

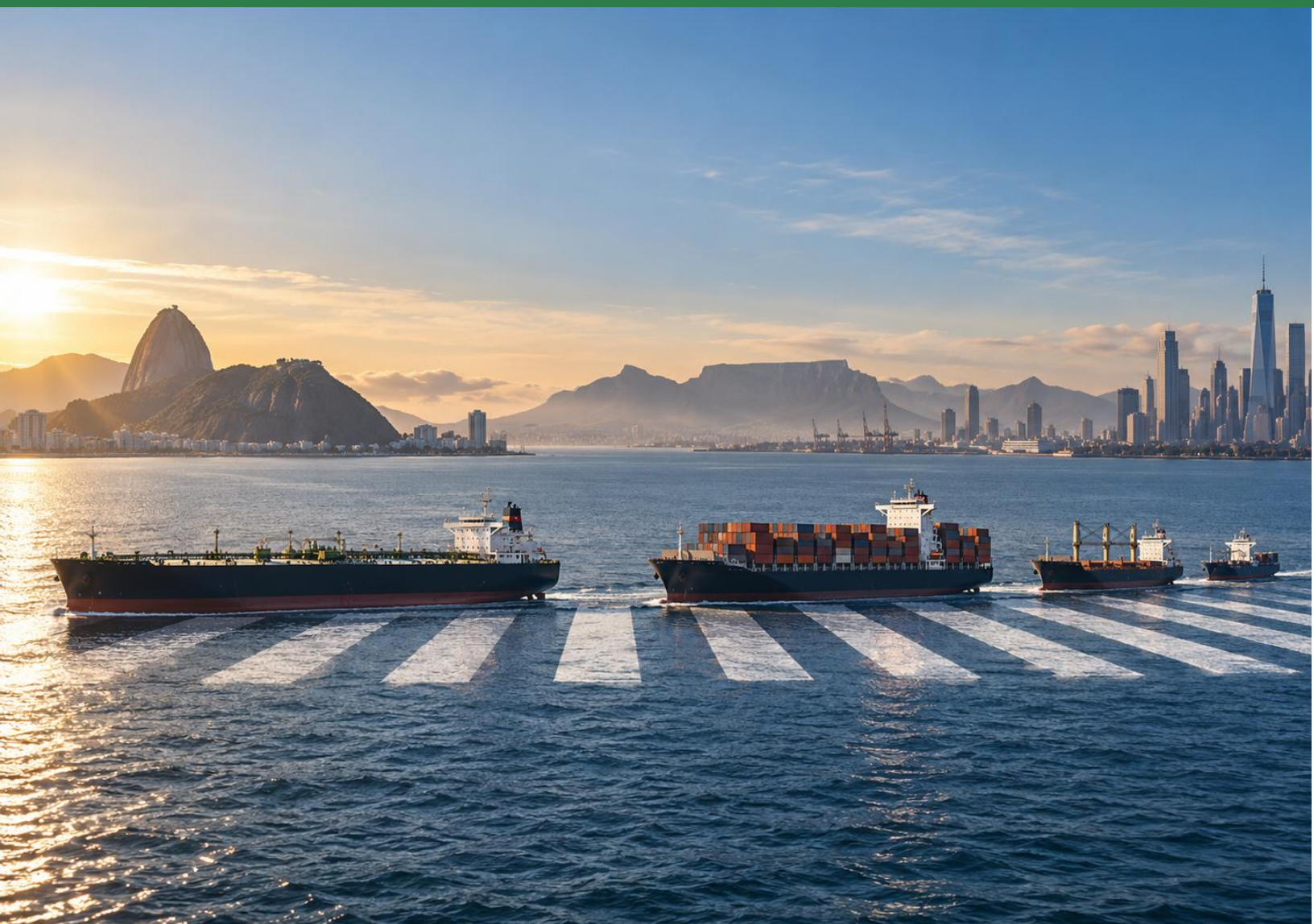


ERCST

Roundtable on
Climate Change and
Sustainable Transition

18 October
2026

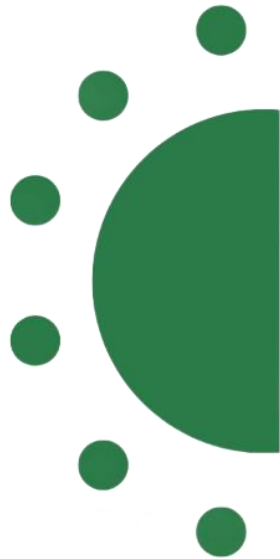
White Paper: A Market Approach to Ship Decarbonization



Andrei Marcu Michael Mehling

SUMMARY

- *The proposal responds to the invitation extended at ISWG-GHG 22 to build bridges on the draft amendments to MARPOL Annex VI, retaining the architecture that commands general support and concentrating on the points of divergence.*
- *It widens the compliance options in regulation 36 to on-board reductions, surplus units, market stability units and investment equivalent units, so that each ship has more than one route to compliance, while a combined limit on the use of market stability units and investment equivalent units keeps the options in balance.*
- *The GFI Implementation Facility operates through two windows: a General Window dedicated to support for developing countries, and an Investment Window that keeps most resources in ships, fuels and ports while securing a fixed share of any profits for ZNZ rewards.*



Contents

.....	1
1. Context and background	5
2. Efforts to overcome the impasse	5
3. Explanatory memo	5
4. Annex: Proposed draft text in MARPOL Annex VI	8
Chapter 5 – Regulations on the reduction of GHG emissions from ships	8
Regulation 30	8
Application	8
Regulation 31	8
Goal	8
Regulation 32	8
Functional requirements	8
Regulation 33	9
Attained annual GHG fuel intensity (attained annual GFI)	9
Regulation 34	9
Sustainable fuels certification schemes	9
Regulation 35	10
Target annual GHG fuel intensity (target annual GFI)	10
Regulation 36	11
Annual GFI compliance approaches	11
Regulation 37	15
Reporting and verification of the annual GFI	15
Regulation 38	17
IMO GFI Registry	17
Regulation 39	19
Uptake of zero or near-zero GHG emission technologies, fuels and/or energy sources (ZNZs)	19
Regulation 40	20
GFI Implementation Facility	20
Regulation 41	22
Disbursement of revenue and use of investments	22
Regulation 42	23

Promotion of technical cooperation and transfer of technology relating to the continuous improvement of the ship's GHG fuel intensity	23
Regulation 43	23
Food security	23
Regulation 44	23
Review of the chapter	23
Chapter 6 – Verification of compliance with the provisions of this annex	24
Regulation 45	24
Application	24
Regulation 46	24
Verification of compliance	24

1. Context and background

Following the adoption of the *2023 IMO Strategy on Reduction of GHG Emissions from Ships*, MEPC 83 approved, in April 2025, draft amendments to MARPOL Annex VI establishing the IMO Net-Zero Framework. The approved text combined a technical element, in the form of a GHG fuel intensity (GFI) standard with two tiers of annual targets, with an economic element under which compliance deficits would be balanced through surplus units or remedial units acquired at fixed prices, the revenue accruing to an IMO Net-Zero Fund. At its second extraordinary session in October 2025, the Committee adjourned consideration of the adoption of the draft amendments for one year. MEPC 84 subsequently instructed the Intersessional Working Group on Reduction of GHG Emissions from Ships (ISWG-GHG) to consider proposals on how to address concerns with the draft amendments, in line with the 2023 IMO GHG Strategy.

