



Addendum to the Engagement Policy PAI Calculation Methodology and Appendix

Applicable for the sub-funds Green Harmony I & II – more specifically for the vessels: EMF Viking I, EMF Viking II & EMF Viking III. Hull numbers: 3516, 3517 & 3518.



PAI Indicator Calculation Methodology

The purpose of this PAI indicator threshold document is to use this as a source of documenting best practice within the shipping industry – and therefore documenting do no significant harm (DNSH) to all the 14 mandatory indicators and two voluntary with absolute values. The reasoning is that the threshold values and calculations are market standards for this specific type of vessels and production – therefore proving better performance than market standard vessels.

Green Harmony I:

Green Harmony I		Estimates might be subject to revision later in case of revised assumptions Threshold: numerical value/binary threshold answer						
PAI Indicator	Unit	2024	2025	2026	2027	2028	2029	2030
GHG emissions - Scope 1	Tonnes CO2	-	-	-	20.235,0	48.564,0	43.707,6	10.000,0
GHG emissions - Scope 2	Tonnes CO2	-	-	-	-	-	-	-
GHG emissions - Scope 3	Tonnes CO2	29.298,3	-	29.298,3	91.028,2	2.820,1	2.538,1	2.284,3
Total GHG emissions	Tonnes CO2	29.298,3	-	29.298,3	111.263,2	51.384,1	46.245,7	12.284,3
Carbon footprint	(tCO2e/MS invested)	581,2	-	283,5	428,9	198,1	178,3	47,4
GHG intensity of investee companies	(tCO2e/MS of revenue)	N/A	N/A	N/A	5.469,5	951,6	856,4	227,5
Is the company active in the fossil fuel sector?	Yes/No	Yes*	Yes*	Yes*	Yes*	Yes*	Yes*	No
Total energy consumption	MWh	1,1	20,0	4.070,0	108.864,0	103.420,8	98.249,8	93.337,3
Total non-renewable energy consumption	MWh	1,1	19,0	3.866,5	103.420,8	98.249,8	93.337,3	88.670,4
Total energy production	MWh	-	-	-	-	-	-	-
Total non-renewable energy production	MWh	-	-	-	-	-	-	-
Activities negatively affecting biodiversity - sensitive areas	Yes/No	No	No	No	No	No	No	No
Emissions to water	Tonnes	-	0,1	0,2	0,2	0,2	0,2	0,2
Total waste	Tonnes	-	-	190,0	162,0	140,0	140,0	140,0
Total hazardous waste	Tonnes	-	-	60,0	32,0	10,0	10,0	10,0
Does the company have sustainable oceans/ seas practices?	Text	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Has the company had any violations of UN Global Compact Principles and Organizations for Economic Cooperation and Development (OECD) guidelines for Multinational Enterprises?	Yes/No	No	No	No	No	No	No	No
Does the company have adequate processes and compliance mechanisms to monitor compliance with UN Global Compact Principles and OECD Guidelines for Multinational Enterprises?	Yes/No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Unadjusted gender pay gap	% Ratio female to male	25%	25%	25%	25%	3,5%	3,4%	3,3%
Board gender diversity	% Ratio female to male	20%	20%	20%	20%	N/A	N/A	N/A
Is the company exposed to controversial weapons (anti-personnel mines, cluster munitions, chemical weapons, and biological weapons)?	Yes/No	No	No	No	No	No	No	No
Does the company have a Code of Conduct?	Yes/No	Yes	Yes	Yes	Yes	Yes	Yes	Yes

The above outlines the DNSH threshold values for the two vessels in Green Harmony I. Full calculations and sources are to be found [Final_PAI_Projections_GHI_GHII.xlsx](#).

Part 1 – Green Harmony I

Green Harmony I includes two vessels: EMF Viking I (operational from 2027) and EMF Viking III (from end 2027 or beginning 2028).

