



Rajkot Municipal Corporation

ICRIER's Program on Capacity
Building and Knowledge
Dissemination on Urbanization in India
*Preparing for the Urban Challenges of
the 21st Century*
(Focus: Sustainable Cities)
June 17 - 18, 2013

Philosophy of SWM-Rajkot Case



About City



➤ Western part of Gujarat -Heart of Saurashtra region

➤ Area : 104.86 Sq.Kms

➤ Population : 12,76,000(Census 2011)

Climate : Max.43.5^o C (Avg.)
: Min. 24.2 ^o C

➤ Rain fall : Avg. 500 mm

➤ City wards : 23

➤ JnNURM City

➤ Industrial City- More than 25000 industries

➤ 9th ranked for city sanitation ; Also the best city for cleanliness by ABP

➤ One amongst the fastest 50 developing cities in the world

➤ Well connected by Road. Rail. Road





Structure of the presentation

1. Understanding the Solid Waste
2. Game Changer
3. Few good things at grass-roots
4. Contracting out the Transportations
5. Waste processing & Landfill
6. Lessons learnt
7. Moving ahead
8. How the Macro-Governments can help



1. Understanding the Solid Waste

1. Omnipresent
2. Multifarious
3. Obscure
4. Ignored
5. Unsophisticated
6. Un-piped
7. Manpower oriented



3.1 Few good things about Rajkot Sakhimandal

- Attempting recycle from door steps
- Rag pickers rehabilitated
- Reduce transportation cost
- Help reduce number of closed container
- Stray dogs, stray animals menace reduced

G. PATEL SALES

પટેલ જમડે

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3.2 Few good things about Rajkot ODOW

- Campaign Mode
- Field Management
- Awareness Drive
- Horizontal liaison with other services
- Feel good factor
- Wide publicity

