

# INSEE ECOCYCLE SOLUTIONS



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A Fully Own Subsidiary of Siam City Cement (Lanka) Limited  
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**Second Edition**



# **YOUR NEEDS OUR SOLUTIONS**

As the leading environmental solutions provider in Sri Lanka , INSEE Ecocycle offers a unique portfolio of services to ensure corporate sustainability.



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## THE SIAM CITY CEMENT PUBLIC COMPANY LIMITED

Founded in 1969 in Thailand, the Siam City Cement Company is today a leading cement producer in Southeast Asia. Drawing on almost five decades of operational excellence, the Siam City Cement Company (SCCC) is powered by an exceptionally skilled 4000-member strong team, engaged in manufacturing the globally demanded INSEE Cement brand. SCCC's cement manufacturing facility in Saraburi, Thailand, is the largest cement production complex in the world, meeting escalating construction needs of the region.

SCCC also produces ready-mixed concrete and aggregates, cement-based building and decorative material as well as lightweight concrete solutions. Having introduced eco-friendly waste management, wood replacement and power generation alongside a comprehensive construction solutions portfolio, SCCC has also expanded into other business verticals such as information technology and digitized business services.

The company's longstanding reputation is built on the quality of products and customer service, the dedication and skill of their employees, the company's endorsement of the communities in which they operate and their ambition to set the industry benchmark for the future.

With an aggressively growing regional presence, SCCC currently operates across Indonesia, Cambodia, Vietnam, Bangladesh and now, Sri Lanka.

**The region's most aggressively expanding manufacturer of cement, aggregates and other construction material.**

# OUR LOCAL PRESENCE



HEADQUARTERED IN COLOMBO



PUTTLAM CEMENT WORKS (PCW)  
INTEGRATED PLANT



PRE-PROCESSING FACILITY



LABORATORY

With an annual capacity of 100,000MT Ecocycle has served over 500 public and private corporates. A total investment exceeding rupees 1.9 billion was made during this time to establish state-of-the-art waste pre-processing, disposal and laboratory facilities in strategic locations of the country. All Ecocycle facilities are compliant with ISO 9001 for quality management, ISO 14001 for environmental management and OHSAS 18001 for health and safety management. Furthermore PCW INSEE Ecocycle laboratory is certified for analytical testing purposes



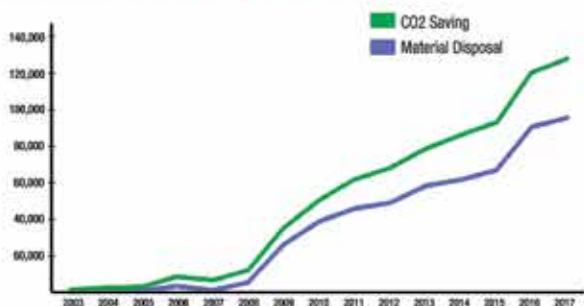
# OUR PROFILE



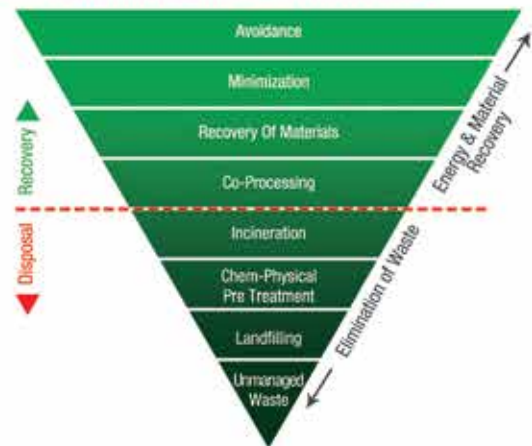
In 2003 with the disposal of 297MT of tyre waste, the responsible waste management solution of co-processing was introduced to Sri Lanka by INSEE Ecocycle. Originally started as the alternative energy supply unit for the INSEE Puttlam cement kiln, Ecocycle has now become the premier waste management solutions provider for the industries of Sri Lanka.

Persistently propelling sustainability across all pillars, Ecocycle always promotes the waste management hierarchy as a fundamental policy in its solutions.

## Waste Volumes Over Time



## Waste Management Hierarchy



Over the next decade, INSEE Ecocycle paved the path of sustainable industrial waste management in Sri Lanka through its eco-friendly solution of cement kiln co-processing. Slowly establishing the "Polluter pays" concept within the local industries, Ecocycle expanded its co-processing capacities to serve a wide variety of hazardous and non-hazardous industrial waste.



