

ZERO CARBON KOCHI METRO



A joint project of
KMRL

&

***PELICAN BIOTECH & CHEMICAL LABS
P LTD.***

*(Dept of Scientific and Industrial Research, Ministry of science &
Technology, Govt of India supported in-house R&D unit)*



OBJECTIVE

- ☐ ***To reduce the carbon foot print of METRO RAIL LINES by greening the pillars and ans using carmedibon neutral, renewable materials***
- ☐ ***To use city compost in the process thereby providing a sustainable solution for Swachh Bharat.***

Problem solved

Soil used in the median is from a farm land



Greening
considered
financially
unviable
expense



Urban bio-degradable waste
management is now a

Solution



1

Grow pad derived of agro industrial waste and municipal compost

2

5000MT of urban compost = 10000 MT biodegradable waste) used ever year. To triple by the 5th year

3

Red earth can be completely avoided

4

Pillars and medians double up as ornamental plants nursery.

INNOVATION BY PBCL

1. Hardening of coir fiber: **funded by NCRMI, Govt. of Kerala (2008-10)**

Application: hardening and preservation of coir fiber

2. Soil less planting media from biological waste using *lignocellulolytic microbes* - *compost with very low EC value*: **funded by SBIRI, DBT, Govt. of India (2007-13)**

Application: Urban biodegradable waste to soil less planting media

3. ZERO CARBON GROW PAD: INDIAN PATENT application no: 201641039783 (date: 22/11/2016)
4. MOU and confidentiality agreement with KMRL to green the medians and pillars with eco-friendly materials 2017.



Operations:
clockwise from above





Honorable Minister for MOHUA Shri Hardeep Singh Puri at the vertical garden site with KMRL and PBCL officials



Environmental impacts



WASTE MANAGEMENT

- QUANTITY OF COMPOST USED/MEDIAN = 10MT
- TOTAL MUNICIPAL COMPOST REQUIREMENT /year = 15000MT
- TOTAL CARBON SINK IN 1500 MEDIAN/year: 7500MT

Oxygen generation

- Each median (75 sq M) will have a total plant body mass of 3000Kg/year
- This will produce 300000L of oxygen/year

In situ soil less planting media derived out of compost mined from dumping site, STP sludge, street sweeps, garden and compost from residences

APARTMENT COMPOSTING: 20000 FAMILIES, 10000 Kg waste/day, 5000kg compost/day, 150000 Kg compost/month @10000Kg compost/median.

APARTMENT COMPOSTING

- 20000 FAMILIES
- 10000 Kg waste/day
- 5000kg compost/day
- 150000 Kg compost/month
- @10000Kg compost/median – 15 medians/month to start with
- to scale by 25% every quarter apartment complexes covered in the project
- To reach 3000 medians, 30000MT compost/year

Waste management in residential colonies



Domestic waste management

Garden/tree pruning waste management



This project ---

- Thus intend to green the KMRL medians with compost
- Derived out of apartment complexes
- And provide comprehensive solutions for waste management
- including clean Non-biodegradable waste collection and recycling
- And collection and forward linkage of soiled waste and sanitary waste

Campaign

- ☐ Mind change Management
- ☐ Green protocol, package free life style
- ☐ My waste my responsibility
- ☐ Involving children and students
- ☐ Dumpsite clearances
- ☐ Opening up a perennial solution for BD waste

Business segments/ partners

- ☐ Metro rail companies
- ☐ Municipal corporations
- ☐ Residential and commercial establishments
- ☐ CSR initiatives
- ☐ Commercial branding segments
- ☐ Government waste management initiatives
- ☐ Carbon partners

Revenue Models

- ☐ Csr funds * Commercial branding *government grant *Waste management service charges from municipal corporation and residential/commercial establishments * soil less plant nursery



Thank