

# Growth & economic transformation

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From being an impoverished nation reliant on fishing, Iceland has become an innovative, diverse and robust economy; a global leader in green energy; and a bucket-list destination for globe-trotters



## ICELAND







The fishing and fish processing industry contributes 8%-10% of Iceland's GDP



In 2023, 1.1 million international travelers visited Iceland during the aurora months



Iceland has gained expertise and recognition in the green transition

## Iceland: A tale of economic takeoff and diversification

From being an impoverished nation reliant on fishing 100 years ago, the Nordic island of Iceland has transformed itself into an innovative, diverse and buoyant economy and, more recently, a bucket-list destination for globe-trotters

Located midway between Europe and the U.S. in the Atlantic Ocean, Iceland's flourishing economy expanded by 4.1% in 2023. This reflects the continuation of an extraordinary turnaround for the "Land of Fire and Ice," which celebrated its 80th anniversary as an independent republic last year.

"The Iceland story is quite remarkable. We were among the poorest in Western Europe a century ago," states former Prime Minister Bjarni Benediktsson. "Our gross domestic product has been growing faster than most other countries. We're also among a group of nations with the highest GDP per capita and that means we have very strong purchasing power. We've translated the challenges of being just below the Arctic Circle into some of the world's best living standards. That's based on our ability to reach global markets — we are, first and foremost, an exporting country."

As part of its profound socio-economic transformation, the country has nurtured a network

of free trade agreements, including membership of the European Economic Area that contains over 30 countries. It has also developed a diverse future-focused export mix, become a worldwide leader in environmental sustainability and consistently ranks first in the World Economic Forum's Global Gender Gap Index.

"We're a peaceful democracy with a story to tell about how utilizing green energy and working on gender issues can translate into a strong economy with tremendous growth potential," Benediktsson asserts. This outlook is drawing in international investors, with the island recording investment inflows of \$977 million in 2023.

Pétur Þ. Óskarsson is CEO of the public-private partnership Business Iceland, the national investment, trade and tourism promotion agency. He points out: "When it comes to foreign direct investments, the U.S. is by far the most important country for us. It's also our single largest trade partner and about a third of our



Pétur Þ. Óskarsson  
CEO, Business Iceland

tourists come from there. We have a strong, special relationship with the U.S. as a partner and ally."

### Expertise in innovative exports

The Icelandic economy has diversified substantially, but its traditional pillars are still core contributors to GDP. "Our staple export industries, like seafood and energy-intensive sectors such as

aluminum, are doing well and it's important to foster them," says Óskarsson. "We work closely with the seafood and food production industries, and there's strong global demand for Icelandic seafood that is sustainably fished from the pure waters of the North Atlantic."

In tandem, the nation has become a hotbed for new fishery and food technologies, especially in relation to aquaculture, which is now a notable part of its export mix. "Iceland has unique environmental conditions for land-based aquaculture, including ample clean water and energy," he explains.

All the island's electricity and heating needs are supplied by hydroelectric and geothermal sources, and sophisticated technologies it has developed in those areas make up a further key segment of its export portfolio. "We're a role model to the world when it comes to the production of green energy," Óskarsson states. "I must stress

### 8 reasons to invest in Iceland

- 1 An advanced economy with 5 key pillars: fisheries and food; energy and green solutions; innovation and technology; arts and creative industries; and tourism.
- 2 Strategically located between Europe and North America with excellent flight, maritime and digital connectivity.
- 3 Competitive corporate taxes, plenty of land available for businesses, plus generous incentives for R&D and creative projects.
- 4 Abundant 100%-green energy from hydro and geothermal resources.
- 5 Part of the European Single Market containing over 450 million people.
- 6 A global frontrunner in sustainability, quality of life, equality and safety.
- 7 A young, highly skilled population of about 400,000 people.
- 8 Support from Business Iceland, which has access to consultants in 40 countries.

Iceland's expertise in geothermal applications. We have the most experienced scientists and engineers that have solved how to harness that energy. Icelandic companies are also at the forefront of carbon capture, utilization and storage."

The country's sustainable energy is a compelling attraction for investors working in green industries or seeking to lower their carbon footprints. As an illustration, data centers are a fast-growing sector of the economy, with operators also profiting from a climate that enables natural cooling and Iceland's extensive fiber optic cable connectivity with the U.S. and Europe.

