

Green Growth

White Paper

Tech for Sustainability Circle



Global Compact
Network
Switzerland & Liechtenstein



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INTRODUCTION

About the Tech for Sustainability Circle

The coming years will be decisive for the path to Green Growth. The foundations will be laid for unleashing the potential of digital technology and the cloud as the innovation platform of the 21st century for green transformation. This applies to the corporate sector as well as to the public sector and society at large.

Switzerland's success in the global economy increasingly depends on its ability to drive data-driven value creation and unlock new revenue streams from digital products and services. However, data and computing power will not only accelerate digital transformation to create sustainable economic and social growth, but also provide the critical infrastructure for green transformation. This is a unique opportunity for Switzerland, as it can build on a strong corporate sector with many technological and digital pioneers, and sustainability is anchored in the country.

Different frameworks and policies will come into play on the path to Green Growth. A look at Europe shows how broad the spectrum of frameworks is. The solutions chosen by governments vary and may also change over time depending on circumstances. Whatever the framework for Switzerland, seizing green opportunities in a post-pandemic world will require collaboration between industry, the private and the public sectors.

For this reason, UN Global Compact Network Switzerland & Liechtenstein, Microsoft Switzerland and EY Switzerland, have decided to build the Tech for Sustainability Circle. The circle intends to bring organizations together to share

knowledge, boost transparency and measurement, and nurture dialogue between the private and public sectors, academia, and governmental organizations.

Since its foundation in 2021, new members have joined constantly to bundle resources, knowledge and know-how as well as manpower to drive and shape key themes for technology and sustainability. It now brings together over 15 parties to co-create positive sustainability impact enabled by technology.



This paper summarizes the current work of the Circle focusing on the three defined themes in scope “Green Growth”, “Responsible Artificial Intelligence (AI)” and “Impact Measurement” and is intended to trigger further discussions and actions for a sustainable Switzerland enabled by technology.

Why Green Growth and Why Now?

We are on a trajectory to overshoot our planetary boundaries and in some areas have already surpassed them. We must act decisively, and we must act now. Climate change is seen by most as our number one sustainability challenge, but many more topics are on the plate to be addressed, such as for instance, sustainable energy, circular economy, or biodiversity.

Switzerland has committed itself to climate neutrality by 2050¹ and Swiss businesses have spent CHF 6 billion for environmental protection in 2020². According to current surveys, 26% of CEOs identify the growing climate imperative as one of the trends having the most impact on their companies³. Managing this challenge is now at the top of business strategies worldwide as companies with better ESG standards typically show better performance as well as a higher resilience during crises⁴. ESG-oriented investing has increased tremendously in the last years⁵, with sustainable investments reaching \$30 trillion globally; an increase of 68% since 2014 and 1000% since 2004⁶.

While “Green Recovery” focused on a sustainable recovery after Covid-19, we clearly set the focus of this paper on “Green Growth” which means to foster economic growth and development in a sustainable way⁷.

Even though many means support Green Growth, we are fully convinced that technology plays a pivotal role in achieving our sustainable development goals. It is not only our responsibility to foster and accelerate the use of technology

to speed up our response to climate change, but we also must use technology in a responsible way. This double responsibility is a shared responsibility by governmental and corporate actors alike and we clearly advocate for a co-creative way to work together.

In the second Chapter we start with setting the stage for Green Growth. The following Chapter focuses on Responsible AI, because we see AI as a decisive technology to achieve our sustainable development goals. In addition, it is a showcase of the ongoing discussions on how to use technology in a responsible way. The fourth Chapter will then focus on impact measurement. Only if we focus the discussion on what and how to measure and report real sustainability impact we generate on our journey towards Green Growth, we can predict our ability to deal with challenges such as climate change. It also allows to early on implement additional mitigation actions where needed.

ESG-oriented investing has increased tremendously in the last years with sustainable investments reaching globally

\$30 trillion

An increase of **68%** since 2014 and **1000%** since 2004.⁶

¹ Swiss Federal Council (2022) [Climate protection: Federal Council adopts Switzerland's long-term climate strategy \(admin.ch\)](#)

² Federal Statistical Office FSO (2021) [Environmental protection expenditure \(admin.ch\)](#)

³ EY CEO Imperative Study (2021) [The CEO Imperative: How has adversity become a springboard to growth](#), the survey was answered by 305 CEOs of the Forbes Global 2000

⁴ Forbes (2021) [Why It's Time To Prioritize ESG Initiatives In Your Business \(forbes.com\)](#)

⁵ McKinsey (2019) [Five ways that ESG creates value](#)

⁶ Global Sustainable Investment Alliance (2018) [Global Sustainable Investment Review](#)

⁷ OECD (2022) [Green growth and sustainable development](#)

GREEN GROWTH

"Green Growth as defined by the OECD means fostering economic growth and development, while ensuring that natural assets continue to provide the resources and environmental services on which our well-being relies"⁸.

The term "Green Growth" was first applied and discussed in 2005 at the 5th Ministerial Conference on Environment and Development in Asia and the Pacific⁹. Against the backdrop of sustainable economic growth, participants pointed out possible solutions, including internalizing environmental costs, improving eco-efficiency of production and consumption patterns, and fostering the development of markets for eco-friendly products and services as well as environmentally sound technologies. In pursuing green growth, participants also emphasized the need for innovation and efficient resource use to decouple growth from natural capital depletion¹⁰. In all these areas of action, technology is already today playing a pivotal role and it is our responsibility to accelerate all phases of the technological life-cycle from research to use and re-use of technology to achieve our sustainability goals.

To achieve Green Growth, it is a shared responsibility of governmental, corporate but also societal actors, academia and others – in short, the responsibility lies with all of us. To achieve the monumental tasks ahead of us, a collaborative mindset to co-create the needed solutions is the most promising way forward. No one actor alone will be able to shift the needle in a way needed to respond to the manifold challenges ahead. Doing it right opens a fantastic opportunity space for all actors to grow in a sustainable way.

The Current State of Green Growth in Switzerland

How is Switzerland doing against the ambition of Green Growth? While Switzerland is not explicitly following a dedicated Green Growth strategy, the environmental impact per person in Switzerland has decreased by about 20% in the last 20 years¹¹. But challenges remain: in its environmental report, the Federal Council drew attention to the fact that the extraction of raw materials, agriculture as well as further processing and disposal still have a significant impact on the environment.

Looking at climate change, with the Swiss vote against a revised CO₂ act, Switzerland's CO₂ reduction target by 2030 "will not be achieved by far"¹². Consequently, the rejection now requires the Swiss government to find other ways how to achieve its climate goals. The Federal Council's new proposal thereby relies on subsidies instead of the unpopular incentive taxes. In our view, technology is already today, and will even more play a decisive role to archive our Swiss CO₂ goals.

