

Resource Efficient Management of Non-recyclable Plastic & other combustible Wastes



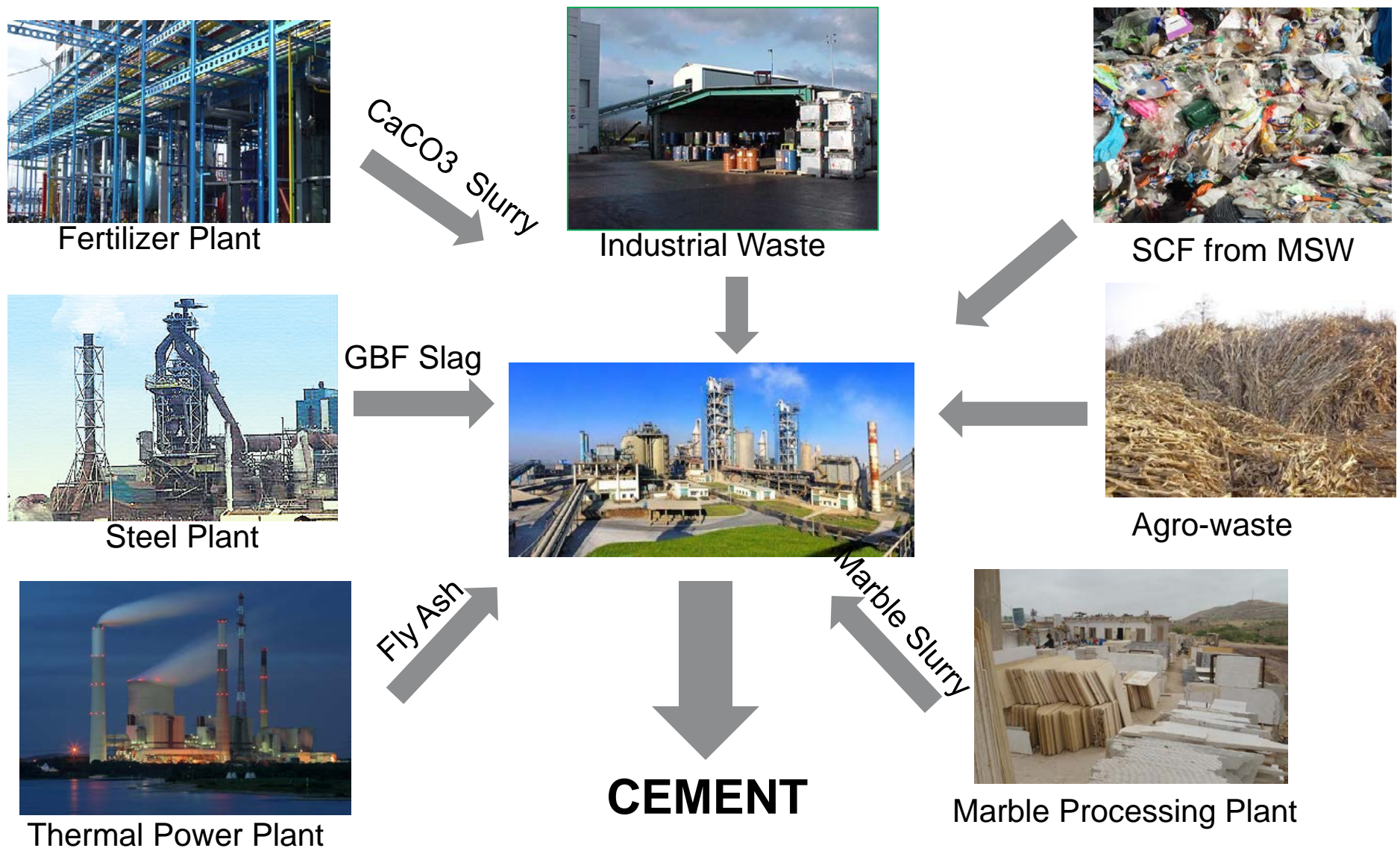
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ACC Limited