Overall, "Iceland has seen a dramatic shift toward innovation and technology-based industries.

"Companies have grown from startups to having hundreds of employees in Iceland and abroad. In 2023, Kerecis, which developed technology to use cod skin for treating persistent wounds, was sold to Denmark's Coloplast for over \$1 billion, making it the first Icelandic unicorn. I'm certain it will not be the last," the CEO declares. "We're also seeing a new growth field, the biosimilar industry, in which a few companies have plans that are enormous by Icelandic scales. We will definitely do our best to support those businesses."

Another focus for Business Iceland is building on a rich cultural heritage that goes back 1,000 years to the Norse myths. "We have a joint project with the government called Creative Iceland, through

**Iceland has seen a dramatic shift toward innovation and technology-based industries. The important factor behind this is that the government has put strong emphasis on research and development."**

Pétur Þ. Óskarsson, CEO, Business Iceland

The important factor behind this is that the government has put strong emphasis on research and development, and making grants available for companies," notes Óskarsson. Incentives including tax credits of up to 35% of R&D expenses are available, which has led to total annual spend on innovation rising to 2.78% of GDP, while the high-tech manufacturing and services sector is now the country's biggest business export revenue generator.

The government's prioritization of both innovation and advanced education has persuaded established firms to set up R&D hubs and bolstered entrepreneurial-

which we work with individuals and companies to promote our arts and creative industries outside of Iceland," Óskarsson states.

"Many Icelandic musicians, visual artists and authors have made a splash on the international stage, and our film industry is booming, with more and more international productions being filmed here, not least because of our production rebate program."

### A unique tourist destination

The nation's biggest foreign currency earner, however, is tourism, with the island welcoming about 2.2 million visitors in 2023. That's over four times the number it re-

ceived in 2010 and 15% higher than its pre-COVID numbers in 2019. "We run the Visit Iceland promotional agency, which has been Business Iceland's most visible role for the past 15 years as tourism has been outgrowing other export industries," he discloses.

One reason for this is that the island is now recognized as a perfect year-round destination. "We've seen a huge shift in seasonality and in the distribution of tourists across Iceland. The country is spectacular all year and you can find magical places all over the island," the CEO explains.

Going forward, the country is determined that tourism will remain sustainable. "I believe we will continue to see less seasonality and a wider dispersal of tourists going further into less visited areas. We want to foster a thriving, responsible tourism industry built in harmony with the people of Iceland," Óskarsson affirms.

Former Minister of Culture and Business Affairs Lilja Alfreðsdóttir agrees: "We're avoiding mass tourism, because one thing that makes Iceland unique is the space you

have and its calmness." The island also stands out for the exceptional quality of its natural environments, which include volcanoes, glaciers, hot springs and clear skies offering amazing views of the Northern Lights. "Not only do we have stunning nature, we've succeeded in creating a holistic tourist experience," Alfreðsdóttir adds. "Visitors enjoy our vibrant cultural scene and food, with free-roaming Icelandic lamb being a true star on a plate that I highly recommend."

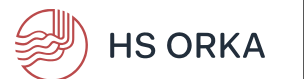
Luckily for U.S. travelers, visiting Iceland has never been easier and flights have been unaffected by the recent volcanic eruptions that so many want to see. There are around 14,100 direct flights a year from its international airport to 15 places in the U.S. and more are in the pipeline. Bogi Bogason, CEO of the national airline Icelandair, says: "Bearing in mind the size of Iceland's population, which is just shy of 400,000, it's remarkable to see the high connectivity that we have. Iceland is and will continue to be a very attractive, safe and interesting tourist destination."

## 50 Years of Innovation

For half a century, HS Orka has harnessed Iceland's geothermal power to overcome challenges, delivering sustainable, waste-reducing energy solutions.



www.hsorka.com





# Internationalized innovation at its core

Innovation-led exports are a new pillar of the Icelandic economy, thanks to generous incentives and effective funding programs for research and development

Ranked 23rd in the World Intellectual Property Organization's Global Innovation Index 2024, Iceland's annual spend on research and development has shot up from 2.2% of its gross domestic product to around 2.8% since 2015.

Both governmental and corporate inputs into R&D have expanded considerably, with the private sector's contribution having risen from about 65% to 71%. "That's among the highest levels achieved in Organisation for Economic Co-operation and Development (OECD) countries, which is a significant development that has happened in the last decade," states Ágúst Hjörtur Ingþórsson, director general of the Icelandic Centre for Research (RANNIS), the public entity that supports research, innovation, education and culture.