The discussions held since have brought several fault lines into focus: the stringency and evidentiary basis of the GFI reduction trajectory; the place of financial contributions among the compliance options, and of a centrally administered fund under MARPOL Annex VI; the predictability of support for a just and equitable transition; and the need for, and financing of, a dedicated incentive for zero or near-zero GHG emission technologies, fuels and/or energy sources (ZNZs).

2. Efforts to overcome the impasse

As reflected in the draft report of ISWG-GHG 22 (ISWG-GHG 22/WP.1/Rev.1), held from 1 to 4 September 2026, delegations have put forward a range of proposals to address these concerns, including:

- a softer initial GFI reduction trajectory, combined with periodic assessment of the availability, affordability and scalability of marine fuels;
- the use of surplus units to balance any compliance deficit;
- the replacement of the IMO Net-Zero Fund by a lighter “Facility”, open to voluntary contributions and able to rely on accredited financial institutions;
- a direct contribution scheme, under which ships could comply through contributions to approved projects; and
- the recognition of verified out-of-sector offsetting, transaction fees on unit transfers as an alternative source of revenue, and calculation-based incentives for ZNZs.

In summing up, the Chair observed general support for the underlying GFI calculation, reporting and verification architecture; suggested a softer start, predictability and an “assess to adjust” approach for the trajectory; and proposed retaining four compliance options at this stage, namely on-board emission reductions, reductions achieved elsewhere within the fleet, including through pooling, financial contributions towards a Fund/Facility, and direct contributions to approved projects, on the understanding that the first two were fully acceptable while the latter two required further work. The Chair further noted the general view that the name of the mechanism matters less than its nature, purpose and functions, suggested that a dedicated ZNZ incentive be retained in principle, and invited delegations to continue to explore concepts having the potential to build bridges.

3. Explanatory memo

The draft text that follows is offered as an independent contribution to that effort. It leaves intact the elements that command general support, namely the well-to-wake GFI metric, the sustainable fuels certification

schemes, the reporting and verification cycle and the IMO GFI Registry, and concentrates on the elements on which views diverge. Rather than choosing between competing priorities, it seeks to accommodate them within a single architecture built on a single target annual GFI with a softer start and a review-based adjustment mechanism (regulation 35), a broader set of compliance options (regulation 36), a GFI Implementation Facility operating through two separate windows (regulations 40 and 41) and enforcement at the national level (regulation 46). Square brackets denote values and options that remain open.

A ship would be able to meet its target annual GFI through one or more of the following options, which ensures that there are options available for different preferences that may in themselves represent red lines for some parties. By offering alternatives, we attempt to ensure that there is no compulsory payment for compliance that may be objectionable to some Parties.

- GFI reductions on board, with any over-performance generating surplus units (SUs);
- pooling, whereby ships within a fleet, or ships of different companies, balance their positions by drawing on SUs generated elsewhere or banked from earlier reporting periods;
- purchase of SUs from other ships;
- purchase of market stability units (MSUs), consisting of eligible carbon credits, subject, together with investment equivalent units, to a combined limitation that protects the market for SUs and, from 2031, procured centrally through auctions; a share of proceeds, levied as a mandatory contribution on the retirement of SUs and, at a higher rate, of MSUs, feeds the General Window of the Facility; and
- use of investment equivalent units (IEUs), acquired through direct investment, valued by reference to the price of SUs, in programmes, projects or activities approved by the Committee, either directly or through the Investment Window of the Facility, where a fixed share of [20] per cent of any profits is allocated to ZNZ rewards, and subject, together with MSUs, to the combined limitation.

Two features of the proposal draw on options that some delegations put forward or supported, as recorded in paragraph 58 of the Chair's summary. First, our proposed use of eligible carbon credits as MSUs corresponds to the option of "the recognition of verified out-of-sector offsetting" (paragraph 58.1). Second, the Chair's summary refers to "the application of transaction fees on SU trades as an alternative source of revenue" (paragraph 58.2). Our proposal takes up this suggestion in the form of a mandatory contribution levied on the retirement of SUs and, at a higher rate, of MSUs (regulation 40.11), which feeds the General Window of the Facility.

The notification to the IMO GFI Registry of the volume and price of each transfer of SUs (regulations 36.6.1 and 38.3bis), and the publication of that information in aggregated form (regulation 38.7), are in line with established practice: price and volume transparency of this kind is commonplace in various existing policy frameworks (such as emissions trading systems, through public registries, auction reports and market-reporting requirements), and does not violate confidentiality or privacy rules, since it concerns the units traded rather than the commercial relationships of the parties and can be published without identifying individual ship accounts.

The underlying logic of our approach is that greater optionality broadens acceptability. Each ship may select the compliance pathway best suited to its trade, fleet and access to fuels, and no ship is confined to a fixed-price payment. The options correspond to those retained by the Chair, while giving concrete and more widely acceptable form to the two that require further work.

The resulting architecture may be likened to a house with several rooms, in which Parties with different preferences can each find a place. The rooms are nevertheless connected by a single formula: the combined

limitation in regulation 36.20 caps the overall use of MSUs and IEUs at the compliance deficit that remains after the use of SUs, with the Committee determining how the available amount is shared between them (regulation 36.22). This keeps the structure in equilibrium and ensures that the use of any one option does not undermine the others, in particular the market for SUs, through which on-board reductions are rewarded.

