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NEPRA

Creating Eco-system with tech interventions across Value Chain



Pirana Dump-site, Ahmedabad



Pirana Dump-site, Ahmedabad

2006-9 Risk:

- Mountains of Trash
- Leachate accumulation
- Water pollution
- Air Pollution
- Health impact on people involved



Effects:

- Impending natural calamities or disaster
- Damage to bio-diversity and environmental quality
- Infusion of toxins
- **Started Commercial Ops – Could have done more? – Still Can.**



Chennai Floods



Delhi suffocated as AQI reached 999 - DNA India



Plastic waste in Hyderabad choking cows to death



ASIA

Climate change: IPCC warns India of extreme heat waves, droughts

India will likely face irreversible impacts of climate change, with increasing heat waves, droughts and erratic rainfall events in the coming years if no mitigation measures are put in place, experts warn.



Chennai comes to a standstill as heavy rains flood city

Story by Reuters

Updated 0908 GMT (1708 HKT) November 24, 2021

THE TIMES OF INDIA

700 species will lose habitat to warming by 2070, finds study

Chandrima Banerjee / TNN / Feb 28, 2021, 05:02 IST

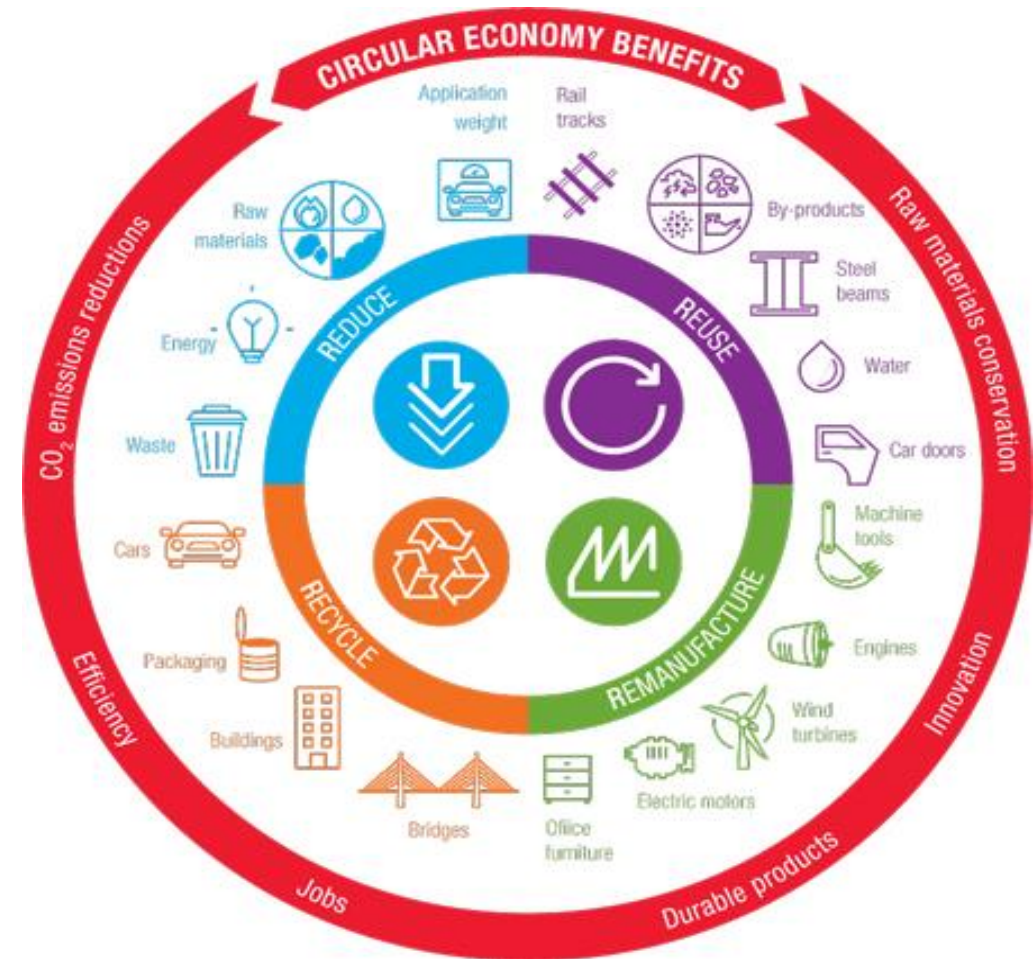
DTE Down To Earth

Forest fires in India: Alerts since April 1 nearly double that of

...

