

Sustainable IT

Challenges, opportunities and strategies for building more sustainable IT infrastructure





Introduction

Sustainability has increasingly become a part of everyday business practices, driven by growing regulatory demands and increased societal awareness. Companies now record and manage a variety of environmental, social and governance (ESG) metrics. These metrics are not only needed to meet legal reporting requirements, but also to form a vital strategic foundation for companies to build on in the transition towards a net-zero economy.

Despite these developments, one area within companies is still often overlooked from a sustainability perspective, despite it being indispensable in modern enterprises: IT. The importance of IT in pursuing ESG cannot be overstated. For instance, IT accounts for 2–4% of all global greenhouse emissions – a level comparable to the aviation sector. On the social front, customers want accessible digital services and AI tools that deliver fair and unbiased outcomes.

It is therefore clear that:

Any company which wants to pursue an ambitious sustainability strategy must apply this to its IT infrastructure as well.

This article explores the potential of **sustainable IT**, the challenges companies currently face, and how to take the first steps towards a more sustainable IT strategy. Our findings and recommendations are based on insights gained from dialogue with various companies, and from the “Sustainable IT – status quo and potential in companies” survey conducted by PwC Germany in autumn of 2024.

Sustainable IT and the environment: sustainability and efficiency go hand in hand

Feedback from companies has repeatedly shown that while the social and governance dimensions of sustainable IT often still require explanation, the environmental dimension is generally well received and immediately understood. This is especially true when it comes to energy efficiency of hardware and software, a widely discussed topic in many companies. The focus is pragmatic: energy-efficient systems not only reduce emissions but also use less electricity and therefore save costs. This is a case where

sustainability and efficiency go hand in hand, as confirmed by more than three quarters (76%) of the companies surveyed. However, the environmental dimension of sustainable IT extends far beyond just energy efficiency.

A central aspect of sustainable IT is **life cycle management** of IT infrastructure. Companies can significantly reduce the environmental footprint of their infrastructure by:



Engaging in green sourcing:

The consideration of sustainability criteria when selecting new hardware and software (beyond energy efficiency) includes assessing environmental factors across the entire supply chain.



Prolong the life of hardware:

Implementing sustainable practices in technology management includes targeted maintenance and repairs, as well as reusing devices to extend the life of hardware. This approach helps avoid electronic waste and reduces CO₂ emissions; for instance, extending the lifespan of smartphones in the EU by one year could save approximately 2.1 million tonnes of CO₂¹.



Refurbishing and reselling:

Through proper maintenance and refurbishment of electronics, used devices that are still functional can continue to be used or sold in secondary markets, thereby increasing their lifespan.

There is also plenty of potential for optimisation in daily operations. For example, **dynamic power management** allows the energy consumption of data centres and devices to be adjusted to meet actual needs, placing unused servers or workstations in energy-saving mode without compromising overall performance or availability of the infrastructure.

Energy efficiency in software development is another important factor. Green coding practices aim to use efficient algorithms and data processing strategies to minimise an application's power consumption. For example, efficient code structures reduce the necessary computing power – and thus the energy consumption – of both cloud and on-premise solutions.

¹ DeStatis, Abfallaufkommen Elektroschrott in den EU-Staaten, 2023.

The social component of sustainable IT: more than just a “nice to have”

While corporate decision-makers often recognise the immediate cost-saving benefits of the environmental dimension of sustainable IT, they frequently underestimate the importance of the social component. While social considerations might not have a direct financial impact, they are essential for any modern, inclusive and forward-thinking company.

Fewer than half of the survey respondents (44%) recognise the potential of sustainable IT in strengthening their company's digital business ethics. This is despite the fact that digital solutions influence not only how efficiently we work, but also how accessible, fair and inclusive IT is – both

externally in interactions with customers and users, and internally in corporate culture.

Digital accessibility is a key aspect of the social dimension of sustainable IT. People with disabilities must have access to digital products and services just like everyone else. Not only is this an ethical obligation to society, but it is also required by law. On 28 June 2025, the German Accessibility Act (Barrierefreiheitsstärkungsgesetz, or BFSG) will come into effect, aiming to make digital services more accessible for people with disabilities. Companies subject to the BFSG will need to ensure compliance with the “Web Content Accessibility Guidelines”², which requires web content to be:



Perceivable:

Information and user interfaces should be presented in ways that are accessible to all users. This may require changes such as increasing contrast, resizing text, or providing closed captions for videos.



Operable:

Users should be able to interact with and navigate the user interface according to their preferences. All functionalities should be accessible via keyboard, voice commands or other input methods, and should not solely rely on a mouse.



Understandable:

The user interface should be straightforward, both in terms of its content and its operation. Instructions need to be clear and navigation needs to be intuitive, enabling users to interact with the site without becoming confused.



