

**IT'S A TEAM**

## **ECOSTRATEGIST-CASE STUDY**

**Heat Islands and their impacts on Gig Workers' Wellbeing and Livelihoods**



**Rutu Barve**



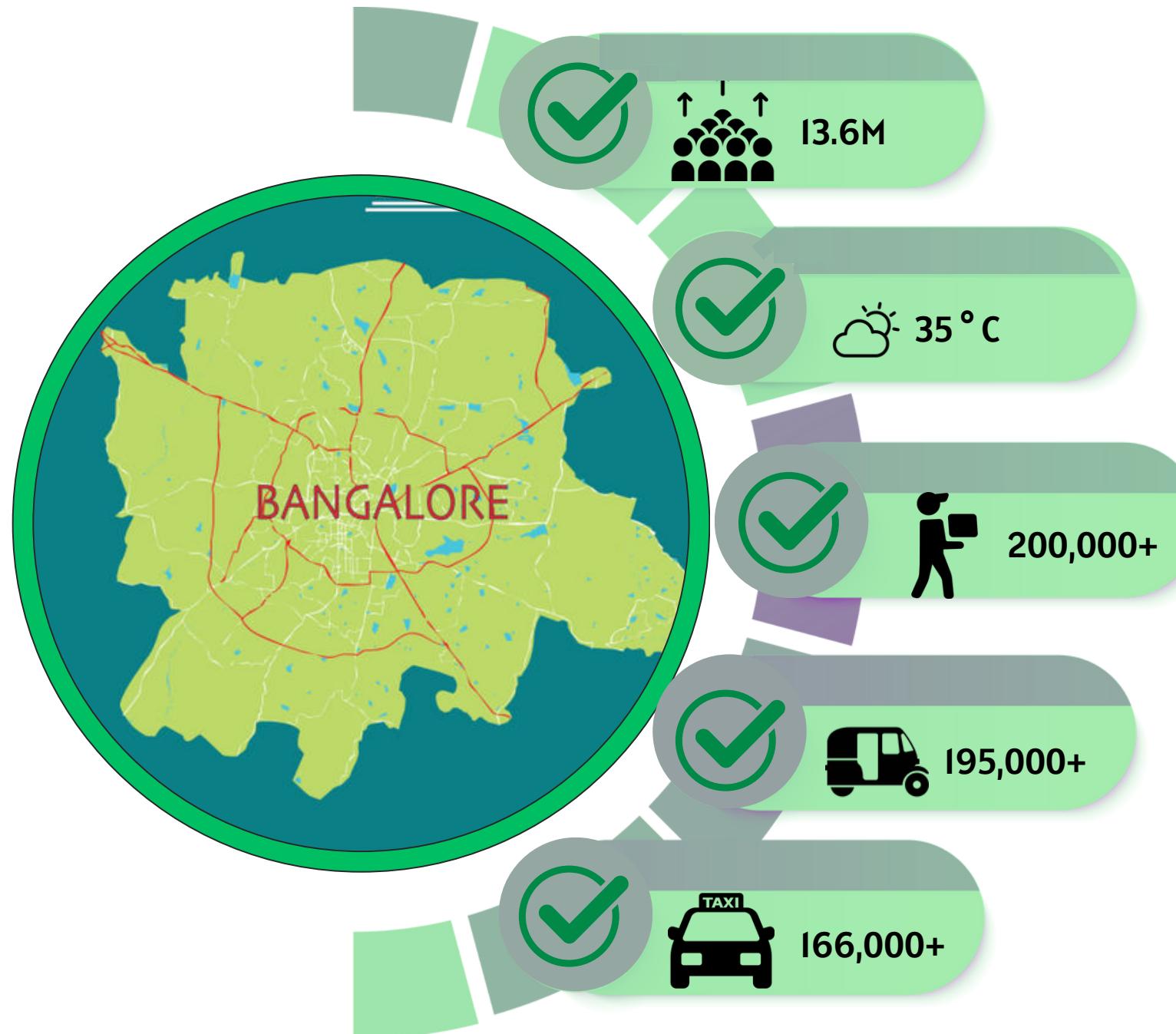
**Shashank Navandhar**



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**T. A. Pai Management Institute**