A majority of the forest fire alerts were concentrated in north and central India, the GFW data showed, mainly in the states of Maharashtra, Madhya Pradesh,...

- Reduction in use of **Fossil Fuels**
- Shift to use of **Renewable Energy Sources**
- **Resource efficiency & Closed Loop System**
- **Focus on Overall GHG reduction**



Creation of **Circular Economy**

We plan to shift to Renewable energy for all our operations



Collection

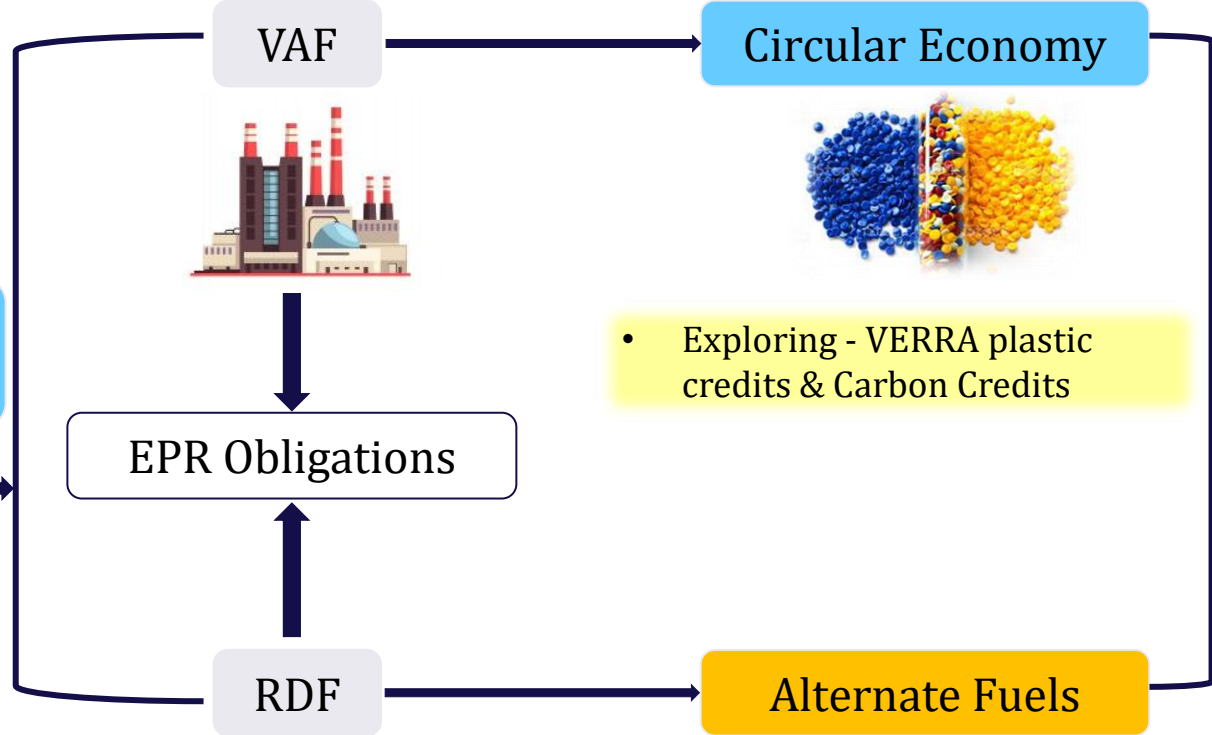


Collection of Waste by NEPRA

MRF - Material Recovery Facility



Transfer to Material Recovery Facility, where Waste is segregated



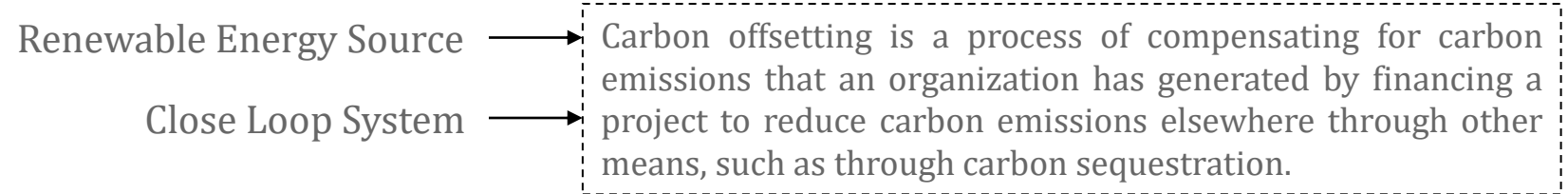
