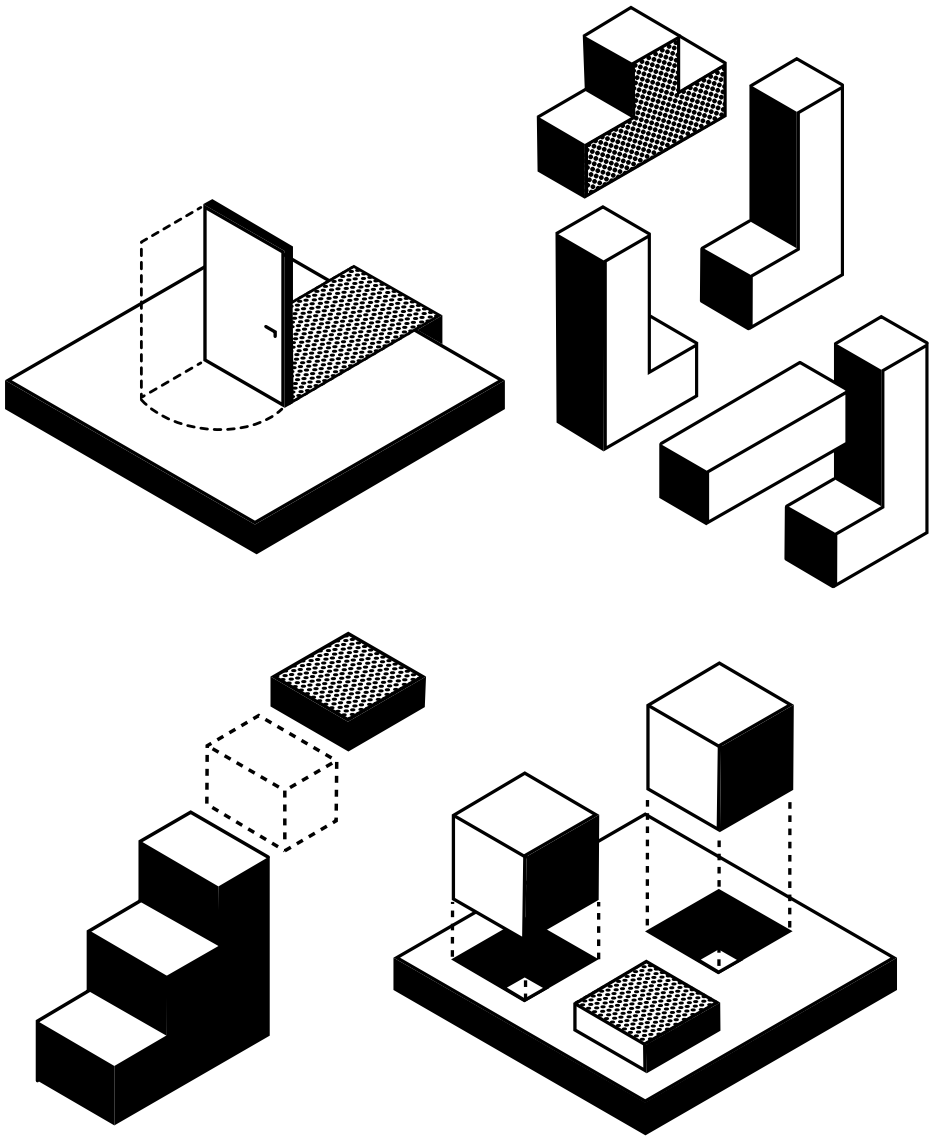
TOWARDS A JUST AND SUSTAINABLE DIGITAL TRANSFORMATION FOR PEOPLE AND THE PLANET

A policy paper for the Coalition for Digital Environmental Sustainability (CODES)

CODES

Authors
(in alphabetical order)

Geraldine de Bastion,
Dr. Marcel J. Dorsch,
Fayrouz Eldebani,
Katrin Fritsch,
Elisa Lindinger,
Dirk Osiek,
Michelle Thorne,
Corinna Vetter



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LIST OF ABBREVIATIONS

ADB - Asian Development Bank
AfDB - African Development Bank
AI - Artificial Intelligence
CODES - Coalition for Digital Environmental Sustainability
COP - Conference of the Parties (to the UNFCCC)
CWN - Clean Water Network
DPI - Digital Public Infrastructure
EPR - Extended Producer Responsibility
GDC - Green Climate Fund
GHG - Greenhouse Gas
IEA - International Energy Agency
IGF - Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development
ITC - International Trade Centre
ILO - International Labour Organization
LMIC - Low and Middle Income Countries
MAPA - Most Affected Peoples and Areas
MSME - Micro, Small and Medium Enterprises
NVA - Net Value Added
OECD - Organisation for Economic Co-operation and Development
SDG - Sustainable Development Goals
SME - Small and Medium Enterprises
UBA - Umweltbundesamt
UN - United Nations
UNCTAD - United Nations Conference on Trade and Development
UNDP - United Nations Development Programme
UNESCO - United Nations Educational, Scientific and Cultural Organization
WBG - World Bank Group
WTO - World Trade Organization

EXECUTIVE SUMMARY

Digital transformation describes the systems-level economic, societal and environmental transformations triggered as a result of digitalisation. Accumulatively, the digital transformation has resulted in one of the most significant and global shifts of our lifetime. Meanwhile, the human-induced climate crisis is one of the biggest threats to life systems on Earth. Digital transformation and the climate crisis are closely interlinked. Direct environmental impacts from digital technologies include carbon emissions from burning fossil fuels, the depletion of natural resources and rare earth elements, as well as pollution from manufacturing and e-waste. Digital technologies also have a role to play in mitigating and adapting to climate change, although more evidence is needed to validate more ambitious claims.

The *Coalition for Digital Environmental Sustainability* (CODES) is a global, multistakeholder coalition founded in 2021 with a mandate by the UN Secretary-General to advance environmental digital sustainability by working closely in collaboration with the UN Office of the Secretary-General's Envoy on Technology. CODES provides resources and opportunities for its contributors to set priorities, take concerted action, and develop capacities for an inclusive, sustainability-driven digital transformation. The *CODES Action Plan 2022* describes three shifts and 18 strategic priorities to achieve a sustainable planet in the digital age.

Shift 1 describes the alignment of visions, values and objectives between the sustainable and digital transformation. Shift 2 focuses on mitigating the negative impacts of digitalisation and ensuring sustainable digitisation. Shift 3 focusses on harnessing digitalisation for sustainability by accelerating meaningful innovation.

This paper seeks to understand the underlying drivers of these shifts. It opens a discussion of the power structures and narratives that frame digital transformation and sustainability in global governance fora. It identifies policy frameworks that could better incorporate social justice within these deliberations. Throughout this paper, we ask how can digital innovation be equitable and sustainable if only certain kinds of knowledge and needs are prioritised? How can sustainable digital transformation be achieved if it does not address the interests of the people most impacted from climate change, who often profit the least from digital transformation?

Through interviews, desk research, and a workshop conducted in early 2024, we find:

- ***Both the digital transformation and sustainability are transversal.*** They intersect in people's lives at many points and are not siloed processes. Their impact is not experienced equally across the world or within groups. Impacted communities often lack decision-making power within global governance bodies on the issues that affect them. What's more, global governance fora miss out on opportunities to develop more meaningful and enduring solutions by marginalising these perspectives. An intersectional lens is needed to inform global governance so that outcomes can be more beneficial for people and the planet. This approach must be supported by a thriving and diverse multistakeholder model (see Chapter 2).

- ***Many policy fields lack a coherent strategy for a sustainable digital transformation.*** Various policy arenas focus on either digital transformation or sustainability, but only a few look at these issues together, and even fewer with a focus on equity and justice. This lack of strategy is also an opportunity. Our research has identified three policy fields and arenas that could be amenable to CODES' mission. These fields are *Sustainable Development* (UNCTAD & UNDP), *Science and Culture* (ISC & UNESCO) and *Labour and Shifting Economic Patterns* (ITC, World Bank and ILO) (see Chapter 3).

- ***Two policy arenas were given closer review: circular economy and digital public infrastructure.*** The current dominant discourse around the circular economy mainly focuses on commercial digital tools and data for circularity. There is a need to bring a just and equity lens to this discussion, which includes the perspectives of the people most impacted by these policies. Similarly, a closer look at the *digital public infrastructure* (DPI) deliberations raises alarm. Here too there is a need to listen to impacted communities and develop approaches that meet ecological goals while respecting people's privacy and digital autonomy.

A just digital transformation for people and the planet will require intersectional and intersectoral approaches. There is a lot of work to do, but this paper aims to chart some of the more promising pathways.

1. INTRODUCTION

1.1. Background

The climate crisis and digital transformation are intricately connected. Digital technologies can offer powerful tools to monitor and mitigate climate risks, drive efficiency gains, and promote sustainable practices.[1] On the other hand, the very infrastructure enabling this transformation[2] has social and environmental impacts, raising concerns about emissions from data centres and hardware manufacturing, as well as the resource-intensive nature of certain technologies and e-waste. Digital transformation poses new challenges and amplifies existing social harms, such as automating bias, increasing corporate and government surveillance, and an erosion of personal privacy.

This paper is part of a project commissioned by the *German Environment Agency* (UBA) on behalf of the *Coalition for Digital Environmental Sustainability* (CODES). The Berlin-based organisations *Konnektiv*, *SUPERRR Lab* and *Green Web Foundation* drafted this paper together with the UBA team to examine recent trends and needs at the intersection of digitalisation and sustainability on a global governance level. This paper asks the following questions, "Who is speaking in these governance fora? Which voices are missing? What are current trends, arenas, and discourses that can be meaningful levers for change for CODES and other actors in the field?"

This paper lays the groundwork for our consultation on strategic pathways and further action for CODES. Addressing these challenges in isolation is not a viable option. What is needed is a sustainable digital transformation that is just for people and the planet.

Just. We refer to the definition articulated by *the Engine Room*, "The institutional conditions that are essential for the fair and equitable redistribution of power, resources and privileges, and an explicit acknowledgment that oppressive and exclusive structures have created disparities among different groups in terms of their needs, resources, affectedness and access to power."[3]

Sustainable. We draw on the *United Nations Brundtland Commission's* definition, "Meeting the needs of the present without compromising the ability of future generations to meet their own needs."

We particularly highlight the interplay among social, economic and environmental values within the term sustainability. For the term digital transformation we mean, "Systems-level economic, societal and environmental transformations triggered as a result of digitalisation," based on a report by OECD and the *CODES Action Plan for a Sustainable Planet.*[4]

1.2. Methodology

We employed three different research methods:

- A policy field mapping based on desktop research
- A workshop involving CODES stakeholders and network actors
- Expert interviews to verify the findings, deepen the insights, and diversify perspectives.

Our desk research took stock of the current discourses around sustainability and digitalisation. We identified critical yet missing perspectives around justice and meaningful participation from people most impacted by these processes. Using this insight, we mapped key policy arenas and players at the intersection of digitalisation and sustainability to determine if and how they integrate a justice perspective.
The exploration of these specific areas is accompanied by a broad mapping of actors relevant to the *CODES Action Plan for a Sustainable Planet*

1 World Bank, *Green Digital Transformation: How to Sustainably Close the Digital Divide and Harness Digital Tools for Climate Action* (World Bank, 2023), http://hdl.handle.net/10986/40653.
2 Referring to the adoption of digital technologies across societies and economic sectors
3 The Engine Room, *At the confluence of digital rights and climate & environmental justice: A landscape review*, July 2022, PDF https://www.theengineroom.org/wp-content/uploads/2022/07/TER-Final-Report-07-07-22.pdf.
4 OECD, *Going Digital: Shaping Policies, Improving Lives* (OECD Publishing, 2019), https://doi.org/10.1787/9789264312012-en. & Coalition for Digital Environmental Sustainability (CODES), *Action Plan for a Sustainable Planet in the Digital Age* (2022), https://doi.org/10.5281/zenodo.6573509.

in the Digital Age[5] across three shifts identified by CODES:

> ***Shift 1*** calls for the alignment of visions, values and objectives between the sustainability and digital transformation
>
> ***Shift 2*** demands efforts mitigating the negative impacts of digitalisation and ensure sustainable digitalisation
>
> ***Shift 3*** encourages dedicated action to harness digitalisation for sustainability by accelerating purposeful innovation.