## Bangalore & Gig Workers



### High-density areas

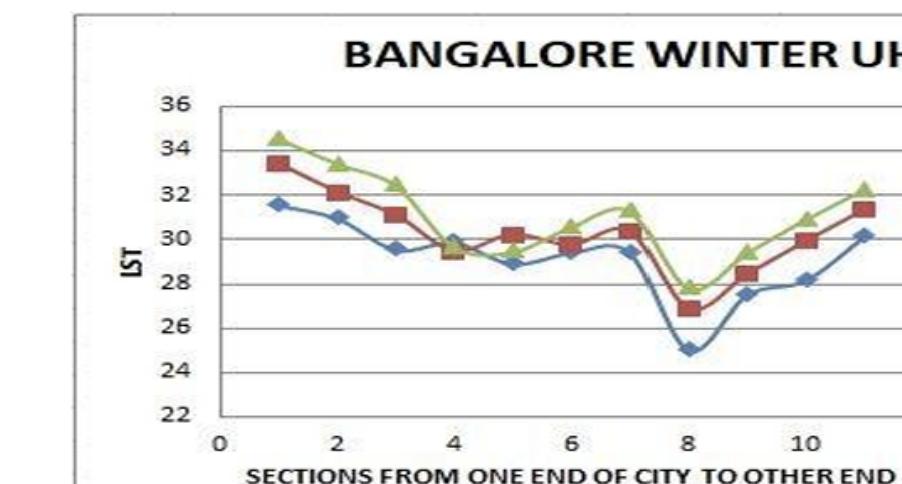
- 1.Horamavu
- 2.Padarayanapur
- 3.Chamrajpet
- 4.Shivajinagar
- 5.Basavanagud
- 6.Jayanagar

