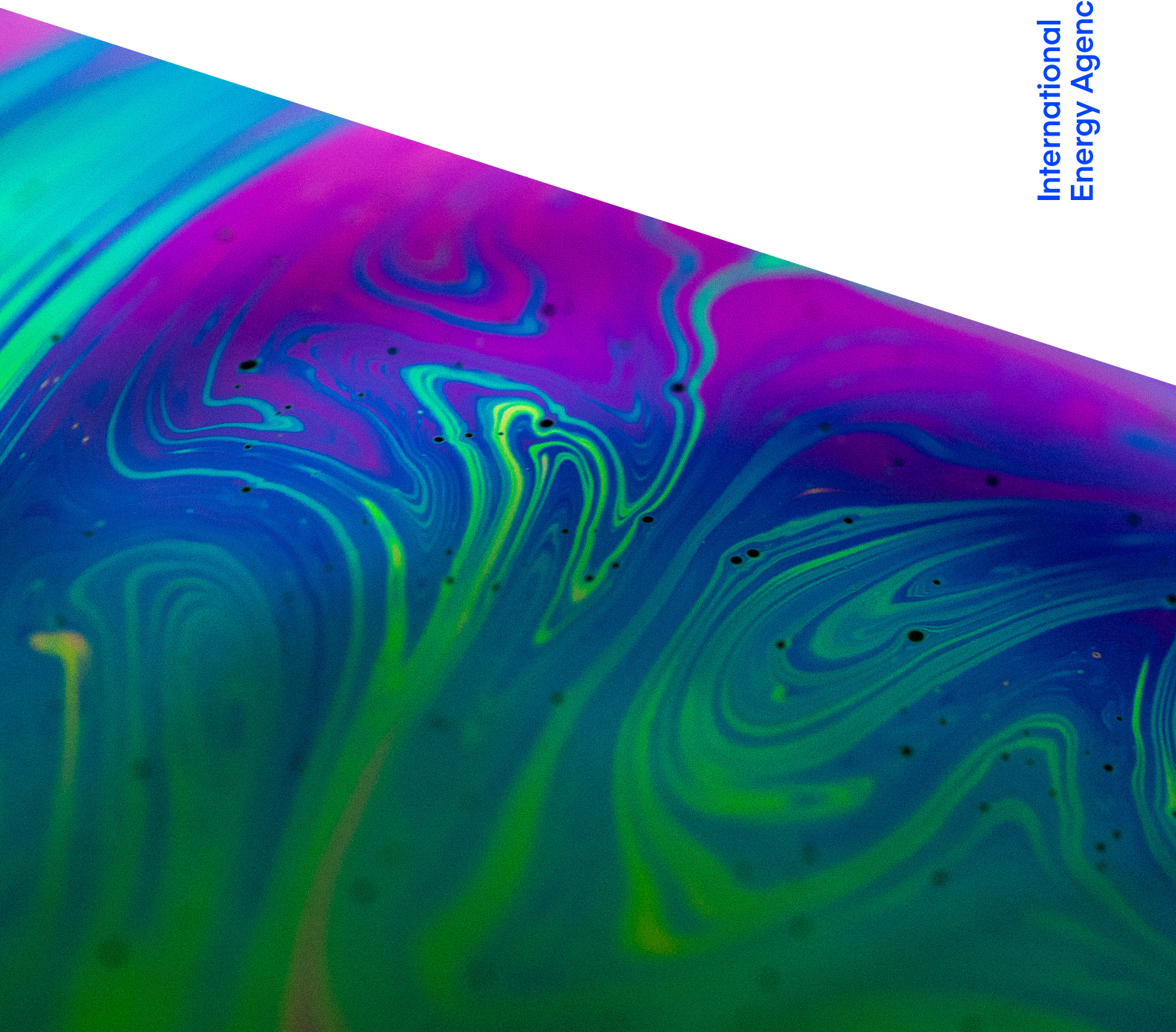
COP30 Belém Sustainable Fuels Pledge

Tracking Report



International Energy Agency

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Abstract

Sustainable fuels – including liquid biofuels, biogases, low-emissions hydrogen and hydrogen-based fuels – offer multiple benefits for the energy sector. They complement electrification and energy efficiency in energy transitions and are particularly important for sectors that continue to rely on fuel-based solutions such as aviation, shipping, and parts of road transport and industry. Sustainable fuels can also enhance energy security, strengthen environmental sustainability and stimulate economic development, especially in rural areas.

Given the need to rapidly scale up these fuels, the governments of Brazil, India, Italy and Japan jointly launched the Belém 4X Pledge on Sustainable Fuels at a pre-COP event in Brasília on 14 October 2025 to advance international action towards this goal. As of late September 2026, 32 countries had endorsed the Pledge.

The Pledge is underpinned by IEA analysis as set out in the report *Delivering Sustainable Fuels*. The report concludes that, if fully legislated and implemented, current and proposed national and international policies would put the use of sustainable liquid and gaseous fuels on a path to nearly double from 2024 levels by 2030 and quadruple by 2035.

This report was prepared at the request of the Brazilian COP30 Presidency for presentation at COP31 in November 2026 and tracks the progress of the Belém 4X Pledge on Sustainable Fuels in its first year.

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Acknowledgements, contributors and credits

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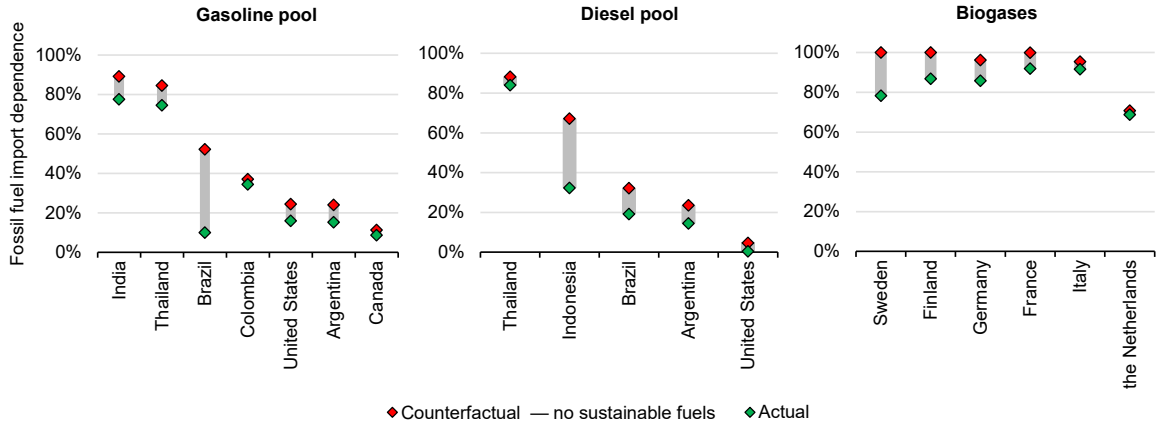
Introduction

Sustainable fuels offer multiple benefits

Sustainable fuels – including liquid biofuels, biogases, low-emissions hydrogen and hydrogen-based fuels – complement electrification and energy efficiency in energy transitions. Although they have a wide number of applications, they are particularly important in sectors that remain dependent on fuel-based solutions, including aviation, shipping and parts of road transport and industry. Sustainable fuels can strengthen energy security by reducing dependence on fossil fuel imports. They can also improve environmental sustainability by lowering the lifecycle greenhouse gas emissions (GHG) of fuels and supporting sustainable land management. They also create economic opportunities in the regions where they are produced and used.

Sustainable liquid and gaseous fuels have already delivered tangible benefits for the countries that use them. Their use has already helped curb reliance on fossil fuel imports and lower exposure to price volatility in several regions. Fuels such as ethanol, biodiesel and renewable diesel have helped cut fossil fuel imports for road transportation by as much as 40 percentage points. Similarly, biogases have helped reduce reliance on natural gas imports by up to 22 percentage points.

Fossil fuel import dependence with and without domestic production of sustainable fuels in selected countries in 2025



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Notes: For gasoline and diesel import dependence is calculated as total net imports of oil products (gasoline and diesel), net imports of crude for domestically refined oil products, net imports of biofuels (ethanol, biodiesel and renewable diesel) and net imports of biofuel feedstocks for domestically produced biofuels, divided by total consumption of oil products and biofuels. The counterfactual scenario for importing countries assumes that all biofuel consumption in the given year is directly replaced with imported oil products. For biogases import dependence is calculated as natural gas imports divided by the sum of natural gas demand and demand for biogases. The counterfactual scenario assumes that all biogas and biomethane consumption in the given year is directly replaced with natural gas imports.
Source: IEA (2026), Renewables 2026, IEA (2025), Oil 2025.

