

Activities of TERI WRC

Dr Anjali Parasnis
Associate Director, TERI WRC

Highlights

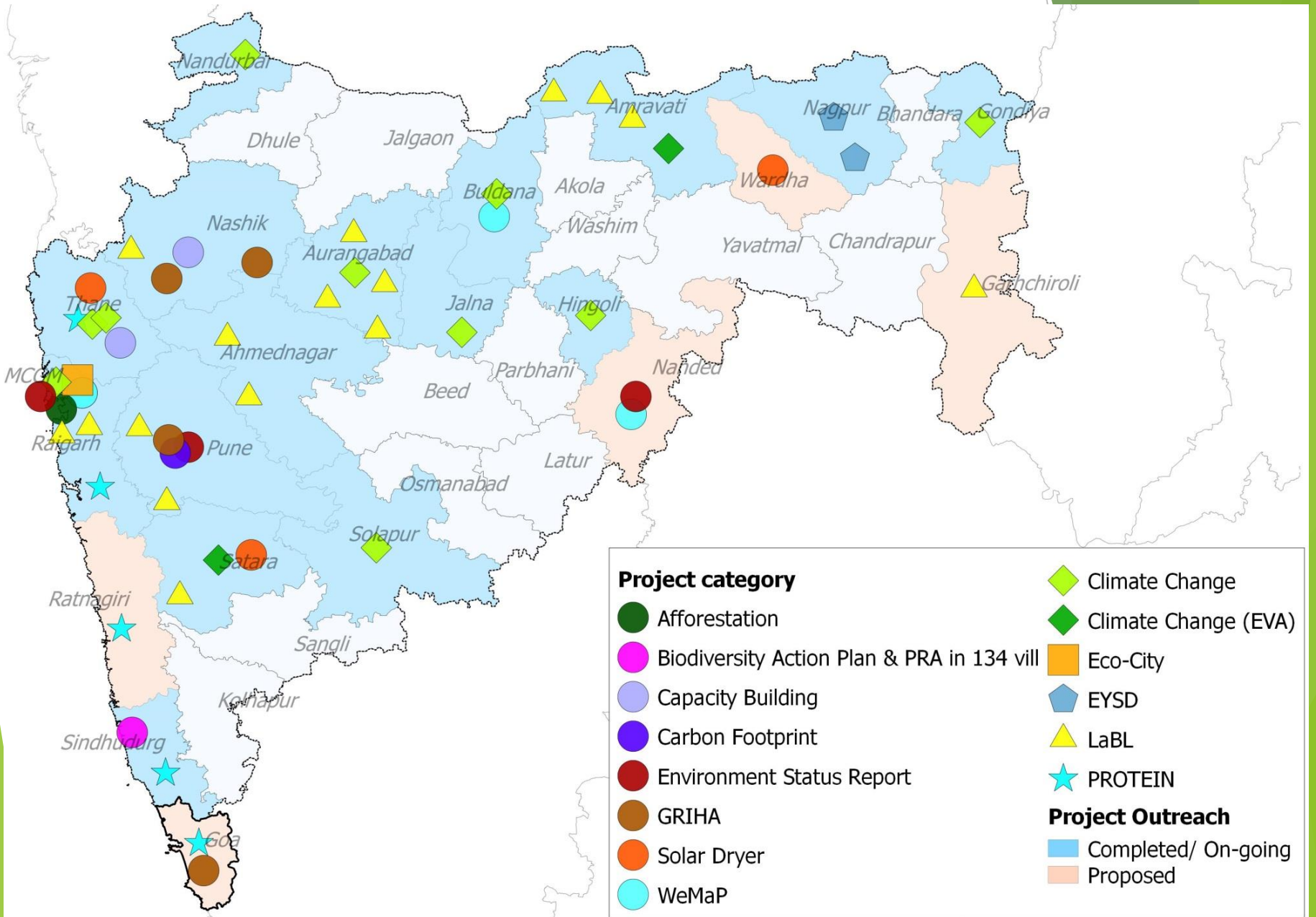
- ▶ Centre was established in 2007
- ▶ Existing premises at Belapur Navi Mumbai
- ▶ Existing staff strength
 - ▶ Research staff 15
 - ▶ Admin Staff 3
- ▶ Ongoing building construction at Airoli (OC expected by 2017)



Glimpses of TERI WRC's upcoming Green Building at Airoli, Navi Mumbai



Outreach of TERI in Maharashtra and Goa



Core activities

▶ Urban

- ▶ The Navi Mumbai Eco-City Project
- ▶ Environmental Status Reports for A class ULB's
- ▶ Municipal Level Carbon Footprint Reports
- ▶ GRIHA – Designing and promotion of Green Buildings
- ▶ Nutrition security among school children

▶ Rural

- ▶ Food and Nutrition Security
- ▶ LaBL
- ▶ Biodiversity resource conservation

Navi Mumbai Eco-City Project



(From L to R) **Dr. Anjali Parasnis**, Associate Director TERI, **Shri. Sagar Naik**, Hon'ble Mayor NMMC, **Shri. Ganesh Naik**, Minister of State for Renewable and Non-Conventional Energy, GoM, **Shri. Sharadchandraji Pawar**, Hon'ble Union Minister Agriculture, GoI, **Shri. Bhaskar Wankhade** Hon'ble Municipal Commissioner, NMMC

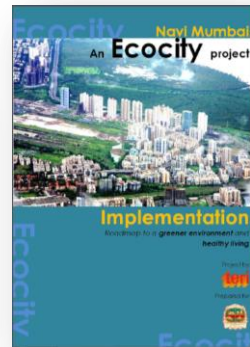
Vision

To develop Navi Mumbai as India's first Eco City on the principles of sustainable development through appropriate utilization and conservation of natural resources and low carbon strategies.