This growth in spending on R&D reflects wider changes in the island's socioeconomic makeup, which Ingþórsson says started in 1994 when the country joined the European Economic Area and the European Union's single trade market. "This transformed Iceland — beyond market access, Icelandic society is much more open and innovation-driven than it was 30 years ago, and all our economic sectors have been internationalized. European cooperation has also transformed our universities into more internationally focused institutes," he reveals.

"Traditionally, our economy revolved around fish exports, energy and, in the last two decades, tourism has developed at great pace. But now we have a fourth pillar, which is innovation-led exports, and that's where R&D comes into play. Iceland's internationalization is a very important element in the growth of that pillar, because businesses in these sectors tend to be operating in an international environment."

RANNIS has been a crucial catalyst of this metamorphosis. Operating under the auspices of the



**Ágúst Hjörtur Ingþórsson**  
Director General, RANNIS

Ministry of Higher Education, Science and Innovation, the institute is responsible for national funding of research and innovation, as well as coordinating Iceland's participation in related international cooperative agreements, such as the EU's Horizon program.

"In 2013, it was decided to make RANNIS a one-stop shop, catering for not just research and innovation but also education and culture. Today, we manage nearly 30 funds, ranging from very small to very large, and eight international programs," Ingþórsson notes.

### Diverse funding tools

The institute administers two main competitive public funding instruments for national research and innovation, which have doubled in size in the last 10 years. One is the Icelandic Research Fund that is open to scientific initiatives from doctoral students, universities and companies. Through this, RANNIS has awarded grants of over \$23 million for the 2024-2026 period, with 67 new projects being added to its portfolio in 2024.

The second is the \$22-million Technology Development Fund that invests in young innovative businesses. "Among our other programs are a smaller infrastructure fund and a strategic research fund, which will probably be increasing," he discloses.



RANNIS has supported Carbfix from first concept to industrial-scale operations

RANNIS is also tasked with ensuring that the country's liberal incentives for R&D are allocated appropriately. "The biggest tool that the government has is the tax deduction and refund scheme for research and innovation, which has increased substantially. This additional funding was part of Iceland's reaction to COVID, but we expect it to be made permanent. The government is very much committed to continuing its strong support of the sector," asserts Ingþórsson.

The Icelandic innovation incentive system is now one of the most generous worldwide, according

**RANNIS is not trying to narrow down sectors for development: it's up to universities or companies to decide what direction they want to go in. We simply select the best projects for our support."**

Ágúst Hjörtur Ingþórsson, Director General, RANNIS

to the OECD. Small and medium-sized companies can have up to 35% of their R&D activities tax deducted if they are paying income tax and, if they are not profitable yet, they are eligible for a refund. Larger companies benefit from up to a 25% deduction, with a cap of \$7 million.

"This support scheme has grown to over \$120 million in 2024, and you can see a direct correlation in corporate R&D expenditure increase and the launch of this scheme in 2015," he says.

According to Ingþórsson, "My priority is to maximize what we get out of our national support initiatives, as that influences our ability to maximize Iceland's participa-

tion in international collaboration, which is always more valuable than just the funding it brings."

By following this ethos, RANNIS has helped to double Iceland's involvement in European programs, which run in seven-year cycles, over the last decade. "The 2014-2020 cycle was our most successful ever," he insists. "For example, the total cost of projects that Iceland participated in within the EU's large Horizon research program was eight times the cost of Iceland's financial contribution. So, we're getting access to knowledge production and innovation that

is eight times more valuable than what we put in. Through these projects, our universities gain connections and continue to improve, while companies get market and collaboration opportunities too."

Among the other EU initiatives that RANNIS oversees, Ingþórsson highlights the Erasmus+ program, which promotes cross-border education and training for young people. During this program's 2014-2020 cycle, more than 14,000 Icelandic students, teachers, volunteers and youth workers spent time abroad, while almost 27,000 Europeans arrived in Iceland. "These people come to our schools, they do their internships or work experience here after graduating

from universities, and this contributes to the internationalization of Icelandic companies," he discloses.

### Long-term nurturing of innovators

Both the government's and RANNIS's R&D policies are mainly industry-agnostic, which has enabled diverse advanced economic activities to thrive on the island, including information and communications technology, life sciences and biotechnology.

