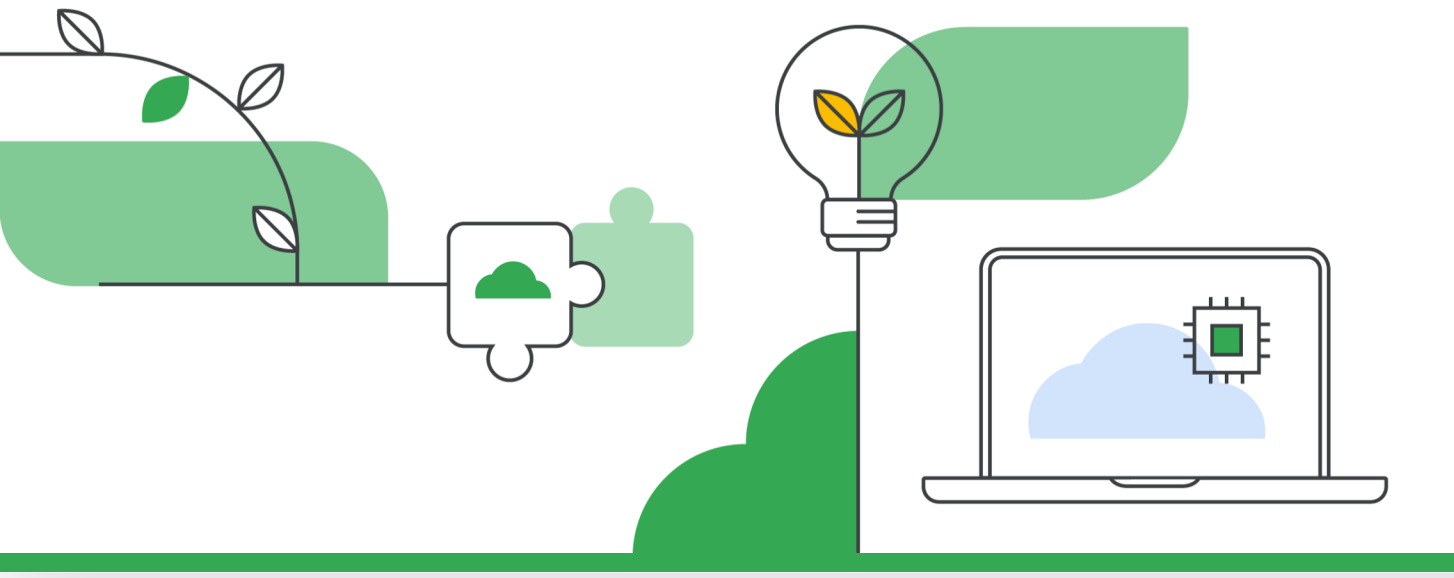
Modernizing and extending device lifecycles to support climate action



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The evolution of the United Nations Sustainable Development Goals has shown that climate change is a collective responsibility.

A great opportunity for organisations to play their part in reducing their business and IT carbon footprint[2] is through end-user computing, which generates 1% of all greenhouse gas emissions.[1] The supply chain and electricity-based emissions generated each year by 460 million new devices and 4.2 billion active users[3] contribute to 99% of device emissions.[4] Focusing on reducing both sources through sustainable IT strategies—such as displacement and improved energy efficiency—is proven to reduce IT-related emissions by as much as 40%.[5]

From both a resource safeguarding and energy efficiency perspective, Google's ChromeOS and ChromeOS Flex offer a compelling opportunity to help businesses achieve their sustainability goals.[3,6]

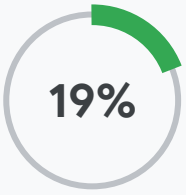
Reducing energy and emissions in daily use

New scientific research has shown that modernizing existing devices, such as notebooks and desktops with ChromeOS Flex reduces both electricity consumption and associated emissions by an average of 19%.[3] Further research has also determined that original Chromebooks are on average 46% more energy efficient than equivalent alternative devices.[6] In both examples, the findings represent scientific proof that the ChromeOS portfolio is great for the planet and for climate action.

Safeguarding resources and improving supply chain impact

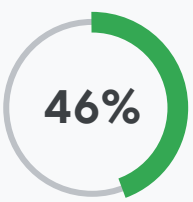
The benefits aren't just limited to energy efficiency either. Re-imagining devices with ChromeOS Flex removes the need to replace existing devices and extends the life of your hardware.[3] When the useful lifespan of a device is extended from 5 years to 8 years, there's almost a 40% reduction in scope 3* embodied carbon emissions.[3,5]