## Upgrade Existing Centers

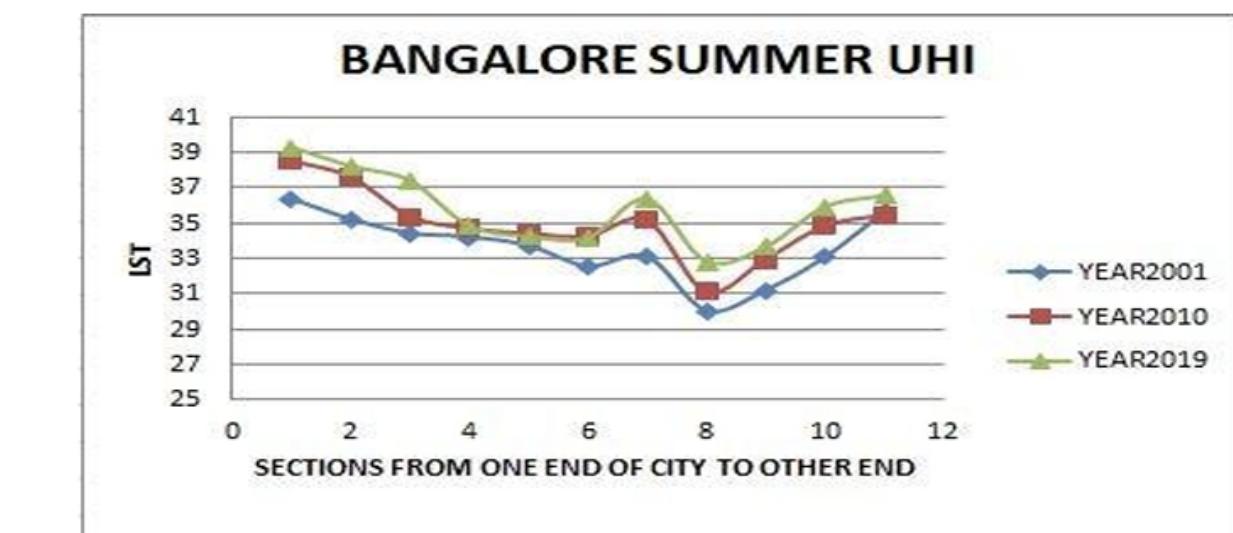
## Building New Centers

## Partnerships & Models

## Funding



Daily power demand  
2300 MW 20% of which  
is met by solar energy  
  
Bangalore has :  
2300+ bus stops  
51 active Metro stations  
4 Major Railway stations

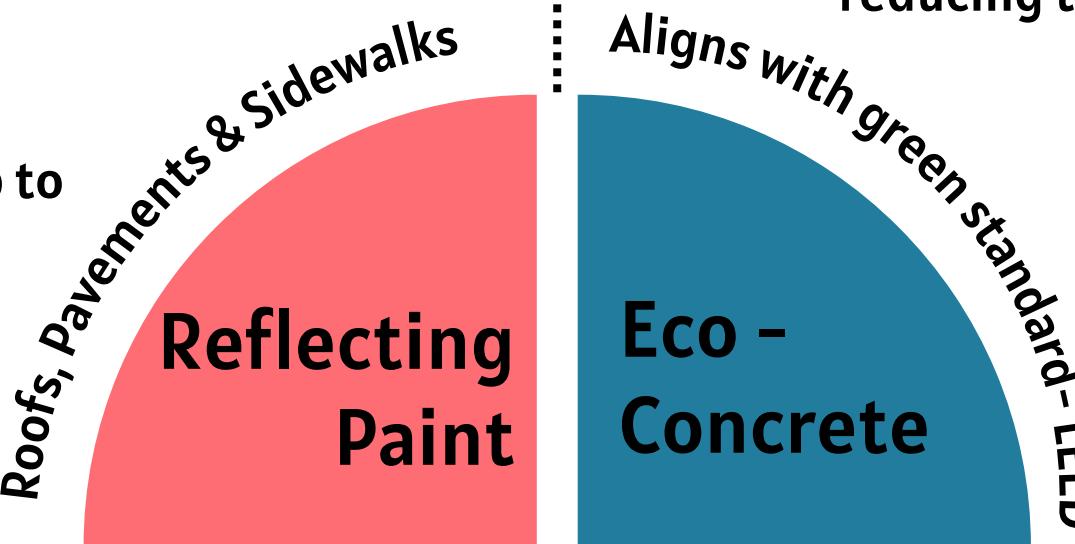


Karnataka budget July 2023 : Every Gig worker to have Rs 4 lakh insurance cover  
This shows Bangalore's a dedicated commitment to enhancing the welfare of gig workers.

The UHI effect in Bangalore worsened due to rising energy consumption by 500% & reduced green spaces from 200 sq. km. to just 120 sq. km. in the last two decades, impacting Gig workers significantly.

# Upgrade Existing Transit Centers By Integrating New Technologies, Materials & Designs

- Energy Guard Cool Roof Paint with SRI of 17 and a price of around Rs. 1,500 per 10 kg.
- Reflects up to 85% of sunlight, which can help to reduce pavement temperatures by up to 20°F.
- Protects from weathering which reduces maintenance.