This mapping was not exhaustive, and many possibly relevant arenas could not be included in the analysis. Participants for the interviews were selected based on their long-standing expertises and to address gaps. The arenas and actors were selected for the mapping based on their relevance and recommendations from the interviews and workshop. Since the focus of this position paper is the global governance perspective, the analysed arenas are predominantly inter- and transnational.[6]

We position this paper in the convergence of sustainability and the digital transformation discourses in selected policy arenas. We analyse these discourses through the context of the three shifts. In two deep-dives, we explore how this convergence plays out in two policy examples and how a justice perspective could be strengthened. Lastly, we identify opportunities for action for actors in global governance and potential leverage points for the *CODES Action Plan.*

2. TAKING STOCK: LOCATING THIS WORK WITHIN CURRENT DISCOURSES

The sheer number of high-level events and agendas focusing on sustainability and digital transformation shows that the importance of the topics is generally understood. However, there is a lack of instances in which the two themes are brought together in a truly integrated manner. In high-level discussions, experts from both domains often position digital technology as a supposedly neutral solution for a more sustainable world (see 2.2) without sufficiently addressing the negative impacts of these technologies. Or the focus is on the social challenges posed by the digital transformation itself rather than alongside the social opportunities of a just transition.

When the conversation shifts towards specific aspects of the digital transformation, we witness a narrowing of spaces. Sustainability experts are less visible while the tech field seeks to address the sustainability of digital technologies mostly from within (see 2.1). This dynamic often leads to a split in narratives: either they come from a sustainability perspective or a digital one. There are currently only few widely adopted approaches that integrate both perspectives on equal footing in a manner that centres people and planet while decentering techsolutionism.

For example, in 2023 the *Commission on the Status of Women* explored new priority themes, innovation and technological change, education in the digital age for achieving gender equality, and the empowerment of all women and girls.[7] In 2024, several events were dedicated to these themes. *NETmundial+10*[8] looked at governance challenges of the digital world while the *Summit for the Future*[9] aimed to reaffirm the commitment of UN member states to realise the *Sustainable Development Goals* (SDGs)

5 Coalition for Digital Environmental Sustainability (CODES), *Action Plan for a Sustainable Planet in the Digital Age*(2022), https://doi.org/10.5281/zenodo.6573509.
6 See Annex.
7 "CSW67 (2023)," UN Women – Headquarters, accessed September 23, 2024, https://www.unwomen.org/en/csw/csw67-2023.
8 NETmundial+10, *Multistakeholder Statement: Strengthening Internet Governance and Digital Policy Processes* (São Paulo, Brazil, April 30, 2024), PDF, https://netmundial.br/pdf/NETmundial10-MultistakeholderStatement-2024.pdf.
9 United Nations, *Summit of the Future Outcome Documents: Pact for the Future, Global Digital Compact, and Declaration on Future Generations* (September 2024), PDF, https://www.un.org/sites/un2.un.org/files/sotf-pact_for_the_future_adopted.pdf.

with a *Pact for the Future*[10]. The *Global Digital Compact*,[11] adopted as an annex[12] to the *Pact for the Future*, presents "shared principles for an open, free and secure digital future for all" including dedicated principles and action to address environmental and social issues in digital transformation[13] The European Commission has framed the "twin transition"[14] as a priority with many associated funding mechanisms and events. The *Internet Governance Forum* increasingly makes space to discuss the environmental impact of the Internet,[15] while the annual *Climate Conference* and the *High-Level Political Forum on Sustainable Development* increasingly incorporate tracks on digital means for climate protection and SDG implementation.

This rest of this section continues taking stock of dominant narratives and examines how they influence global policy debates. It then argues that greening the digital transformation is a necessary but insufficient goal. Instead, it must be embedded in structural shifts to address underlying injustices to deliver a sustainable digital transformation that is just for all people and the planet.

2.1. Narratives of the Digital Transformation

The dominant narratives of sustainable digital transformation often focus on i) making existing systems more efficient and ii) on how digital technologies could contribute to sustainability goals. This kind of solutionism does not properly address rebound effects, a common phenomenon wherein technological progress increases efficiency in resource consumption, yet the falling costs of usage paradoxically leads to an increased demand for these resources.[16] The hope placed in technology is not sufficiently backed up by evidence, nor does it adequately weigh the trade-offs equitably or acknowledge the inherent delays and complexities of these systems. When left unchallenged, this line of argumentation can lead to overzealous technological solutionism.[17]

Similarly, rejection of digital transformation altogether overlooks genuine opportunities to i) improve resource consumption in many sectors and ii) provide foundational social services, such as internet access and meaningful connectivity. The benefits and limits of digital technologies must be better understood so that there can be data-informed decisions with impacted communities about their usage. There is no technical quick fix. For meaningful and sustained climate action, structural changes are needed in sectors that contribute to climate change and resource extraction.[18]

Techsolutionist narratives can take hold because of how global digital policy arenas are structured. Long-standing institutions like the *Internet Engineering Task Force* (IETF) or the *Internet Corporation for Assigned Names and Numbers* (ICANN) are the relevant arenas for the technical community, i. e. domain experts active in these arenas as official representatives or as volunteers. The *Internet Governance Forum* (IGF) and its regional counterparts (e. g. the *African Internet Governance Forum* (African IGF) or the *European Dialogue on Internet Governance* (EuroDIG)) serve as multistakeholder platforms to discuss tech policy and public policy, but sustainability goals are often on the sidelines. More recent overarching initiatives like the *Global Digital Compac*t have even been criticised by the technical community as an effort to minimise their

10 United Nations, *Pact for the Future: Zero Draft* (January 1, 2024), PDF, https://www.un.org/sites/un2.un.org/files/sotf-co-facilitators-zero-draft_pact-for-the-future.pdf.
11 United Nations, *Global Digital Compact: Zero Draft* (April 1, 2024), PDF,https://www.un.org/techenvoy/sites/www.un.org.techenvoy/files/Global_Digital_Compact_Zero_Draft.pdf.
12 United Nations, *Global Digital Compact: Zero Draft*, 2024,https://www.un.org/techenvoy/sites/www.un.org.techenvoy/files/Global_Digital_Compact_Zero_Draft.pdf.
13 United Nations, *Global Digital Compact: Background Note* (version 17 January 2023), PDF ,https://www.un.org/techenvoy/sites/www.un.org.techenvoy/files/Global-Digital-Compact_background-note.pdf.
14 European Commission, Joint Research Centre, Muench, Stefan, Stoermer, Eva, Jensen, Kristine, Asikainen, Taina, Salvi, Matteo, and Scapolo, Fabio. *Towards a Green & Digital Future: Key Requirements for Successful Twin Transitions in the European Union* (Publications Office of the European Union, 2022). https://data.europa.eu/doi/10.2760/977331.
15 "Sustainability & Environment," Internet Governance Forum, accessed September 19, 2024, https://www.intgovforum.org/en/themes2018/sustainability-environment.
16 Horace Herring and Robin Roy, "Technological Innovation, Energy Efficient Design and the Rebound Effect," *Technovation* 27, no. 4 (2007): 194–203, https://doi.org/10.1016/j.technovation.2006.11.004.
17 For a detailed analysis of the challenges of technological solutionism, see Evgeny Morozov, *To Save Everything, Click Here: The Folly of Technological Solutionism* (PublicAffairs, 2013).
18 Paul Schütze, "The Problem of Sustainable AI: A Critical Assessment of an Emerging Phenomenon," *Weizenbaum Journal of the Digital Society* (Osnabrück University), accessed September 23, 2024, https://ojs.weizenbaum-institut.de/index.php/wjds/article/view/4_1_4/119.

impact through a change in internet governance.[19]

The tech policy field sees a rise in corporate lobbying and state geopolitical influences,[20] making it more difficult for public interest advocates to influence tech policy and contribute to a digital sector that is sustainable and just. The siloing of technical and global policy discourses as well as increased influence from lobbying and state actors is eroding pushback to tech-solutionism. The resulting policy agendas often overpromise what technology can deliver, rather than portraying it as one of many levers of change or providing more realistic limits to its power.

The technical community as described above repeatedly posits that digital infrastructure—the foundation for any digital innovation—is fragile and needs constant maintenance.[21] [22] To be clear, this is not a shortcoming of the technical community as stewards of standards and technical development of our digital infrastructures, but rather a "besieging" of public goods and benefits from corporate and state influences. Exaggerated tech-solutionism can stall action, as is the case of artificial intelligence and AI futurism, where factual technological development becomes entangled with digital 'imaginaires'.[23] While global policy actors wait for technological innovations to bear fruit, they tend to deprioritize necessary actions in the here and now.

A sustainable digital transformation cannot rely on technical interventions alone. Rather, it requires innovation and investments that are social and organisational as well. As one workshop participant framed it, "How can we prevent countries from looking only at fancy new technology without meeting the basics first?" Global policy needs to address the digital transformation from a justice and sustainability frame, and not piecemeal in reaction to specific applications or developments. The separation of discourses is not an effective path. This gap makes clear the need to strengthen multistakeholderism and intersectional approaches, especially the voices of civil society, independent academic research and an independent technical community.

2.2. Narratives of the Green Transition

A growing body of research shows the negative impact of digital technologies on climate and the environment.[24] Burning fossil fuels warms the planet by emitting greenhouse gas (GHG), and these emissions are rapidly increasing with digitalisation.[25] According to the *International Energy Agency* (IEA), if the internet were a country, it would be the seventh biggest emitter in the world.[26] Acknowledging this significant environmental impact is often missing from debates on greening the digital transformation.

> *'There is no longitudinal view on the impact of digital technologies and AI when it comes to questions about sustainability. While, for example, in the food sector there is a clear understanding of its impact on climate, there is nearly no understanding of the impact of digital technologies on climate.'*[27]

Current global governance discussions often focus on efficiency and optimisation when it comes to the impact of digitalisation. While there are examples

19 Sally Costerton, John Curran, and Paul Wilson, "The Global Digital Compact: A Top-Down Attempt to Minimize the Role of the Technical Community," ICANN Blog, August 21, 2023, https://www.icann.org/en/blogs/details/the-global-digital-compact-a-top-down-attempt-to-minimize-the-role-of-the-technical-community-21-08-2023-en.
20 Elise Antoine, "The Politicisation of Internet Privacy Regulation," *European Journal of Political Research* 62, no. 2 (October 30, 2022): 530–50, https://doi.org/10.1111/1475-6765.12562.
21 Elisa Lindinger, Julia Kloiber, and Katherine Waters, *Roadwork Ahead: Evaluating the Needs of FOSS Communities Working on Digital Infrastructure in the Public Interest* (Center for the Cultivation of Technology, June 2020), https://recommendations.implicit-development.org/.
22 Nadia Eghbal, *Roads and Bridges: The Unseen Labor Behind Our Digital Infrastructure* (2016), https://onlinebooks.library.upenn.edu/webbin/book/lookupid?key=olbp84515.
23 Paul Schütze, "The Impacts of AI Futurism: An Unfiltered Look at AI's True Effects on the Climate Crisis," *Ethics and Information Technology* 26 (2024): Article 23, https://doi.org/10.1007/s10676-024-09758-6.
24 For a collection of academic and journalistic coverage of these issues, the Green Web Library covers topics from carbon emissions from data centres to e-waste and the harms from the reliance on fossil fuels for our digital infrastructures. https://www.zotero.org/groups/4399301/green-web-syllabus/library
25 "Data Centres & Networks," IEA, accessed September 23, 2024, https://www.iea.org/energy-system/buildings/data-centres-and-data-transmission-networks.
26 Climate Impact Partners, "The Carbon Footprint of the Internet," last updated April 17, 2024, https://www.climateimpact.com/news-insights/insights/infographic-carbon-footprint-internet/.
27 Amrita Sengupta, interviewed for this study, 2024.

of utilising digital technologies for sustainability,[28] there is a lack of data to fully evaluate the tradeoffs. Efforts like green coding can improve efficiencies, but they do not address root causes. Efficiency and optimisation can often lead to rebound effects, as seen in recent years for example in cryptocurrency mining, which boomed in part because of increased efficiency in the hardware used for mining, which made mining more cost-effective and led to more mining overall.[29]

Data centres themselves rely on a significant supply of energy and other locally-sourced dependencies such as land and water. They become deeply embedded in the local infrastructure,[30] at times without sufficient democratic oversight nor benefit delivered to the local community. In the case of hyperscale data centres run by the major tech companies, these digital factories are given preferential treatment and are subsidised by great wealth gained through monopolistic practices from other parts of their businesses. However, many of these operators avoid paying taxes locally and create only a headful of jobs, even in a large hyperscale facility. The value of digital transformation is extracted from this local site and sold as part of a massive, global system of digital resources and services that profit the tech company and further solidify their market position. These dynamics lead to the reproduction of unequal capitalist systems and can even entrench colonial relations around extraction and oppression.[31]

When the green transition is on the agenda, the focus can narrow on resource consumption, rather than addressing injustices throughout the supply chain.

