

GPSC

Waste Management Programs 2025



Content: GPSC Waste Management Programs 2025

No.	Content	Page
1.	Introduction	3
2.	Waste audits to identify opportunities for improving waste performance	5
3.	Action plans to reduce waste generation	6
4.	Quantified targets to minimize waste	7-8
5.	Investment in innovation or R&D to minimize waste	9-11
6.	Waste reduction training provided to employees	12-13
7.	Integration of recycling programs to reduce the waste sent to landfill	14
8.	Waste diversion from landfill is certified by an independent accredited body	15-18



Introduction

GPSC is committed to minimizing waste generated from processes because it denotes production efficiency, mitigation of environmental impacts, and reduced waste treatment costs. For these reasons, GPSC adheres to the principle of 3Rs (Reduce, Reuse, and Recycle) by minimizing waste at the sources. When waste is generated, GPSC will first reuse or recycle it. These efforts have continuously reduced waste sent to landfill, enabling GPSC to achieve Zero Waste to Landfill since 2019. At present, waste generated from production, maintenance, and other activities is managed systematically in accordance with applicable legal requirements and GPSC waste management procedures.



GPSC implements procedures to evaluate and approve the disposal facilities for both hazardous and non-hazardous waste before it leaves the power plants every time as well as complying with the Factory Act and the Hazardous Substance Act under the Ministry of Industry.

In addition, through regular hazardous waste manifest audit of the waste disposal contractors, GPSC ensures that all waste, including unused materials, solar cells, and hazardous waste from production processes, is accounted for without unauthorized treatment and disposal, as well as the preparation of the Form Sor Kor 3, which is the annual report summarizing the amount of waste that GPSC ships and disposes of every year to confirm compliance with relevant regulations.

Waste Management Framework

Clear accountability and a Plan-Do-Check-Act cycle drive continuous improvement across all operations.

Governance & Responsibilities

1

Management oversight

Oversees implementation of waste management programs and annual environmental targets.

2

Plant & Operations management

Owns day-to-day segregation, monitoring and on-site reuse at each power plant.

3

Environmental / EHS function

Runs audits, manifest checks and third-party disposal approvals; consolidates reporting.

4

Procurement & Contractors

Approved, licensed disposal & recycling partners governed by hazardous-waste manifests.

Continuous Improvement — PDCA Cycle

PLAN

Set quantified targets; identify significant waste streams via audit.

DO

Implement 3Rs, ash-reuse systems, segregation & disposal controls.

CHECK

Review waste performance, audit findings and regulatory compliance.

ACT

Review audit findings, implement improvement actions and revise annual waste targets.

Compliance basis: Factory Act & Hazardous Substance Act (Ministry of Industry) · Annual Sor Kor 3 waste report

Waste Audit: From Findings to Results

Regular third-party and first-party audits identify significant waste streams and pinpoint concrete improvement opportunities.



Significant Waste Streams & Audit Approach

Input	Activity	Waste Generated	Audit Approach
Coal	Combustion for electricity & steam	Fly ash, heavy ash	Monthly waste inventory review and third-party verification of waste generated & disposed; annual report to Dept. of Industrial Works
Lubricant	Machine maintenance	Used engine & transmission oils	Hazardous lubricants require traceable management through licensed waste management contractors.
Chemicals (resins, hypochlorites)	Machinery maintenance & pollution treatment	Used chemicals, contaminated containers	Disposal facilities evaluated & approved before waste leaves each plant
Office materials	Office services	Non-hazardous / municipal waste	First-party monthly records of amount & type of waste

Key Audit Findings: • Fly ash and heavy ash are the largest waste streams. • Hazardous lubricants require licensed recycling. • Source segregation improves recycling.

Waste Action Plans

Each significant stream has a defined program, an accountable function, a timeline and a measurable expected outcome.