The same logic is applied to the use of resources, with each window responding to a distinct priority:

- the **General Window** is dedicated to support for developing countries, in particular African States, LDCs and SIDS. As ZNZ rewards no longer draw on it, support for a just and equitable transition is shielded from competing uses, addressing the concern that rewards could absorb a disproportionate share of available revenue;
- the **Investment Window** channels the large majority of its resources into ZNZs and into maritime, coastal and port-related infrastructure and equipment, under the administration of an international financial institution and with investors retaining ownership of their investments. This responds to delegations that have expressed reservations about compliance through payments to a centrally administered fund and favour investment delivering tangible emission reductions; and
- a **guaranteed share** of the Investment Window is allocated to ZNZ rewards, responding to delegations and observers that consider a dedicated incentive essential for early uptake. As IEUs may be expected to become a preferred compliance option, this window, and with it the resources available for ZNZ rewards, is likely to grow faster than the General Window.

4. Annex: Proposed draft text in MARPOL Annex VI

Chapter 5 – Regulations on the reduction of GHG emissions from ships

Regulation 30

Application

- 1 This chapter shall apply to all ships of 5,000 gross tonnage and above.
- 2 Notwithstanding paragraph 1 of this regulation, the provisions of this chapter shall not apply to:
 - .1 ships solely engaged in voyages within waters subject to the sovereignty or jurisdiction of the State the flag of which the ship is entitled to fly; however, each Party should ensure, by the adoption of appropriate measures, that such ships act in a manner consistent with the requirements of chapter 5, so far as is reasonable and practicable;
 - .2 ships not propelled by mechanical means, and platforms including FPSOs and FSUs and drilling rigs, regardless of their propulsion; and
 - .3 semi-submersible vessels until further review of the application of this chapter.

Regulation 31

Goal

- 1 The goal of this chapter is to reduce greenhouse gas (GHG) emissions from international shipping as soon as possible, within a practical timeframe, contributing to the reduction targets set out in the 2023 IMO Strategy on Reduction of GHG Emissions from Ships,¹ effectively promoting the reduction of GHG emissions from shipping and providing the world fleet with a needed incentive while supporting developing countries to effectively participate in and benefit from such efforts. The regulatory objective of this chapter is to achieve compliance with the requirements set out herein.
- 2 This chapter is intended to replace any other regional or national approaches.

Regulation 32

Functional requirements

In order to achieve the goal set out in regulation 31, a ship to which this chapter applies shall comply with the following functional requirements:

- .1 requirements on the continuous improvement of the ship's GHG fuel intensity in accordance with regulation 35; and
- .2 requirements on GFI compliance approaches, including through the use of compliance units, in accordance with regulation 36 and, where applicable, non-compliance mechanisms administered at the national level in accordance with regulation 46.1, and on rewards for

¹ Refer to the 2023 IMO Strategy on Reduction of GHG Emissions from Ships (resolution MEPC.377(80)).

the uptake of zero or near-zero GHG emission technologies, fuels and/or energy sources (ZNZs) in accordance with regulation 39.

Regulation 33

Attained annual GHG fuel intensity (attained annual GFI)

1 After the end of calendar year 2029 and after the end of each calendar year thereafter, each ship to which this chapter applies shall calculate the attained annual GFI over a 12-month period from 1 January to 31 December for the preceding calendar year (reporting period), using the data collected in accordance with regulations 27 and 37 and specified in appendix XII, taking into account the guidelines developed by the Organization.²

2 The attained annual GFI of a ship in a given year (denoted as $GFI_{attained}$) shall be calculated as follows, taking into account the guidelines developed by the Organization:³

$$GFI_{attained} = \frac{GHG_{net}}{Energy_{total}}$$

where:

$GFI_{attained}$, expressed in gCO₂eq/MJ, is the attained annual GFI of a ship in a given year;

GHG_{net} , expressed in gCO₂eq, is the total net GHG emissions associated with all fuels used by the ship in the reporting period, evaluated on a well-to-wake basis, with GHG captured on board and delivered off the ship taken into account, where applicable, and calculated taking into account the guidelines developed by the Organization; and⁴

$Energy_{total}$, expressed in MJ, refers to the total amount of energy used by the ship in the reporting period, including but not limited to fuel oil and fuel oil coupled with onboard carbon capture and storage, electricity delivered from shore power, and other low-emission energy sources, such as wind propulsion and solar power.

Regulation 34

Sustainable fuels certification schemes

1 The GHG intensity of a fuel shall be calculated using GHG emission factors and also taking into account all relevant metrics and indicators for each sustainability theme or aspect of a fuel as documented on the Fuel Life Cycle Label(s) (FLL).

² Refer to the guidelines to be developed on the calculation of the attained annual greenhouse gas fuel intensity (GFI Calculation Guidelines).

³ Refer to the guidelines to be developed on the calculation of the attained annual greenhouse gas fuel intensity (GFI Calculation Guidelines).

⁴ Refer to the *2024 Guidelines on life cycle GHG intensity of marine fuels* (resolution MEPC.391(81)), as may be amended.

2 GHG emission factors and sustainability themes or aspects of a fuel as documented on the FLL shall be certified, as appropriate, by a recognized Sustainable Fuels Certification Scheme (SFCS) taking into account guidelines developed by the Organization.⁵

3 The certified information in the FLL may accompany the bunker delivery note referred to in regulation 18, taking into account guidelines developed by the Organization.⁶

4 An SFCS shall be recognized by the Committee taking into account the recognition process(es) and criteria specified in guidelines developed by the Organization.⁷ The recognition of an SFCS shall be subject to renewal every five years and periodic review, taking into account guidelines developed by the Organization.⁸

5 No later than 1 March 2028, the Secretary-General of the Organization shall publish a list of recognized SFCSs and shall update the list periodically thereafter.

6 Within three months after the end of calendar year 2028, and within three months after the end of each following calendar year, the Organization shall ensure that the legal entity administering the recognized SFCS reports data relevant to their activity for that calendar year or portion thereof to ensure transparency, traceability, and environmental integrity in the certification process, taking into account guidelines developed by the Organization.⁹ On the basis of the reported data, the Secretary-General of the Organization shall produce an annual report to the Committee.

Regulation 35

Target annual GHG fuel intensity (target annual GFI)

1 The target annual GFI (GFI_T) of a ship shall be determined as a single annual GFI compliance benchmark for each calendar year specified in Table 4.

2 The GFI_T for each ship to which this regulation applies shall be determined/calculated as follows:

$$GFI_T = \left(1 - \frac{Z_T}{100}\right) \times GFI_{2008}$$

where:

subscript T is the calendar year referred to in Table 4;

GFI_{2008} is the GFI reference value equivalent to 93.3 gCO₂eq/MJ (well-to-wake), representing the average GFI of international shipping in year 2008; and

⁵ Refer to guidelines to be developed/amend the 2024 *Guidelines on life cycle GHG intensity of marine fuels* (resolution MEPC.391(81)) (LCA guidelines), as appropriate.