> *'People in global governance discourses often leave the bigger questions about data centres out of sight: they only focus on energy consumption. What is needed is a bigger picture, that also takes rare minerals, standards, localisation and inclusion into account.'*[32]

For global governance, a green transition that does not fully account for the impacts of digital technology misses a critical aspect. Again, these discourses run the risk of becoming solutionist by looking at the symptoms, rather than transformative at the systems level.

> *'For example, electric vehicles (EVs) promise a smooth transition to a 'zero-emission world' but what's left blurry to EV users is the source of EV batteries' primary component, lithium: primarily mined in the Andean Altiplano, home to ancient aquifers and Indigenous populations spanning four Latin American nations.'*[33]

The dominant green transition narratives can also overlook social harms and challenges, such as an erosion of the freedom of expression, access to public services as well as the right to privacy and to meaningful connectivity. Threats from discrimination, mis- and disinformation, data and knowledge extractivism and wealth gaps can intensify. The disruption of economic patterns worldwide in labour, production and consumption carries additional challenges for individual well-being, environmental integrity and social cohesion worldwide.

2.3. Critique: The Need for Centering People and the Planet

People living in the *Majority World* and with marginalised identities bear disproportionate harms from both climate change[34] and digital transformation. Notably, the communities most impacted by these harms are often the least represented in global governance discourses.[35] The power imbalances in

28 "Climate Change AI," accessed September, 2024, https://www.climatechange.ai/.
29 Steffen Lange and Tilman Santarius, Smart Green World? Making Digitalization Work for Sustainability, 1st ed. (Routledge, 2020), https://doi.org/10.4324/9781003030881.
30 Fieke Jansen and Corinne Cath, *Down with Data Centres: Developing Critical Policy*, CIL#007 (Amsterdam: Critical Infrastructure Lab, March 2024), PDF, https://doi.org/10.5281/zenodo.11059837.
31 Esther Mwema and Abeba Birhane, "Undersea Cables in Africa: The New Frontiers of Digital Colonialism," First Monday 29 (2024), https://doi.org/10.5210/fm.v29i4.13637.
32 Mallory Knodel, interviewed for this study, 2024.
33 Becky Kazansky, Melissa Karak, Théo Perosa, Qingyang Tsui, Scott Baker, and The Engine Room, *At the Confluence of Digital Rights and Climate & Environmental Justice: A Landscape Review* (2022), PDF, https://engn.it/climatejusticedigitalrights.
34 Encompass HK, "How Marginalised Groups Are Disproportionately Affected by Climate Change," *Earth.org*, November 9, 2022, https://earth.org/marginalised-groups-are-disproportionately-affected-by-climate-change/.
35 cf. Internet Engineering Task Force, *IETF Community Survey 2021*, prepared by Jay Daley (IETF Executive Director), August 11, 2021, https://www.ietf.org/blog/ietf-community-survey-2021/.

global governance that become visible in who is represented therefore impact how well the challenges of the digital transformation for sustainability are understood and answered for.

In the climate movement, these groups identify as *Most Affected People And Areas* (MAPA). The digital rights movement does not have a similarly well established term, so we chose to use "MAPA" throughout this paper since it centres the experiences of impacted people.

Many MAPA groups are excluded from the benefits of digital innovation whilst they are more prone to suffer the consequences of climate change: "(...) when it comes to the climate crisis, neither the responsibilities nor the consequences are equally shared."[36] Women and other marginalised communities are most impacted by the climate crisis.[37] Indigenous communities are on the frontlines. Small countries by size and wealth, such as the Pacific Island States, are the first to feel the sea levels rising.

Digital rights and environmental justice activists and researchers fear a new era of exploitation is being ushered in under the cloak of the "green and digital transformation" leading to a repetition or even exacerbation of power divides.[38] A sustainable digital transformation needs to avoid the replication of unequal power structures and centre the people and areas most impacted.

> *'If digitalisation can be a crucial component for a planet in a climate and ecological crisis, it is time for digital governance at international, regional and national levels to drive key questions such as: What kind of digitalisation? Under what conditions? For whom? How is it developed?'*[39]

How can the innovation paradigm work if financing is tied to a system that prioritises knowledge and data for private companies, rather than impacted people? Too often, the profits of the digital economy are privatised while losses are socialised, leaving communities and societies to deal with social, environmental and financial risks.

A free market economy promises to deliver innovative solutions at a quicker pace than centralised, state-run investments. In this context, it is crucial to acknowledge that the market for digital solutions is, at best, an oligopoly in which few companies have the power to influence new developments and subdue new solutions that pose a danger to their revenue stream. A sustainable digital transformation that centres the people and the planet does not only need digital and technological innovation, but also new forms of market regulation and incentives for sustainable, non-extractive business models.

2.4. Reexamining the Three Shifts: Towards a Just and Sustainable Digital Transformation for People and the Planet

The sustainability aspects of digital transformation tend to rely on an efficiency framework and focus on how digital products and services will reduce environmental impacts. However, these narratives often oversimplify or overlook the structural changes needed to address the environmental and climate harms that come from the digital transformation (see for example the conversation around "AI for good").

When a sustainable digital transition has been a political priority, for example in the case of the "twin transition" agenda in Europe, the just and equitable framework was to a great extent mutated into militarization and securitization.[40] This shift has been driven by rising concerns over cybersecurity, the protection of critical infrastructure, and geopolitical instability, which have prompted governments to prioritise security over social equity or environmental justice in the digital transformation process.

36 Paz Peña O., *Connectivity and Digital Appropriation for Climate Resilience in Rural Areas: A Climate Justice Approach from the Global South to the Twin Transitions* (Latin American Institute of Terraforming, June 2023), PDF, https://www.tedic.org/wp-content/uploads/2023/07/Connectivity-and-digital-appropriation.pdf.
37 United Nations Women, "Explainer: How Gender Inequality and Climate Change Are Interconnected," February 28, 2022, https://www.unwomen.org/en/news-stories/explainer/2022/02/explainer-how-gender-inequality-and-climate-change-are-interconnected.
38 Paz Peña, interview by [Interviewer Name], March 12, 2024.
39 Peña, *Connectivity and Digital Appropriation*, 2023, 13.
40 Andreea Belu, "4 Years of ‚Twin Transition' in the Online Press," *Green Web Foundation*, April 15, 2024, https://www.thegreenwebfoundation.org/news/4-years-of-twin-transition-european-union-press/.

In our definition, sustainable digital transformation describes the process of critically assessing and leveraging digital technologies and innovations for the people and the planet. Environmental justice offers a critical framework that brings to light the complex interplay of power relations that underpin the climate and ecological crises. Intersectional feminism analyses social impacts of digital transformation. They show how easily actions that might work for many, or on a superficial level, fail those that are already marginalised. Intersectionality allows for a critical analysis of issues at stake, while centering voices of marginalised people—who are currently impacted most by both digital transformation and the climate crisis:

> *"[The] institutional conditions that are essential for the fair and equitable redistribution of power, resources and privileges, and an explicit acknowledgment that oppressive and exclusive structures have created disparities among different groups in terms of their needs, resources and access to power."*[41]

The CODES network outlines *Three Shifts for a Sustainable Digital Era*. When aligned with our analysis of prevalent discourses and resulting challenges for global policy, the three shifts offer perspectives for a sustainable digital transformation that is just for people and the planet. Further, the framework of justice for people and the planet can enhance the overall impact of the three shifts themselves.

Shift 1 calls for the alignment of visions, values and objectives between the sustainable and digital transformation, enabled by factors such as developing digital competencies and building pioneering coalitions. For a just transformation, we propose added enablers: facilitate mutual, cross-regional and cross-sectoral learning within the global governance sector, increase bottom-up and inclusive participation within the network and beyond, and thoroughly adopt and implement the principle of "leave no one behind" for its work.

Shift 2 demands efforts to mitigate the negative impacts of digitalization and ensure digital sustainability by closing the digital divide, reducing energy use and emissions, and preventing rights violations. Within our framing of a transformation that is just, an intersectional and environmental justice view is essential to understand the underlying challenges and propose nuanced, impactful actions that lift the floor for the many instead of raising the ceiling for the few. Levers of action can comprise a push for *Green IT* to overcome current shortcomings of the tech sector. Another road to explore is extending the precautionary principle used in a social and environmental context into the field of digital technologies. How are risks assessed and mitigated when funding, developing or deploying digital technologies? How can powerful actors be held responsible?

Shift 3 encourages dedicated action to harness digitalisation for sustainability by accelerating purposeful innovation, for example by catalysing the circular economy or creating knowledge commons. Clearly addressing the threat of tech solutionism for timely action through a digital-with-purpose framework will help finding the right actions that are based on risk assessments with a wide focus outlined in Shift 2. Creating and collecting examples of good practice for responsible creation of value in a commons-oriented economy can help other actors find their way into purposeful innovation. Further, ensuring innovation has a global level playing field and all people, including most impacted people and areas have the possibility to not only benefit from but engage in creating their own solutions and innovation is crucial. Strengthening the awareness around and availability of open and accessible digital resources including data, software and hardware is central to this debate.

Because the harms of these transformations are so diverse, a lot of time and resources will be lost if the solutions are not structural. An intersection approach is not only the right thing to do, but it provides more effective and long-lasting solutions. If global governance actors fail to include the voices of impacted communities, we will likely see developments in one transition weakening progress made in the other.

41 The Engine Room, *Strengthening Intersectional Approaches to Data and Digital Rights Advocacy During the Pandemic* (November 2021), PDF, https://www.theengineroom.org/wp-content/uploads/2022/01/DDR-Report-26-02-22.pdf.

3. THE STATE OF CONVERGENCE: UPCOMING GLOBAL POLICY ARENAS TO IMPLEMENT SUSTAINABLE DIGITAL TRANSFORMATION

An intersectional, justice-oriented approach is needed for a truly sustainable digital transformation. Learning across global governance fora will strengthen this perspective. This means seeking out partnerships beyond the "usual suspects" in the environmental sustainability and digital sectors. A sustainable digital transformation agenda should centre people and the planet, and it will therefore intersect also with other policy fields, such as trade, labour and education. In this section, we identify the sectors and actors already implementing an intersectional, justice-oriented approach in global governance bodies, and we provide further analysis of select global governance policy arenas.[42]

3.1. Mainstreaming a Sustainable Digital Transformation

In many relevant policy fields, there is a lack of a coherent justice-oriented strategy for a sustainable digital transformation that centres the wellbeing of people and the planet. All researched policy fields acknowledge the on-going transformation, but mostly tackle either sustainability or digital transformation without a clear focus on systemic justice. Most organisations have strategies to address environmental impacts, but they do not include digital justice perspectives, and vice versa. The *African Development Bank Group* (AfDB), for instance, works on both digital transformation and climate change, but separately. Very few actors align these issues internally or fund initiatives to serve this alignment.