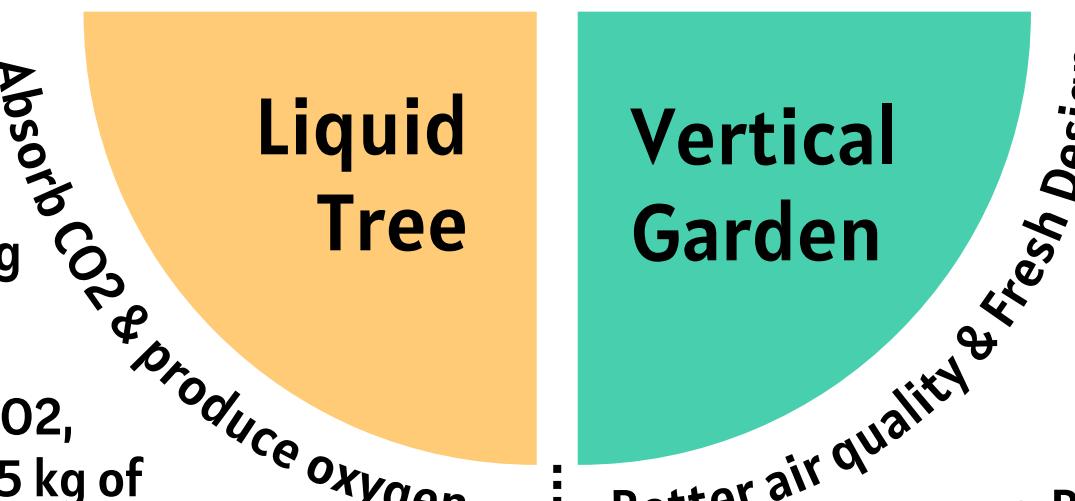
- Mitigates Albedo effect by increasing sunlight reflection & reducing the need for air conditioning and energy consumption.

- Porous nature allows improved airflow, reducing the heat island effect in cities.

- National Renewable Energy Laboratory found that eco-concrete saves 30% on energy costs.



- Liquid Tree photobioreactors to conserve water by recycling 90% of water used.
- Eliminates up to 100 kg of CO<sub>2</sub>, 10 kg of nitrogen dioxide & 5 kg of sulfur dioxide daily.
- Airogrow, a Bangalore-based company, specializes in liquid tree technologies.



- Vertical gardens can remove up to 100 pounds of pollutants from the air each year.

- California used vertical gardens on transit shelters to reduce temperature of surroundings by 5°F.

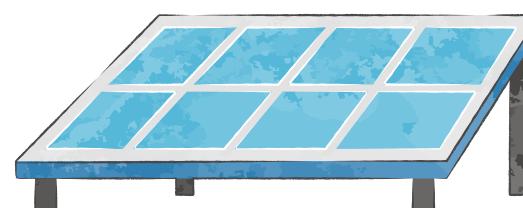
- Besides temp it also helps in :
  - 1) Biodiversity
  - 2) Aesthetics
  - 3) Noise Reduction



- Cooling pads can be integrated into transit center's ventilation systems to provide energy-efficient cooling by utilizing water evaporation, with studies showing that evaporative cooling can lower temperature by 5-15 degrees Fahrenheit, as reported by the U.S. Department of Energy.
- These pads are typically made of a cellulose or synthetic material designed to hold water and facilitate the evaporation process.



- Installing solar panels on shelter roofs to harness renewable energy for lighting, fans, and other amenities, reducing reliance on the grid.
- Study by the National Renewable Energy Laboratory found that solar powered transit shelters can reduce the urban heat island effect by upto 70%.
- Energy-efficient LED systems powered by solar panels to enhance transit centers by providing sustainable lighting, reducing energy consumption by up to 50-80% compared to traditional lighting.



### Cooling Pad

### Bamboo Bus Stops

### Solar Stations

Bamboo material for transit shelters, addressing environmental impact and energy needs effectively. Here's how:

- It has extensive surface area and unique growth properties enable it to absorb pollutants like nitrogen dioxide.
- Bamboo's dense foliage can absorb and dampen sound, reducing noise pollution by up to 5 decibels.
- Evidenced by its use in earthquake-resistant structures due to its strength-to-weight ratio, as highlighted by research in the International Journal of Engineering Research and Applications.



- Fire retardant paints by Fireguard India, Hi-Temp Fire Retardant etc. can be applied to coat bamboo, enhancing its fire resistance.
- With higher growth rate, regenerative properties, and minimal environmental impact bamboo is a sustainable choice for construction.
- Bamboo has a high albedo (typically between 0.15 and 0.20) meaning it reflects sunlight back into the atmosphere.

