



CREDIT: Juho Kuva/Visit Finland

FINLAND'S BLOSSOMING HYDROGEN ECONOMY: POWERING A CLEAN ENERGY FUTURE WITH FINNISH HYDROGEN

The race to decarbonize is on, and a small but mighty Nordic nation is sprinting ahead. Finland – a country with less than 1% of Europe's population – has set its sights on producing at least 10% of the EU's clean hydrogen by 2030. In an era when clean hydrogen is touted as the fuel of the future, Finland is quietly but determinedly building what Business Finland's Tero Ijäs calls "[the world's most attractive hydrogen economy](#)," with 50+ hydrogen projects in the pipeline totaling over \$24 billion in value. This ambitious hydrogen push is backed by Finland's unique blend of abundant clean energy, cutting-edge innovation, and a collaborative industrial ecosystem – all unfolding in [the world's happiest country for the eighth year in a row](#).

A Nordic Hydrogen Vision, with Global Ambition

Finland is positioning itself as a clean hydrogen powerhouse, backed by strong government targets and industry partnerships. Finnish representatives highlighted this momentum at the [World Hydrogen Summit 2025](#).

Not long ago, hydrogen was an afterthought in global energy talks. It is now center stage, and Finland has emerged as a leading protagonist. The European Union has set a bold target of 10 million tons of renewable hydrogen production annually by 2030, and Finland's government has resolved to contribute at least [one million of those tons](#) (10%). This means Finland aims to punch far above its weight, supplying a tenth of Europe's clean hydrogen within a decade.

“Finland has all the necessary building blocks and there are now more than 50 hydrogen investment projects in the pipeline,” notes Tero Ijäs, Business Finland’s Ecosystem Manager for Energy. Many of these projects are moving rapidly from plans to reality: Finnish firm P2X Solutions [just launched the country’s first industrial-scale green hydrogen plant](#) (20 MW) this year, one of the first in Europe.

At the World Hydrogen Summit in Rotterdam earlier this year, Finland’s pavilion buzzed with interest. With its northern geography and vast resources, Finland is making the case that it can be Europe’s hydrogen engine – the place where clean power, industry and innovation converge to fuel a carbon-free future. It’s an audacious vision, and one Finland is well prepared to realize.

“Finland has all the necessary building blocks and there are now more than 50 hydrogen investment projects in the pipeline.”

- Tero Ijäs,
Business Finland Ecosystem
Manager for Energy

Powered by 95% Carbon-Neutral Electricity

If hydrogen is the new gold rush, Finland’s energy mix provides the pick and shovel. In 2025, [95% of Finland’s electricity came from carbon-neutral sources](#) – a level of clean power penetration that few nations can match. Nuclear energy alone now delivers close to 40% of the country’s electricity, thanks to the addition of the Olkiluoto-3 reactor in 2023 (currently the most powerful nuclear reactor in Europe). Wind power has surged from virtually nothing



CREDIT: Adobe Stock

a decade ago to around a quarter of the electricity supply, with onshore turbines dotting the long Finnish coast and an [offshore wind boom](#) on the horizon. Hydropower and sustainable biomass make up the rest, ensuring that Finnish industry enjoys not just a low-carbon grid but also stable, low-cost energy. In fact, electricity prices in Finland are among the lowest in Europe, creating ideal conditions for electricity-intensive hydrogen production.

This clean, affordable power is the bedrock of Finland’s hydrogen economy. “Finland has the [most competitive supply of carbon-free electricity](#) in the EU,” says Markku Kivistö, Head of Cleantech at Invest in Finland. That advantage is crucial because electricity accounts for up to 80% of the cost of producing green hydrogen.

With Finland’s grid getting greener and stronger every year – bolstered by investments in transmission and a pipeline of new wind projects that could [exceed current national consumption](#) – hydrogen producers see Finland as prime real estate. The country has already received grid connection inquiries totaling an astounding [400 GW of new renewables](#), a sign of investor confidence in its energy future. In short, Finland can make hydrogen at scale without blowing its carbon budget or its energy budget, a one-two punch that few can match.