⁶ Refer to guidelines to be developed/amend the 2024 *Guidelines on life cycle GHG intensity of marine fuels* (resolution MEPC.391(81)) (LCA guidelines), as appropriate.

⁷ Refer to guidelines to be developed/amend the 2024 *Guidelines on life cycle GHG intensity of marine fuels* (resolution MEPC.391(81)) (LCA guidelines), as appropriate.

⁸ Refer to guidelines to be developed/amend the 2024 *Guidelines on life cycle GHG intensity of marine fuels* (resolution MEPC.391(81)) (LCA guidelines), as appropriate.

⁹ Refer to guidelines to be developed/amend the 2024 *Guidelines on life cycle GHG intensity of marine fuels* (resolution MEPC.391(81)) (LCA guidelines), as appropriate.

Z_T is the annual GFI reduction factor to ensure continuous improvement of the ship's GHG fuel intensity, the values of which are specified in Table 4, as compared to the GFI reference value.

Table 4 – Annual GFI reduction factors for the target annual GFI relative to the GFI reference value

Year _T	Z _T (GFI benchmark)
2029	[x]
2030	[x]
2031	[x]
2032	[x]

3 By 1 January 2032, the Committee shall determine the Z-factor (Z_T) for the years 2033 to 2040 in line with regulation 31.

4 A dynamic baseline adjustment mechanism, to ensure practicality and to reflect sector realities, shall apply as follows, considering guidelines developed by the Organization:

- .1 every [two/five] years, beginning no later than 2030, the Organization shall review the fleet-wide attained GFI against the target GFI for the review year;
- .2 if, for the reporting period, the actual GFI reduction defined as:

$$Z_T - \left(\frac{GFI_{2008} - GFI_{fleet,T}}{GFI_{2008}} \times 100 \right) > [5]$$

where $GFI_{fleet,T}$ is the energy-weighted average attained annual GFI of all ships to which this chapter applies for calendar year T , such that a recalculation is triggered only where the actual fleet-wide GFI reduction falls short of Z_T by more than [5] percentage points.

- .3 the recalculated trajectory shall be determined by maintaining the original slope of the trajectory and proportionately adjusting the target end-year, subject to guidelines to be developed by the Organization; and
- .4 any adjustment under this paragraph shall be adopted by the Committee by way of an amendment to Table 4.

Regulation 36

Annual GFI compliance approaches

1 At the end of each reporting period as defined in regulation 33, each ship shall determine its GFI compliance balance, expressed in tonnes of CO₂eq, as follows, considering guidelines developed by the Organization:¹⁰

$$\text{GFI compliance balance} = ((\text{Target annual GFI} - \text{Attained annual GFI}) \times \text{Energy}_{total}) \times 10^{-6}$$

¹⁰ Refer to the guidelines to be developed on the calculation of the attained annual greenhouse gas fuel intensity (GFI Calculation Guidelines).

2 If the GFI compliance balance is equal to or greater than zero, the ship shall be considered in compliance and be eligible to receive surplus units for its positive compliance balance in accordance with paragraph 5 of this regulation.

3 If the GFI compliance balance is less than zero, the ship shall have a compliance deficit, the magnitude of which shall be equal to its negative compliance balance expressed as a positive value in tonnes of CO₂eq, and shall achieve compliance in accordance with the GFI compliance approaches specified in paragraph 4 of this regulation.

$$\text{Compliance deficit} = |\text{GFI compliance balance}|, \text{ when GFI compliance balance} < 0$$

Balance of the compliance deficit

4 A ship with a compliance deficit shall balance such deficit through one or more of the following GFI compliance units, as determined by the Committee,¹¹ which shall be recorded on the ship account statement issued by the IMO GFI Registry in accordance with regulation 38, considering the guidelines developed by the Organization, and subject, in the case of the units referred to in paragraphs 4.2 and 4.3 of this regulation, to the combined limitation set out in paragraphs 20 to 22 of this regulation:¹²

- .1 surplus units transferred from other ships or banked from previous reporting periods, in accordance with paragraphs 5 to 7 of this regulation;
- .2 market stability units, in accordance with paragraphs 8 to 14 of this regulation; and/or
- .3 investment equivalent units, in accordance with paragraphs 15 to 19 of this regulation.

Surplus units

5 The amount of surplus units a ship is eligible to receive shall be equal to its positive compliance balance, expressed in tonnes of CO₂eq, taking into account guidelines developed by the Organization.¹³

$$SU = \max\{0; (GFI_T - GFI_{attained}) \times Energy_{total} \times 10^{-6}\}$$

where the terms are as defined in regulations 33 and 35, and *SU* is expressed in tonnes of CO₂eq.

6 A surplus unit credited to the ship account in the IMO GFI Registry may be used for one of the following purposes, which shall be recorded in the IMO GFI Registry, considering guidelines developed by the Organization:¹⁴

- .1 transfer to another ship to balance that ship's compliance deficit, subject to notification in accordance with regulation 38.3bis;
- .2 banked for use in the subsequent reporting periods; or
- .3 voluntarily cancelled as a mitigation contribution.

¹¹ The Committee shall determine the applicable compliance approach from among the options set out in this regulation.

¹² Refer to guidelines to be developed by the Organization.

¹³ Refer to guidelines to be developed by the Organization.

¹⁴ Refer to guidelines to be developed by the Organization.

7 A surplus unit shall only be cancelled once, but each one of a ship's surplus units may be used for any of the purposes provided for in paragraph 6 of this regulation.

Market stability units

8 Market stability units (MSUs) shall consist of eligible carbon credits recognized by the Organization (including those duly verified and authorized for international transfer under the Paris Agreement) in accordance with paragraph 9 of this regulation.

9 The Committee shall determine the eligibility criteria for carbon credits that may qualify as market stability units for the purposes of paragraph 4.2 of this regulation, considering guidelines developed by the Organization.¹⁵

Application of the combined limitation to market stability units

10 In order to protect the market for surplus units, market stability units shall be subject to the combined limitation set out in paragraphs 20 to 22 of this regulation. Market stability units purchased in 2029 and 2030 can no longer be used for compliance with this regulation after the end of 2030.

() ()
() () () 11 Any adjustment under paragraphs 20 to 22 of this regulation shall be adopted by
()
the Committee by way of an amendment.