ChromeOS Flex



Reduction in electricity consumption and associated emissions

Chromebooks

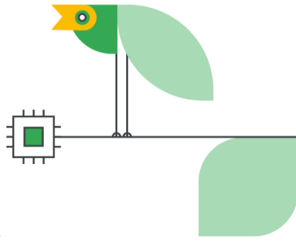


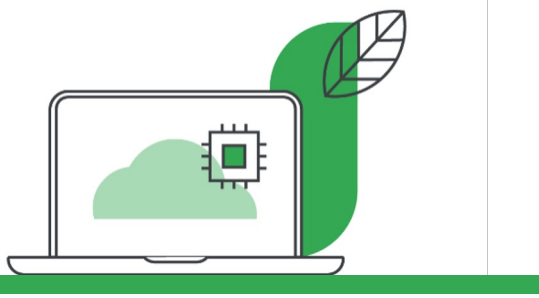
Reduction in electricity consumption compared to equivalent alternative devices

*Find out more about Scope 1, 2 and 3 emissions

Planet and Profit

From a practical perspective, less energy and longer hardware refresh cycles not only protect the planet, but drive profit too. As highlighted within the case study below, cumulative capital and revenue benefits prove that the transition to sustainable IT delivers a positive Return on Investment (ROI).





People

Beyond reduced emissions and costs, climate action also has a positive effect on people. Leading the way on climate action is a huge opportunity for organisations to engage with their employees in a meaningful way. It helps people feel connected to the organisations they work for when their passion is reflected in organisational action to fight climate change. Employees want to work for organisations that align with their personal goals and provide a line of sight into how they are positive contributors to the movement.

> “With ChromeOS Flex and cloud computing, we are reducing the need for the continuous hardware replacements we have been used to for so long.”

Edvard Lundberg,
Chrome Enterprise Lead,
Nordics, Google

*Find out more about Scope 1, 2 and 3 emissions

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Nordic Choice Hotels

Nordic Choice Hotels take climate action with ChromeOS & ChromeOS Flex

The Nordic Choice Hotels group operates 200+ hotels in five different countries across the Nordic region. Already evaluating ChromeOS Flex and considering its use across the group, in late 2021 the company experienced a serious ransomware virus attack by criminals, rendering the affected computers encrypted and effectively unusable. In less than 24 hours, the first hotel bounced back to its operations by deploying ChromeOS Flex, and within 48 hours 2,000 Windows computers were converted.

“

We already had an ongoing pilot project initiated by one of our co-workers who came up with the proposal to convert our existing Windows PCs to ChromeOS Flex. We wanted to upgrade a large part of our computer fleet, but by converting them we could save both costs and greenhouse gas emissions, as well as increase the security level in the company. So when we suddenly had to deal with the cyberattack, the decision to go all-in and fast-track the project was made in seconds.”

Kari Anna Fiskvik,
VP Technology,
Nordic Choice Hotels

2000

Windows computers were converted in just over 48 hours

To determine the positive impact of adopting ChromeOS and ChromeOS Flex, Google engaged independent research-focused IT sustainability specialists Px3. Using methodologies, frameworks and applications developed during PhD research conducted with the University of Warwick, one of the world's leading Urban and Computer Science universities, consultants worked hand-in-hand with both Nordic Choice Hotels and Google to produce the findings. Specifically targeting supply chain emissions, energy emissions and related capital and utility cost reductions, the findings validate that end-user computing is a credible source of reduction and contributes meaningfully to sustainable development goals such as climate action. Having transitioned to a blend of ChromeOS Flex on existing devices and ChromeOS on new devices, Nordic Choice Hotels commented:

“

This is the perfect project. It was an easy decision to make when we learned how much we would save both financially and in greenhouse gas emissions by collaborating with Google on the conversion.”

Torgeir Silseth,
CEO, Nordic Choice Hotels

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Climate action impact

The use-phase analysis determined that the ChromeOS Flex installation and a decision to transition new purchases to Chromebooks, generated an annual reduction of 36,000 kWh, equivalent to a cut of 26% in energy use and scope 2 emissions by Nordic Choice Hotels - 74% of the total reduction was delivered through the transition to ChromeOS Flex.

Significant scope 3 supply chain savings were also realised. Successfully converting more than 90% of existing devices to ChromeOS Flex gave a new lease of life to notebooks and desktops that were due to be replaced due to age and Windows OS incompatibility. By keeping the existing devices and just replacing the OS, 1.5m kgCO2e of supply chain emissions were prevented.

Existing research notes that whilst actions to reduce carbon footprints are considered important by the majority of employees in organisations[7,8], barriers to the adoption of sustainable IT practices still exist.[2] Today 48% of organisations consider cost to be the biggest hurdle, indicating that budget is simply not available to focus on addressing sustainability challenges. However, through reduced utility bills driven by energy efficiencies, and lower capital expenditure associated with displaced hardware purchases, Nordic Choice Hotels' climate action has broken this cycle. The hotel group has already realised a cost reduction of 60 million NOK (€6 million / £5 million) across 4,500+ devices.