The rapid rise in the demand for sustainable waste management has led to the expansion of Ecocycle. Utilizing investments in excess of 1.9 billion INSEE Ecocycle reached a co-processing capacity of 100,000MT in 2010. All operations are carried out in compliance with local and international health, environment and safety standards.

Ecocycle carries out continuous emissions monitoring systems at the Puttlam cement kilns, and provides real-time automated analysis of emissions such as NO<sub>x</sub>, SO<sub>x</sub>, CO<sub>2</sub>, HCl and NH<sub>3</sub>. Ecocycle is OHSAS 18001 certified, and takes strict precautionary measures to prevent any impact on the health and safety of employees and the surrounding communities.



**Ecocycle Pre-Processing Facility (PPF)**

Ecocycle works closely with all government authorities to ensure that all waste handled and its complete disposal is fully covered under the provisions of the current National Environmental Protection Act. We have all the required permits to handle procedures from collection to transport, storage, pre-processing and co-processing of scheduled wastes.



**Ecocycle Sludge Drying Facility (SDF)**

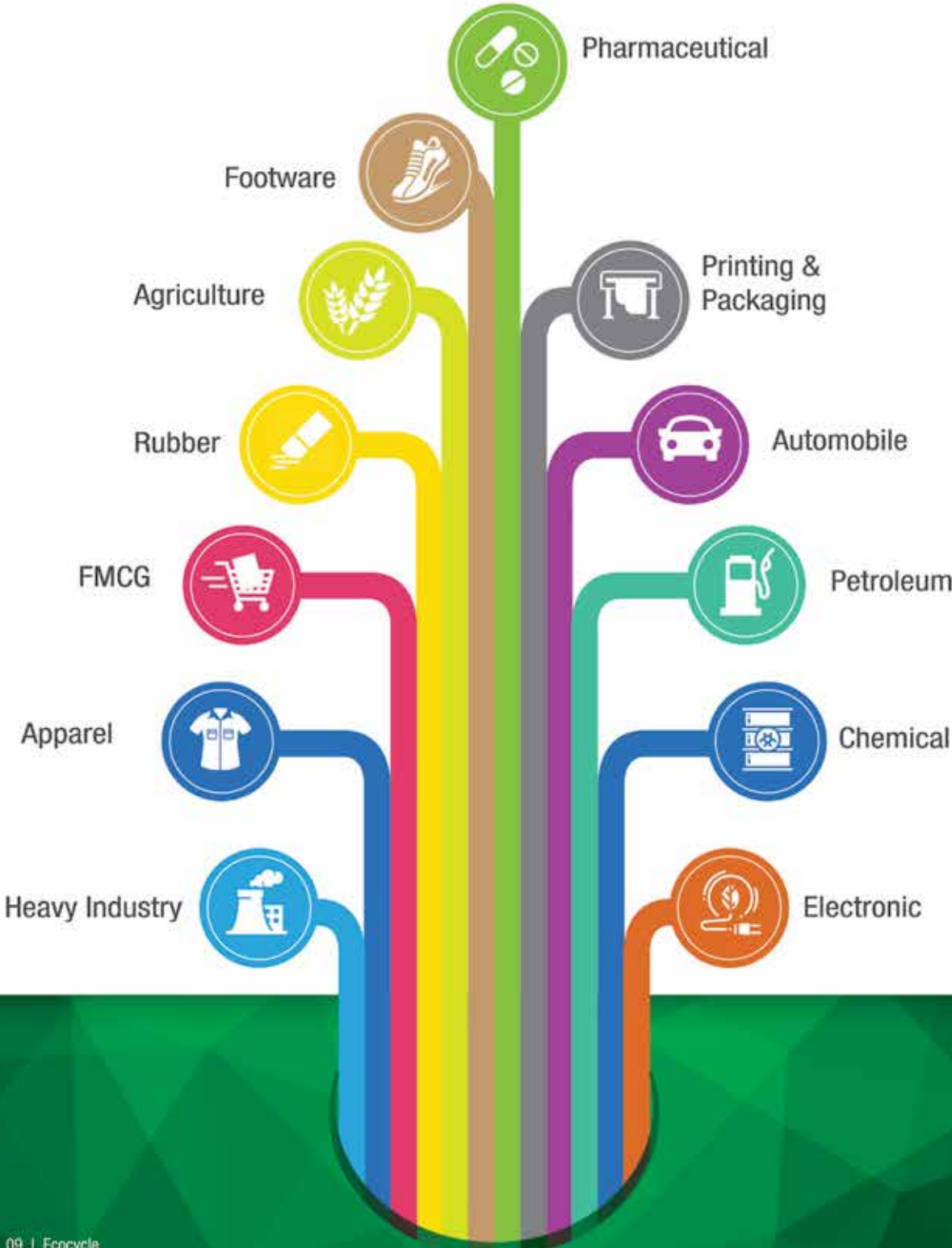
As cement kiln co-processing is a high energy thermal activity, moisture must be reduced before waste such as water treatment plant sludge, hazardous solvents and waste water is fed into the cement kiln. The two automated solar drying facilities operated by Ecocycle are capable of a 35% moisture reduction in such materials, which has increased the annual sludge acceptance by 12000MT.



