CO-PROCESSING OF HAZARDOUS WASTE IN CEMENT KILN

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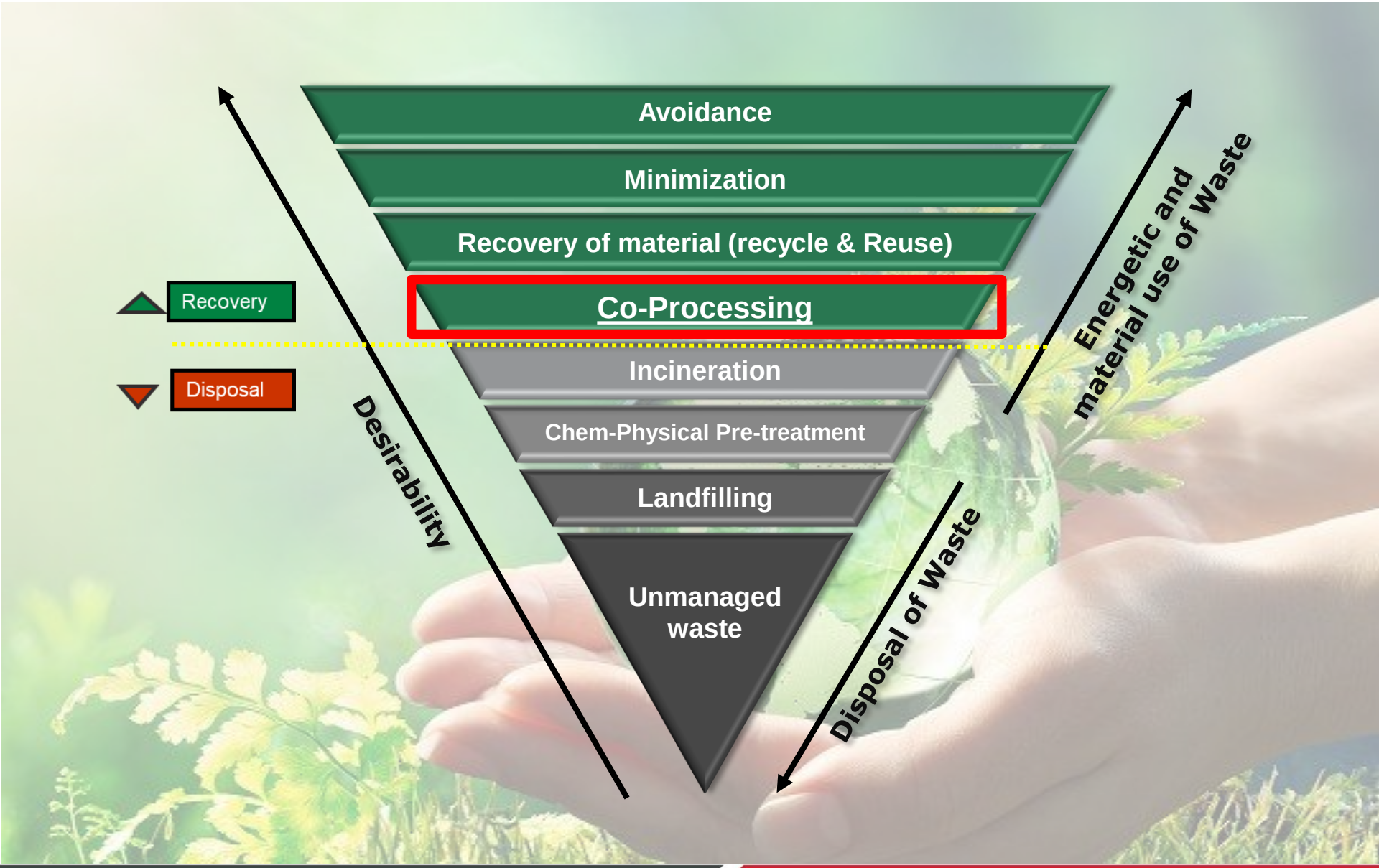
Positioning Co-processing in waste Hierarchy

