SDC Digital Watch Newsletter

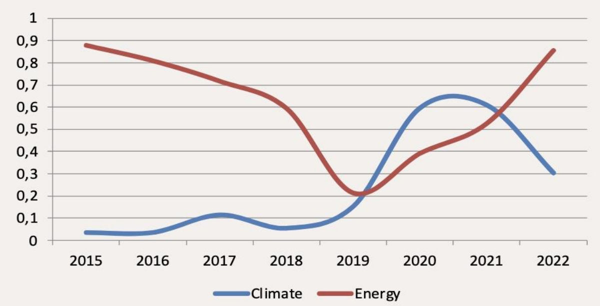
DiPLO

Issue 9 | July 2022

Digital and environment: Nexus of the future of humanity

The nexus between the environment and digital is at the core of many international and national strategies, legislations, and policy initiatives. This nexus is particularly important today as environment and climate issues have been pushed down in public priorities by the pandemic and more recently the Ukraine war.

For example, the climate has been declining in the public agenda since 2020 compared to energy issues, refugee crisis, food security, and health to name a few (see below).



Source: Media Tenor. Basis: 249,471 reports on investment companies in 47 international media, 553 reports related to climate topics, 1,559 reports related to energy topics

Climate commitments to reduce CO2 may be reversed temporarily as some countries increase the use of coal instead of gas and oil. In this context, digitalisation can help 'save' environmental and climate agendas and reach emission and other critical goals.

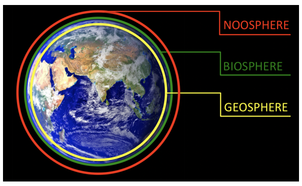
In this direction, the EU's latest [Strategic Foresight (26 June 2022)] proposes twinning green and digital transitions to address new geopolitical contexts.

Digital technology can reduce global CO2 emission by 20% by 2030, according to the Global Enabling Sustainability Initiative (GESI), via use in mobility, agriculture, manufacturing, energy, construction, and cities. In search of sustainability, more than 70% of sustainable development goals (SDGs) can be positively influenced by digitalisation according to a PwC study.

In the subsequent pages, you can read more about the issues at the centre of the digital-environment nexus: earth observation and remote sensing, energy consumption, smart cities, e-waste, and biodiversity. You can also find a summary of the digital coverage at the Stockholm +50 summit, including the launch of the *Action Plan for a Sustainable Planet in the Digital Age*.

Beyond a four-page summary of this issue of the SDC Newsletter, you can dive deeper into governance, economics, and other aspects of environment, climate, and digital via the Diplo knowledge ecology.

We wish you a fun journey discovering the interplay between the environment and digital and their relevance for development cooperation, International Geneva, and the future of humanity.



New thinking on the environment and digital nexus are gradually emerging in works of philosophers, ethicists, and theologians. Among others, a holistic approach can build on **the noosphere concept** developed by French priest Pierre Teilhard de Chardin and Russian scientist Vladimir Vernadsky in the early 20th century. The noosphere complements the geosphere and biosphere, while considering scientific thinking and spirituality.

The Swiss Development Corporation (SDC) Digital Watch Newsletter is prepared four times a year by Diplo. It harnesses insights from comprehensive research, training, and analysis on digitalisation and society conducted by Diplo and the Geneva Internet Platform (GIP). You can consult additional resources on training opportunities and research on digitalisation, AI, International Geneva, and many other topics. If you need more information on Diplo and the GIP or if you have topic suggestions for the SDC Digital Watch Newsletter let us know at diplo@diplomacy.edu!

7 key areas of interplay between digital and environment

Earth observation and remote sensing is the main way to collect climate and environmental data for planning, monitoring, and governance purposes. Modern sensors can convert analogue parts of our reality (images, sound, temperature, humidity etc.) into digital signals that can be processed into data and more importantly knowledge.

Remote sensing is done in two ways. First, meteorological and environmental agencies collect data from earth, water, air, and outer space via their dedicated observatories. Second, non-dedicated remote sensing is done by other connected digital devices ranging from airplanes to smartwatches and smart home appliances.

