



Environmental
Stewardship

SUSTAINABILITY REVIEW

Transitioning to a Cleaner Energy and Circular Economy Future

MATERIAL MATTERS

Renewable
Energy

Energy
Consumption

Waste
Management

Water
Management

Biodiversity
Conservation



RENEWABLE ENERGY

Why It Is Important

Climate change and waste management are two pressing issues that are threatening the environment and the overall well-being of people. Since these two issues are also closely related to Malakoff's core business, it is imperative for us to prioritise sustainable operations. Our waste management initiatives extend beyond plastics as we embrace the concept of 5R for all solid waste types and we actively explore innovative technologies through research and development to minimise waste-to-landfill.







Our Approach

Malakoff's Environmental Policy, which is aligned with the Malaysian Environmental Quality Act 1974 and other relevant regulations and adheres to the ISO 14001 standards, continues to guide us in our operations. The Policy is accessible to all employees on our intranet and MaCNet and is also made available to new recruits.

The Local Generation Division (LGD), responsible for the majority of the Group's carbon emissions, holds ISO 14001:2015 certification, affirming the implementation of processes and procedures for operational and environmental integrity. Our environmental performance is monitored by the Environmental Management Committee (EMC), which includes the Environmental Performance Monitoring Committee (EPMC) and the Environmental Regulatory Compliance Monitoring Committee (ERCMC).

Key Initiatives

For FY2023, our achievements include:

 <p>Secured 33 new solar PV installation projects with a total capacity of 13.17 MW</p>	 <p>Achieved financial close for three Small Hydropower Plants (SHP) in Kelantan, with a total capacity of 84 MW</p>	 <p>Successfully commissioned 23 rooftop solar PV projects in 2023</p>
 <p>Signed 27 Solar Power Purchase Agreements (SPPAs) to develop and operate solar PV facilities with a total capacity of 12.8 MW</p>	 <p>Kick-started decarbonisation efforts of our 2,100 MW thermal plant through a successful pilot run of up to 0.5% biomass co-firing and set to scale up to 2% in the first quarter of 2024</p>	 <p>Completed preliminary feasibility study on the utilisation of hydrogen/ammonia with ITOCHU, while we continue to explore other potential opportunities</p>

Our Performance

RENEWABLE ENERGY

Impact Story

Our Sustainability Team was part of the working group that provided input for the World Economic Forum (WEF) Community Report entitled Mobilising Investments for Clean Energy in Malaysia via various engagement sessions with the WEF.

The Report, in collaboration with Khazanah Nasional Berhad and Accenture, has been submitted to the Malaysian government for further consideration and action for future policies. This initiative comes as part of our efforts to position Malakoff as a key opinion leader in the industry and simultaneously, we have also leveraged the platform to learn from industry players of their challenges and issues in accelerating clean energy investments.



Highlight

For our continuous efforts in progressing towards low-carbon development, our subsidiary, Alam Flora Environmental Solutions Sdn Bhd (AFES) has been awarded:

- National Energy Awards 2023 – Renewable Energy in Off-Grid (Thermal) Merit Winner for Production of Biogas from food waste through Anaerobic Digester

This recognition enhances AFES's commitment towards sustainability and technological innovation.

▶▶ Going Forward

We have set a bold target to increase our renewable energy (RE) capacity to 1,400 MW by 2031, a significant leap from our current capacity of 153 MW. Despite this considerable growth, we are confident in achieving our goal through active participation in competitive bidding for solar projects in Malaysia, with a focus on Large Scale Solar (LSS) initiatives and the Corporate Green Power Programme (CGPP). In addition to this, we plan to enter the Small Hydropower Plant (SHP) sector to provide uninterrupted electricity to off-grid homes and rural communities.

