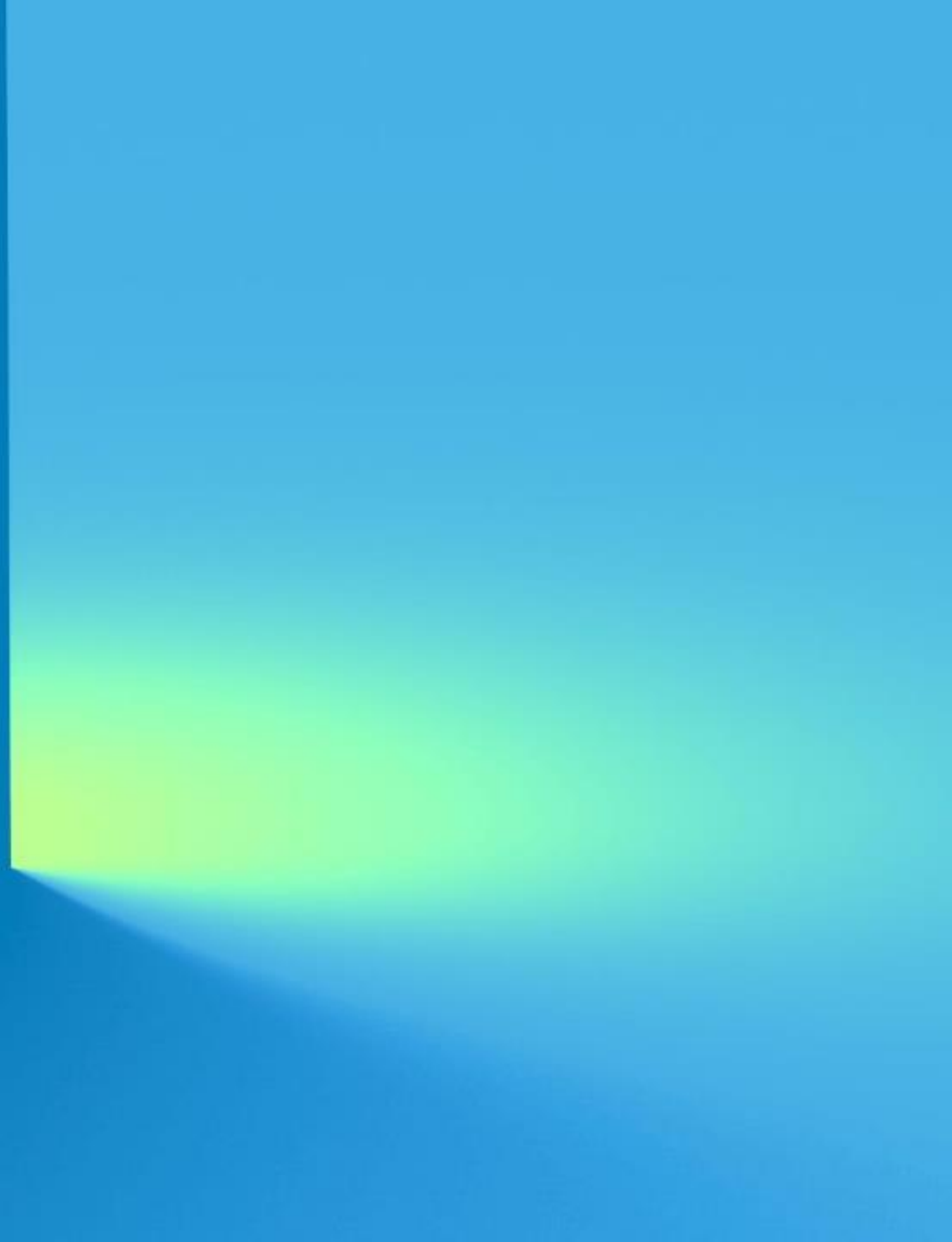
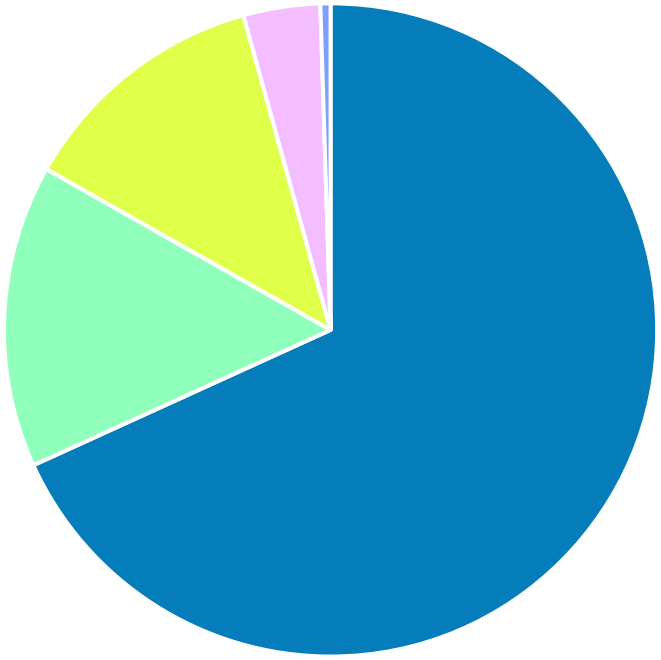
II Jornada del Amoniaco Renovable

