STRATEGIC HORIZON
ENERGY STATECRAFT · VOLUME 05 OF 08

The Clearing

The Hydrogen Geopolitics

The hydrogen crash of 2025 and 2026 is being read as a verdict on the technology. It is not. It is a clearing event, and what it cleared away was the speculative tail. What survived is smaller, narrower and real. The consequential thing that happened during the clearing was not a cancellation. It was that the manufacturing race for the mass-market electrolyser ended — decisively, in China’s favour — while Europe was still writing targets.

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EDITORIAL NOTE

What this volume argues

Volume 01 set out an application hierarchy: electrify wherever direct electric systems compete, deploy hydrogen only where system constraints make it decisive. That hierarchy was stated as an editorial position. Eighteen months of cancellations have since tested it against capital, and this volume reports the result.

The verdict is that the hierarchy was right and the market has now enforced it more brutally than any policy could have. Every use case outside the hierarchy has been abandoned by the people who were paying for it. What that leaves is a smaller hydrogen economy than the one European policy is still written for, and a supply architecture whose ownership question was settled while attention was elsewhere.

No figure here is taken from FR-2026-01. Where institutions report materially different values for the same quantity, the divergence is stated where the figure is used.

EXECUTIVE SUMMARY

The argument in brief

— **The pipeline was never real and is now being priced accordingly.** Of roughly 520 GW of electrolyser capacity announced worldwide to 2030, under 4 per cent has entered construction. Binding offtake stands at 3.6 million tonnes a year. Potential 2030 production fell from 49 to 37 million tonnes in a single year, with electrolysis projects responsible for more than 80 per cent of the drop.

— **The mass-market alkaline electrolyser race is effectively over, and Europe lost it in public.** China holds 86 per cent of global alkaline manufacturing capacity and 60 per cent of the total, up from 5 per cent in under a decade. Chinese exports rose seventeenfold in twelve months. In May 2026 a Norwegian manufacturer mothballed its own factory to build on a Chinese competitor’s lines. PEM and SOEC are not yet consolidated, and that is where the remaining European position sits.

— **The manufacturing race was never where the price was decided.** Renewable electricity is 60 to 75 per cent of the levelised cost of hydrogen; the electrolyser is 15 to 35 per cent. Halving hardware cost takes a $3.50 per kilogram case to about $2.90, against grey hydrogen at $1.00 to $1.50. The decisive innovation frontier is therefore shifting from stack cost toward electricity-system integration, dynamic operation and utilisation — and the cost problem and the industrial problem are separate problems that Europe has been treating as one.

— **What survives is what Volume 01 predicted would survive.** Hydrogen replaces grey hydrogen — refining, ammonia, methanol, steel — and little else has held. Passenger mobility, road freight and building heat have been largely abandoned by their own sponsors, which is a stronger verdict than any modelling; routine grid balancing has retreated sharply, though long-duration and seasonal storage remain open questions.

— **Europe wrote import targets before it had either a manufacturing base or bankable demand.** Ten million tonnes of domestic production and ten million imported by 2030, against a green premium of €4 to €6 per kilogram and a third auction where winning bids ran to €3.49. The gap is not a financing problem. It is an arithmetic one.

— **The corridor map reproduces the dependency the strategy was meant to escape.** Molecules from North Africa and the Gulf, equipment from China, rules

written by neither. On present trajectory Europe arrives in the 2030s as a structural importer of a fuel it does not make with machines it does not build.

SH VERDICT

Hydrogen was never going to be the transition. It was always going to be the residue — the set of things electrification cannot reach — and the residue is worth having. The strategic failure was not believing in hydrogen. It was believing in it everywhere, which meant Europe spent a decade arguing about applications instead of securing the chain. The applications argument is now settled by bankruptcy. The chain question is settled too, and not in Europe's favour. What remains open is whether Europe imports the molecule on its own terms or on someone else's, and that is decided in the next three years by contract structure rather than by technology.