"The Icelandic system is a bottom-up one. RANNIS is not trying to narrow down sectors for development: it's up to universities or companies to decide what direction they want to go in. We simply select the best projects for our support," states Ingþórsson. "Even in our traditional fishing and energy sectors, research and innovation have been key elements in maximizing the value of our resources."

In fishing, Iceland's focus on innovation has made it a global leader in high-tech maritime equipment and technologies. The clearest illustration of how the country is adding value to its oceanic resources, however, is proba-

bly Kerecis, which is transforming cod skin into human tissue regeneration and protection products.

Since 2010, this firm has been awarded 11 grants from the Technology Development Fund, as well as benefiting from European funding and the country's tax deduction and refunding scheme. That backing has helped turn a small startup into a worldwide force and Iceland's first unicorn. "Last year, the value of Kerecis' exports made up 20% of the total value of all our exported cod. It's a very good example of how the support system in Iceland works," he comments.

Another is Carbfix, which has developed a unique way to permanently store carbon dioxide in the ground. "Carbfix started with a small research grant to the University of Iceland, then grants from the Technology Development Fund and the European Horizon program. After years of development, it received the single-largest financing grant from the EU's Innovation Fund, and its ambition is to pump down around 3 million tons of carbon dioxide a year," details Ingþórsson.

### U.S.-Icelandic cooperation

Although most of Iceland's international research partnerships have been Eurocentric in recent years, it maintains strong links with U.S. universities and is building up its ties with North America.

"For example, the Nordic and Baltic countries have put some money into a pot for a large Arctic research program. Both Canada and the U.S. are joining with sig-

collaboration, and we offer a very receptive research and innovation environment. 'Opportunity' is the word that sums up what Iceland stands for now."

The nation's vibrant capital is at the heart of this conducive environment. "We've created incubators and accelerators, and worked hard to foster innovation clusters, such as our energy and ocean clusters, which provide spaces for

**Iceland is really keen on developing strong international collaboration, and we offer a very receptive research and innovation environment."**

Ágúst Hjörtur Ingþórsson, Director General, RANNIS

nificant funding. Iceland is always going to be a modest player on the research scene, but we have the location and the research infrastructure that is needed to support programs like this. There's lots more potential for collaboration between Iceland and the U.S. on Arctic issues, as well as areas of sustainability and energy," Ingþórsson declares.

"Iceland is really keen on developing strong international

people to develop ideas, start companies and collaborate," says Einar Þorsteinnsson, the city's mayor.

"Reykjavik's strong social capital nurtures innovation and collaboration across various sectors, from the blue economy and energy to biotech and pharmaceuticals. And with easy access to information and connections, advancing projects is efficient here. Reykjavik is always open to new ideas and ready for business."

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# Harvesting energy from the Earth to support a circular economy

Over the last 50 years, Iceland has become a world leader in sustainable energy systems by harnessing the power contained in its geothermal fields

More than a century ago, Iceland started capitalizing on the vast energy potential held in the glacial rivers and volcanic fields that cover much of the island. Today, 85% of the country's total primary energy needs are satisfied by those domestic renewable sources, including 100% of its electricity and heating requirements.

Tómas Már Sigurðsson, CEO of the nation's third-largest energy company, HS Orka, explains: "Initially, Iceland relied on hydroelectric power but, during the oil crisis in the 1970s, the government invested heavily in geothermal energy. Our position on the North Atlantic Ridge, between the European and North American tectonic plates, gives us access to active geothermal areas along a volcanic belt. These provide both steam and hot water, which we use to heat buildings and generate electricity."

As a result of the country's investments in hydropower and geothermal technologies, Iceland has been relatively unimpacted by global energy supply and inflation issues throughout the following decades, and has benefited from constant supplies of affordable green power. "Iceland's renewable energy sector has transformed its economy over the last five decades, making it a highly livable and economically resilient nation," Sigurðsson asserts.

The country's status as a global leader in green energy, particularly geothermal, is thanks in no small part to the expertise of HS Orka. The company was established 50 years ago as a public company supplying geothermal district heating to local communities on the island's Reykjanes peninsula. With its ownership now split between a group of Icelandic pension funds



**Tómas Már Sigurðsson**  
CEO, HS Orka

and an infrastructure investment fund overseen by the U.K.'s Ancala Partners, HS Orka has since expanded its activities and national presence.