**Ecocycle Shredder Facility**

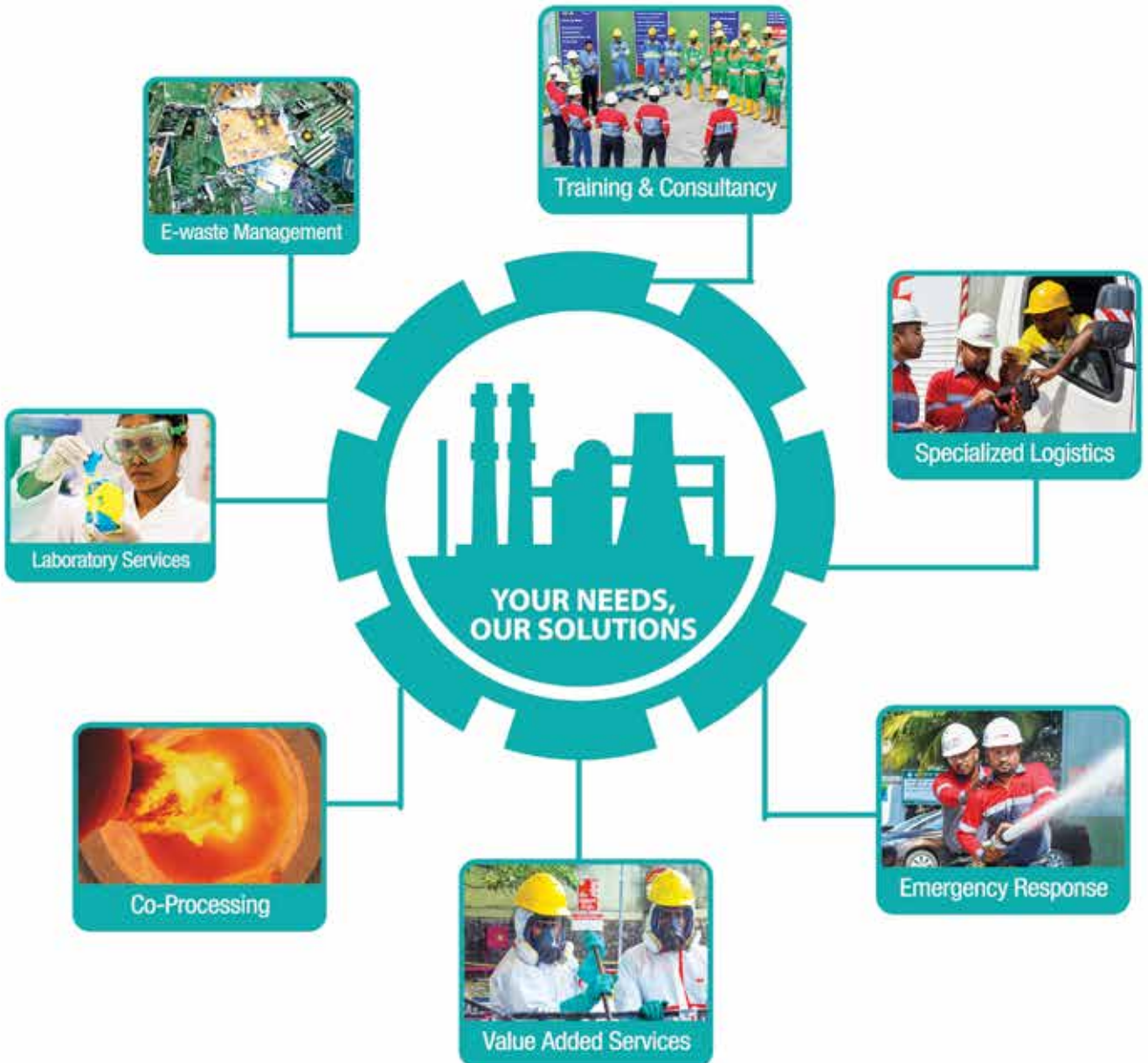
The particle size of the textile and polythene material received for disposal needs to be reduced before it can be fed into the cement kiln for final disposal. Ecocycle has established state-of-the-art shredder facilities in Puttlam that is capable of handling 50,000MT of shreddable material per annum.