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In addition, several countries have accelerated policies in response to the current conflict in the Middle East. Most have targeted increases in sustainable fuels used in road transport, such as biodiesel and ethanol, to help further reduce reliance on imported fossil fuels.

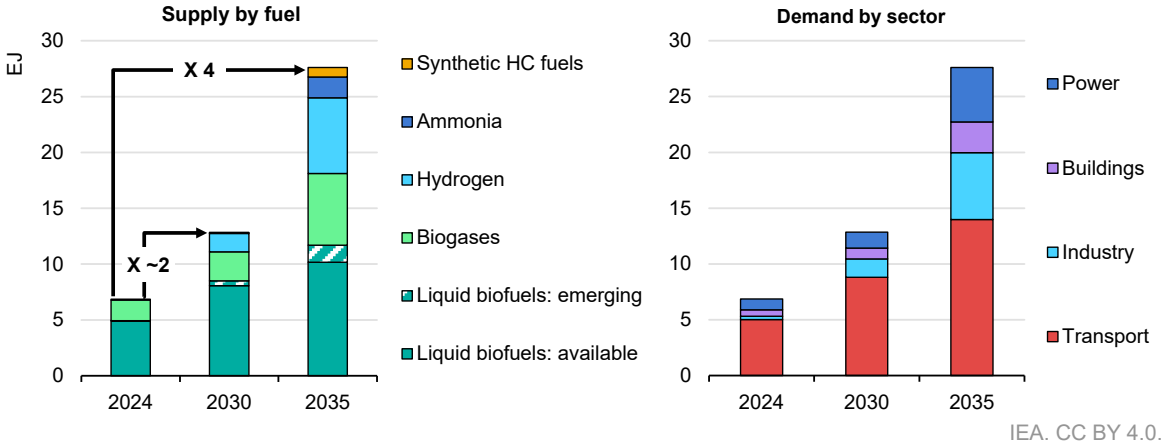
The COP30 Belém Pledge on Sustainable Fuels

Recognising these benefits, the International Energy Agency (IEA) has published several reports on sustainable fuels to help inform these policies, including: The Role of E-fuels in Decarbonising Transport, Carbon Accounting for Sustainable Biofuels, and Towards Common Criteria for Sustainable Fuels. In 2025, the IEA published the Delivering Sustainable Fuels report, which underpins the COP30 Belém Pledge on Sustainable Fuels. This study shows that if fully legislated and implemented, current and proposed national and international policies would put the use of sustainable liquid and gaseous fuels on a path to nearly double from 2024 levels by 2030 and to quadruple by 2035.

The Delivering Sustainable Fuels study indicates strong growth for all fuels and across different sectors. Liquid biofuel use increases in all fuelled transport modes, as many of these fuels are already commercially available. New technologies capable of leveraging non-traditional feedstocks are also expected to scale up in the second half of the decade. Biogas use increases across several sectors due to their versatility and compatibility with existing natural gas infrastructure, as well as a growing number of supportive policies. Hydrogen, ammonia and synthetic fuels is meanwhile driven by demand in industry, transport and power generation, especially after 2030.

The projected increase in sustainable fuels by a factor four adopted by the Belém Pledge implies the global average fuel and sectoral demand mixes shown below. Regional and country mixes can differ considerably, depending on national policies, available resources and the structure of demand.

Sustainable fuel supply and demand in the Pledge case, 2024 to 2035



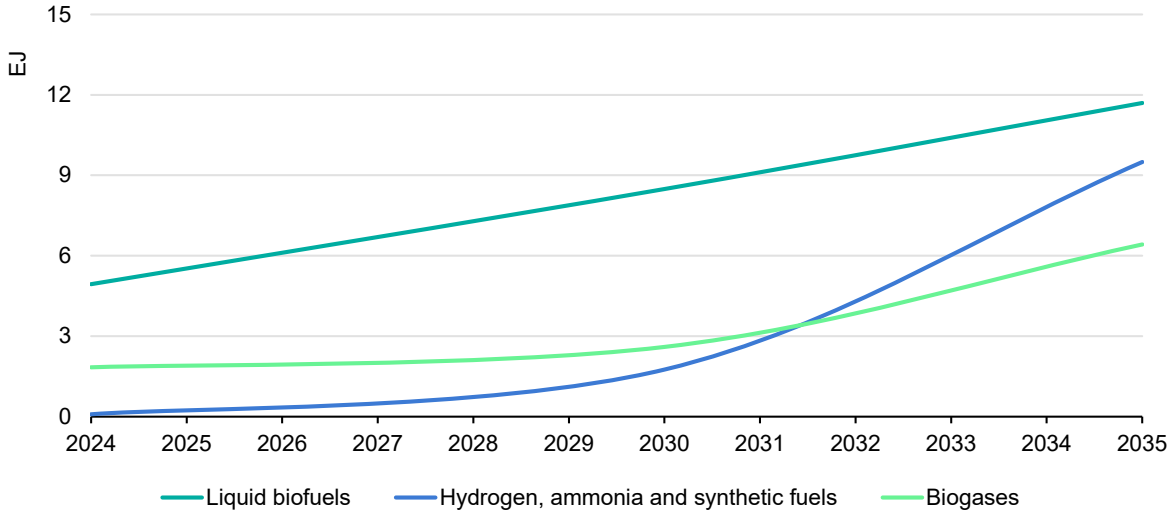
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Sources: IEA (2025), Delivering Sustainable Fuels.

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However, the required growth trajectories of liquid biofuels, biogases and hydrogen-based fuels between 2024 and 2035 are expected to differ considerably owing to differences in market and technology maturity and relevant infrastructure needs. Liquid biofuels are expected to grow linearly throughout this period, while biogases grow more slowly through the 2020s but their use accelerates more rapidly in the 2030s. Hydrogen and its derivates are expected to grow after 2030, with limited production expected before 2030 – followed by a rapid increase, as announced projects reach production.

Indicative trajectories for liquid biofuels, biogases and hydrogen-based fuels towards the 2035 Pledge target, 2024-2035



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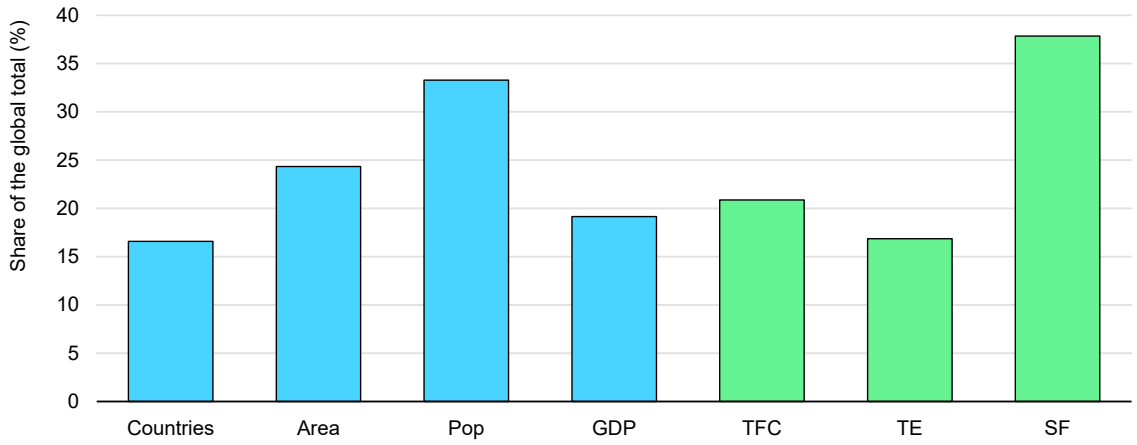
To push forward international action, and given the need to rapidly scale up these fuels, the governments of Brazil, India, Italy and Japan jointly launched the Belém Pledge on Sustainable Fuels at a pre-COP event in Brasília on 14 October 2025. The full text of the Belém Pledge is provided in Annex A.

Under the Pledge, endorsing countries commit to 'work collaboratively and expeditiously to pursue the expansion of sustainable fuels use globally by at least four times by 2035 from 2024 levels, taking into consideration different starting points and national circumstances. These commitments include supporting market development with long-term demand signals; seeking to align domestic and international carbon accounting frameworks for transparency, traceability, interoperability and trade opportunities; unlocking financing mechanisms, specifically in emerging economies, to support commercialisation and scale-up; collaborating on the research and development of new technologies; and developing the necessary infrastructure to accompany their expansion.