Waste Stream	Program / Action	Responsible Function	Current Status	Expected Outcome
Fly ash & heavy ash	Development of beneficial-use applications for fly ash and bottom ash as alternative raw materials.	Operations & Environmental	Ongoing / annual	Reduced waste requiring final disposal and reduced demand for virgin raw materials.
Heavy ash	Installation & operation of heavy-ash reuse system (CFB1-3)	Engineering & Operations	Implemented	Approximately 120 tonnes/year reused and reduced furnace sludge generation.
Used lubricants & chemicals	Agreement with distributor for reuse & recycling	Procurement & Maintenance	Ongoing contract	Hazardous waste recycled, not landfilled
Source segregation	Waste segregation and 3Rs implementation across operations.	All employees / Facilities	Continuous	Increased recycling rate and reduced waste sent to landfill.



Continuous improvement: following each audit, GPSC prioritises measures at the source, monitors performance across all operations monthly, and feeds results back into the next year's targets and R&D pipeline.

Quantified Waste Targets & Progress

Company-wide, measurable KPIs — with baseline, target year and current status — verifiable at a glance.

Zero

waste to landfill
since 2019

≥ 43%

of wastes managed
circularly (Target)

0

hazardous waste (routine)
to landfill

0

Non - hazardous waste (routine)
to landfill

2025 Waste Management KPI

KPI	Baseline	Current	Target	Status
Industrial waste sent to landfill	Pre-2019 disposal	0	0	✓ Achieved
% Hazardous waste (routine) to landfill	—	0%	0%	✓ Achieved
% Non-hazardous waste to landfill	—	0%	0%	✓ Achieved
% Wastes managed circularly	Monitored	98%	43%	✓ Exceeded

Baselines shown where disclosed; items without a published baseline are monitored annually across all operation sites. Source: GPSC Group Waste Summary & annual quantified targets.

Quantified targets to minimize waste

GPSC establishes annual, company-wide quantified waste management targets to minimize waste disposal and promote circular waste management across its operations. For 2025, the targets include zero industrial hazardous and non-hazardous waste sent to landfill and at least 43% of total waste managed circularly. Performance against these targets is monitored across GPSC's operating sites.

Each column represents operation site

Waste Generation Data and Summary both Hazardous waste and Non-Hazardous waste of GPSC Year 2025																			
GPSC Group Waste Summary Year 2025																			
	Operation Method	Reposco	GPSP2	GPSP3	GE (C/FB)	GE (Phase I)	GE (Phase II)	GE (Phase III)	Gheco One	CUP1	CUP2	CUP3	CUP4	GE (Solar)	GP	GPSP11 (Plant1)	GPSP11 (Plant2)	SRC	RD
1) Hazardous waste																			
1.1) Reuse	NA	0.00	0.73	0.00	6.68	0.00	2.11	2.18	0.87	0.00	0.54	0.32	0.00	0.00	0.00	2.30	1.63	0.00	0.88
1.2) Recycle	NA	1.53	0.00	0.00	2.46	0.11	0.65	3.28	9.20	2.74	4.66	0.22	0.00	1.33	0.22	0.16	0.00	0.14	26.68
1.3) Recovery	NA	25.42	118.16	7.20	23.07	4.73	6.89	24.71	7.62	2.40	1.13	8.51	0.00	24.73	72.36	32.14	0.00	0.00	359.15
1.4) Secured Landfill	NA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
% Secured Landfill	Keep Monitor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.5) Composting	NA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.6) Incineration (mass burn)	NA	38.42	0.00	0.00	44.56	9.46	1.77	3.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.29
1.7) Deep well injection	NA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.8) Other	NA	0.00	0.00	0.00	0.00	0.00	0.36	3.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.83
Haz - Waste Summary (Ton)		66.37	118.89	7.20	76.78	14.50	11.98	37.48	19.57	2.40	1.13	8.51	0.00	26.06	74.88	33.93	0.00	1.02	507.37
2) Non-Hazardous waste																			
2.1) Domestic waste	NA	0.00	180.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1466.41
2.2) Recycle	NA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.3) Recycling	NA	53.59	27831.15	64.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	27831.15
2.4) Recovery	NA	0.00	22.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	112.70
2.5) Sanitary Landfill	NA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
% Sanitary Landfill	Keep Monitor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.6) Composting	NA	0.00	5.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1404.94
2.7) Incineration (mass burn)	NA	11.46	0.00	0.00	1.34	32.52	12.31	0.00	0.00	0.00	0.00	0.00	0.00	2.23	4.06	134.75	0.00	0.00	198.57
2.8) Deep well injection	NA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	32.52
2.9) Other	NA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Non-Haz Waste Summary (Ton)		65.05	27858.42	64215.81	990.28	81.69	2196.63	124601.12	43.20	171.08	25.24	9.15	0.00	10.14	46.91	138.10	82.18	9804.20	230319.39