Despite a lack of a coherent approach, we still see opportunities and a mainstreaming around using digital technology for sustainability goals.
For example, in the development sector, the *Asian Development Bank* (ADB) invests in digital technology to enable a just net-zero transition. However, applying a sustainability lens, let alone a justice lens, to these digital technologies is less common. The ADB for example does not specify how to mitigate the environmental impacts of digital technologies nor does it acknowledge other harms, from a digital rights perspective, that might occur with the adoption of these technologies. Many policy arenas replicate this approach.

We identify an opportunity to work with the *Sustainable Development Goals* (SDGs), which are mainstreamed among many intergovernmental entities affiliated with the United Nations and organisations beyond, such as the *Internet Society* or the *International Water Association*. Many sectors have a framework to address environmental sustainability while contributing to broader socio-economic-environmental transformations as informed by the SDGs. Although this aligns well with justice-oriented transformations, these strategies nevertheless do not focus on a just and sustainable digital transformation itself.

In this section, we describe three relevant policy sectors for this issue and outline promising arenas within them. We see opportunities for the CODES network to learn from these sectors as well as benefit from the perspective that CODES brings.

3.2. Sectoral Perspectives

Here we examine three policy sectors that may be well aligned for an agenda on sustainable digital transformation: i) sustainable development, ii) science and culture policy, iii) labour and shifting economic patterns.

To develop these ideas further and offer more specific recommendations, we also provide two deep dives into topics that are prominent in international policy agendas: a) *Digital Public Infrastructures* (DPI) and b) *Circular Economy*.

3.2.1. Sustainable Development

Sustainable development is a policy sector that often talks about leveraging digital technologies to achieve the SDGs. Some policy actors here also dis-

42 Azline A., Khairul Anuar Abdullah, Iszaid I., Syamimi Syahira, Hisham A., and Muhamad Juni, "Policy Arena of Health Policy-Making Process in Developing Countries," *International Journal of Public Health and Clinical Sciences 5* (June 2018): 32–33.

cuss how to transform existing structures through a sustainable digital transformation. The global governance arenas in this field acknowledge the need for a justice-oriented digital transformation. Some of these actors are already CODES co-champions, while others could be strong allies in streamlining the three shifts CODES identified.

1. ***UN Conference on Trade and Development.*** UNCTAD provides policy recommendations for sustainable digital technologies in trade, manufacturing and global value chains. It incentivises governments and businesses to invest in greener sectors, and some of UNCTAD's projects[43] focus on the sustainable digital transformation, such as on deploying digital technologies for sustainable development and green economies. Multiple reports[44] and policy briefs[45] published by UNCTAD discuss the sustainable digital transformation for global value chains. Furthermore, UNCTAD emphasises the need for a transition that is fair to workers and communities dependent on fossil fuel industries.[46] Notable is their recent *Digital Economy Report*, which articulates an environmentally sustainable and inclusive digital future.[47]
2. ***UN Development Programme (CODES co-champion).*** The *UNDP Digital Strategy*[48] guides the organisation and its member countries to achieve just, sustainable, ethical and inclusive digital societes. The *Digital Strategy* emphasises the potential of digital transformation to drive climate action. *Digital for Nature*[49] is one of the UNDP's areas of work, and many of their projects integrate a justice perspective on digital transformation, such as *Maps of Hope*[50] or *BesNet*.[51] UNDP works on *Digital Public Infrastructure* (DPI) for achieving the SDGs. It co-authored a playbook on DPI with the government of India[52] and is part of the *Digital4Climate Working Group* where it promotes DPI for transparent carbon markets[53] and other green transition goals. However, we believe the approach around DPI requires more discussion between environmental and digital rights stakeholders, as we outlined in the deep dive below. As it currently stands, the anticipated environmental gains are foregrounded while concerns about erosion of privacy, centralising control and digital sovereignty are sidelined.

Infobox 1: Digital Public Infrastructure

Digital Public Infrastructure (DPI) refers to providing digital platforms that enable access to various "foundational" services such as identification, payments, and data-sharing systems.[54] The DPI discourse seeks to challenge tech monopolies and increase global agency in the digital world. In the current political discourse, the connection to green transformation remains vague and at times, unsubstantiated. Events like the session on DPI at the *SDG Summit 2023* could serve as a starting point to advocate for a justice-oriented per-

43 United Nations Trade and Development (UNCTAD), "Science, Technology and Innovation," April 12, 2024, https://unctad.org/topic/science-technology-and-innovation.
44 United Nations Conference on Trade and Development, *Opening Green Windows: Technological Opportunities for a Low-carbon World* (2023), PDF, https://unctad.org/system/files/official-document/tir2023_en.pdf.
45 United Nations Conference on Trade and Development, *Twin Transition for Global Value Chains: Green and Digital*, UNCTAD Policy Brief (July 2023), https://unctad.org/system/files/official-document/presspb2023d5_en.pdf.
46 United Nations, Background Note: *A Global Just Transition: Climate and Development Goals in a World of Extreme Inequalities* (2015), PDF, https://unctad.org/system/files/non-official-document/UNCTAD_Just_Transition_BACKGROUND_NOTE_COP27.pdf.
47 UN Conference on Trade and Development (UNCTAD), Digital Economy Report: Shaping an environmentally sustainable and inclusive digital future (2024). https://unctad.org/system/files/official-document/der2024_en.pdf
48 United Nations Development Programme (UNDP), *Digital Strategy 2022–2025* (2022), PDF, https://www.undp.org/publications/digital-strategy-2022-2025.
49 United Nations Development Programme (UNDP), "Digital for Nature," accessed September, 2024, https://www.undp.org/nature/our-work-areas/digital-nature.
50 United Nations Biodiversity Lab, "Maps of Hope," accessed September, 2024, https://unbiodiversitylab.org/en/maps-of-hope/.
51 Marta Panco, "New Online Platform to Track Pollinators and Pests in the Caribbean," *BES Net*, September 24, 2018, https://www.besnet.world/new-online-platform-track-pollinators-and-pests-caribbean.
52 United Nations Development Programme (UNDP), *Digital Public Infrastructure Playbook* (n.d.), PDF, https://www.undp.org/sites/g/files/zskgke326/files/2023-12/undp-digital-public-infrastructure-playbook.pdf.
53 United Nations Development Programme (UNDP), "Digital Public Infrastructure for Green Transitions," September 18, 2024, https://www.undp.org/blog/digital-public-infrastructure-green-transitions.
54 The India Stack is the DPI model being pitched widely. It has layers for identity, data storage/exchange and payment. As the India Stack website itself notes "The bedrock of India Stack is a set of digital identity products centred around Aadhaar, India's national identity program". With Aadhaar, close ties between the government and private sector led to significant negative outcomes for privacy and social equity for over a billion Indians. Robust regulatory frameworks and independent oversight are required to ensure privacy and civil liberties on a global scale are not undermined.(https://casi.sas.upenn.edu/iit/smriti-parsheera-2024).

spective.[55] The *DPI Safeguards*, published in September 2024, is one of the first arenas apart from G20 to provide a global forum to connect DPI with sustainability discourses.[56] On the one hand, there are efforts to ensure that the DPI infrastructures are environmentally sustainable, and on the other hand, DPI is being championed for public sustainability management.

However, we identify the need to bridge environmental concerns with digital justice perspectives in DPI. These issues are sometimes pitted against each other. An informed debate about DPI should bridge both areas of concern. How can people be protected from surveillance, control structures and abuse of collected data? Meanwhile, if these tools are built, how can they be environmentally sustainable, such as using data storage facilities running on green energy, applying green coding standards, recycling hardware and reducing consumption of other natural resources? On top of all of that, there are growing concerns that DPI is replacing conversations around digital commons and digital public goods.
UNDP argues that DPI can be used for environmental sustainability. UNEP has noted that sustainability is missing in the current approach to DPI. Moreover, data is seen as a key element yet UNEP highlights that there is a lack of environmental data, data on economic activities such as traceability of value chains, and on the effectiveness of green policies—all of which is needed to evaluate if DPI is effective for those purposes. The *Kenya Agriculture Observatory Platform*, to provide an example, promotes sustainable agriculture through evidence-based decision-making. Using a government-implemented online platform to gather data on crops, weather and soil, it helps improve transparency and enable data-informed discussions.

Picking up another thread in DPI, we look now at *Payments for Ecosystem Services* (PES). PES is a financial mechanism that incentivizes landowners and communities to engage in sustainable environmental practices by compensating them for maintaining ecosystem services such as clean water, carbon sequestration, or biodiversity. This approach is seen as an innovative way to address environmental degradation and promote conservation, but it faces challenges around ensuring long-term sustainability, equity, and participation of marginalised communities.[57] Integrating DPI into PES schemes has become a topic of growing relevance. DPI‘s potential in PES includes increasing the efficiency of payments, improving transparency, and reaching a larger pool of participants. However, there are concerns that relying too heavily on digital systems might exacerbate inequalities, especially in rural areas with limited access to digital services.
Issues around data privacy and the risk of excluding vulnerable groups from these programs have also been raised. Moreover, there are concerns about government surveillance and the possibility of using DPI for purposes beyond its initial environmental goals. If governments and corporations misuse the data collected through PES programs, this could lead to infringements on civil liberties or commercial exploitation of natural resources without the consent nor fair compensation for local communities.[58] To address these challenges, advocates emphasise the need for open-source platforms and strong legal frameworks to govern the use of digital tools in PES and ensure transparency, equitable access, and data sovereignty for participants. Furthermore, building community consent mechanisms into the digital PES system design is crucial to maintaining trust and minimising the risks of exclusion or exploitation. This example again highlights the need to bridge sustainability and digital justice goals.

55 “Digital Public Infrastructure” session at the SDG Summit 2023. https://www.un.org/en/conferences/SDGSummit2023/SDG-Action-Weekend/digital-public-infrastructure
56 United Nations Office of the Secretary-General’s Envoy on Technology, “The Universal Digital Public Infrastructure Safeguards Framework” (2024). https://www.dpi-safeguards.org/
57 United Nations Development Programme (UNDP), *Designing Digital Systems for Scale: Payments for Environmental Services* (2024), PDF, https://www.undp.org/publications/designing-digital-systems-scale-payments-environmental-services.
58 Romina Bandura, Madeleine McLean, and Caroline Smutny, *Approaches to Digital Public Infrastructure in the Global South: An Overview of India, Ukraine, Brazil, and Zambia* (Center for Strategic and International Studies, August 26, 2024), https://www.csis.org/analysis/approaches-digital-public-infrastructure-global-south.

3.2.2. Science and Culture

Science and culture is a very active sector for a sustainable digital transformation. Actors in these sectors often have a specific focus on social, economic and environmental impacts of the transformation. UNESCO for example is one of the global leaders regarding global ethics of AI. CODES could support this justice-oriented perspective and strengthen it by emphasising CODES' understanding of sustainable digital transformation. Below are two examples of work being done in the science and culture sector:

1. ***International Science Council (CODES co-champion).*** In their 2022-2024 *Action Plan Science and society in transition*, the ISC acknowledged the multiple transitions impacting human-centred development, especially the sustainable digital transitions.[59] The ISC centres the impact of these transitions within domains, the first two of which are *Global Sustainability* and *Converging Science and Technology in a Digital Era*. Even though sustainability and digital transformation are separated into two different domains, these topics are still worked on together.

2. ***UN Educational, Scientific and Cultural Organization.*** UNESCO is a key global convener around the ethics of AI. In 2022, UNESCO published concrete recommendations and actionable policies to make AI not only just but also sustainable.[60] They look at social, economic and environmental impacts of AI and how the power of AI can be harnessed for further progress and how the negative impacts of AI can be mitigated. Accompanying these recommendations, UNESCO defined four core values of AI which lay the foundations for AI systems that work for the good of humanity, individuals, societies and the environment. Additionally, UNESCO describes what a human-rights centred approach to the *Ethics of AI* look like in their ten core principles.[61] UNESCO also inaugurated a *Global AI Ethics and Governance Observatory* and organises a multitude of events aimed at fostering global understanding of ethical AI solutions.