Switzerland developed a 2030 Sustainable Development Strategy (SDS) in reference to the Sustainable Development Goals (SDGs)¹³. Against this background, the Federal Council has defined 22 specific measures in the action plan 2021-2023 that will be implemented by latest 2023 to achieve the goals set by the SDS. The measures follow three priority themes:

- 1) sustainable consumption and production;
- 2) climate, energy and biodiversity;
- 3) equal opportunities and social cohesion¹⁴.

⁸ OECD (2022) [Green growth and sustainable development](#)

⁹ UN Sustainable Development Knowledge Platform (2022) [Green growth \(un.org\)](#)

¹⁰ MCED 2005 Bulletin (2005) [Summary report, 23–29 March 2005 \(iisd.org\)](#)

¹¹ Federal Statistical Office FSO (2018) [Switzerland's ecological footprint: A contribution to the sustainability debate](#)

¹² SRF (2022) [Bericht des Weltklimarates: Vertane Jahre für den Klimaschutz \(srf.ch/news\)](#)

¹³ Federal Office for Spatial Development ARE (2021) [2030 Sustainable Development Strategy \(admin.ch\)](#)

¹⁴ Swiss Federal Council (2021) [Aktionsplan 2021-2023 zur Strategie Nachhaltige Entwicklung 2030](#)

The SDS includes, among other priority areas, the reduction of total greenhouse gas (GHG) emissions in line with the Paris Agreement, which Switzerland has ratified in 2017. As part of the Climate Strategy 2050, Switzerland has committed to halving its GHG emissions by 2030 compared to 1990 levels and to achieve net-zero¹⁵ GHG emissions by 2050. With regards to social aspects, the SDS contains the promotion of individual self-determination, ensuring social cohesion, and guarantee of real equality between women and men¹⁶.

As part of Green Growth, the Covid-19 pandemic has given rise to the term "Green Recovery". Measures included a trans-formation of the target operating model, a restructuring of supply chains and suppliers, the restoration of ecosystems, or economic growth decoupled from resource consumption. Regardless of the applied measures, the pandemic-induced economic downturn provided a great opportunity to reboot and to create a sustainable, resilient, and inclusive future for people and planet. Additionally, recent geopolitical conflicts such as the Ukrainian War and tensions between Taiwan and China, threaten existing supply chains and existing dependencies on imported natural

assets. This also highlights the value of restructuring value chains.

Future of Green Growth Enabled by Technology

How will technology enable Green Growth in Switzerland? For Switzerland to facilitate the implementation of the described SDS, as well as the associated action plan and its measures, the Federal Council has adopted its "Digital Switzerland" strategy. This framework defines that in the future, environmental and data aspects are to be given more space in the federal government's digital policy¹⁷. Specifically, 41 targets are defined, which can, amongst others, be assigned to the fields of environmental protection, natural resources, energy as well as social affairs, healthcare, and culture.

Additionally, specific measures and areas of responsibility have been assigned to define how digital technologies can accelerate the achievement of ESG-related goals. To outline these targets, an overview is provided in the next table.

Environmental protection, natural resources and energy	Social affairs, healthcare and culture
The resource consumption of digitalization is optimized	Barrier-free and non-discriminatory access to digital products and services is guaranteed
The energy supply system is efficient, secure and reliable	Networking of the actors in the healthcare sector to enable made-to-measure health provision
The use of resources and energy is more efficient and more sustainable	Facilitating access to cultural creation and cultural heritage strengthens cultural participation
The basis for calculating environmental assessments has been improved	The digital transformation process takes account of the health and well-being of the population

¹⁵ To achieve net-zero, avoidable emissions must be eliminated and emissions that are difficult to avoid must be offset with negative emission technologies (NET), which permanently remove CO₂ from the air. Net-zero in this context is only an interim target.

¹⁶ Swiss Federal Council (2021) [2030 Sustainable Development Strategy](#)

¹⁷ Swiss Federal Council (2020) [New priorities for digital Switzerland \(admin.ch\)](#)

Concerning the category "Environmental protection, natural resources, and energy" Daniel Zürcher (Head of Section Innovation, FOEN) emphasizes the technological progress in Switzerland:

“We see a lot of technology development around the deployment of IoT solutions to monitor environmental effects and manage resource use.”

One of these innovations can be recognized in agriculture. "Smart farming" is on the rise and especially important against the background of population growth, induced urbanization and subsequent reduction in farmland and biodiversity.¹⁸ Specifically, it leverages a wide range of technologies such as drones, robots, and sensors, enabling precision agriculture¹⁹ to enhance soil, water, and crop management as well as plant protection and animal health.

Studies highlight the potential of smart farming: Via the incorporation of drone, satellite and soil data, the improvement of nitrogen use efficiency in winter wheat was tested in a multi-year study (2018-2020)²⁰.

The results reveal that seed yields do not differ significantly from harvests obtained by conventional methods. What has been recognized, however, is that fertilizer rates decreased significantly in some cases. Specifically, an average improvement in nitrogen uses of 13% was achieved for seven trial fields. Daniel Zürcher similarly recognizes major opportunities for the sustainable development of Swiss agriculture:

“By means of combining satellite imagery, drone technology, AI and autonomous robotics on the ground, fertilizer input can be massively optimized, and pesticide consumption phased out and replaced by mechanical treatments. This will allow organic farming to become mainstream worldwide.”

Another technology example, explicitly mentioned by the "Digital Switzerland" strategy²¹, which, for instance, minimizes the use and waste of resources for better renewable energy integration is the Distributed Ledger Technology (DLT)²². The technology has the capability to cut out the middle person by directly connecting (green) energy producers with potential consumers via peer-to-peer established platforms²³. Experts from the electricity industry, DLT industry and universities are collaborating to achieve the widespread application of the DLT in the electricity industry. The aim is to create nationwide standards that can be used to automate possible process steps along the supply chain and enable applications to interact with each other.

In Switzerland, many start-ups and companies are developing products and services based on DLT. Specifically, 130 DLT start-ups were recognized in January 2021²⁴. Hive Power, as an example, leverages the DLT to verify and trace generated energy quantities²⁵. With Ethereum-based "smart contracts", "prosumers" can trade energy in a decentralized manner. In this way, Hive Power supports energy providers to improve

¹⁸ SWI (2020) [Making the most of smart farming \(swissinfo.ch\)](https://www.swissinfo.ch/eng/making-the-most-of-smart-farming)
Importance of Smart Farming in Switzerland: Switzerland is home to 50,000 small-scale farmers, whose production meets slightly more than half of the nation's nutrition demand. Consequently, new agricultural technologies must be accessible and manageable for these small farmers. If it is considered that more than 80% of the world's food demand is covered by small farmers, this aspect becomes even more important. In this context, Switzerland, as a technology location, has the advantage of being able to draw on know-how of its leading universities such as ETH Zurich. In addition, projects such as the "Swiss Food and Nutrition Valley" are being launched, bringing together stakeholders to promote the importance of sustainable agriculture. This expertise could lead to Switzerland being recognized as a leading country in terms of "Smart Farming" and to the emergence of a hub which develops internationally applicable farming solutions.)