Green Harmony I reports on the 14 mandatory and 2 voluntary PAI indicators.



Constants and Assumptions

- Engine MCR: 11,200 kW
- SFOC (LPG mode): 165 g/kWh
- Fuel split: 97.5% LPG / 2.5% ULSFO – ammonia conversion in 2029
- Emission factors: 3.00 kg CO₂/kg (LPG), 3.17 kg CO₂/kg (ULSFO)
- Sailing days/year: 270
- Load factor: 75%
- Operational hours/year: 6,480

PAI Indicator Calculations

1. GHG emissions - Scope 1 (Excel row 5): 0 in 2024, increase in 2027

Detailed Scope 1 Calculation (per ship):

- Annual output = $11,200 \times 0.75 \times 6,480 = 54,432,000$ kWh
- Fuel = $54,432,000 \times 165 / 1,000 = 8,981,280$ kg
- LPG = $8,756,248 \text{ kg} \times 3.00 \text{ kg CO}_2/\text{kg} = 26,268.74$ tonnes CO₂
- ULSFO = $224,532 \text{ kg} \times 3.17 \text{ kg CO}_2/\text{kg} = 711.73$ tonnes CO₂
- Total per ship = 26,980.47 tonnes CO₂
- Total for 2 ships in 2027 = 53,961 tonnes CO₂
- We assume a discount factor of 10% following year 2027, as we anticipate a reduction in CO₂ emissions up until 2030 where we anticipate a drastic reduction in emissions to the availability of biofuels and/or e-fuels due to the investment target and implementation of ammonia engines – which the vessels are prepared to be fitted with

2. GHG emissions - Scope 2 (Excel row 6)

Scope 2 emissions are indirect GHG emissions from electricity purchased during design or shore-based activities from the company. The sub company had no electricity or other energy purchase in 2024 therefore the value is 0.

In 2024, only EMF Viking I had measurable design-phase electricity use, totalling 4.07 GJ. As the shipbuilding process progresses, the number will increase from 2024-2025, as two ships will be in the construction phase rather than just one (EMF Viking I). No Scope 2 emissions are assumed beyond minor auxiliary emissions post-delivery from the holding company in the Marshall Islands, which is negligible and constant over time. Following 2027, this number is reported as 0.01 as



there are no electricity bills from the Marshall Islands vessel entity company. Port emissions post-delivery are a part of Scope 3 emissions.

However, since electricity purchased for the vessel is estimated under Scope 3 emissions, the electricity and/or other energy purchases directly attributable to the funds are negligible. A threshold is therefore set at 0.01–0.4 for energy potentially being purchased during the period for administrative costs purchases of similar companies without operations.

3. GHG emissions - Scope 3 (Excel row 7)

In a shipping context, the main example of Scope 2 emissions is shore power for the operator – also known as cold ironing or alternative marine power. For instance, when a vessel is docked in port and connected to shore electricity, instead of running on diesel generators, the emissions from the power plants that generate that electricity are Scope 2 emissions. The Scope 2 emissions per vessel depend on where it is docked. Some ports require vessels to run on their own diesel generated power whereas others provide shore power. As the vessel owners, we do not directly purchase or consume the shore power electricity when our vessels are operated by third-party charterers. Therefore, the in-port electricity emissions are accounted for as Scope 3 emissions (Category 13 – Downstream leased assets), rather than Scope 2 emissions. These emissions are part of the operational control of the charterers. We have calculated the emissions produced from port usage ourselves, which is provided below. Our Life-Cycle Analysts (ReFlow) have provided Cradle-to-Gate emissions, predicting our anticipated absolute threshold emissions, which prove our lifetime emissions are substantially lower than market standard vessels (in business-as-usual cases).