But it’s not just about electricity. Finland’s energy strategy has long emphasized reliability and security, traits that appeal to businesses and investors. The country famously built the world’s first permanent geologic repository for nuclear waste (Onkalo) to enhance nuclear’s long-term sustainability. Its grid is among world’s most reliable, and district heating networks crisscross its cities – an asset now being leveraged for hydrogen. Many new hydrogen projects are sited next to district heating and cooling systems, so [waste heat from electrolysis can be captured to warm or cool homes and factories](#), improving overall efficiency. Even Finland’s geography contributes: a robust natural gas pipeline network (a legacy of past imports) can be repurposed for hydrogen or e-methane distribution. Taken together, these factors form a unique foundation for a hydrogen economy – clean power, strong infrastructure, and a culture of energy pragmatism that ensures hydrogen in Finland is not only clean but also dependable and cost-effective.

From Industry Giants to Agile Startups, Everyone Innovates

Finland’s hydrogen rise isn’t happening in a vacuum. It is driven by an ecosystem of innovative companies, large and small, each tackling a piece of the puzzle. Wärtsilä, a storied Finnish engineering company, is retooling power generation for the hydrogen era. Known globally for ship engines and power plant technology, Wärtsilä is now pioneering hydrogen-fueled engines capable of providing reliable power when the wind isn’t blowing. The firm has successfully tested engines running on hydrogen blends. “Today, our engines already run on natural gas, biogas, synthetic methane, and hydrogen blends. With the world’s first large-scale 100% hydrogen engine power plant solution, we are taking a major step toward net-zero,” Wärtsilä declares – a critical innovation for grid stability in a renewables-heavy world.



Hybrid powerplant rendering CREDIT: Wärtsilä

Another big Finnish player, Fortum, one of the Nordic region's largest clean energy producers, is investing heavily in hydrogen to decarbonize industries. Fortum's pilot Power-to-X plant in Loviisa, Southern Finland, will come online by end of 2025, testing both alkaline and PEM electrolyzers side by side. This pilot – built next to a nuclear plant – will explore optimal hydrogen production methods and even feed byproduct oxygen to a nearby wastewater treatment plant in a clever symbiosis (a typical Finnish touch). Meanwhile, the country's leading research institute VTT is supporting hydrogen innovations from multiple angles, from advanced electrolysis materials to even biological hydrogen applications. VTT has also spearheaded Finland's leap into small modular reactors (SMRs) for energy and heat, which in the long run could provide emissions-free heat for hydrogen production. This kind of cross-sector innovation (nuclear complementing hydrogen, power grids integrating electrolysis, etc.) underscores Finland's holistic approach.



Fortum's pilot Power-to-X plant will be built next to an existing nuclear plant in Loviisa, Southern Finland.
CREDIT: Fortum

Beyond the household names, a cadre of startups and specialized firms is infusing Finland's hydrogen economy with agility and fresh ideas. At the World Hydrogen Summit 2025, Finland's joint stand featured companies covering the full spectrum of hydrogen tech. For instance, Convion, a Finnish fuel cell pioneer, develops high-efficiency solid oxide fuel cells and electrolyzers to enable distributed power and hydrogen production with remarkable efficiency. Elomatic, an engineering consultancy, helps clients design and build everything from hydrogen plants to entire Power-to-X supply chains. Power electronics firm Merus Power has carved a niche ensuring industrial electrolyzers don't disturb the grid – its Finnish-made active compensator systems smooth out the power quality issues that big hydrogen units can create. Then there's Salgrom, an Oulu-based startup with a novel angle: providing advanced fire suppression systems for hydrogen facilities and battery farms, proving that even safety tech is getting a high-tech, sustainable Finnish twist.