GPSC's comprehensive procedure to monitor waste management performance for all operations

1.3 ตัวชี้วัดด้านสิ่งแวดล้อม (Environment)	
ตัวชี้วัด	เป้าหมายที่กำหนด
1.3.1 จำนวนครั้งของการรั่วไหลของน้ำมันและสารเคมี (Oil and Chemical Spill) ลงสู่สิ่งแวดล้อม	การรั่วไหลลงสู่สิ่งแวดล้อมที่มีนัยสำคัญตามที่กำหนด เท่ากับ 0 ครั้ง การรั่วไหลลงสู่สิ่งแวดล้อมที่มากกว่า 1 บาร์เรล แต่ไม่เกิน 100 บาร์เรล เท่ากับ 0 ครั้ง
1.3.2 อัตราการใช้น้ำในสถานประกอบการเพื่อเก็บและใช้ (Water Consumption)	อาคารสำนักงาน ไม่เกิน 123 ลิตรต่อคนต่อวัน
1.3.3 ปริมาณการดึงน้ำจืด (Freshwater Withdrawal)	ไม่เกิน 70 ล้านลูกบาศก์เมตร
1.3.4 ร้อยละของปริมาณของเสียอันตรายจากอุตสาหกรรมที่ส่งไปกำจัดด้วยวิธีการฝังกลบ (Industrial Hazardous Waste to Landfill) ต่อปริมาณของเสียอันตรายจากอุตสาหกรรมทั้งหมดที่ส่งกำจัด	ร้อยละ 0
1.3.5 ร้อยละของปริมาณของเสียไม่อันตรายจากอุตสาหกรรมที่ส่งไปกำจัดด้วยวิธีการฝังกลบ (Industrial Non-hazardous Waste to Landfill) ต่อปริมาณของเสียไม่อันตรายจากอุตสาหกรรมทั้งหมดที่ส่งกำจัด	ร้อยละ 0
1.3.6 ร้อยละของปริมาณของเสียที่ถูกจัดการแบบหมุนเวียน (% of Wastes that are managed circularly)	ไม่ต่ำกว่าร้อยละ 43

Industrial hazardous waste sent to landfill: 0% of total industrial hazardous waste disposed

Industrial non-hazardous waste sent to landfill: 0% of total industrial non-hazardous waste disposed

Waste managed circularly: at least 43% of total waste managed

GPSC's annual quantified waste management targets

Investment in Innovation & R&D to Minimize Waste

GPSC allocates financial, technical, engineering and human resources to develop innovative solutions that minimize waste generation, increase waste reuse and recycling, and transform operational waste into valuable resources.



Fly & bottom ash utilization R&D

GPSC collaborates with K MIX TECHNOLOGY CO., LTD. to research and develop beneficial uses of fly ash and bottom ash generated from power generation operations, with the objective of minimizing waste requiring disposal and increasing material circularity.

R&D Activities: The collaboration explores the development of ash-based materials for applications including ready-mixed concrete, cement-based products, road base/sub-base, masonry, material fillers and lightweight concrete.

Waste Management Outcome: Transforms operational ash waste into alternative raw materials, reducing waste requiring disposal and the use of virgin materials.