Due to the size of these VLACs and historic sailing route data, we predict that the Green Harmony Vessels – EMF Viking I, EMF Viking II & EMF Viking III, will be connected to shore electricity when docked in port. The emissions depend on the emission factor of the local grid, some of which are coal-heavy and others of which are integrating renewable energy infrastructure. The IMO Net-Zero Framework aims to achieve net-zero greenhouse gas emissions from international shipping by around 2050, combining mandatory emissions limits with a global pricing mechanism. This is likely to have an impact on ports and port infrastructure, influencing them to switch to renewable electricity. Therefore, a 10% discount factor of 10% is applied, with the underlying



assumption that ports become 10% more energy efficient each year starting in 2028.

These emissions are challenging to calculate given port-specific grid emission factors.

Scope 3 emissions in 2027 are expected to be minimal, given limited shore power usage during port stays. These emissions are calculated based on the annual electricity consumption (MWh) and the port-specific grid emission factors.

According to past data on the top 5 major global ports for VLACs and Ammonia/Bulk liquid handling, we predicted the countries where the Green Harmony vessels are expected to be docked. The data on their emission factors is provided below.

Grid Emission Factors by Country:

Netherlands (Port of Rotterdam)

- Emission Factor: 0.439 kg CO₂e/kWh
- Source: European Residual Mix, 2022

United States – Texas (Port of Houston)

- Emission Factor: 0.4908 kg CO₂e/kWh
- Source: Entergy Texas, 2022 data

Qatar (Port of Ras Laffan)

- Emission Factor: 0.490 kg CO₂e/kWh
- Source: IEA Emissions Factors, 2023

South Korea (Port of Ulsan)

- Emission Factor: 0.465 kg CO₂e/kWh
- Source: IEA Emissions Factors, 2024

Singapore (Port of Singapore)

- Emission Factor: 0.4057 kg CO₂e/kWh
- Source: Singapore Energy Market Authority, 2021



The assumption that the vessels will be sailing for 270 days per annum maintains. Therefore, the assumption also implies that the vessels are docked for 95 days. The mean of the emissions factors of these 5 ports is calculated to get an overall emission factor of 0,4581 kg CO₂/MWh. VLACs typically have a hotel load in port of 1.5-3 MW. A hotel load is defined as the power for on-board instrumentation, guidance, computers and communication devices, and has steadily reduced through advancements in electronic systems. In our calculations, we assume a MW of 1.5, as the Green Harmony vessels contain the newest technology with some of the best sustainability profiles and energy saving devices. The MW is multiplied by the total hours in port (95 days times 24 hours/day) to attain the total energy used (MWh). Then, these Scope 3 emissions are calculated by multiplying the total energy used by the average grid factor and divided by 1000 to convert the units to tonnes CO₂ rather than MWh.

In addition to these Scope 3 emissions, we have collaborated with Life-Cycle Analysis consultants to calculate the total upstream – supply – and downstream – use – emissions from the vessels. The Cradle-to-Gate stage measures the greenhouse gas (GHG) emissions linked to the vessel's construction, starting from the extraction of raw materials to its delivery at the shipyard. This model accounts for the various materials, equipment, and supporting construction processes throughout the expected construction period from 2024 to 2027 and excludes emissions related to vessel operation, maintenance, or end-of-life. The result is an emissions inventory highlighting the climate change impacts associated with all major systems and components of the vessel. We have chosen to break-up Scope 3.2 manufacturing emissions (Cradle-to-Gate) based on scheduled payments to the yard. The payment percentages can be seen in the Excel on a separate page under 'investment data.' 20% of the payment was due in 2024, 20% is due in 2026 and the remaining 60% is due in 2027 upon completion of the vessels. The Scope 3 Manufacturing emissions were accounted for per this schedule.

Our external Life-cycle analysis focuses on Scope 3.2 emissions from cradle to gate. There are 15 categories of Scope 3 emissions, categories 1 through 8 describe upstream emissions whereas categories 9 through 15 describe downstream emissions. Given that the holding company is registered in the Marshall Islands and there is no official office location or employees physically present there, the upstream Scope 3 emissions (categories 1 & 3-8 are not applicable). Additionally, the downstream



emissions are not yet relevant to Scope 3 emissions, as they will become relevant towards the end of the product life cycle, specifically under 3.12 - End-of-Life Treatment of Sold Products.