With the fast deployment of sensors via the internet of things (IoTs), we are on the brink of a 'remote sensing revolution' which will generate much more data on climate and the environment. Remote sensing creates many new technical, governance, and operational issues: the standardisation of data and sensors, privacy, the use of data as public good, etc. Many aspects of remote sensing are addressed in Geneva from fundamental research, governance, and standardisation aspects.

For example, at the European Organization for Nuclear Research (CERN), the most advanced sensing technologies are developed to detect particles. The World Meteorological Organisation (WMO) coordinates one of the most diverse remote sensing systems with more than 10.000 observatories collecting data from earth, water, outer space, oceans, and more. Geneva is the centre of standardisation organisations: the International Organization for Standardization (ISO), the International Telecommunication Union (ITU), the International Electrotechnical Commission (IEC) all develop various standards for the calibration, use, and performance of sensors and the validation of data which are highly relevant for remote sensing technologies. Collecting data via remote sensing feeds into governance and policy activities of Geneva actors as described in the Geneva Digital Atlas.

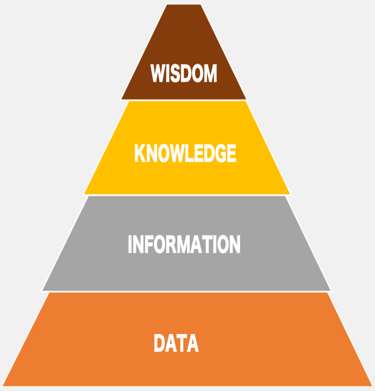
The Group on Earth Observations (GEO) is a central pillar of the Global Earth Observation System of Systems (GEOSS) that covers the full remote sensing cycle: collecting data from ground, air, water and space sensors ; sharing data; and transforming data into actionable information and knowledge as described in their Strategic Plan 2016-2025. In particular, GEO focuses on providing hardware and software for transferring data from the observatory system to information and knowledge. GEO's projects, as listed here, focus on biodiversity and ecosystem sustainability, disaster resilience, energy and mineral resource management, food security and sustainable agriculture, public health surveillance, infrastructure and transport management, sustainable urban development, and water resource management.

Sensors are the underlying infrastructure of **smart cities** where data on transport, environment, and economy is collected in real time and used for efficiency optimisation of energy consumption, traffic, and more. For example, smart buildings can reduce GHG emissions by 3.4% by 2030. ITU hosts the United for Smart Sustainable Cities (U4SSC) initiative and has a few instruments on smart cities including: key performance indicators and a maturity model.

Energy consumption has two interplays with digitalisation: increased energy consumption by digital devices, and use of data and AI for energy efficiency. To be clear, digital technology consumes a lot of energy. This is even more so the case with the latest tech developments, such as AI, blockchain, cryptocurrencies, and mining. At present, estimates show that if the internet were a country, it would rank fifth or sixth in terms of electricity usage globally. Bitcoin mining alone exceeds the energy demand of countries like Switzerland. The current 2% of global electricity consumption of data centres will increase to 8% by 2030. Yet, AI and data platforms can increase energy efficiency, especially in smart cities. ITU has developed a series of recommendations on energy efficiency and green data centres (see: overview).

Circular economy is a holistic solution for digital technology and the environment based on three principles: (a) designing products to reduce waste and pollution, (b) keeping products and materials in use after the end of their usability, (c) regenerating natural systems. With use of blockchain and other tools, circular economy supply chains can become more traceable and transparent. The circular economy can optimise use of digital technologies while protecting the environment. It is also one of the pillars of the UN 2030 Agenda for Sustainable Development. ITU's Study Group 5 has developed a wide range of recommendations and policies on circular economy and e-waste.

From data to knowledge and wisdom



Data is central for developing and monitoring climate and environmental governance. Currently, there are two major challenges in the effective use of data for governance: the scarcity of data, and the ineffective use of available data. For example, data is lacking for two-thirds of the environmental SDGs, especially from developing countries.

