Plan to Accelerate Renewable and Low-Emissions Hydrogen and its derivatives (Hydrogen PAS)

Axis: 1. Transitioning Energy, Industry and Transport

Key objective: 4. Transitioning away from fossil fuels in a just, orderly and equitable manner

Solution: Renewables and low-emissions Hydrogen and its derivatives

Host initiative: Hydrogen Breakthrough - Breakthrough Agenda

Participating initiatives: AFID, Breakthrough Agenda, Clean Energy Ministerial (CEM), Clean Hydrogen Mission, Climate and Clean Air Coalition (CCAC), COP29 Presidency, COP30 Presidency, Environmental Defense Fund (EDF), Green Hydrogen Organisation (GH2), Green Hydrogen Task Force (hosted by Sustainable Energy for All (SEforALL) and the Clean Energy Economy Transition (CEET)), H2Global, Hydrogen Breakthrough, Hydrogen Council, Hydrogen for Development Partnership (World Bank Group), International Energy Agency (IEA), International Hydrogen Trade Forum (IHTF), International Organization for Standardization (ISO), International Partnership for Hydrogen and Fuel Cells in the Economy (IPHE), Net Zero Partnership for Industrial Decarbonization, Organisation for Economic Co-operation and Development (OECD), RMI (Rocky Mountain Institute), United Nations Climate Change High-Level Champions, United Nations Industrial Development Organization (UNIDO), World Business Council for Sustainable Development (WBCSD), World Customs Organization (WCO), World Trade Organization (WTO).

Scope:

- Hydrogen Breakthrough 2030 goal: Affordable renewable and low-carbon hydrogen globally available by 2030.
- **Geographic:** Global: The plan will strengthen international cooperation to scale renewable and low-carbon hydrogen, with a particular emphasis on supporting Emerging Markets and Developing Economies (EMDEs)
- **Sectoral:** Cross-cutting: The scope covers the full hydrogen and derivatives value chain; from production and infrastructure development to transport, storage, and end-use demand.

The Plan (PAS):

The Hydrogen PAS aligns directly with the Hydrogen Breakthrough 2030 goal of making renewable and low-emissions hydrogen (hereinafter low-emissions) globally available and affordable by the end of this decade. As a critical enabler of the global clean energy transition, offering solutions for decarbonising hard-to-abate sectors and transitioning away from fossil fuels in a just, orderly and equitable manner. Yet despite growing ambition, deployment remains well below the levels required to meet the 2030 and 2050 climate goals. Today, more than 95 percent of global hydrogen production is still fossil-based, emitting $\sim 900-1,200$ Mt $\rm CO_2$ annually and underscoring the urgency of shifting to low-emissions production pathways.

Building on the growing momentum and coordination across the international community since COP26 provided by the partners working through the Hydrogen Breakthrough framework. It responds to the persistent challenge that, while momentum is building, fragmented standards, insufficient demand visibility, and limited access to finance continue to constrain progress across the hydrogen ecosystem.

It aims to close that gap by unifying international efforts, providing a bird's eye view of who is doing what, and where support is most needed to ensure tangible progress ahead of the second Global Stocktake (GST). It brings structure to a fragmented landscape, encouraging coherence and enabling mutual accountability under a shared vision.

This process is not a formal commitment; it is a coordination and visibility exercise to highlight where actions are advancing implementation and to identify areas for further collaboration.

Levers assessment:

This section provides a qualitative assessment of the current maturity of low-emissions hydrogen across the 11 implementation levers, identifying the main barriers, progress, and priorities for scaling up deployment. The analysis draws collectively on leading international reference sources, including the IEA Global Hydrogen Review (2025), the Hydrogen Council's Global Hydrogen Compass (2025), the Breakthrough Agenda Report (2024), IPHE Reports (2024–2025), the WBCSD Business Barometer (2025), and other analytical inputs from the IPCC, UNFCCC, and related sectoral studies. Together, these sources provide the evidence base for the maturity ratings and highlight where targeted action under the Hydrogen PAS can most effectively accelerate progress.

Risk-informed decision-making: Medium maturity

Rationale: Investment in low-emissions hydrogen remains constrained by regulatory uncertainty, inconsistent policies, and limited price transparency. Addressing market distortions, including the effects of fossil fuel subsidies, and improving clarity on emissions thresholds can help reduce risk premiums and enable more informed, efficient decision-making.

Progress to date:

- ISO/TS 19870 now gives a standard lifecycle GHG method helping with policy risk.
- Committed investment in low-emissions hydrogen hydrogen has now passed \$110 billion across 510 projects past final investment decision.

Roadblocks:

- Delay in implementation of demand-side incentives (e.g. RED III) undermines investment certainty.
- Macroeconomic headwinds and cost pressures due to inflation, supply chain disruptions, and slow permitting delay uptake.
- Fossil fuel subsidies and legacy pricing structures continue to distort hydrogen market signals and reduce competitiveness of low-emissions alternatives.

Technology shifts: Medium maturity

Rationale: Low-emissions hydrogen remains more expensive than unabated fossil-based hydrogen; economies of scale essential to drive cost down and the need for equitable access to technology is critical.

Progress to date:

- Low-emissions hydrogen hydrogen capacity committed (FID+) is ~6 million tonnes/year, which could rise to 9-14 mtpa by 2030 pending demand and execution.

Roadblocks:

- Midstream infrastructure lags in many regions.
- Regulatory and permitting delays and policy uncertainty weaken economics.
- Slow implementation of demands policy is hampering firm offtakes, which are needed to underpin investment in hydrogen supply.
- Cost gap remains in the absence of carbon pricing policies.

Knowledge & Capacity building: Low maturity

Rationale: As an emerging solution there is a lack of institutional capacity, skills, and resources to regulate and scale hydrogen. **Progress to date:**

- Clean Hydrogen Mission mapped 100+ hydrogen valleys.
- UNIDO and MDBs supporting certification and workforce programs.

Roadblocks:

Limited expertise to design policies and prepare bankable projects.
 Public institutions under-resourced, slowing permitting/licensing.
 Training fragmented; no global skills mechanism.