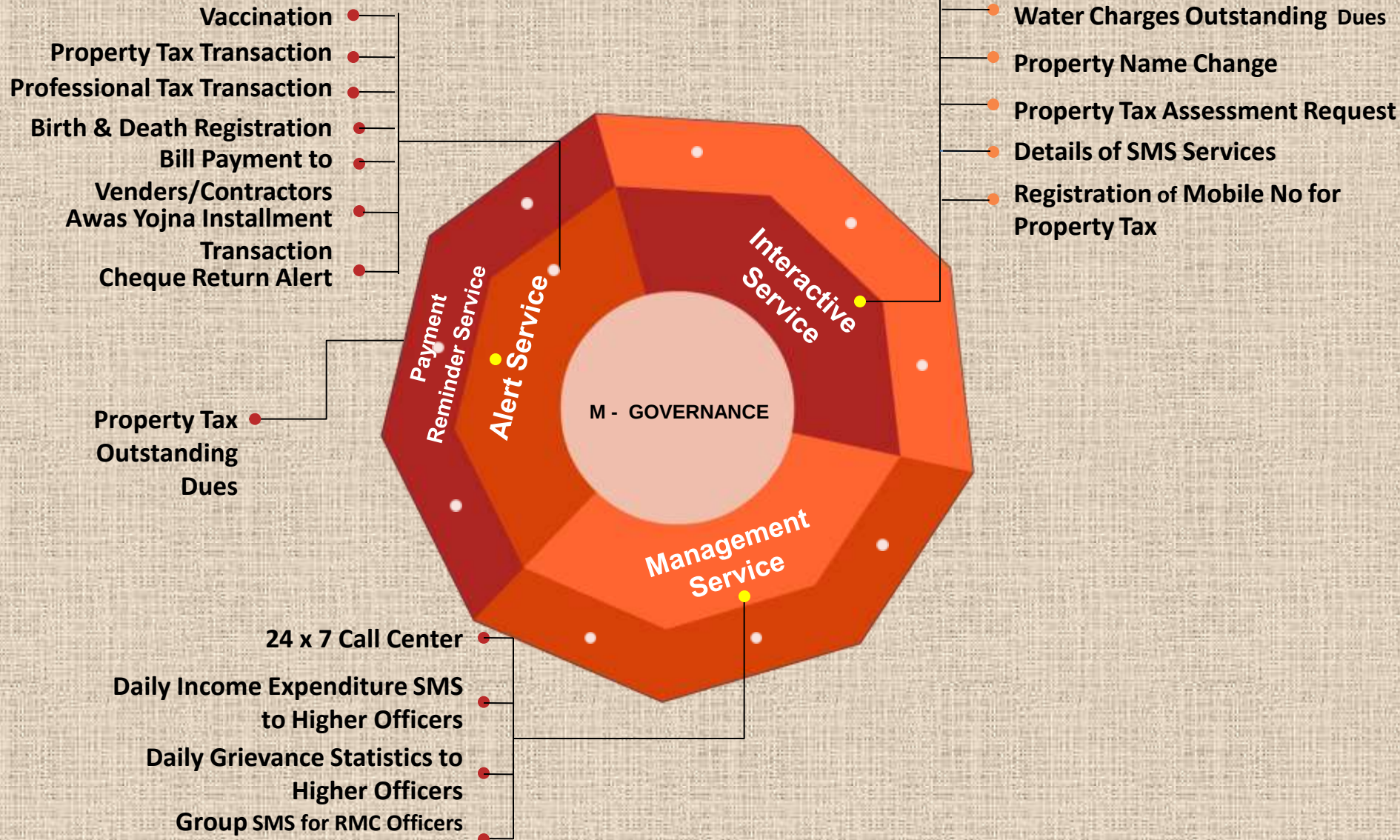


3.3 Few Good Things about Rajkot M-Governance

- Complaints Management 24x7,
- Message goes around
- Message comes around
- Monitoring
- Pro-active towards the citizens
- Good citizens favored, served quickly



M- Governance Services





3.4 Few good things about Rajkot Do It Yourself

- No new sweeping service
- Payment of Safai grant
- That too in advance
- Help in monitoring
- Facilitate secondary transport



3.5 Few good things about Rajkot Night Scraping

- Used to be 48 roads, 80 kms every night manually
- Now partially replaced by suction sweeper machines
- Properly supervised, reported
- Feel-good factor strengthened





3.6 Few good things about Rajkot coordination with Railways

- Removal of solid waste at regular intervals
- Tree plantations along the route
- Close liaison with the railway authority
- Training of the staff
- Efforts to reduce Open defecation
- 8000 trees along 3 kilometers route
- Encroachment and Accidents reduced





3.7 Few Good things about Rajkot Toilet Facilities





4. Contracting out Transportations

- An easy 'make' or 'buy' decision
- Well monitored
- Provision for spares
- Contractor friendly approach
- Owned by Us-Transported by them





5.Waste processing and Landfill

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INFRASTRUCTURE SERVICES

Chairperson
Dr. Isher Judge Ahluwalia,
Chairperson, Indian Council for Research on
International Economic Relations

Box 2.8

Waste to Wealth in Rajkot

Rajkot, the fourth largest city in Gujarat, generates about 300 metric tonne of solid waste every day, which was earlier collected and dumped at different locations on the outskirts of the city. After the Municipal Solid Waste Management Rules 2000 were notified, Rajkot Municipal Corporation set up a modern processing plant for solid waste and engaged Hanjer Biotech Energies Pvt Ltd for this job. The state government stepped in by providing land to the Municipal Corporation, 30 acres of which was leased out by the Corporation to the private company, Hanjer, at a rate of Re 1 per sq. m per year to set up the waste-processing plant. The remaining land was used for a sanitary landfill. The project was initiated in 2003 and the plant became operational in 2006.

The city waste is first brought to the site in dumpers and then segregated. The wet organic waste of about 20-30 per cent is left in the composting yard, transformed into organic compost, and sold to corporate clients. The dry organic waste is compressed into high calorific fuel fluff (green coal) and sold to cement and paper industries. The recyclable waste consisting of rubber, plastic, and metals (about 5 per cent of the total waste) is sold in the junk market. Only 10-15 per cent of the waste collected is sent to the landfill. From the daily collection of 300 metric tonne of waste, Hanjer produces 40 metric tonne of bio fertilisers, 70 metric tonne of green coal, and 2.5 tonne of plastic.

Source: Rajkot Municipal Corporation (2010).



Why PPP?