As noted, we have collaborated with LCA consultants to attain estimates for these emissions in the construction phase of the vessels.

4. Total GHG emissions (Excel row 8)

The calculations for this row are a sum of the 3 previous rows combined – adding Scope 1, Scope 2 & Scope 3 emissions together.

5. Carbon footprint (Excel row 9)

The calculations for carbon footprint are calculated as the accumulated GHG emissions, also referred to as the total carbon footprint calculated as tonnes GHG emitted (as seen in Excel row above, 8), divided by millions of dollars invested. These numbers can be seen on a separate Excel page, 'investment data.' The values for investment in USD are calculated as the 'Payment to yard' plus 'Other options,' such as managers supervisor fee.

Note: when debt is introduced in 2027 upon vessel completion, we continue to use the same formula – 'Payment to yard' plus 'Other options.' Additionally, our financial models assume that vessel completion and the final payment to the shipyard are realized at the beginning of Q3 2027. This is subject to manufacture delays, but nonetheless, should be around this timeframe. It is assumed that the total investment in the fund remains the same following 2027.

6. GHG intensity of investee companies (Excel row 10)

The GHG intensity of investee companies is calculated as the total carbon footprint, calculated in Tonnes CO₂ divided by revenue in millions of USD. We assume that revenue is first realized upon delivery, which is 31 March 2027 for Green Harmony I and 31 July 2027 for Green Harmony II. For 2027, we then multiply this value by 74%, which is our calculation of operational days in a year as a percentage. This multiplication explains why the predicted revenue values and therefore also the GHG intensity values differ for 2027 between the funds. From 2028 onwards, the values are consistent with the assumption that



Green Harmony I has two ships, operating at 270 days a year at a per day revenue of \$100.000.

7. Exposure to fossil fuel sector (Excel row 11)

The answer may be conditionally “yes” for the duration of the vessel’s lifetime until 2030, as maritime transportation is currently a transitional sector without fully developed zero-emission solutions. This classification may remain until clean alternatives, such as ammonia, biofuels, or e-fuels, become widely available and technologically viable. However, to align with the EU taxonomy for substantial contributions in shipping, the vessels must meet the required thresholds for emissions intensity (gCO₂/MJ) and/or the Energy Efficiency Design Index (EEDI).

8. Total energy consumption (Excel row 12)

Preconstruction:

Direct input from manufacturer for 2024 and 2025 – lead to design team, procurement team, contract management team.

"We have estimated the energy consumption (electricity usage) associated with the design process for the vessel.

(Only vessel no. 3516, the lead ship, generated energy consumption; vessels no. 3517 and 3518 did not.)

Assumptions:

It is assumed that energy consumption related to the vessel occurred only during the design phase.

Energy consumption was calculated based on the design team’s activities in two buildings where the 3516 design personnel work: the Headquarters Main Building and the GRC (Group R&D Center).

Calculation formula:

Energy consumption in the Headquarters × (Number of design personnel in the Headquarters / Total personnel in the Headquarters) × (Design M-Hours for vessel 3516 / Total design M-Hours)

+



Energy consumption in the GRC $\times$ (Number of design personnel in the GRC / Total personnel in the GRC) $\times$ (Design M-Hours for vessel 3516 / Total design M-Hours)”

The number provided by our manufacturer: 4.07 GJ

Converted to MWh: 4.07 GJ $\times$ 0.27778 MWh/GJ = 1.13 MWh

Construction:

In the construction phase (2026) we estimate 2035 MWh per ship.

Sailing:

Calculated from engine output using: 11,200 kW $\times$ 0.75 (load factor) $\times$ 24 hours $\times$ 270 days = 54,432,000 kWh or 54,432 MWh per ship/year.

