed a 656.30 acres of greenfield development. To enhance the quality of the built area and the open spaces, it is proposed that due focus will be given to urban design. Department of International Development (DFID)-UK, under the UK-India Strategic Partnership for Smart Urban Development in Indian States (SmUDI) initiated a project to prepare Ranchi Urban Design Guideline.

Project Objectives

I. To provide comfortable and high quality built environment, integrated with nature

II. Enhance the sustainability and ecological viability of the city

Key Stakeholders

Ranchi Smart City Corporation Limited, Urban Development & Housing Department, Government of Jharkhand

Approach

The approach to develop the Urban Design Guidelines for Ranchi is threefold – 1) Study of the Master Plan for the Project Site, 2) Secondary Research to identify Global Practices, and 3) Stakeholder consultation. Based on an assessment, three broad design parameters have been identified; Streetscape, Building & Blocks and Open Space. The key features under these parameters are as follows:

- Streetscape design guidelines aim to create a unified and visually attractive environment that is safe, comfortable, convenient and sustainable. Establishment of discrete spaces encountered on the street - footpaths, cycle tracks, bus lanes, bus stops, carriageways and parking, - with street furniture, markings and designs
- Design of buildings and blocks aims at unique, cohesive and distinctive expression of physical forms.
- Adoption of sustainable techniques like rainwater harvesting, roof top solar, solar water heating, solar power for lighting and sustainable materials etc., for a green development.
- Designing open spaces to ensure integration with nature and creating a sustainable city.

Financial Structure of the initiative

- Admissible incentive for Green Building and sustainability provisions (installing Solar heating, lighting & waste water recycling, city & site level greenery) to be given by the Competent Authority

- Additional FAR to be provided for buildings complying to GRIHA or similar green rating norms with a nominal fee
- Revenue sources from designed spaces for vendors along streets and other public open space, and parking space

Achievements

Benefits

- Streetscape Design
  - Street plantation and shaded resting space to maximize thermally comfortable street environment
  - Designing innovative multi utility and green zones along the streets to ensure intermediate and interactive break out spaces for the road users
  - Public spaces with cultural identity where people work, enjoy and congregate
- Building & Blocks Design
  - A cohesive and symmetric look across the city, through use of standard material options, colour palette and building massing
  - Building designs responsive to site conditions and do not disrupt the geology, hydrology and micro climatic conditions of the site
- Open Space Design
  - Preserving the natural waterbody and plantations within the site and developing recreational space along it

Co-Benefits

- Active involvement of local Sohrai, Dhokhra, bamboo and wood, and other indigenous art form's artisans within Ranchi

Success Factors

- Intensive consultation with RSCCL, experts and local artists for preparing a city specific guidelines incorporating the local character and ecology
- Strong and stable leadership guiding the development of the Guidelines
- Institutional and managerial models established within the RSCCL

Limitations

Appropriate institutional strengthening across stakeholders shall be a key factor towards successful accomplishment of the project

Future Prospects

The final guideline shall be made a part of all tender documents or auction documents or any other document related to any transaction or construction within the ABD

Source: As received from DFID

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SURAT CLIMATE RESILIENCE STRATEGY

Project Highlights

- Development of an early warning system for floods
- The system is an end-to-end early warning system which has been instrumental in reducing flood risks of the city
- Integrated strategy based on the expertise of multiple stakeholders from all walks of urban development
- Minimization of economic losses in the city attributable to floods

Background

Surat, one of India's most economically successful city is extensively prone to floods leading to the constant threat for the city. The geographical location of the city, i.e., on the Tapi river makes it flood prone not only from heavy precipitation in and around the city but also from heavy precipitation upstream and from high tides downstream. In order to minimize the risks of disaster and make the city resilient to the shocks of disasters, the city took an initiative of developing early warning systems and bring together expertise from all walks of urban sector to demonstrate how this strategy can help in not impeding growth of the city.

Surat,
Gujarat

2009-2010

(Not to scale)

Project Objectives

I. Development of an integrated climate resilience strategy for Surat to make the city resilient to the impacts of natural calamities, especially floods

Key Stakeholders

Surat Municipal Corporation with technical support from TARU Leading Edge, a research and consultancy company working on disaster management and climate change

Approach of Climate Resilience Strategy

The strategy was planned with an aim to minimize the impacts of floods on the city and make the city resilient to the disaster. The strategy was developed under the Phase II of the Asian Cities Climate Change Resilience Network (ACCCRN) initiative. A city advisory committee including stakeholders from all sections of urban life- including academia, industry, local government and civil society etc. was established to study the impacts of climate change on the city. The thorough understanding gained by the committee was used to create a Surat Climate Change Trust. This trust is a unique instrument designed to develop a resilience strategy for the city.

