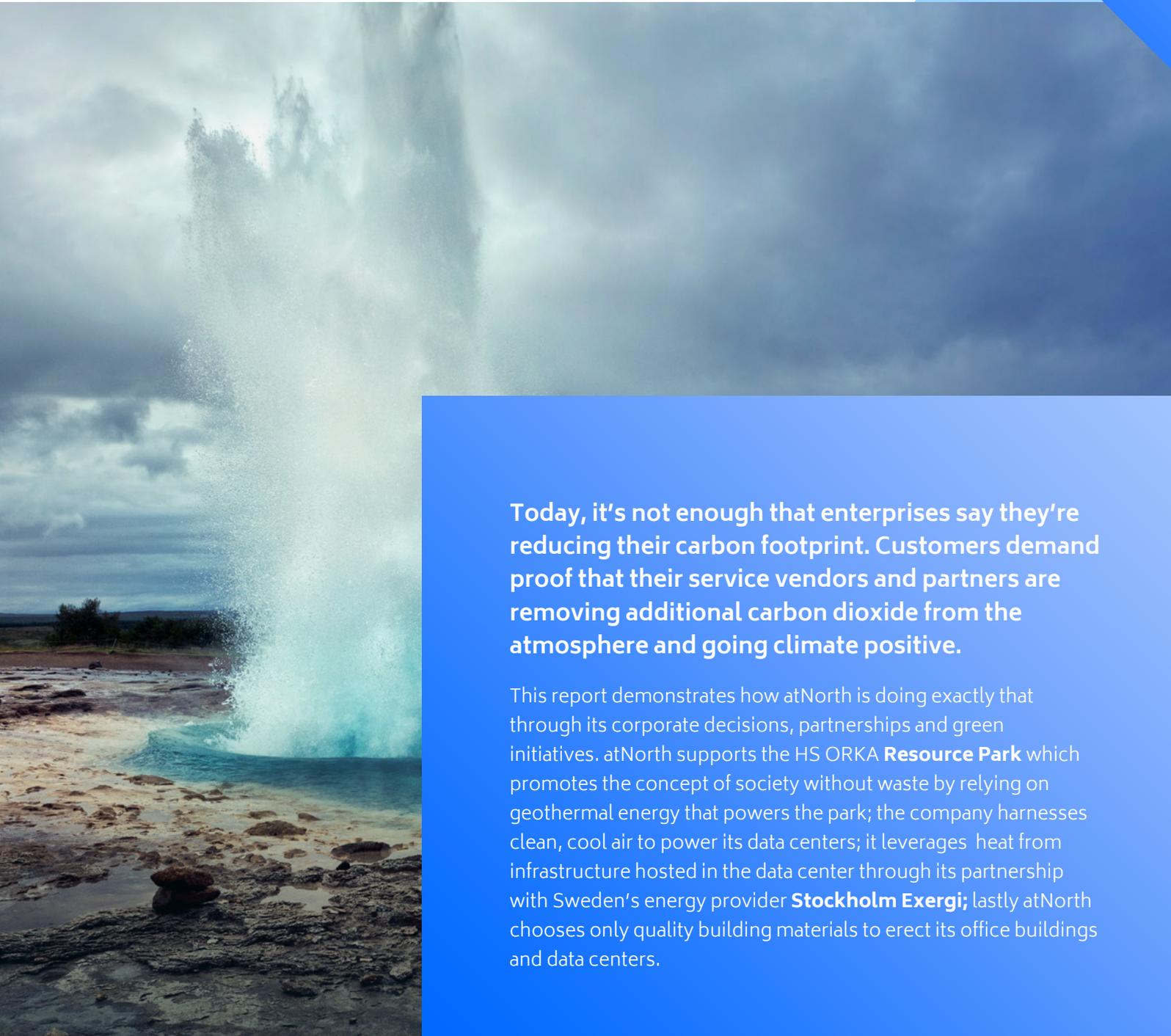


Unparalleled Sustainability

How atNorth is going climate positive by going green and entering circular economy



Today, it's not enough that enterprises say they're reducing their carbon footprint. Customers demand proof that their service vendors and partners are removing additional carbon dioxide from the atmosphere and going climate positive.

This report demonstrates how atNorth is doing exactly that through its corporate decisions, partnerships and green initiatives. atNorth supports the HS ORKA **Resource Park** which promotes the concept of society without waste by relying on geothermal energy that powers the park; the company harnesses clean, cool air to power its data centers; it leverages heat from infrastructure hosted in the data center through its partnership with Sweden's energy provider **Stockholm Exergi**; lastly atNorth chooses only quality building materials to erect its office buildings and data centers.