Inclusive decision-making governance & design: Medium maturity

Rationale: Governance must align exporters, importers, and regions to avoid unintended environmental, social and economic inequities. Progress to date:

- Over 40 governments committed to mutual recognition of certification at COP28.
- Early bilateral and regional hydrogen trade agreements.

Roadblocks:

- Limited stakeholder engagement, especially communities and labour.
- EMDEs underrepresented in governance forums.

Standards & Taxonomies: Low maturity

Rationale: Harmonised standards and certification enable trade, reduce fragmentation, and lower risk.

Progress to date:

- ISO lifecycle GHG methodology published; full standard expected 2025–26.
- COP28 Declaration of Intent on certification recognition.
- Latin America launched CertHiLAC for regional comparability.

Roadblocks:

- Divergent definitions of "low-emissions hydrogen, including in sector specific frameworks, e.g., the IMO Net Zero Framework.
- Need to align emission thresholds in national standards with NDCs.
- Unresolved accounting on temporal/geographic correlation and additionality.
- Mutual recognition commitments not yet operational.

Supply: Low maturity

Rationale: <1% of hydrogen supply is low-emissions.

Progress to date:

- Low-emissions hydrogen production could surpass 4Mt by 2030 (from less than 1Mt in 2024). An additional 6Mt have strong potential to be operational by 2030 if policy support is provided to close the cost gap with unabated fossil-based production and demand creation policies are implemented (particularly in existing application in refining and industry).
- ~37 Mt/yr supply potential for 2030, down from ~49 Mt due to cancelations, projects put on hold and delays post-2030.
- 200+ projects have reached FID since 2020.

Roadblocks:

- The cost gap with fossil hydrogen remains large.
- Permitting and infrastructure bottlenecks limit delivery.
- Lack of offtake agreements resulting in investment uncertainty

Demand: Low maturity

Rationale: Low-carbon Hydrogen and its derivatives demand creation lags supply announcements; strong policies are needed to de-risk investments.

Progress to date:

- Low-emissions hydrogen demand supported by policy is estimated at around 6 Mt by 2030, compared with ~90 Mt of total global hydrogen demand today, which remains almost entirely unabated fossil-based. Stronger policy frameworks are needed to redirect and expand this demand toward low-emissions hydrogen.
- H2Global and First Movers Coalition piloting offtakes.

Roadblocks:

- Very few binding demand commitments; most are MoUs.
- Fragmented, inconsistent and/or insufficient policies across regions.
- Divergent definitions for qualifying hydrogen.
- Mismatch between contracts' and projects' time horizons (1-3 years vs. 10-15 years) impeding the securing of offtake agreements.

Public/private finance: Low maturity

Rationale: De-risking and concessional finance, especially in EMDEs, is critical to unlock supply.

Progress to date:

- 10 GW Lighthouse Initiative and International Transition Accelerator launched.
- World Bank and G20 GIF expanding risk-mitigation tools.

Roadblocks:

- Concessional flows insufficient for EMDE projects.
- High cost of capital and risk premiums stall projects.
- Few projects reach bankability due to weak preparation.

Partnerships and collaboration: Medium maturity

Rationale: Cross-sector and cross-border collaboration reduces duplication, pools resources, and shares risk.

Progress to date:

- Breakthrough Agenda structured coordination platform and framework.
- IHTF established for hydrogen trade coordination.
- Clean Hydrogen Mission and regional alliances building joint R&D.
- IPHE, established in 2003 as the first government-to-government hydrogen partnership, has built a global platform for policy coordination, standards alignment, and data sharing

Roadblocks:

- Fragmentation across partnerships risks duplication.
- Voluntary commitments lack binding power.
- EMDEs underrepresented in global partnerships.

Policy & regulatory: Medium maturity

Rationale: Predictable and coherent regulation is essential for investment and delivery.

Progress to date:

- >1,000 hydrogen policy measures since 2020.
- 70+ countries with national strategies published/drafted and 20+ countries with national roadmaps published/drafted.

Roadblocks:

- Divergent definitions and inconsistent thresholds.
- Permitting remains slow and fragmented.
- EMDE regulatory capacity limited.
- Focus exclusively on emissions measurement and do not address wider environmental, social and governance considerations.
- Lack of policy clarity and certainty deters investment.

Public opinion and political will: Medium maturity

Rationale: Public and political support underpins long-term momentum and investment.

Progress to date:

- Hydrogen is now integrated into almost 60 published national hydrogen strategies, plus the EU and ECOWAS.
- Public support grows when linked to jobs, energy security, and climate action.

Roadblocks:

- Awareness remains low in many regions.
- Political commitment uneven, vulnerable to economic shifts.
- Local resistance to infrastructure persists.
- Low-carbon hydrogen projects do not systematically benefit local communities, which however are essential for successful projects.

Expected impact of this plan on targets and contributions to global processes:

The delivery of the PAS will help ensure that hydrogen produced from renewable energy and other low-emissions pathways becomes competitively available in all regions by the end of this decade. It recognises the pivotal role of hydrogen in decarbonising hard-to-abate sectors, enhancing energy security, and accelerating national and global climate targets. Delivering this goal requires scaling up production well beyond today's levels, establishing trusted international standards and certification, stimulating demand through clear policies and commitments, and mobilising finance at scale; especially in emerging markets and developing economies.