¹⁹ AI, Edge & IoT for Agriculture: [FarmBeats: AI, Edge & IoT for Agriculture - Microsoft Research](https://www.microsoft.com/en-us/research/publication/farmbeats-ai-edge-amp-iiot-for-agriculture/)

²⁰ Swiss Future Farm (2020) [Jahresbericht: Resultate der Feldversuche 2020 auf der Swiss Future Farm](https://www.swissfuturefarm.ch/jahresbericht-2020)

²¹ Swiss Federal Council (2020) [Strategie Digitale Schweiz: Das Energieversorgungssystem ist intelligent, sicher und zuverlässig \(digitaldialog.swiss\)](https://www.digitaldialog.swiss/de/strategie-digitale-schweiz)

²² EY (2020) [Why the energy sector must embrace blockchain now](https://www.ey.com/en_gl/blockchain/why-the-energy-sector-must-embrace-blockchain-now)

²³ Andoni et al. (2019) [Blockchain technology in the energy sector: A systematic review of challenges and opportunities \(sciencedirect.com\)](https://www.sciencedirect.com/science/article/abs/S0959652619300011)

²⁴ Swisscom (2021) [The evolution of blockchain start-ups in Switzerland \(swisscom.ch/en/b2bmag\)](https://www.swisscom.ch/en/b2bmag)

²⁵ Hive Power (2022) [Energy, made smart \(hivepower.tech\)](https://hivepower.tech/)

Key Takeaways and Call for Action

1

Even though the environmental impact per person in Switzerland has decreased by about 20% in the last 20 years, consumption as well as production patterns can still not be described as sustainable. Switzerland's CO₂ reduction target by 2030 will most likely not be reached under today's conditions.

2

Switzerland developed a "2030 Sustainable Development Strategy" and a referring action plan to address

- 1) sustainable consumption and production
- 2) climate, energy, and biodiversity
- 3) equal opportunities and social cohesion as its main objectives.

3

With its Digital Switzerland strategy, the country provides a framework to leverage digital technology to address ESG-relevant issues. Thereby, an advanced ecosystem is already in place, which focuses on harnessing innovative technologies to address pressing issues, supported by the lately launched Swiss Innovation Fund to support start-ups.

4

Switzerland's "Digital Switzerland" strategy highlights the intersection between the digital and green transition, but it also indicates that harmed parties, e.g., workers need support to be able to reintegrate into professional lives.

To foster Green Growth enabled by technology, we see a call for action in the following three areas:

CALL FOR ACTION



Switzerland to define policies, frameworks and support for relevant actors from the public, private and academic sectors that focus on the role of technology to achieve the defined 2030 and 2050 sustainability goals for Green Growth.



Switzerland to facilitate and support the development and implementation of technological innovation as well as exchange of best practices to accelerate positive sustainability impact and ensure the achievement of the 2030 and 2050 sustainability goals.



Switzerland to determine policies, frame conditions and support to ensure a responsible use of technology, including reduction of own environmental footprint of the use of technology as well as consideration and mitigation of societal impacts.

RESPONSIBLE AI

“The increasingly complex use of AI can be expected to test the boundaries of existing legal approaches to liability. As AI-specific regulation is emerging, a proactive governance approach to ensure trustworthy AI will mitigate algorithmic risk and inspire confidence in a digital society.”

Elisabeth Bechtold | Global Lead Data Governance & Oversight | Zurich Insurance Group

As pointed out in the second chapter, Switzerland has developed its own 2030 Sustainable Development Strategy. In combination with its Digital Strategy, the ambition is to solve tomorrow’s challenges with sophisticated technology³¹.

AI is one of the promising technology categories achieving this ambition. Unleashing the power of data and AI creates endless business opportunities to ultimately improve the quality of our lives³². In 2018, McKinsey suggested that AI could deliver economic activity of \$13 trillion by 2030, equivalent to 1.2% additional annual global GDP growth³³. In 2020, a paper in Nature asserted that AI could “help address some of the world’s most pressing challenges and deliver positive social impact in accordance with the priorities outlined in the United Nations’ 17 Sustainable Development Goals³⁴”. To underline the importance of this emerging technology application: the AI market is expected to increase in size to about USD 200 billion, in 2026, registering a compound annual growth rate of 26.1% from its USD 50 billion valuation in 2020.

As business models become increasingly digitized, human lives are impacted significantly by design choices of algorithm creators. Heralded to eliminate human error and bias, increase

efficiency as well as enhance our abilities as a species to reach new heights, all aspects of social and environmental responsibility need to be weaved into AI developments. In short: **We require “Responsible AI”**.

Responsible AI³⁵ enables the design, development and deployment of systems and solutions based on models of fairness and responsibility. Responsible AI acts as intended, fosters human values, and enables and nurtures AI in a way that amplifies human ingenuity.

How is responsible AI applied today?

The possibilities of solving ESGs and SDGs challenges with applied responsible AI are unlimited. A concrete example is the project “Feeding the world responsibly and sustainably with Artificial Intelligence”³⁶, which has received large international exposure. It addresses the *SDG goal 14 Life below Water*.

The manufacturer ABB³⁷ together with the Norway Royal Salmon (NRS), the leading producer of sustainable salmon, selling about 70,000 tons of salmon every year, have jointly developed an approach that empowers fish farmers to *avoid overfishing*. Biomass underwater cameras are used here to capture images of the salmon in their submerged fish pens, floating kilometers offshore at sea. A layer of AI on top of the video footage makes it possible to measure and count salmon automatically. That solution is furthermore leveraging Internet of Things (IoT), Sensors and Edge devices, allowing sustainable salmon fishing³⁸.