El amoniaco renovable en la estrategia energética de España:

integración en el mix de combustibles



El amoniaco renovable en la estrategia energética de España: integración en el mix de combustibles



1 ¿Tipos de amoniaco renovable y cómo se producen?

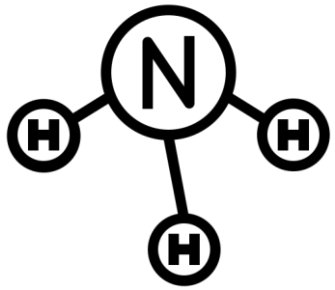
2 ¿Qué hace falta para incentivar la producción?

3 ¿Qué aplicaciones energéticas están previstas?

4 ¿Qué hace falta para incentivar la demanda?

5 Conclusiones

Which are the different types of ammonia?

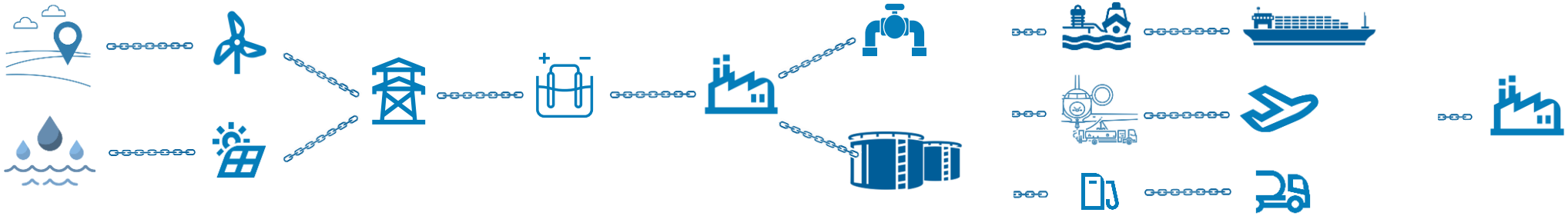


	EU				IMO
	RFNBO	BIO	LOW CARBON	FOSSIL or FOSSIL EQ.	ZNZ
H2 ORIGIN	RED III DAs	RED III Sust. Criteria	Gas Directive LC DA	Fossil or any other	< 19 gCO2eq/MJ
GHG INTENSITY	< 28,2 gCO2eq/MJ	< 32,9 gCO2eq/MJ	< 28,9 gCO2eq/MJ	> 28,2 or 32,9 gCO2eq/MJ	
PRODUCTION PATHWAY					
MAIN REGULATION	RED / FUEM	RED / FEUM	FEUM		IMO NZF

RED: Renewable Energy Directive; FEUM: Fuel EU Maritime; IMO: International Maritime Organization; NZF: Net Zero Framework