By 2030, the Hydrogen PAS aims to translate collective ambition into measurable outcomes across global mitigation, economic, and institutional impact areas, ensuring that the hydrogen transition contributes meaningfully to the Paris Agreement, the Sustainable Development Goals (SDGs), and the 2030 Climate Solutions process:

Impact Area	Impact Potential	Description
Support for the Paris Agreement (mitigation)	High •	Global hydrogen demand stood at around 95–100 Mt in 2024, with unabated fossil-based production accounting for nearly 99 percent, resulting in about 900 Mt of $\rm CO_2$ emissions per year. In the IEA Net Zero Emissions (NZE) Scenario, low-emissions hydrogen supply must rise to approximately 65 Mt by 2030, cutting hydrogen-related emissions intensity by roughly 40 percent and avoiding more than 200 Mt $\rm CO_2$ annually through displacement of unabated production in heavy industry, refining, and transport fuels.
Support for SDG 7 – Energy access and security	High •	More than 100 regional hydrogen valleys are under development, integrating low-emissions hydrogen into local energy and industrial systems. Global hydrogen-equivalent trade could reach 10–15 Mt per year by 2030, strengthening cross-border supply chains, improving energy security and system resilience, and supporting the transition away from unabated fossil fuels while expanding access to clean and reliable energy in all regions.
Support for SDG 8 - Investment	Medium -	Delivering the 2030 pathway requires around USD 50 billion of investment annually, compared with approximately USD 3 billion in 2023. Cumulative committed investment has surpassed USD 110 billion, spanning over 500 projects that have reached or are approaching final investment decision. Expanding electrolyser manufacturing capacity beyond 150 GW per year by 2030 (up from around 20 GW in 2021) could support hundreds of thousands of jobs across renewables, equipment, logistics, and operations.
Support for SDG 9 – Green Industrialisation	(High •	Emerging regions with abundant renewables, particularly Africa and Latin America, could become major low-emissions hydrogen exporters. By 2030, up to 8 Mt of ammonia exports from Latin America (nearly half of today's global ammonia trade) could generate new export revenues, enable low-carbon industrialisation, and support a just and inclusive transition.
Increased adoption of hydrogen in NDCs	High -	As of 2025, around 40 countries include hydrogen in their NDCs or long-term strategies. By 2030, this number is expected to at least double, as more governments integrate hydrogen into national mitigation and industrial plans.
Raised ambition from 1st GST into 2nd GST	Medium -	Lessons from the first Global Stocktake (2023), in particular paragraph 28(e), which calls for accelerating zero- and low-emission technologies including low-carbon hydrogen, are expected to drive strengthened hydrogen targets in the second GST cycle (2028–2030). This can be expanded by: setting global hydrogen production targets aligned with NZE, embedding hydrogen in hard-to-abate sector

		roadmaps (steel, cement, aviation, shipping); scaling up finance and incentives for deployment; strengthening MRV and carbon accounting frameworks; ensuring derivatives (e-fuels, ammonia, methanol) are included under low-carbon hydrogen pathways; and requiring countries to reflect specific progress in their Biennial Transparency Reports (BTRs) to track delivery against GST outcomes.
Delivery of key multilateral agreements	High •	Underpins delivery of the COP28 Declaration of Intent on mutual recognition of certification schemes for Hydrogen and its derivatives, COP28 Private-Public Action Statement on Hydrogen and its derivatives, COP29 Hydrogen Demand Declaration, and G7/G20 hydrogen collaboration outcomes, supporting shared progress across markets.
Tangible progress toward the 2030 Climate Solutions process	High •	Provides a concrete track for the UNFCCC 2030 Climate Solutions Implementation Roadmap. It aligns milestones on standards, demand, and finance with 2030 Climate Solutions goals; supports integration with NDCs and non-Party stakeholders; encourages regional adaptation of low-emissions hydrogen pathways; enhances MRV, carbon accounting, and regulatory alignment; and delivers visible progress through the Marrakech Partnership's 2030 Climate Solutions platform.

Core Outcomes and Tracking Framework:

Each Priority Outcome of the Hydrogen PAS corresponds to a critical enabler in the global hydrogen transition, from the development of trusted standards and certification systems to the creation of demand and offtake mechanisms, and the mobilisation of finance and investment, particularly in emerging and developing economies (EMDEs). Together, these outcomes form a sequenced, systemic approach to accelerating low-emissions hydrogen deployment at scale.

To translate ambition into measurable progress, the structure of the Hydrogen PAS aligns with the Hydrogen Breakthrough framework, which tracks collective implementation progress through defined success factors and quantitative indicators across standards, demand, and finance. These represent the key levers for scaling low-emissions globally by 2030.

Each output includes a 2030 success statement and quantitative indicators to define impactful delivery and track measurable progress. This outcome-driven structure enables consistent monitoring, supports mutual accountability, and aligns the efforts of governments, industry, and international initiatives toward system-wide impact.

PAS Outcome	2030 Impact Success Statement	Quantitative Indicator(s)
Regulatory, Standards and Certification	Governments implement regulations that set thresholds for acceptable levels of emissions for hydrogen producers and users	Share of global hydrogen production located in countries with regulations on emissions

Frameworks	to be eligible for support schemes, based on ISO standards or at least consistent with ISO standards.	thresholds for hydrogen production using methodologies consistent with ISO standards.
Demand-Side Measures and Market Development Mechanisms	Governments implement regulations for the use of renewable and low-carbon hydrogen in sectors where hydrogen is already used and in high-value end uses, while private sector commitments translate into firm offtake and purchase agreements.	- Share of global hydrogen demand covered by quotas/mandates for renewable and low-carbon hydrogen - Cumulative firm offtake agreements
Financing Instruments and Risk-Mitigation Mechanisms	Governments, MDBs, and DFIs scale concessional finance to EMDEs to help large-scale renewable and low-carbon hydrogen projects reach final investment decision (FID).	Kilotonnes/year of production capacity facilitated by concessional finance reaching FID in EMDEs

The PAS table below outlines the actions required to deliver these priority outcomes, while also addressing the enabling conditions and delivery mechanisms needed to achieve them.

To make this practical and coordinated, the PAS table is structured around four types of actions:

- **Country Action Scopes (blue):** Broad areas where governments contribute through national strategies, policy frameworks, enabling regulation, and public finance.
- **Private Sector Action Scopes (orange):** Broad areas where companies and investors contribute through standards implementation, market creation, investment mobilisation, technology deployment, and partnerships.
- Multilateral Actions (white): Specific enabling actions by international initiatives and organisations (such as IEA, Hydrogen Council, IHTF, MDBs) to support data alignment, transparency, and progress tracking.
- COP30 Action Agenda Deliverables (green): Collective outputs and milestones under the COP30 Presidency's Climate Action Agenda.