Flow of Events



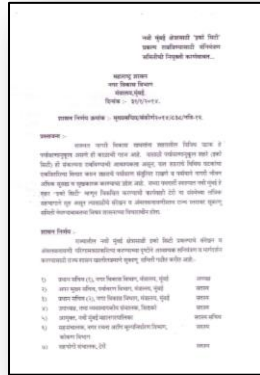
**Signing of MoU
And Launch of
Eco-City Program
(July 2012)**



**Submission of
Navi Mumbai Eco-City
Action Plan
(March 2013)**



**Installation of
Bio-methanation
Plant at NMMC HQ
(May 2014)**



**Release of
Eco-City GR
(February 2015)**

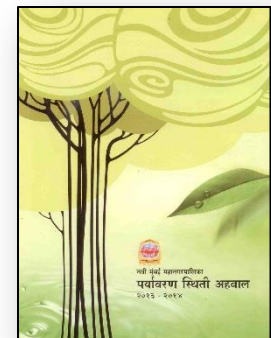
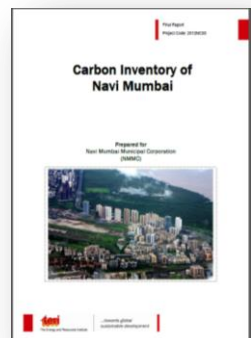


**(February 2013)
Submission of First
Carbon Inventory Report
Of Navi Mumbai**

**(April 2014)
Installation of Lecterns
To highlight Biodiversity
of Navi Mumbai**

**August 2014
Submission of the
Environment Status Report
of Navi Mumbai 2013-14**

**Design and Policy Dialogue
on Green Buildings
(February 2015)**



Ongoing projects under Eco City

- ▶ Developing a city level working and interactive model to highlight the features and services of the city
- ▶ Biomass gasifier project to generate electricity from coconut shell waste
- ▶ Recycling and reusing C&D waste to make paver blocks and restoration of hill slopes



Preparation of Assessment Reports

Environmental Status Reports

Municipal Level Carbon Footprint Reports

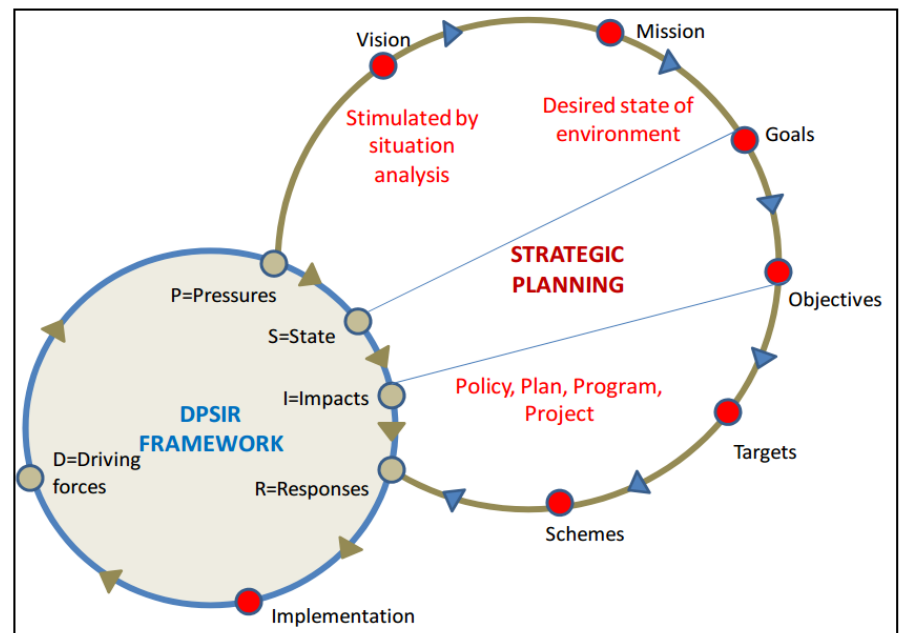
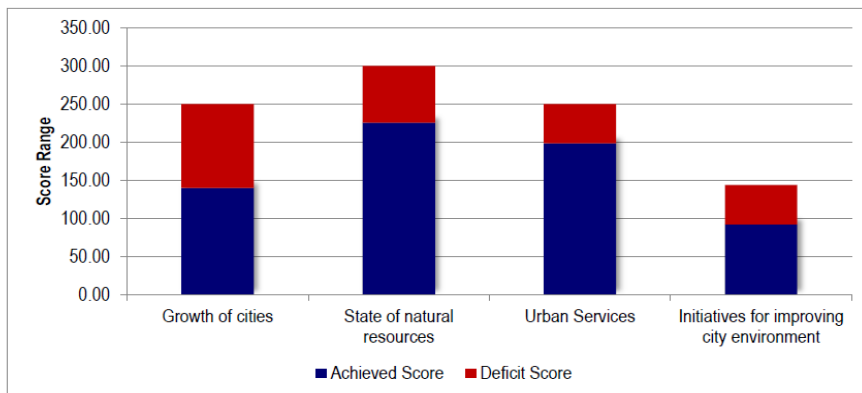
Environmental Status Reports (ESR)

- ▶ As per the BMC's (Bombay Provincial Municipal Corporations) Act 1949, section 67 (A), it is mandatory for all the ULBs of the state of Maharashtra, to submit an annual ESR to the General Body on or before 31 July.
- ▶ The center has developed the ESR for the cities of
 - ▶ Pune 2009-10
 - ▶ Navi Mumbai 2013-14
 - ▶ Nanded Waghala 2014-15 (ongoing)
 - ▶ Navi Mumbai 2014-15 (ongoing)