Robust:

Content must be compatible with a wide range of devices and assistive technologies, ensuring long-term accessibility.

The social dimension of sustainable IT applies both externally and internally: the way IT is designed affects employee wellbeing, productivity and satisfaction in an increasingly digital work environment. Getting this right ultimately benefits companies.

User-friendly and adaptable interfaces enable flexible and comfortable working, reducing physical and mental strain.

Intuitive and user-friendly IT reduces frustration, which not only enhances satisfaction but also boosts motivation and efficiency. In today's world of hybrid working, it is particularly crucial that digital solutions seamlessly support mobile working and enable smooth teamwork. IT is thus more than just a tool that employees use to do their work: if properly thought out, it actively contributes to a positive, healthy and sustainable corporate culture.

² W3C, Web Content Accessibility Guidelines (WCAG) 2.2, 2024.

Sustainable IT and governance: responsible digital transformation

More than half (56%) of the companies surveyed recognise the potential of sustainable IT practices to help drive their sustainable transformation. However, this transformation needs a solid foundation of governance if it is to succeed.

Data breaches or biased AI systems can quickly undermine a company's hard-earned reputation and jeopardise the trust of both customers and partners. Sustainable IT therefore also means handling data and algorithms responsibly. Companies must ensure that their IT systems

are not only efficient and accessible, but also ethical. Special attention should be paid to the AI megatrend, as biases in AI training data can perpetuate societal prejudices, resulting in discriminatory outcomes that disadvantage certain groups, notably in recruitment processes or algorithmic recommendations. Companies must therefore ensure that their AI models are fair, transparent and free from discrimination by focusing on the following key measures:



Improve data quality:

Properly selecting and maintaining training data is crucial. It should be diverse, representative and regularly checked for biases. Using data from a variety of sources can help avoid this problem.



Conduct regular audits:

Independent reviews of AI systems help identify and rectify any potential discrimination at an early stage.



Promote transparency:

Companies should make the decision-making processes of their AI systems public. This allows users to understand the basis on which decisions are made, strengthening trust in the technology.

Sustainable IT from a corporate perspective: high potential, low implementation effort

The survey results clearly indicate that most companies underestimate the importance of sustainable IT. More than half (53%) of respondents stated that this topic has only played a minor role in day-to-day business to date. In many cases, sustainable IT is seen as a strategic concept rather than being implemented with concrete measures. According to 72% of companies, the main reasons for this are limited resources and high costs. Smaller companies in particular said that they face significant challenges.

Furthermore, many companies lack a holistic perspective. Sustainable IT is usually reduced to environmental aspects. The social and governance dimensions have not yet become focal points for many companies – yet, as shown above, focusing on these areas could have a significant impact on sustainable digital transformation.

The survey responses indicate that most companies are open to increased engagement with sustainable IT, but there are several challenges when it comes to implementing it. Most companies have made little progress in implementing relevant measures, and only one in five companies feels adequately prepared for sustainable IT initiatives.

Additionally, many companies would like more targeted support – particularly through training and workshops – and 64% of respondents said that a lack of expertise is a major challenge in implementation. Developing targeted knowledge and offering practical recommendations would therefore help transform sustainable IT from a vision into reality.

Recommendations and conclusion

To overcome these hurdles and successfully establish sustainable IT, we recommend the following four practical measures:



Targeted training and internal awareness

A major barrier for companies is the lack of knowledge about how to implement sustainable IT effectively. Training, workshops and internal awareness programmes should therefore be set up to help transform sustainable IT from a strategic concept into actionable measures.



Anchoring sustainable IT into strategy

Many companies cite a lack of financial resources as one of the biggest hurdles. To mitigate this, companies should consider the issue as a business opportunity. By making sustainable IT an integral part of their IT strategy, they can leverage long-term competitive advantages and cost savings, as outlined above. Strategic consulting can be helpful in uncovering existing potential and getting implementation started.



Integrating sustainable IT into existing business processes

Integrating sustainable IT into existing structures is a significant challenge. To facilitate this process, companies should start with an inventory of their IT infrastructure to identify impactful quick wins. Initial pilot projects can provide a good point of entry and help provide a structured model for broader implementation of sustainable IT approaches in business processes.



Proactively addressing regulations

Growing regulations are making sustainable IT increasingly important. Companies should therefore prepare for new laws and ensure compliance well in advance. Engaging with experts or external consultants can help meet requirements early and establish future-proof solutions.

In light of the opportunities and challenges highlighted by many companies in the study, fostering dialogue around sustainable IT should be prioritised. This will help to cultivate the knowledge and awareness within organisations that is necessary to work together and develop practical

solutions. If you would like to learn more, please feel free to contact us – whether you are interested in an introduction to sustainable IT, a casual discussion, or more detailed support from our experienced team.

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