GREEN IT = SUSTAINABLE BUSINESS

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Climate change affects everyone. Reports about the effects and impact of climate change and the resultant natural disasters worldwide are discussed every day. Environmental deterioration is causing significant challenges to every aspect of life, more significantly to the business ecosystem.

Demographic displacement caused by natural disasters, physical damage to infrastructure, soaring prices of materials and energy, and shrinking agricultural productivity pose significant threats to businesses worldwide. Projecting the current situation into the future, we can expect businesses to face graver Environmental, Social, and Governance (ESG) challenges in their operations.

Environmental Issues

Extreme weather events driven by continuing climate change disrupt business operations and supply chains. The leading cause of carbon emissions and other Greenhouse Gas (GHG) emissions are sectors like transportation, electric power, industry, commercial and residential, agricultural, land use, and forestry. Businesses are starting to compete for natural resources like water and minerals. On one side, the demand for these resources rises because of increased consumption. On the other side, supplies become increasingly constrained, resulting in supply shortages and higher prices.

More consumption entails more waste in landfills, water, and the air. Increased waste production,

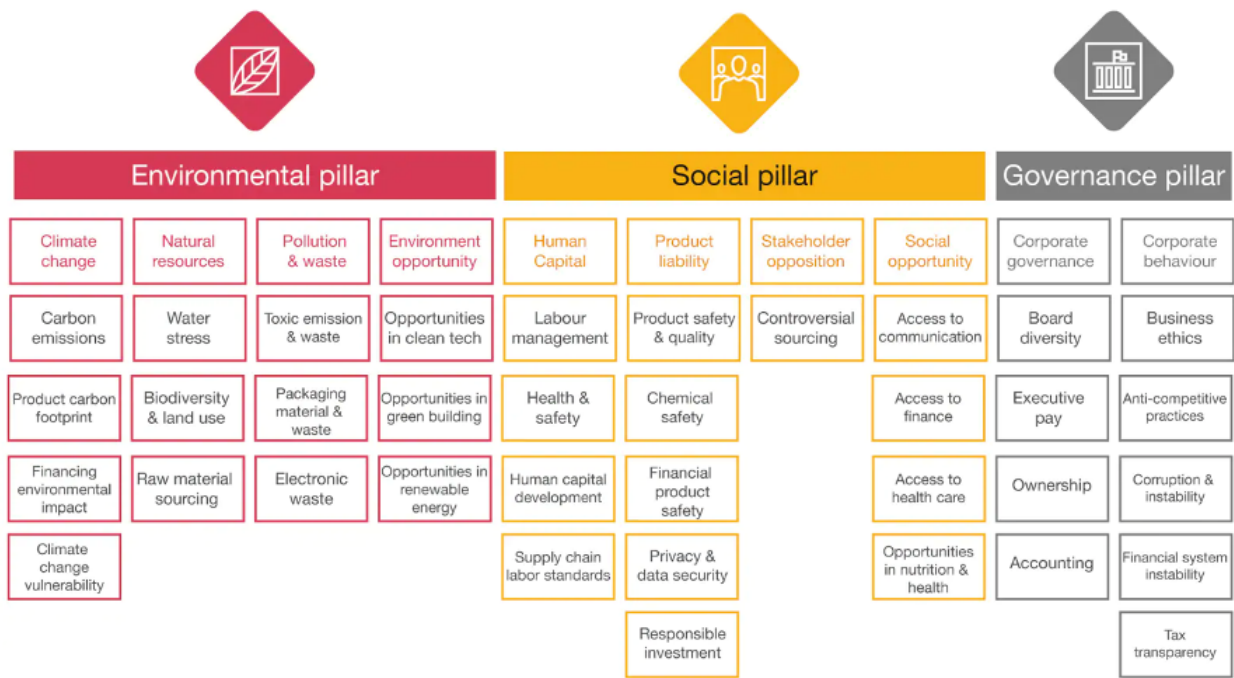| Environmental pillar				Social pillar				Governance pillar	
Climate change	Natural resources	Pollution & waste	Environment opportunity	Human Capital	Product liability	Stakeholder opposition	Social opportunity	Corporate governance	Corporate behaviour
Carbon emissions	Water stress	Toxic emission & waste	Opportunities in clean tech	Labour management	Product safety & quality	Controversial sourcing	Access to communication	Board diversity	Business ethics
Product carbon footprint	Biodiversity & land use	Packaging material & waste	Opportunities in green building	Health & safety	Chemical safety		Access to finance	Executive pay	Anti-competitive practices
Financing environmental impact	Raw material sourcing	Electronic waste	Opportunities in renewable energy	Human capital development	Financial product safety		Access to health care	Ownership	Corruption & instability
Climate change vulnerability				Supply chain labor standards	Privacy & data security		Opportunities in nutrition & health	Accounting	Financial system instability
					Responsible investment				Tax transparency

Image source: PwC

as well as air and water pollution generated by business operations and their supply chains, have resulted in environmental issues that negatively affect businesses.