Outcome	Action Scope	Action	Type of action	Implementation Lever	Responsible	Time horizon	Stakeholder engagement	Committed Stakeholders
Policy, Regulatory, Standards and Certification Frameworks Develop and align policy, regulatory, standards, and technical frameworks to provide	Developing and harmonising technical and safety standards for hydrogen production, storage, transport, and end-use	International standardisation roadmap based on a gap analysis	New action •	Standards & T	International Partnership for Hydrogen and Fuel Cells in the Economy (IPHE)	November 2	Technical instituiti	National Standardisation Bodies, ISO
rrameworks to provide clarity, consistency, and interoperability for low-emissions production, use, and trade. This includes setting credible emissions thresholds, enabling certification		Pre-normative research needs (content and resources)	New action •	Standards & T	International Partnership for Hydrogen and Fuel Cells in the Economy (IPHE)	June 2027 (•	Technical instituiti	Clean Hydrogen Mission Innovation, RD20
and traceability, harmonising technical and safety standards, and ensuring consistent definitions and		Pre-normative research on the safety impacts of hydrogen production, transport, and end-use	Existing act	Standards & T	Environmental Defense Fund	November 2	Multi-stakeholders •	Hydrogen Science Coalition
accounting methodologies across jurisdictions. These frameworks reduce regulatory fragmentation, lower investment risk, and		Pre-normative research to quantify the level of hydrogen emissions from facilities at different stages of the supply chain	Existing act •	Knowledge & •	Environmental Defense Fund	June 2026 (•	Multi-stakeholders •	Air Products, Air Liquide, Shell and TotalEnergies; Utrecht University, University of Rhode Island, West Virginia University and Cornell University; Aerodyne Research, TNO and Transport Energy Strategies
facilitate global market development.	Developing, aligning, and implementing certification systems to enable mutual recognition for hydrogen and derivatives	Implementation of the COP28 Declaration of Intent on the Mutual Recognition of Certification Schemes for Hydrogen and its derivatives	New action • Existing act •	Standards & T	International Partnership for Hydrogen and Fuel Cells in the Economy (IPHE)	November 2	Countries •	Albania, Antigua and Barbuda, Armenia, Australia, Azerbaijan, Belgium, Brazil, Brunei Darussalam, Cabo Verde, Canada, Chile, Comoros, Cote d'Ivoire, France, Germany, Guatemala, Hungary, India, Italy, Japan, Kyrgyzstan, Malaysia, Mauritania, Moldova, Morocco, Namibia, Netherlands, Nicaragua, Nigeria, North Macedonia, Norway, Oman, Palau, Paraguay, Rwanda, Seychelles, Sierra Leone, Singapore, South Korea, Ukraine, United Arab Emirates, United Kingdom, United States of America, Uruguay, Yemen.
		Align national certification schemes and MRV systems with ISO 19870 lifecycle GHG methodologies and pursue mutual recognition through international cooperation.	New action • Existing act •	Standards & T	Countri	November 2	Countries •	IPHE COP28 Dol Signatories Participating stakeholders to be announced following COP30 PAS engagement and alignment of ambitions for implementation beyond COP30.

	Participate in international certification initiatives and align corporate schemes with emerging global standards (e.g. IPHE, ISO 19870 series).	New action • Existing act •	Standards & T	Compa	November 2 •	Companies •	Hydrogen Council, Certification bodies Participating stakeholders to be announced following COP30 PAS engagement and alignment of ambitions for implementation beyond COP30.
Establishing transparent and interoperable carbon accounting frameworks to support certification and policy alignment	Developments of ISO Methodology on GHG Accounting	Existing act	Standards & T	International Organization for Standardizatio n (ISO)	November 2	Multi-stakeholders •	
g	Launch of ISO 19870-2-3-4 completing the ISO 19870-1-2-3-4 suite of standards.	New action	Standards & T	International Organization for Standardizatio n (ISO)	November 2	Multi-stakeholders •	
	Apply emissions thresholds as eligibility criteria in national hydrogen policies, incentives, and compliance programmes	New action • Existing act •	Standards & T	Countri •	November 2	Countries -	COP28 Dol Signatories Participating stakeholders to be announced following COP30 PAS engagement and alignment of ambitions for implementation beyond COP30.
	Analysis on variability of GHG impacts based on LCA accounting criteria	Existing act	Standards & T	Environmental Defense Fund	November 2	Multi-stakeholders •	
	Disclose product-level GHG emissions using standardised methodologies to support credible certification and compliance across markets.	New action • Existing act •	Standards & T	Compa	November 2 •	Companies •	Participating stakeholders to be announced following COP30 PAS engagement and alignment of ambitions for implementation beyond COP30.
Aligning national hydrogen policies with climate strategies and international	Joint Agreement on the Responsible Deployment of Renewables-Based Hydrogen	New action •	Partnerships •	Green Hydrogen Organisation	November 2 •	Multi-stakeholders •	H2LAC, The Green Hydrogen Catapult, Climate High-Level Champions
commitments	Launch or update national hydrogen targets and roadmaps.	New action • Existing act •	Policy & regul	Countri •	November 2	Countries •	Participating stakeholders to be announced following COP30 PAS engagement and alignment of ambitions for implementation beyond COP30.
	Reflect hydrogen deployment pathways, emissions targets, or enabling policies in updated NDCs and net-zero strategies, consistent with international climate reporting commitments.	New action • Existing act •	Policy & regul •	Countri •	November 2	Countries •	Participating stakeholders to be announced following COP30 PAS engagement and alignment of ambitions for implementation beyond COP30.
Supporting	Call from exporting countries to	New action -	Standards & T	International	November 2	Multi-stakeholders •	IHTF supporting countries, other