SECTION I

The Clearing

Around fifty hydrogen projects were publicly cancelled in 2025, and the real figure is higher because many cancellations happen quietly. The roll-call reads like an industry directory. Shell exited Aukra in Norway. BP walked away from the $36 billion Australian Renewable Energy Hub, from Duqm in Oman and from its UK blue hydrogen plans. Air Products cancelled three American projects including its $4.5 billion Texas joint venture. Topsoe and First Ammonia tore up a reservation for up to 5 GW of electrolyser capacity in March 2026. World Energy GH2 shelved 1.2 GW in January 2026 having secured no offtake at all. In Europe more than 29 GW of announced electrolyser capacity had been shelved by the end of 2024 alone.

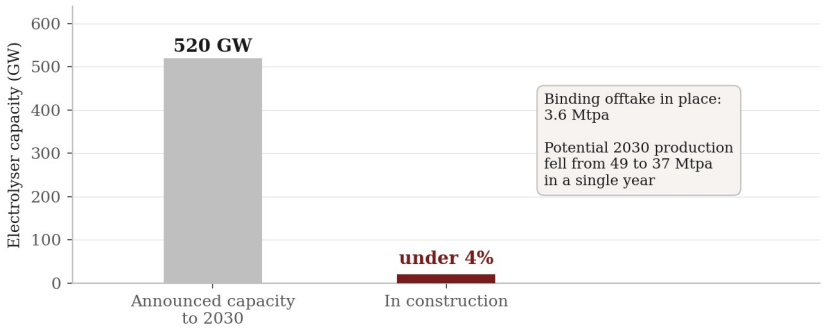


Figure 1. The ambition and implementation gap. Sources: IEA Global Hydrogen Review 2025 and 2026; Odenweller and Ueckerdt, Nature Energy; ING Research.

Four failure modes, not one

The cancellations are usually reported as a single phenomenon. They are four, and separating them matters because only two are about hydrogen.

Failure mode	Mechanism	Example
No offtake	Production built on the expectation that buyers would appear. They did not.	World Energy GH2, 1.2 GW shelved January 2026
Policy withdrawal	Economics that depended on subsidy, and the subsidy was removed.	US 45V repeal; cascade of postponed FIDs
Downstream failure	The industrial consumer cancelled first, removing the demand case.	ArcelorMittal declining €1.3 bn of German state aid

Failure mode	Mechanism	Example
Wrong application	Use cases where the arithmetic never worked and everyone eventually admitted it.	Hydrogen cars, trucks, building heat

Table 1. Why projects died. Only the first two are failures of the hydrogen market; the third is a steel market failure and the fourth was a category error from the beginning.

SH ASSESSMENT I/1

The fourth column is the one that should be read as vindication rather than disaster. Hydrogen cars, hydrogen trucks and hydrogen boilers did not fail because hydrogen is unworkable. They failed because a battery or a heat pump does the same job with fewer conversion losses, and no amount of subsidy closes a thermodynamic gap. Volume 01 said this in print; the market has now said it with money.

Strip the speculative tail out and the underlying industry is still moving, slowly. Low-emissions hydrogen production rose from about 0.8 million tonnes in 2024 to close to 1 million in 2025. That is a real industry at roughly one per cent of the size the announcements implied, and a serious hydrogen strategy should be built on the one per cent that exists rather than the ninety-nine that was press-released.

Recommendation I/1-R — European hydrogen planning should be rebased on projects holding binding offtake rather than on announced capacity. The IEA and the Commission publish both; policy currently cites the larger number. Using the announcement pipeline as a planning input is how the 2030 targets were set, and it is why they will be missed.

SECTION II

The Race That Ended

While the projects were failing, something more consequential was being decided. In less than a decade China moved from 5 per cent of global electrolyser manufacturing capacity to 60 per cent. A World Bank technical paper published in February 2026 put Chinese share of global alkaline manufacturing — the workhorse technology for large-scale production — at 86 per cent, with rapid expansion into PEM, the segment Western firms historically led.

Chinese annual manufacturing capacity reached 39 to 40 GW by the end of 2024 against global demand of roughly 10 GW for 2025 and 2026. That is a fourfold overhang, and it is the same structure Volume 02 identified in solar: domestic capacity maintained well beyond domestic need, with export as the release valve.

