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Navigating the IMO Net-Zero Framework:

Assessing what's at stake for Morocco and its readiness to become a leading e-fuels hub

Rachid Ennassiri
Meriam Lagtari
Othmane Fathallah



I. Executive summary

The International Maritime Organization's (IMO) proposed Net-Zero Framework (NZF), expected to be adopted in October 2025 and enforced by 2027, introduces a global lifecycle-based compliance system for shipping. It combines greenhouse gas intensity targets with a credit-based pricing mechanism and a Net-Zero Fund (the Fund) projected to generate approximately \$10 billion annually. While aiming to accelerate the transition to clean fuels, the framework leaves 90% of global sectoral emissions unpriced and lacks clarity on reward distribution and long-term Fund availability, which raises questions for emerging e-fuel producers like Morocco.

As Morocco positions itself to become a green e-fuels hub, this report assesses what is at stake. Through scenario analysis, it outlines how Morocco's engagement, whether passive or proactive, may determine its future access to the Fund, influence over rulemaking, and competitiveness in clean fuels. A leadership scenario, where Morocco supports strong Remedial Unit pricing, strict lifecycle rules, and inclusive fund eligibility, could reinforce investor confidence and unlock access to the Fund. By contrast, passive alignment or support for weaker sustainability standards could lead to reputational risks, stranded assets, and diminished returns on its green hydrogen investments.

Fuel eligibility rules under the NZF are of significant concern. The current framework risks equating high-integrity hydrogen-based e-fuels with low-integrity biofuels that meet emission thresholds on paper but carry upstream environmental risks. The report urges Morocco to actively advocate for robust lifecycle assessment methodologies, enforceable sustainability safeguards, and differentiated reward multipliers for e-fuels. Failing to do so could structurally disadvantage Morocco's clean fuel sector.

Morocco's readiness to scale e-fuels remains constrained. IMAL's survey reveals that no respondents expect Morocco to become an e-fuels hub by 2030, while 57% expect this only after 2035. Respondents cite regulatory ambiguity, fragmented permitting, underdeveloped infrastructure, and a lack of technical expertise as key bottlenecks. Legal frameworks such as Law 40-19 (renewable energy), 82-21 (electricity self-production), and the Maritime Code require urgent updates, as well as insufficient public finance instruments to de-risk early-stage projects. Despite moderate investor confidence, stronger governance, tax clarity, and common-use infrastructure are needed to build bankability.

The report compares the NZF with the European Union (EU) regulations, which impose clearer interim targets. Although both frameworks share a 2050 net-zero vision,



divergence may expose Moroccan exporters to dual compliance risks. Regulatory convergence under high ambition offers Morocco the most favourable outcome for its e-fuels sector, as this could offer market stability, strengthen Morocco's export competitiveness, and reduce uncertainty.

Finally, the report outlines four voting scenarios for Morocco at the upcoming IMO session. From the standpoint of Morocco's e-fuels sector, a pragmatic "yes" vote is recommended, not as a passive endorsement, but as a pragmatic move to advance influence in rule-setting, secure access to the NZF, and align with long-term national priorities. Thus, **Morocco is encouraged to pair its vote with proactive diplomacy, coalition-building, and regulatory reform to turn ambition into global influence.**



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II. Introduction

As the International Maritime Organization (IMO) prepares to adopt its Net-Zero Framework (NZF) in October 2025, countries around the world face a pivotal moment in global maritime decarbonisation. The NZF introduces a tiered carbon pricing mechanism through Remedial Units (RUs), and a global Net-Zero Fund aimed at supporting cleaner fuels and just transition objectives. While these measures represent a breakthrough in international climate governance, their design raises critical questions around emissions coverage, sustainability safeguards, and access to funding, in addition to concerns around commodity prices. For emerging producers of green fuels, the framework's technical details and the political positioning around them are likely to shape future competitiveness, investment flows, and access to maritime trade routes.

Morocco, with ambitions to become an e-fuel hub, finds itself at the intersection of this evolving regulatory landscape. The country has made early strides through national strategies, international partnerships, and its pre-feasibility work on port-based fuel infrastructure. Yet significant challenges remain in translating ambition into implementation. This report examines the implications of the NZF and its associated Fund for Morocco's policy choices, competitiveness, and regulatory alignment. It draws on scenario analysis, national stakeholder consultations, and comparative insights with the EU's maritime frameworks to assess risks, identify opportunities, and propose a pathway for Morocco to influence, rather than simply absorb, the rules of the emerging maritime decarbonisation regime.

III. Decoding the IMO Net-Zero Framework (NZF) and Net Zero Fund (the Fund)

1. Overview

a. The IMO Net Zero Framework

The NZF at a glance:

- **Rule:** Align with the objectives of the IMO's [2023 GHG Reduction Strategy](#)
- **Price:** Miss the rule? Pay \$100–380 / t CO₂ into a global fund.
- **Bonus:** Use cleaner fuels and earn extra credit via “multipliers”.



The International Maritime Organization (IMO) approved the draft Net-Zero Framework during the 83rd session of the Marine Environment Protection Committee (MEPC) in April 2025, as a direct response to its 2023 GHG Reduction Strategy. With formal adoption expected in October 2025 and entry into force in 2027, the framework aims to achieve net-zero emissions from international shipping by or around 2050, and it functions based on the following **GHG Fuel Intensity (GFI)** compliance approaches:

The IMO's GFI framework establishes two emission thresholds, namely: the **Base GFI** target and the **Direct Compliance (DC)** target. The Base target sets the minimum compulsory emissions reduction ships must achieve through fuel switching. Ships exceeding this threshold are required to pay **Tier 2 Remedial Units (RUs)**, supposedly intended as a deterrent rather than a “pay to pollute” option. Tier 2 RUs are priced at \$380/tCO₂e until 2030, with future prices to be determined.

