



For a zero-waste future

# Environmental Restoration and Circular Economy

## Building a Greener World



# Holcim - Leading the way in Circular Economy

## 'Co-processing' waste in Cement Kiln

Co-processing Technology addresses all Three Pillars of Sustainability



### Environmental benefits :

#### Resource conservation:

Recovers energy and recycles mineral value of waste, if any

#### CO<sub>2</sub> Emission reduction:

Reduces CO<sub>2</sub> emission by substituting use of fossil fuel



### Social Benefits :

#### Minimise Landfill Load:

Diverts waste from landfill as resources

#### Saves Public Fund:

Reduces cost of establishing new waste management facility



### Economic Benefits:

#### Cash Benefit:

Service from waste management

#### Substitution benefit:

Replacement cost of traditional fuel or raw material



Completely decomposes waste through high temperatures and long residence time



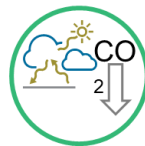
Recovers energy and recycles mineral value of waste, if any



Leaves no residue



Leads to conservation of natural resources



Reduces greenhouse gas emission



Offers local waste management solution



Saves public funds



Promotes a circular economy

# Geocycle



**20.9%** of thermal energy from alternative fuels (2020)



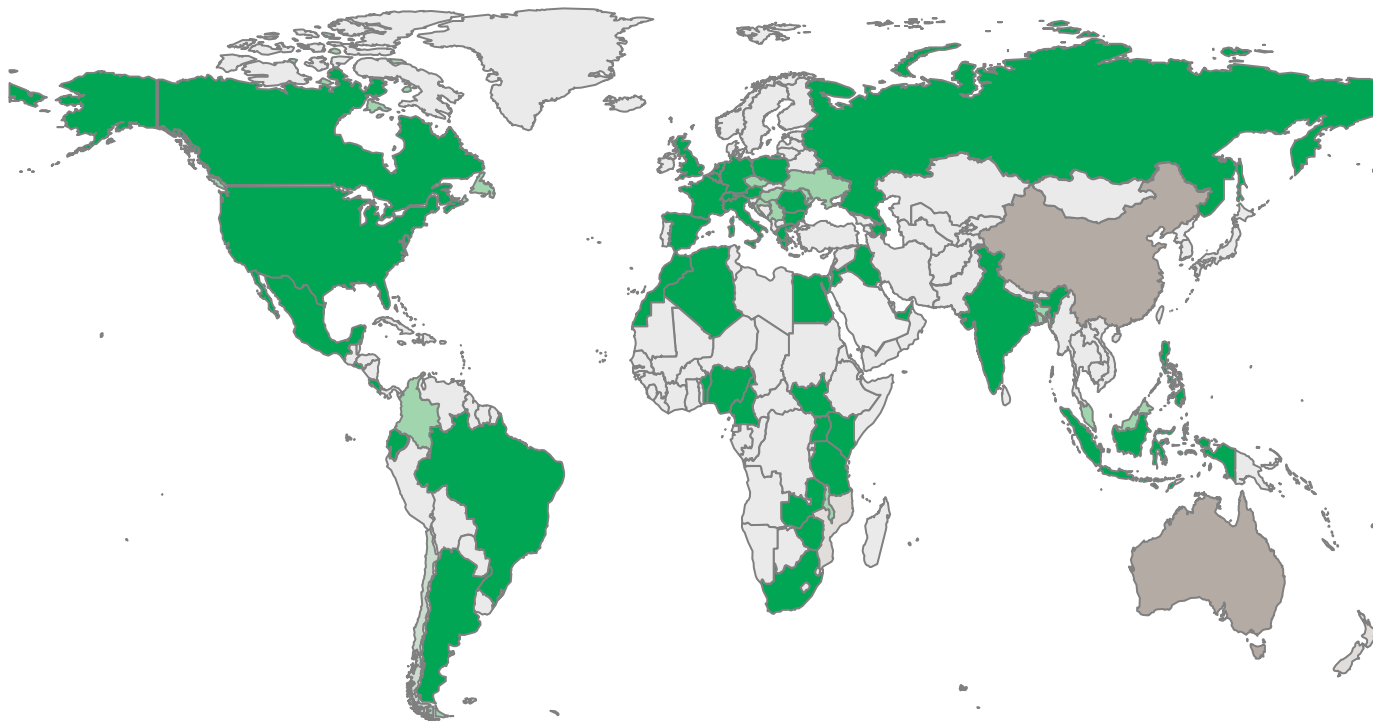
**50** countries with waste management business