³¹ Swiss Federal Office (2020) [Strategie Digital Switzerland \(digital-dialog.swiss\)](https://www.digitalstrategy.ch/digital-dialog/swiss)

³² Polaris Market Research (2022) [Market Research Report: Artificial Intelligence Market](https://www.polarismarketresearch.com/research-report/artificial-intelligence-market)

³³ McKinsey (2022) [The potential value of AI - and how governments could look to capture it](https://www.mckinsey.com/industries/technology-and-digital/our-insights/the-potential-value-of-ai-and-how-governments-could-look-to-capture-it)


³⁴ UN Department of Economic and Social Affairs (2022) [Sustainable Development: The 17 Goals \(sdgs.un.org\)](https://www.un.org/sustainabledevelopment/17-goals/)

³⁵ Microsoft (2020) [Our approach to responsible AI \(youtube.com\)](https://www.microsoft.com/en-gb/ai/responsible-ai)

³⁶ ABB (2020) [Feeding the world responsibly and sustainably with Artificial Intelligence by ABB and Microsoft](https://www.abb.com/global/abb/feeding-the-world-responsibly-and-sustainably-with-artificial-intelligence-by-abb-and-microsoft), Norway Royal Salmon (NRS) is a leading producer of sustainable salmon, selling about 70,000 tons of salmon every year.

³⁷ Leading the way with Circular Economy: [Leading the way to the circular economy — ABB Group \(global.abb\)](https://www.abb.com/global/abb/leading-the-way-to-the-circular-economy)

³⁸ ABB (2020) [How AI can help feed the world sustainably \(youtube.com\)](https://www.youtube.com/watch?v=...)



Feeding the world responsibly and sustainably with Artificial Intelligence

"To continuously improve sustainability and increase the safety of our individuals, we worked with ABB and Microsoft to co-create innovative ways that empower us to achieve more on every level."
- Arve Olav Lervag, COO Farming, NRS.

<h3>Empower Fish Farmers through AI</h3> <p>Norway Royal Salmon (NRS) is a leading producer of sustainable salmon, selling about 70,000 tons of salmon every year. This equates to one million salmon meals per day, all year round.</p> <p>In the harsh and sometimes dangerous environments of the most northern parts of Norway, NRS sought to increase the safety of its employees, reduce operational costs and prioritize sustainability of Nordic aquaculture.</p> <p>Want to learn more? Read the full story.</p>	<h3>The Challenge</h3> <p>How can we measure, weight the fish more accurately? How can we check for sea lice more safely, without visiting the farm in stormy weather?</p>	<h3>The Solutions</h3> <p>Biomass Underwater cameras capture images of the salmon in their submerged fish pens, floating kilometers offshore at sea. A layer of AI on top of the video footage makes it possible to measure and count salmon automatically.</p> <p>Our intelligent edge analyses fishes through video stream 24/7 that allow us to continuously improve the accuracy of the biomass.</p>
	<h3>The Results</h3> <p>To date, Norway Royal Salmon already shows double digit savings due to less on site visits, improved safety, better food distribution and better planning for harvesting.</p>	<p>Sea Lice detection 4k cameras allow NRS to detect Sea Lice in real time and forward the information to the government. In addition, the data collection helps NRS to detect under what conditions sea lice appear.</p> <p>The used convolutional deep learning framework allow us as well to analyze fish lice, wounds or other behaviors of the fishes.</p>

Illustration 1: Responsible AI empowering fish-farmers to avoid over-fishing (SDG Goal 14 – Life under Water)³⁵

Whilst the *Life below Water* case provides an example under water, equivalently the *Life on Land* case addresses SDG goal 15. In this case, the global retailer Nestlé, powered by Microsoft Azure, focuses on “*Water waste avoidance in agriculture*”. When farmers water their fields they never truly know when it is enough or even too much. Water is a rare resource globally, and the “war” for water, like the scarcity for energy we face since the Ukraine war, is just around the corner.

The solution supports farmers in Mexico through IoT Data Collection and intelligent algorithms to optimize the water use for each agricultural field depending on its crop’s situation (growth stage, plant water requirement, ground consistency, fertilization schedules etc.), the environment conditions (weather, season, pollution, CO₂ density etc.) and of course water availability for the entire agricultural (and wider) surroundings.

This is another great example – if applied globally – how we can optimize water consumption in agriculture without jeopardizing an optimal harvest, while at the same time increasing fairness and equality in the distribution of water used for agriculture around the world. Global data could be leveraged to ensure priorities for water provisioning are given to those regions that need it most.

Nowadays organizations are just at the brink to aligning their sustainability strategies with their Digital, Data and AI strategies and Governance. Learning from each other will be fundamental and will only be achieved when market participants within and across industries work in together

More cases of how applied machine learning and responsible AI support ESGs and SDGs can be found here:

<https://pulse.microsoft.com/en/category/sustainable-futures-en/>

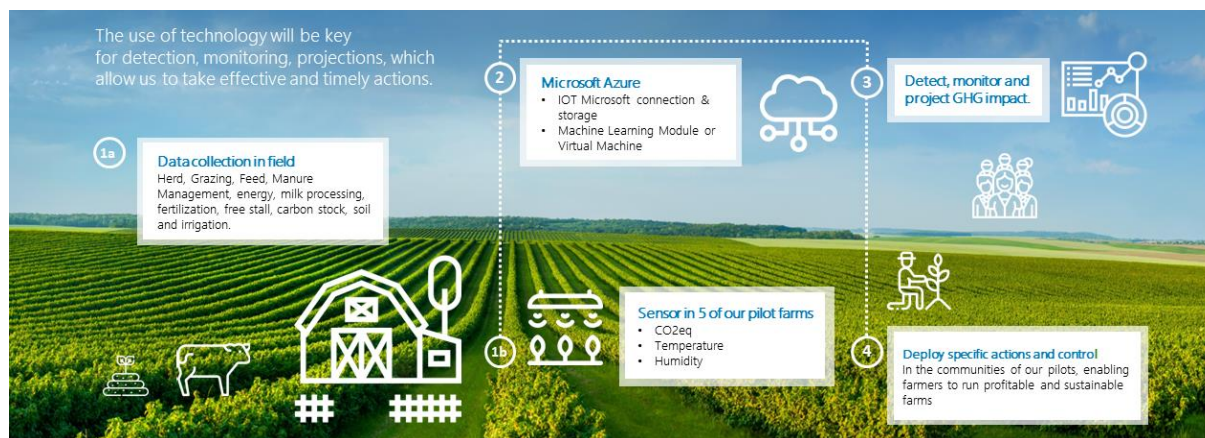


Illustration 2: Applied AI for Water Waste Avoidance in Agriculture (SDG Goal 15 – Life on Land)

The Need for Responsible AI

Why don't we see flying cars outside of our windows yet?

Fundamental research is important to categories of innovation with disruptive character such as described above. Researchers create novel concepts and demonstrate their promise through results in carefully crafted experiments - the amazing state of the art in AI is a recent example of this. Importantly, not every concept created by researchers is sufficient or workable or applies to sustainability or principles of responsibility in the real world. New categories can be created when one or more of these new concepts are developed further, grounded in and applied to the real-world environment.