About Geocycle



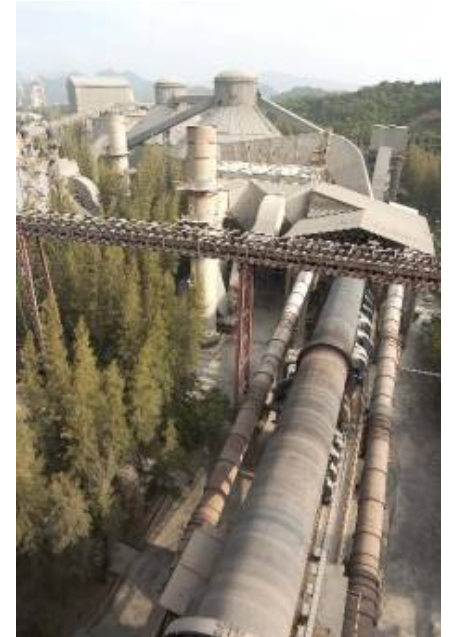
- ▶ Geocycle is the global waste management brand of LafargeHolcim.
- ▶ LafargeHolcim is the promoter of both ACC Limited (ACC) & Ambuja Cements Ltd. (ACL)
- ▶ ACC & ACL extend cement kiln co-processing solution for environmentally sound management of wastes under this brand through the shared services division named Geocycle India.
- ▶ Wastes from Industrial, Municipal & Agricultural sources are managed through co-processing in this initiative.

Cement Industry & Resource Efficient Management of Wastes

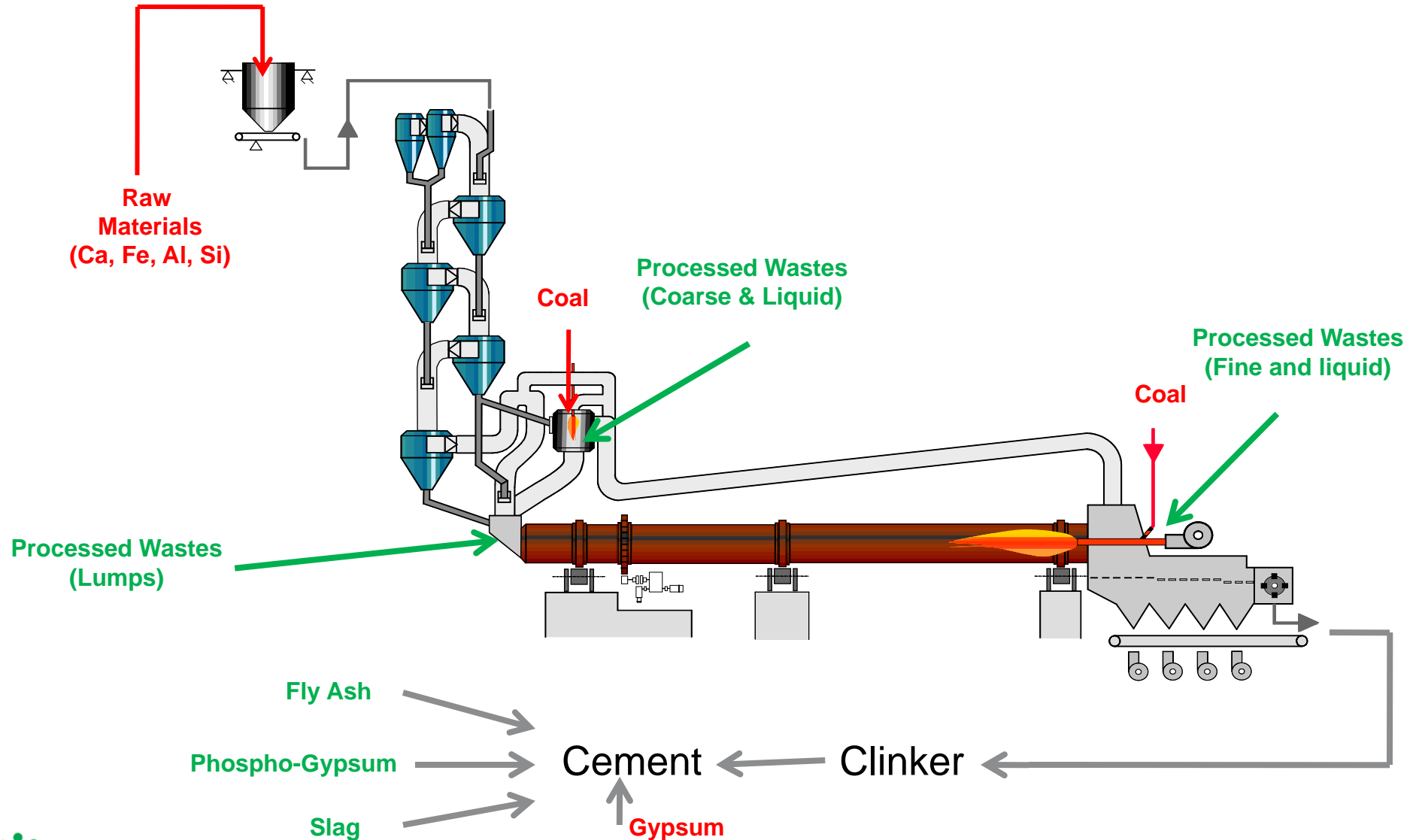


What is Co-processing?