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As of the end of September 2026, 32 countries had endorsed the Belém Pledge (listed in Annex B). Although making up only 17% of United Nations membership, the endorsing countries together represent 24% of the world's land area, 33% of its population, 19% of global gross domestic product (GDP), 21% of total final consumption of energy, 17% of transport energy use and almost 40% of sustainable fuel demand by energy content. At the request of the Brazilian COP30 Presidency, the IEA prepared this report to track progress towards the Pledge.

Share of countries endorsing the Belém Pledge globally; number of countries, land area, population, gross domestic product, total final consumption of energy, transport energy demand and sustainable fuel demand



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Note: Countries based on 193 UN members. Area data from FAOSTAT. 2023 population (Pop) and 2025 gross domestic product (GDP) from the World Bank. 2024 total final consumption of energy (TFC), 2024 transport energy demand (TE) and 2024 sustainable fuel demand (SF), from IEA data and exclude the following endorsing countries; Andorra, Burkina Faso, Cabo Verde, Guinea, Maldives, San Marino, and Sao Tome and Principe.

Current status of sustainable fuels

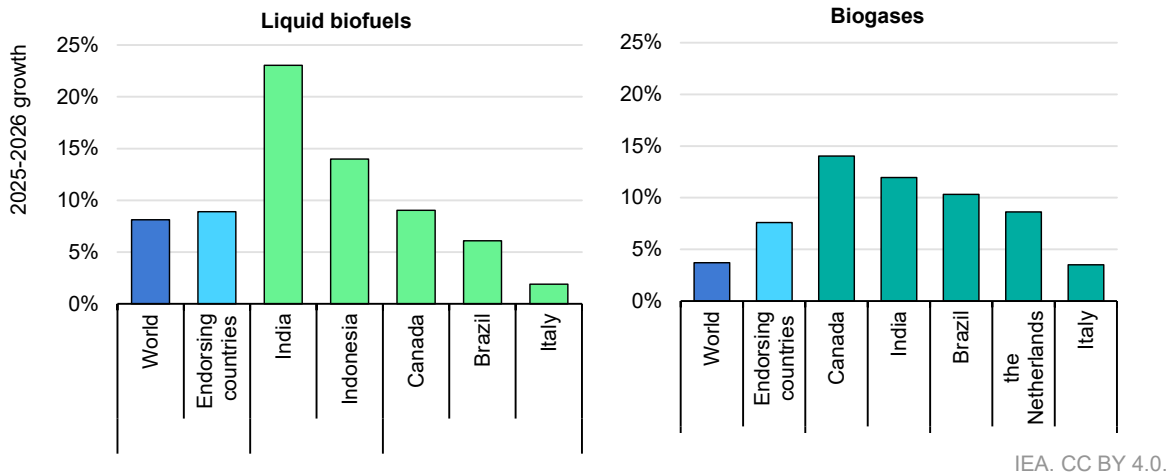
While one year provides a limited evidence base, the use of sustainable fuels has grown since the launch of the Belém 4X Pledge on Sustainable Fuels in 2025. Between 2025 and 2026, the total final energy demand from sustainable fuels is expected to grow by 9% in endorsing countries and by 7% in the rest of the world.

Liquid biofuels are expected to grow by 8%, or 0.41 EJ, from 2025 to reach 5.5 EJ by the end of 2026. Due to their widespread commercial availability, they account for nearly 70% of expected sustainable fuel growth. Countries that have endorsed the Pledge provide nearly half of this growth (0.19 EJ), with non-endorsing countries (0.22 EJ) providing the remainder. Liquid biofuel growth in endorsing countries over this period is expected to be slightly higher (9%) than the global average (8%). Growth is forecast to be faster in some endorsing countries such as India, Indonesia, Canada and Brazil owing to strong past policy support and more recent measures. Some of the measures introduced in 2026 were aimed at

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strengthening energy security in response to the global energy market disruptions triggered by the Middle East conflict.

Forecast annual growth in liquid and gaseous biofuels for the world, endorsing and selected countries, 2025-2026



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Global production of biogases, including biogas and biomethane, reached 1.8 EJ in 2025. Between 2025 and 2026, global growth is expected to be significant at around 4%, with biomethane production alone growing by 16%. While endorsing countries have only produced a small fraction of biogases in 2025, or around 15% of global supply, they are forecast to achieve a higher growth rate of 8%. This is led by increased demand for biomethane in all producing countries, most notably in Canada, India, Brazil and the Netherlands.

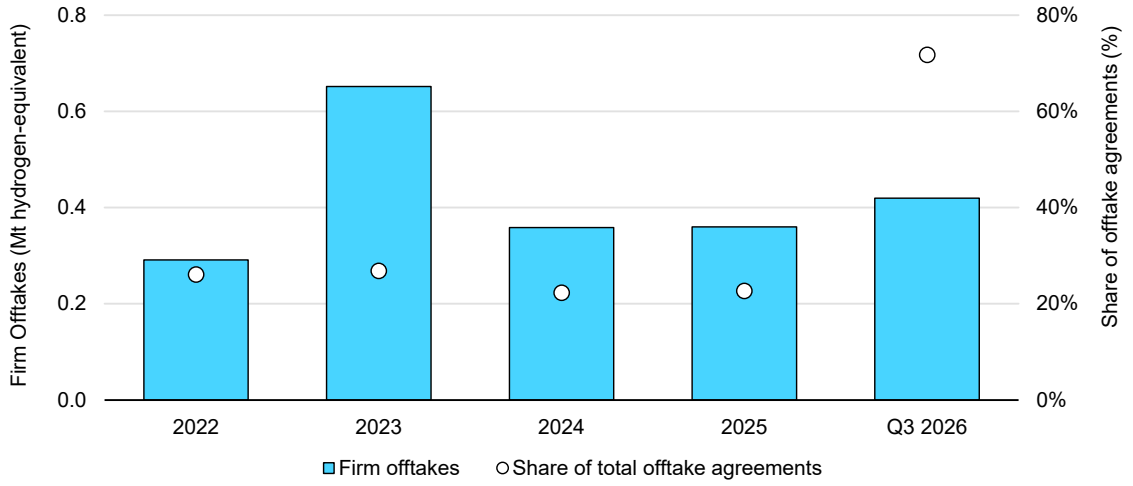
Global production of low-emissions hydrogen and hydrogen-based fuels reached around 0.08 EJ in 2024, the reference year for the Belém Pledge, with nearly 40% of production in endorsing countries. Production grew by 20% in 2025, bringing the total close to 0.1 EJ.

The evolution of offtake agreements clearly illustrates the challenges that project developers face in securing buyers for their products. Newly signed firm offtake agreements peaked at more than 0.6 Mt of hydrogen equivalent (H_2-eq) in 2023 but fell to around 0.35 Mt H_2-eq in both 2024 and 2025 due to slow and uncertain implementation of demand policies. There are, however, signs of renewed momentum in 2026, particularly in regions that have taken more ambitious steps to stimulate demand. By the end of the third quarter, newly signed firm agreements covered more than 0.4 Mt H_2-eq, with Europe, India and Japan accounting for more than 80% of these volumes. These regions were the earliest movers in implementing supportive demand policies.

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The newly signed firm offtake agreements also account for a larger share of all offtake agreements than in previous years. This suggests that market participants are shifting their efforts away from early preliminary engagements (such as memorandums of understanding) towards binding contracts that give suppliers the certainty they need to secure investment.

Annual firm offtake agreements signed for low-emissions hydrogen and hydrogen-based fuels, 2022-Q3 2026



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Notes: Only offtake agreements disclosing the amount agreed are included. Firm offtake agreements are classed by the year in which they became firm. Cancelled agreements have been excluded. Announcements for hydrogen production and self-consumption are not included.

Source: IEA analysis based on announcements of offtake agreements for hydrogen and hydrogen-based fuels and data from Argus Media Group, All rights reserved (full disclaimer on copyright page); Bloomberg NEF and S&P Global.