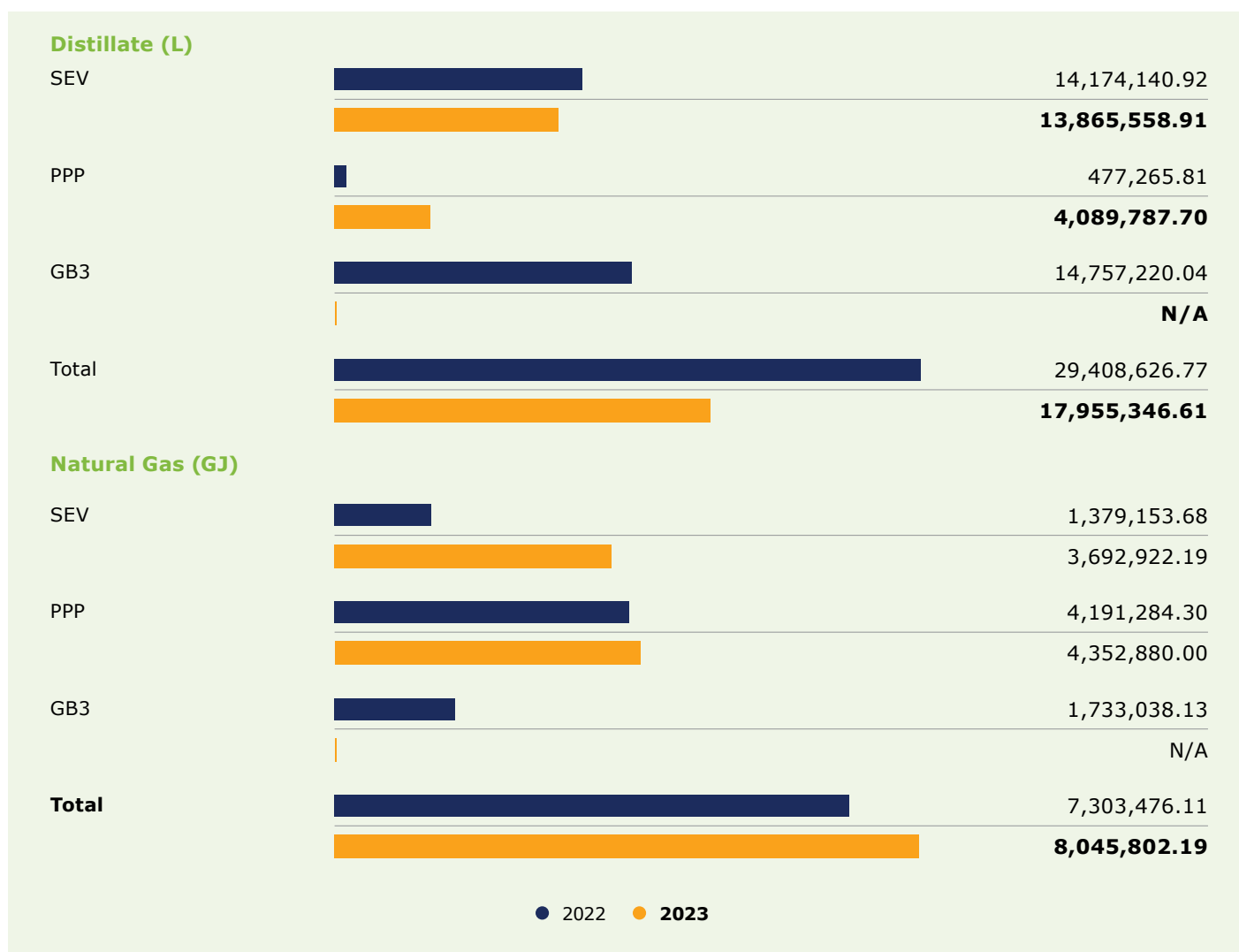
We are also exploring opportunities for potential acquisitions in operational greenfield ventures, particularly in LSS projects. Concurrently, we are evaluating prospects in waste management and environmental solutions, aligning with our commitment to sustainable growth and environmental stewardship.

ENERGY CONSUMPTION

Sustainable energy consumption is paramount in the way we generate and use energy, emphasising responsible and eco-friendly practices that mitigate environmental impact. This transformative concept not only addresses the urgent need to combat climate change but also promotes environmental stewardship and resilience. As the largest Independent Power Producer (IPP) and environmental management company in Malaysia, Malakoff ensures that our operations seek ways to reduce our carbon footprint through efficient conversion rates at our plants and higher energy-efficient systems in our offices.

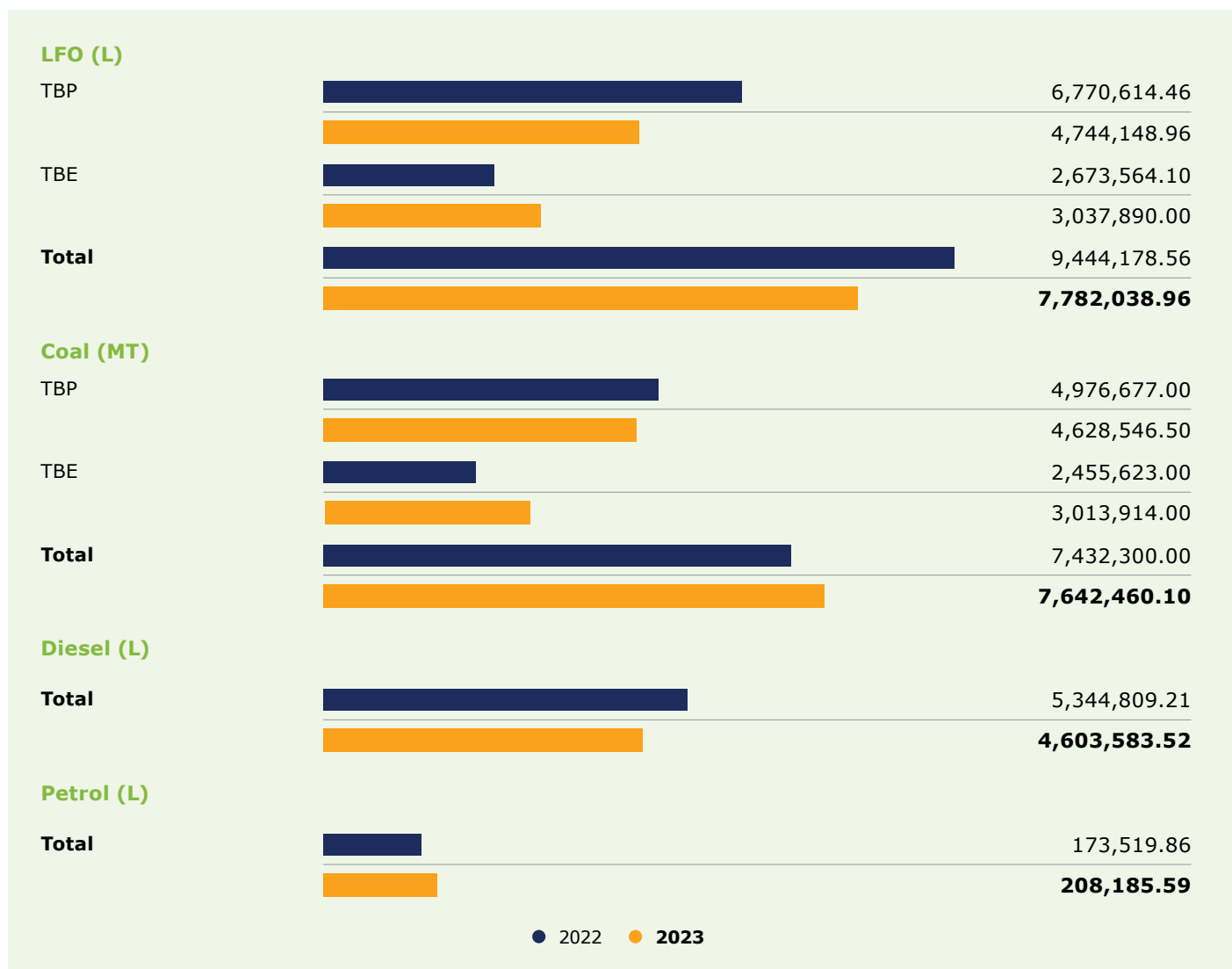
Our energy consumption is mainly for primary fuels, which are natural gas and coal, and secondary fuels, namely diesel and light fuel oil (LFO), for power generation.