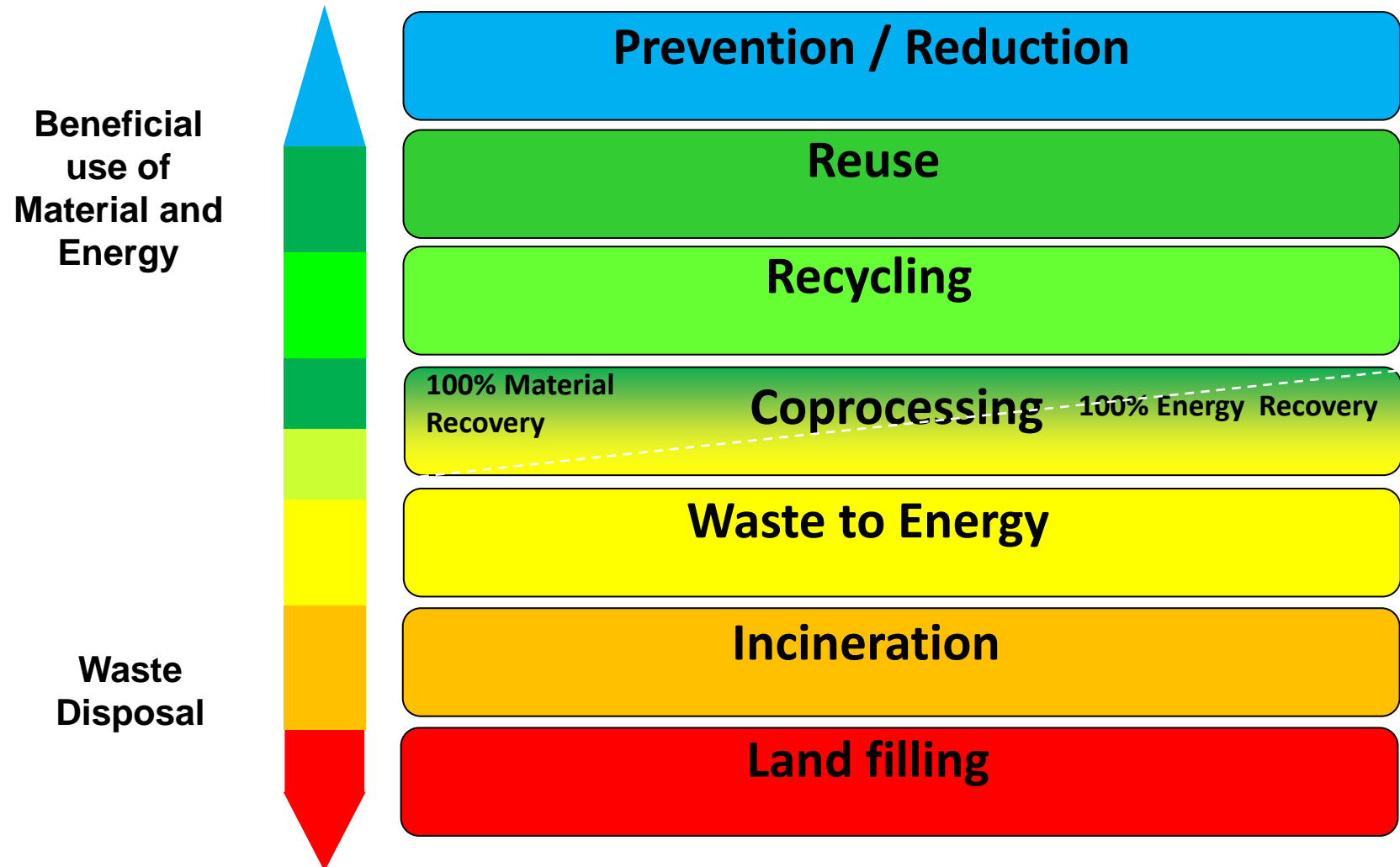
- **Co-processing** is...
 - ▶ ...based on the principles of industrial ecology and stands for the **usage/disposal** of waste material (as raw materials, as a source of energy or both) in resource intensive industries to replace natural mineral resources (material recycling) and fossil fuels such as coal, petroleum and gas (energy recovery) by wastes....
- **Benefit of co-processing** are.....
 - ▶ Provides a permanent solution to waste
 - ▶ Reduces emissions and greenhouse gases
 - ▶ Lessens reliance on fossil fuels
 - ▶ Preserves natural resources
 - ▶ Provides Zero Waste Future & Zero Lanfill option



Co-processing manages the wastes completely while reducing the global emissions



Co-processing Promotes Resource Efficiency & Sustainability



A well laid out approach is implemented for sustainable management of the wastes



1

**Waste
assessment**



2

**Waste
analysis**



3

**Waste
transportation**



4

**Pre-
processing**



5

**Co-
processing**

Which wastes can be Co-processed in cement kilns?