The DC target functions as a secondary, lower compliance threshold. Ships emitting above the DC target but below the Base target must pay **Tier 1 RUs**, priced at \$100/tCO₂e until 2030. Tier 1 RUs are priced below the cost of the cheapest compliant fuels, making them the least-cost compliance option between the two thresholds. After reaching the Base target, ships may continue using Tier 1 RUs to offset any remaining emissions.

Ships emitting below the DC target are not penalised and may earn **Surplus Units (SUs)**. These units can be banked for up to two years, traded with underperforming vessels, or cancelled. Ships using zero or near-zero fuels (ZNZ), defined as those with **GFI below 19 gCO₂e/MJ before 2035 and 14 gCO₂e/MJ after 2035**, may be eligible for financial rewards.

b. The IMO Net Zero Fund (“the Fund”)

The Fund is projected to generate approximately \$10 billion annually until 2035¹, primarily through Tier 1 RUs. However, actual revenues are constrained by the framework's limited coverage, and nearly 90% of shipping emissions remain unpriced, as only emissions between the Base and DC threshold are subject to a Tier 1 RUs. Additionally, many Tier 2 obligations are expected to be met using SUs rather than direct payments, which is likely to reduce inflows to the Fund.

Although the framework mandates support for ZNZ fuels and just and equitable transition (JET) objectives, the mechanisms and timeline for fund distribution are yet

¹ <https://www.transportenvironment.org/articles/un-shipping-agreement-a-victory-for-multilateralism-but-a-failure-for-the-climate>



to be defined. Policymakers should strike a balanced agreement on the fund to support fuels with long-term decarbonisation potential, while ensuring adequate resources remain available for priorities vital for vulnerable states.

2. IMAL's perspective on Morocco's role in the IMO NZF and Fund: access, influence, and risks

Scenario 1: Morocco is excluded due to fund prioritisation

Initial advocacy around the Fund focused (at the time of writing this report in July 2025) on channelling support to Least Developed Countries (LDCs) and Small Island Developing States (SIDS), with seemingly strong European Union backing. Morocco, as a lower-middle-income African country, risks being deprioritized unless eligibility rules are clearly defined, which could restrict its access to the Fund's revenues to support e-fuels-compatible port infrastructure.

Scenario 2: Reduced leverage from passive positioning

If Morocco does not back higher RU prices, strict and transparent NZF fuel eligibility rules, and a clearly defined list of eligible fuels, the Fund's impact may remain limited and market signals in favour of e-fuels may be weakening. This could limit Morocco's ability to access financing and influence IMO rules in its favour. It also risks opening the market to already available, cheaper, lower-standard fuels, which will undermine Morocco's competitiveness in e-fuels.

Scenario 3: Potential geopolitical sensitivities around port infrastructure dominance

Even if eligible, Morocco could face discreet pushback on large allocations, particularly for Tangier Med (and the ongoing Nador West Med), which already outperforms several ports in the Mediterranean region. Further upgrades may raise sensitivities around trade competitiveness.

Scenario 4: Best case scenario

Morocco supports higher RU pricing and strict fuel eligibility rules, advocates for inclusive access criteria that recognize ambition and readiness. It can also build regional alliances, particularly with like-minded African countries, and engage early in Fund governance to secure timely access to financing, reinforce its growing role, and boost investor confidence in its green hydrogen and its evolving e-fuels ecosystem (see Figure 1, below). **Comment:** Ongoing discussions around Fund prioritisation suggest that countries may be eligible if they require port infrastructure upgrades, are in the process of modernising their fleets, or face economic challenges such as increased food costs

resulting from shipping levies. In this context, Morocco², alongside some African partners, could reasonably qualify under these criteria.



Figure 1: Scenarios for Morocco under the IMO NZF and the Fund. (Source: IMAL, 2025)

² On September 18, 2025, His Majesty King Mohammed VI inaugurated a new facility dedicated to the construction and maintenance of naval vessels, aimed at strengthening Morocco's naval industry and attracting investment to this emerging industrial platform.



3. Navigating fuel choices under the NZF (Biofuels vs. e-fuels futures)

The NZF introduces a fuel-neutral compliance system based on lifecycle GHG intensity, where fuels under 19 gCO₂e/MJ qualify as ZNZ until 2035. While this opens pathways for multiple fuels to enter the compliance market, it creates significant risks if structurally flawed fuels, e.g. biofuels, are treated equally to hydrogen-based e-fuels (see Figure 2, below).

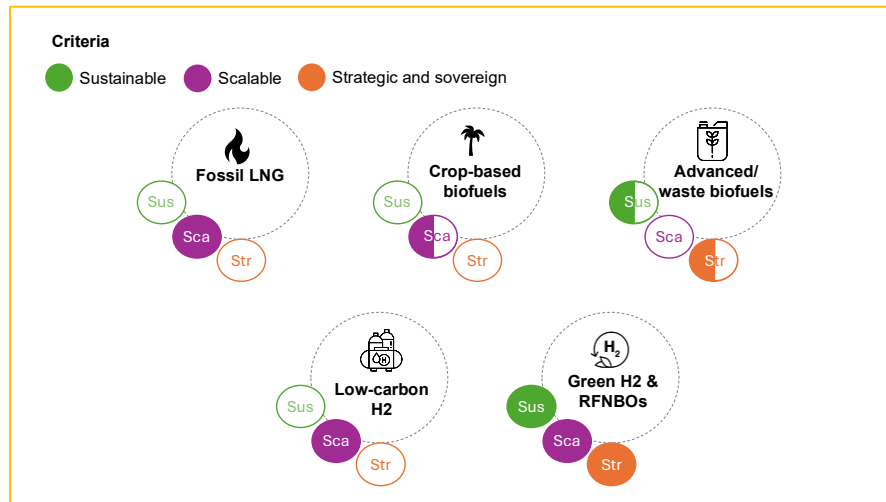


Figure 2: fuels' assessment against sustainability, scalability and strategic security criteria
(Source: Transport & Environment, 2024).