Heavy Ash Reuse System – Process Innovation

GPSC implemented an engineered heavy-ash reuse system at CFB1-3 to enable the internal reuse of heavy ash and reduce waste generated from the furnace process.

Innovation / Investment: Engineering design, equipment installation and operational resources were allocated to integrate heavy-ash reuse into the existing production process.

Waste Management Outcome: Reduces waste generation and disposal requirements by returning heavy ash to productive use within the operating process.



Closed-loop Battery Recycling R&D

GPSC entered into a joint venture with PTT, Nuovo Plus and Total Environmental Solutions (TES) to study and develop dead-battery recycling technology and support a closed-loop battery value chain.

R&D / Resource Allocation: Joint-venture resources, technical expertise and specialist capabilities are allocated to study battery recycling technologies and the recovery of valuable materials from used batteries.

Waste Management Benefit: Supports the diversion of end-of-life batteries from disposal, reduces dependence on virgin raw materials and promotes closed-loop resource utilization.

Investment in innovation or R&D to minimize waste

GPSC commits to research and develop innovation for generating electricity and steam from alternative or renewable energy, safety and environmental friendliness throughout its lifecycle. GPSC has been continuously researching and developing an innovation to close the loop, based on the Circular Economy principle, and minimize waste generation from business operations by allocating monetary, workforce or other resources to investigate new ideas or technology aimed at contributing this commitment.

RECYCLING OF BOTTOM AND FLY ASH (FROM BITUMINOUS)

OBJECTIVE:
To manage waste from coal-fired power plants.

BENEFITS TO COMPANY:
Added value to coal ash. GLOW has disposed fly ash up to 3,000 tonnes per year by supplying it to concrete business which will in turn use it as a raw material in place of cement.

BENEFITS TO STAKEHOLDERS:
Reduction of production costs. Recycling of fly ash does not only reduce the number of landfill sites, which causes an environmental impact, but also replaces the use of cement in concrete business.

Result of experiments to be further tested with five target clay ceramics manufacturers for business feasibility

GPSC has been collaborating with K MIX TECHNOLOGY CO., LTD. to study opportunities to utilize industrial waste (fly ash and bottom ash) through circular economy principles. This project aims at minimizing waste generation from business operations, which is to be further disposed to landfill.

K MIX TECHNOLOGY CO., LTD. is a specialized company licensed to process and recycle non-hazardous waste company focusing on 3 aspects, as follows;

1. Management and development of fly ash and bottom ash to minimize or eliminate the need for final disposal.
2. Development of new fly ash/ bottom ash-based materials that can meet the requirements of not only of ready-mixed concrete, but other markets such as: cement-based products, road base/ sub-base, masonry, material fillers, and lightweight concrete.
3. Providing support to educational Institutions to research and develop fly ash and bottom ash.

Description of R&D project to minimize waste (fly ash and bottom ash utilization collaborated with K MIX TECHNOLOGY CO., LTD.)

Investment in innovation or R&D to minimize waste

In addition to the core power products, GPSC recognizes end-of-life batteries as an emerging waste stream with significant resource-recovery potential. Through recycling technologies, valuable materials can be recovered and returned to productive use, reducing dependence on virgin materials and supporting a closed-loop battery value chain.



Dead-battery recycling technology for better environment

In 2023, GPSC entered a joint venture with PTT, Nuovo Plus Company and Total Environmental Solutions Company Limited (TES), the world's leading firm on electronic waste recycling, to conduct R&D on the dead-battery recycling technology, striving for fully integrated battery products and services. With supplies of dead batteries and resources, including experts, a dead-battery recycling technology feasibility study will significantly enhance clean-technology goals of PTT Group and equip GPSC with competitive advantages to better meet customers' needs quickly at lower costs. This achievement will not only bolster its capability in renewable power businesses, but also support GPSC's Net Zero Emissions target and subsequently sustainable growth for Thailand.