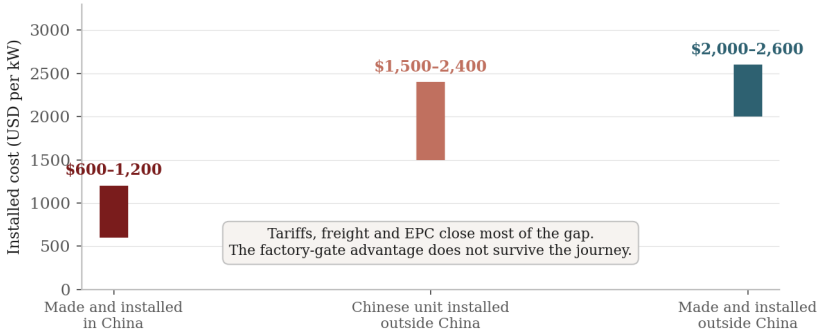


Figure 2. The electrolyser cost gap, and how much of it survives shipping. Sources: IEA Global Hydrogen Review 2025; World Bank, Electrolysers for Hydrogen Production, February 2026; BloombergNEF.

The cost picture is more interesting than the headline suggests. An electrolyser made and installed in China cost $600 to $1,200 per kilowatt in 2024, against $2,000 to $2,600 outside China. But more than half of total installed cost is engineering, procurement, construction and contingency, which is local. With transport and tariffs included, a Chinese unit installed outside China runs $1,500 to $2,400 — narrowing the gap considerably. Stack costs alone fell from $0.36 million per MW in 2021 to $0.13 million in 2024.

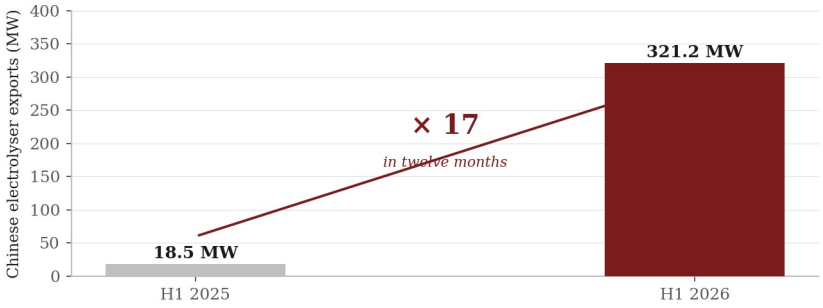


Figure 3. Chinese electrolyser exports, first half of 2025 against first half of 2026. Source: publicly reported shipment data compiled by Fuel Cells Works; Wood Mackenzie.

Exports went from 18.5 MW in the first half of 2025 to at least 321 MW in the first half of 2026, a seventeenfold increase across Europe, Asia, Africa and North America. The IEA projects that under an announced-pledges trajectory China would supply over 95 per cent of global electrolyser exports by 2030.

The moment that settled it came on 13 May 2026. HydrogenPro, a Norwegian manufacturer, mothballed the 500 MW factory in Tianjin it had taken full control of six months earlier and moved production onto the lines of LONGi, a Chinese competitor, under a joint OEM agreement giving it access to 1 GW of capacity. The company keeps its proprietary technology and assembles European-destined systems in Germany. The metal, the manufacturing and the volume are Chinese.

SH ASSESSMENT II/1 — THE CENTRAL FINDING OF THIS VOLUME

A European electrolyser manufacturer giving up its own factory to build on a Chinese competitor's assembly line is not a commercial footnote. It is a concession statement. Volume 01 warned that without explicit electrolyser manufacturing protection the hydrogen economy of the 2030s would be built on Chinese equipment. That warning is now obsolete, because the thing it warned against has happened. The relevant question has moved from prevention to terms.

The mitigating detail matters and is usually omitted. Because EPC dominates installed cost and tariffs bite on the equipment, the delivered Chinese advantage outside China is far smaller than factory-gate prices imply. Europe cannot win the manufacturing race, but it retains real leverage over the two-thirds of project cost that is engineering, integration and construction — provided it stops fighting the battle it has already lost and starts defending the one still open.

Recommendation II/1-R — Reorient European electrolyser policy from manufacturing share to system integration, EPC capability and certification authority. Set import content rules that condition public support on European engineering, installation and service content rather than on stack origin, which is no longer securable. Retain domestic capability in PEM and SOEC, where the Chinese position is not yet consolidated and where the performance argument still holds.