Highlights of the ESR's

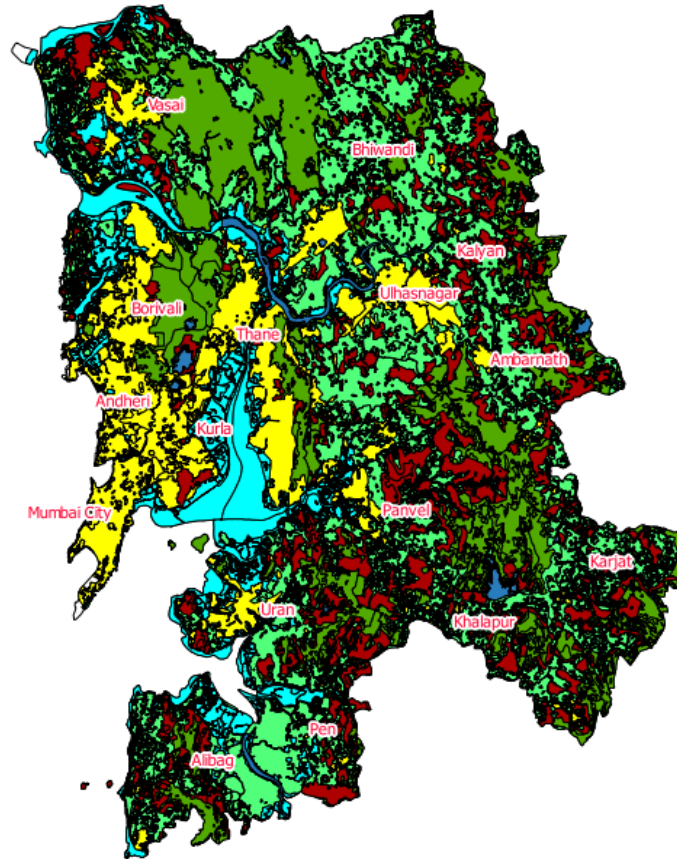
- ▶ DPSIR Framework (Drivers- Pressures-Status-Impact-Response)
- ▶ Calculation of EPI (Environmental Performance Indicator)
- ▶ Comprehensive data analysis and interpretation
- ▶ Use of GIS platform
- ▶ Budgetary allocation analysis
- ▶ Recommendations

Gap Analysis		
Environmental Score	Achievable Score	Achieved Score
Thematic Indicators	944	656.50
Growth of cities	250	140.00
State of natural resources	300	225.60
Urban Services	250	198.50
Initiatives for improving city environment	144	92.40



Regional Level ESR for MMRDA

- ▶ TERI WRC developed the baseline ESR for MMR region
- ▶ The recommendations have been included in their upcoming regional plan
- ▶ GIS Level analysis
- ▶ Sections on
 - ▶ Air
 - ▶ Water
 - ▶ Land resource
 - ▶ Climate Change



Carbon Footprint

Carbon footprint is historically defined as "the total sets of greenhouse gas **emissions** caused by an organization, event, product or person.

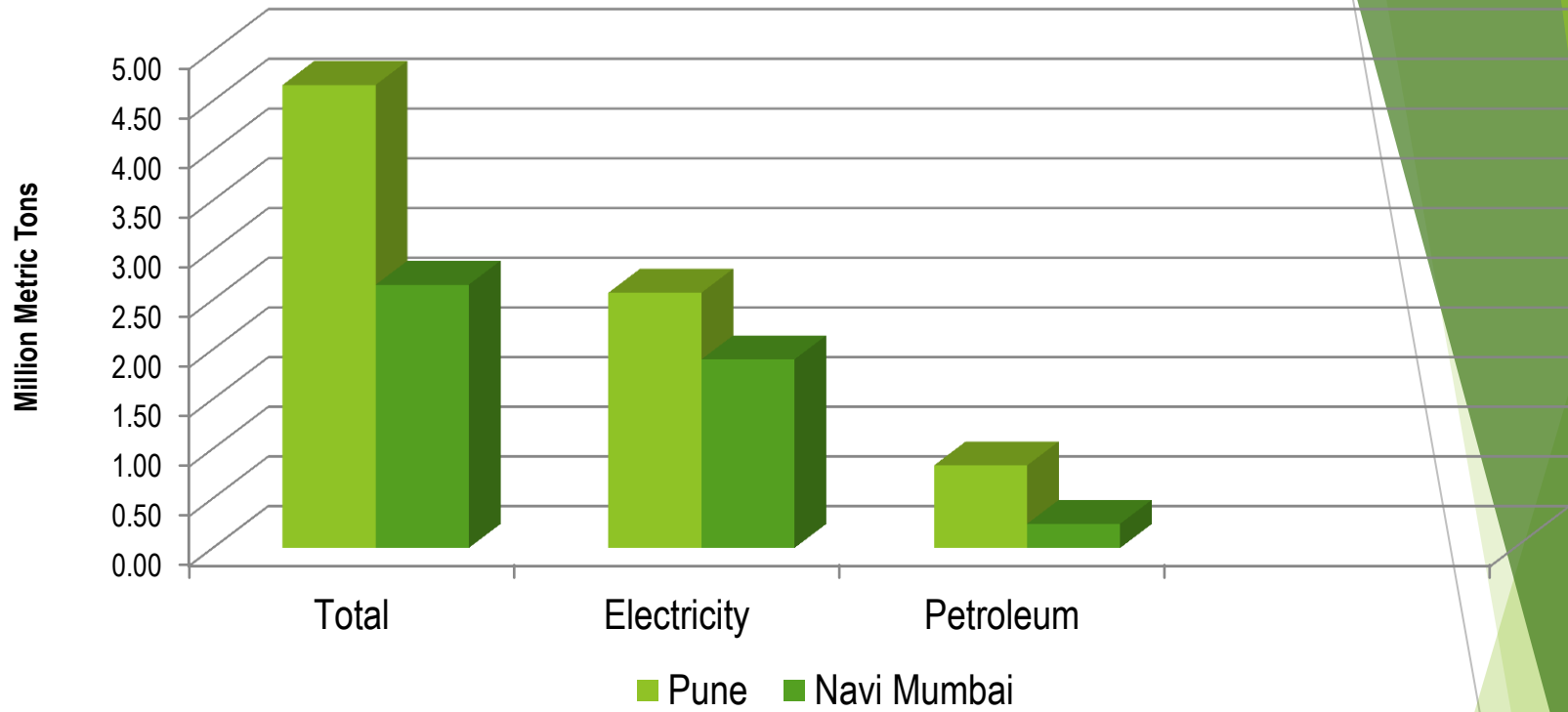
Cities account to about 70%¹ of the global GHG emission

Globally cities have taken many initiatives to reduce the footprint. However Indian cities have now started to document footprint

