

Environmental Pillar				
	Unit	2022	2021	2020
TOTAL GHG EMISSIONS (Scope 1 & 2)	tonnes CO ₂ e	4,202,311	4,186,563	4,180,914
Scope 1 ¹	tonnes CO ₂ e	4,161,800	4,148,617	4,132,383
Scope 2	tonnes CO ₂ e	40,511	37,946	48,531
CO ₂ Biogenic ^A	tonnes CO ₂	955	–	–
TOTAL SCOPE 1	tonnes CO ₂ e	4,161,800	4,148,617	4,132,383
Breakdown by operations				
Shipping	tonnes CO ₂ e	4,132,289	4,121,458	4,103,313
- Gas	tonnes CO ₂ e	2,535,686	2,506,131	2,319,137
- Petroleum	tonnes CO ₂ e	1,549,196	1,557,596	1,714,706
- Product	tonnes CO ₂ e	42,751	51,988	64,768
- Workboat	tonnes CO ₂ e	4,656	5,744	4,702
Non-Shipping	tonnes CO ₂ e	29,511	27,158	29,070
TOTAL SCOPE 2	tonnes CO ₂ e	40,511	37,946	48,531
Non-Shipping	tonnes CO ₂ e	40,511	37,946	48,531
TOTAL SCOPE 3 (Material Categories**)	tonnes CO ₂ e	2,811,086	1,352,596	–
Breakdown by Category				
Category 1 – Purchased Goods and Services from MISC's Marine and Heavy Engineering Business**	tonnes CO ₂ e	456,650	–	–
Category 3 – Fuel and Energy Related Activities**	tonnes CO ₂ e	1,151,431	–	–
Category 6 – Business Travel	tonnes CO ₂ e	8,554	–	–
Category 7 – Employee Commuting	tonnes CO ₂ e	8,584	–	–
Category 8 – Upstream Leased Assets**	tonnes CO ₂ e	74,766	101,723	–
Category 13 – Downstream Leased Assets**	tonnes CO ₂ e	1,094,822	1,229,410	–
Category 15 – Investments**	tonnes CO ₂ e	33,417	21,463	–
AIR EMISSIONS				
NO _x emissions ^{6B}	tonnes	87	38,763	38,289
SO _x emissions ^{7C}	tonnes	3,362	3,922	3,352
PM10 emissions ^{8D}	tonnes	3	3	3
Ozone depleting substances (ODS)	tonnes	0.24	0.93	2.11

PERFORMANCE DATA

	Unit	2022	2021	2020
CARBON INTENSITY AND ANNUAL EFFICIENCY RATIO				
Annual Efficiency Ratio (AER)				
- MISC Shipping Fleet (Gas and Petroleum) * E	gCO ₂ / ton-nm	6.15	6.24	5.74
Annual Efficiency Ratio (AER^{CO2e})				
- MISC Shipping Fleet (Gas and Petroleum)	gCO ₂ e/ ton-nm	6.36	6.43*	5.93*
* Restated based on corrections to deadweight figures of vessels				
OPERATIONAL DATA				
Total distance traveled (GAS and Petroleum fleet) ¹¹	nautical miles (nm)	5,319,450	5,365,388	5,245,189
AVERAGE ENERGY EFFICIENCY DESIGN INDEX (EEDI⁵) FOR NEW VESSELS		2.624		
Very Large Ethane Carrier (VLEC)	gCO ₂ per tonne-mile	–	6.080	–
LNG Dual-Fuel Dynamic Positioning Shuttle Tanker (DPST)	gCO ₂ per tonne-mile	–	–	2.879
Conventional Dynamic Positioning Shuttle Tanker (DPST)	gCO ₂ per tonne-mile	2.738	–	3.006
LNG Dual-Fuel Very Large Carrier (VLCC)	gCO ₂ per tonne-mile	1.937	–	–
ENERGY				
Total Group Energy Consumption ²	GJ	58,790,503	58,956,128	58,771,890
Heavy Fuel Oil ³	tonnes	64,258	70,130	68,854
Low Sulphur Heavy Fuel Oil	tonnes	380,222	330,863	255,470
Ultra-Low Sulphur Heavy Fuel Oil	tonnes	5,843	3,400	22,822
Marine Gas Oil	tonnes	161	190	3,500
Low Sulphur Marine Gas Oil	tonnes	2,264	5,333	9,377
Ultra-Low Sulphur Marine Gas Oil	tonnes	217,593	232,194	264,185
Liquefied Natural Gas	tonnes	677,716	707,014	731,887
Diesel	Litre	347,189	5,609,360	5,900,968
Biodiesel ^F	Litre	5,728,249	–	–
Petrol	Litre	39,274	24,039	41,835
Compressed natural gas	m ³	419,712	298,920	280,671
Liquefied petroleum gas	tonnes	8	4	4
Electricity	kWh	60,786,267	55,453,724*	70,913,588
* Restated based on updates to kwh data				
Ethane	tonnes	15,644	15,709	–
Renewable energy ^{4G}	MWh	8,957	–	–

