NTT DATA | Microsoft Solutions Partner
Modern Work

5 ways mobile devices and SIM cards affect the environment

Small devices can have a big impact.
Our solution can cut that impact in half.

When focusing on large sustainability projects, it's easy to overlook the large impact of small devices. Mobile phones and Subscriber Identity Module (SIM) cards leave a deep carbon footprint, but hybrid working is not possible without these devices.

This guide explores how mobile devices and SIM cards affect the environment, and how our NTT Extend for Microsoft Teams solution can help you minimize their impact and enable employee communication at the same time.

Content

Sustainability strategies: the big picture

Businesses have the power to drive positive change. By taking a proactive approach to sustainability, they play a vital role in creating a fairer and more sustainable world.

It's a good thing, then, that they're increasingly being held accountable for their social and environmental impact – and by a wide range of stakeholders. Clients, shareholders, investors, employees, business partners and communities are paying attention to what businesses are saying and doing in these areas.

To mitigate environmental risks, enhance their brand reputation, attract socially conscious consumers (and employees) and drive innovation, organizations are including sustainability in their business strategy. They're working on initiatives that will help them make data-driven decisions to reduce their carbon footprint and achieve net-zero goals.

> Our Sustainability Report 2023 reiterates NTT DATA's commitment to reach net-zero emissions across our operations by 2030, and across our value chain by 2040. We also aim to incorporate circular design into the way we operate by 2026 to reduce waste and carbon emissions.

When you're focusing on something as big as the environment, it's easy to overlook small things like mobile phones and their SIM cards.

But the production, use and disposal of these devices and cards have significant environmental implications that are often invisible. Knowing this, you can tailor your corporate policies for business phones and other communication devices to minimize environmental impact – and costs.

5 environmental impacts of mobile phones and SIM cards

Mines are struggling to meet demands for these elements. According to the **International Energy Agency**, demand for rare earth elements is expected to be three to seven times higher than it is now by 2040; demand for other critical minerals, such as lithium, may be 40 times higher.

While a SIM card is much smaller than a phone, it needs metal for the electronic chip as well as plastic for the shell to hold the chip. The plastic shell must accommodate three SIM sizes: standard, micro and nano. The unused plastic around the shell is simply waste.

Manufacturing a mobile phone takes up significant resources

Metals and minerals have to be mined, then refined for manufacturing. And for electronics, the bigger problem is that the processes require “rare earths”: a group of 17 minerals used in various technologies. **Rare earth elements** are abundant in the earth’s crust but are hard to separate from other elements, which is what makes them “rare” and expensive to mine.

Even biodegradable packaging must be transported

Landfills are full of single-use plastics. To address this problem, there's been a huge shift to using ecofriendly and biodegradable packaging for everything from groceries to electronics. While this does reduce a company's carbon footprint, there is an environmental cost in getting the packaging – and the product – from the factory to the user.

Data on internet access reveals that the number of "unique" mobile users reached 5.61 billion in January 2024. And the number of people who use smartphones to connect to cellular networks continues to increase.

Phones are usually transported around the world by airplane, significantly increasing the carbon emissions needed to get the sustainably boxed device or SIM card to employees.

Giving an employee a business phone can keep their personal number and other personal details separate from their working lives, but it also doubles the electricity needed to keep people connected.

Phones need electricity to charge

With so many devices in use, the electricity used to keep them charged quickly adds up – and deepens your environmental footprint.

Organizations can miss this impact because frontline and hybrid employees usually charge their devices at home, not at the office.

Disposal creates ewaste

Business devices and SIM cards that are no longer in use are often destroyed or discarded to protect company data. This means every time an employee resigns or a phone contract expires, another phone is added to a growing pile of waste.

According to the **World Health Organization**, an estimated 53.6 million tons of ewaste was produced globally in 2019, but only 17.4% was documented as formally collected and recycled. While proper disposal prevents hazardous substances from being released into the environment, disposal processes can be energy-intensive. And expensive.

Reusing devices offers a quick and cost-effective solution to the problem of ewaste.

Instead of letting mobile devices gather dust to keep data secure, you can clean them up for use by another employee. Simply extending a mobile phone's lifetime makes a significant difference to sustainability.

Company policies can cause unnecessary damage

Mobile contracts usually last between one and three years, after which the user gets a new phone. Businesses then have to consider what to do with the business device and the sensitive information on it. Although the SIM card can be transferred to a new device, the cards are often discarded when an employee resigns, or a card is damaged.