Combustible wastes from MSW



Hazardous Wastes



Plastic Waste



Agro - Waste

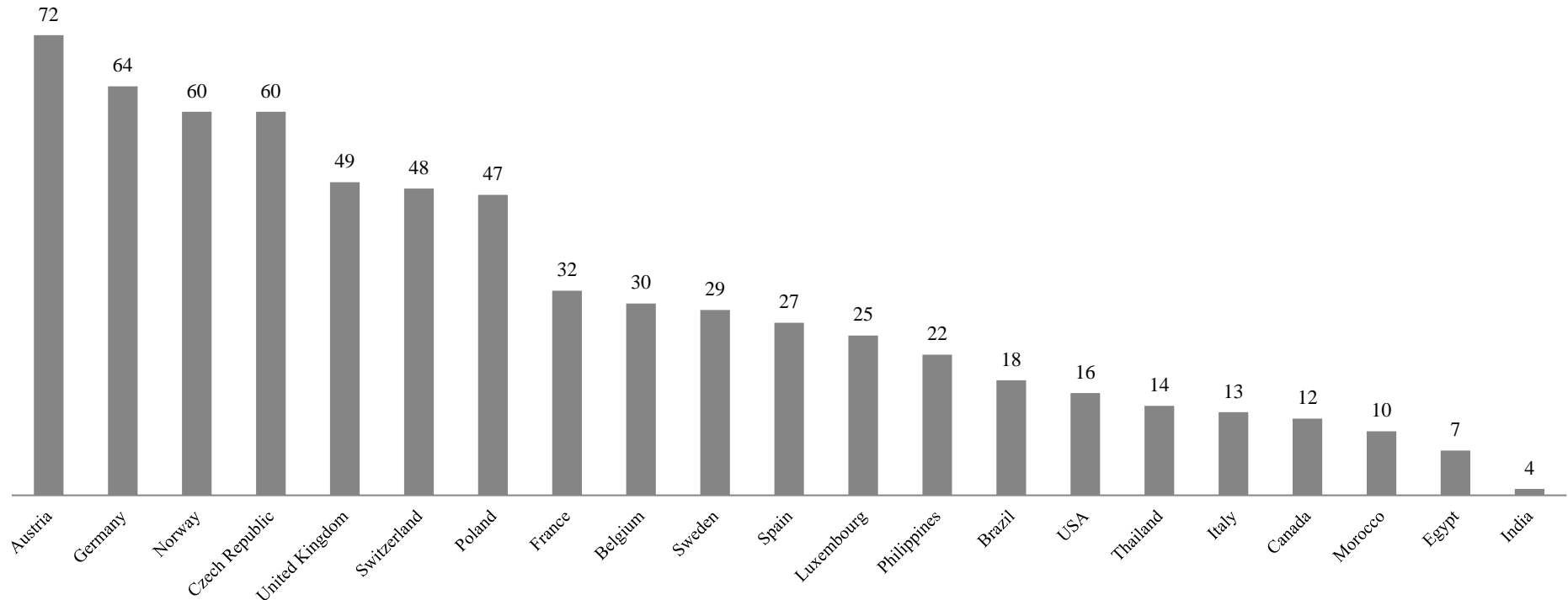


Is co-processing a workable model in India?

- Co-processing model is operating for the **past 11 years in India.**
- Volumes co-processed are **increasing** year on year
- Almost all the cement companies are implementing co-processing in their kilns
- **National Task Force on co-processing** constituted by CPCB has **evaluated and concurred** with the **co-processing model** for Waste management.

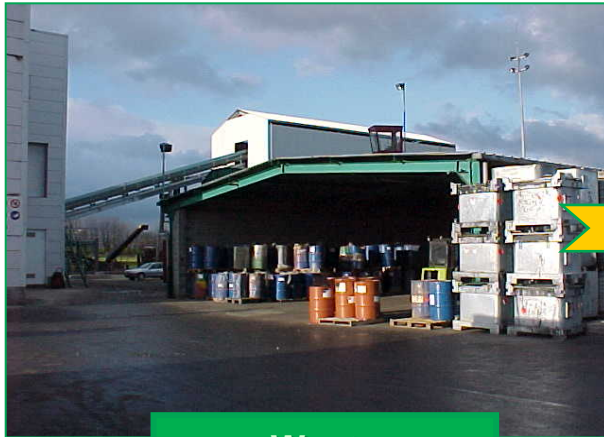
How much of Waste can be managed in cement kilns?