a. Fuel choices

Assessment 1: weak lifecycle rules favour low-integrity fuels and may distort market signals and lack long-term viability

The current IMO NZF framework risks distorting investment and compliance decisions by failing to differentiate between genuinely clean fuels and those with questionable climate performance. Several biofuels, including Hydrotreated vegetable oil (HVO) from animal fats, Used Cooking Oil Methyl Ester (UCOME), and biomethane derived from manure, may meet the proposed 19 gCO₂e/MJ “near-zero” emissions threshold on paper, yet carry significant sustainability risks³ (see Table 1 below for an overview of each feedstock type and its associated risks). The absence of robust and transparent lifecycle assessment (LCA) methodologies within the IMO risks over-crediting these

³ <https://cleanshipping.org/wp-content/uploads/2025/02/ISWG-GHG-18-2-21-Overview-of-the-climate-and-environmental-risks-of-biofuels-CSC-1.pdf>



fuels, which may allow them to compete unfairly with high-integrity solutions like green hydrogen-based e-fuels.

Feedstock / Fuel pathway	Associated risks
Virgin Vegetable Oils (Palm, Soy, Rapeseed: HVO / FAME)	• ILUC: Risk of deforestation, peat loss, biodiversity destruction (notably palm and soy). • Food vs. Fuel conflict: diverts edible crops, exacerbating food security concerns. • Market distortion: artificially favoured by weak lifecycle rules despite high net emissions.⁴
Waste Lipids (Used Cooking Oil UCO, Animal Fats : UCOME/HVO)	• Supply constraint: limited global availability, cannot scale to meet shipping demand. • Fraud and opaque supply chains: risk of mislabelling virgin oils as waste to capture subsidies. • Cross-sector competition: diverts from road/aviation sectors and oleochemical industries.⁵
Biomethane (Manure / Waste-Based Biogas : Bio-LNG)	• Methane leakage: fugitive emissions across collection, upgrading, and combustion risk erasing GHG savings. • Scale easibility: limited availability of sustainable manure/waste streams. • Risk of lock-in: incentivising LNG ships/infrastructure without robust leak monitoring undermines long-term decarbonisation⁶
Cellulosic Biofuels (Residues, Forestry Waste: Biomethanol, Drop-in Hydrocarbons)	• Commercial immaturity: Past attempts at scale-up largely failed; high cost and technology risk. • Sustainability of residue harvesting: Risks soil carbon depletion and ecosystem harm if over-extracted. • Infrastructure complexity: Collection, pretreatment, and transport challenges remain significant.

Tableau 1: Feedstock types and associated risks (Source: multiple references; see footnotes)

⁴ Cerulogy for Transport & Environment, Full Steam Ahead (Feb 2025); T&E, Biofuels and ILUC Briefings (2024).

⁵ T&E, Advanced and Waste Biofuels: Supply and Fraud Risks (2024); ICCT, Waste Lipid Supply Chains (2023)

⁶ Cerulogy (2025); ICCT, Methane Leakage in Bio-LNG Pathways (2023)

To ensure the NZF delivers real and lasting climate benefits, **fuels must be clearly differentiated**: high-risk feedstocks should be excluded, while scalable solutions such as green hydrogen-based e-fuels, supported by efficiency gains, should be prioritized. This would avoid locking the sector into temporary fixes and instead steer it toward the IMO's long-term decarbonization targets.

Implications for Morocco: from IMAL’s perspective, the equal treatment of low-integrity biofuels with e-fuels would create a distorted market that disincentivises investment in higher-integrity green hydrogen and its derivatives. This regulatory asymmetry could shift investor attention away from Morocco, delay critical infrastructure development, and result in carbon lock-in around transitional fuels with limited long-term viability and sustainability. To preserve its competitiveness, **Morocco, in line with its domestic policies, should actively oppose the broad classification of such biofuels as “near-zero” fuels.** It should instead advocate for stricter sustainability safeguards, robust lifecycle accounting, and the prioritisation of synthetic fuels that align with net-zero objectives and long-term energy security. While high costs may present a constraint, Morocco, along with development partners and peer countries advancing green hydrogen-based fuels, should increase investment in research and development to drive cost reductions and enhance long-term economic viability (which is another incentive to influence the Fund).

One possible scenario is that Morocco may be tempted to align its production strategy with these weaker standards to remain competitive and capture short-term compliance demand. However, such a shift would carry reputational risks, potentially undermining its positioning as a frontrunner in renewable energy and reducing investor confidence in its green hydrogen strategies. At the same time, if Morocco remains passive in shaping technical rules, it may be locked into a compliance framework that structurally disadvantages high-integrity fuels.

Thus, Morocco should advocate for strict Life Cycle Assessment (LCA) methodology, default values that reflect real emissions, and enforceable sustainability criteria to prevent low-integrity fuels from undermining its green hydrogen market development being planned under Morocco's Green Hydrogen Offer.



Morocco's competitiveness will depend on de-risking instruments, certification credibility and CO₂ sourcing.

Data availability and Morocco's green hydrogen cost context for Morocco:

CO₂ feedstock mapping (Morocco). In 2024, Morocco's Ministry of Energy Transition and Sustainable Development, with the technical support **GIZ (German's development agency)**, launched a [national assessment](#) to map and qualify CO₂ sources for e-fuels (biogenic streams; unavoidable process emissions in cement/fertilisers/refineries; waste-to-energy; emerging DAC), including **volume, intermittency, purity, baseline abatement, cost and compliance pathways**. Public release is expected in October 2025.

A recent [Nature Energy](#) study (2025) finds that African green hydrogen could cost anywhere from **€3.8 to over €10/kg by 2030**, depending on financing conditions and location. Even the cheapest projects would be around €4.2–4.9/kg without de-risking.