3.2.3. Labour and Shifting Economic Patterns

The labour and economic sector has an inherent focus on the social and economic impacts of the sustainable digital transformation. Just as with "Science and Culture," CODES could support this perspective while mainstreaming the CODES' understanding of the sustainable digital transformation.

1. ***International Labour Organization.*** The ILO wants to ensure "a just transition to a future of work that contributes to sustainable development in its economic, social and environmental dimensions"[62] as declared in their *Centenary Declaration for the Future of Work* in 2019. The ILO's leading agenda is the SDGs. The ILO understands digitalisation as a disruptor of the labour sector and focuses on digitalisation to achieve the SDGs. "The ILO has a clear focus on justice aspects within the green and digital transition and boasts a variety of programmes such as *Green Jobs*, *Future of Work* and *Green and Circular Economies* that emphasise the need to lessen the impact the green and digital transitions will have on people's livelihoods. The ILO sees the opportunities for the sustainable digital transformation and hopes it will drive job creation and employment opportunities for millions.

2. ***International Trade Center.*** The ITC is a joint agency between UNCTAD and the *World Trade Organisation* (WTO) that works with governments, international organisations and *Micro, Small and Medium Sized Enterprises* (MSMEs) on the implementation of projects to achieve an inclusive, sustainable digital transformation.

59 International Science Council, *Science and Society in Transition* - ISC Action Plan: 2022–2024 (2022).
60 United Nations Educational, Scientific and Cultural Organization, *Recommendation on the Ethics of Artificial Intelligence*(2022), PDF, http://creativecommons.org/licenses/by-nc-sa/3.0/igo/.
61 UNESCO, "Ethics of Artificial Intelligence," accessed September 23, 2024, https://www.unesco.org/en/artificial-intelligence/recommendation-ethics?hub=32618.
62 International Labour Organization, *ILO Centenary Declaration for the Future of Work* (June 21, 2019).

For instance, the ITC offers trainings to tech startups[63] on how they can make their operations more environmentally sustainable. The ITC's work highly focuses on the social justice aspect. One example is the *SME Sustainability Standards Navigation Toolkit*,[64] guiding SMEs in ADB developing member countries with sustainability and regulatory standards, focusing on social and labour sustainability, especially in the textile sector.

3. ***World Bank.*** *World Bank* financing seems to be mainly focused on climate change (low-carbon transition, inclusive & green growth, energy transition). Their financing for digital development includes a digital and climate component. The World Bank collaborates with other IGOs on projects such as the *Digital4Climate*[65] aimed at creating a digital ecosystem for a global carbon market, a mechanism that in itself faces a lot of practical problems, e.g. scale, inclusion, accountability, greenwashing and unintended side-effects[66] In 2024, the *World Bank* published a report[67] underlining the urgency of thinking digital and sustainable together and addressing the *Digital - Climate Change Nexus.* The report also assesses the acknowledgement of the Nexus by governments on national and regional levels and how well they are working towards it. The publication can be seen as a call to action for governments and includes concrete recommendations. The *World Bank* also emphasises the need for a multidisciplinary and intersectoral approach to digital development while acknowledging different aspects of digitalization such as internet affordability, the benefits and risks of online gig work, the provision of social insurance, as well as sustainably closing the digital divide.[68]

Infobox 2: Circular Economy

The circular economy is a core topic for economic sustainable transformation currently debated in different regional and international policy fora. Japan was first to introduce circular economy policies in the 1990s. Today the European Union (EU) along with its member states lead the discourse. Initially centred around waste management and recycling, the circular economy's regulatory approach has progressively shifted to incorporate *Extended Producer Responsibility* (EPR), eco-modulation, and eco-design aimed at decreasing the consumption of raw materials and enhancing the efficiency of resource use. Recently, there's been a growing legislative focus on integrating digital technologies, pointing towards future policies that may leverage predictive analytics for more effective outcomes. Some of the EU's most ambitious policy measures involve the sectoral policy proposals, such as the *New Sustainable Products Initiative*, a key tool in this context will be the digital product passport.

Generally, digital tools are considered crucial for advancing towards a circular economy with technologies like advanced data analysis, supply chain scrutiny, and creative design. It should be noted that the proponents of these digital solutions include the tech companies that want to develop and sell products, anywhere from "AI for supply chain transparency" to AI that helps minimise waste. However, the need for open technologies, open data and open standards do not benefit from the same prominence in the dominant narratives. Some policy arenas have dedicated positions on the social effects of digitalisation and the circular economy. For instance in the area of labour and circular economy, which was the focus of the *1st Nexus Series: Digitalisation for Circular Economy and Green Jobs for Youth 2023* in Geneva, where it identified the circular economy as a driver for new employment opportunities, especially for young people.

63 Milou van Bruggen, "Empowering Tech Startups for a Greener Tomorrow," *International Trade Centre*, November 8, 2023, https://intracen.org/news-and-events/news/empowering-tech-startups-for-a-greener-tomorrow.
64 International Trade Centre, "Southeast Asia: SME Sustainability Standards Navigation Toolkit," accessed September, 2024, https://intracen.org/our-work/projects/southeast-asia-sme-sustainability-standards-navigation-toolkit.
65 Climate Warehouse, "Digital for Climate (D4C)," accessed September, 2024, https://www.theclimatewarehouse.org/work/digital-4-climate.
66 For an overview of some of the issues in the global carbon market: James Temple, "The Growing Signs of Trouble for Global Carbon Markets," *MIT Technology Review*, November 2, 2023, https://www.technologyreview.com/.
67 World Bank, *Green Digital Transformation*, 2024.
68 World Bank, "Overview," accessed September, 2024, https://www.worldbank.org/en/topic/digitaldevelopment/overview#2.

However, there is an awareness that such shifts could drastically alter job markets and general value creation across different industries, which in the short-to-midterm negatively affect countries exporting resources not goods. The *Green Jobs for Youth Pact* was introduced as a means to smooth this transformation and to ensure the transition to a circular economy does not exclude or further marginalise groups. While some relevant actors seem to have identified a thematic connection between digital innovation and circular economy, they have not yet delved into the topic to define what this means for their sector.

Such is the case with the OECD whose joint working party on trade and environment finds that, "Given that further opportunities for services trade related to a more resource efficient and circular economy may emerge especially through digital technology and innovation, this understudied area could be a subject to further investigation."[69] Such open, yet unfilled areas could present an opportunity for CODES to engage and introduce formats such as the above mentioned Nexus dialog in order to enable important policy actors such as the OECD to develop concreter positions and approaches. The Nexus Dialogues could be used as settings for the triangulation of expert policy perspectives to exchange perspectives and distil concrete recommendations.

The discourse around aligning the shift toward the circular economy with the digital transition is largely focussed on economic and ecological goals, and the use of digital technologies as tools for powering the circular economy or providing relevant data. A justice perspective is largely missing in the discourse. In our view, it is important to strengthen the social justice perspective around the circular economy and the potentials and harms of digital technologies in this context. Developing tools needed for the circular economy should not be limited to the app-based private sector economy but rather part of the development of digital public goods and infrastructures. There is a need to connect the circular economy policy and tool discourse with concepts around open source software, hardware and innovation. Creating common tools, data, standards, ressources, and platforms will be key in the sustainable and just implementation of circular economy approaches on a local level. It also makes sense to connect access and connectivity with circular economy concepts.

Community wireless networks[70] (CWN) play an important role as "community space for climate resilience" for the circular economy by providing community access and data as well as fostering grassroot innovation. They should be seen as a pivotal space where "digital connectivity meets the search for and production of climate resilience information for these rural communities."[71] Numerous examples exist such as the *Guifi.net* in Spain,[72] which operates as a free and open service. A more holistic approach will also require connecting policy themes like the right to repair and sustainable digital public infrastructures, which do not yet feature in the debates apart from in the EU's new consumer agenda.

69 Shunta Yamaguchi, "International Trade and Circular Economy - Policy Alignment," *OECD Trade and Environment Working Papers* (February 19, 2021), https://doi.org/10.1787/ae4a2176-en.
70 CWN are communications infrastructures, administered and managed by the community on a not-for-profit basis and seek to address the lack of ICT services in underserved areas. See Wikipedia, "Wireless Community Network," accessed September, 2024, https://en.wikipedia.org/wiki/Wireless_community_network and Peña, *Connectivity and Digital Appropriation*, 2023.
71 Peña, *Connectivity and Digital Appropriation*, 2023, 11.
72 For reference see FasterCapital, "Community Networks: Building Resilient Communities with Community Networks," updated June 13, 2024, https://fastercapital.com/content/Community-networks--Building-Resilient-Communities-with-Community-Networks.html.

3.3. Outlook: Positioning the CODES Perspective in Global Governance Structures

Apart from the above sectoral policy arenas, there are of course global governance structures in the sustainability and digital sectors that CODES is already engaged with and should stay active in. For digital policy, CODES should stay engaged in the *Internet Governance Forum* (IGF) as this forum focuses more and more on sustainability. The IGF aims to use *Digitalisation for Our Common Future*[73] with a focus on environmental sustainability of digitalisation. Yet, this perspective is not fully formed nor mainstreamed across all working areas of the IGF, so further engagement from CODES is recommended. Next to the IGF, we recommend CODES stay engaged in environmental sustainability arenas such as the *Conference of the Parties* (COP) and the *High-Level Political Forum on Sustainable Development* (HLPF). These fora increasingly incorporate digital perspectives, especially regarding climate technology. However, mainstreaming a sustainable digital perspective that centres justice and speaks to digital sustainability is still needed. This is a perspective CODES could bring.

All in all, despite there being a general acknowledgement of either the digital or sustainable transformation in major policy arenas, an alignment of both is still missing from many important discussions. However, there are arenas that could serve as great docking points and strong allies for CODES to continue strategizing along the three shifts.

4. *OBSERVATIONS AND OUTLOOK*

Based on the analysis of existing narratives around digital and sustainable transformation and the state of convergence in key policy arenas, we recommend a number of ideas for further activities and policy arenas for CODES.

4.1. Observations for global policy actors

To enact systemic change, global policy actors should go beyond a narrow focus on legislative and policy levers and embrace a broad-based theory of change.[74] In order to make the sustainable digital transformation that is just for people and the planet, we need a wide variety of actors in many different policy fields who understand the cross-cutting nature of sustainable and digital. Further, we need these actors to develop agendas tailored to their policy fields that adopt a systemic analysis of digital and technological means, their ecological and social impact and centre intersectional approaches. In our view it is key to have a clear understanding that digital transformation is not a societal goal in itself, but it must serve the needs of humanity and the protection of our planet. Policies shaping the digital transformation should therefore be geared toward justice for people and the planet, recognizing the inseparability of these goals. One key factor missing in current digital transformation discourse are political visions including a clear and strong narrative on just, sustainable green futures. With the increased urgency of the human-induced climate crisis, many narratives focus on techsolutionism or how technology will lead to the demise of our democratic systems and civil liberties. Often these are presented as unavoidable trajectories. New narratives that link a desirable digital future to the future narratives of the environmental justice movement can help to broaden the field of vision of policy makers dealing with the challenges of climate change, inequality, and sustainability, thereby providing a framework that is responsive to the needs of the present and future. A systemic justice narrative can move the debate beyond seeing technology merely as a tool for economic growth or efficiency, promoting its potential to contribute to broader societal goals like reducing carbon footprints, enhancing social welfare, and promoting sustainable development. Political visions and approaches to implement these should ensure sustainable digital transformation goes hand in hand with a strengthening and not an erosion of rights, in particular for the most impact-

73 Jack Barrie, Kristy Buckley, Cyril Caminade, Joyce Chen, Florian Cortez, Daniel Emejulu, Elif Erdemoglu, Shawna Finnegan, Paolo Gemma, Ramampiaro Heri, Pablo Hinojosa, Martin Hullin, Chris Ip, Richard King, Rainer Krug, Jack Leevers, Abhayraj Naik, Leandro Navarro, Ramona O'Dwyer-Stock, and Flurina Wäspi, *Recommendations on Using Digitalisation for Our Common Future: A Report by the Policy Network on Environment and Digitalisation* (IGF, 2022), https://doi.org/10.24451/arbor.16649.