The firm currently owns and operates two of Iceland's biggest geothermal plants — Svartsengi and Reykjanesvirkjun — which lie close to each other on the peninsula and have a combined 196MW

**Our Resource Park operates as an eco-park, where businesses connect and support each other, fully utilizing geothermal resources."**

Tómas Már Sigurðsson, CEO, HS Orka

of installed energy capacity. It also has two hydro facilities that contribute a further 20MW: Fjarðarvirkjanir in the east of the country and Brúarvirkjun in the south.

"Electricity production is now our main revenue source. Alongside our plants, we actively manage energy from independent hydropower sources, generating around 8% of Iceland's national renewable capacity," the CEO states. "We serve 10% of the population with hot and cold water, and we produce electricity for the nation-



Two of Iceland's five largest geothermal plants are owned and operated by HS Orka



HS Orka's electricity generation portfolio includes two hydropower facilities

al grid, serving homes and a large share of the nation's small and medium-sized enterprises."

### A zero-waste pioneer

One of the firm's most notable achievements is being a trailblazer in zero-waste energy. "From the beginning, HS Orka has prioritized sustainability by fully utilizing all geothermal resources. Our plants

produce not only electricity, steam and hot water, but also heat, brine and carbon dioxide that support numerous businesses," he says.

To facilitate this, the company set up the pioneering Resource Park near to its two geothermal facilities, and less than 20 miles from the country's international airport, capital and main port. Around 2,000 people are employed by the diverse enterprises currently based in this park, which are operating in sectors such as food, aquaculture, cosmetics, skincare,

biotechnology, the energy transition and tourism. The number of occupants is growing, although there is plenty of space available for more.

"We've created a circular economy model, generating jobs, export revenue and growth. Our Resource Park operates as an eco-park, where businesses connect and support each other, fully utilizing geothermal resources," he enthuses.

Sigurðsson offers some illustrations of how industries are benefiting from being part of this ecosystem: "The Blue Lagoon, Iceland's top tourist attraction, utilizes our brine; we also extract materials like silica from brine, which is used in skincare products; and companies use our steam to dry fish products. Furthermore, as well as hot water, our geothermal plants generate valuable lower-temperature energy that can drive industries. Aquaculture is a prime example — with controlled-temperature lava-filtered seawater from our plants being used to farm trout and salmon."

The CEO adds: "In our resource park, Carbon Recycling International has pioneered technology

to create green methanol from our steam, electricity and cold water — technology that is now used globally. We see major opportunities to grow the methanol market, alongside hydrogen production."

The Icelandic government is encouraging investment in hydrogen and other e-fuels, mainly for use in transportation and fishing. Decarbonization of these sectors are considered vital for the country to reach its target of becoming carbon neutral and completely fossil-free by 2040. To meet those goals, the island needs to ramp up its electricity generation, taking further advantage of its geothermal and hydro potential, as well as beginning to harness its excellent conditions for wind power.

HS Orka is poised to be a central participant in this. "\$100 million upgrades to our Svartsengi plant are ongoing, which will increase its production to 85MW from 66MW. This is in addition to the already completed 30MW expansion of our Reykjanes plant, which was commissioned in 2022," says Sigurðsson. The company's 2023 acquisition of the Fjarðarvirkjanir

hydroelectric facility is another element of its wider expansion plan, with HS Orka having identified significant investment opportunities in small-scale hydro, wind and geothermal energy projects.

The firm's team of world-class geoscientists have amassed an arsenal of innovative technologies that will be a crucial factor in the latter's success. "By using advanced modeling and artificial intelligence, developed in-house and in partnership with U.S. institutions, we optimize resource management and extraction, ensuring sustainable, long-term production. This approach offers a unique model for operating geothermal fields," he reveals.

Sigurðsson believes more countries should tap into the island's extensive geothermal knowledge. "I also see immense opportunities for green energy, especially geothermal, in Iceland. We should foster partnerships with experts from diverse energy backgrounds who can bring their experience and resources to geothermal as a renewable solution. For example, by combining Iceland's geother-

mal expertise with U.S. oil and gas drilling experience, we could advance geothermal energy and hydrogen globally," he concludes.