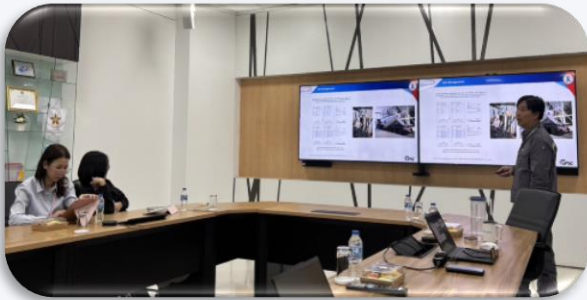
Employee Waste-Reduction Training

In accordance with GPSC's QSHE framework, waste management is incorporated into employee training and awareness programs to strengthen employees' understanding of waste reduction, segregation, reuse and recycling. Beyond formal training, GPSC promotes employee participation through practical waste management initiatives and further extends waste management knowledge to surrounding communities.

01 | Formal Employee Training

Waste Management

Training Waste management is incorporated into GPSC's organizational training needs, with regular training and awareness activities provided to employees.



Key Topics

- Waste minimization
- Waste segregation & 3Rs
- Recycling and reuse
- Hazardous waste management
- Appropriate waste handling.

Approach

Training • Awareness • On-the-job practices
• Understanding assessment

02 | Employee Engagement — “Yak Lak Rak”

“Yak Lak Rak” Waste Segregation Campaign

GPSC encourages employees across operating sites to actively participate in waste segregation and recycling by collecting designated recyclable materials and exchanging them for reward points. The initiative translates waste management awareness into practical employee behavior and promotes responsible resource use.



8,352 kgCO₂ e avoided

Key Results

- 87,596 small plastic bottles
- 43,335 large plastic bottles
- 10,337 plastic cups
- 132 used calendars
- 36,309 aluminum cans / can tabs



218 employees across 12 operating sites

Employee Training & Community Knowledge Sharing

In accordance with GPSC's QSHE Policy and waste management practices, waste management is incorporated into employee training to ensure that employees understand proper waste segregation, handling, reduction, reuse and recycling practices. Training and awareness activities are conducted regularly to strengthen employees' capabilities and support waste minimization across operations.

Training Matrix

Training Topic	Format	Frequency
Waste segregation & 3Rs at source	Hands-on workshop	Regular / ongoing
Recycling & upcycling techniques	Experiential at Learning Center	Regular
Household waste & circular economy	Knowledge exchange	Regular
Hazardous-waste handling & manifests	On-the-job / compliance	Ongoing

Since 2018

continuous program

5 km

radius of RDF plant, Rayong

Ban Phai

flagship Learning Center



Outcomes (2025)

11.85 tCO2 e a year

GHG emissions avoided from landfill via the program

THB 2,073,834

community income from recycled / upcycled products

Beyond its workforce, GPSC extends waste management knowledge and good practices to surrounding communities through knowledge-sharing and hands-on activities, promoting broader participation in waste reduction and circular economy practices.

Recycling & Circular Economy

Waste segregation, ash reuse and material recovery close the loop — sustaining zero waste to landfill through industrial symbiosis.



Key Recovery Streams



Fly & bottom ash → cement

Supplied as an alternative raw material to cement production, reducing demand for virgin materials.



Heavy-ash reuse system

~120 tonnes/year of heavy ash reused; furnace sand sludge reduced by up to 15 t/month at CFB1-3.



RDF plant bottom ash

Utilised in the cement industry, extending circularity to refuse-derived-fuel operations.



Lubricants & chemicals

Reused and recycled through a distributor agreement rather than disposed.



Organic landscape waste → compost

Leaves generated from power plant landscaping are converted into organic compost for beneficial community use..

Independent Third-party Assurance

independently assured in accordance with GRI Standards.

What the External Assurance Verifies

- ✓ Data accuracy of reported waste figures
- ✓ Calculation methodology for waste diversion
- ✓ Waste classification (hazardous / non-hazardous)
- ✓ Traceability of waste from source to disposal
- ✓ Reporting reliability & completeness



GRI 306-4: Waste Diverted from Disposal

Reported waste diversion information under GRI 306-4 is subject to annual independent third-party assurance, supporting the reliability and credibility of GPSC's reported waste performance.