74 AI Now Institute, 2023 *Landscape: Executive Summary* (April 11, 2023), https://ainowinstitute.org/general/2023-landscape-executive-summary.

ed communities and areas that lack strong political representation.

From an environmental justice and digital rights perspective we need to ensure the instruments created to implement the sustainability transformation are not instruments of surveillance but public resources supporting people's access and meaningful participation as well as governmental and private sector accountability. Data-driven approaches offer powerful tools for informed policy-making and public sustainability management. For example, using digital technologies can help track and allocate environmental impacts, such as the "polluter pays" principle, ensuring that those responsible for environmental harm are held accountable. This may involve monitoring practices, such as tracking how farmers manage their land, which could be seen as a form of surveillance. However, while this kind of oversight is justified from an environmental and public welfare perspective, it raises concerns about personal privacy and the potential for excessive control. The challenge is to ensure that these technologies do not evolve into tools of surveillance that undermine individual freedoms and rights. Possible tensions between environmental protection and privacy must be negotiated carefully. In cases where environmental objectives may take precedence, decision-making processes need to be transparent so that trade-offs are made with democratic oversight. This democratic oversight needs to include open, public access to such data and different forms of public control and multi-stakeholder involvement.

Data-driven decision-making cannot come at a cost of playing out individual democratic civil liberties and human rights against collective environmental objectives. In cases where these objectives are in conflict, they must be balanced and negotiated through a lens of justice for people and the planet wherever they come into conflict. The intersectional lens and environmental justice lens show what questions need to be answered in order to not lose sight of the human rights based approach whilst setting the sails for a greener society powered by digital technologies. Returning to the policy case of DPI, for example, digital identities, payment schemes or smart applications should not lead to people's privacy being undermined or new forms of societal control being established. Instead, these new infrastructures should be built to enable new forms of information sharing and openness in concert with environmental gains, and communities must be allowed to opt-out and reject solutions that harm them.

4.2. Ways forward for CODES

Based on the learnings from this paper, we went on to design fifteen implementation pathways. They identify leverage points and specific policy arenas and lines of action for CODES as well as other actors interested in engaging in policy making for a sustainable digital transformation that is just for the planet and its people. A cross-cutting theme is the importance of fostering cross-actor and cross-sectoral collaboration in order to ensure the diverse engagement of different stakeholders as well as making sure the conversations in different policy arenas are connected.

To align the sustainable, digital and just perspectives, the CODES community can work together with champions in the identified arenas referenced in Chapter 3 to create synergies to even more coherently spread this common understanding of the three shifts for justice for people and the planet. We recommend CODES to engage in relevant policy arenas where work towards a sustainable digital transformation has already started and CODES can strengthen its alliances.

Furthermore, CODES could invest in actors that are not yet aligned in this way of thinking but who have a significant impact on the issue, such as regional development banks, the WTO, consumer rights organisations (see Annex). Here, new formats and models for policy exchange and triangulation, such as the Nexus Dialogues could present an opportunity for CODES to engage policy actors and arenas who are not acting as champions yet.

CODES itself can be a lever for change by collaborating more strategically with grassroots movements. A polycentric approach is central to policy making, and with a more bottom-up approach within its network, CODES can help avoid domination by few stakeholders and provide a uniquely polycentric perspective. In particular, CODES can be an advocate for the multi-stakeholder governance model and see in what policy arenas outside of digital governance this model could be applied.

There is a need to strengthen the multistakeholder model[75] which is currently under threat such as with the IGF as well as how these governance models from digital and green can learn from each other. CODES could play an important role as an ally for this governance model. By leveraging the insights and frameworks discussed, particularly the concept of a just transformation for people and planet, stakeholders across all sectors can collaborate more effectively to ensure that both the digital and environmental agendas advance in a manner that is not only technologically innovative and environmentally sustainable, but also socially equitable and inclusive.

75 "Internet Governance Forum Must Reverse Decision to Make Saudi Arabia Its Next Host," letter to UN Secretary-General António Guterres, October 12, 2023, CC: Mr. Li Junhua, Mr. Vint Cerf, Ms. Maria Ressa, Mr. Chengetai Masango, Mr. Paul Mitchell, and Ms. Carol Roach, https://www.accessnow.org/campaign/igf-reverse-saudi-arabia-host-decision/#statement.

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APPENDIX

A MAPPING OF POLICY ARENAS RELEVANT FOR A JUST AND SUSTAINABLE DIGITAL TRANSFORMATION

1. FINANCING/DEVELOPMENT

1.1. ARENA: WORLD BANK

1.1.1. Context

Background: The World Bank Group (International Bank for Reconstruction and Development (IBRD) and International Development Association (IDA)) works in the area of international development providing low- and middle income countries with financial products and technical assistance.

Geographic scope / policy level: Global / government level

Strategy: The World Bank acknowledges the urgency of thinking digital and sustainable together. The World Bank Group is the biggest multilateral funder of climate investments in developing countries.

1.1.2. Topics & Instruments:

Topic 1: Green Digital Transformation

- Publication "Green Digital Transformation: How to Sustainably Close the Digital Divide and Harness Digital Tools for Climate Action" (2024, first report to address this topic):
- Report addresses the urgency and need to think digital and sustainable together & a path toward low-emission applications of digital technologies to help countries mitigate and adapt to climate change, while simultaneously meeting their digital transformation goals and so addresses 'the Digital - Climate Change Nexus'.

Topic 2: Low-carbon transition

- World Bank Climate Warehouse: Project by the World Bank to finance the low-carbon transition.
- Digital 4 Climate is a joint initiative between several international organisations, including the European Bank for Reconstruction and Development (EBRD), United Nations Development Program (UNDP), United Nations Framework Convention on Climate Change (UNFCCC), European Space Agency (ESA), International Emissions Trading Association (IETA) and the World Bank Group. It focuses on synchronising workflows to develop a cohesive and flexible digital ecosystem for the carbon market. The main aim is to foster a global carbon market characterised by transparency and integrity, facilitating investment in significant climate actions and sustainable, low-carbon growth.

1.1.3. Evaluation[1]

Status: orange/green
World Bank financing seems to be mainly focused on climate change (low-carbon transition, Inclusive & Green Growth, Energy Transition), but no financing projects seem to be on the twin transition, but their financing for digital de-

1 The evaluation is based on the traffic light system: red (digital & sustainable not thought of together), orange (thought of together, but not implemented/acted on yet), green (digital & sustainable being invested in/acted on/implemented full on)

velopment includes a digital and climate component. WBG Program COP28 included some talks on the twin transition and digital for climate.

1.2. ARENA: UNITED NATIONS DEVELOPMENT PROGRAMME (UNDP)

1.2.1. Context

Background: The UNDP is the UN's agency for international development. Its focus areas are sustainable development, democratic governance and peace building and climate and disaster resistance. It works with countries on policies and capacity building.

Geographic scope / policy level: Global / government level

Strategy: The UNDP's strategy for a just and sustainable digital transition focuses on leveraging Digital Public Infrastructure (DPI) to achieve the SDGs and support green transitions, guided by its Digital Strategy, which emphasises building ethical, inclusive, and climate-responsive digital societies.

1.2.2. Topics & Instruments:

Topic: Digital Public Infrastructure

- The UNDP co-authored a playbook on DPI with the government of India for countries (especially LMICs) to aid in their DPI adoption journey.
- As part of this collaboration with the government of India, it also co-published a compendium on how DPI can help achieve the SDGs.
- The UNDP is part of the Digital 4 Climate Working Group and through it promotes DPI for transparent carbon markets and other green transition goals.

Instrument: UNDP Digital Strategy

- UNDP Digital Strategy: The UNDP's digital strategy is aimed at guiding the UNDP and its member countries to achieve just, sustainable, ethical and inclusive digital societes. The Digital Strategy emphasises the potential of digital transformation to drive climate action.
- Digital for Nature is one of the UNDP's work areas and therefore, a lot of the UNDP's projects and global initiatives focus on the digital, sustainable and just transition, such as Maps of Hope or BesNet.

1.2.3. Evaluation:

Status: green

The UNDP seems to put an emphasis on a just, inclusive and sustainable digital transformation, which is evident from its digital strategy. Through its engagement in different initiatives, it also seems to be implementing projects on sustainable digitalization as well as using digital technologies for climate action. The UNDP is one of the eight founding co-champions of CODES.

1.3. ARENA: ASIAN DEVELOPMENT BANK (ADB)

1.3.1. Context

Background: The ADB is a regional development bank focused on Asia and the Pacific. It supports and funds development projects in its member countries.

Geographic scope / policy level: Regional - Asia and the Pacific / government level

Strategy: ADB is scaling up support to address climate change, disaster risks, and environmental degradation, supports policies, practices, and technology that lower greenhouse gas emissions and is mainstreaming a comprehensive approach to climate and disaster resilience. The bank's work also focuses on promoting environmental sustainability, ADB recognises that for digital technology to have sustainable development impact in the region, more investment is needed in policy, infrastructure, capacity, and skills.

1.3.2. Topics & Instruments:

Topic 1: Digital Technology & Digital Economy:

- ADB's work on digital technology does not entail a sustainability component, even when it comes to food security and agriculture.
- 2030 Digital Technology Directional Guide (2022) includes measures from the ADB to use digital technology for climate action (p.21).
- Example of a project being financed in China for the use of the digital economy to improve business operational efficiency and reduce energy and carbon intensity.

Topic 2: Net-Zero Economies:

- Support of a Just Transition Toward Net-Zero Economies does not entail digital as a component.
- Report by the ADB on Asia's transition to net-zero in the global context, does not entail digital as a component.

1.3.2. Evaluation

Status: red/orange
ADB reports and documents mention using digital technology for climate action, but it does not seem to be the main focus of projects. There is no talk of mitigating negative effects on the environment by digital technologies and digital technologies are not regarded as tools to achieve net-zero economies.

1.4. ARENA: AFRICAN DEVELOPMENT BANK (AFDB)

1.4.1. Context

Background: The AfDB is a multilateral regional development bank focused on sustainable economic development in African countries.

Geographic scope / policy level: Regional - Africa / government level

Strategy: The AfDB puts a strong focus on combating climate change and towards a 'Just Transition' and also on ICT initiatives, but these two are not thought of together.

1.4.2. Topics & Instruments

Topic 1: Climate Change

- Just Transition: The AfDB puts a focus on a just transition, however, that is only climate related.
- AfDB Action Plan on Climate Change: The Climate Change and Green

Growth Department, responsible for Africa's transition towards more climate resilience and low-carbon development, is on the way to meet the following commitments as stated under the Action Plan:

- Climate mainstreaming: At project level, the Bank has increased the percentage of its projects that are based on climate-informed designs
- Directing 40% of all investment to climate finance
- Prioritising finance for climate adaptation
- Increase of total volume of climate finance

Topic 2: ICT

- ICT Initiatives by the AfDB focused on infrastructure and connectivity, policy and regulation and investment in e-applications incl. on rural development, agriculture, health, education and infrastructure, including:
  - Digital services and platforms
  - Digital Entrepreneurship and Skills
  - Digital connectivity and infrastructure
  - Digital services and platforms

1.4.3. Evaluation

Status: red
AfDB works on both digital transformation and climate change, however, separately.

2. TRADE

2.1. ARENA: UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT (UNCTAD)

2.1.1. Context

Background: UNCTAD is a UN organisation focused on supporting mainly LMICs in accessing the globalised economy, while reaping the benefits and minimising the risk.

Geographic scope / policy level: Global / government level

Strategy: UNCTAD highlights green windows of opportunity and discusses 17 frontier technologies, defined as new and rapidly developing technologies that take advantage of digitalization and connectivity.