**10.1 M Tons** of co-processed waste (2020)



Led by Central Corporate function & 5 Regional organizations\*



10'000 customers



90 pre-treatment facilities

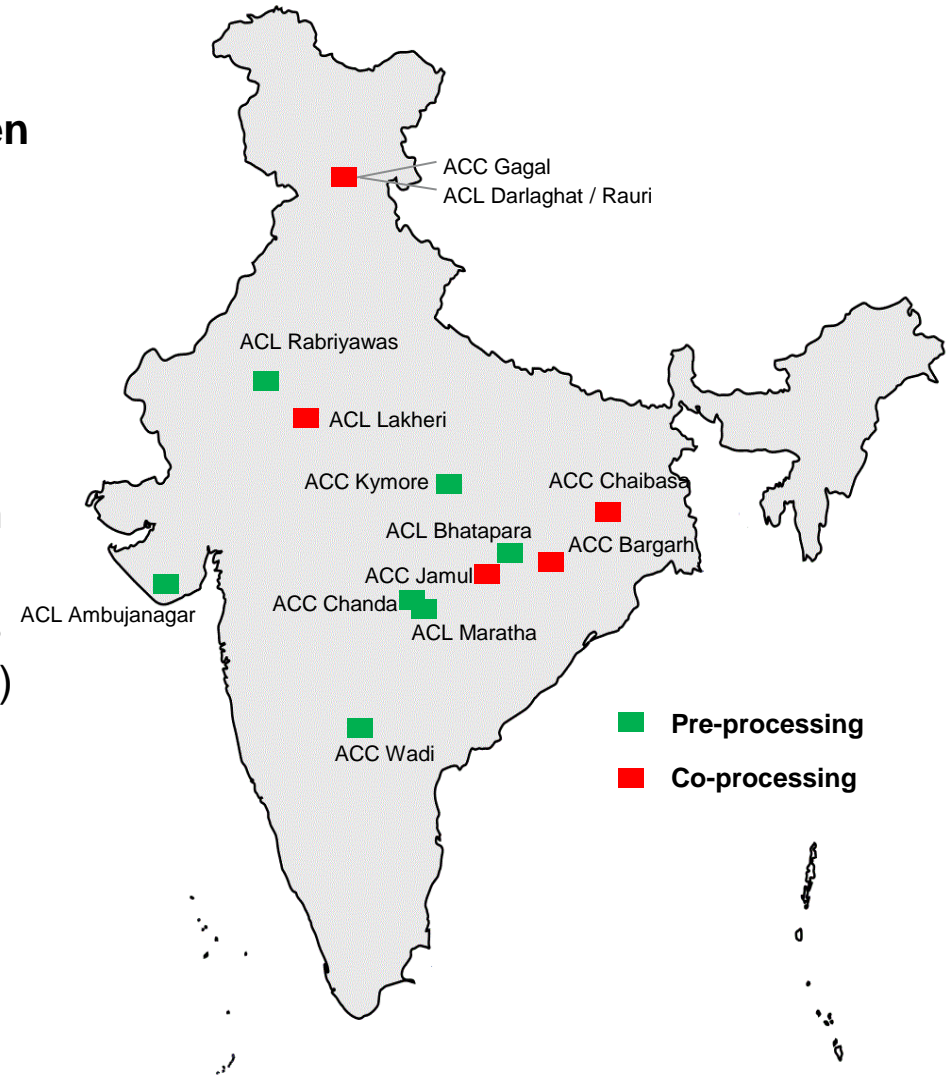


180+ co-processing facilities

*\* China & Australia – Non consolidated, but scope includes waste management business*

# Geocycle India

- In India, Geocycle Operates as the green arm to Ambuja and ACC
- Capacity to manage over 700,000 Tons of waste
- Serving Society to address the waste problem
  - Repurposing waste cement kilns with alternative fuels and raw materials derived from waste market segments (Industrial, Municipal and Agricultural)



# Solutions we offer



## Assessment & Consultation:

We understand the needs & priorities of our partners and undertake a complete survey of the waste to recommend the best treatment options.