Calculating the carbon cost of mobile phones and SIM cards

Quantifying carbon emissions is a complex undertaking. The results vary greatly depending on what organizations measure, and how, to calculate a device's carbon footprint.

Have they considered weight? Cost of materials? The impact of the processes used to refine the base components? Are they measuring the impact of the device only while it's being used, or do they consider the entire device lifecycle? This means that you can't compare the estimated carbon emissions from different sources to each other because they are not calculated the same way.

Manufacturers do their own calculations.

For example, Apple puts the emissions created by its recent smartphones at 50kg to 76kg of CO2 per phone, depending on the model. Huawei calculates their phones' emissions at 60kg to 85kg of CO2. Manufacturer Oppo reports an average of 56kg of CO2 and Samsung phones have a surprisingly wide range, from 22kg to 70kg. Xiaomi is less forthcoming, only quantifying a top-of-the-line model at 63kg of CO2. Multiplying these emissions by each phone your organization owns soon adds up.

It's better to use a single method of calculating all your telephony. For example, **Tango Networks** offers their own Value and Carbon Savings Calculator that enables organizations to calculate the cost of telephony in terms of both total cost of ownership and carbon footprint.

One planet. One number. One phone.

According to our **2023 Global Employee Experience Trends Report**, 73% of organizations say they had invested in mobile technology in the past two years to support hybrid and remote working, and enable “on-the-go” employees such as salespeople or consultants to be productive wherever they are.

To reduce the carbon impact of mobile devices and enable hybrid working, a seemingly simple solution is for employees to use their own devices. A survey conducted by Tango and Cavell Group in 2023 revealed that 77% of frontline workers use mobile phones to perform work duties, with 56% using personal mobile phones.

The problem lies in how employees use their personal phones for business calls. They dislike navigating and logging in to communication applications like Microsoft Teams. It’s much simpler for them to use the dialer and message apps they’re used to. Calls made this way are not secure or private, and do not follow company and regulatory requirements.

We’re helping organizations overcome these challenges with a solution that enables them to integrate employees’ personal mobile phones with their business phone systems: NTT Extend for Microsoft Teams.

> NTT Extend for Microsoft Teams builds on our Operator Connect and Direct Routing solution to enable enterprise-grade connectivity on mobile devices. You can extend your existing telephony to mobile users with a single contract for a variety of profiles in your organization, including frontline workers and temporary employees.

Organizations can now access and retain business voicemails and record business calls and call history – all to ensure they comply with regulations and have a record of business calls. At the same time, the solution protects an employee's privacy by keeping their private numbers and calls private.

A more sustainable solution

By digitalizing the SIM process and reducing the environmental impact associated with physical SIM cards, NTT Extend for Microsoft Teams reduces the carbon footprint of telephony. Moving to eSIM cards improves sustainability, but also offers business benefits like never having to wait for stock to become available.

Our eSIM cards rely on technology like our data centers, which also use energy. We have committed to 100% renewable energy in our data centers by 2030, and in our offices and facilities by 2035. Our Sustainability Report 2023 shows we're making progress: at the end of March 2023 our Global Data Center business ran on 35% renewable energy.

Saving resources

Leveraging eSIM technology, NTT Extend for Microsoft Teams conserves resources by reducing electronic waste. Users can simply bring their existing mobile devices and use them for business communication. This removes the need for each user to have two devices to power, produce and eventually dispose of, reducing electronic waste.

Physical SIM cards come with plastic casings and packaging materials, which contribute to plastic waste. NTT Extend for Microsoft Teams ends the production and disposal of plastic casings, supporting more sustainable mobile communication.

It also offers a fully digitized onboarding process, making it quick and easy to activate and configure user profiles.

Financial and environmental savings

Employees can use a single device for their personal and work needs, instantly halving the amount of power needed to charge devices. This allows employees – and organizations – to save on their energy bills.

Organizations no longer have to provide additional corporate mobile devices. Instead, employees can use their existing personal devices for business communication. This cuts the cost of purchasing and maintaining additional devices, resulting in significant IT cost savings.

Experience NTT Extend for Microsoft Teams

Take the first step toward a sustainable and cost-effective mobile communication solution: sign up for an NTT Extend for Microsoft Teams trial and see how easy it is to consolidate your mobile communication onto a single device, lower energy consumption and save costs on providing additional corporate devices.

Sign up for an NTT Extend for Microsoft Teams trial today.

List of abbreviations

Abbreviation	Meaning
IoT	Internet of Things
SIM	Subscriber Identity Module

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