SECTION III

Where the Cost Actually Is

Section II described a manufacturing race that Europe lost. This section describes why that race was never where the price of hydrogen would be decided, which is the most consequential thing the cost literature says and the thing European policy has been slowest to absorb.

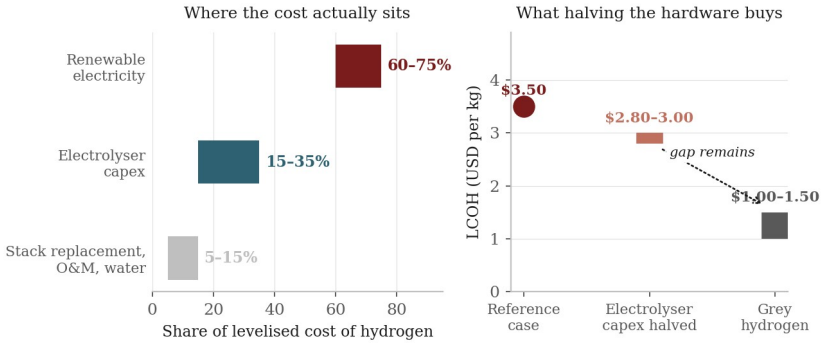


Figure 4. The structure of the levelised cost of hydrogen, and the limits of hardware cost reduction. Sources: IEA; World Bank ESMAP; European Hydrogen Observatory LCOH calculator; IRENA; Lazard.

Renewable electricity accounts for 60 to 75 per cent of the levelised cost of hydrogen. Electrolyser capital expenditure accounts for 15 to 35 per cent. Stack replacement, operations, maintenance and water make up the remainder. A shift of $10 per megawatt-hour in the power price moves the hydrogen cost by roughly $0.50 per kilogram — more than most plausible hardware improvements deliver in a decade.

The arithmetic that follows is uncomfortable for everyone. Halving electrolyser capital cost takes a $3.50 per kilogram reference case to around $2.80 to $3.00 in the best configurations. Grey hydrogen from steam methane reforming costs $1.00 to $1.50. The hardware reduction is real and it does not close the gap.

The learning curve that went backwards

Cost curves in this sector are usually presented as a matter of time and volume. In the West they went the other way. A BloombergNEF survey of more than fifty manufacturers found average system-level cost outside China around $2,500 per kilowatt against roughly $600 for a Chinese-built machine — and that Western prices had risen rather than fallen, driven by input inflation and by subsidy delays that prevented the scale-up on which the projected reductions depended.

That is worth stating plainly because it inverts the assumption underneath a decade of European hydrogen policy. Support was designed on the expectation that deployment would drive learning and learning would drive cost down. Deployment did not arrive at the scale required, so learning did not occur, so cost did not fall, so deployment did not arrive. The subsidy was meant to break that loop and instead arrived late enough to be inside it.

Against that record the benchmark targets deserve scrutiny. The United States Hydrogen Shot set $1 per kilogram within a decade. The best projects today sit near $3, most higher, and the cost structure in Figure 4 shows why the target cannot be reached from the hardware side: even free electrolysers would leave 60 to 75 per cent of the bill in place. A dollar per kilogram requires electricity at a price and a capacity factor that almost nowhere in Europe offers.

The technology frontier, stated honestly

Technology	Installed cost	Status	What has to happen
Alkaline	$200–400 / kW	Commodity; 70–90% of global shipments	Nothing. This is a mature product and the cost race is over.
PEM	$400–600 / kW	Commercial; largest project 20 MW	Iridium loading below 0.3 mg/cm² and a closed recycling loop, for a sub-$200 / kW target by 2030.
SOEC	$800–1,200 / kW	Mostly pilot	80–90% efficiency at 600–850°C, but only where industrial waste heat is available.
AEM	Early stage	Pre-industrial	Non-precious catalysts already show above 90% efficiency at 1 A/cm²; membrane conductivity is roughly half that of PEM.

Table 2. Where each technology stands. Bold entries are the two where the strategic question is settled: alkaline because the race is over, SOEC because its advantage depends on a heat source rather than on the stack. Sources: World Bank ESMAP; PatSnap technology landscape 2026; IEA.