## Laboratory Testing:

Dedicated laboratory testing produces a thorough analysis of the waste to ensure it is suitable for co-processing.



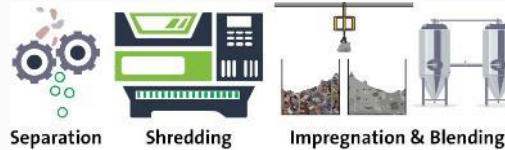
## Collection & Transportation:

Our network of reliable logistics partners can support in collecting and transporting the waste promptly & legally.



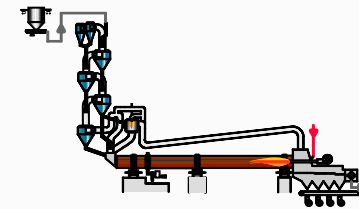
## Other Services:

We offer a wide range of services including risk assessment, on site handling, sorting, repackaging, labelling & other solutions, depending on the waste stream and needs of our partners.



## Pre-processing:

We pre-process waste using a range of techniques to prepare it for safe final treatment. State-of-the-art handling equipment and trained operators manage the various types of waste ensuring the highest standard of safety, control & quality.



## Co-processing:

The final step is the safe and environmentally friendly treatment of waste materials through co-processing in cement kilns leaving no residue.

# Examples of Wastes Managed by Geocycle



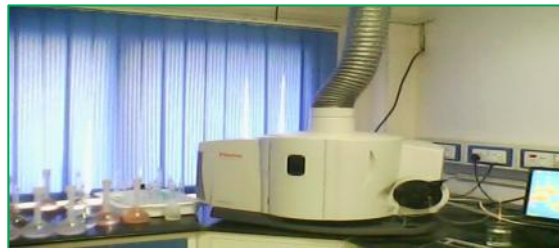
- Aluminum production waste
- Carbon fines
- Contaminated soil
  
- Damaged beans
- Diaper trimming

- Diatomaceous earth
- Expired corn seed
- Expired food/health products
- Expired products
- Filter cake
- Fly ash & bottom ash from power plants
- Foundry sand
- Lime sludge from water treatment

- Mill scale
- Oil filter fluffs
- Packaging materials
- Paint wastes
- Plastics
- RDF fluff & pellets
- Refinery catalyst
- Refinery wastes
- Rubber wastes
- Scrap tires

- Shipping wastes
- Sorted municipal solid waste
- Solvents
- Synthetic gypsum from sulphur scrubbers
- Textile waste
- Used oil & grease
- Wood chips