Assessment 2: e-fuels meet long-term criteria but need structural policy support

Aspect	Evidence
<i>Lifecycle performance</i>	Green ammonia and e-methanol cut emissions by over 90% compared to marine gas oil. ⁷
<i>Economic viability</i>	While a 2× multiplier may encourage early e-fuels adoption, it remains insufficient. E-fuels require stronger incentives to make them commercially viable before 2035. ⁸
<i>Operational requirement</i>	Large e-fuel ships need an extra refuelling stop near Morocco, which may generate increased demand by 2030 ⁹

Tableau 2: Performance, viability, and operational requirements of e-fuels. (**Source:** multiple references, see footnotes.)

⁷ DNV, LifeCycle Assessment of Alternative Marine Fuels, 2025

⁸ Transport & Environment, *Impact of the IMO's draft NetZero Framework*, April 2025 (multiplier sensitivity). UCL-UMAS (2025), *How IMO Mid-Term Measures Might Shape Shipping's Energy Transition*.

Sensitivity analysis shows that a 2× multiplier is insufficient to make e-fuels cost-competitive before the 2040s. According to the modelling, reaching parity by 2030 would require a multiplier closer to **×15**, gradually falling to **×10 by 2035**. Alternatively, the study recommends pairing a **strong GHG levy (USD 150–300/t CO₂e)** with a **dedicated e-fuel rebate** as a more realistic and effective incentive.

Without stronger measures, the market is likely to favour cheaper transitional fuels, delaying green hydrogen adoption and weakening the business case for e-fuel infrastructure in emerging producer countries.

⁹ IMAL & Transport & Environment, *EuropeAsia Green Corridors: Case for Morocco*, 2024 (Section 2).



Green hydrogen, along with its derivatives like e-ammonia and e-methanol, meets all the essential criteria: **sustainability, scalability, and energy sovereignty** (see Figure 2). These fuels rely on renewable electricity and avoid feedstock limitations of fossil fuels¹⁰. However, their commercial uptake remains dependent on clear policy signals. If the IMO allows biofuels to qualify on equal footing without applying stronger reward multipliers to hydrogen-based e-fuels, the investment and infrastructure development case for green hydrogen becomes weaker, particularly in emerging future producer countries like Morocco.

- b. **Implications for Morocco:** without a stronger international policy signal favouring e-fuels, Morocco risks underutilisation of its planned green hydrogen capacity and delayed return on investment for port and fuel infrastructure. To protect its position, Morocco is highly encouraged to advocate for strong reward multipliers, differentiated compliance treatment for hydrogen-based fuels.

Morocco, with growing announced investments in green hydrogen-based e-fuels is encouraged to influence GHG Intensity rules in line with its long-term interests.

Morocco's stance ↓ / IMO outcome →	Lenient LCA (biofuels = e-fuels)	Stringent LCA (e-fuels rewarded)
Low criteria (Morocco relaxes its rules)	Quick wins, long-term loss Gains quick access to compliance markets; undermines Morocco's leadership (and potential) on renewables and green hydrogen; risks stranded assets and eroded investor trust.	Offside and expensive Domestic standards below global bar; costly retrofits or write-offs; investor confidence tumbles.
High criteria (Morocco keeps strict rules)	Competitive squeeze E-fuels outpriced by over-credited biofuels; needs targeted support to maintain market share; holds reputational ground.	Leadership scenario Market rewards Moroccan e-fuels; strong signal spurs port and hydrogen investment; Confirms Morocco as zero-carbon fuels hub.

Figure 3: Fuel choices for Morocco (**Colour code:** Red = worst-case scenario, Yellow = costly misalignment, Green = best-case scenario). (**Source:** IMAL, 2025)

¹⁰ This applies more to e-ammonia, which can be made from air and water, than to e-methanol, which tend to come from a biomass source. While Direct Air Capture is an ideal potential carbon source, it is currently commercially unviable.



Aspect	EU Measures (FuelEU Maritime and EU ETS)	IMO Net-Zero Framework
<i>Timing</i>	Earlier start: EU ETS from 2024; FuelEU Maritime from 2025 (first 2% reduction). Targets tighten through 2030-2050.	Later start: IMO measures to be adopted in 2025 and enter into force in 2027. Initial global fuel GHG targets apply from 2028 onward.
<i>Scope</i>	Regional scope: EU ETS applies to all ships ≥5,000 GT calling at EU ports , no matter what flag they fly. This means any ship that enters the EU must comply, even if it is foreign flagged. The ETS covers 100% of emissions on voyages inside the EU, and 50% of emissions on voyages between the EU and non-EU ports.	Global scope: Designed as a global system under the IMO. In principle, it applies to all international ships ≥5,000 GT once adopted into MARPOL Annex VI. But implementation depends on flag states (the country where the ship is registered). If a flag state does not apply or ratify the rules, ships under that flag may be outside the system. This could create uneven coverage until most major flag states adopt the framework
<i>Incentives in favour of e-fuels</i>	Renewable e-fuels: FuelEU gives some extra credit to synthetic fuels made from renewable electricity (such as hydrogen-based e-methanol or e-ammonia). A conditional rule adds a 2% minimum share from 2034 , but only if by 2031 these fuels still make up less than 1% of the maritime fuel mix. While this creates a signal for investors, most experts consider it too weak on its own to drive large-scale uptake. The EU also requires strict sustainability checks for any fuel to qualify	The IMO fuel standard is fuel-neutral but will develop Life-Cycle Assessment (LCA) guidelines and allow only approved “Sustainable Fuel” certification schemes by 2027. It currently does not prescribe specific fuel quotas (no dedicated ZNZ fuels mandate) and has looser definitions pending further work on sustainability criteria.
<i>Compliance flexibility</i>	Banking/pooling: FuelEU allows some flexibility. Operators can bank extra compliance to use in later years and pool compliance across ships in the same company. No borrowing from future years. If you end the year short, you pay a penalty . Penalties for non-compliance are set in € per tonnes GHG exceedance (significant financial deterrent).	Banking/transfers: Draft rules allow banking of surplus compliance units and transfers to other ships (works like pooling). No borrowing from future years. Some practical details (registries, limits, certification links) are still being finalised

Tableau 3: Comparison of EU and IMO Maritime decarbonisation frameworks. (*Source: EU Commission and IMO, with IMAL's analysis, 2025*)

While these differences can create short-term uncertainty, the two regimes are structurally complementary: the EU provides early investment signals within its region, while the IMO aims to deliver convergence at global scale. The EU is expected to review and adjust FuelEU and ETS once the IMO system takes effect, reducing the risk of overlapping compliance¹⁵, but also benefit from early investment signals, especially within the EU market.