	hydrogen-exporting and -importing countries to develop, strengthen, and align certification and compliance systems for global value chain	clarify the EU Renewable Fuels of Non-Biological Origin (RFNBO) and Low-Carbon Fuels (LCF), laid out in the respective Delegated Acts, for projects in non-EU countries		Knowledge & •	Hydrogen Trade Forum			exporting countries, UNIDO, Hydrogen Council
	integration	Build hydrogen trade readiness by aligning export/import certification, infrastructure standards, and compliance systems with major trading partners.	New action • Existing act •	Standards & T Policy & regul Partnerships	Countri •	November 2	Countries •	IHTF supporting countries, other exporting countries Participating stakeholders to be announced following COP30 PAS engagement and alignment of ambitions for implementation beyond COP30.
		Collaborate with governments and trading partners to align export/import standards and facilitate certification interoperability in supply chains.	New action • Existing act •	Standards & T • Policy & regul • Partnerships • Supply •	Compa	November 2 •	Companies •	Hydrogen Council Participating stakeholders to be announced following COP30 PAS engagement and alignment of ambitions for implementation beyond COP30.
		Cooperation framework including minimum reporting principles	New action	Risk-informed • Standards & T • Partnerships • Inclusive deci •	Clean Hydrogen Mission (Chile and EU)	November 2 •	Countries •	Clean Hydrogen Mission Members
	Developing the physical and digital quality infrastructure required for certification, testing, and traceability of low-emissions hydrogen	Technical assistance to 9 countries to review relevant quality infrastructure for hydrogen	New action	Standards & T	United Nations Industrial Development Organization (UNIDO)	November 2 •	Regulators & Publi	Algeria, Ecuador, Egypt, Malaysia, Namibia, Nigeria, Pakistan, the Philippines and South Africa, UNIDO, GEF
	and derivatives	Implement a hydrogen digital product passport (H2 DPP)	New action •	Standards & T	International Partnership for Hydrogen and Fuel Cells in the Economy (IPHE)	November 2	Multi-stakeholders	COP 28 DOI signatories, HTF supporting countries, Hydrogen Council
Demand-Side Measures and Market Development Mechanisms Design and implement integrated policy tools	Scaling demand for low-emissions ammonia-based fertilizers through coordinated global action	Launch of the Public-Private Action Statement for scaling Low-Emissions Ammonia-based Fertilizers	New action	Demand •	Hydrogen Council, UNIDO & supporting organisations	November 2	Companies • Countries •	Hydrogen Council, UNIDO & supporting organisations
and market-enabling instruments that stimulate reliable demand signals for		Advancement of the Green Fertiliser Development Network	New action •	Demand •	Green Hydrogen Organisation	June 2026 (·	Multi-stakeholders •	In close collaboration with the LEAF Coalition, UNIDO, MDBs and fertiliser industry partners
low-emissions hydrogen and its derivatives. This includes adopting mandates, quotas, pricing mechanisms,		Research on policy/market mechanisms for driving H2 demand in fertilizers and refineries	New action -	Demand •	Environmental Defense Fund	November 2	Multi-stakeholders •	
and aggregation models to de-risk supply		Support market creation for	New action •	Demand •	Countri •	November 2	Countries	Participating stakeholders to be

investments and		low-emissions ammonia-based	Existing act	Policy & rogul				announced following COP30 PAS
accelerate deployment in priority sectors. Strong demand-side frameworks are essential to scale		fertilizers through national policy signals, demand aggregation mechanisms, and cross-sectoral coordination.	EXISTING ACT	Policy & regul Public/private Partnerships				engagement and alignment of ambitions for implementation beyond COP30.
production, build supply chains, and unlock early commercialisation pathways.		Commit to long-term offtake agreements for low-emissions ammonia-based fertilizers, supporting sector decarbonisation pathways aligned with science-based targets.	New action • Existing act •	Demand Public/private Policy & regul	Compa •	November 2	Companies •	Participating stakeholders to be announced following COP30 PAS engagement and alignment of ambitions for implementation beyond COP30.
		Plan to Accelerate Fertiliser Solutions	New action •	Partnerships •	Climate and Clean Air Coalition (CCAC) subject to funding.	November 2 •	Multi-stakeholders •	UK Government, Brazilian Government, UNIDO, FAO, Hydrogen Council, WRI, WBCSD, CEFENP CA4SH, IEA, IFA, World Bank, ICS, Ambition Loop, Global Methane Hub, Systemig, Mission Possible Partnership Industrial Transition Accelerator, CGIAR, Breakthrough Agenda.
	Mobilising political leadership and cross-sectoral cooperation to drive early low-emissions hydrogen demand	COP29 Declaration to scale up renewable, clean/zero-emission and low-carbon hydrogen production and deployment and accelerate decarbonisation of existing hydrogen production from unabated fossil fuels to facilitate energy transitions and achieve near-zero GHG emissions from hydrogen production, targeting particularly end-use sectors that are difficult to decarbonise, taking into consideration national circumstances.	Existing act	Demand •	COP29 Presidency, UNIDO, Hydrogen Breakthrough	November 2	Multi-stakeholders •	Declaration Signatories (62 states actors and 47 non-state actors)
		COP30 Public Private Statement on Demand Creation for Low-Emissions Hydrogen and Its Derivatives in Lead Markets	New action •	Demand -	International Hydrogen Trade Forum	November 2	Multi-stakeholders •	IHTF supporting countries and others, UNIDO, Hydrogen Council
		Champion low-emission hydrogen demand at industry leadership forums and support joint declarations or coalitions (e.g. First Movers Coalition).	New action • Existing act •	Demand •	Compa •	November 2	Companies •	Participating stakeholders to be announced following COP30 PAS engagement and alignment of ambitions for implementation beyond COP30
		Identify and apply WTO rules to facilitate international trade of low-emission hydrogen, hydrogen derivatives and critical equipment (e.g. electrolysers)	Existing act •	Demand · Supply ·	International Partnership for Hydrogen and Fuel Cells in the Economy (IPHE), World Trade Organization(WTO)	November 2	Countries •	IPHE Countries, IRENA