The effective use of data is hampered by the fragmentation of datasets and inappropriate data modelling. Innovative and inclusive solutions are needed including the use of citizen-collected data as well as effectively combining private and public data. For more info on data governance you can consult: The Road to Bern via Geneva and Data Diplomacy.

E-waste is centred around the reuse of **rare earth materials,** as they are used profusely to produce microprocessors, cameras, batteries, electronic displays, and other digital devices.

The use of rare earth materials has a two-fold impact on the environment. First, the extraction process is often toxic, expensive, and energy intensive. 'Rare' is not related to their availability in nature, but rather their toxic and expensive extraction process. Second, these rare earth materials contribute immensely to e-waste.

Out of over 50 million tonnes of e-waste generated annually, only 20% is recycled, while the remainder is tossed into landfills or incinerated, polluting soil, air, and water. One of the most crucial aspects is the production, reuse, and recycling of batteries. This is a long-term threat to human nature, as heavy metals such as mercury, lead, bromine, and arsenic seep into soil and groundwater.

Inequality is inherent to current e-waste practices as most e-waste is sent to developing countries, meaning that the greatest consumers of digital products (developed countries) are largely spared its adverse effects. To this end, both the production and disposal of raw and rare materials open a wide range of environmental and human rights issues. In the USA, one of the largest producers and exporters of e-waste, the US Congress adopted the America COMPETES Act which will create legal obligations and restrictions for e-waste exports in 2022. For e-waste, the main instrument is the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (1992) that, among other provisions, outlaws the export of e-waste from developed to developing countries.

The EU took a practical and impactful step by putting forward a new rule forcing manufacturers to create a universal charging solution for phones and small electronic devices in September 2021. Single chargers that use USB Type-C ports are not only good news for users worldwide, but also may help significantly reduce e-waste as consumers would no longer need a new charger and cable every time they purchase a new device.

Biodiversity and bionatural capacity are under serious strain as humanity and nature cannot renew biological resources at the rate humanity uses them. Digital systems ranging from data to AI can help monitor trends in complex biosystems, model various scenarios, and ensure 'precision conversation' for critically endangered species. As an example, data and AI systems can help calculate Earth Overshoot Day, a point when humanity cannot renew biological resources used during that day.