- **Administrative limitations**
- **Marketing not a core skill**
- **Huge capital investment**
- **Increased landfill site life and thereby revenue saving**
- **Compliance to all prevalent regulations**
- **No direct expenditure- Cost advantage**



Present Status and Features of the Project

- **200 acres of land near Nakrawadi village acquired from the State Government for the establishment of the processing plant and development of landfill site.**
- **MOU with M/s. Hanjer Biotech Energies Pvt. Ltd. (HBEPL) - a Mumbai based firm, for the establishment of the Integrated Municipal Solid Waste Processing Facility on BOT basis.**
- **Of the total of 200 acres of land, 30 acres allotted to HBEPL on lease, at a rate of Re.1/- per sq. m. per year.**
- **No cost incurred to RMC for Waste Processing**



Present Status and Features of the Project

- Requirement of necessary water fulfilled by RMC at Rs.34 per 1000 liters.
- Approximately 350-400 MT of MSW delivered to HBEPL on daily basis.
- Integrated Waste Processing technology used to process the Municipal Solid Waste.
- At present, Bio-fertilizers, Fuel palettes (fluff) and eco-bricks manufactured by HBEPL
- Approximately only 20% of inert material left as residual matter after processing of MSW.

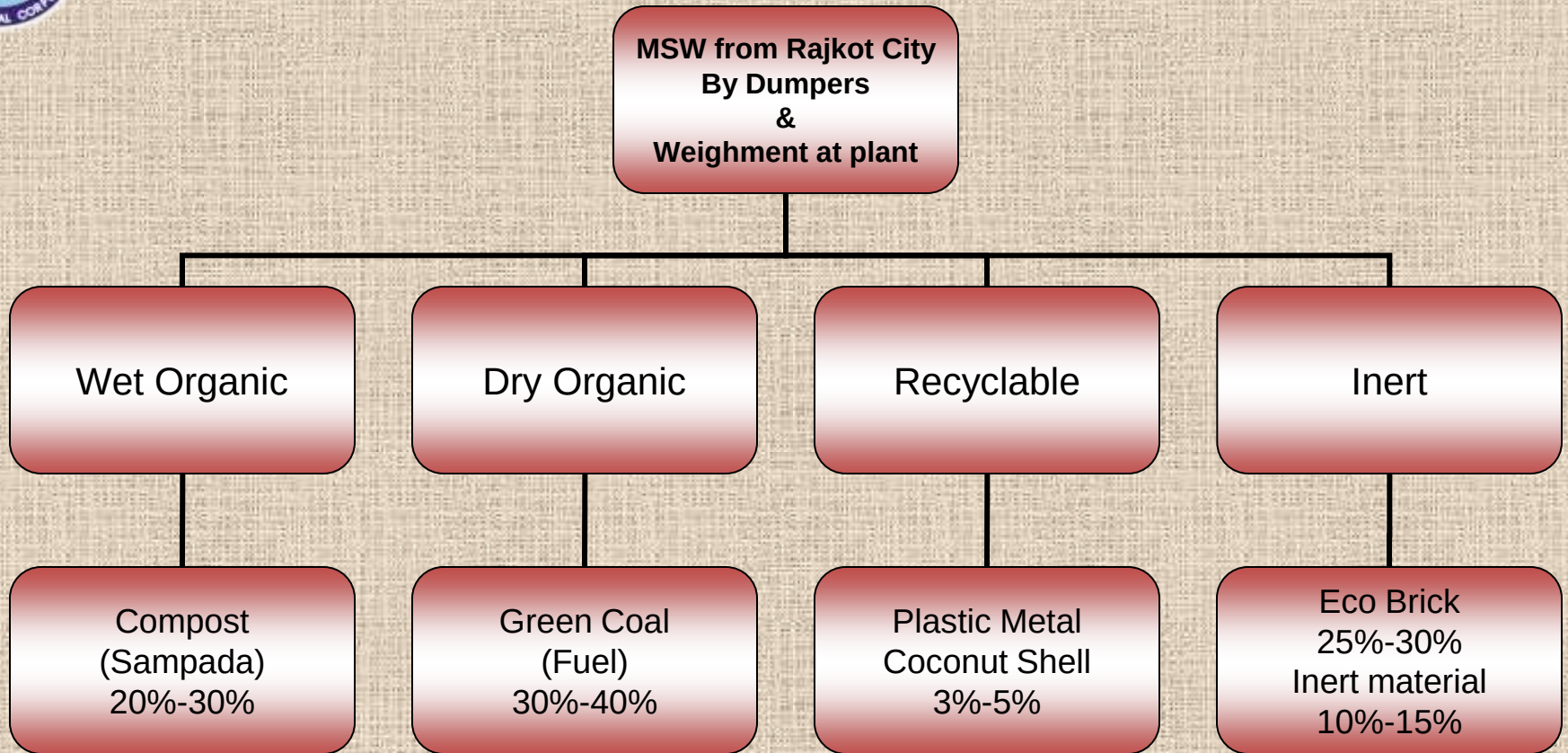


ISWM Plant at Nakrawadi Rajkot





ISWP plan – Line Process



- **100% segregation of waste by mechanical equipments**
- **Products such as Bio-Fertilizer, Fuel Pallets & Eco-Bricks are manufactured & only 20% of residue remains at end**
- **It is the only successfully running plant in Asia, supporting integrated waste processing technology**



Waste receiving and preparation

Dumpers carrying MSW of Rajkot City



Weighing at the Entry Point of HBEPL



Safe storage with bottom and side CC linings





Process cycle segregation (100% Material)

Material lifted from Tipping floor

Fed on segregation line

Metal Separator

Plastic Separator

Primary Segregation

Secondary Segregation

Wet Organic

Inert
Bricks
Residue
landfill

Eco-
&
for





Segregation Shed





Wet Organic Material Process

Pre-sorting of MSW into compostable, recyclable and currently unusable

Treatment with herbals & enzymes for sanitization and accelerated biological conversion cycle

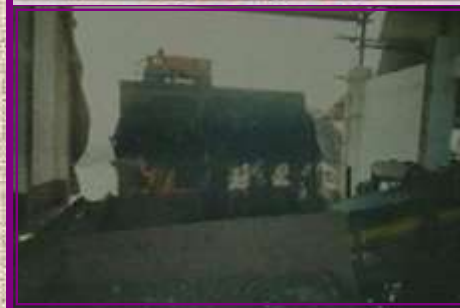
Windrow formation for proper aeration and process control

Weekly turning and moisture maintenance

Control of process parameters like pH, Temp., odors, porosity

Processing of fermented biomass through on-line machines for separation grading & recovery

Quality control analysis and release of the product for market





6. Lessons learnt

- Segregation at the source of generation is the key
- Foodprint
- 'Reduce' out three 'R's can not be ignored
- Being there, always, really, virtually
- Connecting People
- I am the Best
- Stay Hungry, Stay Foolish



7. Road Ahead

- Total segregation at primary level
- Urban Agriculture
- Waste Museum
- Waste Research Centre
- IEC activity- live models
- Kabadiwala Networking
- One stop procurement of recycled waste
- Value addition to the schools





8.1 How the Macro Governments can help?

- Understands the need of REDUCE
- Enact law based on research
- And enforrrrrce the law
- Town planning reservation for urban agriculture



8.2 How the Macro Governments can help? (contd.)

- Encourage the reduction of Food prints
- Town Planning Reservations for Urban Agriculture



8.3 How the Macro Governments can help? (contd.)

- CPF projects can be made saleable
- Equi-allocation of funding under JnNURM



Projects sanctioned under JnNURM

- Solid Waste Management 44
- 197286.44 1,02,262.42 62172.37 (Rs.in lacs)
- **The Amount is a meager 3.18% of total money for all projects sanctioned**