Although HS Orka was the first to champion zero-waste geothermal energy, others have followed in its footsteps. One of them is ON Power, Iceland's second-biggest electricity provider, which has created a circular-economy industrial park alongside its Helliheiði

**Our geothermal plants generate valuable lower-temperature energy that can drive industries. Aquaculture, is a prime example."**

Tómas Már Sigurðsson, CEO, HS Orka

geothermal power plant. Two synergistic residents of this site have utilized the resources it produces to make the country a frontrunner in carbon capture and storage.

The first, Climeworks, has built the world's largest direct air capture plant, which can remove 36,000 tons of carbon dioxide a year from the atmosphere. The second, Carbfix, has developed innovative technology that permanently stores this gas in rock.

Both ON and Carbfix are subsidiaries of Reykjavík Energy, a public utility group that is mainly owned by the capital city. Reykjavík's mayor, Einar Þorsteinsson, insists that the country's investment in geothermal has been invaluable for the economy in recent years.

"While Europe faced skyrocketing energy prices after the invasion of Ukraine, Iceland remained stable. In today's world, where energy

resources are increasingly weaponized, energy independence is a major advantage," he states. "Geothermal is an untapped resource in many parts of Europe and the U.S. While most focus on wind and solar for green transformation, geothermal provides a stable, reliable baseload, making it the perfect complement to these. China is rapidly expanding in geothermal energy — it's time Europe and the U.S. took it more seriously."

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PROTECTED DESIGNATION OF ORIGIN



# Icelandic data centers: Sustainable, cost-effective and connected to the world

The country is becoming a key global hub for data center services, with customers increasingly taking advantage of its strong value proposition for the sector



Borealis operates three of the ten data centers in Iceland

Iceland's data center industry is expanding rapidly. The sector's export revenues have increased fivefold over the last decade, with the International Monetary Fund estimating that it contributed 5.3% of the nation's gross domestic product in 2023.

One of the market leaders is Borealis Data Center, a specialist in colocation, high-performance computing (HPC) and artificial intelligence (AI) solutions. Established in 2014, the company operates three campuses across the country, which have a combined storage capacity of 60-plus MW.

Borealis' CEO Björn Brynjúlfsson explains why the sector is booming: "Iceland has a strong value proposition for data centers, primarily because its ambient conditions are great. We experience mild winters and cool summers, allowing for efficient cooling and low energy consumption."

Not only do Icelandic data centers require comparatively little energy, the power they use is 100% green, competitively priced and electricity contracts are long. As a result, clients can predictably decrease their carbon footprints and their costs.

Iceland's geographical position is another plus. "Borealis supplies sustainable data center solutions



**Björn Brynjúlfsson**  
CEO, Borealis Data Center

to the world. And with our location between Europe and the U.S., we're naturally placed to serve both of those markets," says Brynjúlfsson. "For a company operating on the two continents, it's logical to have some of your workloads in Iceland where you benefit from connectivity in both directions."

The country has one fiber optic link to North America and three to Europe, the newest of which was launched in 2023. "This cable directly connects Iceland with Dublin, one of the world's major data center hubs. It provides a secure, reliable connection between Icelandic and Irish data centers, as well as leading global telecoms and corporations," he states.

The nation also ranks well for data safety, as the government is a firm advocate of privacy laws and complexes are sited in in lower seismic risk areas. "Borealis' campus in northern Iceland is in one of the most favorable data center locations worldwide. Bore-

alis' reveals. "We have a twofold strategy to continue expanding our sustainable solutions: external expansion and internal value creation."

As part of the first prong of this strategy, Borealis purchased a Finnish data center in 2024. The firm has also announced that it is

**"We're not only building the future of our company and our customers, we're helping to protect the planet by providing clean, reliable and certified data center solutions."**

Björn Brynjúlfsson, CEO, Borealis Data Center

alis' campus in northern Iceland is in one of the most favorable data center locations worldwide. Iceland ranks at the top globally and our Blönduós campus is carefully chosen with minimal natural risk in mind," notes Brynjúlfsson. "On top of these benefits, Iceland has a highly qualified workforce, fully capable of managing data centers and handling compute workloads efficiently."

### Advanced data services

Backed by the French investment fund Vauban Infrastructure Partners, Borealis has leveraged Iceland's advantages to support its growth. "We've constantly scaled our operations to meet the needs of AI and HPC customers, enhancing our expertise and capabilities," he

reveals. "At the same time, our strategy for internal growth is focused on adding value for customers and attracting those with greater requirements. The industry is rapidly evolving, so we are equipping ourselves to meet future demands," he reveals.