These smaller innovators are aiming big. Convion's solid-oxide systems, for example, can turn biogas into clean power or operate as ultra-efficient electrolyzers – a flexibility that attracted global attention. Merus Power is already exporting its grid stabilization tech to dozens of countries, showing how a hydrogen-related solution can scale internationally.

And in the realm of Power-to-X chemistry, Finland also boasts startups like Solar Foods, which uses hydrogen to create protein from thin air (literally combining hydrogen, captured CO₂ and microbes to produce nutrition), and Q Power, which provides the [methanation technology turning green hydrogen and CO₂ into synthetic methane](#). “Another key advantage of Finland’s hydrogen economy is some 100 companies in Hydrogen Cluster Finland representing the full value-chain and innovators,” [notes Ijäs](#), pointing to working together on new hydrogen solutions.

SOLAR FOODS



Finland’s hydrogen capabilities are grounded in decades of sustained public and private R&D. Flagship programs like the WISE ecosystem, spearheaded by Wärtsilä, are creating zero-emissions-ready energy systems and hydrogen-fueled engine platforms. At the national level, the Hydrogen Research Forum Finland (H₂FINLAND) brings together 13 academic institutions to accelerate hydrogen knowledge, innovation, and policy. These long-term efforts, supported by Business Finland, have helped Finland develop some of the most scalable and field-tested hydrogen solutions now ready for export.

Hydrogen Valley

Finland’s hydrogen story is not just about individual projects and companies, but entire regions transforming into hydrogen hubs. In the north, the Oulu region has [branded itself](#) the “Hydrogen Valley” of Finland’s Arctic frontier. Centered around the city of Oulu, this region now has 2.4 GW of electrolyzer capacity under development, the most extensive hydrogen hub in Northern Europe. Here, renewable energy developers like Oulun Energia, Verso Energy, Energiequelle, and ABO Wind are collaborating with technology providers to build a full value chain from green electrons to green molecules. With 5,000 MW of new grid capacity earmarked for hydrogen projects in Oulu South alone, investors find shovel-ready sites complete with strong power connections and even pre-zoned industrial parks for hydrogen plants. Biogenic carbon dioxide – a vital ingredient for making e-fuels like methane and methanol – is available from nearby bioindustry, and the local authorities are actively courting projects with streamlined permitting and support services. The result: a truly plug-and-play environment for Power-to-X ventures. Finland is the most natural starting point for Europe’s hydrogen value chains, due to its northern location and continental connectivity.



Further south, other Finnish regions are joining the hydrogen boom. The Tampere region (branded “Hydrogen Hills”) leverages its position on Finland’s main energy and transport corridors – a robust 400 kV grid and proximity to 80% of Finland’s industrial capacity – to attract projects in e-fuels and hydrogen logistics. And on the southwest coast, the Turku region is tapping its maritime heritage for green shipping fuels: Green North Energy is developing a 280 MW green ammonia plant at the Port of Naantali (to fuel next-generation fertilizer and shipping), while Sweden’s Liquid Wind is permitting a 160 MW e-methanol facility to supply carbon-neutral fuel for Baltic Sea vessels. All these projects benefit from a high level of coordination – local universities and vocational institutes training a skilled workforce, city governments setting climate targets (Turku aims for carbon neutrality by 2029), and an ethos of public-private partnership to get things done. Rather than isolated efforts, Finland’s hydrogen projects form a tightly woven network that connects producers, users and research. This ecosystem approach means that when a foreign company or investor comes to Finland, they aren’t just getting a single project – they’re joining an entire hydrogen cluster where everything from R&D support to infrastructure access is part of the package. As Markku Kivistö [observes](#), Finland’s reuse of existing assets like pipelines and its culture of collaboration “enables a strong business model for the production of renewable fuels.”