# Waste processing facilities



# Sneak Peek inside our waste processing facilities



Equipments and machinery at our facility



Waste storage and safety arrangements



# Geocycle India

## Safety and process compliance at the Core

### Fire Safety



### Quality Control



### Logistic Compliance



### Environment Compliance



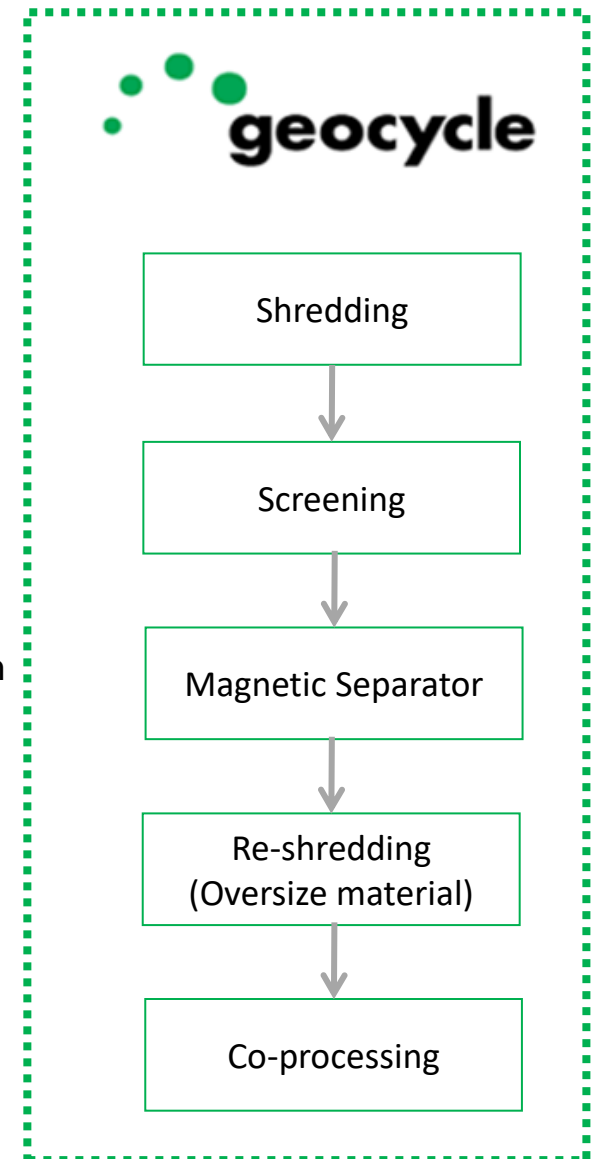
# Geocycle role in managing Municipal Solid Waste

90 million tons of Industrial and Municipal waste generated <sup>1</sup> with mounting waste sites across the country

- 60 million tons of Municipal waste including + 20 million tons is plastic waste
- Waste Generation rate of India to double by 2025

## Geocycle India:

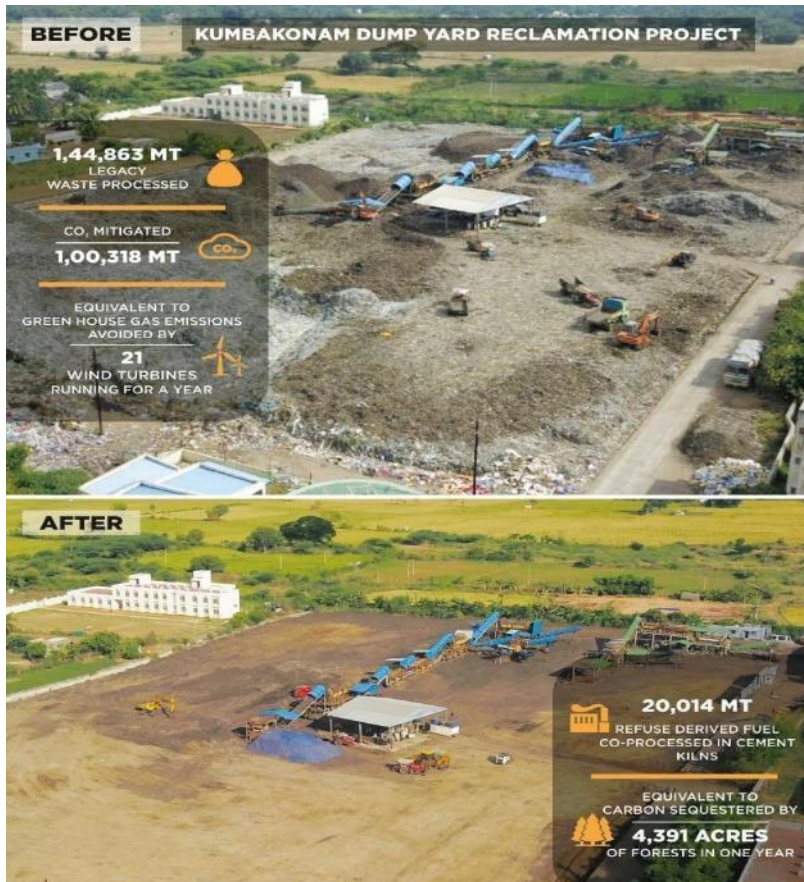
- First unit in India to start Industrial and Municipal waste co-processing and set up 7 waste handling facilities
- Leading advocacy efforts to introduce and institutionalize 'Co-processing' technology
- At the forefront to support clean initiatives of Government of India : Swachh Bharat, SMART city, Clean India
- Geocycle India has co-processed more than 250,000 Tons of SCF/RDF