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### BMTC Partnership with Yulu

- BMTC to give Yulu permission to build its bike stands on some bus stops which don't obstruct pedestrian pathways or bus operations.
- 56% of BMTC Bus stops still do not have shelter facility including roofs & seats.
- Yulu to install and maintain green roofs & clean water stations on the bus stops alongside their stands.
- Stimulate local economies by promoting EV cycle use and creating job opportunities for maintenance.

- Dex GR by Yulu an EV purpose-built for making delivery comfortable & profitable that holds upto 15 kg.



### Sustainable Auto stand with Mahindra Electric

## 100% EV adoption by 2030

for the private transport segment in Bengaluru, target by Gov. of Karnataka.

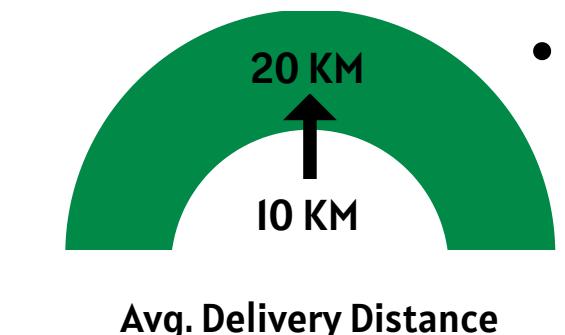


- Sustainable EV auto stands to be built by Mahindra Electric
- Company to get 5 years promotional spaces on all stands built in partnership with BBMP
- Company to conduct training sessions to educate gig workers about the charging procedures, and basic maintenance.
- Special incentive program for gig workers to purchase electric autos from the sponsoring company.



### Upgrading Stations with Consultancies

- Consulting firms to integrate smart technology to upgrade metro stations over time. Helping delivery personnel to increase their delivery radius.
- Smart lockers for delivery riders to store delivery bags while travelling on metro.
- Augmented Reality wayfinding app to guide gig workers to locate amenities, platforms & connections.



- Riders to combine metro travel with last-mile EVs which optimizes efficiency & extends the delivery radius.

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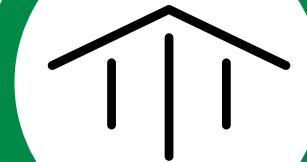


Government plans for upgrading



**BMTC**

- Proposed a plan to upgrade existing transit centers in the city to accommodate gig workers.
- The plan includes providing dedicated spaces for gig workers, such as lockers, charging points, and restrooms.
- It also includes improving connectivity between transit centers and other parts of the city.
- The plan is still in the proposal stage, and it is not yet clear when it will be implemented.
- BMTC is hopeful that the plan will be approved and implemented in the near future.



Private Funding



**Corporate donations**



**Foundation grants**



**Crowdfunding**



**Partnerships**

wipro foundation

**zomato**

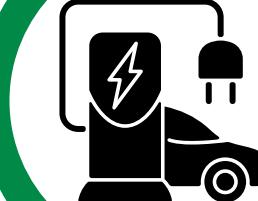
amazon

**SWIGGY**



**DUNZO**

**Uber**



EV subsidy by the government

Scheme	Incentive	Eligibility
FAME II	Subsidy of up to ₹1.5 lakhs	Electric cars with a maximum ex-showroom price of ₹15 lakhs
State-level EV policies	Capital subsidy of 15% of the cost of an EV, up to a maximum of ₹1.5 lakhs	Varies by state
Income tax benefits	Deduction of up to ₹1.5 lakhs on interest paid on loan	Individuals who purchase an EV
Scraping incentives	Incentive of up to ₹25,000	The vehicle must be purchased from a dealer or manufacturer that is registered in Karnataka.

# THANK YOU

APPENDIX - [CLICK HERE](#)