Exploring - VERRA plastic credits & Carbon Credits

VAF - Plastic Circular Economy

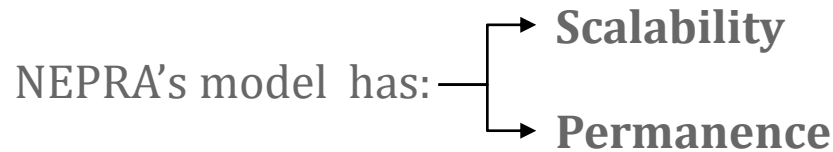
RDF - Alternative Fuel to replace coal

Our Business Model has huge potential to Seize Opportunities to compete in tomorrow's Climate constrained world.

Most of the net zero emissions plans include one important component: carbon offsetting.



NEPRA is an ideal partner for **for creating Infrastructure at Scale for CARBON OFFSETTING.**



Close Loop System

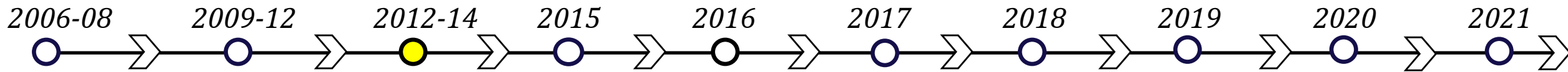


Ideal model to achieve Net Zero Carbon

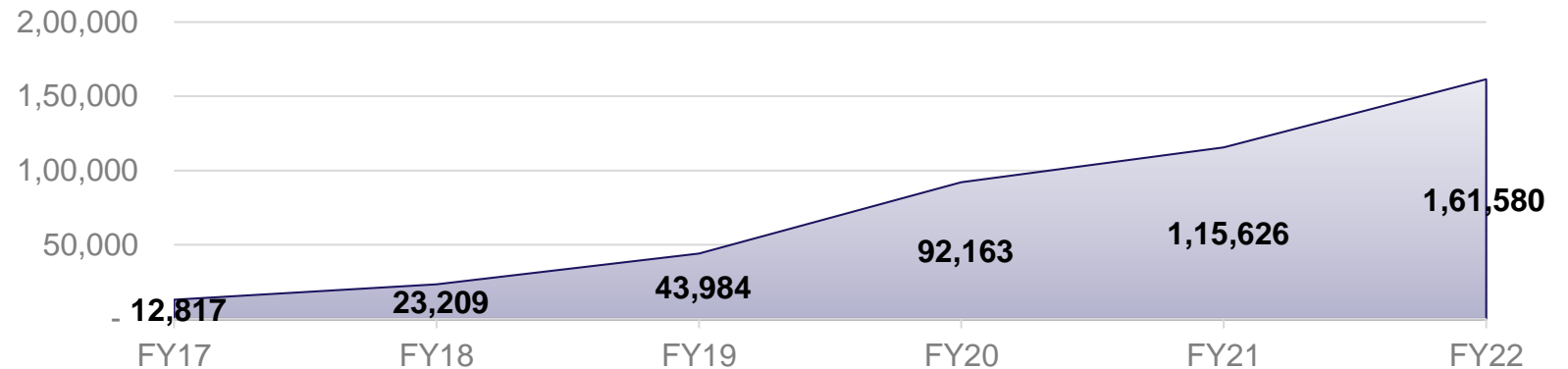
Resource Efficient – making most with fewest inputs possible