Pollution has led to an increase in chronic diseases and malnourishment, and it has also increased the likelihood of pandemics. These, in turn, affect businesses and their supply, production, and distribution capabilities. To counter this deterioration, many governments worldwide have introduced strict regulations to treat the root causes of these issues, which businesses must comply with.

Social Issues

Besides the environmental issues, businesses also deal with social issues pertaining to wage inequalities, diversity, inequity and inclusion, labor standards, and data protection and privacy. Human rights violations and unacceptable labor practices damage a business's reputation and brand value.

As most companies run globally, they must also manage the diversity of workforce and cultures. Diversity, equity, and inclusion are becoming much bigger topics; if done right, they will become a key success criterion for companies. With businesses gathering and utilizing more data than ever, tightened regulatory requirements are forcing companies to establish systems and procedures to ensure a higher level of data privacy, including security for employees and customers, as well as other stakeholders' data.

Governance Issues

Conducting business ethically and responsibly is of considerable importance to corporations worldwide. To promote this, governments worldwide have introduced specific regulations that nudge companies to operate sustainably. Transparency, accountability, shareholder engagement, accounting practices and policies, information disclosures, and auditing and compliance issues are a few aspects of the governance gambit.

ESG Framework (Environmental, Social, and Governance) is a good tool for businesses to determine and manage sustainability challenges. Organizations can incorporate ESG elements in their decision-making processes, identify and handle sustainability risks and opportunities, and improve sustainability and, subsequently, business performance.

Sustainability in the Information Technology Sector

The Information Technology (IT) industry has affected sustainability, both as a contributor to environmental and social issues and as a potential solution provider for them. The IT industry is a significant contributor to negative environmental impacts like greenhouse gas emissions and e-waste.

For example, the manufacturing of electronic devices, such as computers and cellphones, is energy-intensive, and most data centers consume significant electricity to power and cool their servers.

Green IT = Sustainable Business

But IT also has the potential to innovate and increase the energy efficiency of products and processes, reduce used natural and human resources, and support the transition to a low-carbon economy. Platform development, tools, and applications can increase sustainability aspects in supply chain management and the circular economy.

IT — A Part of the Problem

IT creates sustainability issues that run a complete life cycle—from purchasing and operating to decommissioning. Components like hardware, software, infrastructure, operations, and service delivery are often at the core of sustainability challenges. The environmental impact of data centers is also a crucial factor. The energy required to power and cool servers in data centers contributes significantly to greenhouse gas emissions.

The published numbers for the carbon footprint of the ICT industry vary. Lancaster University researchers contend that ICT's genuine contribution of global greenhouse gas emissions could be 2.1 to 3.9 percent. This is more than the aviation industry, which accounts for approximately 2 percent of global emissions. However, businesses are trying to reduce the environmental effects of their data centers through renewable energy sources, improving energy efficiency, and investigating new cooling methods.

Management of electronic waste is a considerable challenge. E-waste generated at the end of the IT life cycle is a significant environmental concern. E-waste refers to abandoned electronic devices and gadgets containing hazardous elements such as lead, mercury, and cadmium. Toxicity generated from e-waste can seep into the environment and cause environmental and health hazards if tech devices are not disposed of appropriately.

According to a recent report[1], 57.4 Mt (Million Metric Tonnes) of e-waste was generated in 2021 and is growing by an average of 2 Mt a year, while only 17.4 percent of e-waste is known to be collected and properly recycled.

Ethical sourcing of IT equipment and services in the IT industry is another challenge. Green Procurement requires additional efforts in the procurement processes and carries a higher price tag. Hardware goods such as computers and cellphones contain various metals and minerals that might be sourced from conflict-affected locations or mined using methods that are hazardous to the environment. Although some businesses address these challenges by using recycled materials or implementing supply chain regulations that encourage responsible sourcing, such initiatives are not widely practiced.

IT — A Part of the Solution

IT has a vast potential to counter and solve sustainability issues. IT can help reduce Greenhouse Gases (GHG) by improving the energy efficiency of products, processes, and systems. This can be achieved through sustainable data center design, energy-efficient computer hardware, and the automation of IT operations.