We have recorded the following for our energy consumption at our plants, facilities and HQ:

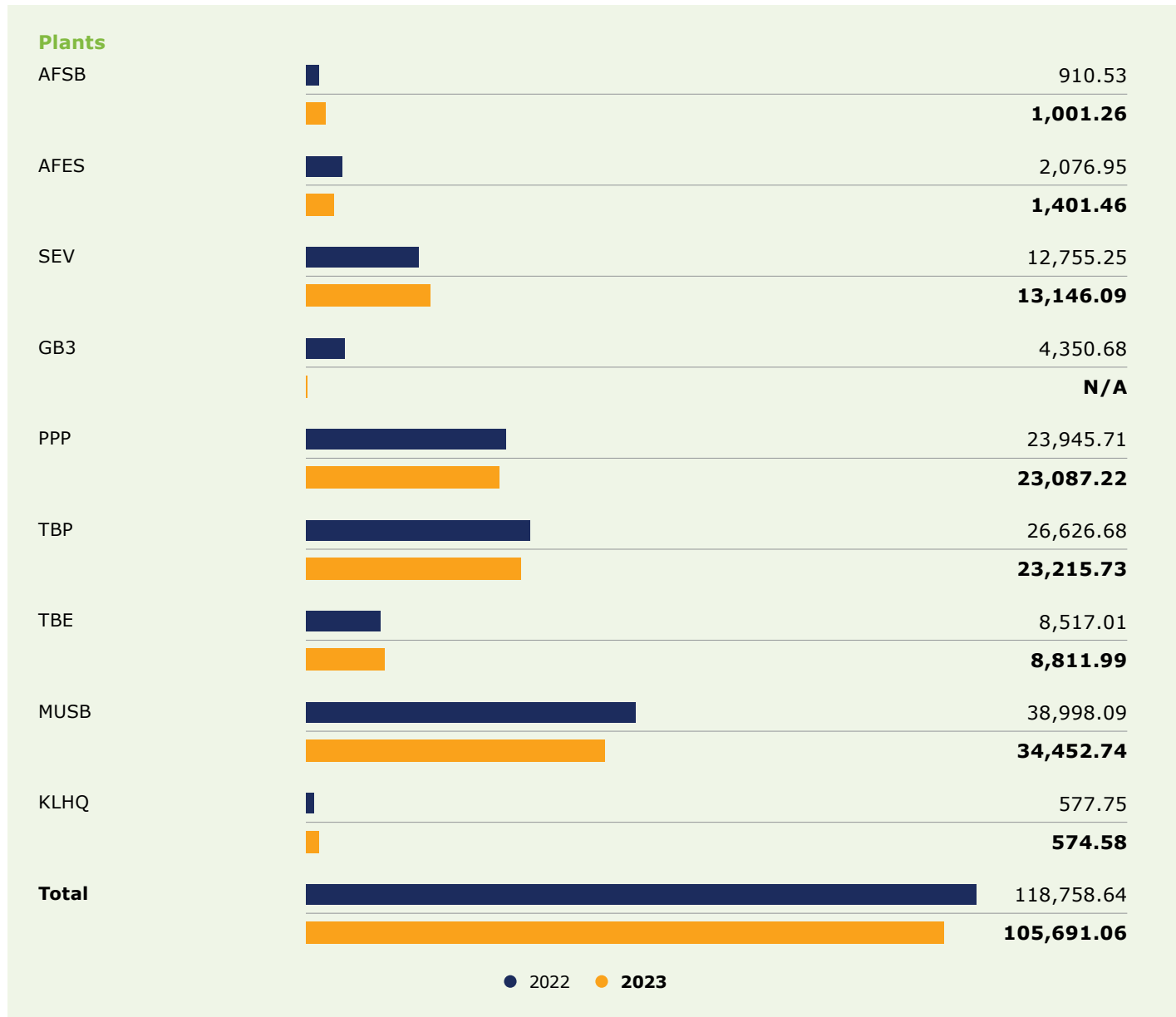


Our Performance

ENERGY CONSUMPTION



Meanwhile, the following shows electricity consumption at our plants, facilities and HQ (MW):



AFSB – Alam Flora Sdn Bhd
 AFES – Alam Flora Environmental Solutions
 SEV – Segari Energy Ventures
 GB3 – GB3 Sdn Bhd