# INDUSTRIES WE SERVE



# INSEE ECOCYCLE

As Sri Lanka's leading waste management solutions provider operating the country's only fully integrated cement manufacturing facility in Puttlam, INSEE Ecocycle has providing sustainable co-processing solutions to the corporate citizens of the nation. Now expanding its services beyond cement kiln co-processing, INSEE Ecocycle established its Environment Solutions 2018. Now with a wide range of services available, we are capable of crafting tailor-made solutions to our customer's sustainability needs.



# CO-PROCESSING



## A Responsible Solution For Hazardous / Scheduled Waste Management in Sri Lanka

Co-processing is a unique industrial process offered for the proper management of industrial waste through thermal destruction. It is the combination of the two processes of clinker manufacturing and industrial waste disposal both carried out in the same environment as a single combined operation without any adverse effects on each other.

### Features of co-processing

- Flame temperatures 1800- 2000 °C
- Residence time 4-6 s
- Total destruction of material under controlled conditions
- No organic residue from the process
- Emissions continuously monitored and controlled

## A Proven Technology

Co-processing meets all regulatory technical standards and is globally adopted for management of waste that is difficult to destroy. It is also superior to landfilling and incineration, as it offers a complete solution with no residue.

## Global And Local Acceptance

Co-processing has been practiced with positive results by the USA, Japan and the EU countries for the past 30 years. It is also recognized by several international organizations, such as the World Health Organization (WHO), the GTZ, Basel Convention, Stockholm Convention, etc.

Locally, it has been approved and is encouraged by the Ministry of Environment & Natural Resources, the Central Environmental Authority (CEA), and the Provincial Environmental Authority of the NW province.

## Advantages of Co-Processing



### To The Environment

- Decreases the amount of natural resources that are taken from the earth.
- Lowers CO<sub>2</sub> intensity from facilities that use co-processed waste as fuel.
- Reduces CO<sub>2</sub> emissions from burning of wastes which cannot be recycled.
- Reduces Methane from landfills.
- Helps reduce the chance of soil or water pollution due to less material in landfills.
- Conservation of natural resources.



### To Companies

- Assurance of complete thermal destruction of waste
- Reduction in liability and risk to corporate reputation, helping to enhance your regulatory compliance



### To Communities

- Reduction in the amount of raw waste going to open dumps
- Preserving energy sources for future generations
- Creating job opportunities

# LABORATORY SERVICES



Ecocycle operates two specialized state-of-the-art laboratories at Puttlam Cement works, Palavi and Ecocycle Pre-processing facility in Katunayaka. Mainly utilized for analytical testing of waste and waste derived fuels, these laboratories are certified for ISO 17025 from the Sri Lanka Accreditation Board. It has also gained recognition from the Central Environmental Authority, as a competent laboratory to carry out analytical testing related to waste and waste derived fuels.

## Commercial Services

The analytical requirements of our customers can now be fulfilled at INSEE Ecocycle laboratories. The two state of the art laboratories at Katunayaka and Puttlam, combined with the analytical expertise gained from 15 years of professional waste management in Sri Lanka is now at your disposal. The following parameters and more can now be tested at our facilities.