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(Million Metric Tonnes)

Amount of e-waste generated in 2021

Growing by an average of 2 Mt a year

Another example is using digital technologies and applications to enable the planning, building, and operating of energy-efficient buildings. Developing sector-specific software can support a sustainable and energy-efficient building design and construction. Building Information Modeling (BIM) or other digital tools can help maximize energy efficiency and resource utilization of buildings and decrease unnecessary waste.

IT can help gather and analyze data to improve purchasing processes for more sustainable and effective supply chain management. The adoption of blockchain technology increases transparency and traceability in supply chains, enabling corporations to discover and address issues in sourcing operations. AI can also help make more sustainable purchasing decisions.

IT can be a huge driver of a circular economy, helping avoid waste and enhancing resource efficiency to save rare natural resources. For example, designing and producing products that are easily repairable and recyclable or using recycled materials in manufacturing. Creating new work environments is an essential aspect of retaining and attracting talent. IT tools and systems can enable a mobile and remote

work model, supporting collaboration and enhancing human productivity.

For example, videoconferencing software and cloud-based productivity tools can enable employees to work from anywhere, regardless of their location, reducing carbon emissions generated due to transportation. IT can also help the agriculture sector secure food for the increasing global population by developing and implementing information technologies for modern agriculture. For example, IT can use sensors to collect soil and plant data and analyze them to minimize water and fertilizer consumption.

Overall, the IT industry plays a significant role in advancing sustainability through responsible management of its impact, as well as creating technologies and solutions that support sustainability objectives in other areas. However, despite IT becoming more efficient over time, IT's carbon footprint has increased in proportion to world emissions due to increased consumption.

Business Drivers for Sustainability in IT

Businesses are facing considerable pressure to focus on sustainability. There are good reasons to consider how IT can help eliminate, minimize, or mitigate sustainability risks. However, various internal and external business drivers motivate companies to consider sustainability.

Internal Business Drivers

- **Cost savings:** Businesses can save money on operational costs by improving energy efficiency, decreasing waste, and optimizing business processes and supply chains.

- **Regulatory compliance:** Governments worldwide are establishing regulations to address environmental and social issues. Companies are mandated to follow and report on these policies.

- **Risk management:** Investors and regulators are propelling companies to introduce sustainability aspects into their risk management procedures to avoid or mitigate potential business risks such as supply chain disruption, material or labor shortages, regulatory fines, or reputational damage.

- **Brand reputation:** Businesses can promote their sustainability engagement to improve brand reputation and appeal to consumers who respect environmental and social responsibility.

- **Employee retention and attraction:** Many employees want to work with companies that live and promote sustainability. It is easier for sustainable companies to attract and retain talent.

- **Social license to operate:** Businesses must demonstrate their commitment to sustainability for the continued support and trust of the communities in which they operate.

External Business Drivers

- **Customer demands:** Consumers are concerned about sustainability and are willing to pay a premium for ecologically and socially responsible products and services.

- **Investor demands:** Investors are now focused on sustainable businesses and are increasingly considering sustainability aspects for their investment decisions. They are more likely to invest in businesses with an outstanding sustainability performance.

- **Increased competitiveness:** Businesses may consider sustainability to differentiate themselves from competitors, stimulate innovation in their industry, and produce long-term value for their customers. Further, businesses that value sustainability are better positioned to adapt to the changing market conditions and capitalize on new business possibilities.

Role of the Technology Leaders for IT Sustainability

A technology leader of any company plays a vital role in creating a sustainable IT organization. Leaders must ensure that the IT practices, procedures, and systems are designed, implemented, and operated in an environmentally and socially responsible way.

ACCURATE ASSESSMENT OF CARBON FOOTPRINT: At the outset, technology leaders should determine the carbon footprint of their IT organizations or if their organizations are affected by sustainability challenges (Double Materiality). If business functions contribute or are negatively affected, leaders should prioritize changes that will have a positive impact.

Technology leaders should collaborate with IT departments' personnel to evaluate the energy consumption of the organization's IT systems and identify the biggest drivers. Energy consumption is always dependent on the interaction between hardware, software, infrastructure, and operations. It is essential to assess the environmental, operational, and

economical implications of running IT systems partially or completely in the cloud.

MINIMIZING E-WASTE: Together with other business functions, technology leaders can start developing and implementing policies and processes to limit the organization's electronic waste output. This can be accomplished either by recycling and disposing of old equipment in an environmentally friendly manner or extending the life cycles of systems and gadgets.

By collaborating with the other departments and stakeholders, technology leaders can discover opportunities where IT technology can leverage the sustainability goals of the firm. This can be done by constructing a framework and deploying reporting tools for sustainability metrics like data quality, traceability, and accessibility.