Synchronization as a whole → mandatory to suceed

Who	EU & MS			
What	**Permitting**	**Electricity Supply (PPAs & Spot); Electricity System Costs; Role of Electrolyzers in the grid; Mechanisms for RFNBO Targets Compliance, Transport & Storage**	**Fleets, Infrastructure, Commercial Routes, Offtake Agreements**	**Foster Industry Competitiviness**



Why — If any part of the Value Chain fails to be synchronized there will not be investments, growth, decarbonization and energy independency

The proposals that allow the European green H2 competitiveness to be significantly increased

To **unlock hydrogen investments**, it is **essential to reduce LCOH by focusing on the elements with the greatest impact** (on top of subsidies that reduce the financial gap vs conventional solutions)

Competitiveness of the electricity supply	Adjustment of grid connection costs	Storage in delocalized batteries	Foster Selfconsumption
• Priority access to the grid for renewables with PPAs with end consumers • Real-time dispatch priority	• Similar to electro-intensive and storage • No Ancilliary Services costs if electrolyzers provide flexibility	• Unlock in front of the meter batteries. So far it's only allowed behind the meter • Increase of PV assets contribution	• Avoid transmission tariff in selfconsumption through the grid • Enable different selfconcumption modes in 1 consumer

Investments in hydrogen depend on the materialization of offtake contracts

Offtake contracts are subject to a mark-to-market that **involves major financial risk for the signatory company**

3. ¿Qué aplicaciones energéticas están previstas?

Which are the most promising applications for “Renewable Ammonia”?

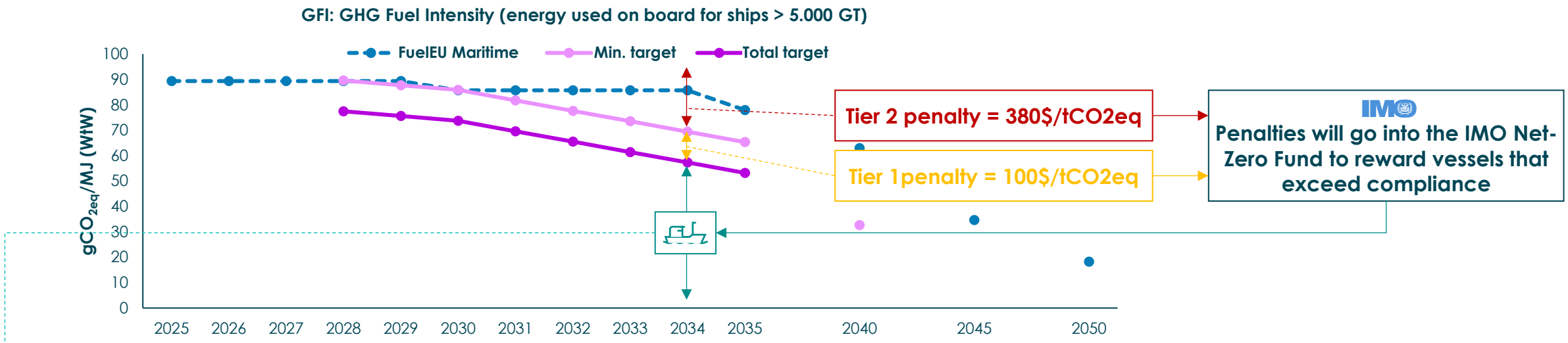
Maritime Regulation as a strong demand driver