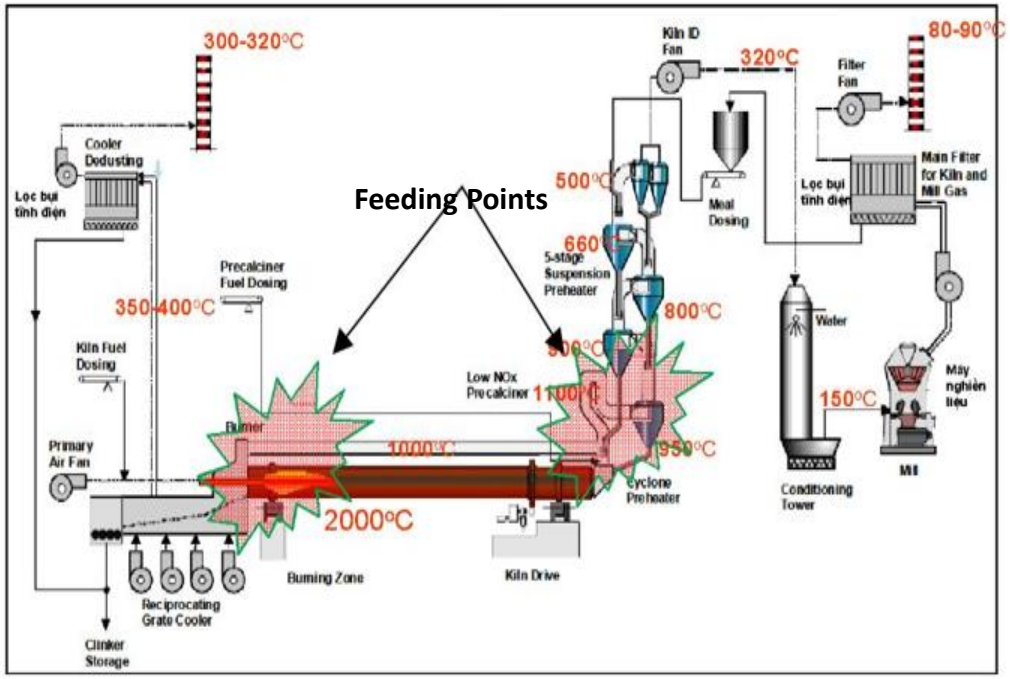


Co-processing: A sustainable solution for Industrial wastes

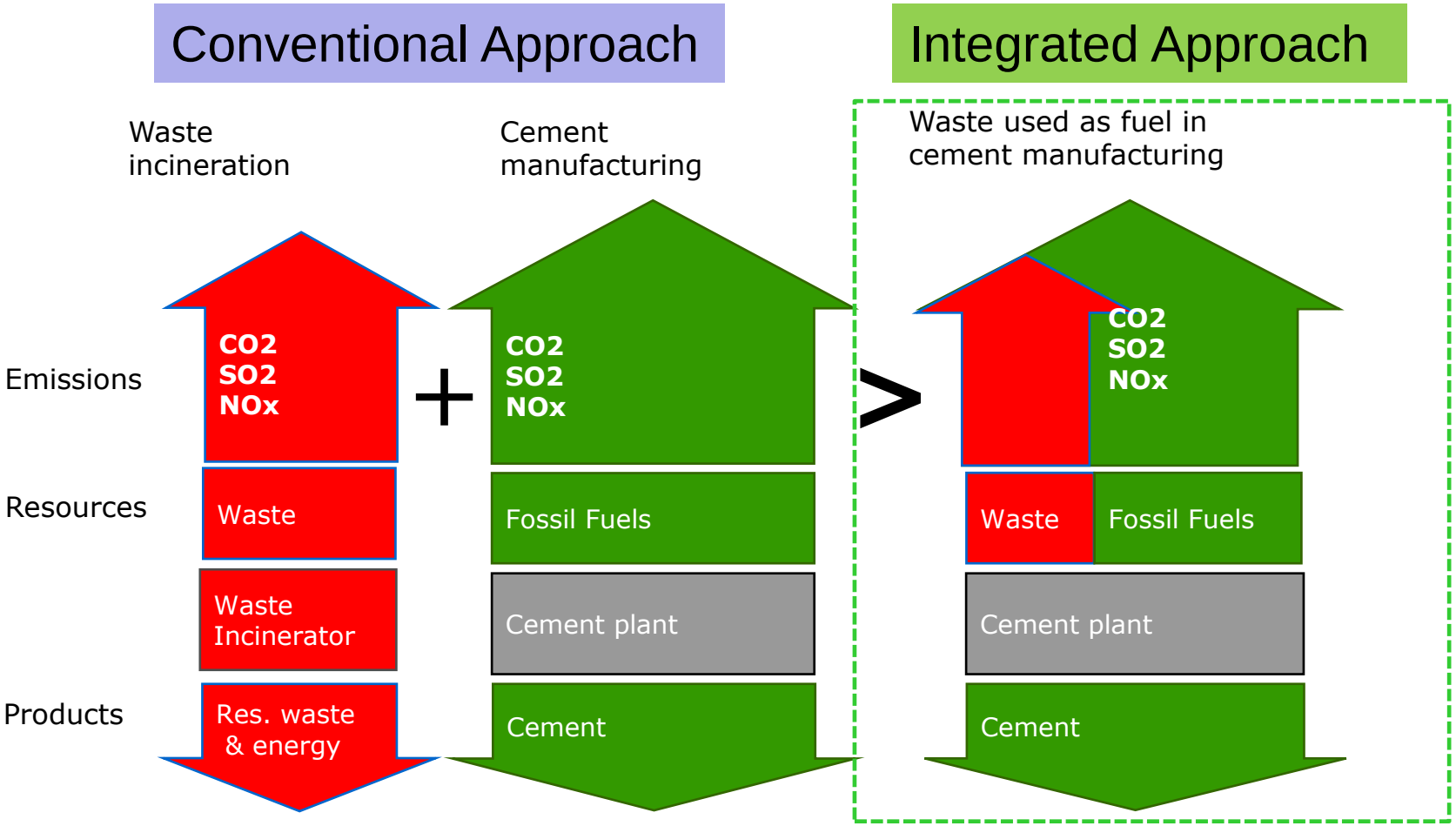
Using the cement manufacturing process to destruct waste while simultaneously manufacturing clinker in a single combined operation