The research frontier is narrower than the press coverage suggests. In PEM the binding constraint is iridium and platinum at the anode and cathode; the whole field is a search for lower loadings without losing durability at industrial current density, and a non-noble cathode catalyst reaching 4 A/cm² at 2.36 V remains a laboratory result rather than a product. In AEM the constraint is membrane conductivity, because hydroxide ions move more slowly than protons. In SOEC the constraint is not the stack at all but whether a project sits next to a source of high-grade waste heat: coupled to concentrated solar or industrial heat, SOEC could reach around $3.50 per kilogram by 2050; coupled to photovoltaics with electric heating it exceeds $5.

SH ASSESSMENT III/1

The innovation that decides the price of hydrogen is not happening in the stack. It is happening in the electricity system. Cheaper renewables, higher capacity factors, longer full-load hours and lower cost of capital move the number. Catalyst chemistry moves the minority share. Volume 01 found that financing runs from under 2 per cent for a Chinese state grid builder to 16 per cent in parts of Africa; that spread is worth more per kilogram than any electrolyser improvement now in development.

Which changes what losing the manufacturing race means. It is a serious industrial loss and a smaller cost loss than it appears, because Europe would have been buying into the minority of the bill either way. The corollary is harder: no achievable European hardware programme produces competitive hydrogen on expensive European electricity. The cost problem and the industrial problem are separate problems, and Europe has been treating them as one.

And the learning-curve assumption should be retired rather than restated. Western electrolyser costs rose through the period in which policy assumed they would fall. Any European instrument still priced on an automatic learning rate is priced on something that did not happen here, and the honest planning assumption is flat or slowly declining Western hardware cost with the reductions arriving through electricity supply and utilisation instead.

There is one place where the two meet, and it favours Europe. Chinese alkaline stacks are designed for steady-state operation. Coupled to variable wind and solar they cycle, run at partial load and lose efficiency below roughly 20 per cent of rated capacity — exactly the duty cycle that European additionality rules impose. The cheapest hardware is optimised for the operating profile European regulation does not permit, and

that mismatch is a real and under-examined element of delivered cost.

Recommendation III/1-R — Direct European hydrogen research funding away from stack cost reduction, where the returns are capped by the cost structure, and toward the two levers that are not: dedicated low-cost renewable supply with high capacity factors, and dynamic operation — stack durability under cycling, partial-load efficiency and fast ramping. Retain PEM and SOEC programmes for the strategic reasons in Section II rather than for cost reasons, and state the distinction openly in funding calls.

SECTION IV

What Survives

The survivor template is consistent enough to state as a rule. Hydrogen replaces grey hydrogen. Where a plant already buys hydrogen by the kilogram — refining, ammonia, methanol, direct reduced iron — substitution is a price comparison and the project is bankable. Where hydrogen has to displace something else entirely, the arithmetic has not worked and the sponsors have left.

Stegra in Boden is the cleanest example. A 690 MW electrolyser feeding hydrogen direct reduction and electric arc furnaces, with captive offtake signed before final investment decision from Mercedes-Benz, Porsche, Scania, ZF, BMW and Volvo. A further €1.4 billion closed in April 2026 led by the Wallenberg family, taking total project capital to around €7 billion. The economics rest on a green steel premium of roughly $80 to $150 a tonne against a $700 to $900 reference price — 10 to 20 per cent at the plate level, absorbed by customers who can pass it through their own product prices.

And the counter-example

Green steel as a class is not doing well. More than fifteen net-zero steel projects have been announced globally with a pipeline above $30 billion; roughly seven have reached final investment decision and none is operating. ArcelorMittal declined €1.3 billion of German public subsidy rather than convert two blast furnace sites, citing energy costs, and then installed a hydrogen combustion system at a Spanish rolling mill instead — a far smaller application. Salzgitter postponed its investment decision from 2026 to 2028 or 2029. Thyssenkrupp’s hydrogen tender was postponed indefinitely in March 2025. Low-carbon steel price indices fell by as much as 50 per cent in early 2026, removing the premium the business cases assumed.

SH ASSESSMENT IV/1

The difference between Stegra and the rest is not technology. Every one of these projects uses the same direct reduction chemistry. The difference is that Stegra sold the steel before it built the plant, to customers whose own products carry enough margin to absorb a premium. Everyone else built, or planned to build, into a premium market that had not been contracted and then discovered it was not there.