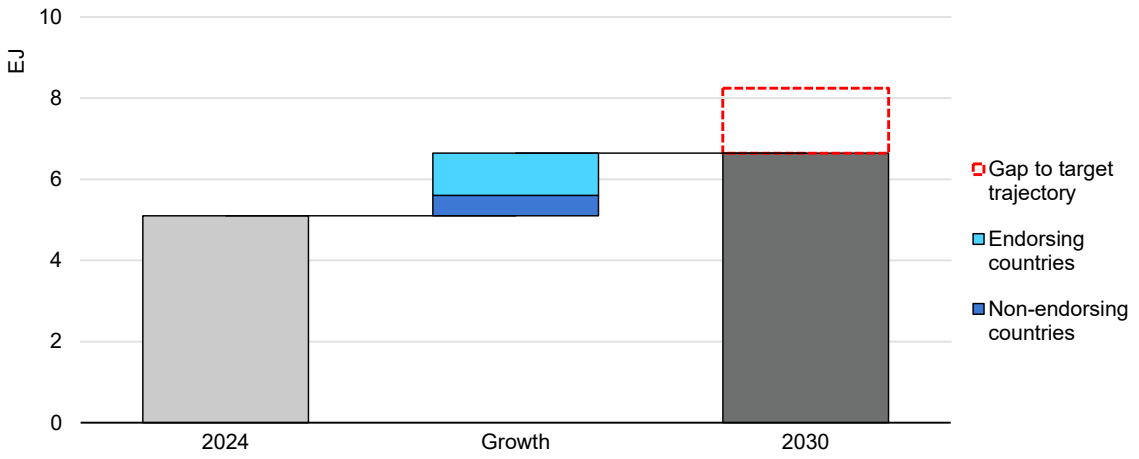
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Projected trends to 2030

Liquid biofuels

Under current policies, global liquid biofuels[1] use in road, marine and aviation transport are forecasted to grow just over 30%, from nearly 5.0 EJ in 2024 to 6.5 EJ in 2030. Four-fifths of this growth is driven by rising demand in road transport – as continued support for low-carbon fuel standards, mandates and production incentives helps to drive this increase. Marine and aviation transport make up the remaining share, primarily due to the EU's FuelEU Maritime Regulation and growing sustainable aviation fuel (SAF) mandates globally. However, biofuel demand remains around 23% below the Pledge's trajectory in 2030.

Forecast liquid biofuel demand by endorsing and non-endorsing countries and 2030 gap to the trajectory towards the Pledge 2035 target, 2024-2030



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Source: IEA (2026), Renewables 2026.

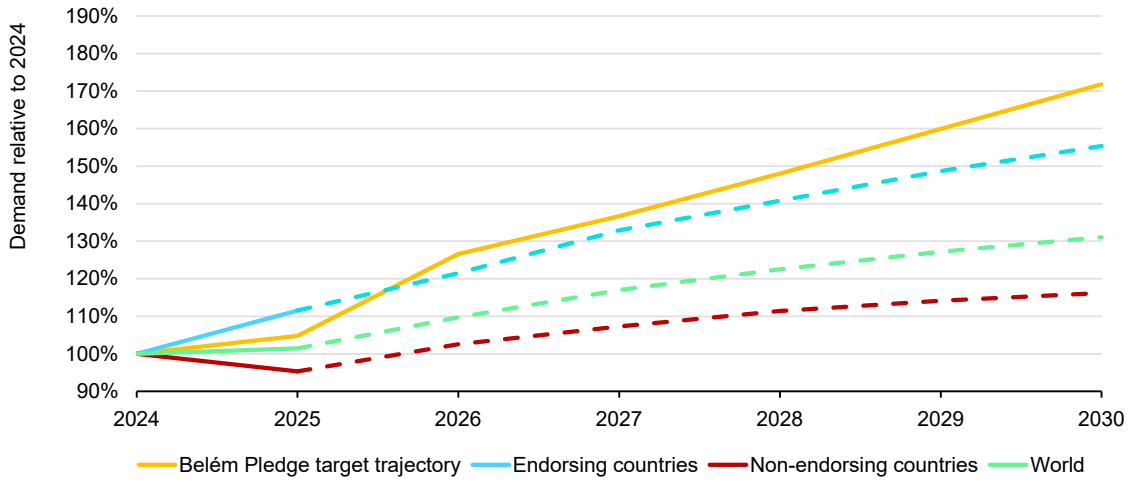
Although global liquid biofuel growth remains below the Pledge's trajectory in 2030, under current policies, demand is forecast to grow at a compound rate three times faster in endorsing countries than in non-endorsing countries. Endorsing countries record an average compound annual growth rate of 6.5%, around 20% below the rate required to remain on track in 2030. By comparison, demand in non-endorsing countries grows by just 2.2% annually, more than 70% below the

[1] Liquid biofuels include ethanol, biodiesel, renewable diesel, marine biodiesel and biojet fuel (biojet fuel is a sustainable aviation fuel (SAF) produced primarily from biomass feedstocks).

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required growth rate. Stronger growth in endorsing countries reflects both previously established policy packages and continued policy support since their endorsement of the Pledge.

Relative growth of liquid biofuels from 2024 in countries that have and have not endorsed the Belém Pledge, 2024-2030



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Notes: IEA (2026), Renewables 2026.

Biogases

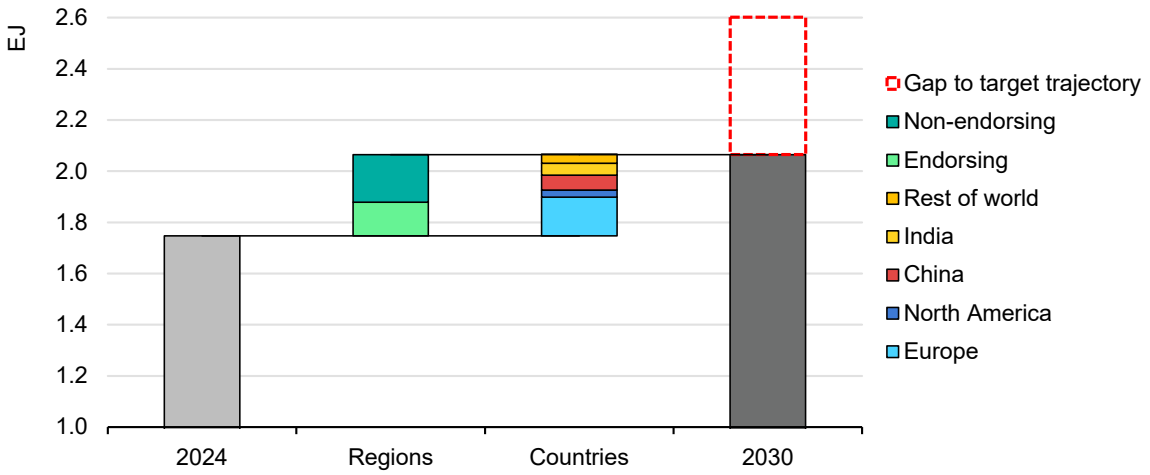
Global production of biogases – including both biogas and its purified form, biomethane – is set to grow across regions, increasing by an average of 2%. This overall figure, however, masks two diverging trends: while global biogas production declines by 1%, biomethane production grows by 14%.

Biomethane is expected to remain the main driver of biogas growth in the coming years, supported by its versatility and ability to replace or be blended with natural gas. These characteristics allow biomethane to be integrated into existing natural gas infrastructure and used in a wide range of end-use sectors.

Looking at regional trends, Europe is expected to remain the leading producing region to 2030, followed by the United States. However, growth slowed in 2024 and 2025 in some of Europe's largest markets, as well as in the United States. By contrast, biomethane production in India and the People's Republic of China (hereafter, "China"). is starting to expand strongly, with both markets experiencing rapid growth thanks to new supportive policies.

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Historical (2024) and forecast (2030) production of biogases by country/region and by endorsing status vs trajectory towards the Belém Pledge 2035 target



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Note: Europe includes all EU countries plus Belarus, Bosnia and Herzegovina, Iceland, Moldova, North Macedonia, Norway, Serbia, Switzerland, Türkiye, the United Kingdom and Ukraine.

Source: IEA (2026), Renewables 2026.

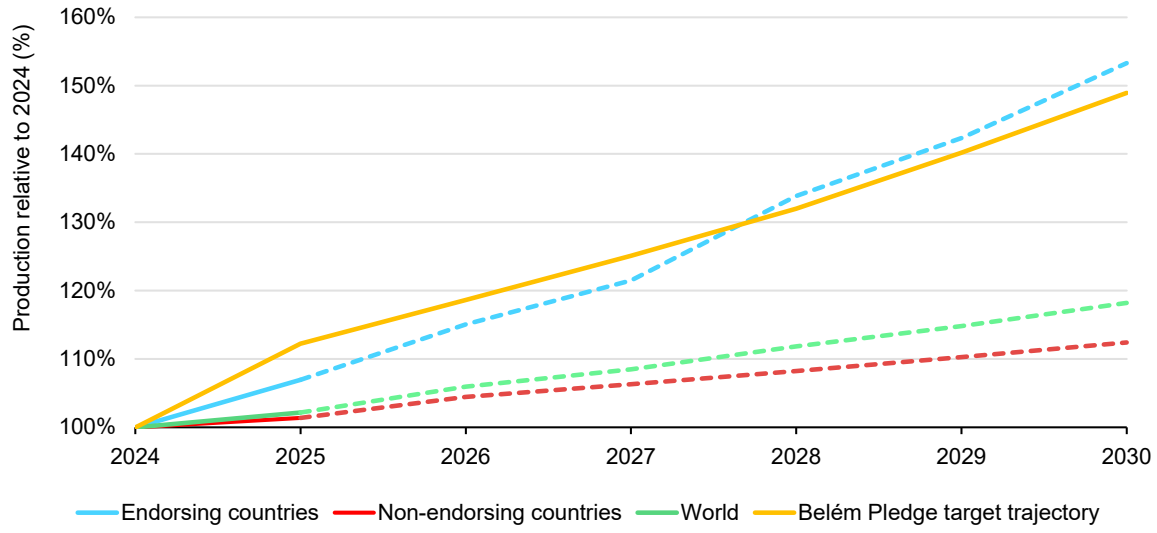
Under current policies, our current forecast for 2030 falls 58% short of interim milestone in the Belém Pledge trajectory. One of the main reasons is the slowdown in production growth observed in 2025 in some of the largest markets.