# Plastic waste management

## Legacy waste and Fresh waste from various Municipalities

Green Partnership: for building a better world



Biomining project - Vijayawada

# Geocycle Bubble Barrier

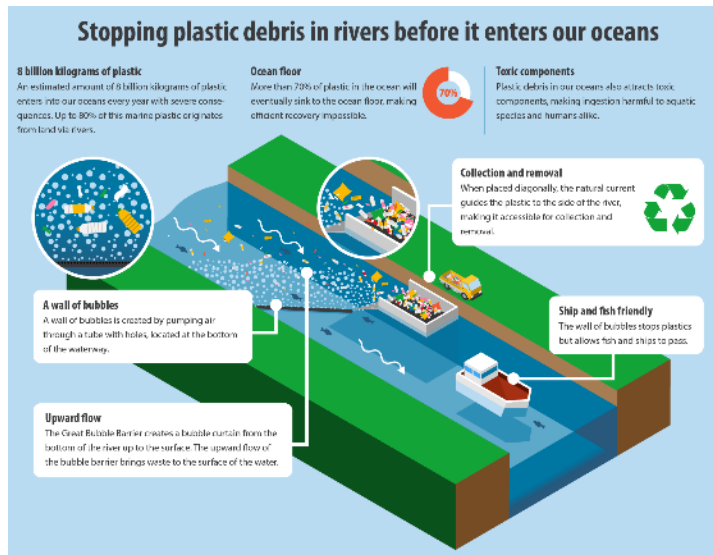
## First pilot in India (In association with UNEP and GIZ)

The project is being implemented in association with UEP India and GIZ  
Implemented on Mantola canal, carrying ~40% of Agra's waste water to the Yamuna river.



# Geocycle Bubble Barrier

Geocycle provides a unique end-to-end solution of plastic waste disposal by combining Bubble Barrier with well proven co-processing technology.



Utilization of energy from recovered plastic waste by Co-processing



Complete end to end Plastic Waste Management



Stops plastic waste before it enters Rivers/Oceans

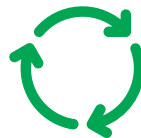


Ease of installation and operation

## Benefits of Geocycle Bubble Barrier + Co-processing



Protects Marine ecosystem



Promotes Circular Economy



Cleaner Environment



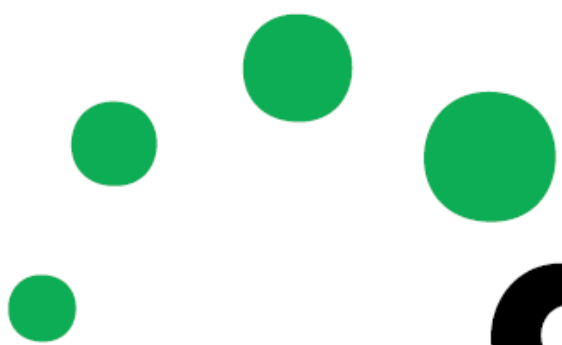
Social Impact

# For a Greener World.....

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***Geocycle India as Business unit of Ambuja and ACC cements, have taken the following key steps in making the Green Difference***

- ✓ 2.7 million Tons of waste (AFR) managed in last three years
- ✓ 480,000 tons of Plastic waste safely repurposed as alternative fuel
- ✓ Serving over 500+ Industrial customers in managing their waste problems
- ✓ Partnered with 20+ Municipalities
- ✓ 10+ dumpsites remediated
- ✓ 65+ acres of land reclaimed
- ✓ 1.1 million Tons of Co2 saved
- ✓ 1.7 million Tons of natural resources conserved



**geocycle**