- An "End-to-End Early Warning System" was setup to reduce the intensity of flood damage
- Extensive public awareness campaigns and sensitization was done to increase the level of understanding the impacts of flood warning systems
- A large number of risk resilient workshops were conducted with the key stakeholders to develop the strategy for the city

Financial Structure of the initiative

The strategy was funded by the Rockefeller foundation under Phase II of the Asian Cities Climate Change Resilience Network (ACCCRN) initiative

Achievements

- Surat has been able to ensure sustainable economic growth in the city in the face of the ecological challenges
- Since its inception the system has saved the city from any intensive impact of floods due to its timely warning system
- Sensitization of the local public about the importance of these warning systems
- Creation of the "Urban Health and Climate Resilience Centre" in the city which primarily works on urban health and building climate change resilience
- One of the major achievements of the initiative was the inclusion of a budget line specifically for climate change in the Surat Municipality budget for the year 2013-2014

Success Factors

- Strong and stable leadership the Surat Municipal Corporation
- Technological Innovations to establish an "End-to-End alarming system"
- Commitment and support of the local bodies
- Intensive campaigning and mass involvement for the drive

Limitations

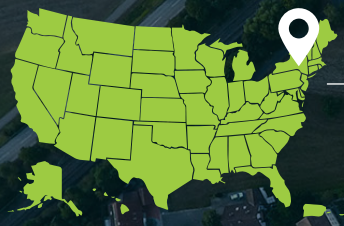
Presence of large number, i.e. ~60% of migrant population in the city making it difficult to spread awareness about the key challenges associated with floods

Source: https://smartnet.niua.org/sites/default/files/resources/Urban%20Green%20Growth%20Strategies%20For%20Indian%20Cities%20Vol.3.pdf

For more Information

2. http://www.asiapacificadapt.net/sites/default/files/resource/attach/Surat_City%20Resilience%20Strategy_TARU-SMC.pdf
3. http://www.100resilientcities.org/strategies/surat/

MASTERPLAN 100% CLIMATE PROTECTION, 100% RENEWABLE ENERGY SUPPLY: FRANKFURT



Frankfurt, Germany

Year of Initiation: 2013

Project Highlights

- **100% shift to regenerative sources of energy by 2050**
- **People centric approach to ensure energy savings**

Background

Frankfurt am Main is among the most built-up cities in Germany; the population rose to around 690,000 in 2013. In 2010, approximately 22,600 gigawatt hours (GWh) of final energy were consumed – just under 1% of German's final energy consumption. 95% of this energy was imported, i.e. generated outside of Frankfurt and, as a rule, outside of the region. Ever since the founding of the Energy Agency and the co-founding of the Climate Alliance in 1990, Frankfurt has put a great deal of effort into climate protection. In 2012, the City Council decided to convert the city's entire energy supply to renewable energies by 2050 and to develop the "Master plan 100% Climate protection" for its implementation.

Project Objectives

The master plan aims to change the energy landscape of the city and ensure the adoption of regenerative forms of energy. The specific objectives of the master plan are:

1. Conversion of entire energy supply to renewable energies by 2050
2. Halving energy consumption and reducing CO_2 emissions by 95% by 2050

Key Stakeholders

Frankfurt Energy Agency; Climate Alliance; Frankfurt city council; Federal Ministry for the Environment

Approach

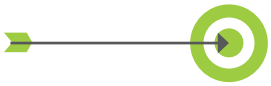
The master plan focuses on three areas heat, electricity and local traffic. The plan aims at not only drastically cutting the consumption but also aligning and optimizing demand and supply. The current Master Plan envisions that approximately 25% will be supplied from energy generated within the City, 25% from outside the City, and total energy consumption will be decreased by 50%. The plan included:

- Converting to an exclusively regenerative energy supply; energy production largely from renewable sources in Frankfurt and the Rhein-Main Region; promoting sustainable regional material cycles
- Participation of residents, companies, energy providers, housing industry, universities and science; involvement in brainstorming and concept development; motivation to implement own measures
- The program also supports initiatives like:
  - "Saving with a bonus – Frankfurt is saving electricity". The initiative encourages participants to save electricity by providing them with incentives, for instance, participants have saved an average of 65 euros and also protected the climate
  - Linking up for more efficiency – Mainova AG is expanding its district heating network
  - Climate-friendly nutrition – climate gourmet: This initiative specifically targets the nutrition sector of the city
  - Reduction in operational costs of various organizations

Financial Structure

Receives funding from Federal Ministry for the Environment, Nature Conservation and Nuclear Safety

Achievements



- Climate Change Mitigation
- Carbon-emissions mitigation and adoption of renewable energy alternatives
- Behavioral changes and mass awareness among the residents of the city about the issues of climate change

Success Factors

- Strong and stable Institutional and legislative capacity
- Innovative and integrated strategy targeting a large spectrum of stakeholders
- Adoption of Incentive based mechanism for promoting energy savings and shift to clean energy
- Consistent and regular monitoring and evaluation mechanism
- Highly educated work force
- Citizenry that supports climate action

Source:

1. https://www.frankfurt-greencity.de/en/status-and-trends/climate-and-open-spaces/renewing-frankfurts-energy/
2. Masterplan 100 % Climate Protection – Frankfurt am Main, City of Frankfurt am Main, Municipal Energy Agency

For more Information

1. https://www.100-percent.org/frankfurt-am-main-germany/
2. https://www.futurepolicy.org/renewable-energies/100-renewable-energy-urban-areas-frankfurt-germany-2012/
3. https://www.renewables-networking.eu/documents/Case-Study-Frankfurt-DE.pdf