	Unit	2022	2021	2020
ENERGY INTENSITY RATIO				
Breakdown by Subsidiaries				
Shipping operations - gas and petroleum fleet	(GJ per million transport work)	90	92	85
Heavy & Marine Engineering	(GJ per million revenues in RM)	158	144	172
Maritime Education & Training	(GJ per million sales in RM)	164	167	216
Port Management & Maritime Services	(GJ per hour)	4	4	4

WASTE

Non-Shipping Operations				
Total Generation Non-Hazardous	tonnes	5,287	4,562	6,332
Total recycled/reuse/recovered	tonnes	137	157	418
Total final disposal	tonnes	5,150	4,405	5,914
Non-Shipping Operations				
Total Generation Hazardous Waste	tonnes	16,449	15,805	19,401
Total waste recycled/reuse/recovered	tonnes	20,942	11,715	13,955
Total waste sent for disposal (incineration/landfill)	tonnes	182	7	36
Shipping Operations				
Ship oil sludge	m ³	6,186	4,903	3,259
Ship operational effluent discharge - comprises bilge water and cargo residues	m ³	47,791	45,415	59,597
Operational effluent discharge per vessel per month - bilge water	m ³	28.82	26.51	25.96
Ship garbage	m ³	6,689	6,492	7,405
Ship garbage disposed to reception facility	m ³	5,683	5,514	6,594
Ship garbage discharged to sea - Category B	m ³	484	450	424
Ship garbage incinerated onboard	m ³	522	528	387

WATER

Total Freshwater Withdrawal	m ³	799,532	658,153	635,686
Total freshwater withdrawal from Surface Water	m ³	0	0	0
Total freshwater withdrawal from Third Party Water	m ³	799,532	658,153	635,686
Water Consumption	m ³	313,388	315,154	328,790
Water Consumption (from vessels' freshwater generator)	m ³	313,388	315,154	328,790

PERFORMANCE DATA

	Unit	2022	2021	2020
Ballast Water				
Percentage of fleet implementing ballast water exchange and treatment	%			
- exchange ¹²	%	6	24	N/A
- treatment ¹³	%	94	76	N/A
SPILLS				
Total spills ⁹	Number	4	3	1
Average volume of spills and releases to the environment ¹⁰	Litre	18,177-18,187	140	30-40
FINES/PENALTIES AND AUDITS				
Fines/penalties on environmental related non-compliance	Number	2	1	–
Audits conducted on environmental# related matters	Number	122	21	15
ISO CERTIFICATION				
ISO 50001 Energy Management System	%	14	–	–
- Gas Assets & Solutions		No	–	–
- Petroleum & Product Shipping		No	–	–
- Offshore Business		No	–	–
- Marine & Heavy Engineering		No	–	–
- Integrated Marine Services		Yes	–	–
- Port Management & Maritime Services		No	–	–
- Maritime Education & Training		No	–	–
ISO 14001 Environment Management System	%	43	–	–
- Gas Assets & Solutions		No	–	–
- Petroleum & Product Shipping		No	–	–
- Offshore Business		Yes	–	–
- Marine & Heavy Engineering		Yes	–	–
- Integrated Marine Services		Yes	–	–
- Port Management & Maritime Services		No	–	–
- Maritime Education & Training		No	–	–