Adjusted by ship count and decay factor (5% energy efficiency gains per year).

Yearly operational energy consumption can decrease over time if:

- fuel efficiency improvements occur (such as the switch from 5% pilot fuel to 2.5% pilot fuel)
- switching to lower-carbon fuels (green ammonia in our case)
- operational optimization (for example, slow steaming – operating ships at speeds lower than their maximum design speed – often 10-20% slower than typical cruising speeds)

9. Total non-renewable energy consumption (Excel row 13)

As both LPG and ULSFO are fossil-derived fuels, 95% of total energy use is classified as non-renewable:

54,432 MWh $\times$ 0.95 = 51,610.4 MWh per ship/year.

10. Total energy production (Excel row 14)

The vessels within the fund do not produce any energy, therefore there are no data points or values for this section, and they remain zero.

11. Total non-renewable energy production (Excel row 15)

To reiterate the previous point, the vessels within the fund do not produce energy in any form, – renewable or non-renewable- therefore there are no data points or values for this section, and they remain zero.



12. Activities negatively affecting biodiversity (Excel row 16)

There have been no negative impacts on bio-sensitive area connected to the vessels within our funds. Our manufacturer consistently monitors the surrounding ecosystem to ensure that it is conserved and not negatively impacted throughout its operations.

13. Emissions to water (Excel row 17)

Includes discharges such as bilge water, greywater, blackwater, and wash water. These are typically treated using onboard systems like oily water separators (OWS) and sewage treatment plants (STP), in compliance with MARPOL Annex IV and V.

A typical vessel may discharge about 1.5 m³/day of treated wastewater. Over 270 operational days, this results in ~405 m³/year. With an estimated residual pollutant concentration of 0.25 kg/m³, this equals ~101.25 kg, or approximately 0.1 tonnes of emissions to water per ship per year.

This estimate aligns with IMO regulations and benchmarks from modern dual-fuel ship operations. Emissions decrease annually by 10% through improved onboard treatment and cleaner discharge practices. During construction years (e.g., 2026), a reduced value of 0.05–0.08 tonnes/ship is applied based on HHI wastewater treatment data.

14. Total waste (Excel row 18)

This includes general shipboard waste like plastics, galley waste, etc., estimated at 60 tonnes/ship/year. This estimate is the median of Operational shipboard waste generation for large vessels (50–70 tonnes/year) based on IMO MARPOL Annex V guidance and DNV/Lloyd's Register sustainability reports. Therefore, in the construction phase (2026), we assume waste as the following table below. Prior to this year, we assume this number to be zero.



Year	Phase	General Waste per Ship (t)	Notes
2024	Pre-construction	0	Only virtual prep, no physical waste
2025	Pre-construction	0	No site activity or assembly
2026	Full construction	65	Steel, packaging, PPE, food waste
2027	Fit-out + Paint + Ops	45	Final coatings, crew waste, electrical packaging
2028+	Full operation	60	Operational packaging, food, crew maintenance

15. Total hazardous waste (Excel row 19)

Per vessel

Year	Phase	Hazardous Waste (t/year – max)	Notes
2024	Procurement / pre-construction	0	Minimal site activity
2025	Pre-construction (extended)	0	No hazardous waste generated
2026	Full construction	30.0	Welding, coatings, oil waste, filters
2027	Final fit-out + painting + ops	16.0 (8 yard + 4 ship + 4 paint)	Includes deferred paint/coatings + yard waste + operational months
2028	Full operation	5.0	Engine maintenance, bilge, batteries, waste oil

During vessel construction (e.g. at the shipyard):

- Paints and coatings with solvents, biocides, or heavy metals
- Solvent waste from cleaning and degreasing
- Oily rags and filters
- Welding and cutting waste with contaminated materials
- Battery waste (from temporary power)
- Chemical containers (resins, adhesives, etc.)



