

2023 ENVIRONMENTAL/ENERGY PLAN

Significant Environmental Aspect	Environmental/Energy Objective			Environmental/Energy Program	PIC	Remarks
	Target	Criteria(Q'ty)	Item			
Marine pollution due to emergencies such as hull damage, etc.	Prevent emergencies And minimize damage	The number of emergency (ZERO)	Collision, Ground, Oil spill	<ul style="list-style-type: none"> - Carried out the training for hazard prevention, TBM and risk assessment - Use of Special & Critical Checklist - When dangerous working, ensure safety through 'Permit to Work' system - Navigational audit by master (within 1 month from the date of joining of each auditee) - Compliance with crew's minimum rest period - Thorough enforcement of Bridge watch - Improvement of emergency response ability through periodic training - Weather monitoring and cargo management, optimization of machinery/equipment's condition - Periodic patrolling and monitoring during oil transfer work - Implement Oil spill response drill and thoroughly manage the materials for pollution control - Periodic sounding for all tanks and check level gauge 	Vessel, MT, QAT	
Marine pollution due to malfunction of machinery/equipment	Management of pollution prevention equipment	Oily bilge separator 15ppm Monitoring System Calibration (33 vessels)		<ul style="list-style-type: none"> - Maintenance of pollution prevention equipment and management of overdue item in accordance with the PMS - Manage the minimum holding quantity of spare part in critical item - Periodic safety device function test - When the regulation changed, provide information for the change and supplement equipment if needed. - Provide technical support and guideline following vessel's request. 	Vessel, MT,	[Targets for each team] <ul style="list-style-type: none"> - CNTR 1T : 4 vessels - CNTR 2T: 10 vessels - CNTR 3T: 8 vessels - Tanker : 10 vessels - LNG : 1 vessel

Air pollution from ship operation	Minimize fuel consumption and increase energy efficiency	Reduction of fuel consumption (% reduction rate compared to baseline in 2016)	M/E, G/E	<ul style="list-style-type: none"> - Voyage optimization management (Trim, Draft, Speed, Propeller immersion, etc) - Machinery efficiency management (prohibit G/E parallel operation under low load, machinery condition management, etc.) - Comply with SEEMP procedure (using CII CHECK LIST) - Verify results of machinery maintenance according to PMS in MMS 	R&D	Comparison of FOC/mile trend line between base year and performance period in specific RPM * According to schedule of HMM R&D Team, the target would be reported at First half performance report.
Air pollution from ship operation		F.O consumption intensity (0.8124 g/DWT*km)			QAT	[Target : 1% improvement of average of last 3 years (2020-2022)]
Air pollution from ship operation		Hull Inspection (76 vessels)			MT, R&D	[Targets for each team] - CNTR 1 : 32 vessels - CNTR 2 : 16 vessels - CNTR 3 : 15 vessels - Tanker : 7 vessels - LNGC : 6 vessels
	Minimize emission of VOCs	VECS calibration (10 vessels)		- Implement VECS calibration	TKT	- Tanker : 10 vessels
	Legal operation of Incinerator	Incinerator procedure (Violation ZERO)		<ul style="list-style-type: none"> - Prohibited incineration inside ports, within territorial sea, etc. - Note the cautions for plastic, oily rags incineration 	QAT	Refer to 'PE-503, Ch.2.3' Shipboard incinerators
Marine pollution from ship operation	Legal management of Garbage	Disposal of Garbage (Violation ZERO)	Disposal method : Landing, Incineration, Discharge into sea	<ul style="list-style-type: none"> - Arrange legal garbage disposal company through local agency - Thoroughly implement separate collection for waste in accordance with the Garbage Management Plan - Minimize volume through compression - Supply and operate the Plastic compactor/ grinder 	Vessel, MT, QAT	

	Minimize generation of Waste oil	Waste oil generation ratio (1.81 %)	Sludge, Oily residues	<ul style="list-style-type: none"> - Periodic maintenance of related machinery (Purifier, Oil pump, etc.) in accordance with the PMS. - Periodic sounding and thorough recording for all waste oil tanks - Optimal adjustment of the discharge time of the purifier in consideration of F.O quality. 		<p>[Target : 1% improvement of standard (average of last 3 years)] 2020 : 1.73% 2021 : 1.83% 2022 : 1.92%</p> <p>*manage by each vessel</p>
	Legal management of Ballast water	Ballast water management regulation/ convention (Violation ZERO)		<ul style="list-style-type: none"> - Comply with the BWMC and local regulations (Refer to BWMP) - Thorough recording about ballast water discharge or treatment (BWRB) - Comply with the reporting obligation for regional ballast water management 	QAT	62 vessels are operating BWTS. (Total 69 vessels)
Marine pollution from ship operation	Legal operation of Scrubber	EGCS washwater discharge regulation (Violation ZERO)		<ul style="list-style-type: none"> - When establishing the voyage plan, identify the SOx emission control areas and control areas to ban discharge of washwater. - Fuel oil change over or change to close loop mode in control area to ban discharge of washwater. 	Vessel, R&D, QAT	52 vessels are operating Scrubber. (Total 69 vessels)
	Compliance with regional regulations for various incidental discharges from ship operation	National discharge regulations (Violation ZERO)	Grey Water, Sewage	<ul style="list-style-type: none"> - Comply with Particularly Sensitive Sea Area (PSSA), and local regulations (Refer to PE-MC-503-013 & PE-502, Ch.3) - Identify the regulation through local agent (send the Experience Feedback) 	QAT	
Resources management of office	Reduce fuel oil consumption for vehicle.	Fuel consumption (Gasoline : 21,509 ℓ) (Diesel : 143 ℓ)	Gasoline, diesel	<ul style="list-style-type: none"> - Recommend on public transport upon an outdoor service. - Regularly maintenance of facility and efficient operation 	CAD	[Target : 1% improvement of standard (average of last 3 years)]
	Reduce the electricity	Electricity (2,571 MWh)	Electricity	<ul style="list-style-type: none"> - Turn off the light during lunch time. - Prohibit the use of personal air-cond. and heater - Unnecessary overtime working should be avoided. - Turn off the unnecessary lights during night overtime. - Regularly maintenance of facility and efficient operation. 	CAD	[Target : 1% improvement of standard (average of last 3 years)]
	Reduce LNG consumption	LNG consumption (Boiler : N/A Nm³) (Cooking facility : N.A)	LNG	<ul style="list-style-type: none"> - According to relocation of the office from Yeonji-dong to Yeouido in Seoul, LNG fuel wouldn't be consumed any more. 		

* Please refer to the appendix for related details.