TRAINING AND AWARENESS CONDUCTED IN 2022

Scope	Total Number of Programmes	Total Number of Participant
Environment	15	700

Scope of ISO certification

Certification	Entity	Scope
ISO 50001:2018 Energy Management System	Eaglestar Shipmanagement (L) Pte Ltd	Provision of Fleet Management Services
	Eaglestar Shipmanagement Gas (S) Pte Ltd	Management of Gas Carrier
	Eaglestar Shipmanagement (S) Pte Ltd	Management of Operation of Tanker
ISO 14001:2015 Environment Management System	Eaglestar Shipmanagement (L) Pte Ltd	Provision of Fleet Management Services
	Eaglestar Shipmanagement (S) Pte Ltd	Management of Operation of Tanker
	Eaglestar Shipmanagement Gas (S) Pte Ltd	Management of Gas Carrier
	MISC Berhad (Offshore Business)	Provision of Engineering, Procurement and Construction Management of Subcontractors, Installation, Commissioning, Operation & Maintenance and Decommissioning of Offshore Floating/Mobile Facilities
	Malaysia Marine and Heavy Engineering Sdn. Bhd.	<ul style="list-style-type: none"> • Repair, Construction, Refurbishment and Conversion of Ships & Marine Vessels. • Engineering, Procurement, Construction, Hook Up, Testing & Commissioning and Maintenance of Production System and Its Facilities. • Fabrication, Testing, Commissioning and Maintenance of Onshore Production Systems and Its Facilities. • Project Management for Transportation and Installation of Offshore Production System and Its Facilities.

PERFORMANCE DATA

IUCN Red List of Threatened Species at our Mangrove Conservation Initiative (on a plot of land belonging to ALAM)

 Please refer to Conserving Marine Biodiversity section for more details on our mangrove conservation initiatives.

	Species	IUCN Status
1	Cave nectar bat (Lesser dawn bat) <i>Eonycteris spelaea</i>	Least concern
2	Dusky leaf monkey (Dusky langur) <i>Trachypithecus obscurus</i>	Endangered
3	Long-tailed macaque <i>Macaca fascicularis</i>	Vulnerable
4	Plantain squirrel <i>Callosciurus notatus</i>	Least concern
5	Civet species <i>Paradoxurus sp.</i>	Least concern
6	Wild cat species <i>Prionailurus sp.</i>	Least concern
7	Wild boar <i>Sus scrofa</i>	Least concern

Note:

¹⁻¹³ Referring to SASB indicator.

^A Data for biodiesel combustion from MISC's non shipping Malaysia operations only

^B Data for 2022 are for non-shipping and workboats only. In FY2022, the monitoring and reporting of emissions for MISC's shipping fleet underwent transition to a new system. Configuration on NO_x calculations are currently ongoing in the new system and due to this, we are unable to report NO_x emissions from our shipping operations for FY2022

^C Data for 2022 exclude six vessels fitted with scrubbers as the system configuration for quantifying SO_x emissions from scrubber is ongoing

^D Data for non-shipping only

^E AER data calculated for total CO₂ emissions without any corrections or adjustment applied

^F Data for MISC's non shipping Malaysia operations only

^G Renewable energy from renewable energy certificate bought

[#] Environmental audits including compliance audit that covers the following aspect; management system, waste, pollution, water, energy use and biodiversity.