3. Potential policy implications for Morocco

To assess the impact of these multi-regulatory approaches on Morocco and identify the most favorable scenarios, we examine three plausible pathways (see below). These scenarios may illustrate how varying combinations of policy outcomes could influence Morocco's ambition to position itself as a regional e-fuel hub.

Scenario 1: unified high ambition : High global ambition (IMO strong) x High EU ambition (EU leads ambitiously)

Both EU and IMO enforce stringent decarbonization.

Outcome: Fast, global uptake of e-fuels; one harmonized regime

Scenario 2: EU-driven fragmentation : Low global ambition (IMO weak/slow) x High EU ambition (EU leads ambitiously)

EU stands as a sole advocate for clear measures; IMO lags (or is not well-defined)

Outcome: Regional (EU-centric) e-fuel market grows; slower uptake elsewhere; fragmented rules. Moroccan exporters will still be subject to EU certification.

Scenario 3: status quo (minimal action) : Low global ambition (IMO weak/slow) x Low EU ambition (EU minimal or aligned)

Neither EU nor IMO pursue strong measures or implementation is weak.

Outcome: Very slow decarbonization; fossil fuels persist, which will potentially undermine Morocco's potential e-fuel investment.

The EU and IMO approaches differ in timing, detail, and enforcement, but they are not competing regimes. The EU has moved faster, with clearer interim targets, penalties, and sustainability checks, while the IMO Net-Zero Framework reflects the global GHG Strategy's long-term ambition but is still finalizing key design elements. This creates some near-term asymmetry, yet both systems are structurally complementary: the EU

¹⁵ European Union. *Regulation (EU) 2023/1805 of the European Parliament and of the Council of 13 September 2023 on the use of renewable and low-carbon fuels in maritime transport, and amending Directive 2009/16/EC*. Official Journal of the European Union, L 231, 22.9.2023, p. 1–59. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32023R1805> (Recital 69)



provides early investment signals within Europe, while the IMO seeks uniform global coverage and eventual convergence. The EU is also expected to review its own measures once the IMO framework is in place, reducing the risk of lasting dual compliance.

For Morocco, this dynamic reinforces the importance of aligning with the highest standards. **The most favourable outcome (Scenario 1)** is a unified, ambitious regime where EU and IMO rules converge, creating a predictable global market for green fuels.

V. Morocco's voting scenarios at the IMO's 2025 October session

1. Scenarios for Morocco's NZF vote and their potential implications

On this basis, to support informed decision-making for Morocco ahead of the October vote on the NZF and its potential alignment with Morocco's e-fuels sector ambitions, IMAL has outlined four scenarios, each illustrating potential implications.

	Global majority supports NZF	Global majority opposes NZF
Morocco votes Yes	Best-case scenario: Morocco aligns with the global trend, reinforces maritime decarbonisation credibility, ensures access to the Fund, and helps shape future rules.	Pragmatic position: seen as climate-committed, builds trust with EU and IMO, prepares for eventual global convergence.
Morocco votes No/abstain	Isolation: risks losing influence, perceived as anti-climate, possible funding exclusion.	Short-term protection: aligns with dissenters, avoids rules that may disadvantage domestic industry, but loses strategic momentum.

Figure 4: Scenarios for Morocco's voting at the IMO. Colour code: The greener the better for Morocco's e-fuel strategy; the redder the worse. (Source: IMAL, 2025)

Recommended voting position: Vote YES.

Rationale:

- A majority Yes vote is understood to be likely, and Morocco risks potential marginalisation and reputational damage if it votes No/abstain.
- Voting Yes gives Morocco the opportunity to influence rules that directly impact its e-fuel export potential.
- A supportive vote aligns with Morocco's long term e-fuel sector ambitions.



Risks associated with this position:

- **Political risk:**

On 12 August, the United States (U.S.) issued a strong statement rejecting the IMO NZF¹⁶, portraying it as a de facto tax on American citizens. The statement argued that the framework would disproportionately benefit China and restrict the use of alternative low-emission fuels in which the U.S. holds a competitive edge, such as liquefied natural gas (LNG) and biofuels. The U.S. administration also called on other countries to oppose the NZF and implicitly warned of potential retaliation against those supporting the measure.

Comment: Although a similar stance was taken by the U.S. during the April negotiations, reportedly lobbying partners to oppose the proposal, the NZF was ultimately adopted. Nonetheless, the risk of targeted U.S. pressure remains, including the possibility of tariff measures or diplomatic friction with countries that endorse the framework.

For Morocco, this raises several considerations. While the U.S. claims diverge from the facts underpinning the NZF, the possibility, however remote, of Morocco being subjected to U.S. retaliatory measures cannot be entirely ruled out. That said, more extreme measures seem unlikely given the longstanding, strategic partnership between the two countries and Morocco's importance as a regional ally. Any overt retaliatory measure would likely be perceived as a hostile act, which carries risk of seriously damaging bilateral relations.

The visibility of such geopolitical risks may shift the NZF conversation from a primarily technical and environmental focus to one shaped increasingly by political dynamics. This could complicate the ability of many countries, including Morocco, to assess the framework purely on its merits.

Nonetheless, Morocco has a record of making independent and strategic decisions, even when under international pressure.