TSR (%)



Therefore, opportunity exists for managing large quantum of wastes from Municipal, Industrial and agricultural sectors in the Indian Cement Industry. But the same can be done only after pre-processing it into processed-waste with desired quality consideration.

Wastes need to be Pre-processed into uniform quality processed-waste for managing them in an environmentally sound manner in Cement kilns



Waste



Pre -Processing



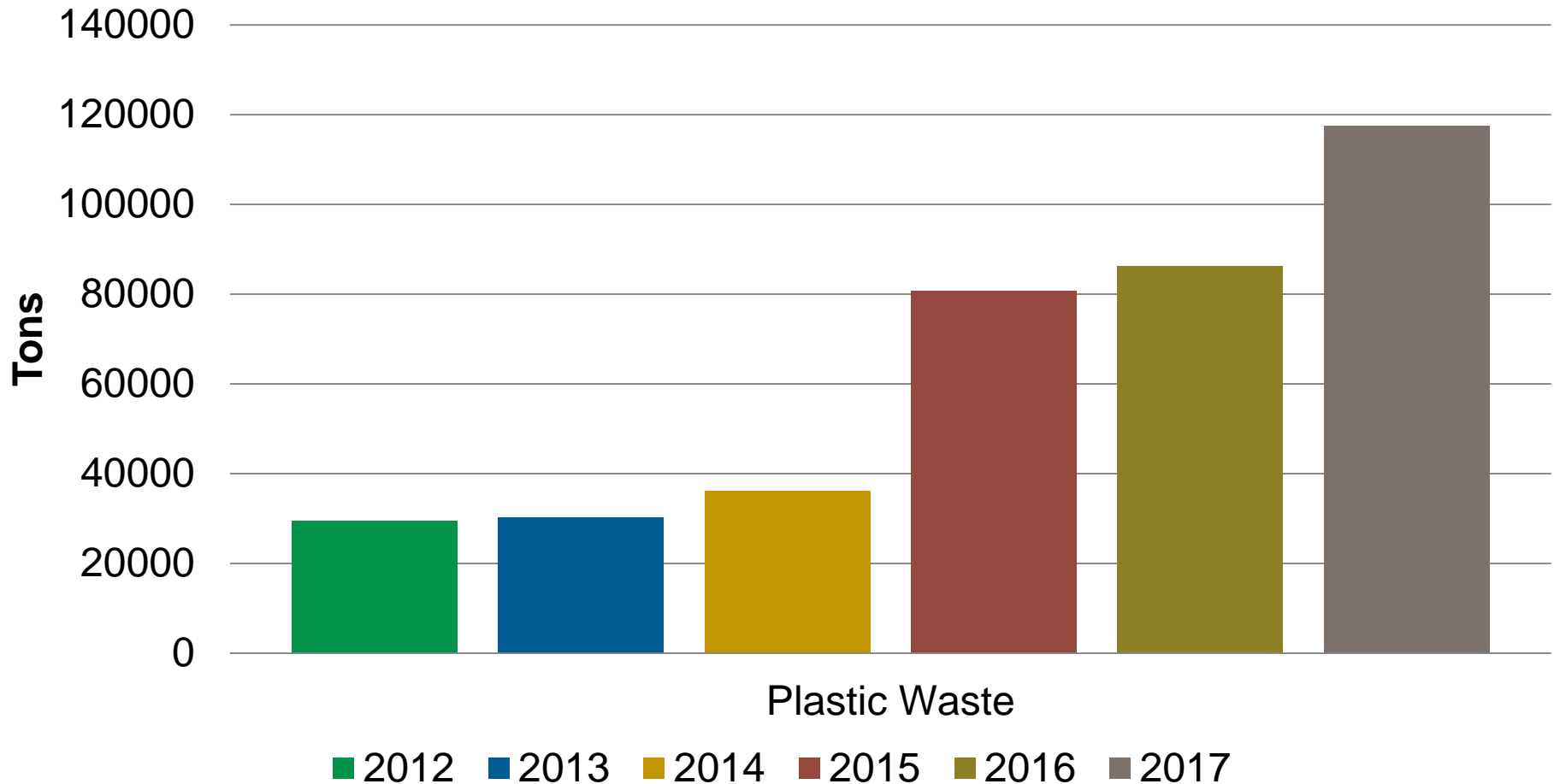
Processed
Waste



Resource Efficient Management of Plastic & other combustible Wastes through co-processing in cement kilns

- ICPE + ACC together conducted the co-processing demonstration trial for disposal of plastic wastes in cement kiln in March 2008
- Trial was conducted with the approval of CPCB and MPPCB
- CPCB evaluated the results of the emission monitoring and also the product quality and confirmed that co-processing is an environmentally sound technology for management of plastic wastes.
- PWM Rules, SWM Rules & HOWM Rules notified in 2016 have given preferred status for co-processing over other disposal options and CPCB has published guidelines to implement co-processing of plastic wastes in the cement kilns.