- Calorific value analysis
- Chloride content analysis
- Heavy metal analysis
- Oxide analysis
- Flash point analysis
- Moisture content analysis
- Sulphur content analysis
- Ash content analysis
- Volatile organic content
- pH analysis

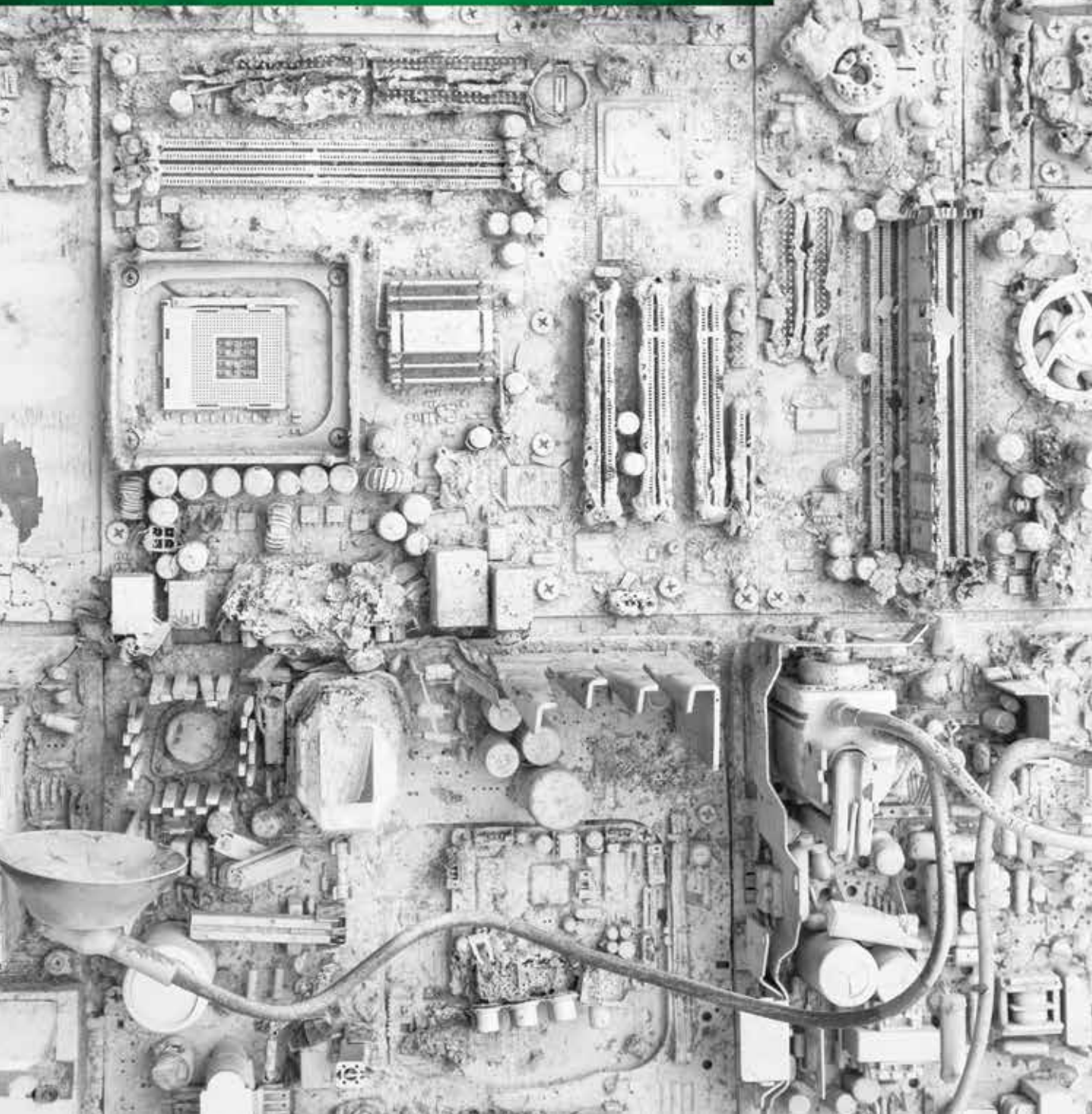
Additional testing capacities are continuously added to this portfolio. More information can be provided on request.

## Research & Development

Taking a further step, INSEE Ecocycle laboratories now facilitate R&D solutions related to the sustainable waste management issues of our customers. Drawing from the experience of over a decade of collaboration with universities and industry experts and the expertise available through the international network, Ecocycle is now able to provide solutions for even the most complex waste materials.

INSEE Ecocycle Laboratory as the prime chemical research and development arm within the organization contributing not only for the development of sustainable waste management solutions through the conversion of difficult waste streams to cement kiln co-processing material, it also plays a crucial role in the continuous improvement of Ecocycle waste management processes.