For AI, one of those breakthrough clinching approaches is machine teaching. In the same way languages and compilers made the once complex task of computing easy, efficient, and accessible to millions of programmers, machine teaching enables experts from any discipline (mechanical, electrical, aeronautical engineering, etc.) to create powerful and usable automated systems easily.

However, the limitations to applying automated AI are in part technical “such as the need for massive training data and difficulties “generalizing” algorithms across use cases”. Other challenges include “potential bias in the training data and algorithms, as well as data privacy, malicious use, and security are all issues that must

be addressed”³⁹. While most AI systems pose limited to no risk and can contribute to solving many societal challenges, certain approaches create risks that we must address to avoid undesirable outcomes.

In general, the more interpretable a model, the easier it is to ensure fairness in decision making and correct for bias. In order to achieve that, we need a Responsible AI framework to define how we evaluate fairness, ensure accountability and how to hold liable the originator or e.g. an unfair AI supported decision.

Baseline is that current AI has standards of responsibility taught to them by humans. Therefore, the current process of building an AI always starts with the human understanding and applying principles of responsible AI into the AI algorithm.

The adoption of corporate responsible AI governance systems⁴⁰ will be at the forefront of any kind of development. There is a clear commitment from industry to developing and applying “Responsible AI”. Society and consumers will not accept anything less than solutions that apply this level of compliance, responsibility, and sustainability. Based on the data from the past and gathered in upcoming years, we will leverage globally aligned reporting and measurement platforms that allow benchmarking organizations and countries against each other, and performance, compliance and inclusive growth are transparent for everyone.

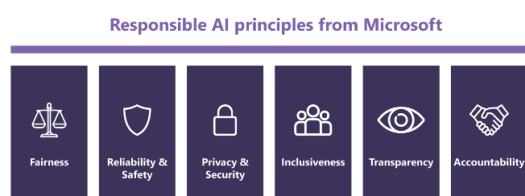
³⁹ McKinsey (2018) [Executive Briefing: AI, automation, and the future of work: Ten things to solve for](#)

⁴⁰ World Economic Forum WEF 2022: [5 ways to avoid artificial intelligence bias with 'responsible AI' \(weforum.org\)](#)

Global convergence around responsible AI principles

Large sections of the private sector have voluntarily committed themselves to standards for responsible AI. These standards have become integral part of each organization's digital and AI strategy. A case in point are Microsoft's six principles which the company has adopted in 2018. Responsible AI is put into practice across Microsoft through efforts by Microsoft's AI, Ethics, and Effects in Engineering and Research (AE-THER) Committee and its working groups along with the Office of Responsible AI (ORA). The AE-THER Committee and the Office of Responsible AI are teaming up with responsible AI advocates and teams to ensure that responsible AI principles are reflected in Microsoft's business practices.

Responsible AI principles from Microsoft⁴¹



Globally, we see convergence around five principles for responsible use of data and AI: Transparency, Equity and Fairness, Non-Maleficence, Responsibility, and Privacy⁴².

We will need a clear understanding of responsibility and accountability for applying AI in real-world solutions.

Clarifying C-suite accountability will reduce corporate liability and operationalize responsible AI governance. As illustrated by the example of Microsoft, organizations will need to establish AI

governance systems and assign clear responsibility on top level to coordinate and handle incoming AI questions and concerns, both internal and external. Such governance bodies will oversee the implementation of the framework and supporting systems, take responsibility for the accuracy and timeliness of responses, and ensure new challenges are identified and addressed.

Europe's Approach to AI

The body of work around AI risk is evolving and AI risk stays topical. In a multinational survey on trust by Edelman⁴³, 61% agreed that "Government does not understand emerging technologies enough to regulate them effectively". But with regulators advocating for a risk-based approach to managing AI systems, the law on AI is emerging.

Building on its influential General Data Protection Regulation (GDPR), the European Union has taken a progressive stance on trustworthy AI and its implications for algorithmic liability by launching specific (non-binding) resolutions such as the Civil Law Rules on Robotics⁴⁴ (2017), the Civil Liability Regime for AI (2020)⁴⁵, and on April 21, 2021, a proposal of a binding comprehensive legal framework for AI, the Artificial Intelligence Act (AI Act)⁴⁶. The AI Act focuses on the regulation of high-risk AI applications⁴⁷, while certain practices should be prohibited for all AI systems as a violation of fundamental human rights. Therefore, four categories of AI risk⁴⁸: unacceptable, high, limited, and minimal, have been established.

Connecting the key pillars of the European Union's AI Act with the European Parliament's resolution on a Civil Liability Regime for AI, it can be expected that a risk-based approach will be

⁴¹ Microsoft (2022) [Microsoft responsible AI Principles](#)

⁴² Jobin, Lenca and Vayena (2019) [The global landscape of AI ethics guidelines \(nature.com\)](#)

⁴³ Edelman (2020) [2020 Edelman Trust Barometer](#)

⁴⁴ European Parliament (2017) [European Parliament resolution of 16 February 2017 with recommendations to the Commission on Civil Law Rules on Robotics \(2015/2103\(INL\)\) \(europarl.europa.eu\)](#)

⁴⁵ European Parliament (2020) [European Parliament resolution of 20 October 2020 with recommendations to the Commission on a civil liability regime for artificial intelligence \(2020/2014\(INL\)\) \(europarl.europa.eu\)](#)

⁴⁶ European Commission (2021) [Proposal for a regulation of the European Parliament and of the Council laying down harmonised](#)

[rules on Artificial Intelligence \(Artificial Intelligence Act\) and amending certain Union Legislative Acts, supra \(fn. 1\) \(eur-lex.europa.eu\)](#)

⁴⁷ The proposed *Artificial Intelligence Act* (supra) lays down a risk methodology to define "high-risk" AI systems that pose significant risks to the health and safety or fundamental rights of persons. A detailed compilation of high-risk AI systems is contained in its Annex III

⁴⁸ Strict liability means that a party can be held liable despite the absence of (proven) fault. See, for example, [non-binding European Parliament Resolution on Civil Liability Regime for AI, supra \(fn. 54\) \(europarl.europa.eu\)](#)

introduced, with a common strict liability regime for high-risk AI systems⁴⁹.

The EU's AI Act will be an integral part of organization's digital and AI strategy to ensure that Europeans can trust what AI has to offer.

Responsible AI Framework in Switzerland

The extraterritorial application of Europe's AI Act will have a range of implications on Switzerland, which is arguably at the cutting-edge of AI and innovation development.