Procurement of market stability units

12 Market stability units shall be procured through the following approaches:

- .1 in 2029 and 2030, ships may procure market stability units in accordance with the criteria established pursuant to paragraph 9 of this regulation; and
- .2 starting in 2031, a centralized procurement function shall be implemented for market stability units, with the GFI Implementation Facility acting as the buyer and the seller, to ensure that access to market stability units is available to all operators on an equal-opportunity basis and to ensure that the part of the combined limitation allocated to market stability units in accordance with paragraph 22 of this regulation is effectively enforced.

13 The GFI Implementation Facility shall acquire market stability units from the market through a reverse auction mechanism and shall sell such units through auction to ship operators at regular intervals as established by the Board of the Facility.¹⁶

14 The activities of the GFI Implementation Facility in the market for market stability units shall be determined through the governing provisions of the Facility.¹⁷

Investment equivalent units

15 An investment equivalent unit (IEU) is a non-transferable unit corresponding to one tonne of CO₂eq on a well-to-wake basis, which a ship may choose to acquire to balance its compliance deficit by means of a direct investment made in accordance with paragraphs 16 to 19 of this regulation, within the limit set out

¹⁵ Refer to guidelines to be developed by the Organization.

¹⁶ Refer to guidelines to be developed by the Organization on the centralized procurement process.

¹⁷ Refer to the governing provisions of the GFI Implementation Facility to be developed by the Organization.

in paragraphs 20 to 22 of this regulation, taking into account guidelines developed by the Organization.¹⁸ The value of an IEU, expressed in US\$, shall be equal to the [volume-weighted] average price of surplus units transferred during the six-month period [ending on 30 June following the reporting period], as recorded in the IMO GFI Registry. [For the first reporting period, the value of an IEU shall be determined by the Committee.]

Use of investment equivalent units

16 The total amount of direct investment shall be not less than the amount calculated by multiplying the compliance deficit remaining after the use of the GFI compliance units specified in paragraphs 4.1 and 4.2 of this regulation by the value of an IEU, as follows:

$$\text{Total direct investment} = \text{Remaining compliance deficit} \times V_{IEU}$$

where the total direct investment is expressed in US\$, the remaining compliance deficit in tonnes of CO₂eq, and V_{IEU} is the value of an IEU determined in accordance with paragraph 15 of this regulation.

17 Direct investments shall be made, at the choice of the ship:

- .1 in a programme, project or activity approved by the Committee in accordance with paragraph 18 of this regulation[, provided that a share of [20] per cent of any profits generated from such investment shall be paid to the Investment Window of the GFI Implementation Facility, in accordance with regulation 41.3.1, for allocation to rewards for the use of ZNZs]; or
- .2 through the Investment Window of the GFI Implementation Facility, which shall invest in approved programmes, projects or activities in accordance with regulations 40 and 41.

Approval of programmes, projects or activities

18 The Administration of a Party may propose to the Committee a programme, project or activity for approval, accompanied by the necessary supporting information, including information on its feasibility and effectiveness. The Committee shall approve those which are deemed feasible and effective and are consistent with the following purposes:

- .1 uptake of [new fuels and technologies] [ZNZs]; and
- .2 the purposes set out in regulation 41.3.2.

19 The Administration of the Party that proposed an approved programme, project or activity shall conduct the necessary audits of the entity responsible for its implementation and shall report the results to the Committee, taking into account guidelines developed by the Organization.¹⁹

Combined limitation on the use of market stability units and investment equivalent units

20 In order to protect the market for surplus units, the total amount of market stability units and investment equivalent units used by ships for compliance purposes in any reporting period shall not exceed the residual compliance gap, in accordance with the following approach:

¹⁸ Refer to guidelines to be developed on balancing the compliance deficit through direct investments in approved programmes, projects or activities.

¹⁹ Refer to guidelines to be developed on balancing the compliance deficit through direct investments in approved programmes, projects or activities.

- .1 in 2029 and 2030, no combined limitation shall apply; and
- .2 starting in 2031, the following combined limitation shall be observed yearly, taking into account guidelines developed by the Organization:

$$\text{Residual compliance gap (year } x+1) = \max \{0; \text{Projected deficit (year } x+1) - \text{Existing surplus units (end of year } x) - \text{Projected surplus units (issued in year } x+1)\}$$

Hence, the total combined use of market stability units and investment equivalent units shall never exceed the residual compliance gap, as expressed in the following formula:

$$\text{MSUs used (year } x+1) + \text{IEUs used (year } x+1) \leq \text{Residual compliance gap (year } x+1)$$

[An alternative approach could be:

$$\text{Residual compliance gap (year } x+1) = \text{Projected deficit (year } x) \times [0.6]]$$

where the residual compliance gap and the projected deficit and surplus units are expressed in tonnes of CO₂eq.

21 For the purposes of paragraph 20 of this regulation, no ship may use market stability units and investment equivalent units in an amount exceeding its compliance deficit remaining after the use of surplus units in accordance with paragraph 4.1 of this regulation.

22 Before the start of each reporting period, the Committee shall determine, on the basis of the report of the Board of the GFI Implementation Facility and the data recorded in the IMO GFI Registry, the share of the residual compliance gap that is available for market stability units and for investment equivalent units, respectively. The IMO GFI Registry shall publish those amounts, record the use of each type of unit against them and, upon registration by a ship of an intended direct investment in accordance with paragraph 17 of this regulation, confirm that the corresponding amount of investment equivalent units is available. [Investment equivalent units credited in excess of the amount available shall be carried forward for use in subsequent reporting periods.]

Regulation 37

Reporting and verification of the annual GFI

1 Within three months after the end of calendar year 2029 and by 31 March after each reporting period thereafter, the ship shall report to its Administration, or any organization duly authorized by it,²⁰ the attained annual GFI, the target annual GFI and the GFI compliance balance of the ship for that reporting period, respectively calculated in accordance with regulations 33, 35 and 36, together with the data collected as specified in appendix XII via electronic communication and using the standardized format developed by the Organization²¹ for the purpose of verifying the compliance of each ship with this chapter, taking into account guidelines developed by the Organization.²²

2 In the event of any transfer of a ship from one Administration to another and/or a change from one company to another completed after 1 January 2029, a ship shall, after the end of the calendar year in which

²⁰ Refer to the *Code for Recognized Organizations (RO Code)* (resolutions MSC.349(92) and MEPC.237(65)).

²¹ Refer to the *2022 Guidelines for the development of a ship energy efficiency management plan (SEEMP)* (resolution MEPC.346(78), as amended by resolution MEPC.388(81)).