# E-WASTE MANAGEMENT



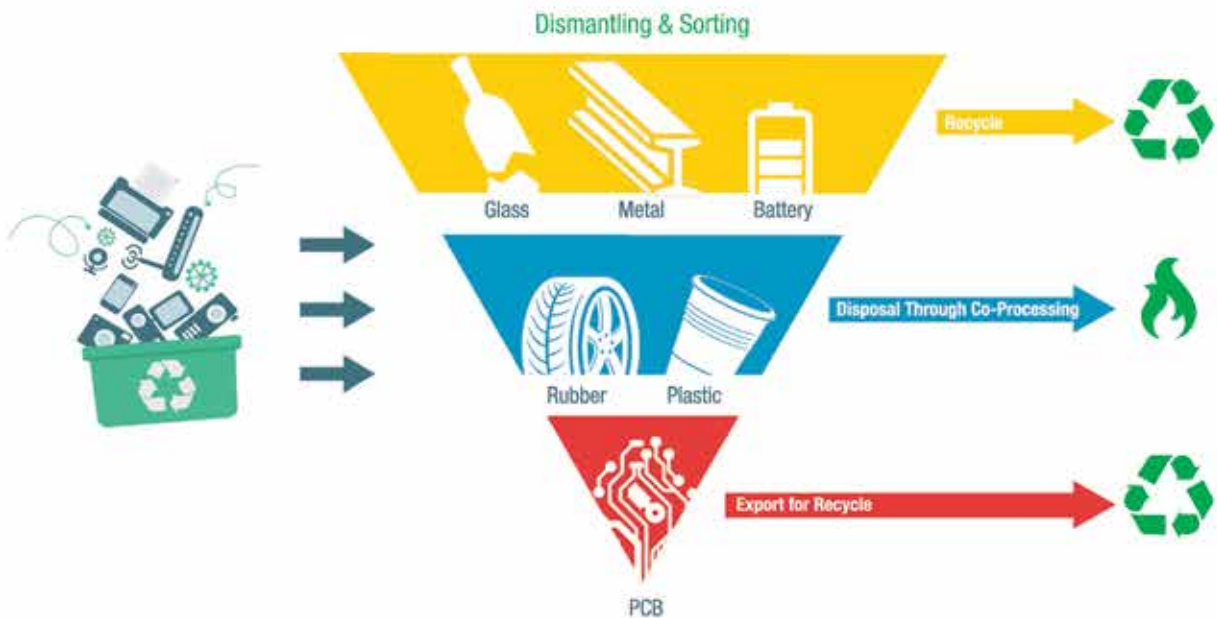


## End-to-End E-waste Solutions from Ecocycle

All electronic waste accepted by INSEE Ecocycle is first dismantled at the Katunayaka pre-processing facility. The dismantled parts are separated by material type, into plastic, metal, printed circuit boards etc.

While the printed circuit boards are sent to Japan for final disposal through material recovery process, the remaining materials are disposed through cement kiln co-processing and local recycling partnerships. This process ensures that your E-waste is completely disposed of in an environmentally friendly manner.

## Ecocycle E-waste Handling Process



## Toner/Ink Cartridge Disposal

For the first time in Sri Lanka INSEE Ecocycle now provides a comprehensive disposal solution for the toner/ ink cartridges.

A waste toner/ink cartridge is mostly consisted of plastic and carbon black, a material classified as a 2B carcinogen by the International Agency of Research on Cancer. At INSEE Ecocycle Katunayaka Pre-processing facility these cartridges are dismantled in an air tight chamber using all necessary precautions. The carbon black which is removed and stored using suction is finally disposed through cement kiln co-processing. The remaining plastic and metal pieces are sent for recycling.



# TRAINING & CONSULTANCY

Over the course of 15 years, the INSEE Ecocycle team has acquired considerable knowledge and experience in the fields of industrial sustainability and Occupational Health & Safety. This expertise is now made available to industries at large through various training and consultation solutions. Our experts can help you in the following areas.



## Waste Management

The waste management philosophy developed by INSEE Ecocycle Consulting follows an established waste hierarchy of waste prevention, minimization, reuse, recycling, energy recovery and final disposal. The INSEE Ecocycle team has experience of providing practical advice on all waste types, including commercial, industrial, hazardous and agricultural waste.

- Waste mapping
- Waste segregation
- Secure storage of hazardous waste
- Waste minimization
- Cleaner production systems



## Occupational Safety

At INSEE, occupational safety takes a front seat in every operation we carry out, may it be cement manufacturing, industrial waste management, logistics or even the day to day operation at its office premises. Working closely with authorities such as Ministry of Health and NIOSH INSEE safety teams have been championing Occupational health and Safety in Sri Lanka for the past decade.