Despite Switzerland's status as a leading hub for AI, it has not created explicit AI legislation up until this point, due to currently existing digital laws and practices such as the "Swiss Code of Good Practice for Corporate Governance". The Swiss Federal Council has adopted seven guidelines as a framework for the handling of AI, with a focus on the development of software for the common good and the protection of fundamental rights. Swiss companies are strongly active in the EU and thus subject to EU legislation. Similar to the wide-reaching impact of GDPR, the EU's AI Act will impact Switzerland accordingly. To maintain Switzerland's leading position for AI, whilst considering a sustainable and responsible application of technology, a bespoke framework could be drafted for Switzerland in a win-win manner. This would strengthen sustainability and responsibility aspects for the use of AI, whilst leaving freedom and creating a culture that promotes innovation and the use of technology, such as AI.

Due to its political and historically neutral positioning within the global community, Switzerland could build a cornerstone to orchestrate and drive global collaboration efforts to further develop, nurture and innovate concepts of "Responsible AI", solutions and platforms.

How to Get to the Target State?

The direction to achieve "Responsible AI" has been set. The awareness towards applying and achieving sustainability goals is present in society, politics, and industry. So is the awareness in countries across the globe towards standards of responsible AI. We therefore need to establish continuous learning, communication and discussion of approaches and global awareness campaigns to nurture the understanding and interpretation of these standards already in early education.

A global "Responsible AI Measurement Framework" and a globally published and easy to understand "Responsible AI Adherence Report" looks like a long-term goal. They would serve the "ethical consortium of human society" as a basis to make informed decisions on "Responsible AI" solution and future platform developments that foster profitable solutions to people and planet.

⁴⁹ European Commission (2021) [Europe fit for the Digital Age: Commission proposes new rules and actions for excellence and trust in Artificial Intelligence \(ec.europa.eu\)](https://ec.europa.eu/commission/presscorner/detail/en/ip-21-1861)

Key Takeaways and Call for Action

1

Governments must act to ensure responsible AI is the norm across their country. Switzerland to consider introducing guidelines, similar to the European Commission's AI Act for Trustworthy AI. These guidelines and laws however are only the foundations of what is required. This approach should become an integral part of a cross country education and information sharing concept.

2

Artificial Intelligence & technology can act as either a tool or a weapon in the fight for sustainability. With the right guiding principles and measurements, the application and adaption of AI in our day-to-day life can have beneficial impact on our path towards a more sustainable and prosperous society. However, the governance of such principles, solution development and application need to remain the accountability of a human governance body.

3

Artificial Intelligence shows the potential to create social justice & injustice, especially in the realms of bias. It is up to organizations and governments to tackle this threat before biases occur on industrial scales through roll-out of AI solutions. Governments, global governance bodies and society itself will – through continuous education and transparency – become the driver for industry, commercial and research organizations to focus their efforts primarily on socially acceptable solutions and platform development.

4

The European Union's Artificial Intelligence Act will place limitations on AI tools used by EU citizens, meaning corporations acting around the world will have to comply in a similar way to GDPR regulations. Switzerland should consider taking a lead role in the adoption of such guidelines and further the introduction or sustainability guarantees, not to limit, but to nurture and optimize innovation driven by Responsible AI in a country that already holds a substantial AI innovation and solution landscape.

Therefore, we conclude this chapter with the following call for action for Organizations, Societies and Governments:

CALL FOR ACTION



When adopting AI solutions, consider how to adhere to the latest regulations, including the European Union's Artificial Intelligence Act, and the Ethics Guidelines for Trustworthy AI.



Consider frameworks and tools to establish trust and responsibility across your entire AI portfolio's lifecycle, Fairness, Safety & Responsibility, Privacy & Security, Explainability, Inclusiveness, Transparency, and Accountability.



Technology and sustainability are bound together, and as such, to survive and thrive, organizations will have to put sustainability at the heart of their business and tech strategy, and tech at the heart of their sustainability journey. Similarly, any policy framework that supports sustainable change will have to factor in a digital transformation to meet any ambitious climate and environmental objective.



Regulations such as the EU's Artificial Intelligence Act are already affecting a number of businesses & organizations in Switzerland. While effort should be made to ensure responsible technology and AI, regulations should consider, and in certain cases allow for, AI supported adaption in order not to limit technological and societal advancement.



AI laws should focus on empowering and protecting the individual, whereas in turn individuals must be better educated on standards and guiding principles especially of "Responsible AI" developments.

IMPACT MEASUREMENT

“You can’t manage what you can’t measure” – a guiding principle Antonio Hautle, Executive Director at the UN Global Compact Network Switzerland & Liechtenstein is using and which shows the need for impact measurement. Impact measurement stands for the process of quantitatively and qualitatively evaluating the impact of an organization⁵⁰. It is the most important tool to ensure businesses reach their goals as put by the Initiative for Global Development:

“Measuring and understanding impact beyond traditional assessments of financial return enables companies to strengthen strategy formulation and decision-making, better manage their business and achieve greater impact, more effectively engage external stakeholders and enhance the long-term sustainability of their business through value and wealth creation and the efficient use of resources”⁵¹.

To incorporate impact measurement into businesses is indispensable to reach sustainability goals, long-term value creation and to building engagement at C-suite level. Specifically, impact measurement needs to be aligned with business strategy and implementation. Clarifying, measuring, managing, and communicating sustainability impacts for stakeholders is therefore becoming a management priority.

Impact Measurement Today

Many efforts to standardize impact measurement and report on organizational impact have been made, resulting in first reporting standards in the late 90’s. For example, The Global Reporting Initiative (GRI) has been founded in 1997⁵² and is continuously evolving. Nowadays, it is still difficult for companies to define which disclosures to adopt given the multitude of existing

reporting standards and frameworks. In recent years, various legislations put forth mandatory sustainability reporting, such as the European Union’s Corporate Sustainability Reporting Directive (CSRD), the Swiss Counterproposal to the Responsible Business Initiative or the US Securities and Exchange Commission’s Proposal on mandatory climate-risk disclosures. However, standard setters such as the GRI, the International Sustainability Standards Board (ISSB), the World Economic Forum International Business Council (WEF IBC), the Science Based Targets Initiative, and the European Financial Reporting Advisory Group (EFRAG) are increasingly working in cross-collaborations to define common standards for sustainability reporting. Until these common and interoperable standards are set, not only companies but also investors will keep struggling, e.g., when comparing disclosures among relevant industry players.

In this context, standardized certifications are emerging, such as the existing B Corp certification process, which provides an orientation for companies and stakeholders when implementing impact measurement actions⁵³. These certificates enjoy credibility due to wide-ranging standards companies adopt if they are certified as a B Corp.