²² Refer to guidelines to be developed by the Organization.

the transfer and/or change takes place, comply with paragraph 1 of this regulation for the 12-month period from 1 January to 31 December of the calendar year during which the transfer and/or change took place.

3 Within six months after the end of 2029 and by 30 June after each following reporting period, the Administration, or any organization duly authorized by it,²³ shall verify the reported data pursuant to paragraph 1 of this regulation and report the verified data to the IMO GFI Registry, taking into account the guidelines developed by the Organization.²⁴

4 Within one month after the ship's verified data has been reported to the IMO GFI Registry pursuant to paragraph 3 of this regulation or on the 31 July at the latest, the ship shall determine and record in the IMO GFI Registry its selected GFI compliance approach(es) in accordance with regulation 36.

5 By 31 August after each reporting period, the IMO GFI Registry shall issue, for each ship account and reporting period, a ship account statement reflecting the transactions recorded in accordance with regulation 38.4. The ship account statement shall be made available to the ship, its Administration, or any organization duly authorized by it,²⁵ taking into account guidelines developed by the Organization.²⁶

6 By 30 September after each reporting period, the Administration, or any organization duly authorized by it,²⁷ shall on the basis of the reported data and selected GFI compliance approach(es) as recorded on the ship account statement in the IMO GFI Registry issue a Statement of Compliance related to the annual GFI in accordance with regulation 6.9. The Administration, or any organization duly authorized by it,²⁸ shall report that Statement of Compliance in the IMO GFI Registry ship account by 31 October after each reporting period.

7 In the event of a transfer of a ship from one Administration to another and/or a change from one company to another as referred to in paragraph 2 of this regulation, the ship shall, on the day of completion of the transfer and/or change or as close as practical thereto, report the data specified in appendix XII for the portion of the calendar year corresponding to that Administration and/or company to the losing Administration, or any organization duly authorized by it,²⁹ in the case of a transfer of Administration or to its Administration, or any organization duly authorized by it,³⁰ in the case of a change of company. The Administration or any organization duly authorized by it³¹ shall verify the data pursuant to paragraph 1 of this regulation and issue a Statement of Compliance pursuant to regulation 6.10. Within one month following the issuance of the Statement of Compliance, the Administration shall report the verified data and that Statement of Compliance to the IMO GFI Registry, taking into account guidelines developed by the Organization.³²

8 From 1 January 2029, if a ship is permanently withdrawn from service during a reporting period, the ship shall fulfil its reporting duties for the time during which the ship was operational within that period

²³ Refer to the *Code for Recognized Organizations (RO Code)* (resolutions MSC.349(92) and MEPC.237(65)).

²⁴ Refer to guidelines to be developed by the Organization.

²⁵ Refer to the *Code for Recognized Organizations (RO Code)* (resolutions MSC.349(92) and MEPC.237(65)).

²⁶ Refer to guidelines to be developed by the Organization.

²⁷ Refer to the *Code for Recognized Organizations (RO Code)* (resolutions MSC.349(92) and MEPC.237(65)).

²⁸ Refer to the *Code for Recognized Organizations (RO Code)* (resolutions MSC.349(92) and MEPC.237(65)).

²⁹ Refer to the *Code for Recognized Organizations (RO Code)* (resolutions MSC.349(92) and MEPC.237(65)).

³⁰ Refer to the *Code for Recognized Organizations (RO Code)* (resolutions MSC.349(92) and MEPC.237(65)).

³¹ Refer to the *Code for Recognized Organizations (RO Code)* (resolutions MSC.349(92) and MEPC.237(65)).

³² Refer to guidelines to be developed by the Organization.

and comply with the requirements of this chapter on the day of completion of the withdrawal or as close as practical thereto, taking into account guidelines developed by the Organization.³³

Regulation 38

IMO GFI Registry

Establishment

1 The Secretary-General of the Organization shall establish and administer the IMO GFI Registry to facilitate the implementation of regulation 36, taking into account the guidelines developed by the Organization.³⁴ The IMO GFI Registry shall be funded through the GFI Implementation Facility.

Ship specific obligations

2 Each ship to which this chapter applies shall open by 1 October 2028 an account with the IMO GFI Registry and shall pay by 30 June 2029, and by 30 June of each year thereafter, the annual administration fee to the IMO GFI Registry.

3 The Secretary-General of the Organization shall determine the annual administration fee to cover the administrative costs of the IMO GFI Registry, taking into account guidelines developed by the Organization.³⁵

3bis Within [30] days after each transfer of surplus units from one ship account to another, the ships concerned shall jointly notify the IMO GFI Registry of the volume, the price per unit, expressed in US\$, and the date of the transfer, taking into account guidelines developed by the Organization. A transfer of surplus units shall be recorded in the IMO GFI Registry only upon receipt of that notification.

Functionalities

- 4 In accordance with regulation 36, the IMO GFI Registry shall in each ship account, as applicable:
- .1 credit the amount of surplus units a compliant ship is eligible to receive;
 - .2 record banked surplus units between reporting periods;
 - .3 record all transferred surplus units from one ship account to another ship account, together with the volume, price and date of each transfer as notified in accordance with paragraph 3bis of this regulation;
 - .4 cancel surplus units when:
 - .1 used by a ship to balance its compliance deficit for a reporting period;
 - .2 voluntarily cancelled at the request of the ship; and/or
 - .3 expired;

³³ Refer to guidelines to be developed by the Organization.

³⁴ Refer to guidelines to be developed by the Organization.

³⁵ Refer to guidelines to be developed by the Organization.

- .5 record market stability units used by a ship to balance its compliance deficit, against the amount available in accordance with regulation 36.22, and cancel such units following their surrender;
- .6 credit investment equivalent units upon confirmation of the corresponding direct investment made in accordance with regulation 36.17 and within the amount available in accordance with regulation 36.22, and cancel such units once used by a ship to balance its compliance deficit; and
- .7 record all surrendered units.

5 By 31 August after the end of each reporting period, the IMO GFI Registry shall issue for each ship account and reporting period a ship account statement reflecting all the transactions recorded in accordance with paragraph 4 of this regulation and the GFI compliance balance.

6 The IMO GFI Registry shall record for each ship account for each reporting period the following information:

- .1 the ship account statement;
- .2 the verified attained annual GFI;
- .3 the total energy consumption;
- .4 the total energy consumption of each ZNZ;
- .5 the GHG emissions avoided by the uptake of ZNZs;
- .6 the Statement of Compliance related to the annual GHG fuel intensity;
- .7 market stability units and investment equivalent units used, including their origin and type; and
- .8 the volume, price and date of each transfer of surplus units.