	Support the international trade of low-emission hydrogen, hydrogen derivatives and its monitoring by the exploration of the WCO Harmonisation System Code	New action -	Demand · Supply ·	International Partnership for Hydrogen and Fuel Cells in the Economy (IPHE), World Customs Organization (WCO)	November 2	Countries -	IPHE Countries, WTO
	Plan to Accelerate Solutions on Sustainable Fuels	New action •	Partnerships •	Clean Energy Ministerial	November 2	Multi-stakeholders 🔻	Refer to the PAS
	Belém 4x Pledge on Sustainable Fuels	New action	Partnerships Supply	Brazil, Italy, Japan	November 2	Countries •	Participating stakeholders to be announced following COP30 PAS engagement and alignment of ambitions for implementation beyond COP30.
Stimulating demand through policy and market-based instruments, including public procurement, quotas, and contracts	Creation of sector specific demand policies	Existing act •	Demand •	United Nations Industrial Development Organization (UNIDO)	November 2	Regulators & Publi	Morocco, Egypt, South Africa, UNIDO, GEF, GCF
for difference	Implement national demand-side policies (such as mandates, contracts for difference, or sector targets) to stimulate early offtake and accelerate market formation in key applications (e.g., steel, fertilisers, shipping).	New action • Existing act •	Demand Policy & regul Public/private Partnerships	Countri •	November 2	Countries	Participating stakeholders to be announced following COP30 PAS engagement and alignment of ambitions for implementation beyond COP30.
	Report on end-user willingness to pay	New action •	Knowledge &	H2Global	November 2		
	Report on effectiveness of demand support instruments	Existing act	Risk-informed •	H2Global	November 2	Countries Companies	
	Participate in cross-sectoral demand coalitions or clubs to aggregate low-emissions hydrogen offtake, reduce risk for early suppliers, and anchor infrastructure development.	New action • Existing act •	Demand • Supply • Public/private • Partnerships •	Compa	November 2 •	Companies •	Participating stakeholders to be announced following COP30 PAS engagement and alignment of ambitions for implementation beyond COP30.
Establishing cross-border hydrogen corridors and hubs to enable trade and scale deployment	Enabling the formation of trade corridors for green ammonia, fertilizers and hydrogen-derived green iron	Existing act	Demand •	RMI	November 2		
	Identify and promote hydrogen corridors and industrial hubs as strategic national infrastructure for deployment and trade.	New action • Existing act •	Supply Public/private Partnerships Policy & regul	Countri •	November 2	Countries •	Participating stakeholders to be announced following COP30 PAS engagement and alignment of ambitions for implementation beyond COP30.

	Co-invest in hydrogen corridors and import/export hubs, working with governments to ensure infrastructure readiness and interoperability.	New action • Existing act •	Supply • Technology s • Public/private • Partnerships •	Compa •	November 2 •	Companies •	Participating stakeholders to be announced following COP30 PAS engagement and alignment of ambitions for implementation beyond COP30.
	Update of Mission Innovation Hydrogen Valley Platform	Existing act	Partnerships	Clean Hydrogen Mission	June 2026 (•	Countries •	
	Establishing a dedicated hydrogen corridor from North Africa to Europe (Southern Hydrogen Corridor): Establishment of a central secretariat to facilitate intergovernmental coordination on the Southern Hydrogen Corridor	New action •	Policy & regul	United Nations Industrial Development Organization (UNIDO)	November 2	Regulators & Publi	Algeria, Austria, Germany, Italy, and Tunisia, UNIDO
	among Algeria, Austria, Germany, Italy, and Tunisia						
	Report on lead markets for low-emissions hydrogen	New action •	Knowledge &	H2Globl	November 2	Multi-stakeholders •	
	AFID to develop and publish report The building block of hydrogen hubs with a case study	Existing act	Knowledge &	AFID	November 2	Companies •	AFID Working Group Green Hydrogen
	Plan to Accelerate Solutions on Green industrial hubs/corridors	New action	Partnerships •	The Net Zero Partnership for Industrial Decarbonizati on	November 2 •	Multi-stakeholders •	Refer to the PAS
Scaling demand for low-emissions hydrogen and derivatives in the maritime sector through coordinated global action	Support to the IMO on zero- and near-zero emission fuel adoption	New action	Demand ·	Green Hydrogen Organisation Environmental Defense Fund	November 2	Multi-stakeholders •	Fortescue, CWP Global, Adani, UCL, RMI, Transport & Environment, SASHA, Global Maritime Forum, UN High-Level Champions, Member states of the Africa and Asia-Pacific Green Hydrogen Alliances
	Launching H2Global Shipping Initiative to unlock global scale-up of clean shipping fuels	Existing act	Demand •	H2Global	November 2	Companies Countries Investors	
	Launch a dedicated H2Global shipping tender	New action •	Public/private	H2Global	November 2	Countries Companies Investors	
	High-level convening on zero- and near-zero emission fuels	New action	Demand •	Green Hydrogen Organisation	November 2	Multi-stakeholders •	Fortescue, CWP Global, Adani, UCL, RMI, Transport & Environment, SASHA, Global Maritime Forum, UN High-Level Champions, Member states of the Africa and Asia-Pacific

								Green Hydrogen Alliances
		Support market creation for low-emissions hydrogen and its derivatives in the maritime sector by integrating hydrogen pathways into national shipping strategies and port development plans.	New action • Existing act •	Demand Policy & regul Supply Partnerships	Countri •	November 2	Countries •	Participating stakeholders to be announced following COP30 PAS engagement and alignment of ambitions for implementation beyond COP30.
		Commit to the adoption and offtake of low-emissions hydrogen-based marine fuels (e.g., green ammonia, e-methanol), in alignment with IMO decarbonisation goals and long-term climate targets.	New action • Existing act •	Demand Policy & regul Partnerships	Compa •	November 2	Companies •	Participating stakeholders to be announced following COP30 PAS engagement and alignment of ambitions for implementation beyond COP30.
		Plan to Accelerate Decarbonizing the Maritime Sector	New action •	Partnerships	Multi-st •	November 2	Multi-stakeholders	Refer to the PAS
	Scaling demand for hydrogen-derived green iron and steel through coordinated global	Establishment of the Asia Pacific Green Iron Compact	New action •	Demand •	Green Hydrogen Organisation	November 2	Multi-stakeholders •	
	action	Launch of the Green Iron Standard Principles	New action •	Standards & T	Green Hydrogen Organisation	November 2	Multi-stakeholders •	Australian National University, the Mission Possible Partnership, the Super Power Institute, SteelWatch, WWF, Fortescue
		Support market creation for hydrogen-derived green iron and steel through national targets, procurement strategies, and industry partnerships.	New action • Existing act •	Public/private Policy & regul Partnerships	Countri •	November 2	Countries •	Participating stakeholders to be announced following COP30 PAS engagement and alignment of ambitions for implementation beyond COP30.
		Secure offtake agreements for hydrogen-derived green iron and steel, enabling demand visibility and investment confidence along decarbonisation-aligned supply chains.	New action • Existing act •	Demand Public/private Partnerships	Compa *	November 2	Companies ·	Participating stakeholders to be announced following COP30 PAS engagement and alignment of ambitions for implementation beyond COP30.
		Plan to Accelerate Solutions on Steel	New action •	Partnerships	Clean Energy Ministerial	November 2	Multi-stakeholders •	Refer to the PAS
	Phasing out fossil fuel subsidies and correcting market prices to reflect environmental and	Extension of GH2's Analysis on the Real Price of Blue Hydrogen	New action •	Public opinion -	Green Hydrogen Organisation	November 2	Regulators & Publi	
	social costs.	Phase out fossil fuel subsidies and introduce corrective pricing mechanisms that level the playing field for low-emissions hydrogen	New action • Existing act •	Policy & regul Risk-informed Public/private	Countri •	November 2	Countries •	Participating stakeholders to be announced following COP30 PAS engagement and alignment of ambitions for implementation beyond COP30.
Financing Instruments	10GW Lighthouse	10 GW project pipeline and First	Existing act	Demand -	Hydrogen for	November 2	MDBs -	African Development Bank Group,