Decarbonization of energy used onboard. Technology agnostic

Obligated Party: Shipowners

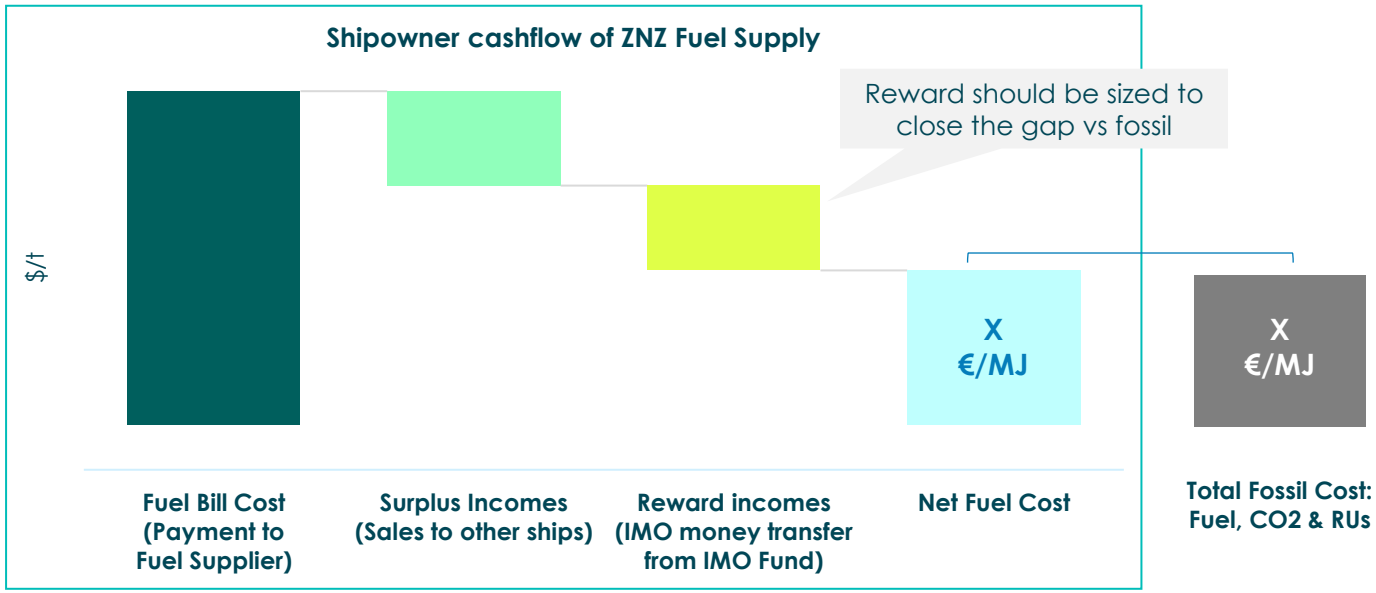
Regulatory Levers	• Multipliers for RFNBO ✓ • RFNBO quotas from 2034 ≈ • Penalties ✓	• Global Carbon Tax ✓ • ZNZ preliminary definition ✓ • Surplus & Reward ✓
Key comments	Regulation in force ✓ Tanks can be filled abroad Europe ✗	Vote for adoption postponed ✗ Working groups ongoing ✓