Plastic & other combustible Waste Managed by Geocycle in India through co-processing

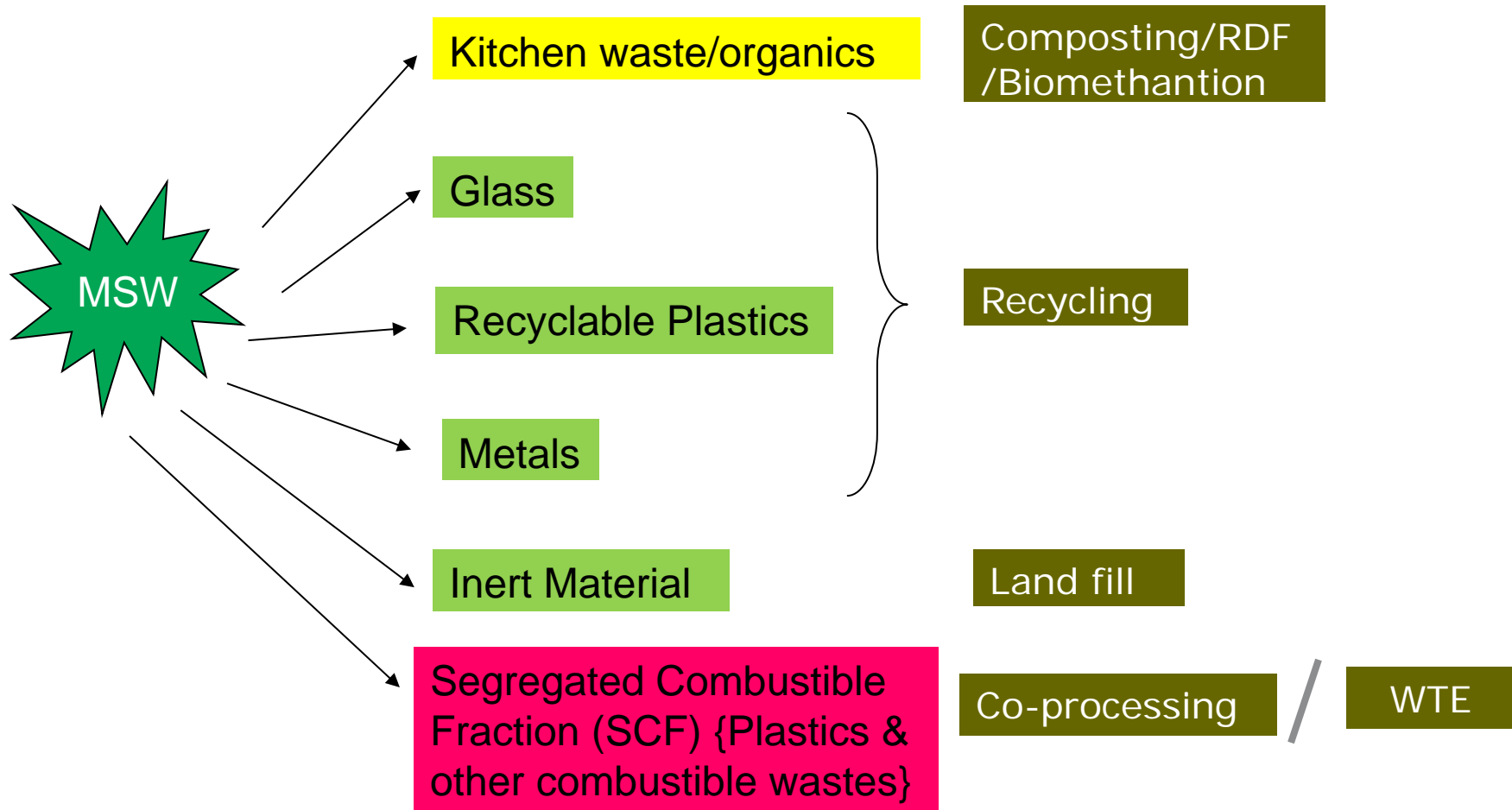


This plastic waste was derived from Municipal and Industrial sources

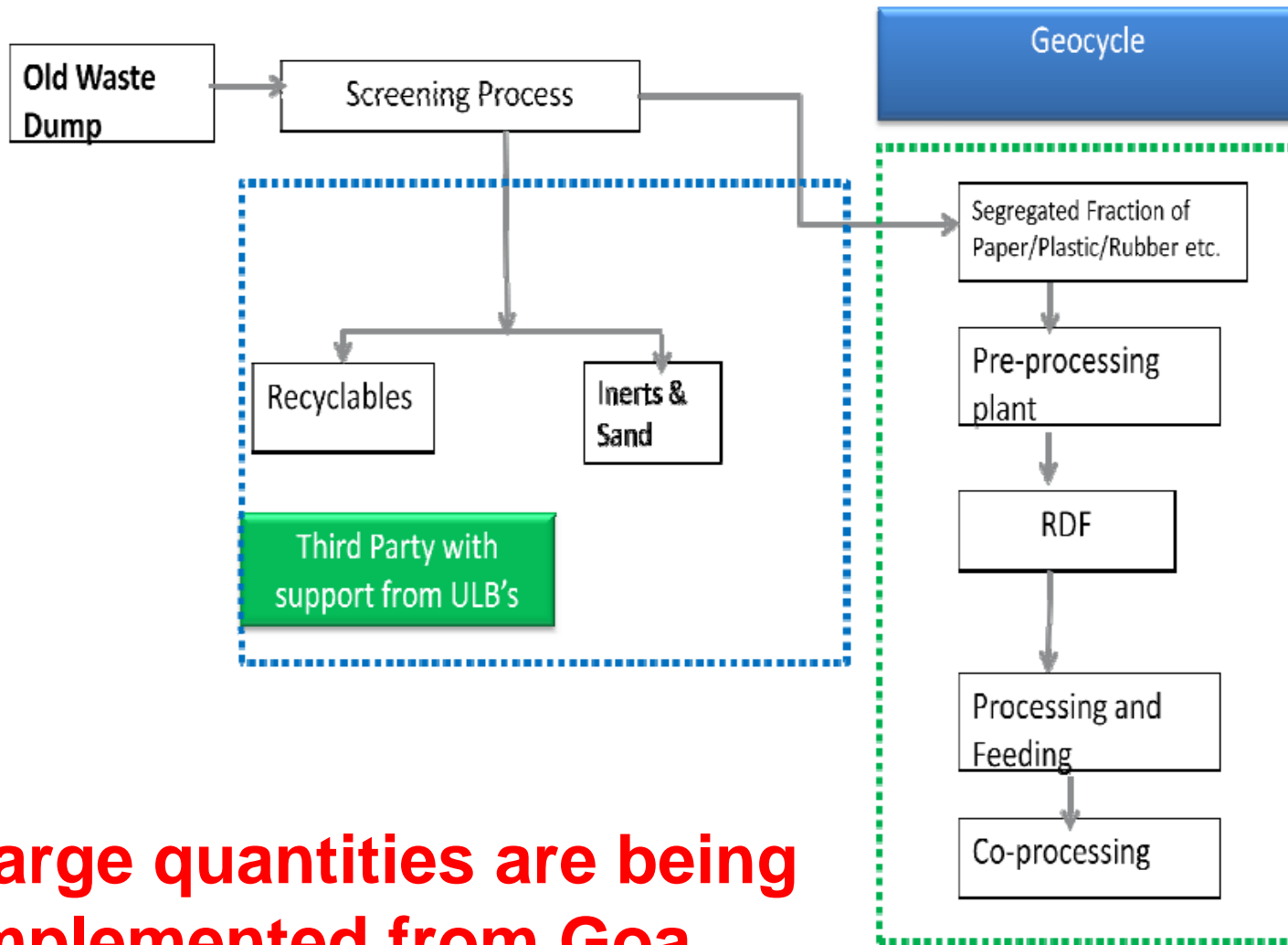
Plastic & other combustible waste is managed from various locations

- Few Wards of Coimbatore & Madukkarai town
- Several Panchayats in Himachal Pradesh
- Panjim & other locations from Goa
- Municipal Corporation of Hyderabad, Chennai, Jaipur, Katni, Bangalore, Varanasi, Lucknow, etc.
- Waste paper recycling industries from Gujarat, Maharashtra, Tamilnadu & Karnataka.
- Plastic & other combustible fractions segregated during remediation of MSW dump yard of Goa