During vessel operation:

- Bilge water contaminated with oil
- Sludge from fuel purification systems
- Waste oils and lubricants
- Ballast water sediments (if contaminated)
- Expired chemicals (e.g. fire suppression, refrigerants)
- Batteries and fluorescent lamps
- Contaminated personal protective equipment (PPE)

During maintenance or retrofitting:

- Asbestos-containing materials (older ships)
- PCBs in electrical equipment (if still present)
- Paint stripping waste

16. Does the company have sustainable oceans/ seas practices? (Excel row 20)

As the voluntary PAI indicator: The company is assessed of having sustainable practices / seas practices – and is required to have one according to the policies. After the construction phase, the charterer is required to have sustainable oceans/ seas practices.

17. Has the company had any violations of UN Global Compact Principles and Organizations for Economic Cooperation and Development (OECD) guidelines for Multinational Enterprises? (Excel row 23)

The only answer complying with sustainable practices would be 'No'.

18. Does the company have adequate processes and compliance mechanisms to monitor compliance with UN Global Compact Principles and OECD Guidelines for Multinational Enterprises? (Excel row 24)

The answer complying with sustainable practices would be 'Yes'.

19. Unadjusted gender pay gap (Excel row 25)

The data outlined in the Excel is provided directly from the vessel manufacturer. This number is expected to remain constant until 2027 upon vessel delivery. Based on salaries from the Danish shipping



industry, a drastic improvement is anticipated in 2028. Thereafter, it is assumed that there will be an additional 2.5% improvement. The calculations are provided under the 'variables' page within the Excel. The data from 2028 onwards is provided from World Salaries.

20. Board gender diversity (Excel row 26)

The percentage from 2024 to 2027 represents board gender diversity of the vessel manufacturer, Hyundai Heavy Industries (HHI). In 2027, it is a mix of HHI and EMF, and from 2028 to 2030 it is exclusively EMF, since the daughter company is directly owned by EMF.

21. Is the company exposed to controversial weapons (anti-personnel mines, cluster munitions, chemical weapons, and biological weapons)? (Excel row 27)

The answer complying with sustainable practices would be 'No'.

22. Does the company have a Code of Conduct? (Excel row 28)

The answer complying with sustainable practices would be 'Yes'.

Part 2 – Green Harmony II

Green Harmony II includes one vessel: EMF Viking II, operational from medio 2027.

Green Harmony II		Estimates might be subject to revision later in case of revised assumptions						
		Threshold numerical value/binary threshold answer						
PAI Indicator	Unit	2024	2025	2026	2027	2028	2029	2030
GHG emissions - Scope 1	Tonnes CO ₂	-	-	-	26980.0	24282.0	21853.8	5000.0
GHG emissions - Scope 2	Tonnes CO ₂	-	-	-	-	-	-	-
GHG emissions - Scope 3	Tonnes CO ₂	14649.1	-	14649.1	45514.1	1410.0	1269.0	1142.1
Total GHG emissions	Tonnes CO ₂	14649.1	-	14649.1	72494.1	25692.0	23122.8	6142.1
Carbon footprint	(tCO ₂ e/MS invested)	581.2	-	283.5	558.9	198.1	178.3	47.4
GHG intensity of investee companies	(tCO ₂ e/MS of revenue)	N/A	N/A	N/A	6405.3	951.6	856.4	227.5
Is the company active in the fossil fuel sector?	Yes/No	Yes*	Yes*	Yes*	Yes*	Yes*	Yes*	No
Total energy consumption	MWh	-	10.0	2035.0	54432.0	51710.4	49124.9	46668.6
Total non-renewable energy consumption	MWh	-	9.5	1933.3	51710.4	49124.9	46668.6	44335.2
Total energy production	MWh	-	-	-	-	-	-	-
Total non-renewable energy production	MWh	-	-	-	-	-	-	-
Activities negatively affecting biodiversity - sensitive areas	Yes/No	No	No	No	No	No	No	No
Emissions to water	Tonnes	-	-	-	0.1	0.1	0.1	0.1
Total waste	Tonnes	-	-	95.0	81.0	70.0	70.0	70.0
Total hazardous waste	Tonnes	-	-	30.0	16.0	5.0	5.0	5.0
Does the company have sustainable oceans/ seas practices?	Text	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Has the company had any violations of UN Global Compact Principles and Organizations for Economic Cooperation and Development (OECD) guidelines for Multinational Enterprises?	Yes/No	No	No	No	No	No	No	No
Does the company have adequate processes and compliance mechanisms to monitor compliance with UN Global Compact Principles and OECD Guidelines for Multinational Enterprises?	Yes/No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Unadjusted gender pay gap	% Ratio female to male	25%	25%	25%	25%	3.5%	3.4%	3.3%
Board gender diversity	% Ratio female to male	20%	20%	20%	20%	N/A	N/A	N/A
Is the company exposed to controversial weapons (anti-personnel mines, cluster munitions, chemical weapons, and biological weapons)?	Yes/No	No	No	No	No	No	No	No
Does the company have a Code of Conduct?	Yes/No	Yes	Yes	Yes	Yes	Yes	Yes	Yes