TERI WRC has developed detailed carbon inventory for Pune as well as Navi Mumbai

¹ Source: <http://news.sciencemag.org/climate/2014/12/giving-cities-road-map-reducing-their-carbon-footprint>

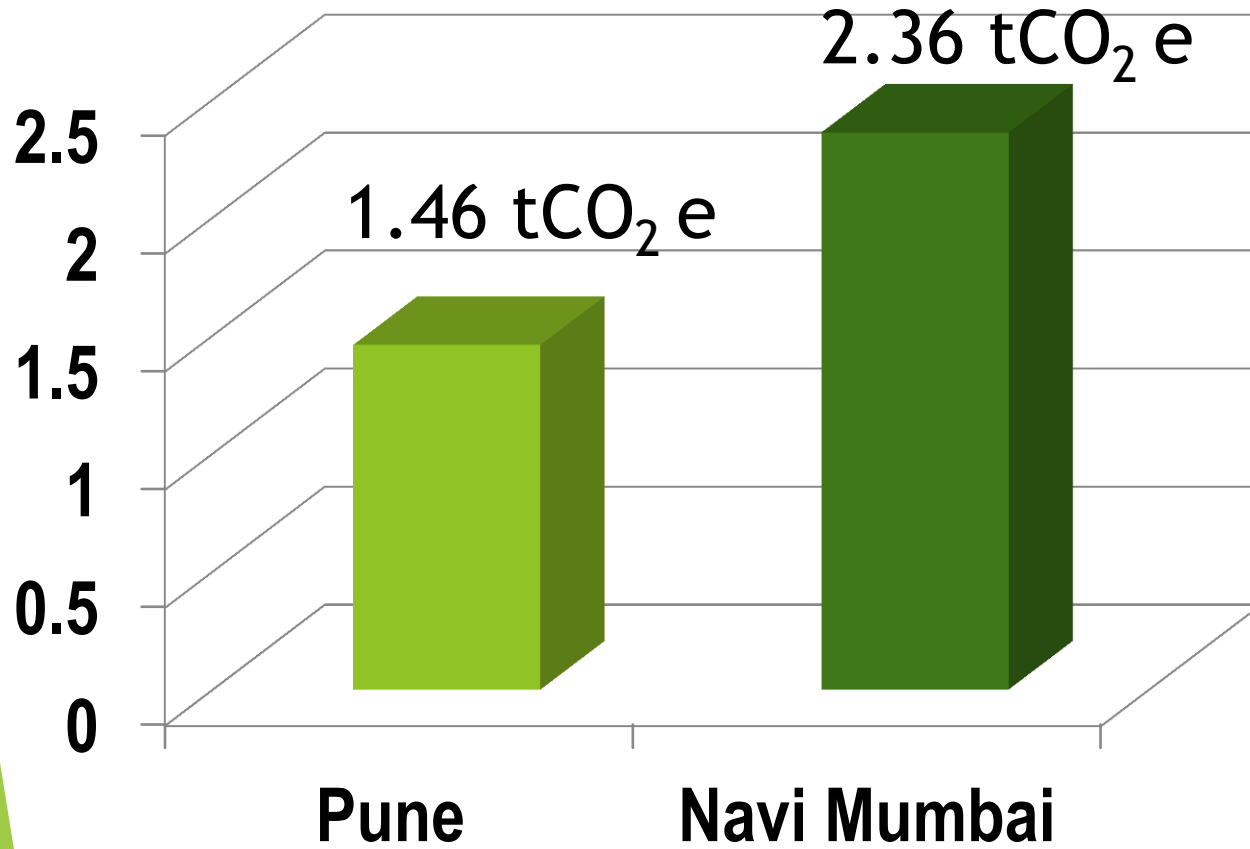
Emission Inventory of Pune and Navi Mumbai



	MtCO ₂ e
Pune	4.66
Navi Mumbai	2.65

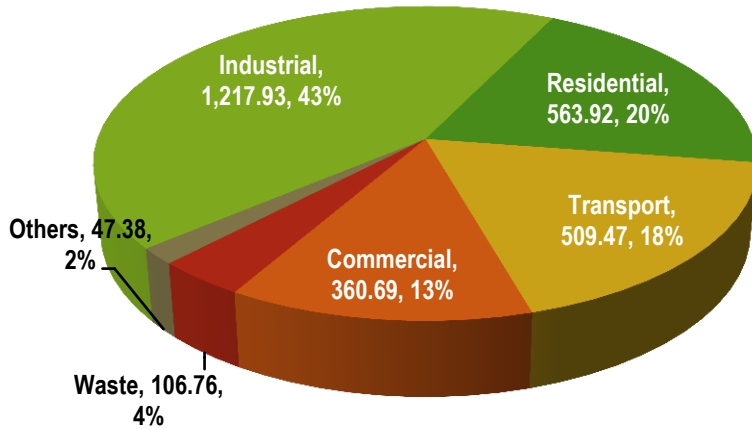


Per capita tCO₂e emissions

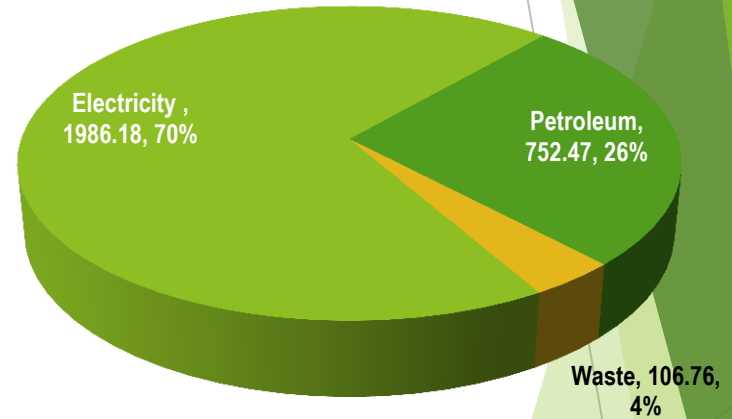


Sector Specific emissions for taking specific interventions

Sector wise share of emissions in Navi Mumbai city
(Thousand tCO₂e, %)



