Impact Study

The Netherlands Data Center

2024

Google

Deloitte.

Google's Data Center Impact in The Netherlands

Google's data centers in The Netherlands are helping to rapidly grow the digital economy. They are 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 The Netherlands drive local economic development through job creation, promote environmental stewardship through carbon-free energy production, and foster thriving communities.

Since 2016, Google has invested more than EUR ~5B[1] in The Netherlands' digital infrastructure. This Impact Study provides a summary of key economic, environmental, and social metrics that Google's digital infrastructure investments have had on The Netherlands in recent years.

Economic

Google's investments in digital infrastructure in The Netherlands support jobs in construction, engineering, and the service industry. Google's data center contribution to labor income in The Netherlands is equal to supporting ~8,720 households in the country each year.

EUR ~1,690M[2]

Annual contribution to The Netherlands's GDP[3] (2017-2023)

~7,830

Annual jobs supported (2017-2023)

Environmental

As part of Google's commitment to operate all of its data centers using carbon-free energy (CFE) by 2030, Google announced its largest offshore wind project to date in The Netherlands, which will help its data centers achieve over 90% CFE by 2024.

80% (2023) | 57% (2022)

Percentage of electricity matched with carbon-free energy[4,5] supply at every hour of every day at Google's data centers in The Netherlands

Social

Google's community investments include support to Christelijke basisschool which helped students better engage with school curriculum, generating an EUR ~0.40[6] social benefit for every Google-invested dollar and fostering a more digitally skilled future workforce in The Netherlands.

EUR ~840K[7]

Invested in The Netherlands communities surrounding Google's data centers 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. Equivalent to USD ~5.5 Billion. 2. Equivalent to USD ~1,913 Million. 3. GDP stands for gross domestic product. 4. 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. 5. 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. 6. Equivalent to USD ~0.5. 7. Equivalent to USD ~894K.

Economic Impact: 2017-2023[1,2,3]

EUR ~1,690M[4]

Annual Contribution to Local GDP

Includes[5] EUR ~811M direct, EUR ~666M indirect, and EUR ~213M induced

~7,830

Annual Jobs Supported[6]

Includes ~570 direct jobs, ~6,020 indirect, and ~1,240 induced

EUR ~390M[7]

Annual Labor Income

Includes[8] EUR ~55M direct, EUR ~286M indirect, and EUR ~49M induced

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

Google's data center contribution to direct, indirect, and induced labor income in The Netherlands is equal to supporting ~8,720 households in the country each year.

Top GDP Contributions

Professional, scientific, and technical services[9]

(29% of Total GDP Contribution from Google's investments in The Netherlands)

Other (various sectors such as construction and utilities)

(71%)

Spotlight: Carbon-Free Energy[10]

Google's investments in clean energy in The Netherlands have created...

EUR ~15M[11]
Annual Contribution to Local GDP

~60
Annual Jobs Supported

EUR ~4M[12]
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 2017-2023 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. This Impact Report builds upon The Netherlands' Data Center Impact Report published in early 2024. 4. Equivalent to USD ~1,913 Million. 5. Equivalent to USD ~918 Million direct, USD ~754 Million indirect, and USD ~241 Million induced. 6. Google's support to jobs includes construction, engineering, networking, renewable energy jobs, security, and services, among others. 7. Equivalent to USD ~440 Million. 8. Equivalent to USD ~62 Million direct, USD ~324 Million indirect, and USD ~55 Million induced. 9. Includes computer systems, data processing, software services, and other computer-related facility management support, etc. 10. Analysis performed from 2021-2023. 11. Equivalent to USD ~16.5 Million. 12. Equivalent to USD ~4.4 Million.

Environmental Impact: 2022 & 2023[1,2]

80% *(2023)* vs. 58% *(2023 Regional Grid)*
57% *(2022)* vs. 42% *(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.