- Basic/ advanced PPE
- Fire safety
- Chemical safety
- Working at height
- Defensive driving



## Management Systems

Decades of implementing and sustaining the Integrated Management System (IMS) as well as many years of navigating through the different regulatory approvals processes has granted us extremely valuable experience in these capacities. Expert knowledge gained first hand by our team is now available as follows.

- ISO certification
- Regulatory approvals
- Safety leadership
- Emergency preparedness
- Incident investigation

For all of the activities above, INSEE Ecocycle can provide on-going support, documentation and approvals during facility construction, operations, monitoring, decommissioning and closure.

# SPECIALIZED LOGISTICS



As a scheduled waste transportation license holder, INSEE Ecocycle is capable of providing transportation & warehousing services to geographically dispersed customers for their hazardous waste transportation and storage needs.





**EMERGENCY**  
**RESPONSE**

## Emergency Response Services

Fire, flood, chemical spillage; at any given time, disaster can befall an industry. What is done beforehand to avoid such disasters and what is done after to manage the situation, is crucial for the smooth continuation of business. INSEE Fire, flood, material transportation accidents, chemical spillages; At any given time disaster can befall an industry. What is done before hand to avoid such disasters and what is done after to manage the situation is crucial for the smooth continuation of the business. INSEE Ecocycle is now capable of helping industries in both these situations. Carefully crafted emergency management systems are now available through INSEE Ecocycle to ensure that your business does not have to face these types of risks. Ecocycle is ready to help in both the situations.

## Pre-emptive Emergency Management



The best way to manage disasters is to ensure that they do not occur at all. Our safety experts are capable of providing a variety of services aiming for emergency situation identification and prevention such as:

- Emergency Response Program Assessment & Consultation
- Emergency preparedness planning
- Emergency response training services
- Permit Required Confined Space Hazard Assessments
- ERT Standard Operation Procedure development

## Reactive Emergency Response



How efficiently you can avoid/ minimize the environmental impact of an industrial emergency is crucial for any industry. Failing to do so can cause severe consequences and threaten the continuity of the business. Ecocycle is capable of quickly responding to industrial emergency situations to help mitigate further damage to the environment at large.

- Environment remediation services
- Chemical spill management
- Permit Required Confined Space Attendants
- Specialized Industrial Rescue.
- H2S Rescue Services
- High Angle Rope Rescue

# VALUE ADDED SERVICES



## Industrial Cleaning Services

Routine, outage and emergency industrial cleaning requirements are standard operational requirements for any manufacturing industry. Ecocycle is capable of responding to these requirements with technologically advanced mobile equipment and expert staff to clean process systems, and avoid costly facility downtime while raising safety standards and protecting the environment.

The following services are now available with the partnership of our Thailand sister company.

- Shutdown and Turnaround services
- Chemical Cleaning
- Mechanical Cleaning
- Decontamination
- Decommissioning
- Tank Cleaning
- Catalyst handling
- Mechanical works
- Pipeline pig cleaning

Equipments we can clean

- Boilers / HRSG
- Heat Exchanger
- Reactor & Vessel
- Piping System
- Condenser / Chiller
- Deaerator
- Compressor
- Hydraulic System
- Refining Tower
- Desalter
- Quenching System
- Storage Tank
- Evaporator
- Furnace
- Fin Fan Cooler
- Oxygen System





### **Total Waste Management Solutions**

Ecocycle has developed sustainable partnerships with many local and international organizations to enable one-stop solutions for all your waste management needs. Through total waste management solutions, Ecocycle will take the burden of waste away from the company and manage it in an entirely environmentally friendly manner.



### **Environmental Remediation Services**

Ecocycle is capable of removing contaminants from the soil, water, air or sediment, typically after a spill or other industrial accident.



### **Plant Turnaround Management Services**

INSEE Ecocycle project managers will work closely to plan and manage scheduled turnarounds (for equipment replacement / re-tooling, safety upgrades or other needs) for maximum safety, efficiency and productivity.



For Mass Pouring & Durable Concrete Requirements

For High Early Strength Concrete Requirements

For General Purpose Concrete

For Concrete Requirements

For Durable Concrete In Any Environment

For High Performance Concrete Requirements



\*Compared to Ordinary Portland Cement



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