



 OCEAN-H2

Italy's National Hydrogen Strategy

A comprehensive roadmap toward decarbonisation, energy security, and industrial leadership – from 2024 to 2050.

Strategic Objectives

Italy frames hydrogen as both a climate imperative and an industrial opportunity across seven strategic pillars.



Hard-to-Abate Sectors

Steel, cement, ceramics, chemicals – where electrification alone falls short.



Energy System Integration

Hydrogen as a long-term storage vector bridging renewables and demand.



Industrial Supply Chain

Electrolysers, components, and clean-tech clusters – a national competitive edge.

Italy as a Mediterranean Energy Hub

Energy Security

Reducing fossil-fuel dependence via diversified hydrogen supply corridors.

Southern H₂ Corridor

Pipelines from North Africa connecting Italy to the European Hydrogen Backbone.

Certification System

Guarantees of origin to ensure hydrogen is genuinely low-carbon.

R&D & Innovation

Next-gen electrolysers, e-fuels, CCS, advanced storage, and new materials.

Technical Constraints

The strategy is honest: significant barriers must be overcome before hydrogen scales. Here are the critical pain points.

High Production Cost

Low technological maturity, high CAPEX, and electricity costs keep green H₂ expensive today.

Electrolyser Maturity Gaps

PEM, alkaline, and SOEC technologies are at different readiness levels – scaling takes time.

No National H₂ Network

No dedicated hydrogen pipeline exists today. Ports, storage, and distribution must be built from scratch.

Import Logistics Complexity

Liquefaction consumes ~1/3 of hydrogen's energy content. Ammonia reconversion adds further complexity.

More Barriers to Address

→ **Concentrated Industrial Demand**

ETS-regulated plants cluster in Northern Italy and port areas, shaping infrastructure priorities.

→ **Regulatory & Permitting Bottlenecks**

Simplification, competitive procurement, and streamlined certification are urgently needed.

→ **Competition from Alternatives**

Direct electrification, biomethane, bioenergy, CCS, and nuclear all compete – making demand less predictable.

Proposed Solutions

Four macro-areas structure Italy's response: production, import, infrastructure, and demand activation.



National Production

- RFNBO incentives to kick-start the market
- Hydrogen Valleys as local production-consumption ecosystems
- Large-scale plants from 2030 onward



Import & Logistics

- Competition-based import mechanisms
- Southern Hydrogen Corridor from North Africa
- Ports upgraded for ammonia, methanol & e-fuels

Infrastructure & Demand Solutions



Repurposed Gas Network

Existing gas pipelines retrofitted as H₂-ready corridors between industrial centres.



Long-Term Storage

Salt caverns and innovative tanks for seasonal and strategic hydrogen reserves.



Mobility Network

One HRS every 200 km on TEN-T core routes; 700-bar dispensers by 2027 (AFIR).



Competitive Procurement

Auctions, contracts for difference, and hydrogen PPAs to generate structural demand.



Three Strategic Time Horizons

Italy's hydrogen roadmap unfolds across three distinct phases – each with clear priorities and demand drivers.

1

● **Now → 2030 — Market Launch**

PNRR projects, first Hydrogen Valleys, RFNBO incentives, early HRS network, certification frameworks.

2

● **2030–2040 — Scaling Up**

Large-scale plants, national pipelines, port hubs, structured imports, maritime & aviation e-fuels.

3

● **2040–2050 — Full Deployment**

H₂ = 18% of industrial HTA consumption, 30% of transport; Italy fully integrated as European hub.



2050 TARGETS

Key Sectoral Targets by 2050

3 Mtoe

Aviation

Largest single transport sector for hydrogen by volume.

2.6 ...

Heavy Road

Long-haul trucking as a core hydrogen demand anchor.

1.16 ...

Chemicals

Replacing grey hydrogen in refining and petrochemicals.

1.11 ...

Steel

Direct reduction replacing coal in primary steel production.

Italy's Hydrogen Future Starts Now

From hard-to-abate industries to Mediterranean corridors, the strategy is ambitious, honest about barriers, and rich with opportunity.

7 Objectives

Decarbonisation, security, hub, industry, R&D

7 Constraints

Cost, infrastructure, logistics, regulation

4 Solution Areas

Production, import, infrastructure, demand

3 Horizons

2030 launch → 2040 scale → 2050 net zero

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