Reduction in energy use

26%

Reduction in energy use and scope 2 emissions as a result of decision to transition new purchases to Chromebooks

Supply chain emissions

1.5m kgCO2e

Emissions were prevented just by replacing the OS

Cost reduction

€6 million

Reduction in cost across 4500+ devices

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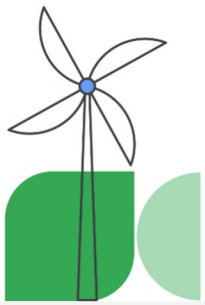
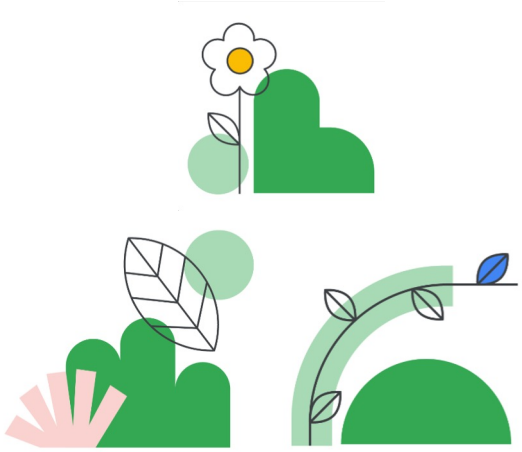
The sustainability analysis

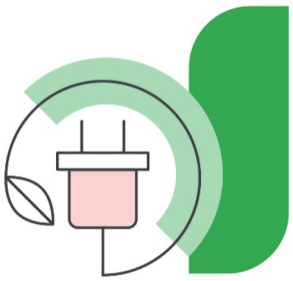
The initial sustainability analysis focused on device energy consumption when the device is in active use, both before and after the installation of ChromeOS Flex. This was achieved through two key activities. Firstly, by examining the device data and generating power draw and electricity consumption metrics based on business operating patterns. Secondly, leveraging existing[3,6] and additional scientific field experiment findings to determine the energy reduction capacity of ChromeOS and ChromeOS Flex software. In total 4,800 devices were analysed, including 132 different makes and models. Having generated kWh values for annual end-user computing operations, scope 2 electricity-related greenhouse gas (GHG) emissions were calculated to include considerations for location-based electricity grid carbon intensity.

The second stage of analysis examined the embodied emissions of the devices in use before the project and how these were affected by extended use. This involved determining key inputs relating to asset age, refresh cycles and incompatibility instances such as the number of devices that might have had to be replaced or upgraded to ensure Microsoft Windows 10 and 11 compatibility.





From an environmental perspective, this is equivalent to preventing **5.4m fossil fuel car miles** from being driven. The strategy means that **1,800 acres of forest** will no longer be required to remove the pollution from Earth's atmosphere.



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“

I read the IT sustainability assessment with much joy. It makes me proud seeing these numbers for us having pushed this project through. Our business case for transforming our end-user computing was underpinned by the major sustainability, financial and security benefits so it’s great to see the figures confirming the environmental benefits.”

Kjetil Berg Neergaard,
Sustainability Manager,
Nordic Choice Hotels

“

This addresses a key issue when facing climate change, which is breaking the ‘business as usual’. Nordic Choice Hotels are leading the way with this project and we believe this is the perfect example for other companies.”

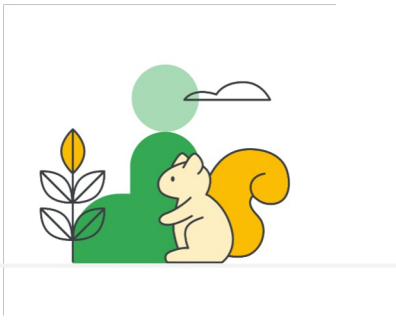
Edvard Lundberg,
Chrome Enterprise Lead,
Nordics, Google

Conclusion

End-user computing emissions are significant, generating 1% of global greenhouse gas emissions[1] equivalent to annual pre-pandemic aviation emissions[3] and require a forest the size of Argentina to clean the resulting pollution from the atmosphere.[10] However, across organisations, employees struggle to engage and participate in corporate and social responsibility strategies that focus on climate change[2] as they do not feel empowered to act, and equally cannot recognise the impact of doing so[2]. Helping them understand that they are helping to mitigate 1.5m kgCO2e of GHG emissions while they conduct their daily business is a defining moment in driving internal environmental strategy.

As associated national and international IT procurement legislations become increasingly comprehensive[2,4,5,9] and more organisations commit to “Net Zero” strategies[2], there is a strong case for looking at the role of IT to deliver climate action. For many, there will be two areas of focus; how can IT itself become ‘greener’, and how can it assist the organisation to deliver its green targets and strategies, particularly around workstyles.

The findings of this report indicate that ChromeOS and ChromeOS Flex can play a significant role in both. The Nordic Choice Hotels case study shows how a large organisation can adopt ChromeOS Flex and ChromeOS devices as part of a balanced business case that considers the triple bottom line - placing value on environmental, user experience and financial considerations.



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