Mechanisms Mobilise and coordinate public, concessional and blended finance alongside risk mitigation instruments to accelerate low-emissions hydrogen investment, particularly in emerging markets and developing economies. This includes addressing high capital costs, limited bankability of projects, and insufficient access to financial instruments. Effective financing frameworks are critical to enable final investment decisions and unlock large-scale	Initiative: Deliver at least 10 GW of renewable hydrogen projects to final investment decision (FID) through blended finance, de-risking tools, and project preparation support	announcements of financial project support		Public/private •	Development Partnership (World Bank Group)		Countries • Companies • Investors •	Asian Infrastructure Investment Bank (AIIB), CAF – Development Bank of Latin America and the Caribbean, CDP, European Bank for Reconstruction and Development (EBRD), ESMAP – Energy Sector Management Assistance Program, H2Global Stiftung, Inter-American Development Bank (IDB), Invest International, Japan Bank for International Cooperation (JBIC), KfW, World Bank Group (The World Bank, IFC, MIGA)
		Electrolyzer report and Risk mitigation toolkit	New action -	Knowledge &	Hydrogen for Development Partnership (World Bank Group)	November 2	(MDBs -	
	Scaling mechanisms to mitigate financial risks and increasing	Complete second round of H2Global supply side auctions	Existing act	Supply -	H2Global	June 2026 (Companies ·	
infrastructure deployment.	deployment of concessional and blended finance models to reduce cost of capital for low-emissions hydrogen, especially in EMDEs	Mobilise public and concessional finance through national and international platforms to reduce investment risk and accelerate project deployment.	New action • Existing act •	Public/private Policy & regul Partnerships	Countri •	November 2	Countries •	Participating stakeholders to be announced following COP30 PAS engagement and alignment of ambitions for implementation beyond COP30.
		Co-develop bankable project structures in partnership with concessional, public, and private financiers to accelerate low-emissions hydrogen deployment globally, with targeted support for EMDEs and frontier markets	New action • Existing act •	Public/private Partnerships Knowledge & Policy & regul	Compa •	November 2 •	Companies •	Participating stakeholders to be announced following COP30 PAS engagement and alignment of ambitions for implementation beyond COP30.
	Strengthening international assistance through project preparation and non-financial de-risking	Operationalisation of the GH2 Cairo Centre of Excellence with Nile University	Existing act	Public/private •	Green Hydrogen Organisation	November 2	Multi-stakeholders •	Nile University, Suez Canal Economic Zone (SCZone), EBRD, AfDB, Central Bank of Egypt, Ministry of Electricity & Renewable Energy (Egypt)
mechanisms to build a global pipeline of investment-ready	mechanisms to build a global pipeline of investment-ready low-emission hydrogen	Develop country platform for match-making between national priority projects and international technical and financial assistance to accelerate low-emission hydrogen projects	Existing act	Public/private •	United Nations Industrial Development Organization (UNIDO)	November 2 •	Investors • Companies • Countries •	UK, Brazil, Mexico, South Africa, UNIDO
		Updating the Climate Club Financial Toolkit, showcasing economic, derisking and financing instruments to decarbonise industry, including insights on low-emissions hydrogen use for industry	Existing act	Knowledge & •	Organisation for Economic Co-operation and Development (OECD)	June 2026 (•	Multi-stakeholders •	