PARTNERING WITH BUSINESS STAKEHOLDERS: Achieving sustainability is complex. Technology leaders cannot do it alone. However, technology leaders can benefit from collaborating with various stakeholders from within the organization. Partnering with other business executives and managers within the organization helps ensure that all sustainability activities are aligned with the organization's broader goals and priorities, and that IT sustainability programs receive the required budget and resources.

PARTNERING WITH SUPPLIERS AND AGENCIES: Suppliers and vendors are now eco-friendly and provide sustainable IT services and solutions. They assist technology leaders in identifying and implementing sustainable IT system and infrastructure solutions. Partnering with suppliers and other external sustainability specialists and consultants brings sustainability knowledge and best practices into the organizations. Leveraging suppliers' insights and experiences can lead to a more effective execution of plans and initiatives. Association with government agencies and industry groups on sustainability can also assist technology leaders in keeping up with legislations and standards, and in establishing connections with other organizations working on sustainability efforts.

ENGAGING WITH CONSUMERS: ENGAGING with consumers and customers to understand their sustainability objectives and priorities is key. This can help technology leaders focus and prioritize the initiatives. This engagement can lead to better decision-making and a robust, improved buy-in and support from the various stakeholders. It also offers access to resources and expertise, which enhances the reputation of the IT organization.

> **Businesses that value sustainability are better positioned to adapt to the changing market conditions and capitalize on new business possibilities.**

Advantages of a Sustainable IT

FOR THE BUSINESS: Sustainability is now recognized as a key driver of business success. Consumers and investors are increasingly considering business, environmental, and social performance when making purchasing and investment decisions. A sustainable IT is a mandatory baseline for that. Adopting sustainable IT practices can bring a range of business benefits, including cost savings, risk management, customer demand, employee engagement, and improved brand reputation. Businesses that prioritize sustainability are better positioned to succeed in the long term.

FOR THE ENVIRONMENT: A sustainable IT can help minimize the environmental impact of IT byproducts and, as a result, the carbon footprint by reducing e-waste and providing the baseline for the development of sustainability solutions for other sectors. A few examples of sustainable technology businesses follow:

- Microsoft claims that it will be carbon negative by 2050 and will remove all the carbon from the environment that it has emitted since 1975.

- Google has bought enough renewable energy to match 100 percent of Google's global annual electricity.

- AWS is on the path to power its operations with 100 percent renewable energy by 2025.

- Cloud providers are working to get carbon neutral or even carbon negative in the future.

SAP, IBM, Siemens, and other ISVs are also extending their sustainable solutions every quarter. They are working jointly with their customers to develop and implement sustainable IT solutions for ESG reporting, asset management, supply chain management, waste management, and other areas. To re-

duce e-waste, Bechtle, a German IT services and solution provider, offers a solution for efficient hardware life cycle management with distinct objectives following the rules of the German Waste Management Act.

Steps for a Sustainable IT

The journey to a sustainable IT is a marathon, not a sprint. It requires a clear goal, sufficient data, and application for monitoring and reporting, as well as commitment, conviction, and actions from all stakeholders.

1. **Sustainability assessments:** Companies should conduct sustainability assessments to identify the organization's most significant environmental and social impacts and opportunities. They should understand stakeholders' needs and priorities according to the double materiality principle, which examines the potential impact of climate change on the financial health and outlook of a company.

2. **Technology landscape assessment:** Evaluate the organization's current IT systems and practices to understand where opportunities for improvement and efficiency exist. This may involve reviewing energy use, resource consumption, waste generation, and other factors.

3. **Define IT's material topics.** Companies should focus on topics that matter and that have an impact, such as CO_2 emissions, e-waste, etc.

4. **Develop sustainability goals:** Develop specific, measurable, achievable, relevant, and time-bound (SMART) goals that align with sustainability priorities and address opportunities for improvement. Identify the resources and support needed to achieve the goals, including budget, staffing, training, and technology.

5. **Plan for sustainability:** Develop a plan for achieving the IT sustainability goals, including specific steps and milestones, and assign responsibility for implementing the plan.

6. **Monitoring sustainability initiatives:** Provide access to data and establish a process for monitoring and reporting on progress toward achieving IT sustainability goals and recalibrate to ensure success. Communicate plans and achievements to business stakeholders regularly.

7. **Stakeholder engagement:** Identify the stakeholders and engage with them early on to gather inputs, perspectives, and buy-in. This helps in prioritizing planned activities.

8. **Reassess:** Continuous assessment and reassessment of the material topics, goals, execution plans, and assumptions should be executed on an annual basis.

Overall, a sustainable IT is essential for protecting the environment, promoting social responsibility, and supporting the organization's long-term success. **si**

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[1] WEEE Forum/statista.com