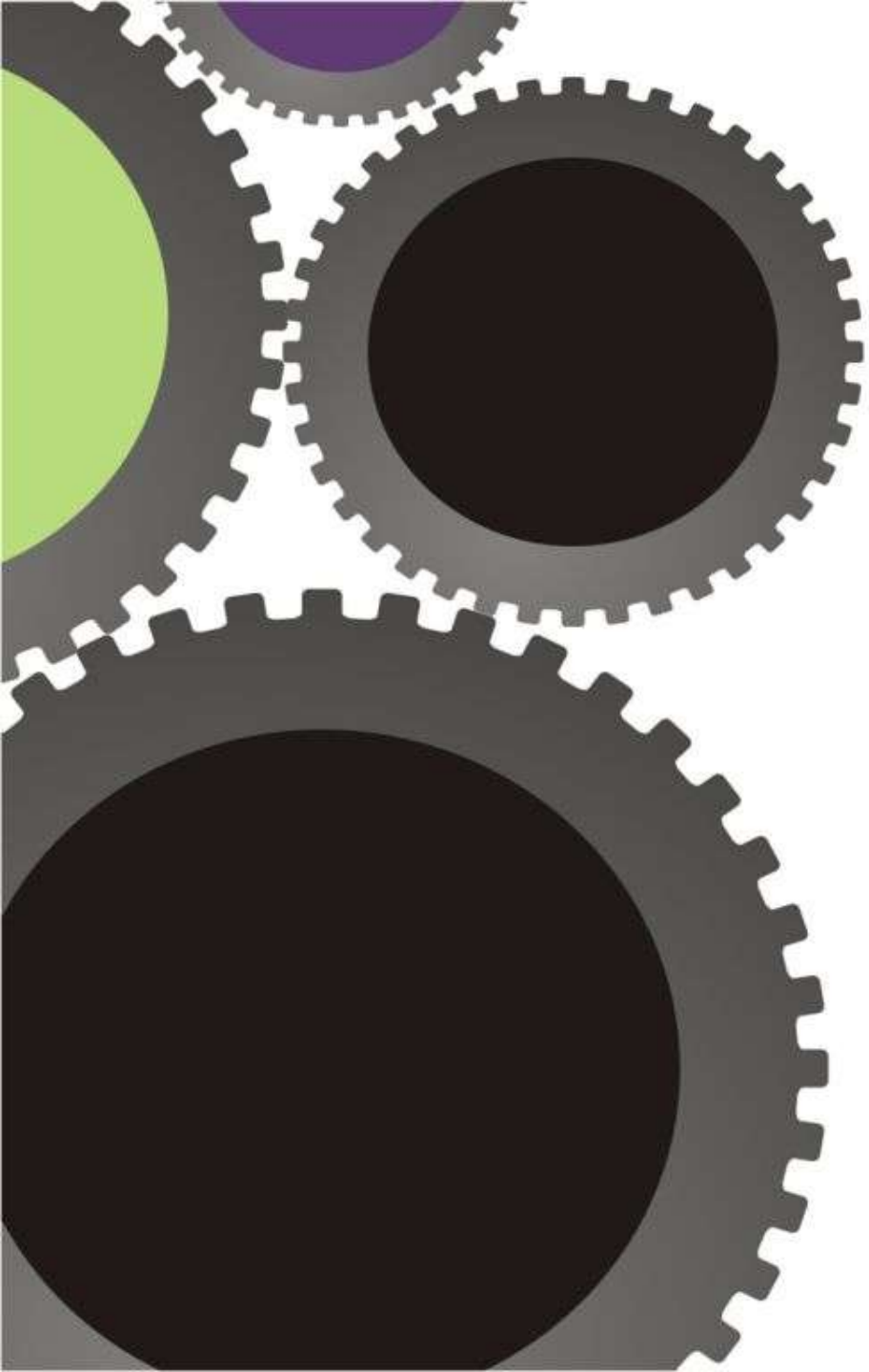
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