Access to the IMO GFI Registry

7 The IMO GFI Registry shall be fully transparent. All information maintained therein shall be made publicly available, unless determined by the Committee to be commercially sensitive, taking into account guidelines developed by the Organization. Information on the volume and price of transfers of surplus units shall be made publicly available at least [quarterly] in aggregated form, without identification of individual ship accounts, and shall not be determined to be commercially sensitive.

8 The Secretary-General of the Organization shall grant access to the Administration of a ship, or any organization duly authorized by that Administration,³⁶ to all recorded data in the ship's account in order to verify and report the ship's data in accordance with regulation 37 taking into account guidelines developed by the Organization.³⁷

9 The Secretary-General of the Organization shall maintain the IMO GFI Registry and grant access to users, taking into account guidelines developed by the Organization.³⁸

³⁶ Refer to the *Code for Recognized Organizations (RO Code)* (resolutions MSC.349(92) and MEPC.237(65)).

³⁷ Refer to guidelines to be developed by the Organization.

³⁸ Refer to guidelines to be developed by the Organization.

Reporting to the Marine Environment Protection Committee

10 On the basis of the information maintained in accordance with this regulation, the Secretary-General of the Organization shall produce an annual report to the Committee summarizing the data collected, specifying the ships with an active ship account, transaction patterns in the issuance, transferring, usage and cancellation of surplus units (including the volume and volume-weighted average price of transfers), market stability units and investment equivalent units, share of zero or near-zero GHG emission technologies, fuels and/or energy sources (ZNZs) used by ships in IMO GFI Registry and other relevant information as may be requested by the Committee.

Regulation 39

Uptake of zero or near-zero GHG emission technologies, fuels and/or energy sources (ZNZs)

1 ZNZs shall include technologies, fuels and energy sources and shall be evaluated on a well-to-wake basis, taking into account guidelines developed by the Organization.³⁹ The GFI threshold for ZNZs shall be set at not greater than 19.0 gCO₂eq/MJ for an initial period until 31 December 2032, and from 1 January 2033 the threshold shall be set at not greater than 14.0 gCO₂eq/MJ taking into account guidelines developed⁴⁰ and to be developed by the Organization.⁴¹ Notwithstanding, the Committee may approve additional ZNZs taking into account guidelines developed by the Organization.⁴²

2 Fuels qualifying as ZNZs shall receive credit proportional to how far below the ZNZ threshold their certified GHG fuel intensity falls, taking into account guidelines developed by the Organization.

3 Ships may receive rewards for the ZNZs used, financed from the share of profits referred to in regulation 41.3.1. Such rewards may be provided directly by the GFI Implementation Facility or through national funds designated in accordance with regulation 40.12 and 40.13, in financial form or through such other modalities as the Committee may approve, taking into account guidelines developed by the Organization.⁴³

4 No later than 1 March 2029 and every five years thereafter the Committee shall define the reward referred to in paragraph 3 of this regulation, and the methodology to determine such reward, taking into account guidelines developed by the Organization.⁴⁴

5 The Organization shall monitor and publish the share of ZNZs in the total annual energy used on board by ships falling under the scope of chapter 5.

³⁹ Refer to guidelines to be developed by the Organization.

⁴⁰ Refer to the *2024 Guidelines on life cycle GHG intensity of marine fuels* (resolution MEPC.391(81)).

⁴¹ Refer to guidelines to be developed by the Organization.

⁴² Refer to guidelines to be developed by the Organization.

⁴³ Refer to guidelines to be developed by the Organization.

⁴⁴ Refer to guidelines to be developed by the Organization.

Regulation 40

GFI Implementation Facility

Establishment

1 A GFI Implementation Facility shall be established as a separate legal entity to support the implementation of this chapter and achieve its goal as set out in regulation 31. Any costs associated with the operation of the Facility and its Board shall be borne by the Facility.

2 The Facility shall operate through two windows:

- .1 a General Window, which shall receive and manage revenue from the sources specified in paragraph 11 of this regulation and disburse it in accordance with regulation 41.1 and 41.2; and
- .2 an Investment Window, which shall receive investments made by ships through the use of investment equivalent units in accordance with regulation 36.17.2 and apply them in accordance with regulation 41.3 to 41.6.

3 The resources of the two windows shall be held, managed and accounted for separately. Investments received through the Investment Window shall remain attributable to the investors in accordance with regulation 41.5 and, other than the share of profits referred to in regulation 41.3.1, shall not constitute revenue of the Facility. No resources of the Investment Window shall be used for the purposes of the General Window.

4 The Investment Window shall be administered by an international financial institution designated by the Board, under arrangements concluded with the Facility.

Governance

5 The Facility shall be internationally constituted with an independent legal personality necessary to perform its functions as outlined in this regulation. It shall select a trustee through an open and transparent process based on merit, cost-effectiveness and consistency with international fiduciary standards. The Facility shall be serviced by an independent secretariat led by an executive director appointed by and reporting to the Board.

6 The Board of the Facility shall comprise 26 members, 14 from developing countries and 12 from developed countries, including members and alternates while striving for balanced gender representation of both women and men in line with the following:

- .1 3 from African States;
- .2 3 from Asia-Pacific States;
- .3 3 from Latin America and the Caribbean (GRULAC);
- .4 2 from Small Island Developing States (SIDS);
- .5 2 from Least Developed Countries (LDCs);
- .6 1 from Other Developing Countries; and
- .7 12 from Developed Countries.

7 A Trustee for the Facility shall be selected by the Board through an open and transparent competitive process. The Organization's secretariat shall serve as the interim secretariat of the Facility for a period of two years subject to renewal by the Board. The Board shall appoint an executive director in the Facility's first year.

8 The Board shall produce an annual report to the Committee containing an overview of its operations, including total contributions and investments received, commitments and disbursement of revenue for the different purposes set out in regulation 41, reported separately for each window, and other relevant information as may be requested by the Committee. The Committee shall provide guidance annually to inform the eligibility criteria and programming areas of the Facility, including but not limited to, ensuring the balance of allocation referred to in regulation 41.3.

9 A Market Stability Committee shall be established within the GFI Implementation Facility, selected by and operating under the guidance of the Board. The mandate of the Market Stability Committee shall be developed by the Board and shall focus on managing the credit purchase programme as well as market liquidity with the objective of price stability and cost-effective compliance.

10 In carrying out its duties the GFI Implementation Facility shall transparently report to its Board on an annual basis on activities undertaken.