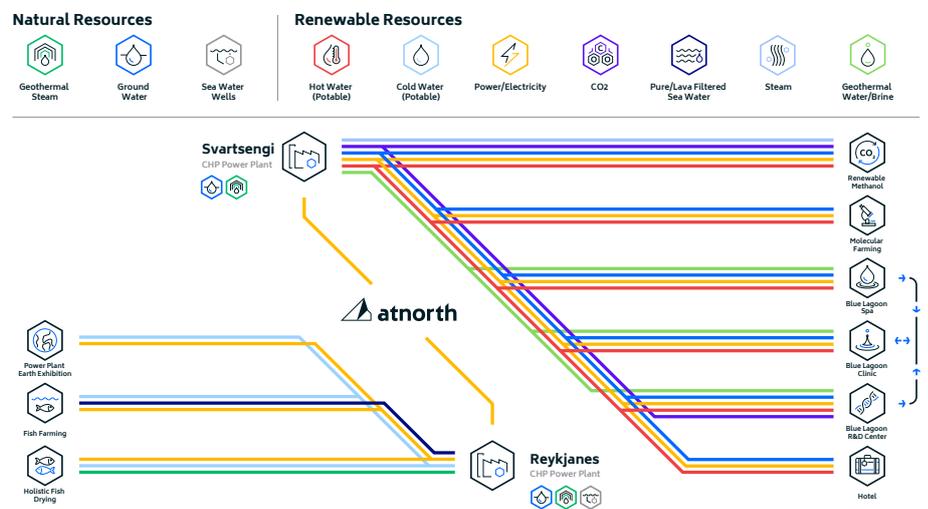
As you will learn from this report, atNorth is continuously adapting its infrastructure, management and operations so that all products, instruments and materials are used to their maximum and for their highest value.

The company's leaders aim to accelerate circular economic principles around the world and help braid them into the fabric of broader commercial operations, including processes, infrastructure and culture.

Going Geothermal

atNorth's **Mjöllnir data center** was built in close proximity to **HS Orka's** geothermal power plants so it could rely on their clean energy supply. By entering into this arrangement, atNorth's Mjöllnir data center has joined the circular economy and, as a result, became climate positive.

As part of this paradigm, all customers that rely on atNorth's high-performing computing services and data center facilities become indirect sponsors of the climate positive benchmark. The domino effects also extend to atNorth's growing partner network, including vendors, suppliers and contractors



Harnessing Clean Air

To provide their services, data centers must constantly cool their systems in order to ensure maximum compute performance of their clusters. This is taxing on the environment because most data centers waste 90% of energy they use, leaving behind a huge carbon footprint.

But atNorth's data centers use cold air for cooling. The system harnesses the Nordic country's cool climate temperatures and circulates only the filtered outdoor air in its server rooms. Doing so helps create ideal conditions for cooling the systems which can drain more than 50% of power in an average data center.

The glulam framework has the lowest contribution in various environmental impact categories when compared to other frameworks, such as steel and concrete which are both more taxing on the environment.

Leveraging Heat Waste

Last year, atNorth partnered with Sweden's energy provider **Stockholm Exergi** for the construction of a new data center in Stockholm aimed at harnessing waste heat generated by the center's computing equipment.

Under the partnership, atNorth is building a data center in **Stockholm Data Parks** and will use the heat generated by servers hosted in the data center for local house-heating in Sweden's capital. This arrangement will utilize heat that would otherwise go unused for the benefit of the community. The result will be a steep increase in the data center's energy efficiency and a leap beyond only power efficiency for the benefit of atNorth's customers and the environment.

Choosing quality building materials

atNorth's green program encompasses the company's choice of building materials with the lowest environmental impact. atNorth has primarily relied on the structural engineered wood products or glued laminated timber, more popularly known as glulam, to erect its data centers.

Customers expect more than net-zero carbon emissions

Sustainability and renewable power sources continue to be major factors that drive our customers to buy atNorth's data center services and high-performance computing services (HPC). But it's also true that, as companies around the world initiate efforts to combat climate change, eco-friendly solutions are increasingly becoming a commodity. Organizations worldwide are now making major leaps on this front to remain competitive while reducing their carbon footprint is becoming a must-have of smart business practices.

That's why atNorth has decided to go a step further. The use of renewable energy and promoting alternatives to the fuel economy have been part of atNorth's DNA since its founding in 2010. Today, with the help of our customer network, atNorth is going beyond achieving only the net-zero carbon emissions. We're building solutions that aren't just carbon neutral but create a benefit for the environment by removing additional carbon dioxide from the atmosphere. **In other words, we're going climate positive.**

The environmentally friendly effect is even greater when we take into account the entire atNorth's stakeholder network that includes vendors, marketing partners and freelance contributors.

atNorth has entered circular economy through geothermal operations

atNorth's **Mjölfnir data center** gets its power from **HS Orka's** two nearby geothermal power plants in Svartsengi and Reykjanes townships. Both use a sustainable infrastructure to produce electricity and hot water.