A Stable Launchpad for Investment

Behind Finland’s hydrogen success story is a perhaps surprising factor: trust and stability. This nation of 5.5 million has been ranked the world’s happiest country for eight years running, a fact often attributed to high trust in society and good governance – qualities that matter in business too. For companies eyeing multi-decade hydrogen investments, Finland offers an environment of predictability and support. Regulations are consistent, permitting processes are efficient, and there’s strong political consensus on the clean transition (Finland’s legally binding target to be carbon-neutral by 2035 speaks to that commitment). “In Finland, hydrogen projects are built on solid business cases. We do not have extensive national subsidy schemes for hydrogen like in some other countries – this is deliberate to ensure long-term viability,” [explains Business Finland’s Tero Ijäs](#). In other words, Finland isn’t banking on short-lived incentives; it’s cultivating hydrogen growth in a way that can stand on its own economic legs. That approach is attracting international partners who value a level playing field and a knowledgeable government partner.

“In Finland, hydrogen projects are built on solid business cases. We do not have extensive national subsidy schemes for hydrogen like in some other countries – this is deliberate to ensure long-term viability.”

- Tero Ijäs,
Business Finland Ecosystem
Manager for Energy

The Finnish model also emphasizes partnership across sectors. Business Finland’s Hydrogen & Batteries program, led by Ilkka Homanen, [explicitly links](#) hydrogen with the battery and electrification ecosystem, reflecting a strategy to integrate clean technologies for maximum impact.

“Finland’s position and reputation are good, but we need to be fast and agile to get and stay ahead of the global competition,” Homanen says, underscoring that complacency has no place even in a leading nation. That mindset – continuously improving, staying agile – is baked into Finland’s innovation culture. It’s evident in the way over [100 Finnish organizations formed Hydrogen Cluster Finland](#) to share knowledge and accelerate projects. It’s also evident in the international MOUs and collaborations Finland is striking: for example, a 2023 Memorandum of Understanding with the United States Department of Energy to cooperate on advanced nuclear and clean fuels, and partnerships with companies from Norway to Japan on hydrogen tech. Finland is open for business and collaboration, and it wants the world to know.

The economic stakes are considerable. [Studies project](#) Finland’s hydrogen economy could contribute €30+ billion to GDP by 2035 and create 60,000 new jobs, with even greater gains by 2045. These numbers – huge for a country the scale of Finland – represent a transformation of the industrial base, from steel and chemicals to new sectors like e-fuels and hydrogen logistics, and a significant opportunity for international partners to join in that growth. For U.S. companies and investors, Finland’s hydrogen push offers multiple entry points. Whether it’s a startup seeking R&D collaboration, a manufacturer looking for a foothold in Europe, or a renewable developer searching for high-impact projects, Finland’s combination of clean energy, tech talent, and pro-business infrastructure is a compelling draw.

An Invitation to Collaborate

Finland’s emerging hydrogen economy is an inspiring national strategy; it is also a story with global relevance. It’s about how a country known for saunas and Nokia phones reinvented itself as a clean energy powerhouse – and why that matters from Brussels to Washington to Silicon Valley. It’s a story of how climate goals, when paired with innovation and pragmatism, can create new industries. And it’s a reminder that big solutions to global problems sometimes come from smaller nations thinking big. As the world seeks ways to slash emissions in heavy industry, aviation, maritime transport, and beyond, Finland is offering a blueprint that blends high tech with deep sustainability.

For journalists, analysts, and clean energy watchers, there’s never been a better time to look north. The Finnish hydrogen economy is gathering momentum, and Business Finland is opening the door for international media to learn more.

Finland’s message is clear: when it comes to the clean hydrogen economy, we’re open for business and collaboration. Whether you’re looking for a success story to inspire readers, a case study in clean industrial policy, or the next big investment news in cleantech, look to Finland.

“Our goal has always been to make Finland’s hydrogen breakthroughs available globally. These technologies are built to scale, and we’re ready to collaborate with partners across the U.S. and beyond.”

- Ilkka Homanen,
Business Finland

For more information, media inquiries, or to schedule an interview with Business Finland’s hydrogen experts, please contact the media representatives listed below.

In the United States the material is provided by Business Finland USA, Inc. on behalf of Business Finland Oy.