[Final_PAI_Projections_GHI_GHII.xlsx](#)



Constants and Assumptions

- Engine MCR: 11,200 kW
- SFOC (LPG mode): 165 g/kWh
- Fuel split: 97.5% LPG / 2.5% ULSFO
- Emission factors: 3.00 kg CO₂/kg (LPG), 3.17 kg CO₂/kg (ULSFO)
- Sailing days/year: 270
- Load factor: 75%
- Operational hours/year: 6,480

PAI Indicator Calculations

Calculation methodology is the same as Green Harmony I, however, Green Harmony II has one vessel rather than two and the building timelines are slightly different, which impacts values. Most values are the same as Green Harmony I, just divided by two.



Appendix

1. Purpose of This Appendix

This appendix provides supporting documentation and evidence for the projected absolute values of Principal Adverse Impact (PAI) indicators disclosed under Article 9 of the EU Sustainable Finance Disclosure Regulation (SFDR). It covers emissions, energy use, and waste indicators for two Article 9 funds: Green Harmony I and Green Harmony II, each financing VLAC-type LPG dual-fuel vessels currently in pre-construction.

2. Technical Assumptions

- Engine: HYUNDAI-MAN B&W 6G60ME-C10.5-LGIP-HPSCR
- MCR: 11,200 kW
- Load factor: 75%
- Sailing days/year: 270
- SFOC (LPG mode): 165 g/kWh
- Fuel split: 97.5% LPG / 2.5% ULSFO
- Emission factors: 3.00 kg CO₂/kg (LPG), 3.17 kg CO₂/kg (ULSFO)
- Operational years: 2027 onward (31-03-2027 EMF Viking I and 31-12-2027 EMF Viking III in Green Harmony I, and 31-07-2027 EMF Viking II in Green Harmony II)
- Decay factors: Scope 1 (10%), Scope 2 (10%), Waste and Water (10%), Energy (5%)
- Improvement in unadjusted gender pay gap of 2,5% starting in 2029, after the Holding Companies take full operational ownership of the vessels in 2028)

3. Emissions and Energy Start Timeline

Based on documentation from shipbuilder HHI (see references), emissions and energy usage are accounted for as follows:

2024: Only EMF Viking I (Hull 3516) generated emissions (0.2 tonnes CO₂ Scope 2, 4.07 GJ = 1.13 MWh energy), due to design activities.

2025: No emissions – vessels remain in pre-construction.

2026: Minimal waste/emissions (~5% of full year) begin as construction starts.

2027 onward: Full operational impact begins (GHG Scope 1, energy, waste, etc.).



