Impact Study

Finland Data Center

2024

Google

Deloitte.

Google's Data Center Impact in Finland

Google's data center in Finland is helping to rapidly grow the digital economy. It is what you rely on to pull up a map to a new restaurant, attend online classes, or access your healthcare records.

Google's digital infrastructure investments in Finland drive local economic development through job creation, promote environmental stewardship through carbon-free energy production, and foster thriving communities.

Since 2011, Google has invested EUR ~4.5B[1,2] in Finland's digital infrastructure, making Google the largest inward investor in Finland in the last decade as of 2024. This Impact Study provides a summary of key economic, environmental, and social metrics that Google's digital infrastructure investments have had on Finland in recent years.

Economic

Google's investments in digital infrastructure in Finland support jobs in construction, engineering, and the service industry. Google's data center contribution to labor income in Finland is equal to supporting **~5,510 households in the country each year.**

EUR ~430M[3]

Annual contribution to Finland's GDP[4] (2021-2023)

~3,590

Annual jobs supported (2021-2023)

Environmental

As part of Google's commitment to operate all of its data centers using carbon-free energy by 2030, Google had **over 445 MW worth of operational renewable energy contracts** in Finland at the end of 2023, which included the purchase of three new wind farms providing 190 MW to Google's Finland data center.

98% (2023) | 97% (2022)

Percentage of electricity matched with carbon-free energy[5,6] supply at every hour of every day at Google's data center in Finland

Social

Google's community investments include support to Code School Finland's STEM[7] program which helped empower 4,000+ students, **generating an EUR ~2.90[8] social benefit for every Google-invested dollar** and fostering a more digitally skilled future workforce in Finland.

EUR ~710K[9]

Invested in Finland communities surrounding Google's data center in 2022 and 2023

This report provides a summary of Google's data center impact. The overall impact of all Google operations is significantly larger, encompassing contributions beyond data centers, including economic benefits from its platforms, products, and services used across various sectors.

Notes: 1. This number reflects total investment in Finland since 2011, but does not represent the figure used to calculate GDP impact, which is based solely on investments made between 2021 and 2023. 2. Equivalent to USD ~4.96 Billion. 3. Equivalent to USD ~474 Million. 4. GDP stands for gross domestic product. 5. Google defines carbon-free energy (CFE) as any type of electricity generation that doesn't directly emit carbon dioxide, including (but not limited to) solar, wind, geothermal, hydropower, and nuclear. Sustainable biomass and carbon capture and storage (CCS) are special cases considered on a case-by-case basis, but are often also considered carbon free energy sources. 6. Google's CFE is influenced by various factors, such as overall electricity usage, purchases of carbon-free energy, technological advancements, and changes in the broader energy landscape. 7. STEM stands for science, technology, engineering, and mathematics. 8. Equivalent to USD ~3. 9. Equivalent to USD ~756K.

Economic Impact: 2021-2023[1,2]

EUR ~430M[3]

Annual Contribution to Local GDP

Includes[4] EUR ~209M direct, EUR ~135M indirect, and EUR ~86M induced

~3,590

Annual Jobs Supported[5]

Includes ~525 direct jobs, ~2,280 indirect, and ~785 induced

EUR ~197M[6]

Annual Labor Income

Includes[7] EUR ~48M direct, EUR ~115M indirect, and EUR ~34M induced

Google aspires to increase its contribution to Finland's GDP by supporting the **growth of the country's digital economy and digital infrastructure goals.**

Google data center contribution to direct, indirect, and induced labor income in Finland is equal to supporting **~5,510 households in the country each year.**

Top GDP Contributions

Utilities

(23% of Total GDP Contribution from Google's investments in Finland)

Professional, scientific, and technical services[8]

(19%)

Other (various sectors such as real estate and manufacturing)

(58%)

Spotlight: Carbon-Free Energy

Google's investments in clean energy in Finland have created...

EUR ~99M[9]
Annual Contribution to Local GDP

~545
Annual Jobs Supported

EUR ~31M[10]
Annual Labor Income

Direct: includes Google employees and contractors (incl. their payroll and benefits) and annual spend on Google's suppliers

Indirect: includes Google's suppliers' employees and contractors, the suppliers' payroll and benefits due to Google orders, and suppliers spend

Induced: includes impact generated by the household spending of Google's employees and their suppliers in their local economies

Notes: 1. Numbers were converted into local currency using the average 2021-2023 exchange rate (IRS). 2. GDP and labor income rounded to the nearest one-million; Jobs and household numbers rounded to the nearest multiple of five. 3. Equivalent to USD ~474 Million. 4. Equivalent to USD ~231 Million direct, USD ~149 Million indirect, and USD ~94 Million induced. 5. Google's support to jobs includes construction, engineering, networking, renewable energy jobs, security, and services, among others. 6. Equivalent to USD ~218 Million. 7. Equivalent to USD ~53 Million direct, USD ~127 Million indirect, and USD ~37 Million induced. 8. Includes computer systems, data processing, software services, and other computer-related facility management support, etc. 9. Equivalent to USD ~109 Million. 10. Equivalent to USD ~34 Million.

Environmental Impact: 2022 & 2023[1,2]

98% *(2023)* vs. 92% *(2023 Regional Grid)*
97% *(2022)* vs. 86% *(2022 Regional Grid)*

24/7 Carbon-Free Energy (CFE)

Google has matched 100% of its global annual electricity consumption with renewable energy purchases, and has further committed to operating at 24/7 CFE by 2030. This means matching electricity demand with CFE supply every hour of every day.