This has a policy implication European industrial strategy has not absorbed. Subsidising production does not create demand for a green premium. Lead markets do: public procurement rules, content mandates in regulated sectors, border adjustment that prices the alternative. Germany offered ArcelorMittal €1.3 billion to build a plant and the company refused, because no subsidy for construction solves an operating cost problem in a market that will not pay the premium. The money was on the wrong side of the equation.

Recommendation IV/1-R — Shift European support from capital subsidy toward guaranteed demand: minimum green content in public infrastructure procurement, carbon border

adjustment applied without the current free-allocation offsets, and long-term contracts for difference on the product rather than on the hydrogen. A steelmaker with a contracted premium can finance its own electrolyser.

SECTION V

The Import Architecture

Europe’s hydrogen strategy assumes imports at scale: 10 million tonnes produced domestically and 10 million imported by 2030. The supply map that would deliver it is now visible in outline, and its geography is the geography of the fossil era with different molecules.

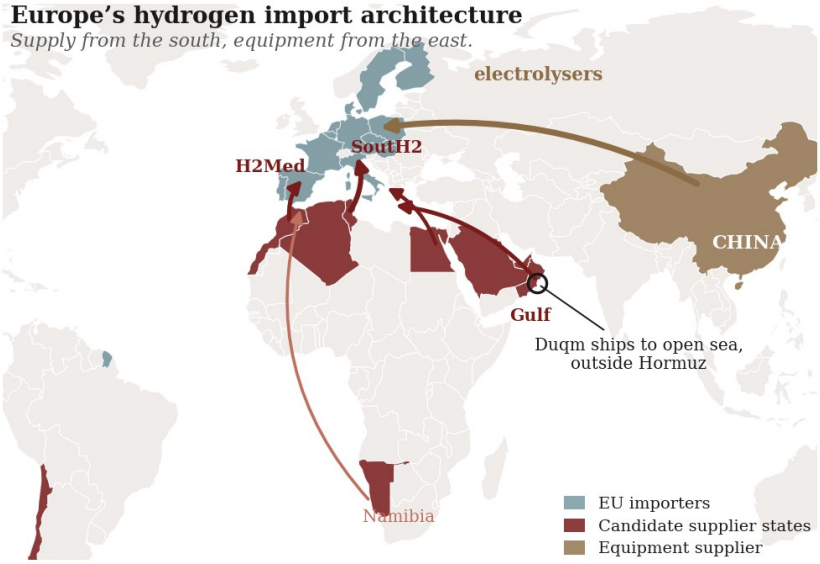


Figure 5. Where the molecules would come from, and where the equipment comes from. Sources: OGE H2 import corridors; SoutH2 and H2Med project documentation; IEA Global Hydrogen Review 2026; ORF Middle East.

Two pipeline corridors dominate the European plan. SoutH2 runs some 3,300 kilometres from Tunisia and Algeria through Italy to Austria and Germany, around 80 per cent repurposed pipe, and is projected to deliver 15 to 20 per cent of EU green hydrogen imports by 2030 if final investment decisions close by mid-2027. H2Med would carry up to 8 million tonnes a year from Portugal and Spain via France to Germany, roughly half repurposed, with potential onward connection to Morocco and Algeria.

Beyond the pipelines, the trade is ammonia rather than hydrogen, because ammonia moves in existing ships to existing terminals — around 170 ammonia port terminals are already operating worldwide. Saudi Arabia’s NEOM is designed for roughly 1.2 million tonnes a year of green ammonia backed by more than 4 GW of dedicated renewables, and began commercial shipments to South Korea in late 2025. Egypt, Morocco, Oman, Namibia and Chile are all positioning.

The Hormuz lesson, applied

Oman’s Duqm illustrates what the March 2026 disruption taught, and who learned it. Duqm ships to the open sea without transiting the Strait of Hormuz. That advantage is relative rather than absolute — Arabian Sea and Indian Ocean routes carry their own exposure — but it is a deliberate design choice by a supplier that watched the strait close

and drew the obvious conclusion. Oman has also declined technological lock-in, keeping ammonia, methanol and liquid hydrogen open rather than committing to one carrier.