VAF
and
RDF
Facilities



15 Years Exponential Growth in Waste Processed (Cumulative Metric Tons)



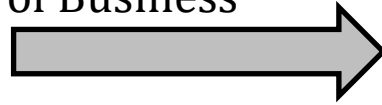
2013

Met 69th & 70th VC – they kept asking why's & how's & I kept solving them



Credits: skipprichard.com

1st Biggest Success
of Business



Credits: westpress.com



Raised INR 3 Crore in Feb '13

Ordered new machine/equipment required for scaling the MRF



But then faced biggest setback in May '13



2014-15

Commencement of operations of 2 MRF's with combined capacity of 40 MT per Day



Journey →



2016-20

NEPRA's MRF use state-of-the-art technologies like Optical Pneumatic Sorting enabling it to sort and segregate waste at scale

Ahmedabad Facility (100 TPD)



Pune Facility (100 TPD)

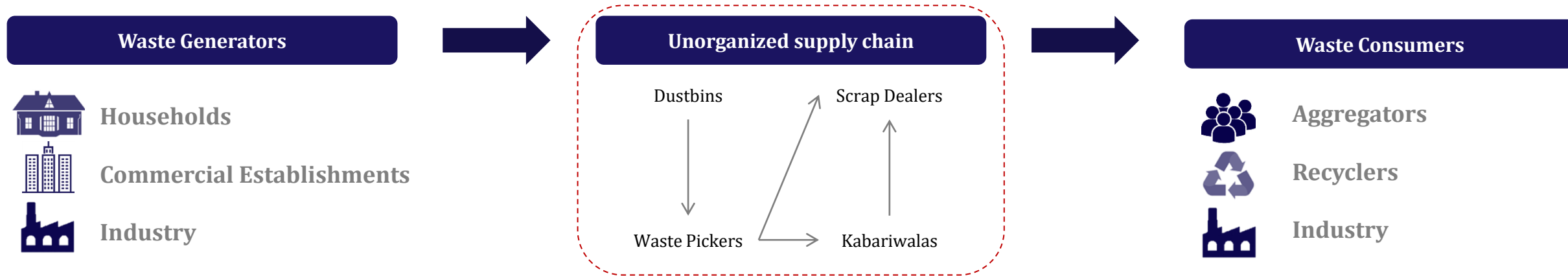


Indore Facility (300 TPD)

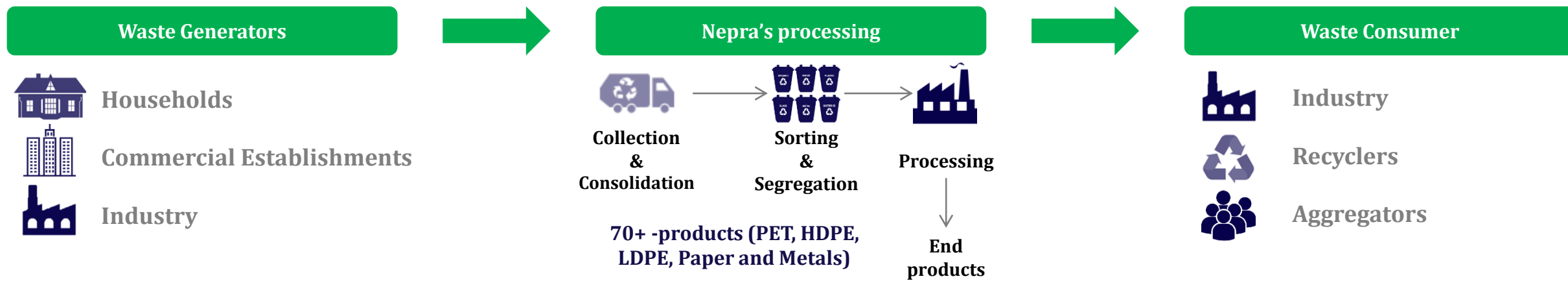


Largest MRF in India in alignment with our mission of 'Zero Waste to Landfill'

The Current Dry Waste Value Chain is highly unorganized and inefficient



NEPRA - Successfully Organizing the Value Chain to Enhance Efficiency



Directly Linking Waste Generators to Recyclers - Eliminating Inefficient Intermediation



