

Technical Notice

TD **10256 / 2021**

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SUBJECT:
ENERGY EFFICIENCY EXISTING SHIP INDEX (EEXI) AND CII

INTRODUCTION

The initial **IMO GHG Strategy has established levels of ambition** that are subject to ongoing reviews by the organization. The ambition levels have considered potential **improvements on vessel design and operational performance** as well as the immediate **need to introduce low/zero carbon fuels**.

The International Maritime Organization (IMO) has set **2030** as the target date for **reducing ships' carbon emissions by 40% as compared to 2008 levels**, and *has targeted a 70% reduction of carbon intensity and a 50% reduction in emissions by 2050*.

To meet this target, IMO has drafted a set of amendments to existing regulations intended to reduce greenhouse gas emissions from vessels: the **EEXI and CII**.

EEXI AND CII

Both the **EEXI and CII were introduced** by IMO at the Marine Environmental Protection Committee in November 2020 (**MEPC 75**) and are subject to **adoption in June 2021 at the MEPC 76**. If approved, the EEXI and CII will come **into force at the end of 2022**.

EEXI (Energy Efficiency Existing Ship Index)

Similar to current regulations on EEDI (Energy Efficiency Design Index), the EEXI regulations will establish a Required EEXI for specified ship types, and an Attained EEXI to be calculated for each ship. The calculation of Required EEXI will utilize the existing EEDI reference lines, with a table of reduction factors specific to the EEXI calculation.

The **EEXI regulations apply to all vessels** falling under the ship type categories subject to compliance with EEDI regulations. EEXI does not apply to category A ships as defined in the Polar Code and ships having non-conventional propulsion except for cruise ships (non-conventional propulsion) and LNG carriers (conventional and non-conventional propulsion).

The **EEXI** is a **framework** for determining the **energy efficiency and CO₂ emissions of in-service vessels over 400 GT**.

Adapted from the Energy Efficiency Design Index (EEDI) for newbuilds, the **EEXI requires ship owners to assess and measure their ships' CO₂ emissions** by design against **specific emission reduction factors for each vessel type**. Owners can then implement **technical measures to adjust their vessels' emissions** to the required level.

The legal instruments developed to incorporate the EEXI measure into MARPOL Annex VI are shown in below:

IMO Instrument	Current Status
Amendments to MARPOL Annex VI	Approved at MEPC 75
Guidelines on method of calculation of the attained EEXI	Developed, subject to finalization and approval at MEPC 76
Guidelines on Survey and Certification of the attained EEXI	Developed, subject to finalization and approval at MEPC 76
Guidelines on the Shaft/Engine Power Limitation System to comply with the EEXI requirements and use of a power reserve	Developed, subject to finalization and approval at MEPC 76

Annual Operational CII (Carbon Intensity Indicator)

New regulations will be introduced to establish a **Required** Annual Operational CII for specified ship types, and an **Attained** Annual Operational CII to be calculated for each ship. Utilizing the existing framework of the Ship Energy Efficiency Management Plan (SEEMP), on or before 1 January 2023 ships of 5,000 gross tonnage and above will need to **revise their SEEMP** to include:

- a) a description of the methodology to be used to calculate the ships Attained Annual Operational CII, and the process that will be used to report this value to the Administration;
- b) the Required Annual Operational CII for the next 3 years;
- c) an implementation plan documenting how the Required Annual Operational CII will be achieved during the next 3 years; and
- d) a procedure for self-evaluation and improvement.

The Confirmation of Compliance (**CoC**) and Statement of Compliance (**SoC**) which are associated with **fuel oil consumption reporting** (Regulation 22A) will be **modified** to also address the "**Operational Carbon Intensity Rating**," both of which must be reported annually to the Administration. This will require new issuance of CoC and SoC documents when these amendments enter into force.

Each year, the **Attained Annual CII** shall be documented and **verified** against the **Required Annual CII** to determine an **operational carbon intensity rating of A, B, C, D or E**, indicating a major superior, minor superior, moderate, minor inferior, or inferior **performance level** for a vessel. A ship rated D for 3 consecutive years or rated as E, shall develop a plan of corrective actions to achieve the required annual operational CII. The corrective action plan is to be included in the SEEMP.

ATTAINED EEXI – REGULATION 20A

The attained EEXI will be **ship-specific** i.e., it will be calculated for each individual vessel and **verified by the Flag Administration/RO**. The calculation will be included in each vessel's **EEXI technical file** along with any supporting technical data and information used in the calculation process.

For all **vessels that have been verified for EEDI** and issued an **International Energy Efficiency Certificate (IEEC)**, the attained **EEDI will be equal to the attained EEXI**, provided that the attained EEDI meets the regulatory limit established by the newly introduced required EEXI **regulation 21A**.

When a ship's Attained **EEDI does not meet the EEXI threshold**, technical **modification options** may be considered for compliance (e.g. engine power limitation, retrofit of energy saving technologies, alternative fuels). For such cases, the Attained EEXI calculation shall be calculated and verified based on the guidelines to be adopted by the IMO.

The **EEXI calculation guidelines** have been developed but so far remain in draft form. The calculation methodology is aligned with that used for EEDI.

REQUIRED EEXI – REGULATION 21A

Regulation 21A will provide the requirement and guidelines for **calculating the required EEXI and verifying that a vessel's attained EEXI is lower than the required EEXI**. The Required EEXI would be the regulatory limit for EEXI and its calculation will be in line with the EEDI reference line values using reduction factors specific to EEXI, depending on ship type and size.

Special consideration was taken by the members of the ISWG-GHG during the determination of the EEXI reduction factors to address the **compliance challenges that some older vessels** may face while keeping in line with the IMO Strategy's level of ambition for 2030.

EEXI SURVEY AND CERTIFICATION

For the verification of a vessel's attained EEXI, an application for a survey would be submitted to the verifier together with an **EEXI Technical File containing the necessary information for the verification and supporting background documents**.

Verification of the ship in service's EEXI will take place at the **first annual, intermediate or renewal survey** for its IAPP certificate after the entry into force of the amendment.

The verification scope is generally expected to align with the one applied for EEDI. However, specific requirements will be introduced on the method to obtain the ship speed (VREF), for situations where SHaPoLi/EPL is installed and for ships having undergone a major conversion.

Upon final verification, each vessel's **attained EEXI and required EEXI values will be indicated on the vessel's IEEC** issued by the Flag Administration. For cases where the attained EEDI of the ship satisfies the required EEXI, a confirmation of compliance with EEXI regulations and subsequent update of the IEEC would be sufficient.



WHAT SHIP OWNERS AND MANAGERS SHOULD DO

Ship owners and managers will need to **prepare for EEXI and CII requirements in advance**, taking the time needed to assess and improve their vessels as needed. This is crucial to ensure that **vessels are ready by the end of 2022**, having demonstrated compliance and obtain the proper certificates to continue trading internationally.

Ship managers will need to take a series of steps to achieve compliance. Vessels can undergo a **preliminary EEXI assessment**, then gain **review for preliminary technical files** and obtain a **statement of compliance**.

For **CII**, managers can determine ships' carbon intensity profiles and **develop an optimized SEEMP by the end of 2022**. **Documentation** confirming ship **compliance** with CII requirements will be provided **by January 2023**, and must be present onboard from then on.

To comply with EEXI and CII regulations, ship operators may need to target ongoing improvement. Ships have **many options for improving energy efficiency** and limiting carbon emissions, including **limiting engine loads and reducing speed, switching to low-carbon fuels, and retrofitting vessels with new fuel or energy-efficient technology**,