IMO. Surplus & Reward System



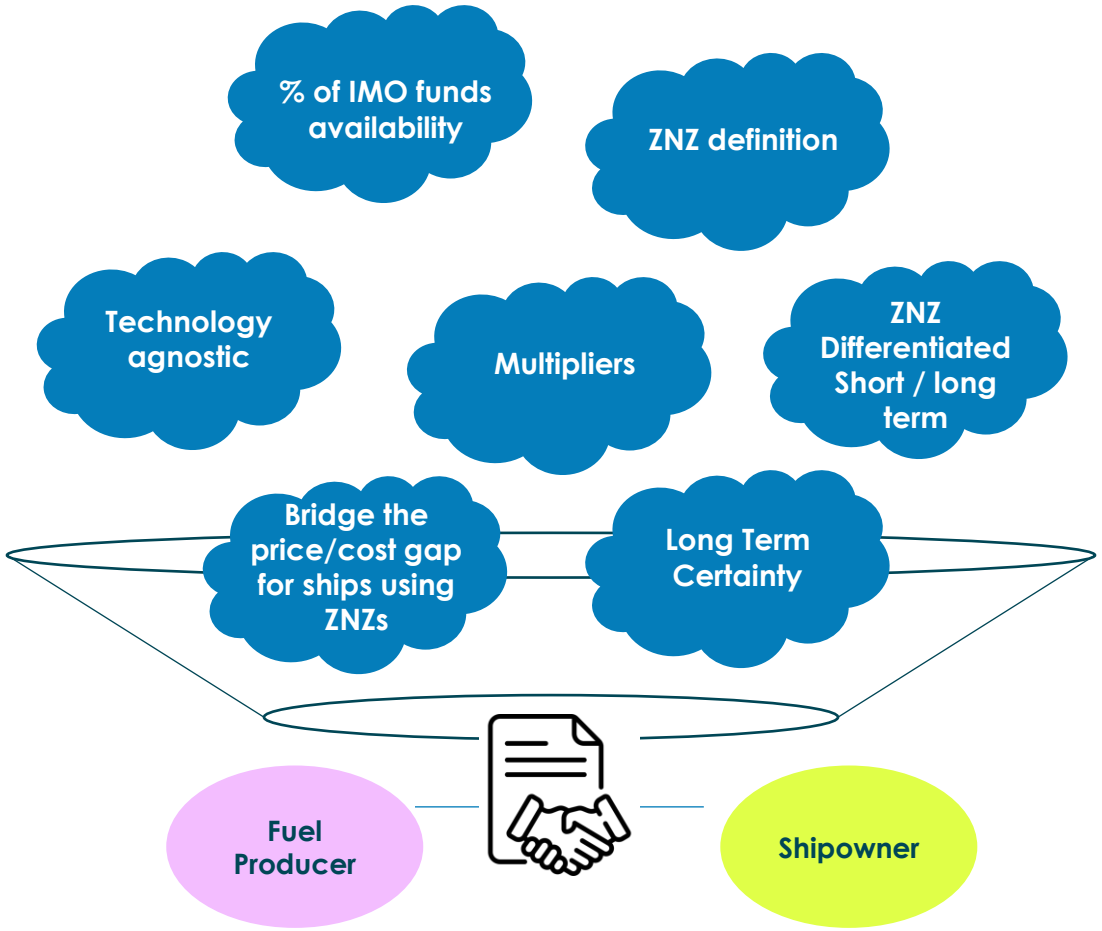
These vessels receive incomes from:

1. **Surplus**: excess of decarbonization achieved vs "Total Target"
2. **Reward**: money given from IMO Fund to ships that use Zero or Near Zero Fuels in order to foster the increase share of Bios & RFNBOs