2.1.2. Topics & Instruments

Topic: Digital & Green Transition

- Report on the green and digital transition in manufacturing, including policy recommendations.
- Policy Brief on Twin transition for global value chains, including policy recommendations.
- The Technology and Innovation Report 2023: UNCTAD calls on their governments and business communities to invest in more complex and greener sectors, boost technical skills and scale up investments in the

technology infrastructure needed to grow green industries.
- Twin Transitions For Global Value Chains – Green And Digital: examines the options and the opportunities for latecomer countries in greening and digitalizing to benefit from these twin transitions in global value chains (GVCs).
- Twin Transition is discussed in meetings such as Multi-year Expert Meeting on Investment, Innovation and Entrepreneurship for Productive Capacity-building and Sustainable Development.
- UNCTAD Science and Technology Projects include many different projects on utilising digital technologies for sustainable development and green economies etc..
- UNCTAD's eWeek2023 highlighted digitalization's potential to accelerate climate action but also its environmental costs.

2.1.3. Evaluation

Status: green
UNCTAD highlights the green and digital perspective on trade, manufacturing and global value chains and provides different policy recommendations for governments and incentivises governments and business communities to invest in greener sectors, some of UNCTAD's projects also focus on the twin transition.

2.2. ARENA: WORLD TRADE ORGANIZATION (WTO)

2.2.1. Context

Background: The WTO is a global international organisation responsible for the rules of trade between countries and governments. WTO agreements, which are negotiated and ratified by member states, set and govern these rules.

Geographic scope / policy level: Global / government level

Strategy: The WTO focuses on different aspects of trade and the environment, among which are climate change and the SDGs and members can adopt WTO rules to protect the environment. At the same time, it explores the topic of digital technologies and trade, with its risks and benefits, among which are the benefits for environmental sustainability.

2.2.2. Topics & Instruments

Topic 1: Digital technologies
- In 2021 the WTO took part in a multi-agency dialogue in 2021 on the latest digital technologies to advance sustainable trade and environmental transparency.
- New joint project between WTO and World Bank on digital trade in Africa. However, no mention of environmental sustainability.

Topic 2: Environmental Sustainability
- Trade and Environmental Sustainability Structured Discussions (TESSD): This initiative involves WTO members discussing ways in which trade policies can contribute to environmental sustainability, including addressing climate change, circular economy practices, and environmental goods and services.

2.2.3. Evaluation

Status: orange
The WTO only mentions the use of digital technologies for environmental sustainability, but no specific projects on the green and digital transition are found.

2.3. ARENA: INTERNATIONAL TRADE CENTER (ITC)

2.3.1. Context

Background: The ITC is a joint agency between UNCTAD and WTO which works with governments as well as small and medium-sized enterprises in global majority countries on trade-related problems/solutions and projects. The ITC offers trainings, advisory services and business intelligence data.

Geographic scope / policy level: Global / micro, small and medium-sized enterprises (MSMEs)

Strategy: ITC works together with UNCTAD on sustainable trade initiatives, such as the Global BioTrade Facilitation Programme and both organisations participate in the United Nations Forum on Sustainability Standards. The ITC also works on inclusive trade.
ITC also promotes digital tools and their potential benefit for MSMEs and works with them on e-commerce.

2.3.2. Topics & Instruments

Topic 1: Environmental Sustainability
- The ITC works closely with tech startups, offering trainings, on how to make their operations more environmentally sustainable. Their trainings delve into energy efficiency, sustainable data storage, energy management opportunities, electronic waste management, and the broader spectrum of ICT sustainability standards, among others.
- Green2Compete is ITC's new and ambitious strategy aiming to place environmental sustainability at the heart of MSME competitiveness.

Topic 2: Digital Technologies
- The International Trade Centre's Netherlands Trust Fund V (NTF V) is a four-year partnership (July 2021- June 2025) signed by the Ministry of Foreign Affairs of The Netherlands and the International Trade Centre to support micro, small and medium-sized enterprises (MSMEs) in the digital technologies and agribusiness sectors.

Topic 3: Social Justice
- The "SheTrades - Asian Development Bank: Advancing Women's Economic Empowerment" project aims to enhance the economic empowerment of women entrepreneurs in Asian countries.
- SME Sustainability Standards Navigation Toolkit: The toolkit will help SMEs in ADB developing member countries (DCMs) increase their awareness of sustainability and regulatory standards, with an initial focus on social and labour sustainability in the textile and apparel sector.

2.3.3. Evaluation

Status: green
The ITC works with governments, international organisations and MSMEs on the implementation of projects to achieve an inclusive, green and digital transition.

3. CONSUMER POLICY

3.1. ARENA: CONSUMERS INTERNATIONAL

3.1.1. Context

Background: Consumers International is a membership-based organisation for consumer groups around the world. They have about 200 member organisations from around 100 countries.

Geographic scope / policy level: Global / independent consumer groups

Strategy: Two key topics of Consumers International are digital rights and sustainable consumption, there is an interest in the digital transition, but the topics of sustainability and digitalisation are not considered together.

3.1.2. Topics and instruments

Topic 1: Digital rights
- Topics: Data governance and policy; Digital Fairness; Innovation and Virtual Economies, e-commerce
- Current project: The Digital Index, which is a collection of global digital policies and initiatives aimed at protecting and empowering consumers. The Digital Index is intended as a resource for policy makers.

Topic 2: Sustainable consumption:
- Main identified issue: lack of clear and reliable information on the sustainability impacts of products; mentions moving to a circular economy that is low energy as one of the potential solutions.

Topic 3: Just and sustainable digital transition:
- Focus on e-commerce. The Consumers International Action Agenda highlights how e-commerce actors can make transparent and sustainable online shopping a reality.

Instrument 1: Key documents:
- Action Agenda: Informing sustainable consumer choices in e-commerce
- Policy Action Framework: Improving Product Sustainability Information in E-Commerce

Instrument 2: Key bodies within the organisation:
- Change Network: network to connect the consumer movement with stakeholders from government, academia, civil society and business. The goal is to develop a shared vision of a marketplace that is safe, fair and sustainable for consumers globally.
- All network projects are underpinned by a commitment to eleven consumer needs, outlined in the UN Guidelines for Consumer Protection.
- The network developed key insights demonstrating how consumer protection and empowerment can deliver benefits for people, planet and energy systems.

3.1.3. Evaluation

Status: orange
Apart from e-commerce, the just and sustainable digital transition is not apparent in their work but digital rights and sustainability play a huge part in their work independently.

3.2. ARENA: INTERNATIONAL CONSUMER PROTECTION AND ENFORCEMENT NETWORK (ICPEN)

3.2.1. Context

Background: ICPEN provides a forum for the development and maintenance of and focus on consumer protection issues. By promoting cooperation between agencies, ICPEN aims to enable its members to have a greater impact with their consumer laws and regulations.

Geographic Scope / policy level: Global (70 countries) / consumer protection (state) authorities

Strategy: The mandate of ICPEN includes the coordination and cooperation on consumer protection enforcement matters, the sharing of information and intelligence on consumer protection trends and risks and the sharing of best practice information about key consumer protection laws, enforcement powers and regulatory approaches to consumer protection.
Within this mandate, there is no apparent ICPEN strategy regarding the just and sustainable digital transition.

3.2.2. Topics & Instruments

Regarding the digital transformation, the ICPEN published its Joint Open Letter to Businesses in the Digital Economy in 2018, highlighting consumer rights in the digital era. No specific remarks were made reading sustainability.

3.2.3. Evaluation

Status: Red
Environmental sustainability seems to play no role in the work of ICPEN, the digital transformation is also not central to their work.

4. TECHNOLOGY

4.1. ARENA: UNITED NATIONS INTERNET GOVERNANCE FORUM (IGF)

4.1.1. Context

Background: The IGF is a global, multi-stakeholder platform convened by the United Nations to foster dialogue on public policy issues related to the Internet, aiming to create a more inclusive, secure, and sustainable digital future by bringing together governments, civil society, the private sector, and technical communities.

Geographic scope / policy level: Global / multistakeholder governance group: governments, the private sector, civil society, academia

Strategy:
The IGF does not produce negotiated outcomes but strives to inform policy-makers with best practices and policy recommendations. The IGF has a year-long policy outreach, conducts community and capacity-building activities and organises one major annual meeting. The IGF strives to support the UN sustainable development goals in its work. The current focus regarding pressing challenges in digital policy is, next to artificial intelligence, the digital and sustainable transition.

4.1.2. Topics & Instruments

Instrument 1: Working groups
- Policy Network on Environment (PNE) with a focus on digitalisation was active in 2021 and produced the "Recommendations on Using Digitalisation for Our Common Future". The report contains 15 recommendations regarding the use of digital technologies for the common good with clear reference to the UN Sustainable Development Goals. The report explains why stakeholders need in-depth knowledge about the interplay between digitalization and the environment and why accurate environmental data is key.
- Dynamic group on environment convened in 2022 as a follow up the the PNE, strives to disseminate the recommendations

Instrument 2: The IGF annual conference has, since 2022, a clear added focus on environmental sustainability in digitalisation.
- IGF 2022 overarching topic "Resilient Internet for a Shared, Sustainable and Common Future" with many debates on environmental sustainability.
- IGF 2023 two of the main topics were sustainability & environment.
- IGF 2024 one of the four main themes "Enhancing the digital contribution to peace, development, and sustainability".

4.1.3. Evaluation

Status: Green
Environmental sustainability is one of the key focus areas of the IGF.

4.2. ARENA: ITU

4.2.1. Context

Background: The ITU is a specialised United Nations agency that coordinates global standards, policies, and partnerships to enhance connectivity and digital transformation worldwide, focusing on inclusive and secure access to information and communication technologies (ICTs) to drive sustainable development.

Geographic scope / policy level: Global / government, businesses, academic institutions, and international and regional organisations

Strategy:
The ITU supports goal 13 (climate change) by using ICTs, including satellite monitoring, to help mitigate climate change as they play a crucial role in earth

monitoring, sharing climate and weather information, forecasting, and early warning systems. Furthermore, the Kigali Declaration "Connecting the Unconnected to Achieve Sustainable Development" and Kigali Action Plan, focus on how telecommunications can support the implementation of the SDGs and thus sustainability efforts. One of the 11 key areas of action of the ITU is "environment and climate change".

4.2.2. Topics & Instruments:

Topic: Work on Environment and Climate Change includes:

- Using digital technologies for monitoring, mitigating and adapting to climate change.
- Protecting human health and the environment from e-waste.
- Facilitating digital solutions for energy efficiency by driving down emissions and reducing carbon footprint.

Instrument:
"Global Portal on Environment and Sustainable Digital Transformation"

- Highlights external resources related to three topics: energy efficient ICTs; e-waste management and circular economy; and climate change.

ITU Development Bureau: Environment Thematic Priority

- Mandate to develop its activities on ICTs, environment, climate change and circular economy in order to contribute to ongoing wider global efforts to mitigate and adapt to climate change.
- Covers activities and issues related to e-waste management through the development of policy and regulation, collection of data and statistics, and the role of ICTs in enhancing environmental sustainability for climate action.

4.2.3. Evaluation

Status: green
Focus on environmental sustainability through the deployment of digital solutions or by greening of digital tools. The ITU is one of the eight founding co-champions of CODES.

4.3. ARENA: INTERNET SOCIETY (ISOC)

4.3.1. Context

Background: ISOC is an American nonprofit advocacy organisation founded in 1992 dedicated to ensuring an open, globally connected, secure, and trustworthy Internet for everyone, advocating for policies, standards, and practices that promote universal access and digital inclusion.

Geographic scope / policy level: Global / non-governmental

Strategy: ISOC promotes "the development of the Internet as a global technical infrastructure, a resource to enrich people's lives, and a force for good in society." The Action Plan 2024 "Global Internet, Opportunity for All Delivering on the Internet's promise" outlines ISOCs efforts in 2024. There is no focus on sustainability in the 2024 Action Plan. Beyond that, there is generally no apparent strategy regarding the sustainable and just digital transition.

4.3.2. Topics & Instruments

There are few resources within ISOC deployed towards the topic of sustainable and just digital transition, the only noteworthy exception is the 2015 report "The Internet and Sustainable Development". It outlines how the internet can support the implementation of the SDG's and outlines the positive and negative impacts of the internet on the environment. The report concludes that environmental impacts of the Internet are crucial to sustainability.