PPP – Prai Power Plant
 TBP – Tanjung Bin Power Plant
 TBE – Tanjung Bin Energy Plant
 MUSB – Malakoff Utilities Sdn Bhd
 KLHQ – Kuala Lumpur Head Quarters

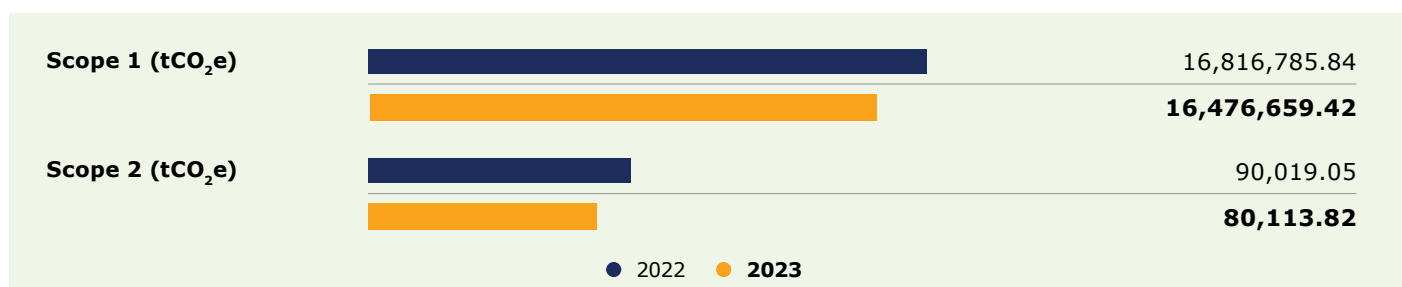
Our Performance

ENERGY CONSUMPTION

Carbon Emissions

Our carbon and non-greenhouse gas (GHG) emissions such as sulphur and nitrogen oxides are monitored from our plants and facilities. Since 2021, we have tracked and disclosed our Scope 1 (direct emissions from operations) and Scope 2 (indirect emissions from purchased electricity) emissions. This year, we have extended our reporting to encompass Scope 1 emissions from our fleet fuel usage and Scope 2 emissions from imported power used in Alam Flora's business.

In improving our reporting, we are utilising an online carbon accounting platform with real-time data to enhance coverage of Alam Flora's operations, including incinerators and its avoided emissions through anaerobic digesters (AD) and recycling. Additionally, we are currently undergoing carbon emissions data assurance in accordance with ISO 14064. It's significant to highlight that our Scope 1 emissions experienced a reduction of 2.02%, while our Scope 2 emissions decreased by an impressive 10.99% than in 2022, underscoring our steadfast commitment to reducing our carbon footprint and contributing to sustainability efforts.



Note:

- Covers all assets operated and maintained by Malakoff and its subsidiaries, including Alam Flora's fleet and electricity consumption, based on equity approach
- Excludes offsets generated from our business activities

Non-GHG emissions, in mg/m³

Year	Plant	SEV						TBP				
		Unit 11	Unit 12	Unit 13	Unit 21	Unit 22	Unit 23	PPP	U10	U20	U30	TBE
2021	SOx	0.00	0.00	0.00	2.58	0.00	0.00	4.81	286.66	294.20	262.68	176.18
	NOx	0.00	0.00	0.00	0.02	0.00	0.00	17.99	262.19	278.66	249.05	163.70
2022	SOx	0.00	0.00	0.00	3.42	0.00	0.00	5.75	186.88	281.35	291.89	193.92
	NOx	0.31	0.00	0.75	0.38	0.00	0.60	21.29	196.45	208.97	280.32	128.55
2023	SOx	0.00	0.00	0.00	0.79	0.00	0.00	1.79	270.71	366.67	155.39	247.58
	NOx	7.59	1.14	7.46	2.08	0.74	1.95	14.28	276.71	412.13	150.00	169.99

Note:

All data are daily averages for the year, and all limits are within the allowable emissions limits.

►► Going Forward

In advancing the industry, we will hold frequent engagements with our stakeholders, especially the authorities and regulators that supply fuel for the power sector, for better management of sustainable energy consumption. We will also explore new investment opportunities and prepare them in accordance with targeted dispatch, in view of fuel prices to maximise generation revenue. It is also important for us to focus on ensuring that our business assets and operations are prepared to be dispatched to meet the demand by Single Buyer in line with the changing dispatch patterns.

WASTE MANAGEMENT

The expansion of Malakoff Environmental Solutions' core business in waste management is crucial as effective waste management not only supports the growth of the Company but also plays a vital role in minimising pollution, safeguarding human health and preserving biodiversity. In managing waste generated from our operations, we adhere to the Solid Waste and Public Cleansing Management Act 2007, the Environmental Quality Act 1974 and the Alam Flora Environment Policy.

Additionally, our approach to waste management is enhancing the efficiencies of our Alam Flora and AFES subsidiaries as part of our efforts to increase the recycling rate in Malaysia. Our approach is aligned with the government's recycling agenda and the target of achieving a 40% national recycling rate by 2025. Apart from supporting the agenda, we also ensure that we responsibly execute our waste management services as toxic waste pollutants may lead to negative health impacts within the community and subsequently cause environmental degradation.