Borealis' dedication to supplying state-of-the-art services led to it becoming Iceland's first colocation operator to be recognized by the international Open Compute Project as "OCP Ready" in 2023. This status confirms its ability to sup-



Iceland's mild climate ensures year-round natural cooling, minimizing costs

port intensive workloads efficiently and sustainably. It also holds International Organization for Standardization 27001 certification for information security, ISO 27017 for cloud activities and ISO 27018 for compliance with general data protection regulations.

As well as fulfilling customers' increasing certification requirements, the firm is constantly introducing new services. Brynjúlfsson explains: "Our customers trust the

heart of their companies to us. Their IT must work. If not, they have a serious issue. We take that responsibility seriously and strive to offer the best services."

To stay ahead of the competition, Borealis has a strong and expanding partner network. For example, it has recently become an accredited post-sales service provider for Supermicro, the U.S.-based computing infrastructure and technology giant. "Through partnerships



All businesses in the country benefit from excellent digital connectivity

like this, we can take a holistic approach and deliver end-to-end solutions for running clients' equipment remotely," he states. "We work with many U.S. tech companies and solution providers, in addition to having U.S.-based customers, and we envisage these collaborations growing."

The CEO is confident that the sector will carry on thriving. "Computer rack density is increasing, which requires more energy and

cooling. Therefore, global workloads will move closer to energy sources and locations offering economical cooling," he asserts. "Iceland has the capabilities to be one of the world's leading data center hubs and Borealis is well equipped to be instrumental in making that a reality. We're not only building the future of our company and our customers, we're helping to protect the planet by providing green, reliable and certified data center solutions."

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- 5.3%** of Iceland's GDP in 2023
- 100%** powered by green energy
- 4 submarine cables** Connecting to Europe and the U.S.
- 1.05 -1.2** Global-low power usage efficiency





The island's sheep spend their lives foraging in wild pastures



Icelandic lamb is served in most of the country's hotels and restaurants

## Free-roaming Icelandic lamb: An unmissable gastronomic star on a plate

Centuries of tradition and free-range rearing in Iceland's unpolluted countryside make the country's pure-bred lamb a unique culinary pleasure

Agriculture is a significant contributor to the Icelandic economy, with the sector generating revenues of around \$410 million in 2022, according to the latest data available from Statistics Iceland.

A variety of distinctive high-quality natural foods and drinks are produced on the island, including the yogurt-like skyr, vodkas and pure spring waters, plus increasing volumes of organic vegetables and algae.

However, Iceland is probably best known for the delicious output of its sheep farms, which are responsible for about 27% of the entire agricultural sector's sales by value.

**Our lamb meat is rich in vitamin B12, folate, potassium and zinc. The levels are high enough that they can be used for nutrition declarations on packaging and marketing under European law."**

Hafliði Halldórsson, CEO, Icelandic Lamb

As an indication of how highly Icelandic lamb is regarded internationally, it became the country's first product to be awarded Europe's protected designation of origin (PDO) status in 2023. This puts it in the same elite category as goods like France's champagne

and Italy's Parma ham — the best of the best and impossible to replicate outside of their geographical region.

The PDO seal now appears on all of the island's lamb products, as does the Icelandic Lamb label of origin, which is owned by the country's sheep farmers.

These marks "highlight the quality of the product and its uniqueness," states Hafliði Halldórsson, CEO of Icelandic Lamb, the farmers' marketing agency that comes under the umbrella of Inspired by Iceland, a public-private body which promotes the nation's most outstanding goods and services in North America.

The country's lamb stands out for a number of reasons. The first is that all sheep on the island hail from one pure breed and no cross-breeding ever takes place. "It's a protected species, one that no other country has," Halldórsson notes. The second factor is that,



Hafliði Halldórsson  
CEO, Icelandic Lamb

"Traditionally, lamb is a very important component of the Icelandic food culture," he adds.

Sheep farming is engrained in the country's heritage and, even today, no Christmas or other major celebration would be complete without lamb on the table.

About 1,100 years ago, the Vikings started farming the hardy breed on the island and many of the agricultural practices they introduced have been passed down through the generations to the approximately 1,500 small, family-run farms that currently operate. According to Halldórsson, "Sheep farming is carried out all around the island. In many of the most rural areas of Iceland, it's vital to their economies."