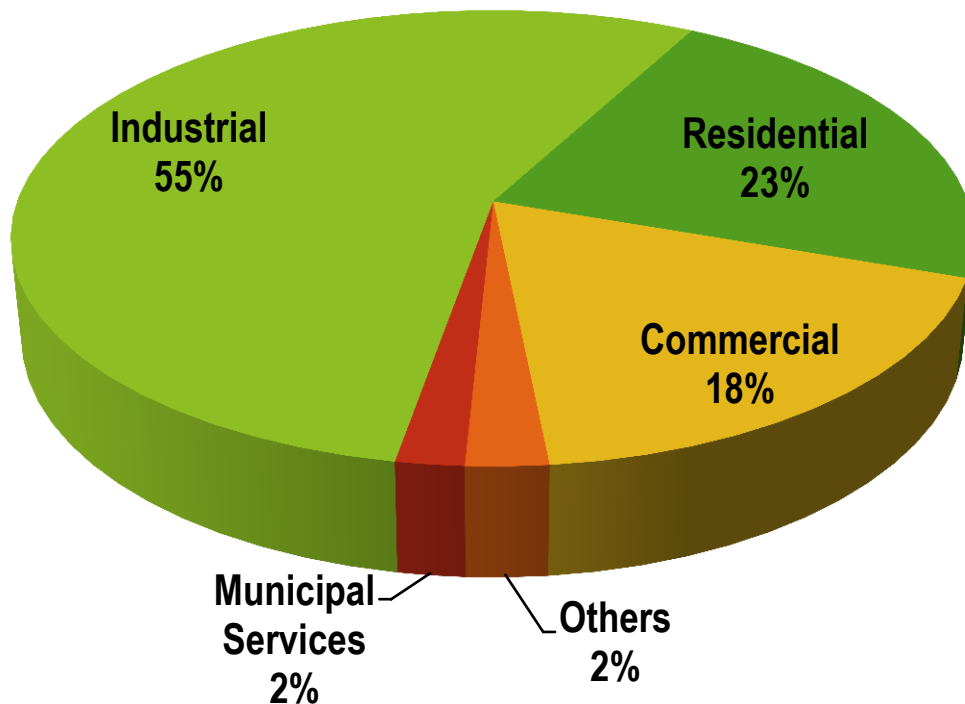
Share of emissions from usage of electricity and petroleum
(Thousand tCO₂e, %)



	Total GHG emission (Million tCO ₂ e)	Per capita CO ₂ emissions (tCO ₂ e)	Population
Navi Mumbai	2.65	2.36	~11.19 lakhs

Interventions for Industrial sector

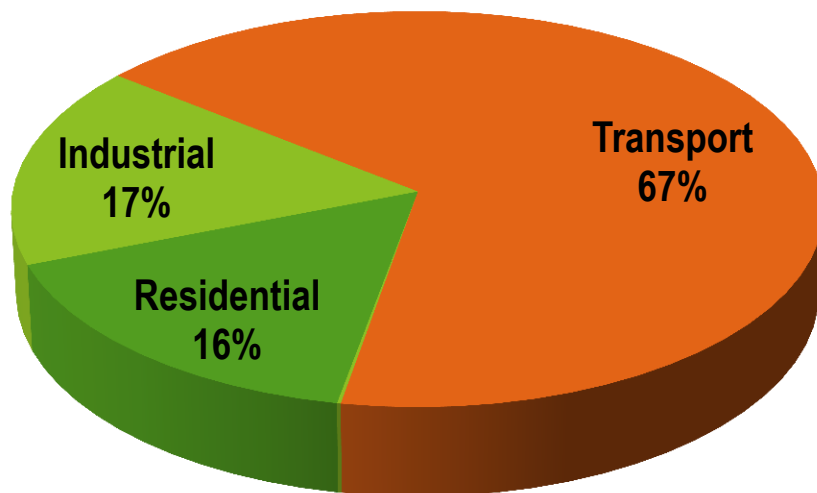
Sectoral break up of emissions from electricity usage in 2011-12



- Energy Audits
- Retrofitting
- Carbon foot-print estimation

Interventions for Transport sector

Sector wise share of emissions from fuel combustion in Navi Mumbai 2011-12



- Promoting CNG usage for vehicles
- Concession/rebates by NMMC for erecting CNG fueling stations
- Battery operated transport vehicles providing point to point service
- Promoting electric public transport
- Introducing Hybrid buses in NMMT's fleet of buses



Consultancy for green building and GRIHA



Consultancy services are provided throughout various stages of building life cycle

Pre-construction stage
(intra and inter site issues)

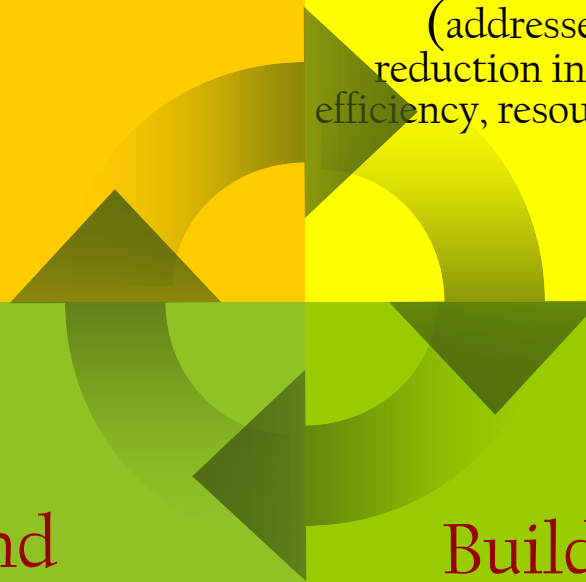
Building planning and construction stage

(addresses issues of resources conservation and reduction in resource demand, resource utilization efficiency, resource recovery and reuse, and provisions for occupant health and well being)