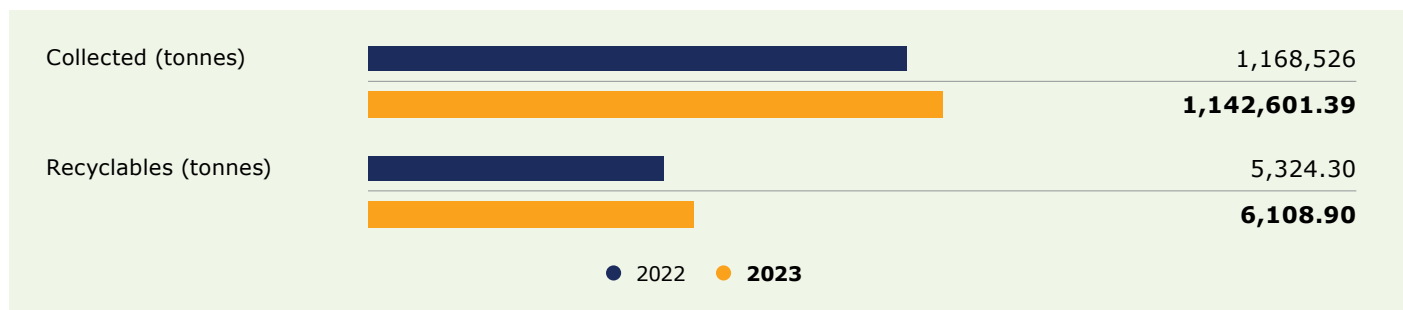
We will continue to strengthen our relationships with stakeholders and develop more business opportunities to achieve carbon neutrality and provide access to a clean and healthy environment for our stakeholders.

Key Initiatives

Waste Collection by Alam Flora

Alam Flora, serving as the concessionaire for solid waste collection and public cleansing services in Kuala Lumpur, Putrajaya and Pahang, is responsible for directly engaging with a significant number of households. As we acknowledge our extensive reach, Alam Flora embraces the task of fostering mindset change among Malaysians, gradually shifting waste disposal habits by encouraging separation at the source and enhancing recycling efficiencies.

In FY2023, we collected and recycled:



Our Communications, Education and Public Awareness (CEPA) initiatives during the year under review included:

WASTE IS AMAZING 2023 FASHION DESIGN COMPETITION

The campaign promoted the 3R concept of Reduce, Reuse and Recycle through fashion design. This year, the theme 'Met Gala: Romantic and Glamorous Hollywood Design' marked Alam Flora's 10 years of championing sustainability.

Accomplishments

The competition witnessed the participation of 100 designers and produced 10 finalists who turned their designs into 3R Couture.

Our Performance

WASTE MANAGEMENT

SUSTAINABILITY HUNT 2023

Held for the second consecutive year, the event aimed to foster community participation and cultivate environmental awareness through education. Participants had to write an article or caption related to the sustainability task given at five checkpoints. To create awareness, they were required to upload photos or videos on their respective social media platforms with hashtags including #AlamFloraSustainabilityHunt2023, #WorldEnvironmentDay, #JomRawatBumi, and #EnhancingLifeEnrichingCommunities.

Accomplishments

The participation of 35 local celebrities, media representatives, bloggers, key opinion leaders (KOLs) and influencers and members of the public in the event helped to create more awareness about proper waste management and waste diversion initiatives.

CYBER ECO HUNT 2023

Themed 'Towards Sustainable Cities', the annual Cyber Eco Hunt 2023 had an objective similar to the Sustainability Hunt. The event's innovative approach to tackling operational challenges and advocating essential waste management practices made a substantial contribution to a cleaner and more environmentally friendly future.

Accomplishments

Twenty-six Key Opinion Leaders, influencers, bloggers and a local celebrity participated in the event, which successfully engaged the online community, the majority of which are youths.

KARNIVAL SAYA SAYANG BUMI

The event aimed to create awareness and acted as a reminder of our responsibilities towards the environment. The activities lined up in the carnival included a competition to create music instruments from waste and other upcycling competitions.

Accomplishments

More than 2,000 people from the local community in Kuantan, Pahang attended the half-day carnival where various 3R-related activities were conducted.

RECYCLING AWARENESS PROGRAMMES

We conducted recycling awareness programmes through talks, workshops, webinars, recyclable collection and school engagements.

Accomplishments

A total of 83 programmes were organised, and through our activities, we collected 41,444.5 kg of recyclables in 2023.

FASILITI INOVASI KITAR SEMULA (FIKS) VISIT

We continued to organise visits to our FIKS to educate and create awareness on recycling and proper waste management.

Accomplishments

Conducted a total of 85 activities at FIKS, clocking in 1,878 visitors.

We continue to work towards achieving a zero-waste circular economy goal through various initiatives including the following:

In September 2023, AFES launched RISE@KL at Batu Caves, an innovative recycling facility that doubles as an education centre to promote best practices and knowledge for recycling and waste segregation. This initiative came after the crucial need to address the increasing waste disposal issue in Kuala Lumpur.

RISE@KL has the capacity to manage 50 tonnes of waste in a day, optimising recyclable material capacity and machinery operations productivity. The facility is slated to assist AFES in producing 65 tonnes of recyclable waste from KL and its surrounding areas in the next five years.

The facility first started as a manual recycling facility and gradually transitioned into a semi-automated process, evolving from either a single-stream or dual-stream source. It was fully operational by January 2022.

PARTNERSHIP WITH NESTLÉ

We continued our kerbside recycling with Nestlé Malaysia for the second year to drive plastic waste collection and recycling.

Accomplishments

Upon renewing our partnership, we recorded 968,955 kg of total plastic waste collected.

PRESERVE NATURE FOR FUTURE, AN ENVIRONMENTAL-FOCUSED EVENT

The event was organised for our internal employees, held at the Malakoff Academy of Excellence (MAX). Staff were educated by various speakers on the importance of recycling for a greener and more sustainable future, especially on replacing single-use plastics. The event engaged employees via fun activities and interactive booths.