Features of Cement Kiln Co-Processing

- Completely destroy waste materials.
- Flame temperatures **1800-2000**^{0}C, Material temperature **1450** ^{0}C
- Residence time > gas residence time **~6-7** s in burning zone. Material residence time **~30 minutes**
- Avoids formation of **dioxins and furans** due to the specific temperature profile
- **Zero residue for land fill**. No Ash-Residue, all materials retained in clinker
- Reduces **greenhouse gas** emissions.
- Large capacity (30 tons Waste/hour)
- Alkaline environment and self-cleaning process (CaO)



Co-processing as a solution



Cement Kiln Co Processing is fully recognized

United States Environmental Protection Agencies

The European Union

The Stockholm Convention

BASEL CONVENTION

Emissions reduction by Co-processing waste materials

Why is Co-processing superior to incinerator and Landfill?

Reduce CO_2

Replace fossil fuel for burning with waste

Complete destruction of organic compounds

Kiln temperature ~1.450Degrees vs. <1.100 for the best incinerators

No residue for Landfill

Small quantity of ashes are 100% captured in the kiln and become part of the cement

No public funding needed

Existing infrastructure can be used and private

Reduce mining extraction

Some waste can be used a substitute to mineral raw material

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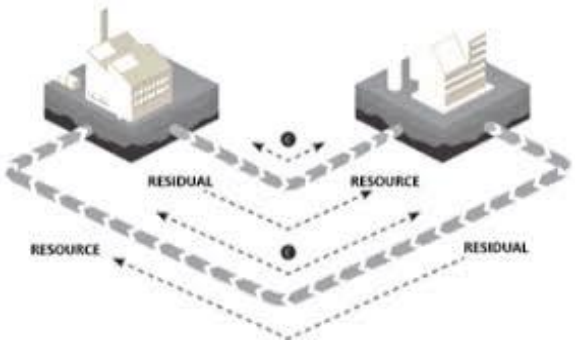
BASEL CONVENTION