Resource Efficient use of the constituents present in MSW



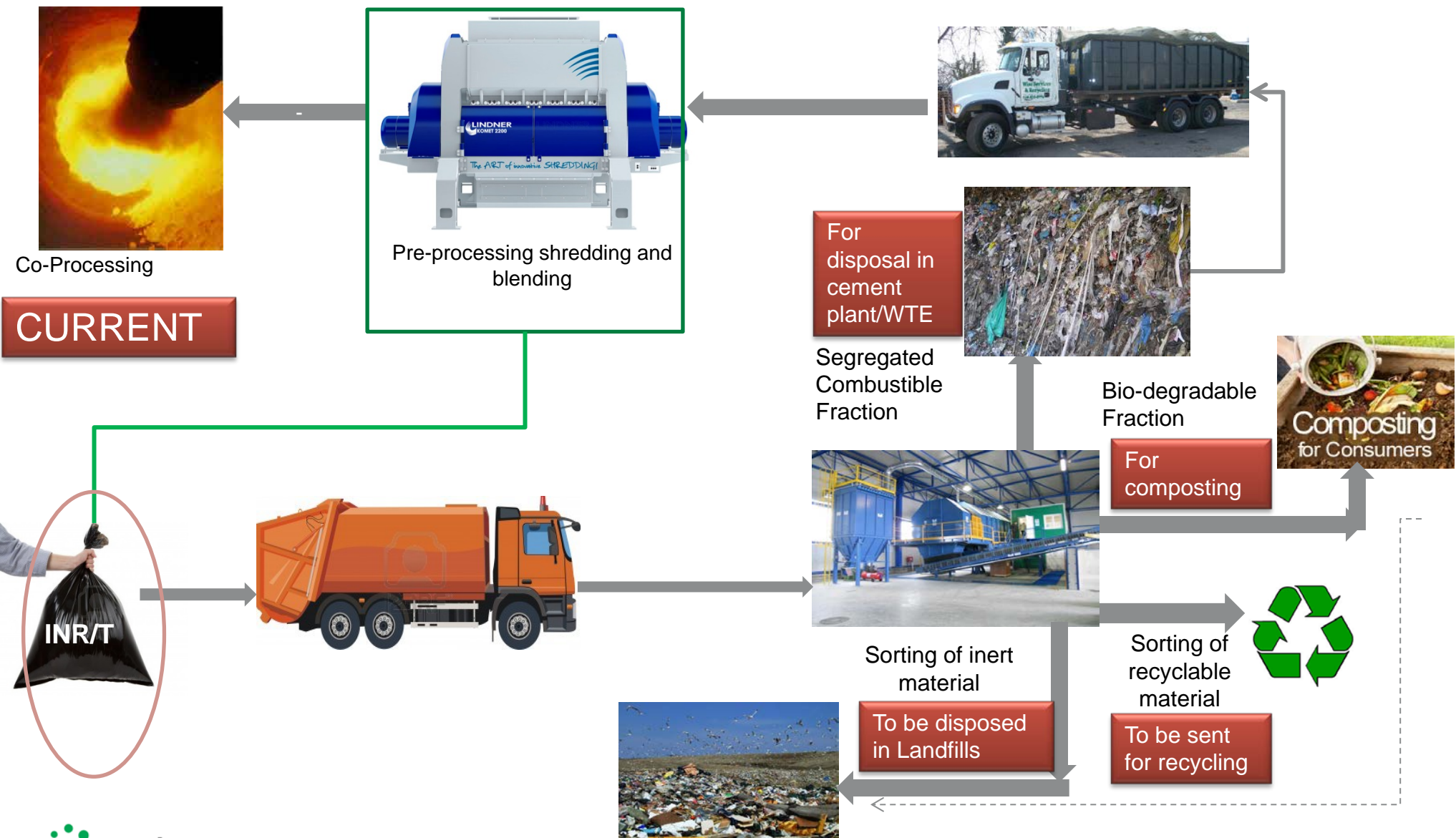
Is it possible to manage SCF from MSW Dumpsites?



Large quantities are being implemented from Goa

Adaptable Model in India (integration with existing option)

Key driver in the market is the appropriate tipping fee to make the economics work



What needs to be done for large scale management of non-recyclable SCF in cement kilns to facilitate Swatch Bharat Abhiyan?

- Management of non-recyclable SCF should be viewed as a desirable cost because they facilitate zero land fill option.
- Experience has demonstrated that only a tipping fee based model works successfully and sustainably.
- Pre-processing facilities for conversion of SCF into cement grade RDF be encouraged by including them in the MSW management tender documents .
- Tie up of RDF producers and cement plants for use of RDF are included at the tender bidding stage itself.
- Management of RDF in cement kilns to be encouraged with desired fiscal and other incentives.



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