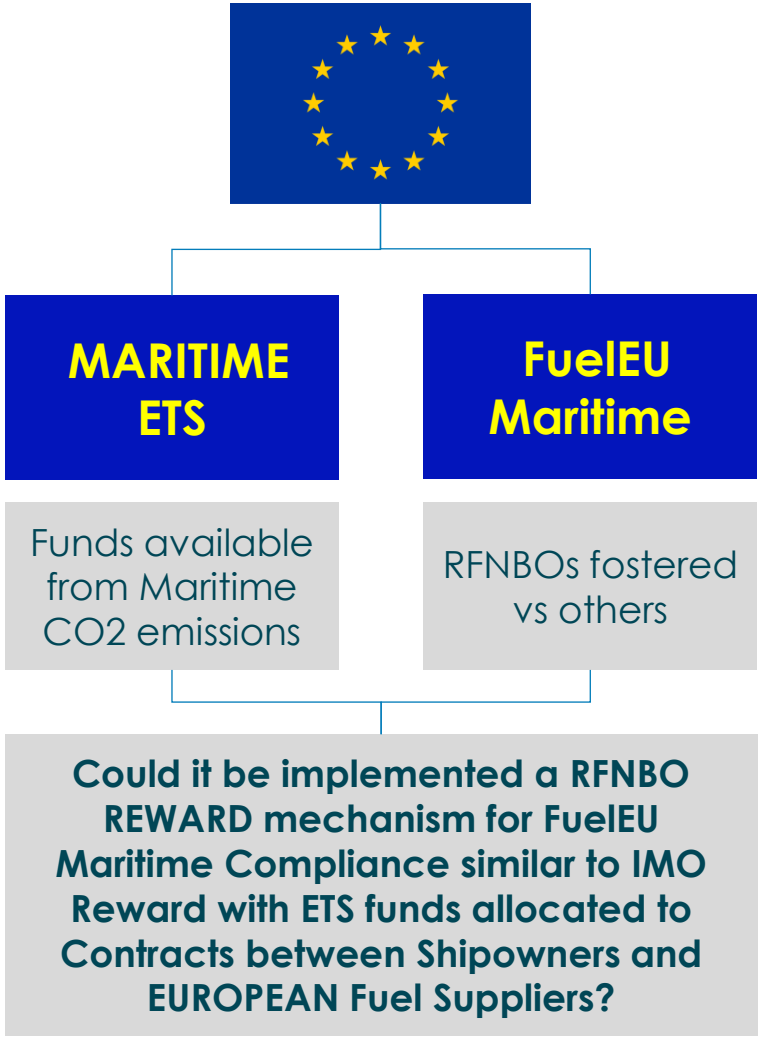


Adecuate Reward design can effectively foster offtake agreements

Reward needs to make the **uptake and the investments** in ZNZs **financially and globally attractive for**:



“Reward EU”, fostering Europe as a worldwide supply and demand hub



Why Yes?

Reward EU

Employment	Avoid Routes to be deviated from EU Ports	It has already been done in Aviation through EUA allowances (20 million ETS)

Renewable Energy Directive Transposition in Spain

Transport

Draft Transposition

- Product differentiation ✓
- Penalties ✗
- Fuel Supplier obligations ✓
- Offtakers obligations ✗

Industry

Pending draft transposition ✗

Key enablers that are evolving towards ammonia readiness

MAN to deliver first ammonia dual-fuel engines in early 2026

MAN Energy Solutions confirms its prototype liquid gas injection ammonia engine has run at 100% engine load for the first time

Jan, 25


IMO INTERNATIONAL MARITIME ORGANIZATION

E

4 ALBERT EMBANKMENT
LONDON SE1 7SR
Telephone: +44 (0)20 7735 7611 Fax: +44 (0)20 7587 3210

MSC.1/Circ.1687
26 February 2025

INTERIM GUIDELINES FOR THE SAFETY OF SHIPS USING AMMONIA AS FUEL

Feb, 25

NH3 as fuel

Operational and safety procedures

Engine Manufacturers

Infrastructure Readiness

Pilot Projects

World's First Use of Ammonia as a Marine Fuel in a Dual-Fuelled Ammonia-Powered Vessel in the Port of Singapore

Mar, 24

First ammonia bunker pilot completed in Rotterdam

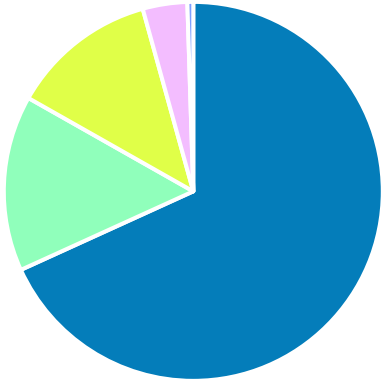
Apr, 25

ARISE
Ammonia Response In Sea Emergencies

Research Partnership sponsored by third parties for controlled Ammonia release at sea

Yara Clean Ammonia · equinor · The Decarb Hub · moeve · ClassNK · ITOCHU · Shell · TotalEnergies · IHI · Dräger · Natural Resources Canada · Canadian Coast Guard · Hapag-Lloyd · MOL 商船三井 · AXA · CIP Molecule Technologies · CPC Corporation, Taiwan · Bureau Veritas · DNV · Maritime Decarbonisation · HÖEGH EVI · Imodco · HAROPA PORT

En función de cómo se implementen las siguientes consideraciones en la estrategia energética en España, el rol del amoniaco renovable en España tendrá un peso u otro



- Promover la implementación de la sincronización de toda la cadena de valor
- Reducir el LCOH con medidas efectivas y sustanciales aumenta la probabilidad de hacer al “amoniaco renovable” competitivo
- FuelEU Maritime + ETS establecen un marco favorable, si bien, “Reward EU” sería una herramienta muy potente para incentivar suministro y demanda EU
- A nivel global, IMO postpone la votación 1 año del Net Zero Framework.
- La trasposición de la RED en España tiene pendiente la concreción del sector transporte y la primera orientación del rol en el sector industrial
- Los elementos habilitantes para que el amoniaco renovable sea una realidad en el mix de combustibles progresan adecuadamente

Thank you