		Strengthen national project pipelines and engage in international partnerships to support technical assistance, co-investment, and cross-border hydrogen project development.	New action • Existing act •	Partnerships * Knowledge & * Public/private * Supply *	Countri •	November 2	Countries •	Participating stakeholders to be announced following COP30 PAS engagement and alignment of ambitions for implementation beyond COP30.
		Partner with MDBs and technical partners to improve project design, prepare bankable business cases, and build local delivery capacity.	New action • Existing act •	Knowledge & • Public/private • Partnerships •	Compa •	November 2 •	Companies •	Participating stakeholders to be announced following COP30 PAS engagement and alignment of ambitions for implementation beyond COP30.
		Joint OECD-IEA report on scaling up assistance for industrial decarbonisation: An upcoming OECD-IEA report will take stock of technical and financial assistance for industry decarbonisation to EMDEs, and provide a quantitative assessment of investment requirements over the next decade to align the industrial sector in EMDEs with net-zero pathways. It will map existing international assistance initiatives and showcase examples of financial instruments currently being used to decarbonise industry, based on Climate Club analysis.	New action •	Knowledge &	Organisation for Economic Co-operation and Development (OECD) and International Energy Agency	November 2	Multi-stakeholders •	
Enabling Conditions: Research and Development, International Trade, Skills and Institutional Capacity Building, and Social Acceptance and Community Engagement Support foundational system-wide enablers that underpin hydrogen scale-up, including investment in research and innovation, workforce development, institutional strengthening, international trade readiness, and inclusive public engagement. Addressing gaps in skills, governance capacity, social acceptance, and market connectivity is essential to ensure equitable deployment, build trust, and enable just and effective transitions.	Expanding the portfolio of innovative low-emissions hydrogen research and demonstration projects to accelerate technological progress and deployment	Hydrogen Valleys - Best practice framework to support valleys from concept to implementation and in diversifying demand strategies	Existing act	Supply -	Clean Hydrogen Mission (Spain and UK)			
		Support public-private collaboration on hydrogen R&D and demonstration to accelerate innovation and early deployment.	New action • Existing act •	Technology s • Partnerships • Public/private • Knowledge & •	Countri •	November 2	Countries •	Participating stakeholders to be announced following COP30 PAS engagement and alignment of ambitions for implementation beyond COP30.
		Lead large-scale, cross-sector demonstrations (e.g. industrial clusters, hydrogen valleys) to prove tech-readiness and value chain integration.	New action • Existing act •	Technology s Supply Public/private Partnerships	Compa *	November 2	Companies ·	Participating stakeholders to be announced following COP30 PAS engagement and alignment of ambitions for implementation beyond COP30.
	Maximising local value creation through inclusive industrial strategies, workforce development, and community participation	Case studies of local beneficiation from hydrogen projects	New action -	Public opinion •	International Hydrogen Trade Forum	November 2 •	Countries •	IHTF supporting countries and others, UNIDO, Hydrogen Council
		Share guidance documents to Support the Development of Sustainable Hydrogen Workforces and make it available through a public database	Existing act	Knowledge & •	International Partnership for Hydrogen and Fuel Cells in the Economy (IPHE)	November 2 •	Countries •	IPHE countries

		Implement a mentor/mentee platform to favour exchanges and knowledge sharing on the whole hydrogen value chain between experts and any voluntary	Existing act	Knowledge &	International Partnership for Hydrogen and Fuel Cells in the Economy (IPHE)	November 2	Multi-stakeholders •	IPHE countries
		Develop industrial strategies and supply chain initiatives that link hydrogen deployment to local economic development, promote skills development, inclusive employment, and social investment linked to hydrogen projects and infrastructure.	Existing act • New action •	Inclusive deci • Knowledge & • Partnerships • Policy & regul •	Countri	November 2	Countries •	Participating stakeholders to be announced following COP30 PAS engagement and alignment of ambitions for implementation beyond COP30.
	Advancing national hydrogen strategies and institutional capacity to plan, regulate, and coordinate low-emissions hydrogen development, particularly in EMDEs	MENA Policy Briefs on Green Hydrogen: Shipping, Fertilisers, and Iron & Steel	New action •	Policy & regul	Green Hydrogen Organisation	June 2026 (·	Countries •	Pooled Fund on International Energy; GH2 International Centre of Excellence in Cairo; MENA member states of the Africa Green Hydrogen Alliance (AGHA), including Algeria, Egypt, Mauritania and Morocco
	Embedding equity and just transition mechanisms in hydrogen planning to ensure inclusive access, affordability, and socioeconomic benefits	Social License to operate - Good practice collection for solutions in low-emissions hydrogen project development	Existing act	Inclusive deci	H2Global	November 2	Companies •	
		Incorporate just transition principles (accessibility, affordability, community benefits) in corporate project frameworks.	New action • Existing act •	Inclusive deci Public opinion Knowledge &	Compa *	November 2	Companies •	Participating stakeholders to be announced following COP30 PAS engagement and alignment of ambitions for implementation beyond COP30.
	Integrating circularity and resource efficiency into hydrogen planning to ensure sustainable use of water, land, energy, and critical minerals across the value chain	Embed lifecycle sustainability guidelines (e.g. water use, land, critical minerals) into hydrogen project approvals and investment criteria.	New action • Existing act •	Policy & regul • Risk-informed • Standards & T • Inclusive deci •	Countri •	November 2	Countries •	Participating stakeholders to be announced following COP30 PAS engagement and alignment of ambitions for implementation beyond COP30.
		Integrate resource efficiency principles into project design (e.g. water use, land, and materials) and participate in voluntary sustainability frameworks.	Existing act • New action •	Standards & T • Risk-informed • Technology s • Inclusive deci •	Compa •	November 2	Companies ·	Participating stakeholders to be announced following COP30 PAS engagement and alignment of ambitions for implementation beyond COP30.
	Coordinating planning and development of enabling hydrogen infrastructure, including transport, storage and digital systems, to reduce costs, support aggregation, and enable cross-border and	Report on last mile infrastructure gaps	Existing act	Knowledge &	H2Global	November 2	Countries •	
		Report on export infrastructures	New action	Knowledge &	H2Global	November 2	Multi-stakeholders •	
	transport, storage and digital systems, to reduce costs, support aggregation, and enable	Report on export infrastructures	New action •	Knowledge &	H2Global	November 2	Multi-stakeholders •	

domestic deployment.							
Enhance coordination and visibility of leading analytical and reporting efforts that track hydrogen deployment, investment, and policy progress worldwide. Strengthen the evidence	Business Breakthrough Barometer annual report capturing the voice of business on the net zero transition, including the hydrogen sector. Includes countries to watch, opportunities, risks and policy recommendations.	Existing act	Knowledge & Inclusive deci	World Business Council for Sustainable Development (WBCSD)	June 2026 (Companies -	
base by identifying key technical, financial, and regulatory challenges to hydrogen deployment and providing actionable recommendations to address them in the short term.	Global Hydrogen Compass Report	Existing act	Knowledge &	Hydrogen Council	November 2	Multi-stakeholders •	
	Global Hydrogen Review	Existing act	Knowledge &	CEM Hydrogen Initiative - International Energy Agency	November 2	Multi-stakeholders •	
	Hosting Green Hydrogen Task Force of global, interdisciplinary stakeholders and experts	Existing act	Knowledge & • Public opinion •	Green Hydrogen Task Force (hosted by SEforALL and CEET)	November 2	Multi-stakeholders •	SEforALL's 24/7 Carbon-free Energy Compact and the Council of Engineers for the Energy Transition (CEET)