However, the IMO NZF differs in nature from other diplomatic issues. It is more closely tied to Morocco's high-level commitment to climate leadership and growing role within African regional initiatives, particularly the Atlantic Initiative, where Morocco has assumed a more prominent voice. Given this context, any stance Morocco takes on the

¹⁶ [Joint Statement on Protecting American Consumers and Shipping Industries by Defeating the International Maritime Organization's "Net-Zero Framework" aka Global Carbon Tax - United States Department of State](#)



NZF will likely be seen not only as a national position but also as a basis for wider African maritime infrastructure development opportunities.

For that reason, any voting decision should carefully weigh geopolitical sensitivities, national interests (including economic ones), and Morocco's role as a climate leader. Positions should be shaped through consultation with African peers and presented as part of a unified regional vision.

- **Food security concerns:**

Morocco may wish to raise concerns regarding NZF's impact on wheat imports' costs, given the importance of this commodity, particularly as the country imported 5.8 million tonnes of cereals in the first seven months of 2025¹⁷.

While this concern is partially valid under certain conditions, it should not automatically necessitate opposition to the entire NZF proposal. Morocco is encouraged to undertake a targeted assessment of the potential implications of the NZF on its cereal imports and broader trade exposure. This should be complemented by a comprehensive **cost-benefit analysis** that weighs the potential strategic gains from supporting the NZF, such as access to climate finance and infrastructure investment, as well as reputational gains against any short-term trade cost implications.

In addition, as a matter of solidarity with other developing economies, Morocco should ensure that policies are in place under the NZF to proactively prevent negative impacts on food security beyond Morocco, particularly for vulnerable states in Africa and the Arab region.

Comment: Morocco is still in the early stages of developing its carbon tax, reportedly requiring further impact assessment, stakeholder consultations, and technical analysis¹⁸.

Conclusions

- Morocco's strategic interest lies in aligning with high-integrity fuels and lifecycle-based compliance.
- **Passive or oppositional engagement** at the IMO risks regulatory lock-in, funding exclusion, and reputational setbacks.

¹⁷ [Entre janvier et juillet 2025, le Maroc a réduit ses importations de céréales de 11 % - Le Matin.ma](#)

¹⁸ 2025 Article IV Consultation and Third Review Under the Arrangement Under the Resilience and Sustainability Facility, IMF, 2025.

- **The best scenario for Morocco's e-fuel sector** is global alignment under a high-ambition framework that rewards e-fuels.
- Morocco should go beyond voting “yes” and actively advocate for robust sustainability safeguards as well as equity features for poorer countries.

VI. Morocco's readiness for e-fuels:

This section analyses Morocco’s gaps and challenges in becoming a global e-fuels hub. The analysis draws primarily on consolidated responses from a survey conducted by the IMAL Initiative for Climate and Development (IMAL), capturing insights from a diverse set of stakeholders, including government representatives, private sector actors, NGOs, academia, and independent experts. It examines structural gaps across the following key dimensions:

1. Policy and regulation
2. Infrastructure
3. Institutional barriers
4. Financial incentives
5. Morocco's positioning within the IMO.

This section also explores domestic efforts to promote e-fuels and elevate Morocco's profile in maritime e-fuels.

1. Current state

Morocco has taken important early steps to develop an e-fuels market, notably through the 2024 Morocco Green Hydrogen Offer and its Hydrogen Roadmap in 2020. It has signed international partnerships, including with France and Germany, and announced major green hydrogen investments. Morocco has also engaged in a pre-feasibility study for the production, storage, supply and export of zero-carbon fuels at Morocco's ports (with World Bank support), **whose publication is pending.**

However, despite Morocco's strengths, industrial-scale e-fuels production is not yet in place. Implementation may be slower than expected, and progress on the ground remains limited.

Comment: While the Moroccan Agency for Sustainable Energy (MASEN) acts as a one-stop shop for the Green Hydrogen Offer, this role may not be widely understood, **suggesting a need to improve communication around its responsibilities, particularly concerning e-fuels for maritime use.**

Few responses explicitly mentioned that “regulatory documents and processes remain too generic and not adapted to the industrial reality of e-fuels”. The Morocco Offer, while appreciated for its ambition, was said to lack a concrete legal basis and is not yet supported by secondary legislation or binding technical specifications.

These gaps are reflected in the average scores provided across six policy dimensions:

Dimension	Average score (/5)
Availability of investment incentives	2.57
Efficiency of regulatory approval processes	2.43
Support for Research and Development (R&D) and innovation	2.86
Coordination between sectors (government, industry, energy, maritime)	2.86
Clarity and stability of long-term policy frameworks (e.g. roadmaps, sector-specific regulations)	2.71
Availability of skilled workforce and technical expertise	2.57

Tableau 4: Average ratings of Morocco's e-fuels policy readiness (1 = needs significant development, 5 = well prepared). (Source: IMAL's survey, 2025)

All average scores fall between 2.43 and 2.86, indicating a low-to-moderate level of preparedness with significant gaps. Respondents cited delays, unclear administrative responsibilities, and a lack of sector-specific coordination mechanisms, especially between ministries, regulators, and port authorities. On human resources, responses noted an absence of targeted technical training on green hydrogen, power-to-liquid processes, or port and maritime safety, despite growing interest from academia, researchers and, increasingly, commercial actors and start-ups.

Despite these limitations, Morocco appears to be making incremental progress through pilot projects, policy experimentation, and institutional dialogue. Yet without significant acceleration in **regulatory reform, administrative efficiency, and targeted investment in human capital**, the current framework is unlikely to fully support the future subsequent large-scale production, commercialisation and scaling of e-fuels. This assessment suggests the need for a more coordinated, technically robust, and future-proof regulatory framework to enable Morocco to transition from political ambition to implementation, while navigating uncertainties.