The plant's condensers are cooled by clean seawater that is filtered through lava layers and extracted from the sea using boreholes. Each condenser uses about 1,600 liters of water per second. The plants recycle the excess seawater to power a wide range of businesses that make up the **Resource Park** tech hub in the Suðurnes region on Iceland's southwest coast. As a result, the park enables more carbon dioxide to be removed from the atmosphere than is released during the creation of geothermal energy. The Resource Park promotes the idea of society without waste through geothermal operations. Being connected to the park has been an important milestone on our journey towards becoming climate positive. By getting the power from HS Orka, the park's geothermal electricity provider, atNorth's Mjölfnir data center has joined circular economy that eliminates waste through continual use of every resource. All resource streams that flow to and from the companies in the park are utilized as responsibly as possible for the benefit and further progress of the community.

Under this model, when our customers buy and use atNorth's services from the Icelandic Data Center, they leverage a unique opportunity to become not just carbon neutral but contribute to a climate positive standard. Put in another way, when customers colocate within atNorth's Icelandic data center facilities, they enter circular economy.

atNorth's Swedish expansion enables atNorth to promote sustainable operations beyond Iceland as it strengthens international competitiveness, boosts operational security and efficiency and improves customer service.

atNorth harnesses clean air as part of efforts to go circular

One of the main challenges in the data center industry is ensuring continual cooling throughout the day, which is costly and comes with an environmental impact. As the global reliance on internet-connected devices continues to grow at dizzying speed, server farms that store digital data are expanding in parallel. The use of data centers is expected to jump to 4.5% of global electricity usage by 2025 from 0.9% in 2015, a [ResearchGate report](#) showed. According to scientific journal [Nature.com](#) information and communication technology sector's carbon footprint is on a par with the aviation industry's emissions from only fossil fuel.

atNorth reduces its carbon footprint through its data centers in more than ways than only relying on geothermal power. The cooling system used by atNorth's data centers was designed to take advantage of northern hemisphere climate of moderate temperatures and dew points. Air temperatures range from around freezing 0 °C to 13.3 °C, creating perfect data center conditions that enable significant reductions in the amount of electricity used to keep data center servers cool.

By bringing in and circulating only the cool outdoor air in the server rooms, atNorth has eliminated the need for mechanical cooling from chillers or other equipment with compressors. In typical data centers, mechanical cooling systems can account for more than 50% of a data center's power usage.

atNorth's SWE01: Stockholm Data Center uses heat from servers to heat local homes

2nd half of 2021 atNorth's SWE01, Sweden's first sustainable, high-performance data center will go live in Kista, Stockholm in Sweden to meet growing demand for large scale computing projects. atNorth's partnership with Sweden's energy provider Stockholm Exergi is an important part of atNorth's effort to maximize the energy efficiency of this state of the art data center, engineered to accommodate demanding compute environments in the most energy efficient manner possible with minimal environmental impact in the country's capital. atNorth's facility is placed in Stockholm Data Parks, while using the heat generated by the computing equipment in the facility to heat residential neighborhoods in the surrounding area.

Instead of wasting the heat by emitting it out of the facility as most data centers do, atNorth will harness it for the benefit of Stockholm residents whose energy bills will be greatly reduced. So, not only will this partnership enable a sharp boost of the data center's energy efficiency for the benefit of its tenants and customers, it will utilize a resource that is traditionally treated as surplus waste.

The Stockholm data center is atNorth's first data center outside of Iceland where it already runs two top-tier data centers: one is the [Mjölknir data center](#) located in the Resource Park and the other is [the Thor data center](#) in Hafnarfjordur, in the capital region of Reykjavik.

Solution Brief

The atNorth Principles

Energy Efficiency =
Lower TCO

Renewable Energy
Powered Data
Centers = Future
Proof Infrastructure
Deployments

Circular Economy =
Climate Positive
Operations

Renewable energy
+ Power Efficiency
+ Energy Efficiency =
More Compute^{same budget}

Our quality building materials and resource optimization are part of our circular design

We have a circular approach to the design, management and operations of our data centers that is unique on a global scale. atNorth's circular data center operations are restorative and regenerative by design because we aim to keep products, components and materials at their highest utility and value at all times. For this reason, glulam is our building material of choice for the Icelandic data center facilities. Glulam, a manufactured timber product made by bonding layers of timber boards with durable adhesive is popular for its natural appearance and durability. As such, it's used to make a variety of shapes that meet a range of architectural requirements, such as horizontal beams or vertical columns among many others. It's also an environmentally friendly alternative because its manufacturing process consumes less energy than steel and concrete.

atNorth is dedicated to investing further in sustainable efforts of the future

In today's economy in which we're all affected by climate change, enterprises are tasked with so much more than keeping costs down and delivering their services on time. They're expected to show their commitment to making the world a better place by reducing carbon footprint from the atmosphere. Our decisions to rely on geothermal energy, harness clean air, leverage heat waste and choose only quality building materials is a testament to this commitment. We take great pride in our choice to go climate positive through the many policies we have implemented over the years and look forward to sharing more news with you about our green initiatives.



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