Countries endorsing the Belém Pledge are on a much faster growth trajectory for biogases production than non-endorsing countries and slightly faster than the trajectory to the target, driven largely by expansion in India. However, endorsing countries currently account for only 14% of the total global production of biogases. Despite the widespread availability of suitable feedstocks, including agricultural waste, animal manure, organic municipal waste and organic industrial waste, some countries and regions have yet to develop domestic biogas or biomethane production. Achieving the Pledge's target of quadrupling global production and use by 2035 will therefore require more countries to develop markets for biogases, while existing producers continue to scale up output.

Looking further ahead, the growth trajectory required to meet the Pledge's 2035 objective points to two distinct phases: relatively steady growth up to 2030, followed by a faster pace of expansion between 2030 and 2035. Growth in the first phase is expected to rely primarily on established markets and the continued expansion of existing production. In the second phase, China and India are expected to reach a larger scale, while new production is likely to emerge from countries that have only recently begun developing regulatory frameworks to support biogases. These include Brazil and several emerging European markets, such as Spain, Czechia, Belgium and Ireland. In Southeast Asia, interest in biogases is also growing, although market development remains at an early stage.

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Relative growth of biogases from 2024 in endorsing and non-endorsing countries and globally vs the trajectory towards the Belém Pledge 2035 target, 2024-2030



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Source: IEA (2026), Renewables 2026.

However, the contribution of these new markets is likely to materialise mainly after 2030, as developing a biomethane project typically takes two to five years. Additionally, some regions are developing the supply chains needed to support market expansion, including feedstock collection and aggregation, and commercial arrangements for waste and residues – or need to expand their gas grids. These factors are likely to slow the pace of deployment.

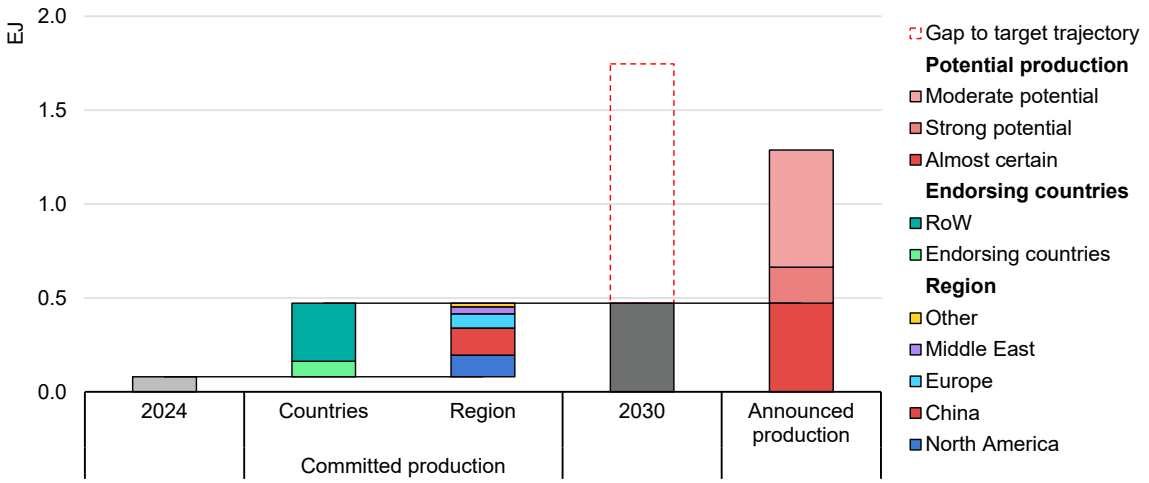
Another factor supporting the positive long-term outlook is the potential for strong uptake of bio-liquified natural gas (bio-LNG) from the maritime shipping sector. Following the introduction of the EU FuelEU Maritime Regulation, international measures to reduce emissions from shipping are also under discussion. As these frameworks evolve, bio-LNG is well positioned to contribute to the uptake of lower-emissions marine fuels, creating an additional source of demand for biomethane in the longer term.

Hydrogen and hydrogen-based fuels

Based on announced projects with committed production – including projects that are operational, under construction or have reached a final investment decision (FID) – production of low-emission hydrogen and hydrogen derived fuels is expected to reach close to 0.5 EJ by 2030, under current policies. This would be almost six times the 2024 level of 0.08 EJ, implying an average annual growth of close to 40% to 2030. This growth rate is comparable to that of liquefied natural gas (LNG) in the 1970s, at 35%, and of solar PV and onshore wind over the past two decades, at 35-38%.

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Production of low-emissions hydrogen and hydrogen-based fuels based on announced projects by country, region and likelihood, 2024-2030



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Notes: RoW = Rest of world.
Source: IEA (2026), IEA Hydrogen Production Projects Database (June 2026).

Growth is expected to be concentrated in four regions. In North America, several large-scale projects producing hydrogen and ammonia from natural gas with carbon capture utilisation and storage (CCUS) are under construction. In China, electrolysis is expanding at unprecedented speed, supported by government policies to develop domestic supply chains for hydrogen technologies and that encourage the use of low-emissions hydrogen and hydrogen-based fuels to reduce reliance on fossil fuels. In Europe, after some years of slow progress, national and EU-wide support schemes are expected to bring several large-scale projects (both for electrolysis and for the use of natural gas with CCUS) online in the next few years. Finally, in the Middle East, large export-oriented projects aim to draw on competitive production costs to serve markets such as Europe, Japan and Korea, where near-term demand is expected to grow and production costs are expected to remain high.

Countries that endorsed the Belém Pledge accounted for nearly 40% of production in 2024. However, their projected contribution to growth through 2030 is smaller, and they account for only around 20% of the committed production expected to enter operation by the end of the decade. Moreover, less than 10% of the around 30 PJ of production that has reached FID since the Pledge was signed is located in endorsing countries. Practically all of this endorsing-country share since October 2025 comes from a single project in Kenya that aims to produce renewable ammonia for fertiliser production.

Overall, low-emissions hydrogen and hydrogen-based fuels are witnessing an impressive expansion, especially considering that these fuels remain at an early

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stage of adoption. However, this growth still falls short of the trajectory required by the Belém Pledge. Achieving the Pledge trajectory would require production of 1.7 EJ by 2030, compared with close to 0.5 EJ from projects with committed investment.

Many projects that have not yet reached FID still have the potential to come online by 2030. IEA analysis of the status, size, location and target application of announced projects shows that an additional 0.2 EJ of production has strong potential to come online by 2030. Another 0.6 EJ of projects have moderate potential to be operating by 2030 but have better prospects to reach operational status soon after 2030. Altogether, this would correspond to around 75% of the 2030 level of the trajectory towards the Pledge's 2035 target.

Realising this potential will require addressing the barriers that project developers continue to face that prevent faster growth, such as persistently high technology costs, insufficient public support, difficulties in meeting public funding criteria and permitting hurdles. Stakeholders most often identify the lack of offtake as the main constraint, particularly due to uncertain regulatory frameworks for stimulating demand. At this early stage of market development – when these fuels remain more costly than incumbent fossil fuels – policies, regulations and incentives that support demand are essential to create predictable and stable demand signals and reduce investment risk.