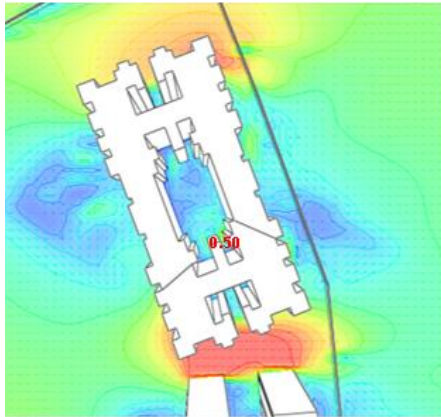
Building operation and maintenance stage
(addresses issues of operation and maintenance of building systems and processes, monitoring and recording of consumption and occupant health and well being)

Building responsiveness to global and local environment

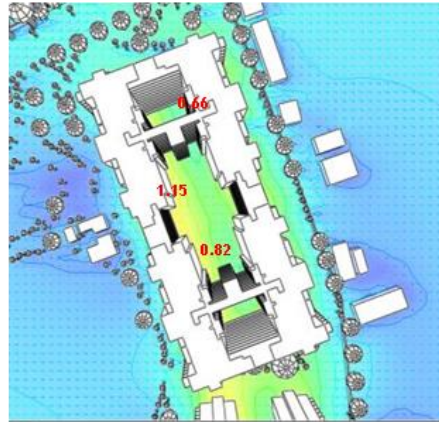
(addresses issues that affect global and local environment)