In keeping with tradition, early Spring sees those farms shepherd newborn lambs into the island's pristine countryside, where they

are free to graze in wild meadows and mountain pastures, drink from clean natural water sources and breathe in Iceland's unpolluted air.

From this point on, farmers keep a dedicated watch over their herds, ensuring they remain safe, healthy and free from any contact with growth-promoting antibiotics, hormones, genetically modified organisms, pesticides and herbicides.

This quality of life makes Icelandic lamb exceptionally lean and tender. It also gives it a uniquely enticing taste, with the meat flavored by the abundant aromatic herbs, berries and grass that the animals have foraged.

Strict regulations and quality control systems going beyond international standards are in place to guarantee the purity of the country's lamb products. On top of this, the trade body undertakes research to assess nutrient and pollutant content.

"Our lamb meat is rich in vitamin B12, folate, potassium and zinc. The levels are high enough that they can be used for nutrition declarations on packaging and marketing under European law," states Halldórsson.

"Furthermore, our research has shown very low levels of the heavy metals mercury, cadmium, lead and arsenic, which were below the quantifiable limits for lamb meat. Our research on hearts and livers also detected no heavy metals.

That's interesting, because these parts have bioactive ingredients and a lot of nutrients. At least one company in Iceland is now making supplements with them."

### The future of agriculture

The number of sheep roaming the nation's countryside has halved in the last 40 years due the financial challenges that have faced artisan livestock rearing as a global profession over that time.

"Around 1980, we had around 800,000 sheep for less than 230,000 Icelanders, a 4 to 1 ratio of animals to people," he says. "However, Icelandic sheep farmers have been extremely innovative in terms of breeding programs based on the extensive data they collect, which have increased meat yields by 30% in the last 20 years."

Even so, it is very difficult to sample Icelandic lamb outside of its home country, where about 70%-80% of the farmers' products are consumed. "Exports are minimal. We're currently working with three companies in Denmark, Germany and Japan that are importing our lamb using our label

of origin," Halldórsson reveals.

"For the U.S., there are basically no exports at present, but we're working on promoting the product through Inspired by Iceland. Future lamb exports would most likely be small scale and niche, as increasing our production of lamb would require a lot of investment."

It is much easier for visitors to the island to enjoy the meat, which is widely available at restaurants and hotels. "The tourist market is something we are focusing on, telling them about the story of our lamb and its quality," he comments.

"Icelandic lamb is a high-end product and, going forward, we'll keep a strong focus on tourism, especially the North American market, which is important for us. We've seen that an incredibly high number of Americans eat lamb when they travel to Iceland. They're obviously responding well to our advertising and are ready to try it during their visit."

A particularly good time for lamb-loving travelers to the island is September, when the traditional réttir roundup takes place. This

sees farmers, their local communities and welcomed visitors corraling sheep back to their farms in advance of the icy winter. Once all the animals have been safely gathered, participants are invited to join celebratory feasts, in which lamb is the principal star.

Alongside Iceland's lamb, Halldórsson is optimistic about the future of its overall farming sector. "Icelandic agriculture has substantial potential. We have lots of land, water and green energy,

**Icelandic agriculture has substantial potential. We have lots of land, water and green energy, as well as a good, highly educated workforce and strict laws."**

Hafliði Halldórsson, CEO, Icelandic Lamb

as well as a good, highly educated workforce and strict laws," he states. "We don't have a long-growing season for horticulture, but with investment in greenhouses and new technology, much can be achieved."

One innovative startup is showing what is possible. Vaxa's founder and CEO Andri Björn Gunnarsson explains: "Iceland lacks

sun and warmth, so almost all leafy vegetables are imported. My goal was to provide high-quality, healthy, locally produced greens year-round."

His solution was to develop controlled environment agriculture in high-tech greenhouses. "The real value of CEA lies in control, delivering consistent quality regardless of weather. Iceland, with its abundant clean energy and water, is an ideal place for this model," he states.

Vaxa has capacity for about 100 tons of vegetables a year and is planning a new facility that will take that to 400 tons. The firm has also recently launched its technology in Sweden. Gunnarsson discloses: "Our vision was always to start here, refine the process and then expand internationally. Like the Vikings, our aim is to venture beyond Iceland."

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