Projected trends to 2030 for all sustainable fuels

According to the Renewables 2026 main case, with current market conditions and policies implemented, sustainable liquid and gaseous fuels are projected to increase by 33% from 6.8 EJ in 2024 to 9.1 EJ in 2030 – the Pledge's interim year. Liquid biofuels make up nearly 70% of this growth, followed by biogases and hydrogen. Liquid biofuels drive much of this growth since this fuel segment has been, and remains, the largest segment of commercially available sustainable fuels, supported over the last several decades through long-term blending mandates, low-carbon fuel standards and other incentives. While biogases make up a smaller share of overall growth, they continue to expand in several regions for use in transport, buildings and industry. Under current policies, hydrogen growth remains limited as existing projects continue to progress through permitting and financing stages towards production, but interest persists for low-emissions hydrogen in sectors such as industry, refining and long-distance transport.

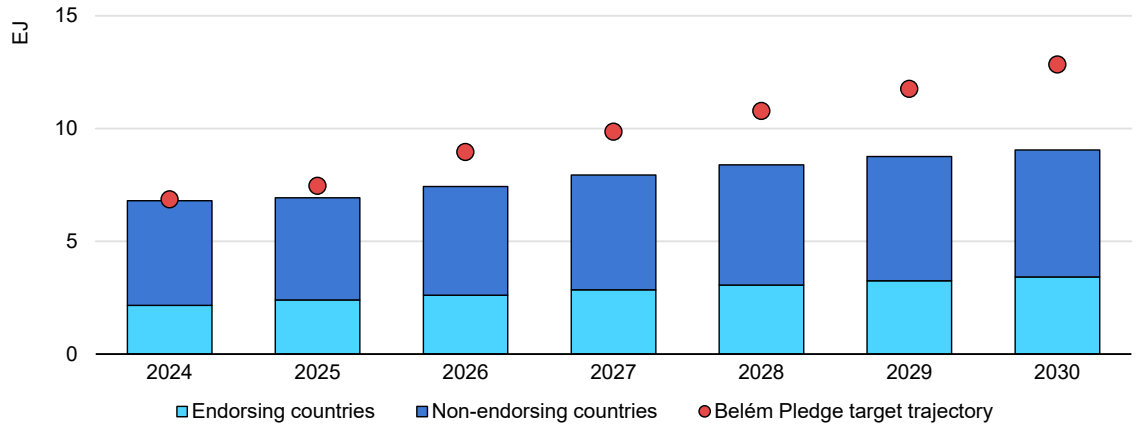
With current policies, total demand for these fuels is projected to remain around 30% below the trajectory required for the Pledge in 2030. Closing the gap between the trajectory required to meet the Belém Pledge target and the projected demand from current policies requires further liquid biofuel production, supported by

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continued access to sustainable feedstock and development of new technologies that can leverage non-traditional feedstocks. For biogases, further production, supported by more regulatory certainty and greater access to feedstocks, is required. Meanwhile, for hydrogen and hydrogen-based fuels more final investment decisions are needed to bring additional projects to commercial readiness.

However, progress towards the 2030 doubling of sustainable fuels differs between endorsing and non-endorsing countries. Countries that have endorsed the Belém Pledge are expected to have an average annual compound growth rate of 6.8%, roughly 2.6% below the growth rate required to remain on track in 2030 and reach the Pledge target. Countries that have not endorsed the Pledge face a larger gap, growing 2.8% annually on average and more than 6.5% below the required annual growth rate.

Forecasted demand for sustainable fuels under current policies and market conditions and gap to the trajectory towards the Belém Pledge 2035 target, 2024-2030



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Policy support in endorsing countries

Endorsing countries have had only 12 months since the introduction of the Pledge. Large-scale deployment will depend on a stable regulatory environment, supportive policies, and coordination and collaboration along value chains.

Some countries already had an advanced policy environment before endorsing the Belém Pledge. Italy, for instance, could build on the broad national strategy as described in its NECP[2] 2021–2030, submitted in 2024, while Brazil had already set out a dedicated fuel roadmap in 2022. In some cases, these frameworks have been complemented over the past year, as with India's policy updates and the Netherlands' transposition of EU legislation into national law. For other countries, the improvement was more tangible: for example, Indonesia introduced a new mandatory blending programme, while Japan introduced new financial support measures including long-term Contracts for Difference.

Current trends show substantial further policy adoption in endorsing countries. Between October 2025 and the third quarter of 2026[3], we identified about 90 actions and 60 unique measures introduced in the form of new policies and updates to existing legislation. Our year-on-year analysis of selected endorsing countries shows that the policies introduced focus primarily on the liquid and gaseous biofuel markets – mature technologies and markets in many regions – possibly reflecting efforts to address fossil fuel scarcity arising from geopolitical events. In the aviation sector, multiple ongoing consultations and exchanges indicate a growing interest in SAF in preparation for the implementation of CORSIA[4]. Aware of the challenges in the particularly vulnerable jet-fuel market, many countries are planning to heavily restructure their policy frameworks to mitigate energy supply risks.

Hydrogen-based synthetic fuels and low-emissions hydrogen show a similar number of updates for existing legislation, but for low-emissions hydrogen, countries have focused more on introducing new dedicated policies. The least represented category is sustainable maritime fuel policy. In the last year, efforts in this area have mainly been directed towards updating existing legislation and conducting broad consultations, rather than introducing new measures – possibly as countries await progress on a global agreement within the International Maritime Organization (IMO).

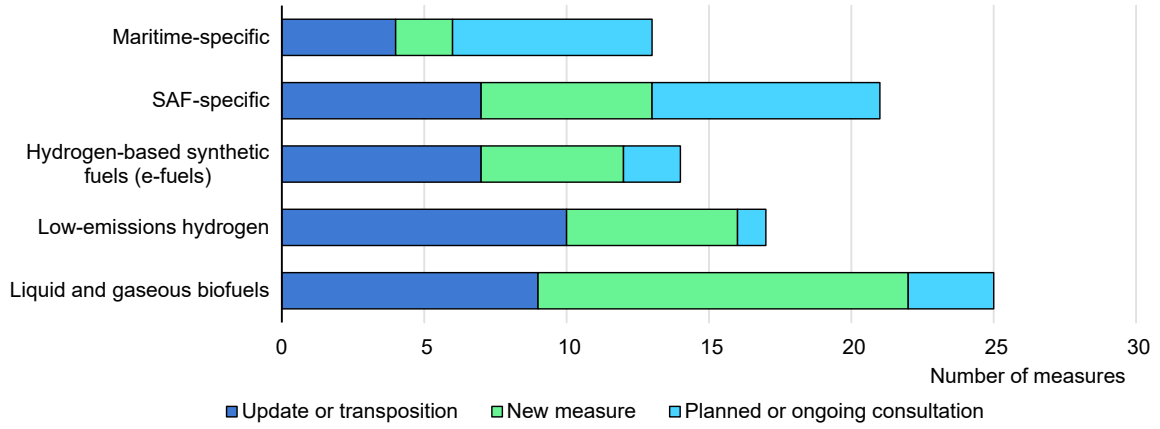
[2] NECP - National Energy and Climate Plan

[3] Policy frameworks have been analysed through the fuel dimension, considering five categories (Liquid and Gaseous Biofuels, Low-Emissions Hydrogen, Hydrogen-Based Synthetic Fuels (E-Fuels), SAF-specific, Maritime-specific). This methodology led to partial overlapping of measures describing different sectors (e.g., e-fuels, SAF and maritime applications).

4 CORSIA - Carbon Offsetting and Reduction Scheme for International Aviation

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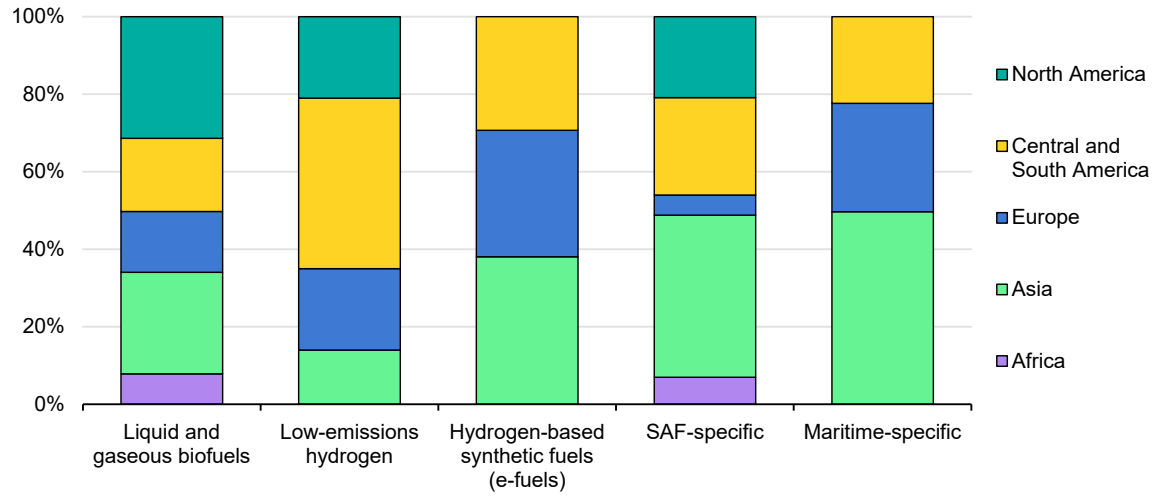
Types of measures enacted by fuel type in selected countries endorsing the Belém Pledge, Oct 2025-Oct 2026



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Since 2025, policy support for different sustainable fuels has been uneven among regions but shows a consistent momentum for biofuels in every region. In Asia and North America, policy instruments have partially addressed challenges related to scaling up low-emissions hydrogen. Central and South America have made progress in several areas, with an emphasis on low-emissions hydrogen, e-fuels and SAF. In Europe and Asia, policy frameworks are steering the sustainable fuels sector towards the inclusion of hydrogen-based synthetic fuels and maritime-specific fuels, offering a path for hard-to-electrify sectors such as freight and sea transport in these regions. Different regions show a mix of mature and evolving frameworks. The policy framework in Africa is still developing, with limited measures for liquid and gaseous biofuels and SAF.