Type of Waste Products

Plastic Rigid

Plastic Films

Paper

Metal

RDF*

Processing by NEPRA

PET bottles are separated

Plastic segregated into HDPE, PP, ABS, PVC, HIPS, etc

Plastic segregated into LDPE, PP& BOPP, LLDPE, etc

Paper segregated into different types like Cardboard, hardboard, etc

Segregation of metals into different types

Rest of the dry waste is sent to Cement/Boilers as Refuse Derived Fuel



Conversion into PET Bales

Conversion into plastic granules

Conversion into plastic lumps

Conversion into Paper bales

Conversion into Aluminum bales

End - Use^



Sold to Fabric Manufacturers

Sold to Plastic products manufacturers

Sold to Tarpaulin & Pipe Manufacturers

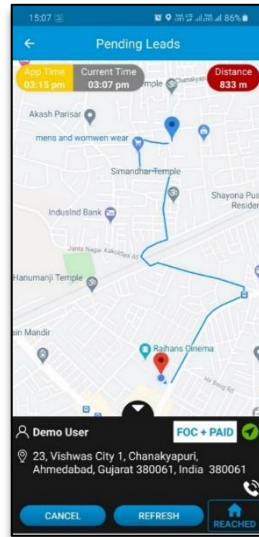
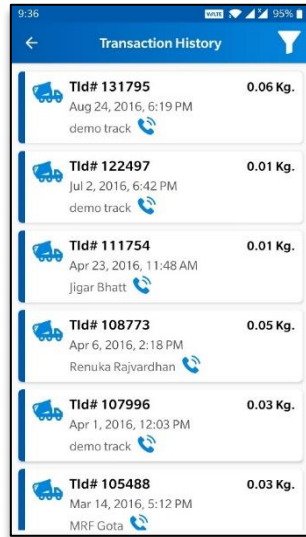
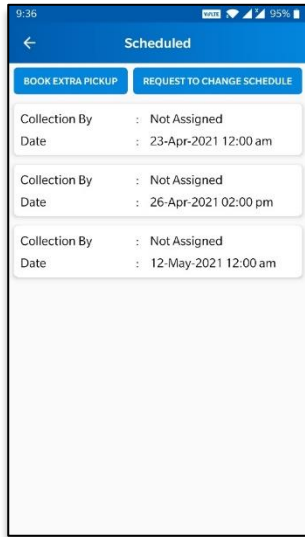
Sold to paper recyclers

Sold to Can manufacturers

^These are few sample application of many end use applications

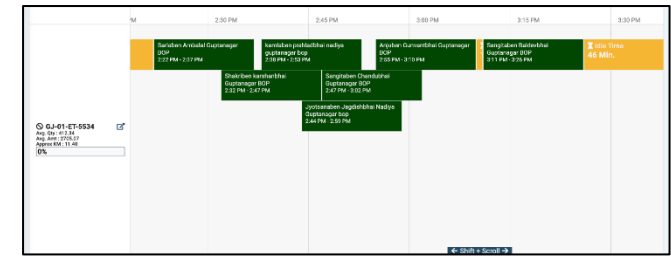
*Refuse Derived Fuel

Customer App • Collection App • Back End & MRF ERP



Vehicle Earning

Vehicle Name	Vehicle Type	Tot. Qty	Tot. Amt	Tot. Collection Qty	Tot. Disposal Qty	Tot. Collection Amount	Tot. Disposal Amount	Tot. Diff. Mapping	Tot. Diff.
VikramKovel - G819T3608	VARIABLE	4648.00	7322.00	4648.00	0	6972.00	0	350.00	0.00
RajshPalmer - G1-01-TD-8821	VARIABLE	7895.00	11542.50	7895.00	0	11542.50	0	0	0.00
JahaPalmer - G1-24-V-5478	VARIABLE	27500.00	41550.00	27500.00	0	41250.00	0	0	0.00
MukeshTaher - G1-02-VV-8183	VARIABLE	17185.20	23777.80	17185.20	0	25777.80	0	0	0.00
VijayChunay - G1-02-VV-8183	VARIABLE	12307.20	15960.80	12307.20	0	15960.80	0	0	0.00
RakeshTaher - G0329772	VARIABLE	16510.00	25116.90	16510.00	0	24765.90	0	350.00	0.00
DineshTaher - G1 S3 AT 7219	VARIABLE	29358.00	44027.00	29358.00	0	44027.00	0	0	0.00
KirshPalmer - G1 01 FT 3136	VARIABLE	4800.40	6900.60	4800.40	0	6900.60	0	0	0.00
GRAND TOTAL		120804.40	183907.00	120804.40	0	181206.60	0	700.00	0