Accomplishments

The event was attended by more than 100 employees and they shared their thoughts about the importance of recycling and imparted their knowledge to others, essentially acting as 3R ambassadors for Malakoff.

Waste Management at Plants

At our plants, we produce a substantial amount of both scheduled and unscheduled waste. In managing our waste, we have implemented policies and procedures to ensure the responsible treatment in compliance with the Department of Environment (DoE) regulations and the Environmental Quality Act (Scheduled Waste) Regulations 2005.

It is crucial for us to treat our waste responsibly. Otherwise, when improperly treated waste reaches downstream, the excessive release of methane gas and exposure to landfill burning will pose serious risks to human health. Additionally, improper leachate management can lead to leakage into the soil, which will eventually flow into the main water stream.

In managing our generated waste, we continuously engage with the authorities in charge of landfill operations and incinerators to manage gas emission release and leachate emissions. We collect and analyse our waste for Board reporting and the data is collected at service areas and monitored by the DoE through the eSWIS system.

Scheduled Waste

We manage our scheduled waste, including fly ash, bottom ash, used oil, and chemicals from the power plant and incinerators, in accordance with our Scheduled Waste Management Policy. This policy establishes clear procedures for consistent Group-wide practices. Additionally, we also ensure our scheduled waste is appropriately stored at maintenance sites before an appointed licensed contractor collects and disposes the waste, complying with the DoE regulations.

Our Performance

WASTE MANAGEMENT

The plants at TBE and TBP employ the Life Cycle Assessment, a tool for analysing and evaluating potential alternatives to reduce, reuse and recycle (3R) waste. Internally generated scheduled waste, including used lube oil, distillates and contaminated solid waste, is collected by licensed domestic contractors and directed to either landfills or incinerators.

Unscheduled Waste

Our plants produce metal and rubber waste, which are gathered in scrapyards and are responsibly disposed of by licensed contractors. In our offices, we encourage recycling among employees by strategically placing recycling bins.

►► Going Forward

We strive towards progressing in our waste management by ensuring robust facilities development. We will continue to identify, source and implement the best technologies for waste management treatment and improve:

- our Sustainable Facility & Eco-Park Centre (SAFE) Perak and SAFE Terengganu for scheduled and clinical waste
- the production of biomass pellet plant for alternative fuels and reducing our dependency on coal
- continuous research and innovation on the treatment of plastic-to-fuel

Advancing our recycling efforts, AFES has signed an MoU with the Malaysian Nuclear Agency (MNA) to explore the concept of recycling plastic waste using radiation pyrolysis. AFES will take charge of collecting and sorting recyclable waste, while MNA will utilise its innovative expertise to convert these sorted materials into fuel and create new value-added products more efficiently at a lower cost.

Awards

As a result of our efforts in safeguarding the environment, Alam Flora Group has been recognised with several accolades throughout the year. This year, we were award recipients of:



Waste Management Achievement Award 2023 for the categories of:

- Technological Advancement & Innovation Award - Large Enterprise Category
- Notable Achievement on Waste Reduction and Circularity Award



Prime Minister Hibiscus Awards 2021/2022

- Exceptional Achievement Award for Environmental Performance (FIKS Project)



Sustainability & CSR Malaysia Award 2023

- Company of the Year (Waste Management) for Excellence in Community Support Initiatives



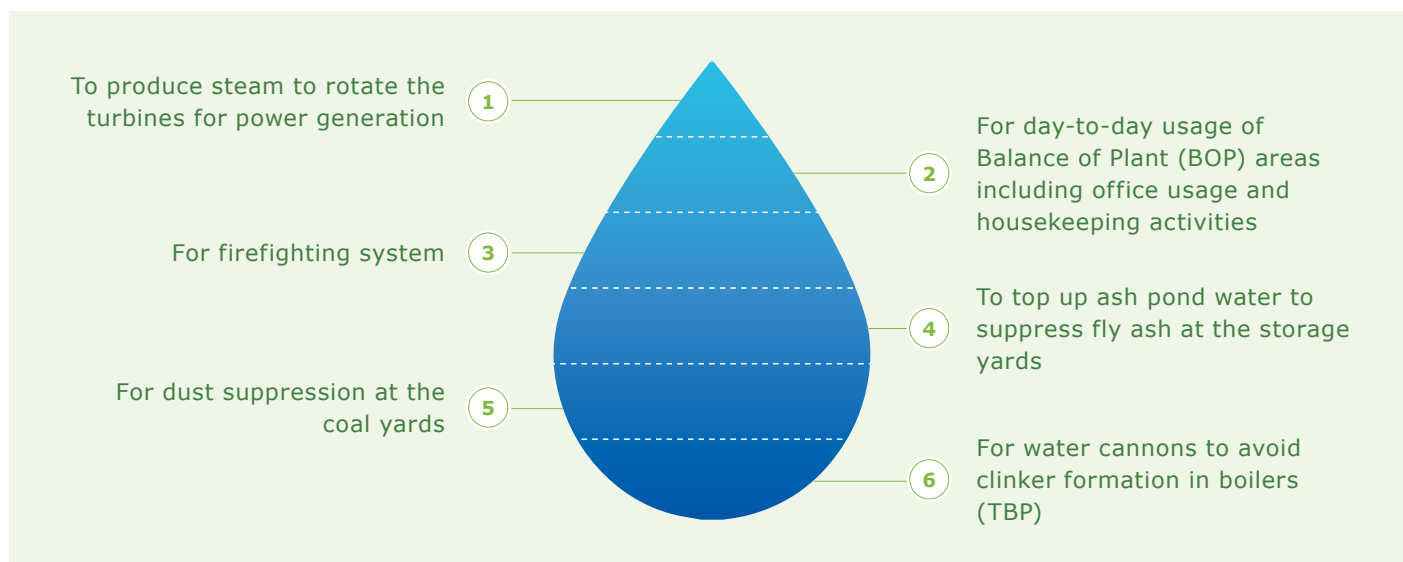
National Energy Awards 2023

- Renewable Energy in Off-Grid (Thermal) Merit Winner for the Production of Biogas from Food Waste through Anaerobic Digester