Sustainable fuel policy effort by region, Oct 2025-Oct 2026



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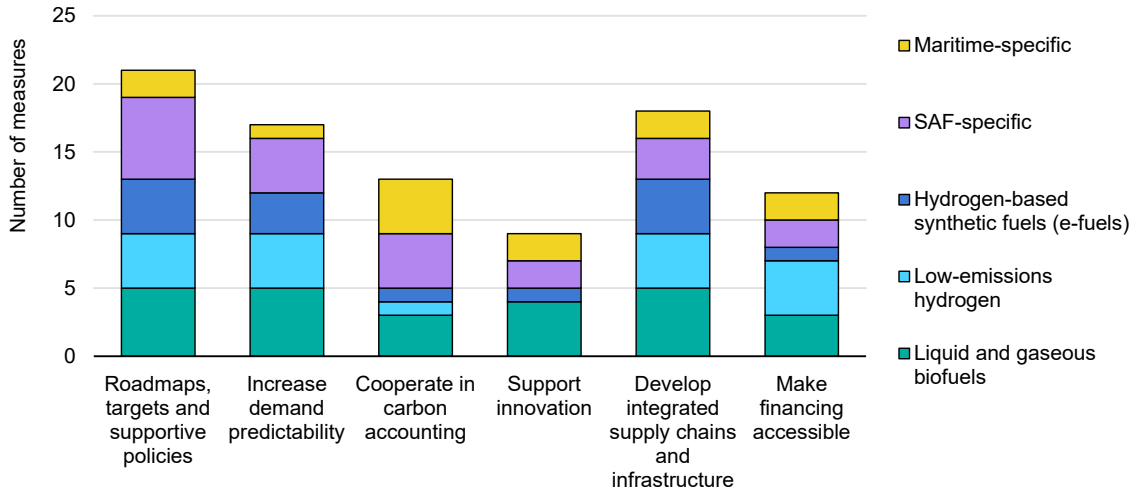
Note: The analysis covered five regions (Africa, Asia, Europe, Central and South America, and North America) and 13 selected countries. As regional coverage varied from two to five countries, the number of measures for each sustainable fuel type was normalised by the number of countries assessed in each region, allowing for comparable regional analysis and providing a better indication of how representative each fuel type is across countries within a region.

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The Delivering Sustainable Fuels report identified six main priority policy actions in order to achieve the Pledge goals. In this report, we track how policies in endorsing countries relate to each priority area.

The analysis of the six priority policy areas shows a focus on publishing roadmaps and targets, improving supply chains and developing dedicated infrastructure, With the level of activity varying by fuel. Across the six policy priority areas, we group measures from endorsing countries to show how action progresses from establishing clear roadmaps, targets and supportive frameworks to strengthening demand predictability and integrated supply chains and infrastructure.

Types of measures enacted in countries endorsing the Belém Pledge by policy priority area, Oct 2025-Oct 2026



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These policies are supported by cooperation on robust carbon accounting systems and improved access to finance derisking investments. Support for innovation to narrow cost gaps is the least tackled priority area. Most countries have chosen to establish roadmaps, targets and strategies tailored to regional contexts and aligned with their broader energy goals to unlock economic development opportunities. These long-term instruments aim to strengthen supply resilience, diversify energy sources and shield transport and industrial sectors from single-source supply shocks or geopolitical disruptions. For liquid and gaseous biofuels – and partially for low-emissions hydrogen and SAF –increasing demand predictability is a priority, with policies seeking to match supply and demand and stabilise markets.

Cooperation on carbon accounting is considered a priority for SAF, and an important measure for the maritime sector and biofuels. Joint efforts aim to develop robust and mutually agreed accounting methodologies that improve comparability, and long-term interoperability, enabling policies that reward better GHG performance. More support for innovation may be needed in all sectors to narrow the cost gap for emerging technologies and expand production potential and efficiency.

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Conclusions and priorities for action

In the first year of the Belém Pledge, the current conflict in the Middle East has brought into sharp focus the multiple benefits of greater use of sustainable fuels. Several countries have prioritised measures to replace liquid and gaseous fossil fuel demand with sustainable fuels in order to realise the energy security and diversification benefits of increased sustainable fuel use. Several countries - especially in Southeast Asia and Latin America – have also raised blending mandates, i.e the minimum share of biofuels in either gasoline or diesel sold at the pump, as an immediate response to high fuel prices and availability challenges.

As of the end of September 2026, 32 countries had endorsed the Belém Pledge announced in autumn 2025. Policy momentum in these endorsing countries is tangible across fuels and sectors. Countries that have endorsed the Belém Pledge are leading the way but additional actions to support accelerated growth and broader global participation are needed in the years ahead to achieve the Pledge goals. Further endorsements could expand the reach and depth of both cooperation and mutual learning, maximising the benefits of improved energy security and decarbonisation. A fourfold growth in sustainable fuels over a decade remains ambitious but achievable, if announced policies are consistently and fully implemented and market barriers are removed in many more countries.

Although several policies have already been implemented, further support is needed on multiple fronts to achieve progress. It will require a mix of regulatory and financial measures that reflect technology maturity and market readiness. These measures should be technology-open, i.e. aim to support a large portfolio of technologies at different readiness levels, and ensure equitable market access to further expedite sustainable fuel deployment.

Governments can seek to develop differentiated yet holistic approaches to integrate sustainable fuels along the industrial value chain to unlock their full potential. On one hand, supply chains of different fuels are interconnected and can mutually reinforce each other, as in the case of e-fuels that combine low-emissions hydrogen with a biogenic source of carbon. On the other hand, over time different sustainable fuel alternatives will compete in the same end-use markets, such as maritime, aviation or industry. This calls for a holistic and systemic policy approach.

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The appropriate policy, regulatory and financial support in each country will depend on a range of factors including optimising the mix of available resources to meet the structure of demand. Everywhere, however, the core components should facilitate long-term demand creation, the development of transparent and robust carbon accounting, innovation and cost competitiveness, infrastructure integration and access to capital.

The IEA reiterates its six priority actions to accelerate sustainable fuel use, summarised below with best-practice examples from endorsing countries for each policy priority area.

Priority 1: Establish roadmaps, targets, and support policies

The absence of coordinated national strategies inhibits progress towards deployment of sustainable fuels at a meaningful scale. Each country will have a different target and trajectory guided by local circumstances, demand structure and energy mix. Governments should establish clear, time-bound targets for sustainable liquid and gaseous fuel deployment to reduce market uncertainty and encourage deployment at scale. Aligning these targets with national roadmaps and priority sectors and developing them in consultation with key stakeholders is likely to ensure broad participation and implementation. Brazil's Fuel of the Future Law, which establishes a strategy for sustainable fuels including ethanol, biodiesel and SAF requirements, and Japan's Seventh Strategic Energy Plan, which lays out a coordinated and integrated approach to increasing sustainable fuel use, are leading examples.