SH ASSESSMENT V/1

Europe is assembling a hydrogen import architecture with the same structure as the gas architecture it spent four years trying to escape. Molecules from suppliers carrying varying degrees of political, regulatory and chokepoint exposure, equipment from a strategic competitor, and no European position anywhere in the chain except as the buyer. Volume 03 recorded the Union concentrating LNG supply on a single external state and calling it security. This is the same move, executed in advance, on a fuel that does not yet exist in volume.

The suppliers are further ahead in strategic thinking than the buyer. Oman is designing around chokepoints and refusing carrier lock-in. The Gulf states are structuring exports around ammonia precisely because it uses infrastructure that already exists. Several of these actors previously blocked competing corridors and are now repositioning as indispensable suppliers. Europe, meanwhile, is still setting volume targets. Targets are not a negotiating position.

Recommendation V/1-R — Apply the supplier concentration ceiling recommended in Volume 03 to hydrogen and its derivatives before the contracts are signed rather than after. Structure import agreements around multiple carriers and multiple corridors as a design requirement, not an aspiration, and make European EPC and certification participation a condition of import infrastructure support. The terms are available now and will not be available once the first long-term offtake contracts set the template.

SECTION VI

Europe’s Instruments

The European Hydrogen Bank has run three auctions. The trajectory of the bid prices is the most honest data series in European hydrogen policy.



Figure 6. Winning bid ranges across three European Hydrogen Bank auctions. Sources: European Commission, Innovation Fund; Hydrogen Europe; PNO Innovation.

Round	Budget	Winners	Capacity	Bid range
IF23 (2024)	€720 m	7 projects	1.5 GW	€0.37–0.48 / kg
IF24 (2025)	€992 m	15 projects	—	not directly comparable
IF25 (2026)	**€1.09 bn**	**9 projects**	**1.1 GW**	**€0.57–3.49 / kg**

Table 3. Three rounds. The third auction was more than six times oversubscribed with 58 bids from 11 countries, and produced winning bids up to seven times the first round’s ceiling.

The subscription numbers are cited as success and the bid prices are not. Both matter. Heavy oversubscription with rising clearing prices is what a market looks like when demand for subsidy is strong and underlying economics are deteriorating. The first round benefited from an additionality exemption for projects operating before 2028; later projects carry the full cost of dedicated new renewable capacity, and from 2030 hourly matching replaces monthly, forcing either oversized renewable portfolios with storage or much lower electrolyser utilisation.

The delivery record is worse than the award record. Of the first €2 billion offered across two rounds, €902 million went unused — €384 million withdrawn before grant signature and a further €230 million after. Zeevonk lost eligibility because its dependency on the Delta Rhine Corridor pipeline pushed commissioning past 2030. Member states have begun topping up: Germany added €1.3 billion for RFNBO projects, more than the entire EU budget for the round, and Spain €415 million.

SH ASSESSMENT VI/1

The instrument works and the target does not. The auction mechanism is well designed, competitively subscribed and allocating capital to real projects. It is being asked to close a green premium of €4 to €6 per kilogram at a budget scale that would cover a fraction of one year of the 2030 target. RED III requires 42.5 per cent of industrial hydrogen to be RFNBO by 2030. Nothing in the current trajectory reaches that, and everyone involved knows it.

A target that will visibly be missed is worse than a lower target that is met. It discredits the instrument that was working, it invites the compliance flexibility that hollows out the mandate, and it teaches industry that European deadlines are negotiable. Strategic Horizon's position is that the Union should revise the 2030 RFNBO obligation downward and defend the revised number absolutely, rather than defend the current number rhetorically and concede it in implementing acts.

Recommendation VI/1-R — Rebase the 2030 RFNBO obligation on demonstrated delivery, extend the additionality exemption to projects commissioned before 2030 rather than 2028, and delay hourly matching by three years. Each lowers near-term system cost or improves deliverability while preserving the strategic direction of travel. The nominal 2030 number falls; the number delivered rises, and so does the credibility of every European deadline after it.