Building simulation service to optimize building design

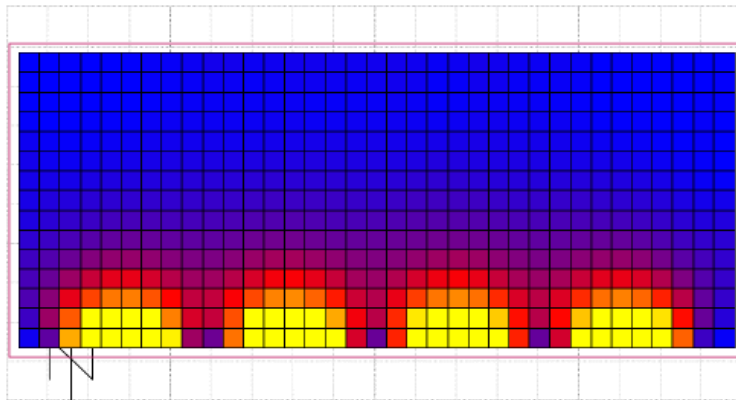


Before



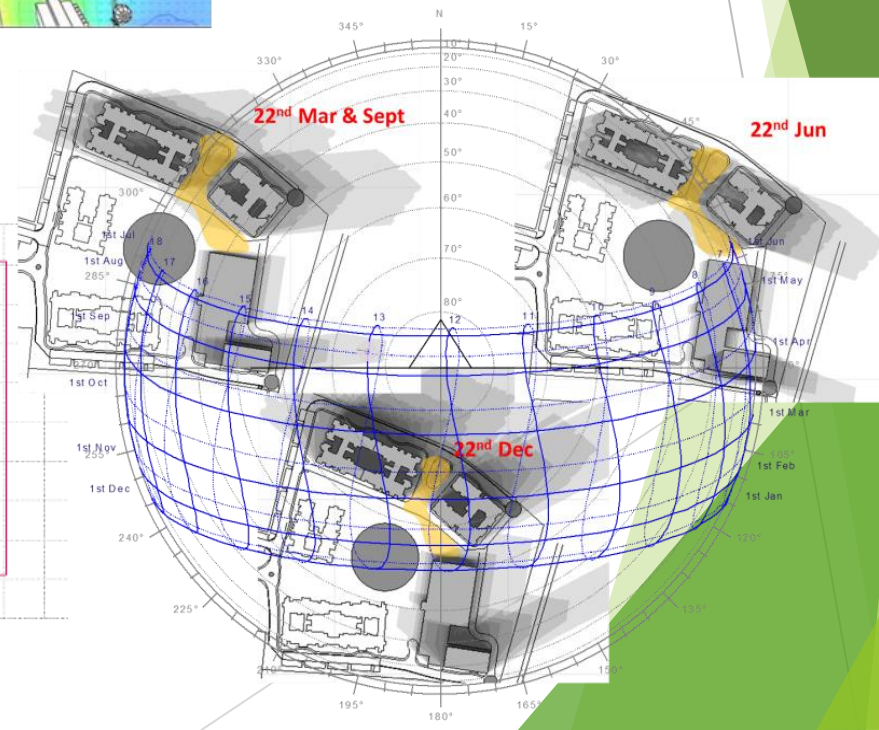
After

Solar radiation analysis

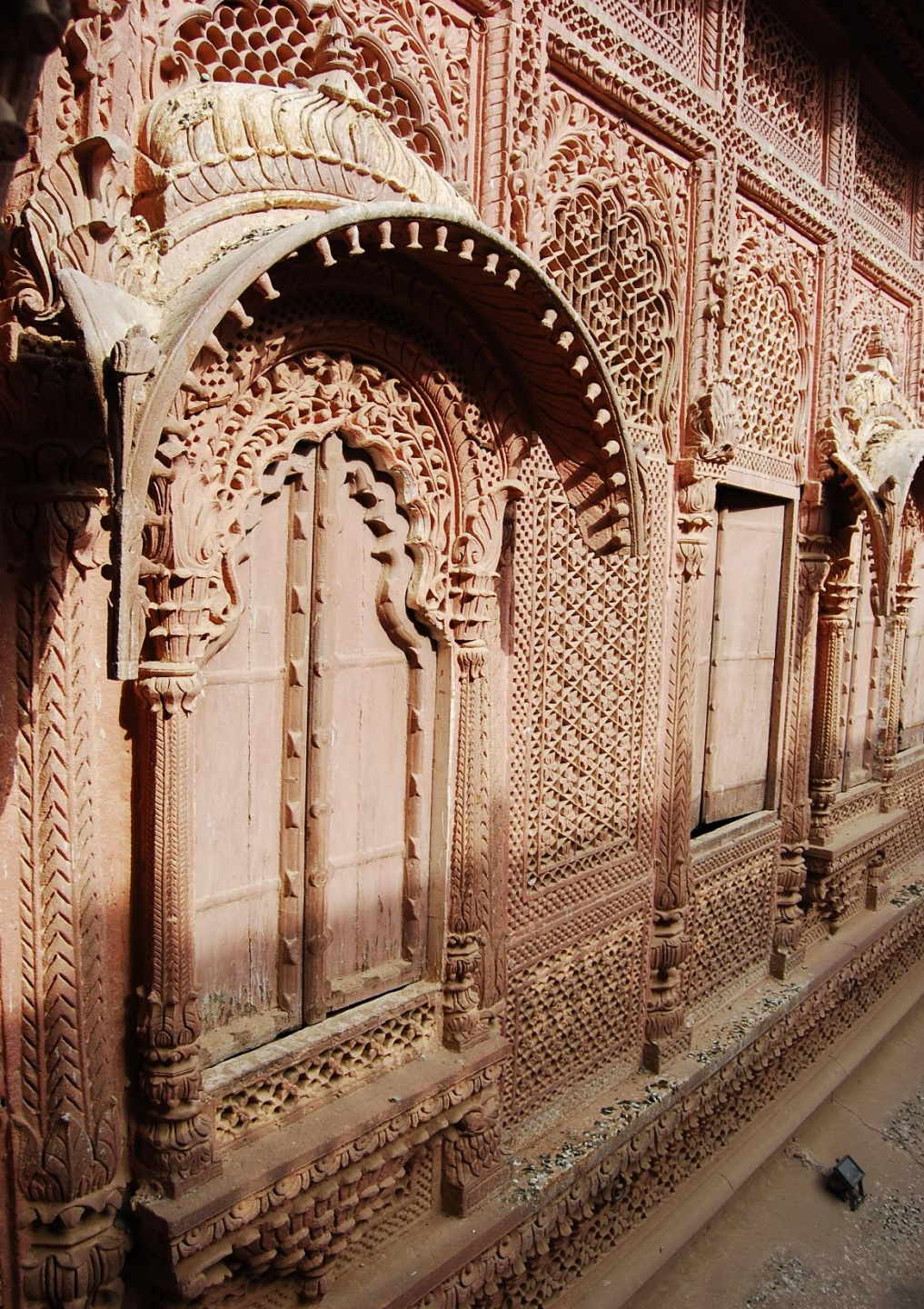


Day light analysis

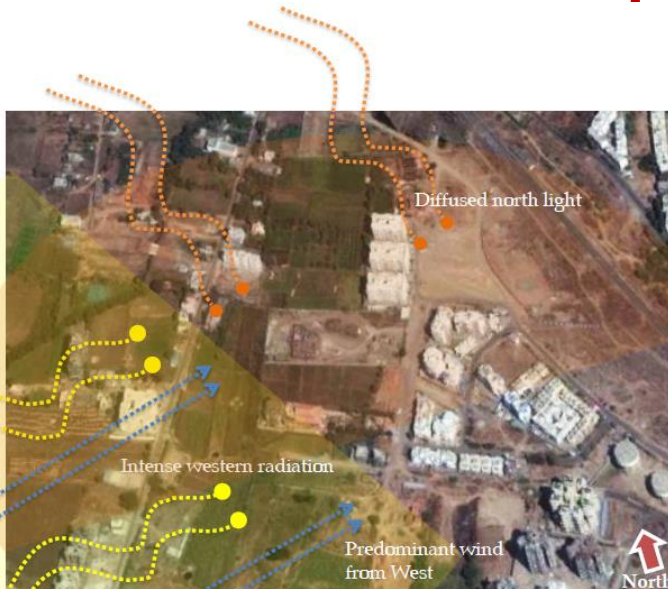
Sun path analysis



Recommendations on climate responsive architecture



Sustainable site planning & management



Comprehensive site analysis



Recommendation to preserve natural features on site like top soil, mature trees and so on.



to ensure preservation and integration of site feature

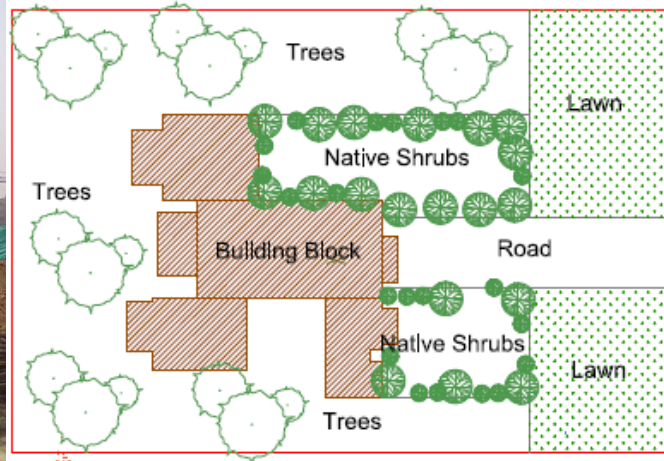


On site hand holding services to ensure smooth implementation of green features



Capacity building on site

Water & energy conservation during and after construction

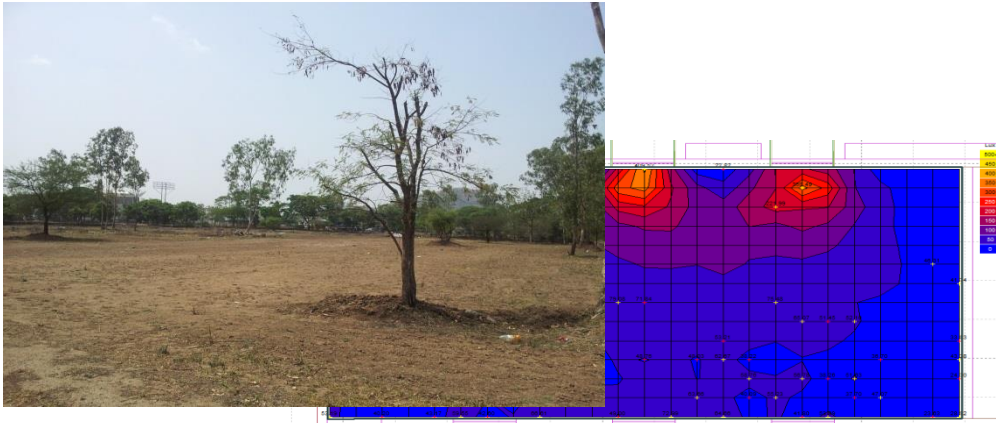


Water conservation on site during construction, landscaping and in the building use