Priority 2: Increase demand predictability

In the absence of established durable demand, private investors hesitate to commit capital, and producers struggle to achieve economies of scale with significant price uncertainty. Sector-wide mandates and performance standards that reward fuels in proportion to their lifecycle GHG emissions savings, together with developing policies that allow competition between fuel pathways can direct investment towards the most cost-effective pathways. Additionally, creating demand through procurement policies for public transport fleets can reduce investment risks. The ReFuelEU Aviation and FuelEU Maritime regulations provide long-term market signals to 2050 for sustainable fuels in aviation and maritime. Similarly, Italy’s auction-based financial scheme is aimed at ensuring stable demand and competitive market prices for new biomethane projects

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Priority 3: Cooperate in developing transparent and robust carbon accounting methods

Robust carbon accounting methods and internationally accepted rules are vital to ensure the credibility and comparability of sustainable fuels. Standardised methods and verification procedures are essential for tracking progress, enabling trade, and integrating sustainable fuels into compliance markets. Governments and international regulatory bodies should cooperate to adopt transparent, science-based carbon accounting frameworks that align with international best practices, apply to all fuel types, updated regularly and supported by independent monitoring, reporting, and verification mechanisms. The International Civil Aviation Organization (ICAO) and the International Maritime Organization (IMO) have established transparent accounting approaches and adopted lifecycle assessment guidelines for global use, although some methodological differences have yet to be addressed.

Priority 4: Support innovation to narrow cost gaps

High capital costs, low technological readiness, and limited deployment of emerging sustainable fuels translate into a cost premium over their fossil alternatives. Without support, several emerging technologies might struggle to become commercially viable, limiting opportunities to diversify feedstocks and improve supply chain resilience, and constraining the economic and environmental benefits of these fuels. Supporting emerging sustainable fuel pathways can de-risk technologies with high potential for GHG emissions reductions. Long-term policy visibility can provide the correct signals to innovators and investors encouraging them to explore solutions that reduce costs through technological development. The Energy Innovation Program in Canada supports pilot and demonstration projects to accelerate the deployment of new fuel technologies.

Priority 5: Develop supply chains and address infrastructure and integration needs

Infrastructure bottlenecks in certain parts of the supply chain limit cross-border flows and inhibit investment in international value chains. On the other hand, access to resilient supply chains and distribution infrastructure can accelerate sustainable fuel production. Policies that support the development of integrated, sustainable, and traceable supply chains, and that reward cross-sectoral synergies especially between the energy, agriculture, land management, and municipal waste valorisation sectors should be prioritised. International cooperation can help emerging and developing economies to participate in global supply chains. Support under India's National Green Hydrogen Mission spans the entire value chain including funding for research, pilot and demonstration

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hydrogen infrastructure projects as well as the development of codes and standards for labour market development.

Priority 6: Make financing more accessible, especially in emerging and developing economies

The lack of stable financing makes it difficult to raise affordable capital, weakening investor confidence, and delaying final investment decisions. Public financing tools such as grants, loan guarantees, and tax credits can enable greater access to financing mechanisms and help project developers overcome these hurdles, as well as overcome challenges related to infrastructure buildout and securing offtake agreements. Financing mechanisms that address local contexts and country-specific risks, especially in emerging and developing economies, are necessary for the scale-up of sustainable fuels. Japan has taken multiple steps to mobilise public and private finance by issuing Climate Transition Bonds and tax incentives to signal government support over the coming decade. The Netherlands also rolled out a temporary subsidy scheme to support industrial research and experimental development for sustainable fuels used in the maritime sector.

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General Annex: The Belém Pledge

Annex A. The Pledge Text

Belém 4X Pledge on Sustainable Fuels

We, Heads of State and Government as the Participants in the COP30 Global Sustainable Fuels Declaration,

Recalling that the first global stocktake of the 28th United Nations Climate Change Conference (COP28) in Dubai called on Parties to contribute to "transitioning away from fossil fuels in energy systems, in a just, orderly and equitable manner, accelerating action in this critical decade in keeping with science" and "accelerating the reduction of emissions from road transport on a range of pathways, including through development of infrastructure and rapid deployment of zero and low-emissions vehicles,"

Noting that the 2024 G20 Rio de Janeiro Leaders' Declaration underscored "the crucial role of technologically neutral, integrated, and inclusive approaches to develop and deploy a variety of… sustainable fuels and technologies, … with a view to creating scale and global markets to accelerate energy transitions, particularly in hard-to-abate sectors,"

Recalling that the 2023 Delhi Leader's Declaration highlighted the need to "Support the acceleration of production, utilization, as well as the development of transparent and resilient global markets for hydrogen produced from zero and low emission technologies and its derivatives" and acknowledged the "G20 High-Level Voluntary Principles on Hydrogen,"

Underscoring the Global Biofuels Alliance's goal of supporting worldwide development and deployment of sustainable biofuels to promote GHG emission reduction, energy security and sustainable development,

Observing the Global Energy Transition Forum's goals of keeping the momentum on the world's energy agreements, focusing on jump-starting new clean industries and scale up clean energy globally, and unlocking more investment for the energy transition,

Welcoming the Clean Energy Ministerial´s role in promoting government-industry collaboration and international cooperation to support interested countries in their efforts to scale-up sustainable fuels production and use,

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Recognizing the need for consistency in carbon accounting that will enable sustainable fuels' scalability, affordability, fair competition and rapid deployment with mutually recognized, interoperable, transparent, comparable and verifiable standards,

Highlighting that, despite efforts to diversify energy sources, fossil fuels still meet most of the overall energy needs of the transport sector and of chemical feedstocks,

Underscoring the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) and the IMO 2023 Strategy on the Reduction of GHG from shipping, as well as the provisions set by both for in-sector emissions reduction through the adoption of sustainable fuels,

Recognizing that a growing number of countries, especially emerging markets and developing economies, have expanded the uptake of sustainable fuels such as biogases and biofuels, renewable, clean/zero emission and low-carbon hydrogen and its derivatives including e-fuels and e-methane, in line with their NDCs,

Underscoring that, while there are other useful international initiatives that promote sustainable fuels, there is a need for high-level political and collective action to accelerate the scaling up of sustainable fuels as energy sources capable of delivering substantial reduction of GHG emissions in their lifecycle, in sectors such as aviation, maritime, road transport and industry,

Recognizing that it is important to adopt a multi-pathway approach towards achieving carbon neutrality and that ambitious actions should be taken by every country, taking into consideration different economic, cultural and social circumstances,

Commit our intent to work collaboratively and expeditiously to pursue the following objectives:

Expand sustainable fuels use globally by at least FOUR times by 2035 from 2024 levels, taking into consideration different starting points and national circumstances;

Take comprehensive **domestic actions** to contribute to the achievement of this declaration, including by adopting ambitious national policies on sustainable fuels and reflecting this ambition in NDCs;

Ensure that efforts to scale up sustainable fuels be conducted in an **environmentally and socially responsible** manner;

***Strengthen* international collaboration** on sustainable fuels, for which the following cooperative actions are key:

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• Provide clarity on support schemes and strengthen market conditions and investment frameworks to foster predictable demand and enable investments in sustainable fuels;

• Seek to align domestic and international carbon accounting frameworks across sectors and fuels, taking into account national circumstances;

• Promote a coordinated implementation of carbon accounting principles and standards to support the interoperability of different frameworks and unlock the full potential of sustainable fuels and feedstocks;

• Collaborate on financing mechanisms to reduce the cost of capital in emerging markets and developing economies;

• Enhance technical support and capacity building for sustainable fuels in emerging markets and developing economies for both commercially viable and emerging technologies;

• Accelerate the adoption of drop-in solutions such as increased fuel blends, and expand associated infrastructure and end-use equipment needed for sustainable fuels, including high-performance mobility equipment such as flex fuel and hybrid engines;

• Collaborate on research, development, and demonstration to foster innovation, accelerate deployment, and reduce costs of emerging technologies and value chains for sustainable fuels,

• Stimulate a wider adoption of sustainable agricultural practices for food, feed and fuel production, and for biodiversity conservation;

• Accelerate permitting of sustainable fuel projects and related infrastructure;

• Accelerate international trade of sustainable fuels by advancing regulatory cooperation, fostering mutual recognition of certification schemes, and promoting open, fair, and transparent trade conditions;

Agree on a way forward to **review progress** of the Belém 4X Pledge on an annual basis until 2035 by means of ministerial meetings and annual reports on the global progress.

Encourage announcements and commitments made by financial institutions, the private sector, and civil society to support this pledge.

We call on other states to join the Belém 4X Pledge on Sustainable Fuels.

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Annex B. Endorsing Countries as of 28 September 2026

Andorra

Armenia

Belarus

Bosnia and Herzegovina

Brazil

Burkina Faso

Cabo Verde

Canada

Chile

Costa Rica

Côte d'Ivoire

Democratic People's Republic of Korea

Guatemala

Guinea

India

Indonesia

Italy

Jamaica

Japan

Kenya

Maldives

Mexico

Mozambique

Myanmar

Netherlands

Panama

San Marino

Sao Tome and Principe

Singapore

Sudan

United Arab Emirates

Zambia

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