On top of the overwhelming variety of existing guidelines, many companies are still relying on manual tools to collect data, consolidate it across business units and calculate KPIs. This is not only prone to errors and inaccuracies but can also be time and resource consuming. Companies should, where possible, try to leverage technology which allows for better data analytics, automatize controls, and visualize impact deviated from raw data input. Data gathering via digitalization will remain the most efficient way to provide accurate and reliable data at scale, this means that standards requirements will have to factor in the possibility to comply with

⁵⁰ youmatter (2020) [Impact Measurement Definition \(youmatter.world\)](https://youmatter.world/)

⁵¹ Initiative for Global Development (n.D.) [Measuring Impact: A Business Approach \(comunicarseweb.com\)](https://comunicarseweb.com/)

⁵² Global Reporting Initiative (2022) [Mission and history \(globalreporting.org\)](https://globalreporting.org/)

⁵³ B Lab (2022) [Make Business a Force For Good \(bcorporation.net\)](https://bcorporation.net/)

reporting via data gathered digitally (e.g. avoiding open answers to broad questions).

Furthermore, a good data basis can automatically be created to enhance internal reporting and therefore track progress on the achievement of environmental and social goals. Big data supports availability, use, and analysis of data. The progress in data evaluation through big data analytics offers completely new possibilities for forecasting trends, responding to unforeseen events, and optimizing business strategies. Never was this clearer than after the recent Covid-19 pandemic, which has been managed and approached with the use of big data⁵⁴. Now is the time to leverage the growing knowledge on big data, to break through data siloes within supply chains, providing greater transparency and accountability that is essential to draw the roadmap towards sustainability. The following subchapter provides some insights into currently pursued applications and projects.

Carbon recording und reporting

Many organizations and states commit themselves with long-term company targets and national agendas to reduce their carbon footprint in the coming decades, alike the Swiss Government with its 2050 net-zero strategy. High-level reporting on these commitments is often already in place, but detailed progress measurement on these goals is not⁵⁵. To quote a Harvard Business Review's critique: *"Reporting is not a proxy for progress. Measurement is often non-standard, incomplete, imprecise, and misleading"*⁵⁶. Thankfully many projects are concentrating on closing this gap.

For example, the Wiser project⁵⁷ develops assessment frameworks and visualization tools to analyze the carbon footprint of supply chains. Leveraging an open-source data approach,

public and private stakeholders can contribute and share their knowledge on GHG emissions. In addition, automatic data-updates integrate the constantly growing information base on GHG data to ensure transparent and complete measurement.

A further example, which leverages the collaboration of scientific, corporate, philanthropic, and intergovernmental organizations is "The Carbon Call", which addresses gaps in existing global carbon accounting⁵⁸. These gaps occur due to low data quality, inconsistent measurements or isolated platforms and the project specifically seeks to identify where more accurate information is needed to promote reliability, interoperability, and therefore impact measurement across ecosystems. An example of a product in development aiming to provide reliable carbon emission recording and reporting is the "Microsoft Cloud for Sustainability", a new Microsoft App, that offers organizations a precise, comprehensive, and increasingly real-time view of their footprint. The software connects data to represent the emissions footprint of operations and value chains with accuracy and can visualize as well as quantify the company's environmental impact and sustainability progress in near real time^{59 60 61}.

Looking at the Swiss market, several companies are developing impact measurement and reporting solutions regarding sustainability impact, as for example the start-ups Pelt8⁶² or Project Frame⁶³.

Social Impact Measurement

Social impact relates to long-term positive and negative changes for individuals, communities, society and our world which results from activities by organizations⁶⁴. The 17 UN Sustainable Development Goals have become the golden

⁵⁴ Haleem, Javaid, Khan and Vaishya (2020) [Significant Applications of Big Data in COVID-19 Pandemic \(nih.gov\)](#)

⁵⁵ Swiss Federal Council (2021) [Climate protection: Federal Council adopts Switzerland's long-term climate strategy \(admin.ch\)](#)

⁵⁶ Sawa (2021) [Overselling Sustainability Reporting \(hbr.org\)](#)

⁵⁷ The Wiser project is run by Swiss research partners such as the Swiss Federal Laboratories for Materials Science and Technology or the University of St. Gallen. Further, implementation partners such as ABB, EY or Microsoft participated, aiming to provide a platform to put Switzerland in a leading position in the context of environmental accounting.

⁵⁸ Microsoft (2022) [Leading organizations form the Carbon Call to address reliability and interoperability in carbon accounting for the planet \(microsoft.com\)](#)

⁵⁹ Microsoft (2022) [What is Microsoft Cloud for Sustainability \(microsoft.com\)](#)

⁶⁰ Microsoft (2022) [Microsoft Cloud for Sustainability is growing \(microsoft.com\)](#)

⁶¹ Redmond (2021) [Microsoft Cloud for Sustainability Released to Public Preview \(redmondmag.com\)](#)

⁶² Pelt8 (2022) [Sustain the Future \(pelt8.com\)](#)

⁶³ Project Frame (2022) [Frame \(projectframe.how\)](#)

⁶⁴ UNDP (2022) [SDG Impact Standards for Enterprises \(sdgimpact.undp.org\)](#)

standard against which entities measure not only their environmental but also their social impacts. The SDGs were defined as a shared blueprint for peace and prosperity for people and the planet⁶⁵. Achieving the SDGs creates at least US\$ 12 trillion in opportunities a year by 2030 which represents about 10% of forecasted global GDP in 2030⁶⁶.

There are several reporting tools attempting to facilitate the tracking of progress against the SDGs. For example, the web-platform SDG Tracker presents data across all available indicators from the “Our World in Data” database, using official statistics from the UN and other international organizations. It is an open-access source that tracks global progress towards the SDGs and allows people around the world to hold their governments accountable to achieving the defined goals⁶⁷.

Another example, which particularly leverages the SDGs to measure impact of companies, is Impaakt. It is a platform which evaluates and publishes the social and sustainable impact of companies with the objective of protecting investors as well as asset managers from greenwashing⁶⁸.

The measurement of social impact is also addressed by the private sector providing automated solutions to other businesses. For example, the company Sopact is a SaaS-based platform designed for enterprises to measure and manage evidence of their positive or negative impact on people and the planet. It simplifies data integration and builds continuous data-driven impact evidence dashboards⁶⁹.

US\$ 12 trillion

Achieving the SDGs creates at least US\$ 12 trillion in opportunities a year by 2030.

Future Impact Measurement

AI and specifically Machine- and Deep Learning harbor immense potential to mitigate climate change and address impact measurement related issues. Selected applications of machine learning are to provide adequate life-cycle transparency and reporting of GHG emissions, to implement standardized metrics for assessing model effectiveness, and to develop organizational carbon pricing strategies⁷⁰. Carbon pricing is an example of in-house impact measurement and used as a tool to fund climate action projects within companies. The need for standardized carbon pricing was also stressed by Raphaëla Andrea Kotsch, a Ph.D. candidate in Digital Innovation at University of Zürich. In her opinion, a common carbon price would lead to the consideration of all external effects, such as environmental impact, into business strategy.