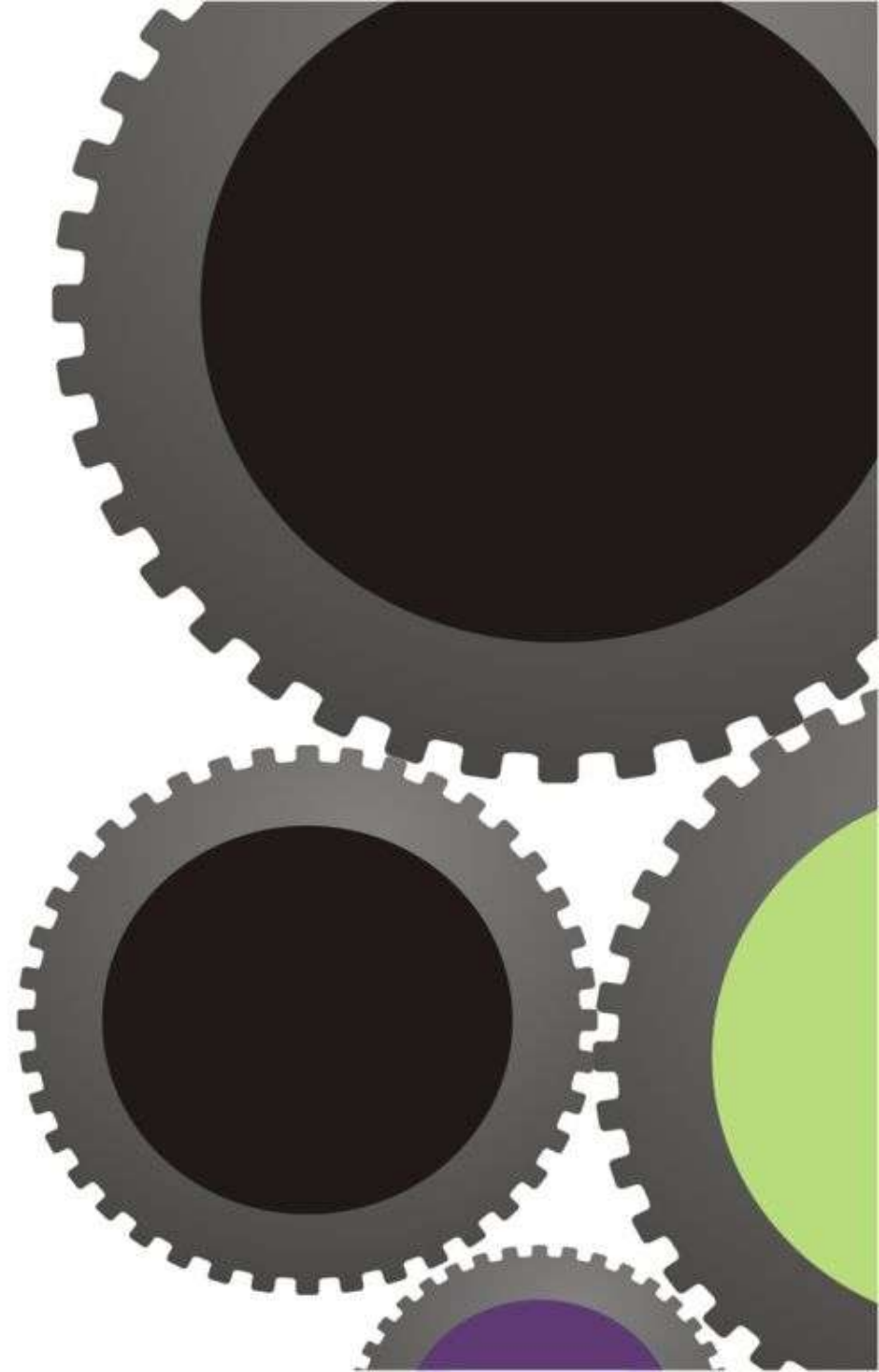
Segregation.....