- Manage Addresses
- Request additional Pick-ups
- Check Transaction History

- Collection Operation
- AI based Facial Recognition
- Waste Picker/BOP Management
- Customer Relation Management
- Differential Price Management

- Material Sorting
- Inventory & Stock Management
- Transporter Management
- Sales Management
- Vehicle & Driver Management
- Vehicle Planning, Live-Tracking & Route Optimisation

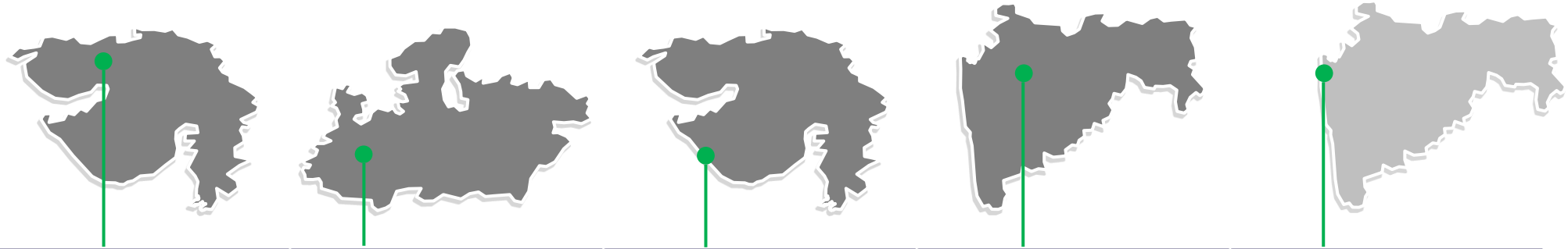
Traceability • Transparency • Scalability • Real time reporting & analytics • Lean System • Resource Efficient • Multilingual • Digital Payments

- A team is formed, including members from different departments in the organization.
- NEPRA has set a frequency for meeting to implement ESG reporting culture and track progress.
- Roadmap including key milestones is prepared to publish a Sustainability Report in Quarter 2 of 2022.



NEPRA has opted to publish report in accordance to GRI Core option.

Current operations



Capacity	200 TPD	300 TPD	60 TPD	100 TPD	100 TPD#
City - MSW generation	2,500 TPD	1,000 TPD	275-310 TPD*	2,300 TPD	8,600 TPD

Rapidly expanding to other cities

Potential MRF in PPP Model	Bhopal	Bengaluru	Jaipur	South Delhi	North Delhi	Greater Noida	Guwahati	Prayagraj	Lucknow	Kalyan – Dombivali	Latur
VAF	Indore	Ahmedabad									
Potential MRF in standalone model	Indore	Aurangabad	Pune	Bharuch	Vadodara	Gurugram/ Manesar	Bengaluru	Chennai	Hyderabad		

Sources: cpcb.nic.in – annual report on status of solid waste management rules;

Contract finalisation underway with Mumbai Municipal Corporation

*Jamnagar data from SWM report submitted by Urban Management Centre in Feb '18

“To be the **leading** Waste Management Company in **emerging markets** while impacting **People & Planet positively**”



- We shall lead by continuously innovating to make the processes simpler yet efficient.
- We shall serve the emerging markets that include developing and under-developed economies and market.
- We shall impact the people at the ‘Bottom of the Pyramid’ by creating a sustainable healthy living for them.

“To create **state of the art infrastructure for circular economy** and continuously strive to achieve **zero waste to landfill.**”



- To operationalize **30+** waste management facilities including MRFs, VAFs & RDF Facilities **by 2025.**
- To reduce approx. **5.77+ MMT** of carbon emissions by diverting **2 MMT** of waste by 2025.

NEPRA Partnership Snapshot



THANKS