CHIP MONG INSEE Cement Plant

CHIP MONG ECOCYCLE- Systematic Approach in Waste Management

Circular Economy

Industrial symbiosis



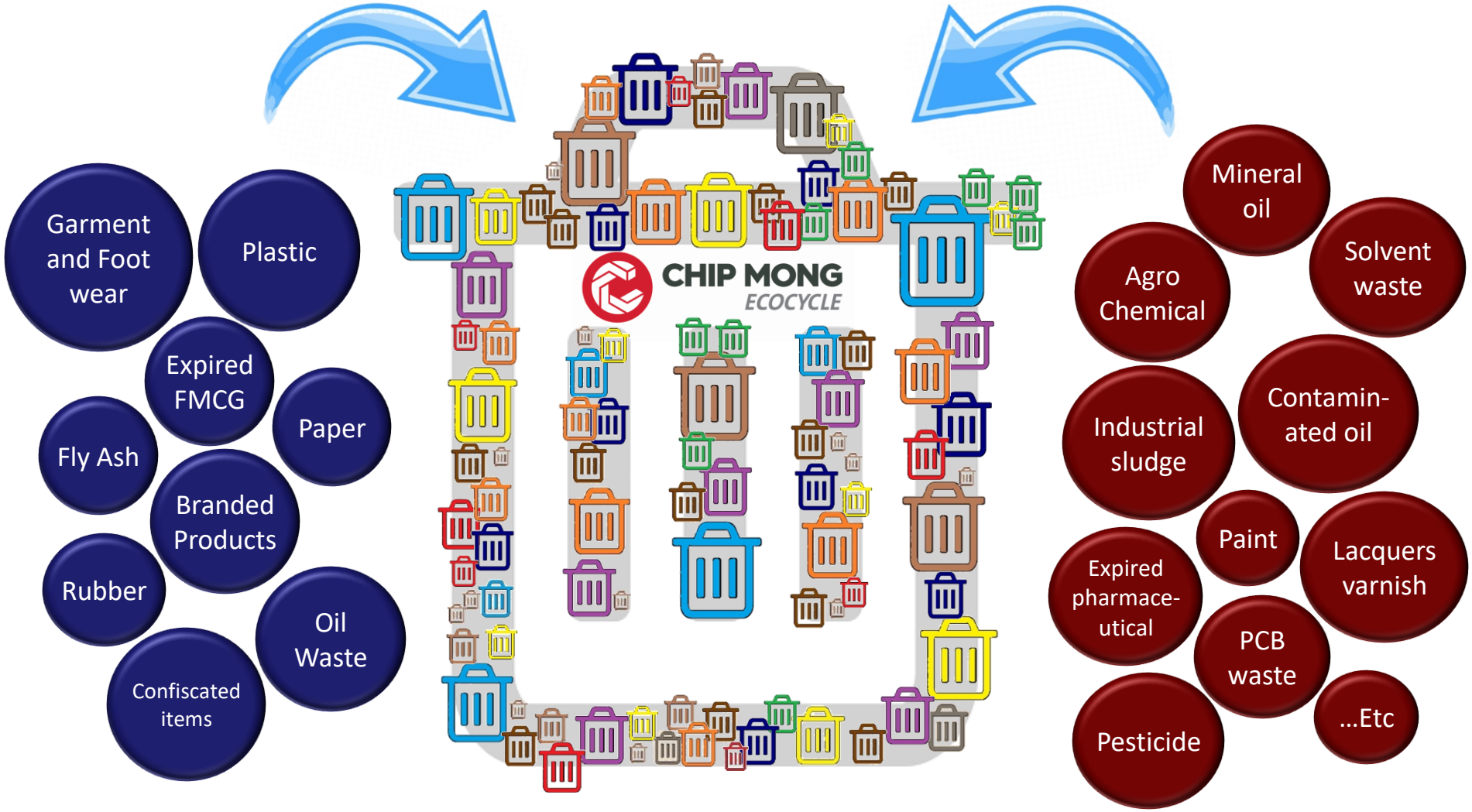
Sustainability

Health and Safety

Regulatory compliance

Partnering

Co-Processing of Industrial Waste:



Chip Mong Ecocycle Current capacity – 150,000MT per year

Industrial Symbiosis:

Waste to Resource : Resources recovery as a best practice in Garment , footwear & Travel Goods & Cement industry in Cambodia

Garment, Footwear & Travel goods Factories

Zero residue for Land fill.

Chip Mong Insee Cement Factory

Fabric , Foam, PU, Synthetic Leather, Canvas , Use Chemicals , Chemical Contaminated Packaging , Sludge , Boiler Ash etc.

Chip Mong Ecocycle

Pre-process and Pre-treat the waste

Brands Choice…

Because tomorrow matters

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6 CLEAN WATER AND SANITATION
7 AFFORDABLE AND CLEAN ENERGY
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION
14 LIFE BELOW WATER
15 LIFE ON LAND
17 PARTNERSHIPS FOR THE GOALS

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