Technology will be essential in guiding us into a green future. However, technology in itself needs to be tracked regarding its impact. The increasing use of technology is resulting in growing electricity and material demand which leads to further negative environmental impact⁷¹. In fact, by 2030, the IT sector will account for a massive 20-30% of global electricity consumption, where data centres alone will represent ~10%⁷². However, Lucas Federer, Project Manager at Economiesuisse, argues that by the year 2030, information and communication technologies will help to reduce up to ten times more GHG emissions than they cause.

This trade-off needs to be addressed as put by Jan Bieser, a Senior Researcher and Speaker at the Gottlieb Duttweiler Institute: “In order to steer the use of technology for sustainable development, it is important to know the “real” impact of technology or specific solutions.” One possible reduction of ICT energy use, as proposed by Raphaëla Kotsch, could be to simplify and optimize machine learning models as much as possible.

⁶⁵ UN Department of Economic and Social Affairs (2022) [Sustainable Development: The 17 Goals \(sdgs.un.org\)](https://sdgs.un.org)

⁶⁶ UN Sustainable Development Knowledge Platform (2017) [Better Business, Better World: The report of the Business & Sustainable Development Commission \(un.org\)](https://www.un.org/sustainabledevelopment/)

⁶⁷ SDG Tracker (2018) [Measuring progress towards the Sustainable Development Goals \(sdg-tracker.org\)](https://sdg-tracker.org)

⁶⁸ Impaakt (2022) [Company Sustainability Impact Rating & Scores \(impaakt.com\)](https://impaakt.com)

⁶⁹ sopact (2022) [Impact Cloud \(sopact.com\)](https://sopact.com)

⁷⁰ Kaack et al. (2021) [Aligning artificial intelligence with climate change mitigation \(hal.archives-ouvertes.fr\)](https://hal.archives-ouvertes.fr/)

⁷¹ Masanet et al. (2020) [Recalibrating global data center energy-use estimates \(science.org\)](https://science.org)

⁷² Jones (2018) [The Information Factories \(ibl.gov\)](https://ibl.gov)

Key Takeaways and Call for Action

Generally, the potential of big data and technology for impact measurement is vast as highlighted by the three main takeaways of this paper:

1

Impact measurement is essential for companies and other organizations to reach their sustainability goals.

2

Technology can simplify, standardize and scale impact measurement processes, and allows data gathering digitally. First service offerings already exist.⁷³

3

Standardization of impact measurement is accepted, even desired, by industry relevant stakeholders, for instance by means of regulation.

The questions that need to be answered are:

- Which metrics are impact-oriented and relevant for a multitude of companies of different sectors and with different business models to allow for comparison across companies?
- If those metrics are determined, should reporting on them be mandatory on a national or international level?

The private sector and the public sector need to align and work together to implement the change our society desires. Therefore, we conclude this chapter with the following call for action:

CALL FOR ACTION



Standardized impact measurement processes and common sustainability reporting standards must be developed as soon as possible to allow for dedicated action and comparison across different sectors and companies.



Companies must adopt digital technologies to measure and communicate their impact on people and environment in a more accurate, transparent, and persisting way.



Transparency is the first step towards a sustainable future.

The approach we take now could shape technological progress and environmental sustainability for decades to come.

⁷³ The Microsoft Cloud for Sustainability enables companies to amplify progress and transform their business through environmental, social, and governance (ESG) capabilities: [Microsoft Cloud for Sustainability | Microsoft](#)

CONCLUSION

This white paper started with the clear urgency to act - the coming years will be decisive for the path to Green Growth.

We have taken you on a journey along the three chapters of “Green Growth”, “Responsible AI” and “Impact Measurement” with the intention to trigger further discussions and actions for a sustainable Switzerland enabled by technology. Clear calls for actions have been highlighted and are summarized again here:

Green Growth

CALL FOR ACTION



Switzerland to define policies, frameworks and support for relevant actors from the public, private and academic sectors that focus on the role of technology to achieve the defined 2030 and 2050 sustainability goals for Green Growth.



Switzerland to facilitate and support the development and implementation of technological innovation as well as exchange of best practices to accelerate positive sustainability impact and ensure the achievement of the 2030 and 2050 sustainability goals.



Switzerland to determine policies, frame conditions and support to ensure a responsible use of technology, including reduction of own environmental footprint of the use of technology as well as consideration and mitigation of societal impacts.

Responsible AI

CALL FOR ACTION



When adopting AI solutions, consider how to adhere to the latest regulations, including the European Union’s Artificial Intelligence Act, and the Ethics Guidelines for Trustworthy AI.



Consider frameworks and tools to establish trust and responsibility across your entire AI portfolio’s lifecycle, Fairness, Safety & Responsibility, Privacy & Security, Explainability, Inclusiveness, Transparency, Resilience, Performance, and Accountability.



Technology and the Sustainability are bound together, and as such, consider any sustainability impacts of your AI solutions and technological progress. In other words, to survive and thrive, organizations will have to put sustainability at the heart of their tech strategy, and tech at the heart of their sustainability journey.



Regulations such as the EU’s Artificial Intelligence Act are already affecting a number of businesses & organizations in Switzerland. While effort should be made to ensure responsible technology and AI, regulations should consider, and in certain cases allow for, AI supported adaption in order not to limit technological and societal advancement.



AI laws should focus on empowering and protecting the individual, whereas in turn individuals must be better educated on standards and guiding principles especially of “Responsible AI” developments.

Impact Measurement

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Standardized impact measurement processes and common sustainability reporting standards must be developed as soon as possible to allow for dedicated action and comparison across different sectors and companies.



Companies must adopt digital technologies to measure and communicate their impact on people and planet in a more accurate, transparent, and persisting way.



Transparency is the first step towards a sustainable future.

The Tech for Sustainability Circle will continue to bring organizations together to share knowledge, boost transparency and nurture dialogue between the private and public sectors, academia, and governmental organizations. It is of essence to co-create positive sustainability impacts enabled by technology and to showcase best practices from industry and public sector.

Further reading and links:

- https://www.ey.com/en_gl/sustainability
- <https://www.microsoft.com/en-us/sustainability>
- <https://www.globalcompact.ch/>
- <https://www.microsoft.com/en-ch/techforsustainability/>
- <https://info.microsoft.com/ww-landing-Sustainability-Executive-Playbook.html?LCID=EN-US>
- <https://pulse.microsoft.com/de-at/category/sustainable-futures-de-at/>

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