Paresh Vyas

Dy. Commissioner

Rajkot Municipal corporation





Rajkot SWM

- Average Generation of garbage = 400 MT per day
- No of sweeper =2625
- 92 % Door to Door garbage collection coverage (by WHG, MHG & Pvt contractor)
- No of Sakhi Mandal = 53 with 477 women
- No of Mitra Mandal =158 with 1264 members
- Night scrapping in 45 roads covering 72 kms of major road length
- 2 Nos of transfer station to reduce transportation cost
- 65 % transportation by Contracted out
- Installation of 4500 Litter bins along the main roads
- Processing of 100% Garbage by scientific method



Rajkot SWM project under JnNURM



- Procurement of equipments for primary SWM
 - ❖ 2000 littering bins, 800 wheel borrow, 4800 container, 50 cycle rickshaw, 250 closed containers, 50 debris container, 1 sweeping machine
- Procurement of equipments for Secondary SWM
 - ❖ 04 excavator cum loader, 06 dumpers, 06 dumper placer, 01 crassvan
- Development of 50,000 MT landfill cell in first phase
- Sanctioned amount Rs.862 lakhs
- Status complete





Objectives of the Processing Plant

- **Implementation of the MSW Rules-2000 and the Guidelines provided by Hon'ble Supreme Court.**
- **Minimising Waste at disposal site**
- **Scientific disposal of the Municipal Solid Waste generated daily from the Rajkot City.**
- **Minimize the ground water pollution caused due to improper and unscientific disposal of the garbage.**
- **Optimum extraction of Recyclables.**
- **Produce useful products such as bio-organic fertilizer, RDF, and eco-bricks, etc. from MSW.**



Achievements

- SWM – success story of RMC published by Skoch India Pvt. Ltd. In Global Edition Book
- Success story reported By Dr. Ishar Ahluwalia, chairman High power committee for India Infrastructure

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Rajkot SWM Practice