4. References

- HHI PAI Indicator Response Document (PAI indicators (HHI reply_250516 (003).pdf), page 6
- 2024 KSOE Integrated Report (2024_KSOE_IR_EN.pdf), pages 124–126
- MAN Energy Solutions G60ME-C10.5-LGIP Technical Specification
- EU SFDR Regulation (2019/2088), Article 9 Disclosure Requirements
- World Salaries, Average Shipping Officer Salary in Copenhagen Denmark
- ReFlow report – Scope 3.2 emissions

Base values per ship:

- Scope 1 GHG emissions: 26,980 tonnes CO₂/year
- Scope 2 emissions: 0.5 tonnes CO₂/year (starting 2027)
- Energy use: 54,432 MWh/year
- Non-renewable energy: 51,610.4 MWh/year
- Emissions to water: 0.1 tonnes/year
- Waste: 60 tonnes/year
- Hazardous waste: 8 tonnes/year

Decay factors (applied from 2027 onward):

- Scope 1: 10% annual reduction
- Scope 2: 5% annual reduction
- Energy & non-renewable energy: 5% reduction
- Waste & water: 10% reduction

Year-by-year formula:

$$\text{Projected Value} = (\text{Base Value per Ship}) \times (\text{Number of Operational Ships}) \times (\text{Decay Factor})^{(\text{Year} - 2027)}$$

Note: the calculations can also be seen in our Excel sheet.

Annual absolute emissions and impacts were projected from 2024 to 2030 using base values per ship and scaling them by the number of operational ships each year. Improvement trends were applied using decay factors (efficiency gains), resulting in lower emissions, energy use, and waste per ship per year.

Additional Note: Scope 3 GHG emissions are not finalized in this version of the document. We are currently awaiting full upstream/downstream lifecycle assessments from our external LCA analysts. Provisional estimates may be included upon internal review and verification. As of now, our Excel sheet places all Scope 3 emissions from manufacturing in the completion of the



vessels. This is subject to change.

5. Summarized Excel

Do no significant harm 2024 test

Green Harmony I & II			
Threshold: numerical value/binary threshold answer			
PAI Indicator	Unit	GH I	GH II
		2024	2024
GHG emissions - Scope 1	Tonnes CO2	-	-
GHG emissions - Scope 2	Tonnes CO2	-	-
GHG emissions - Scope 3	Tonnes CO2	29.298,28	14.649,14
Total GHG emissions	Tonnes CO2	29.298,28	14.649,14
Carbon footprint	(tCO2e/M\$ invested)	581,2	581,2
GHG intensity of investee companies	(tCO2e/M\$ of revenue)	N/A	N/A
Is the company active in the fossil fuel sector?	Yes/No	Yes*	Yes*
Total energy consumption	MWh	1,13	-
Total non-renewable energy consumption	MWh	1,13	-
Total energy production	MWh	0	0
Total non-renewable energy production	MWh	0	0
Activities negatively affecting biodiversity - sensitive areas	Yes/No	No	No
Emissions to water	Tonnes	0	0
Total waste	Tonnes	0	0
Total hazardous waste	Tonnes	0	0
Does the company have sustainable oceans/ seas practices?	Text	Yes	Yes

Has the company had any violations of UN Global Compact Principles and Organizations for Economic Cooperation and Development (OECD) guidelines for multinational enterprises?	Yes/No	No	No
Does the company have adequate processes and compliance mechanisms to monitor compliance with UN Global Compact Principles and OECD Guidelines for Multinational Enterprises?	Yes/No	Yes	Yes
Unadjusted gender pay gap	% Ratio female to male	25%	25%
Board gender diversity	% Ratio female to male	20%	20%
Is the company exposed to controversial weapons (anti-personnel mines, cluster munitions, chemical weapons, and biological weapons)?	Yes/No	No	No
Does the company have a Code of Conduct?	Yes/No	Yes	Yes