Sources of funds

11 The General Window of the Facility shall be funded from the following sources:

- .1 a mandatory contribution of [US\$0.12], payable by the ship, on the retirement of any SU;
- .2 a mandatory contribution of [US\$0.12 × 1.5], payable by the ship, on the retirement of any MSU;
- .3 voluntary contributions by States, philanthropic organizations and private sector entities; and
- .4 where the Facility exercises a market management function pursuant to regulation 36.12 to 36.14, any net revenue from the purchase and sale of market stability units.

Designated national funds

12 Parties may designate a national fund for the purpose of receiving resources from the GFI Implementation Facility.

13 Designated national funds shall meet criteria established by the Committee taking into account relevant international fiduciary and accounting standards.

Periodic review

14 On the basis of the Board's annual report referred to in paragraph 8 of this regulation, the Committee shall periodically review the allocation of revenue to the different purposes set out in regulation 41.

15 The Facility shall be subject to audits.

Regulation 41

Disbursement of revenue and use of investments

General Window

1 The Facility shall disburse revenue collected through the General Window, as shall be specified in its governing provisions,⁴⁵ to support developing countries, including through the implementation of projects or through direct support to designated national funds, in the context of the implementation of this chapter and promoting a just and equitable transition in States by facilitating environmental and climate protection, adaptation and resilience building within the boundaries of the shipping sector, paying particular attention to the special needs and circumstances of developing countries, in particular African States, least developed countries (LDCs) and small island developing States (SIDS), for the following purposes:

- .1 enabling a just transition for seafarers and other maritime workforce;
- .2 facilitating information-sharing, technology transfer, capacity-building, training and technical cooperation supporting the implementation of the regulations in this chapter;
- .3 supporting the development and implementation of National Action Plans (NAPs), including fleet renewal and upgrade; and
- .4 addressing, as appropriate, disproportionately negative impacts on developing States, including on food security and energy affordability, resulting from the implementation of the regulations in this chapter.

2 Revenue collected through the General Window shall also cover the administration and operational costs of the Facility and its Board.

Investment Window

3 Investments received through the Investment Window shall be applied as follows:

- .1 a share of [20] per cent of any profits from an investment shall be deducted and allocated to rewards for the use of ZNZs, in accordance with regulation 39[, including the share of profits paid in respect of direct investments in accordance with regulation 36.17.1]; and
- .2 the invested funds shall be invested in programmes, projects or activities approved by the Committee in accordance with regulation 36.18, for the following purposes:
 - .1 researching, developing and making globally available and deploying ZNZs, supporting reductions of GHG emissions in shipping; and
 - .2 developing the necessary maritime, coastal and port-related infrastructure and equipment.

4 The share of profits referred to in paragraph 3.1 of this regulation shall be held and accounted for separately and shall be used exclusively for rewards for the use of ZNZs.

5 Investors shall retain ownership of, and all rights and interests in, the investments made in accordance with paragraph 3.2 of this regulation, including any returns thereon, [net of the costs of

⁴⁵ Refer to the governing provisions of the GFI Implementation Facility to be developed by the Organization.

administering the Investment Window, which shall be borne by that window]. An investor may designate the approved programme, project or activity, or the category thereof, in which its investment shall be made.

6 The administrator of the Investment Window shall confirm to the IMO GFI Registry the amount of each investment received, before deduction of the share of profits referred to in paragraph 3.1 of this regulation, for the purposes of regulations 36.15 and 38.4.6.

Regulation 42

Promotion of technical cooperation and transfer of technology relating to the continuous improvement of the ship's GHG fuel intensity

1 Administrations shall, in cooperation with the Organization and other international bodies, promote and provide support, as appropriate, directly or through the Organization to States that request technical assistance, especially developing States.

2 The Administration of a Party shall cooperate actively with other Parties, subject to its national laws, regulations and policies, to promote the development and transfer of technology and exchange of information to States which request technical assistance, particularly developing States, in respect of the implementation of measures to fulfil the requirements of chapter 5.

3 The Organization shall promote information-sharing, technology transfer, capacity-building and technical cooperation to enable the development of the necessary maritime, coastal and port-related infrastructure and equipment to support supply of zero or near-zero GHG emission fuels and/or energy sources in developing States.

Regulation 43

Food security

The Committee shall:

- .1 address, including avoiding, remedying and mitigating, the disproportionately negative impacts of this chapter on food security, paying particular attention to countries exposed to food insecurity; and
- .2 keep the potential impacts of this chapter on food security under continuous review.

Regulation 44

Review of the chapter

To ensure the continued achievement of the goal of this chapter, a review shall be completed by the Organization every five years to assess the effectiveness of this chapter in achieving its goal as set out in regulation 31, on the basis of which it shall consider:

- .1 amending the annual GFI reduction factor in regulation 35, including through the dynamic baseline adjustment mechanism;
- .2 amending the threshold values for ZNZs as defined in regulation 39;

- .3 the functioning of the compliance approaches set out in regulation 36, including the use of market stability units and investment equivalent units and the operation of the combined limitation on their use; and
- .4 the possible application of this chapter to ships of 400 gross tonnage and above.

Chapter 6 – Verification of compliance with the provisions of this annex

Regulation 45

Application

Parties shall use the provisions of the Code for Implementation in the execution of their obligations and responsibilities contained in this Annex.

Regulation 46

Verification of compliance

- 1 Any compliance enforcement mechanisms shall be established at the national level under the authority of a country.
- 2 Every Party shall be subject to periodic audits by the Organization in accordance with the audit standard to verify compliance with and implementation of this Annex.
- 3 The Secretary-General of the Organization shall have responsibility for administering the Audit Scheme, based on the guidelines developed by the Organization.⁴⁶
- 4 Every Party shall have responsibility for facilitating the conduct of the audit and implementation of a programme of actions to address the findings, based on the guidelines developed by the Organization.⁴⁷
- 5 The audits of all Parties shall be:
 - .1 based on an overall schedule developed by the Secretary-General of the Organization, taking into account the guidelines developed by the Organization;⁴⁸ and
 - .2 conducted at periodic intervals, taking into account the guidelines developed by the Organization.⁴⁹

⁴⁶ Refer to the *Framework and procedures for the IMO Member State Audit Scheme* (resolution A.1067(28)).

⁴⁷ Refer to the *Framework and procedures for the IMO Member State Audit Scheme* (resolution A.1067(28)).

⁴⁸ Refer to the *Framework and procedures for the IMO Member State Audit Scheme* (resolution A.1067(28)).

⁴⁹ Refer to the *Framework and procedures for the IMO Member State Audit Scheme* (resolution A.1067(28)).