3Rs & Zero Waste to Landfill Awards

Recognised by the Ministry of Industry, Thailand for effective waste-management practices — independent, external validation of performance.

Assurance reference: GPSC Sustainability Report 2025, third-party assurance statement (PDF pp. 80–83) — gpscgroup.com SD Report 2025.

Waste reduction training provided to employees

Waste Reduction Training and Community Engagement – Ban Phai Waste Management Learning Center

In addition to formal training, GPSC actively engages employees in hands-on waste reduction initiatives through its flagship **Ban Phai Waste Management Learning Center Project**, located within a five-kilometer radius of the company's RDF plant in Rayong province.

Since 2018, GPSC has collaborated with the Ban Phai Waste Bank Moo 1 Community Enterprise to promote an integrated waste management model. In , GPSC supported the development of a **Waste Bank Building** that serves as a **knowledge-sharing hub** for waste recycling, upcycling, and plastic waste processing innovation.

As part of this initiative, GPSC employees regularly participate in joint activities with community members, such as:

- **Collaborative waste separation workshops**
- **Product development from recycled materials**
- **Knowledge exchanges on household waste management and circular economy practices**

These activities not only strengthen the community's waste management capacity but also serve as experiential training for GPSC staff, reinforcing the company's environmental values through direct involvement.

2025 Achievements:

- Community income from recycled/upcycled products: **THB 2,073,834**
- This project exemplifies GPSC's commitment to combining **employee learning, community development, and waste minimization** in a holistic and impactful way.



Integration of recycling programs to reduce the waste sent to landfill

Waste Utilization and Zero Landfill Commitment

GPSC is committed to minimizing waste generated from operations as it reflects production efficiency, environmental stewardship, and reduced waste management costs. In line with the 3Rs principle (Reduce, Reuse, and Recycle), GPSC prioritizes waste prevention at the source and, where waste is generated, focuses on reuse and recycling before disposal. As a result of these efforts, GPSC has achieved **zero-waste disposal to landfill** since 2019.

One of the key recycling initiatives is the **reuse of ash from thermal power plants**.

- **Fly ash and bottom ash** from coal-fired plants are supplied as **alternative raw materials for cement production**, reducing the demand for virgin raw materials.
- In addition, GPSC has **installed a heavy ash reuse system**, enabling the reuse of approximately **120 tons of heavy ash per year** and reducing **furnace sand sludge by up to 15 tons per month** at the CFB1,2 and CFB3 plants.
- For RDF power plants, **bottom ash is also utilized in the cement industry**, further contributing to the company's circularity strategy and supporting its **Zero Waste to Landfill policy**.

These programs demonstrate GPSC's proactive approach to industrial symbiosis and closed-loop waste management, ensuring that by-products are transformed into valuable resources for other industries.



Independent Assurance and External Recognition of Waste Diversion Performance

GPSC strengthens the credibility of its waste diversion performance through independent assurance of reported waste data and external recognition from the Ministry of Industry, Thailand.

1. Independent Third-Party Assurance

GPSC's reported waste diversion information is subject to independent third-party assurance in accordance with GRI 306-4: Waste Diverted from Disposal. The assurance process supports the accuracy, traceability and reliability of reported waste performance. (Reference: GPSC Sustainability Report 2025 — Independent Assurance Statement, PDF page 80–83.)

2. External Recognition

GPSC has also received the 3Rs and Zero Waste to Landfill Awards from the Ministry of Industry, Thailand, recognizing the company's effective waste management and waste diversion practices.



Additionally, GPSC has been recognized for the effective waste management practices and has been awarded the 3Rs and Zero Waste to Landfill Awards by the Ministry of Industry, Thailand.

3Rs and Zero Waste to Landfill Awards by the Ministry of Industry, Thailand.

THANK YOU