1.09 *(2023)*
1.09 *(2022)*
vs. 1.58 *(industry average)*

Avg. Power Usage Effectiveness

Compared to the industry average, Google's Finland data center is achieving an 84% reduction in overhead power usage. For every watt of power used to run servers and network equipment, only 0.09 watts are used to run supporting infrastructure like cooling and lighting.

Spotlight: Carbon-Free Energy

To advance Google's 24/7 CFE commitment, Google had over 445 MW worth of operational renewable energy contracts in Finland at the end of 2023.

SEAWATER USAGE

Google's data center in Hamina, Finland uses seawater for cooling. Google strives to protect water quality and ecosystem health in the communities where it operates, including Finland.

Spotlight: Offsite Heat Recovery

Google is initiating its **first offsite heat recovery project** in collaboration with city-owned energy provider, Haminan Energia. The project aims to reroute heat generated by the data center to the local district heating network and is **expected to fulfill 80% of the district's annual heating demand**. This will provide sustainable heating solutions for **local households, schools, and public service buildings in nearby Hamina at no charge.**[3]

Sustainability Spotlight

Did you know that Google converted an old paper mill into the Hamina data center that exists today? In fact, Google takes advantage of the former paper mills' existing pipes to the Bay of Finland, **using a first-of-its-kind cooling system allowing the Hamina data center to use seawater for data center cooling.**

Notes: 1. For more information on the environmental statistics, refer to the 2023 & 2024 Google Environmental Reports. 2. As applicable, the water consumption represents total water consumption across all data centers in the country; Carbon-free energy and power use effectiveness are averages across data centers. 3. The heat provided by the Google data center is offered at no cost to the local district heating provider, except for a nominal annual fee of €1 + VAT, included for administrative purposes.

Social Impact: 2022 & 2023[1]

EUR ~710K[2]

Given to communities in 2022 and 2023

Surrounding Google's data center in Finland in addition to other Google.Org programs[3]

24

Organizations supported in 2022 and 2023

Focused on education, workforce, and community development, among other areas

EUR ~2.90[4]

Social benefit per Google-invested dollar[5]

Based on STEM educational program[6]

Google invested EUR ~710K[2] in Finland communities, including:

STEM Training

Since 2021, Google has supported Code School Finland and its efforts to **enhance digital skills education in schools.**

- Google's support helped **equip over 130 teachers to provide coding and robotics curriculum** in primary and secondary schools, **reaching over 4,000 students across Finland.**
- The positive results in Finland inspired the development of Code School Europe, which has expanded to operate in six total countries, **reaching over 15K students in the past three years.**

Supporting Career Development

Google's international reputation as a desirable employer extends to its data centers.

- **In fact, in 2024, Google was listed as the #1 most desirable employer in the Young Professionals Attraction Index.**
- Talented employees from a **variety of skillsets and backgrounds** are proud to call Google's data centers their place of work.
- They cite **team diversity, culture, and career development opportunities** (such as Google's IT Support Professional Certificate) as a few reasons for job satisfaction.

> *"The feedback we receive from teachers and students **highlights the transformative impact of this program, and Google's contribution,** in making digital literacy education accessible and impactful across Europe."*
>
> *- **Kaisu Pallaskallio,** CEO, Code School Finland*

Notes: 1. Numbers were converted into local currency using the average 2022-2023 exchange rate and rounded to the nearest ten thousand. 2. Equivalent to USD ~756K. 3. The amounts listed are in addition to other Google programs, like Grow with Google, Google.Org's Impact Challenge, and other initiatives. 4. Equivalent to USD ~3. 5. This calculation is directional and represents Google's step toward understanding social value associated with its community investments. 6. Calculation based on Code School Finland program.

The Google Differentiator

Google recognizes that its data center operations and value chain can be engines of economic, environmental, and social progress. Google aims for its investments to catalyze positive spillover effects within Finland.

Google thinks about its investments holistically.

Google recognizes that it can catalyze greater impact when it **looks at its economic, environmental, and social efforts collectively**, which is why Google's 2024 Impact Study in Finland articulates Google's impact across these three domains. As Google considers its future strategy in Finland, it will continue to look for opportunities to keep digital infrastructure secure and sustainable while driving local economic development, fostering thriving communities, and spurring environmental stewardship.

Google seeks to harness AI to drive innovation and accelerate climate action.

Google continues to invest in state-of-the-art infrastructure to **support its artificial intelligence (AI) efforts and rapidly grow the digital economy in Finland**. However, Google recognizes that these benefits also come with increased energy usage and emissions and might have unintended consequences if not properly managed. As part of its AI for Sustainability strategy, Google is taking steps to use AI to **accelerate climate progress** and through its AI Opportunity Agenda, Google is providing recommendations for governments to **amplify the positive impacts** of AI for the broadest possible range of people.

Google seeks to engage directly with community members to advance and measure impact.

Google continues to work closely with community members in Finland to understand its impact and refine its strategy. This report represents a **step toward measuring impact as Google moves from measuring inputs to measuring impact and value.** This includes Google's approximation of a "social return on investment", intended to estimate the social value created per Google-invested dollar based on educational empowerment and future job opportunities. Google will continue to find ways to **be more transparent and articulate its impact to local communities** across all dimensions.

Thank you!

To the many community members and Googlers who strive to make Google's ambitious economic, environmental, and social goals a reality.

For additional information or any questions please reach out to:

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