3. Structural and institutional landscape



Figure 6: Perceived severity (on average) of structural and institutional barriers to e-fuels deployment in Morocco (1 = most severe barrier, 5 = less severe). (Source: IMAL's survey, 2025)

a. Structural and technical bottlenecks

Based on respondents' average severity rankings (where 1 indicates the most severe barrier), the most critical structural challenges appear to be **infrastructure costs** and **skilled workforce availability**, both averaging **2.14 out of 5**. This reflects strong concern over Morocco's limited electrolyser deployment, underdeveloped hydrogen transport and storage networks, and lack of e-fuel refuelling infrastructure. Respondents also pointed to a shortage of local expertise in electrolysis, power-to-liquid processes, and maritime e-fuel handling, challenges that likely hinder the operational readiness of projects.

b. Moderate but persistent regulatory and administrative issues

Regulatory complexity, **coordination between agencies**, and **administrative processes** were rated as **moderately severe barriers**, each averaging **2.43**. Qualitative responses confirm that fragmented responsibilities across ministries and slow permitting procedures add significant delay and risk. These issues seem to

undermine developer confidence, particularly in the absence of e-fuel-specific licensing and safety protocols. **Environmental assessment protocols and institutional capacity** both scored **2.71**, which indicate ongoing concerns about the readiness of institutions (relevant to e-fuels) to oversee large-scale e-fuel projects efficiently and transparently.

c. Technical standards and renewable energy access

The **least severe** challenges relate to **technical requirements definition** and **access to renewable energy**, both averaging **3.29**. While these are not rated as the most urgent problems, respondents allegedly remain cautious about the absence of clear e-fuel production standards and the operational feasibility of securing stable and baseload renewable electricity for electrolyzers

d. Investor confidence and enabling environment

Investor confidence received a score of **2.57**, which indicate an emerging concern. Respondents cited a lack of carbon price visibility and delays in awarding large-scale projects. These risks seemingly reduce commercial viability of projects and undermine bankability. However, **Morocco continues to be viewed as an attractive investment destination**, averaging a confidence score of **3.5**. This suggests that, if key enabling conditions are in place, investors are likely to engage further.

e. Priority measures for acceleration

When asked about the **single most important measure** to accelerate e-fuel deployment, most respondents selected infrastructure grants, followed by tax incentives and off-taker and finance mechanisms. These preferences reflect the centrality of cost and risk-sharing barriers, especially during early project phases. Several answers also highlighted the pace of project approvals and the need for common-use infrastructure as key enablers. Finally, **42% of respondents highlighted the need for a clear governance structure as the single most important success factor, followed by stakeholder coordination.**

4. Financing frameworks and investment enablers for e-fuels in Morocco

a. Mobilising infrastructure financing

Morocco has access to a wide range of potential financial instruments to accelerate the scale-up of e-fuel infrastructure, but many of it remains underutilised or not yet upgraded to become operational. Respondents highlighted the **Green Hydrogen Offer**, the **Investment Charter**, and **public-private partnerships (PPPs)** as key enablers. In

addition, it was noted that climate finance mechanisms and blended finance instruments could attract both domestic and international investors.

Several respondents emphasised the untapped potential of international development finance institutions, including in offering concessional loans and grants. These could provide favourable financing terms and help mitigate early-stage risks. Furthermore, it was noted that Morocco's National Climate Finance strategy could be enhanced to support e-fuel infrastructure, and that carbon credit markets could generate revenue through emissions trading to support capital-intensive projects.

Despite these opportunities, some respondents, particularly from the private sector, noted that current frameworks are still fragmented or undefined. This suggests the need for a clearly articulated, coherent investment framework that links climate, hydrogen, and industrial strategies with investor mobilisation.

b. Additional mechanisms to unlock investment

To unlock greater investment in Morocco's e-fuels sector, respondents recommended developing a range of complementary mechanisms focused on enhancing financial predictability and regulatory certainty. These include securities such as green bonds, sustainable financing tools, and risk-mitigation instruments like guarantees and insurance. Government-backed loans and co-financing models were also flagged as potential mechanisms to support early-stage infrastructure, alongside better visibility on project development and alignment with export strategies.

Fiscal measures were identified as essential to de-risk investment and improve project bankability. These included tax exemptions for equipment and infrastructure, long-term PPAs or feed-in tariffs (FITs) to stabilise returns, and carbon pricing to internalise environmental costs. Removing early-phase tax burdens on developers was also viewed to enhance liquidity. Overall, these tools were seen as necessary to offset high upfront costs and reduce volatility.

VII. Leveraging Morocco's diplomacy to influence international e-fuels standards

1. The imperative of strengthening Morocco's influence at the IMO

Most respondents agreed that Morocco needs to strengthen its influence within the IMO. Within this, respondents identified several priority areas. First, **building diplomatic coalitions with like-minded countries, particularly African, Arab, and Mediterranean partners**, was consistently cited as a priority. These alliances would enable Morocco to promote shared positions on emission reduction measures, financing mechanisms, and

the prioritisation of e-fuels. Morocco's role as a regional leader also provides a strategic platform to engage emerging economies in support of sustainable maritime practices. Collaborating more closely with the private sector was also seen as essential to ensure that national proposals reflect industry readiness and commercial viability.

Second, **capacity building emerged as a critical area of need.** Training Morocco's public officials and maritime stakeholders in areas such as international climate regulations, GHG emissions accounting, and technical aspects of e-fuel technologies would empower Moroccan representatives to engage more confidently in IMO negotiations. Respondents also highlighted the importance of **establishing partnerships with research institutions and universities** to support innovation and knowledge exchange on maritime decarbonisation. **Strengthening domestic research capacity** and launching pilot projects would help Morocco generate robust data and credibility, which will likely reinforce its leadership position in the global energy transition.

2. Leveraging cooperation initiatives to reinforce Morocco's maritime influence

Most respondents highlighted that international cooperation platforms, such as the Atlantic Initiative, other South-South cooperation initiatives, and European Union regional initiatives, could help to strengthen and amplify Morocco's credibility as an e-fuels hub. These cooperation frameworks offer entry points for developing transnational infrastructure, aligning regulatory approaches, and pooling resources.