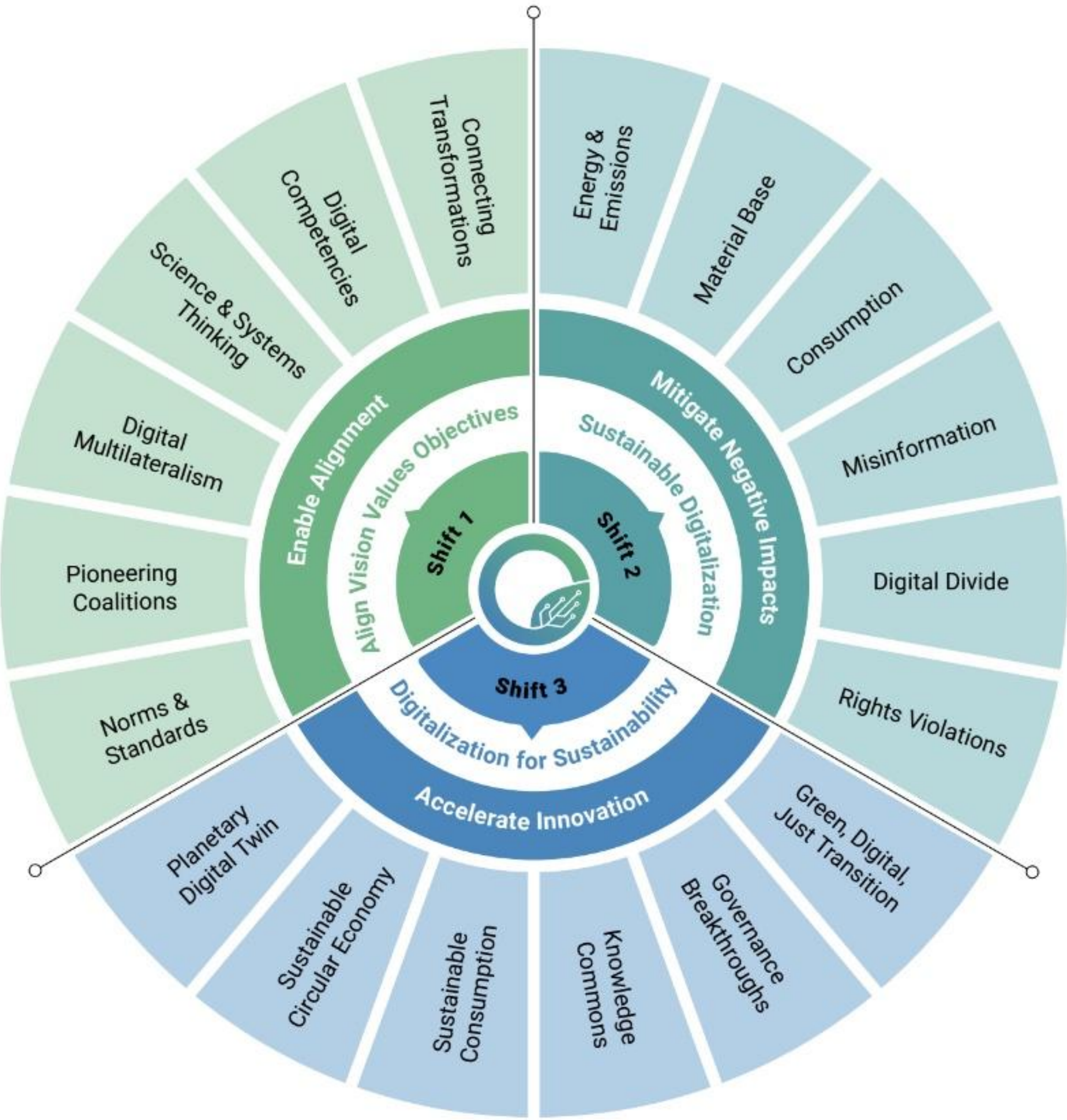
Rights of future generations will be increasingly shaped by developments in the environmental and digital realm as outlined in the UN Secretary-General's 'Our Common Agenda'. The 2023 Summit of Future should outline a new social contract, including a possible establishment of an ombudsman for future generations.

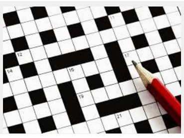
As a practical awareness building step to bring the rights of future generations in negotiations, Diplo proposed the placement of an 'empty chair' in the UN and other negotiation spaces. The chair, like Frank Gehry's cardboard chair from 1972, should remind us of the presence and interests of future generations as we discuss pressing issues of our era.

Digitalisation and Sustainability

The [*Action Plan*](#) *for a Sustainable Planet in the Digital Age* was initiated by the Coalition for Digital Environmental Sustainability (CODES) during the Stockholm +50 anniversary that took place on 2-3 June 2022. As illustrated below, the action plan is built around 3 shifts and 18 strategic priorities that should be implemented via 9 impact initiatives:

- **Shift 1 (Enable Alignment)**: World Commission on Sustainability in the Digital Age, Clearing House of Digital Sustainability Standards, and Education for Digital sustainable Development
- Shift **2 (Mitigate Negative Impacts)**: Harmonisation of Digital Companies' GHG Inventories, Sustainable Procurement and Green Digital Infrastructure Pledge, and Digital product passport for circularity
- **Shift 3 (Accelerate Innovation)**: Digital sustainability innovation hubs and accelerators, data and assessments as digital public goods for sustainability, and decentralised financing of sustainable solutions.





The **Climate Crossword** contains basic concepts and acronyms on the environment and climate change. Test your knowledge and explore other Diplo resources on climate change and climate diplomacy.