SECTION VII

Strategic Implications

Ref.	Recommendation	Addressee	Horizon
II/1-R	Reorient electrolyser policy from manufacturing share to integration, EPC and certification; retain PEM and SOEC capability.	Commission / member states	Immediate
III/1-R	Redirect hydrogen research funding from stack cost to dedicated low-cost renewable supply and dynamic operation under cycling.	Commission / Horizon Europe	Immediate
V/1-R	Apply a supplier concentration ceiling and multi-carrier requirements to hydrogen imports before the first long-term contracts set the template.	Commission / Council	Immediate

Ref.	Recommendation	Addressee	Horizon
IV/1-R	Move support from capital subsidy to guaranteed demand: procurement mandates, unoffset CBAM, product-level contracts for difference.	Commission / member states	2026–28
VI/1-R	Rebase the 2030 RFNBO obligation on delivery; extend additionality exemption; delay hourly matching.	Commission	2026–27
I/1-R	Plan on binding-offtake capacity, not announced capacity.	Analysts / forecasters	Ongoing

Figure 7. Consolidated recommendations. Bold entries are assessed by Strategic Horizon as the two that most change European outcomes.

SECTION VIII

Conclusion — The Strategic Horizon View

Hydrogen held a peculiar place in European energy thinking for a decade: the technology that let every hard question be deferred — heavy industry, aviation, shipping, seasonal storage, the last twenty per cent. Because it could theoretically do all of them, it stood in for a strategy about any of them.

The clearing ended that. What hydrogen will do is now known with reasonable confidence, and it is a shorter list than the one European policy was written against. It will decarbonise the hydrogen that already exists, make ammonia and methanol, and reduce iron. It will not become a mainstream solution for building heat, passenger mobility or routine grid balancing, whatever survives in long-duration storage. Those questions come back unanswered, and they were always the real ones.

The thing that was decided while nobody was looking

Between 2024 and 2026 the alkaline electrolyser question was settled. Not narrowly: 86 per cent of capacity, a seventeenfold export increase in twelve months, and a European manufacturer moving its own production onto a Chinese competitor’s lines. Europe spent those two years running auctions and revising delegated acts.

This is the third time the series has recorded the same sequence. Solar was lost while Europe debated feed-in tariffs, batteries while Europe debated gigafactory subsidy, electrolysers while Europe debated additionality rules. Each European instrument was technically sophisticated, procedurally correct and aimed at the wrong variable.

The verdict

STRATEGIC HORIZON VERDICT

The hydrogen crash is not the story. The story is that Europe built a demand-side policy for a supply chain it does not own, in a fuel it will import, using machines it no longer makes. Every individual instrument in that sentence is well constructed. The Hydrogen Bank auctions are good auctions. RED III is a coherent mandate. The corridor projects are serious engineering. The problem is that they collectively answer the question of how much hydrogen Europe should consume, and no European instrument answers the question of who owns the chain that delivers it.

The window on the import terms is roughly three years and it is the last one. Manufacturing is gone. Molecule production is going to the sun belt, which is geography rather than policy failure. What remains negotiable is contract structure: carrier

diversity, corridor diversity, supplier concentration limits, and European participation in engineering, certification and service. Those terms are available while the first long-term offtake agreements are still being drafted and unavailable afterwards, on the ordinary logic that nobody reopens a signed contract to make it worse for themselves.

The uncomfortable conclusion is that the honest hydrogen strategy is a smaller one. Fewer applications, lower targets, defended absolutely rather than proclaimed and quietly conceded. A Union that committed to 42.5 per cent RFNBO by 2030 and delivers a fraction of it will have taught its own industry that European deadlines are provisional — and that lesson costs more than the tonnes.

Limits

The cancellation record is incomplete: many failures are never announced, and the fifty or so public cancellations in 2025 are a floor. Electrolyser cost figures vary widely with scope — stack only, system, or installed including engineering and construction — and are stated here on the basis each source uses. Chinese manufacturing share varies by segment — 60 per cent of total capacity against 86 per cent of alkaline — and both are used where they apply. The IF24 bid range is not comparable with the other rounds, and corridor projections are conditional on decisions not yet taken.

Principal sources: IEA Global Hydrogen Review 2025 and 2026; World Bank ESMAP; European Hydrogen Observatory; European Commission Innovation Fund; Hydrogen Europe; BloombergNEF; IRENA; Lazard; US Department of Energy; Wood Mackenzie; ING; Nature Energy; ORF Middle East; OGE; Fuel Cells Works; Reuters. © Strategic Horizon 2026. Volume 05, v1.5. Open access. Reviewed by Ciceró and Solon; see the note on limits in Section VIII.