WATER MANAGEMENT

In 2023, UNESCO, on behalf of UN-Water reported that two billion people do not have access to safe drinking water while 3.6 billion lack access to safely managed sanitation. At least for a month in a year, two to three billion people experience water shortages which adversely impact their livelihood via food security. Additionally, climate change, which has caused extreme natural disasters such as prolonged droughts, is also stressing the ecosystem. As water scarcity is a global phenomenon, Malaysia will eventually be affected if we continue with our consumption patterns, lack of efficient amenities and conservation awareness.

Water plays an important role in Malakoff’s core business as we use water intensively in our power generation, waste management and district cooling system:



Our power plants utilise seawater for cooling purposes and raw water for general administrative and process needs. Meanwhile, raw water is primarily employed in the electricity generation process to replenish water and steam losses to the environment during operations. We source raw water from supply companies such as Pembekalan Air Pulau Pinang (PBAPP), Syarikat Air Johor (SAJ) and Lembaga Air Perak (LAP).

In 2023, we utilised a total of 2,532,082.45 m³ of water.

Key Initiatives

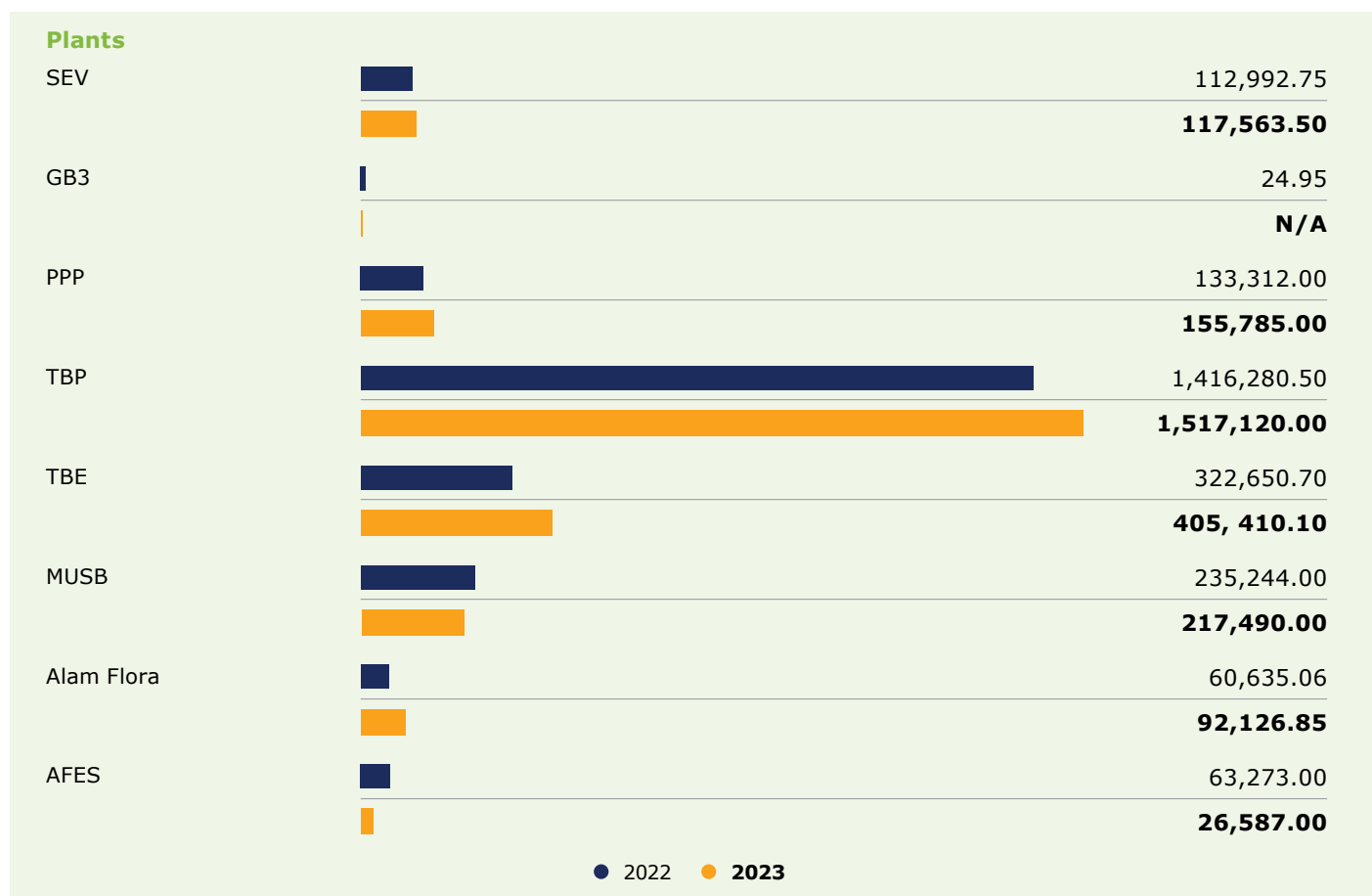
To foster sustainable practices and minimise water consumption across our operations and office premises, we have implemented various initiatives, including:

- | | | |
|--|---|--|
| Incorporating rainwater harvesting systems for housekeeping and landscaping purposes | Implementing leachate water treatment methods to reduce raw water consumption in incinerators for temperature control | Conducting studies on consumption patterns at TBP to optimise water usage efficiency |
|--|---|--|

Our Performance

WATER MANAGEMENT

Raw Water Consumption at Our Plants and Operations (m³)



▶▶ Going Forward

Our strategic focus remains on exploring brownfield and greenfield opportunities aligned with Malakoff's growth objectives while enhancing operational efficiencies across our existing portfolio. Notably, the global water crisis, as highlighted by UNESCO and UN-Water, underscores the urgency for sustainable water management practices. As Malaysia faces potential impacts from global water scarcity trends, Malakoff is committed to integrating water conservation measures into its core business operations, leveraging initiatives such as rainwater harvesting, leachate water treatment, and consumption pattern optimisation to promote sustainability and mitigate water consumption across its power generation, waste management, and district cooling systems. Through strategic partnerships and proactive measures, Malakoff aims to navigate the evolving landscape of water scarcity while reinforcing its commitment to sustainable development.

BIODIVERSITY CONSERVATION

Biodiversity conservation is crucial for preserving the balance of the environment. Acknowledging the potential impact of our business operations on local ecosystems, we are committed to minimising our negative impacts. We ensure that our efforts in safeguarding marine biodiversity are aligned with our business operations, which use seawater as a cooling agent for our plants.

Key Initiatives

Impact Story

Save Our Sea Campaign – Kenali Penyu, Sayangi Penyu Initiative

Partnering with the Perak State Fisheries Department (JPNP) and Jabatan Taman Laut Malaysia for our Save Our Sea programme since 2011, we have been conducting activities such as beach cleanups and coral conservation. Local communities, authorities and tertiary students participate in these activities to improve the marine biodiversity in the surrounding areas.

This year, we organised our seventh instalment of the turtle conservation programme known as the Kenali Penyu, Sayangi Penyu initiative at the Turtle Conservation and Information Centre Pasir Panjang (PKPPP) at Segari in Lumut, Perak. The event aimed to create awareness on the importance of safeguarding endangered species and actively work towards the expansion of the turtle population. Various attendees were at the event including local communities of Kampung Segari, students from the Kolej Perikanan Sultan Nazri Muizzuddin Shah, the Perak Fisheries Department and the Lumut Power Plant (LPP) staff.

As part of the programme, our volunteers took part in different activities such as the planting of “ambong-ambong” trees, which are crucial for helping endangered turtles. These trees function as protection for the turtles against bright lights and land erosion, making it easier for them to build nests and hatch their eggs safely. Apart from tree planting, volunteers also cleaned up the area around the centre. Another team of volunteers had the special job of cleaning the turtle ponds, allowing the volunteers to understand these incredible creatures up close through direct interaction.

We also contributed to the centre’s main information board by adding the latest information and its new logo, replacing the old board from 2012. Additionally, we presented two motor pumps to PKPPP which will be used for the centre’s daily operations. The eventful activity is a strong testament of our ongoing commitment to caring for the environment and staying connected with our community.



Our Performance

BIODIVERSITY CONSERVATION



International Coastal Cleanup Day

In collaboration with the Department of Fisheries of Johor, we organised a beach cleanup activity at Pulau Tinggi, Mersing, Johor. We ensured all trash and recyclables were removed from the site, collecting tonnes of waste at the end of the session. The initiative also doubled as an opportunity to introduce and promote reusable bags as a replacement for single-use plastic which has detrimental effects on the environment, especially the marine ecosystems. Malakoff employees, the Department of Fisheries and the Johor State Education Department Co-curriculum Centre participated in the activity.

To commemorate this ongoing initiative, an official installation of a Malakoff signboard and its officiation by the Pulau Besar Village Head was held at the Pulau Besar public jetty before proceeding with an educational visit to the Marine Park Information Centre in Pulau Tinggi. While on Pulau Tinggi, Director of the Department of Fisheries Johor Puan Nur Afifah binti A. Rahman hosted an informative session dedicated to marine life, with a particular emphasis on the department's ongoing turtle conservation initiatives. We also distributed reusable bags to the island community.



Mangrove Planting and National Environment Day 2023 Celebration

We continued our long-standing mangrove conservation programme in 2023 by planting 2,000 mangrove trees along the Sungai Pulai Mukim, Sungai Karang, bridge in Pontian, Johor. The initiative is our contribution towards 'The Planting of 181,000 Mangrove Trees in One Day Programme' organised by the Pontian District Office, Johor. The programme was held in conjunction with the National Environment Day which falls on the 21 October annually.

The event is also part of our efforts in supporting the Malaysian government's goal of planting 100 million trees from 2020-2025.

Monitoring Seawater at Intake and Release Points

We regularly check the water temperature at both the intake and release points in our plants, ensuring it stays below 40°C to avoid disturbances to marine life. Additionally, our team conducts weekly monitoring of water discharge to uphold its quality, with external parties verifying the collected data.

▶▶ Going Forward

We will continue to nurture strong relationships with the local communities in our operational areas via outreach programmes that emphasis environmental consciousness. Simultaneously, we believe that it is also important to inculcate the values of biodiversity preservation as everyone can play a role in contributing towards a resilient and sustainable environment.