His Majesty King Mohammed VI's Atlantic Initiative presents Morocco with a unique platform with high-level political momentum. By providing enhanced maritime access for Sahel countries via the Atlantic, the Initiative positions Morocco as a key gateway for regional trade as well as clean fuel logistics. That creates demand pull for common-use bunkering, storage and export corridors based around Moroccan ports, and strengthens the case for transnational infrastructure whose standards Morocco can help shape. This framing elevates Morocco from a sole producer to a regional facilitator of an equitable transition, which enhances its credibility as an e-fuel hub.

The Atlantic Initiative also enables Morocco to align regulatory approaches and pool resources with neighboring states. This underpins larger and more bankable project pipelines, improving the likelihood of attracting climate finance and strengthening the case for accessing NZF resources for port infrastructure supporting ZNZ fuels.

Morocco should also consider engaging further with the **African Union's Maritime Transport Charter**, supporting its ratification and promoting its vision at the international level.



Comment: The various different stances of Morocco and other African countries during the April 2025 IMO negotiations highlighted gaps in Africa's coordination and regional alignment. Strengthening consultation with African countries and aligning positions before key negotiations would help build a common voice for Africa, enhance regional leverage, and better reflect Morocco's national interests and continental role.

VIII. Recommendations:

Building on the analysis presented across this report, the following recommendations aim to guide the current Government of Morocco (2021-2026) in maximising the benefits of the IMO's Net-Zero Framework while securing Morocco's ambition to become a hub for e-fuels. The table below outlines priority actions based on identified gaps and opportunities, assessed according to their priority, potential impact, and urgency.

Area	Recommendation	Priority	Impact	Urgency
Regulatory/Policy	Revise Law 40-19, 82-21, and 48-15 to integrate e-fuels production, transmission, and grid connection standards. Update the Maritime Code.	High	High	High
	Develop a dedicated legal framework for e-fuels with definitions, safety protocols, permitting rules, and integration into the Maritime Code.	High	High	High
	Publish the Government's pre-feasibility study on Morocco's ports (supported by World Bank). Ahead of its publication, it should consider integrating analysis based on the upcoming final decisions of the October 2025's MEPC/ES.2,	High	High	High
	Adopt binding technical standards for synthetic fuels and MRV-compliant LCA methodologies for certification.	High	High	High
	Promote MASEN's one-stop-shop role for project licensing,	Medium	Medium	High



	including clearer guidance for developers.			
	Establish legal clarity on taxation, customs treatment, and fiscal incentives for hydrogen and e-fuels projects.	High	High	High
Infrastructure	Upgrade public support schemes for shared-use e-fuels infrastructure, such as refuelling stations, port upgrades, and electrolysis hubs.	High	High	High
	Fast-track common-use infrastructure projects (bunkering, storage, maritime transport corridors) under PPP models.	High	High	High
	Invest in renewable electricity transmission infrastructure dedicated to electrolyzers and industrial clusters.	High	High	High
Finance	The Ministry of Economy and Finance is encouraged to conduct an impact assessment of the NZF's implications on key sectors, such as agriculture, phosphate, etc.	High	High	High
	Leverage the national Climate Finance Strategy to structure bankable e-fuels infrastructure pipelines and attract climate and private capital.	Medium	High	Medium
	Introduce tax exemptions and feed-in-tariffs for early hydrogen and e-fuels infrastructure investments.	Medium	High	High
	Integrate carbon credit revenue into investment frameworks for e-fuels.	Medium	Medium	Medium



<i>Institutional/ administrative</i>	Establish a National E-Fuels Taskforce, operating under the Investment Committee of the Moroccan Offer for Green Hydrogen, to ensure inter-ministerial coordination across energy, transport, maritime, and environment ministries.	High	High	High
	Streamline administrative procedures and reduce delays by publishing detailed permitting guidelines and digitalisation.	Medium	Medium	High
	Develop a centralised digital platform for licensing and project tracking.	Medium	Medium	Medium
<i>Human capital</i>	Establish specialised training programmes in hydrogen, electrolysis, IMO technical negotiations, maritime bunkering, and LCA methodologies.	High	Medium	High
	Facilitate public-private-academic partnerships to support skills development and R&D in e-fuels technologies.	Medium	Medium	Medium
<i>International diplomacy</i>	Build coalitions with like-minded African and Mediterranean countries to promote e-fuels and just transition within IMO negotiations.	High	High	High
	Align domestic diplomatic actions with continental ambitions e.g., African Union Maritime Charter, Atlantic Initiative, etc.	High	Medium	Medium
	Coordinate positions in advance of IMO votes and build technical negotiation capacity at national level	High	High	High



	Leverage EU-Morocco Green Partnership to support convergence with EU FuelEU Maritime and access funding.	Medium	High	Medium
Technical standards	Advocate at IMO for strict LCA default values and sustainability safeguards to protect Morocco's e-fuels against over-crediting of low-integrity biofuels.	High	High	High
	Promote a multiplier reward mechanism specifically for green hydrogen-based e-fuels.	High	High	High
Market development	Facilitate early offtaker agreements with EU shipping lines to secure export demand and attract investment.	Medium	High	High
	Include e-fuels in Morocco's national industrial strategy and align with export promotion agencies.	Medium	Medium	Medium
Research & Development (R&D)	Boosting IRESEN's efforts by funding pilot e-fuels production and bunkering projects to create proof of concept.	Medium	Medium	Medium
	Establish a national green innovation fund to be managed by IRESEN, to support startups and research institutions working on green technologies, including electrolysis and synthetic fuels.	Low	Medium	Low
	Forge collaborations with top-tier universities, research centres, and think tanks to drive joint research, capacity building, and evidence-based policymaking in the e-fuels sector	High	High	High