1.08 *(2023)*
1.07 *(2022)*
vs. 1.58 *(industry average)*

Avg. Power Usage Effectiveness

Compared to the industry average, Google's Netherlands data center[3] is achieving an 86% reduction in overhead power usage. For every watt of power used to run servers and network equipment, only 0.08 watts are used to run supporting infrastructure like cooling and lighting.

Spotlight: Carbon-Free Energy

To advance Google's 24/7 carbon-free energy (CFE) commitment, Google had over 245 MW worth of operational renewable energy contracts in The Netherlands at the end of 2023.

In 2024, Google announced its largest offshore wind project to date: through power purchase agreements with Shell and Eneco, Google will support the development of 478 MW of subsidy-free offshore wind farms, which are expected to contribute about 6% of the country's annual electricity consumption. Collectively, Google's commitments in The Netherlands will help its data centers achieve over 90% CFE by 2024.

"Our long-standing data center efficiency efforts are important because our data centers represent the vast majority of our direct electricity use. Google's [global] data center consumption was more than 24 TWh in 2023 which translates to approximately 7-10% of global data center electricity consumption."

- 2023 & 2024 Google Environmental Reports

897.1M Gal. *(2023)*
876.3M Gal. *(2022)*

Water Consumption

Google strives to protect water quality and ecosystem health in the communities where it operates, including The Netherlands.[4] Google uses industrial water for cooling of its Netherlands data centers.

Sustainability Spotlight

In partnership with Acacia Water, Google is launching an innovative pilot project focused on improved management and utilization of freshwater in Negenboerenpolder. Water monitoring data will be integrated into a collaborative platform which will leverage AI techniques to optimize model predictions and freshwater usage, all while maintaining agriculture outputs.

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; CFE and PUE are averages across data centers. 3. Based on Google's Netherlands data center in Eemshaven. 4. Google seeks to replenish 120% of the freshwater volume it consumes, on average, across its offices and data centers by 2030.

Social Impact: 2022 & 2023[1]

EUR ~840K[2]

Given to communities in 2022 and 2023

Surrounding Google's data centers in The Netherlands in addition to other Google.Org programs[3]

32

Organizations supported in 2022 and 2023

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

EUR ~0.40[4]

Social benefit per Google-invested dollar[5]

Based on educational program[6]

Google invested EUR ~840K[2] in The Netherlands communities, including:

Learning and Exploration

In 2023, Google gave EUR ~30K[7] to help local primary school Christelijke basisschool (CBS) De Ster in Harkstede better engage students in the school curriculum.

- Google's support helped install an interactive movement wall as a teaching tool, allowing students to gamify different learning topics like math (e.g., throwing balls at the wall at the correct math calculation), spelling, music, and dance – while also helping students develop cooperation and teamwork.
- The wall is utilized by 75 students and its engagement helped to generate the social benefit referenced above.

STEM Accessibility

From 2021 to 2023, Google granted EUR ~90K[8] to Stichting Junior IOT to make STEM education accessible to students who live in the region of Google's Middenmeer data center.

- Google's support engaged an estimated 10K students each year in hands-on learning experiences including robot-building challenges. It also included a lending-library of STEM materials for local teachers to help inspire STEM curriculum.

> *"We are a small school, and all this beautiful technology quickly becomes unaffordable, but thanks to a large subsidy [by Google], we succeeded."*
>
> *- Fredric Geijtenbeek, School Director*

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 894K. 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 0.5. 5. This calculation is directional and represents Google's step toward understanding social value associated with its community investments. 6. Calculation based on Christelijke basisschool (CBS) De Ster in Harkstede program. 7. Equivalent to ~USD 32K. 8. Equivalent to ~USD 93K.

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 The Netherlands.

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 The Netherlands articulates Google's impact across these three domains. As Google considers its future strategy in The Netherlands, 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 The Netherlands. 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 The Netherlands 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:

Adria Troyer
Global Head of Strategy & Innovation, Google Data Centers
adriatroyer@google.com

Shay Eliaz
Principal,
Deloitte Consulting LLP
seliaz@deloitte.com