Energy efficient fixtures and installation of RE systems

On-going projects



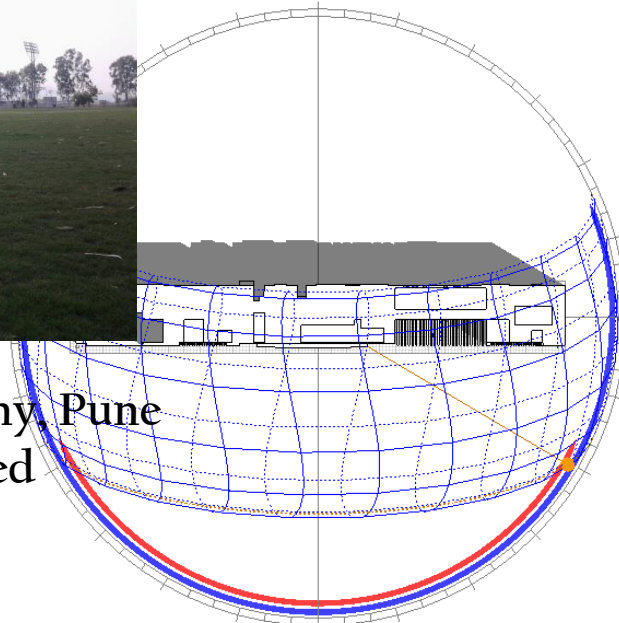
Ashoka City, Pune - Peninsula Land Limited



Dwarka Residential Apartment, Akurdi, Pune



Pune Football Academy, Pune
Peninsula Land Limited



Kapse Paithani



Kapse Paithani Park, Yeola, Nashik

Canteen for Teens- A program to address malnourishment in Urban Teenagers

Main objectives

The project aims in imparting knowledge to the teenagers of the cities about adopting healthy food habits and lifestyle related health disorders. The three main objectives of the project is

- ▶ “ Know your food”
- ▶ “Grow your food” and
- ▶ “Cook your own food”.

Live demonstrations, workshops and hands on training activities on importance of nutrition, types of food groups, healthy recipe making, gardening and so on were the main components of the project.

Regional importance

With the increasing trend of childhood obesity and Type 2 diabetes at a younger stage of life, it is very important give practical food education to the teenagers. The influence of junk food is tremendous and hence there is a need felt to introduce different forms of nutritious food in an interesting and fun way.

Duration: 2014-2015



Location: Pune, Navi Mumbai and Mumbai

- **Future plans** : Replicated in all kinds of schools (private and government) with more robust and unique strategies.

Outreach and Programs in Rural Areas

The background features abstract, overlapping geometric shapes in various shades of green, ranging from light lime to dark forest green. These shapes are primarily located on the right side of the slide, creating a modern, layered effect. The text is positioned on the left side of the slide, set against a plain white background.

The PRA study in the coastal villages of Sindhudurg

Main Objective

- ▶ The Participatory Rural Appraisal (PRA) exercise was being undertaken in 134 villages (76 villages of Malvan and 58 villages of Devgad block) of Sindhudurg district,
- ▶ To assess the issues pertaining to the sustainability of the livelihood of the traditional coastal communities (Agriculture, Fisheries and Tourism) and the pressures on the local biodiversity.
- ▶ The study mainly focused on livelihood options of the local communities, major gaps affecting it, and impact on the coastal and marine biodiversity.
- ▶ The project also aimed to identify the sustainable Entry Point Activities (EPA), and secondary livelihood options at village level
- ▶ The project also developed a biodiversity action plan for mainstreaming marine biodiversity into the major production sectors of Sindhudurg.



Introducing the concept of Nutri-gardens to address rural malnutrition by involving KSKs (Kisan Seva Kendras)

Main Objective

To address the issue of malnourishment in tribal communities by providing sustainable solutions.

Regional importance

Malnourishment is highly prevalent in tribal areas and Malnutrition related diseases in children were up to 94% and mortality rate was 4% in these areas.

Work done so far- Phase I:

The tribal communities have been trained and encouraged to cultivate and consume the selected healthy and nutritious food varieties using locally available resources

Duration : 2012-13



Location : Khaniwali, Wada, Palghar

Future plans : Sustainable Food Processing - A resource centre which shall focus on processing the locally grown nutritious food products with the help of tribal youth and women. Training on packaging and market linkages would also be explored.

Protein: Program to Revitalize the Overall health of Tribals by Ensuring Intake of Nutritious food

Main Objective

To address the issue of malnourishment in tribal communities by strategic interventions which include awareness workshops for the tribals, anganwadi workers and distribution of the health supplements as immediate interventions.

Work done so far- Phase I:

The tribal communities have been informed the importance of simple and healthy food items, nutrition booklets comprised of easy to make healthy recipes from locally available ingredients were provided to the anganwadi workers.

Duration : 2014-15



Location : Botoshi, Mokhada, Palghar

Future plans : A comprehensive program to improve the socioeconomic status along with the improvement of the local environment that would directly have impacts on the health & nutrition and could enable breaks vicious cycle of malnourishment.

Bio prospecting of the local wild edible varieties to address the issue of malnourishment in Palghar district

Main Objectives

Bio prospecting of wild edibles and re introducing them as part of the year long diet of the tribals as source of food to tackle the critical issue of malnourishment.

Key Activities

- ▶ Biosourcing
- ▶ Preparation of a Germplasm Bank
- ▶ Preparation of a Digital Herbarium / Catalogue
- ▶ Nursery development
- ▶ Conducting Biochemical and Genetic Characterization
- ▶ Valuation as a food source
- ▶ Social acceptance

Project Location: Jawhar, Palghar



Project Duration:

Phase I: Dec'14- March'15

Phase II: April'15- March'16

Future plans

This project can be further replicated regionally and geographically to areas facing similar issue of malnourishment.

Thank You