4.3.3. Evaluation

Status: red
There does not seem to be any specific focus on sustainability and no strategy on the sustainable and just digital transition.

5. CULTURE AND HERITAGE

5.1. ARENA: UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION (UNESCO)

5.1.1. Context

Background: UNESCO is a specialised agency of the UN that works to foster peace and sustainable development through international cooperation in education, science, culture, and communication, promoting freedom of expression, cultural diversity, and access to quality education for all.

Geographic scope / policy level: Global / 194 member states and 12 associate members, as well as partners in the non-governmental, intergovernmental and private sector.

Strategy: UNESCO endeavours to support the SDGs in all its work and has a focus on sustainability and AI.

5.1.2. Topics & Instruments

Topic 1: Digital transformation and sustainability

- PERSIST programme focuses on digital transformation (started in 2013, potentially inactive since 2022), it contributes to the sustainability of the information society through long-term preservation and access to information.
- The Management of Social Transformations (MOST Programme) - Sustainability science provides interdisciplinary knowledge-based input to tackle environmental challenges.
- Education for sustainable education is a learning programme for all ages globally on sustainability.

Topic 2: Ethics of Artificial Intelligence

- Recommendation on the Ethics of Artificial Intelligence, adopted by 193 countries in 2021. Contains one subchapter on sustainability, concerning the human, social, cultural, economic and environmental impact of AI technologies as well as on the SDGs. Sustainability is understood as social, economic and environmental sustainability.

- The Global AI Ethics and Governance Observatory provides a global resource for policymakers, regulators, academics, the private sector and civil society to find solutions to the most pressing challenges posed by Artificial Intelligence. It showcases information about the readiness of countries to adopt AI ethically and responsibly. It also hosts the AI Ethics and Governance Lab, which gathers contributions, impactful research, toolkits and good practices across a range of issues related to AI ethics, governance, responsible innovation, standards, institutional capacities, generative AI, and neurotechnologies.
- The Global Forum on the Ethics of AI in 2024 laid down global foundations on ethical approaches to AI. These outcomes include the four core values of ethical AI, including core value 4 "Environment and ecosystem flourishing". This means ensuring AI contributes to a more inclusive, sustainable, and peaceful world. The outcomes of the forum also include "A human rights approach to AI", which are ten core principles that lay out a human-rights centred approach to the Ethics of AI. This includes the 8th principle: Sustainability. The forum also designed Actionable Policies which are key policy areas where member states can make strides towards responsible developments in AI. Policy Area 5 is "Environment and ecosystems".

5.1.3. Evaluation

Status: Green
UNESCO focuses on both the environmental sustainability and the social justice and ethical aspects of the digital transition.

5.2. ARENA: INTERNATIONAL LABOUR ORGANISATION ILO

5.2.1. Context

Background: The ILO is a United Nations agency that promotes social and economic justice through setting international labour standards, advocating for fair work conditions, advancing employment rights, and fostering inclusive and sustainable job creation worldwide.

Geographic scope / policy level: Global / government level

Strategy: The ILO's strategy towards a just and sustainable digital transition emphasises integrating digitalisation strategies with employment policies to align digital transformation with social justice and sustainability goals, advocating for green jobs and a human-centred future of work that supports sustainable development across economic, social, and environmental dimensions.

5.2.2. Topics & Instruments

Topic 1: Just and digital transition:

- According to the ILO, a just transition is understood as "ensuring a just transition to a future of work that contributes to sustainable development in its economic, social and environmental dimensions".
- The ILO has put emphasis on the interlinking of digitalisation strategies to employment objectives and is therefore calling for the inclusion of digitalisation strategies in employment policies.

- The ILO hosted the Regional forum on sustainable and inclusive digital transformation in which members discussed the alignment of the digital transition with social justice objectives and stressed that it is critical for a more inclusive and sustainable future.
  - Aligning the digital transformation with social justice objectives is critical for laying the foundation for a more inclusive and sustainable future.

- The ILO strongly advocates for a just transition through green jobs and pushing environmental sustainability:
  - The focus lies more on sustainability but also incorporates the digital aspect as a disruptor

Topic 2: Green Jobs
- The ILO supports its member countries to ensure the implementation of the Paris Agreement as it would help create 18 million jobs globally by 2030.

Topic 3: Future of Work
- ILO Centenary Declaration for the Future of Work emphasises the need to ensure a just transition to a human-centred future of work that is instrumental to sustainable development in all its dimensions (economic, social and environmental). The Declaration also addresses the impact of digital technologies on the future of work.

Topic 4: Green and circular economies
- The ILO also pushes for a green circular economy and estimates that it can generate about 100 million jobs by 2030, for instance through the 'Jobs in the Circular Economy' Initiative.

5.2.3. Evaluation

Status: green
The ILO emphasises a just and green transition and acknowledges the connection between the future of work and an inclusive digital transition.

5.3. ARENA: UN WOMEN

5.3.1. Context

Background: UN Women, the United Nations entity dedicated to gender equality and women's empowerment, works globally to eliminate discrimination against women and girls, promote women's rights, and support their full participation in social, economic, and political life.

Geographic scope / policy level: Global / government level

Strategy: In its strategic plan 2022-25, UN Women states that it supports the achievement of the SDGs by focusing on the following thematic focus areas: governance and participation in public life; economic empowerment; ending violence against women and girls; and women, peace and security, humanitarian action and disaster risk reduction. While the environmental and digital transformations are not explicitly named as focus areas, they are named as important levers of change.

5.3.2. Topics & Instruments

Topic 1: Sustainable development - green economies and climate change

- Contributing to the SDGs is one of the major goals for UN Women, SDG 5 explicitly states that in order to achieve sustainable development we need gender equality. Thus, UN Women states that sustainable development requires action on three fronts: social, economic and environmental.
- Green economies and climate change are seen as two main levers that influence women's economic empowerment. In this context, UN Women promotes women's economic empowerment within the broader sustainable development agenda, with a focus on green economics and climate change. UN Women finances projects on the matter.

Topic 2: Technology

- The 67th annual meeting CSW67 was dedicated to the topic technology and gender equality:
  - The priority theme of the CSW67 was "Innovation and technological change, and education in the digital age for achieving gender equality and the empowerment of all women and girls".
  - The agreed conclusions acknowledge that achieving gender equality in the context of innovation and technological change, and education in the digital age, is essential for achieving the SDGs.

5.3.3. Evaluation

Status: Orange
The focus areas include neither the environmental or digital transformation but these are underlying issues present in the agency's work.

6. UTILITIES (ENERGY/WATER)

6.1. ARENA: INTERNATIONAL ENERGY AGENCY (IEA)

6.1.1. Context

Background: The IEA works with governments and industry to shape a secure and sustainable energy future for all, and helps coordinate a collective response to major oil supply disruptions. The IEA was established under the auspices of the Organisation for Economic Co-operation and Development (OECD).

Geographic scope / policy level: Global - mainly OECD and global minority countries, very few oil or gas producing states / government level

Strategy: The IEA's core activity is to provide policy advice to its member states and associated countries to support their energy security and promote their transition to clean energy. The IEA mainly facilitates analytical work and compiles data.

6.1.2. Topics & Instruments

Topic 1: Environment: clean energy transition

- Sustainability is one of the main shared goals of the IEA member states, as also stated in a 2022 ministerial communique. In 2021, the IEA published

Net Zero by 2050: A Roadmap for the Global Energy Sector, setting out a plan for the global energy sector to reach net zero emissions by 2050 in line with the Paris Agreement. Thus, the IEA focuses a lot of its work on climate change and how to combat it.

Topic 2: Digital in the context of clean energy transition

- The digital transformation is understood by the IEA as a tool to help combat climate change, for example as a tool for a clean energy transition or to improve energy efficiency. The IEA funds programmes on the topic, for example the "Digital Demand-Driven Electricity Networks Initiative" or the "Technology Collaboration Programme".

6.1.3. Evaluation

Status: Orange
Environmental transformation is a clear focus area for the IEA, whereas the digital transformation is mainly understood as a tool to help combat climate change and is thus not mentioned in relevant strategy documents.

6.2. ARENA: INTERNATIONAL WATER ASSOCIATION (IWA)

6.2.1. Context

Background: The IWA is a self-governing, not-for-profit organisation and knowledge hub for the water sector, bringing together water professionals and businesses to find solutions to the world's water challenges; an international network for water professionals, promoting standards and best practice in sustainable water management.

Geographic scope / policy level: Global / non-state actors, membership comprises about 80 countries, the private sector as well as academia. The IWA is an affiliated member of the International Science Council (ISC).

Strategy: The IWA focuses on four main programmes: Basins of the Future; Cities of the Future; Water and Sanitation Services and Digital Water.

6.2.2. Topics & Instruments

Topic 1: Sustainable transformation

- The IWA understands climate change, population growth and increasing urbanisation, and ageing and overly stressed infrastructure as the great water challenges of the present, as they inflict significant pressure on water networks. Thus one of the main focus areas of the IWA is helping to curb climate change by driving sustainable ideas forward.

Topic 2: Digital water

- The IWA understands digital transformation as a tool to aid combat climate change in order to navigate towards by saving water resources. The IWA thus promotes the use of smart utilities in order to curb water use. Since 2022 the IWA has thus organised the "Sustainable water summit" in order to put more focus on this topic and find solutions.

6.2.3. Evaluation

Status: Orange
Digital is understood as a tool to ensure a sustainable transformation.

7. SCIENCE, RESEARCH & EDUCATION

7.1. ARENA: UNITED NATIONS CHILDREN FUND (UNICEF)

7.1.1. Context

Background: UNICEF is the UN's humanitarian aid organisation, focussing on children and youth and advocating for their rights, especially on education.

Geographic scope / policy level: global, government level

Strategy: The UNICEF Climate, Environment, Energy and Disaster Risk Reduction department advocates for and urges governments and business partners to prioritise children and youth when it comes to sustainability, make sure that social services are strong and resilient enough to withstand climate and environmental impacts, create programs aimed at supporting and empowering children and young people to become sustainable.
The UNICEF Information and communication technology division (ICTD) is responsible for accelerating UNICEF's digital transformation to ensure the delivery of innovative technology services across the organisation. UNICEF recognizes the importance of utilising digital technology and encouraging digital innovation for sustainable development (T4D).

7.1.2. Topics & Instruments

Topic 1: Green Transition & Environmental Sustainability
- Skills for a Green Transition: Solutions for Youth on the Move: Report presents best practice programs working on enhancing the skills for a green transition for young people, among which are digital skills. However, the report does not highlight the intersection between digital transformation and environmental sustainability.
- The CEED Global Annual Report includes examples of projects by UNICEF in different countries with a focus on climate and environment sustainability, among which are digital skills. Similarly to the Skills for a Green Transition Report, it does not highlight the intersection between digital transformation and environmental sustainability.

Topic 2: Children & relevant policy areas
- Report on The State of Children in the European Union: examines four policy areas, including digital technologies and the environment, and their impact and relevance to children. The report does not put any emphasis on the relation between both topics.

7.1.3. Evaluation

Status: orange
UNICEF is working on both topics separately. Digital transformation and sustainability are only thought together in the context of projects and innovations

for environmental sustainability and for climate action. However, they are not thought together in a broader strategic way. However, given its thematic focus, UNICEF focusses highly on the just and inclusive perspective when it comes to environmental sustainability and digital technologies.

7.2. ARENA: INTERNATIONAL SCIENCE COUNCIL (ISC)

7.2.1. Context

Background: The ISC is an international non-governmental organisation that brings together scientific bodies at various levels in the social and natural sciences.

Geographic scope / policy level: Global / 135 member organisations, 40 member unions and associations, and 30 affiliated members

Strategy: The ISC has three main areas of work:
- Stimulating and supporting international scientific research and scholarship, and communicating science that is relevant to international policy issues;
- Promoting the ability of science to contribute to major issues;
- Defending the free and responsible practice of science.

The "Action Plan 2022-2024: Science and society in transition" lays down the current work domains, including "Domain 1: Global Sustainability" and "Domain 2: Converging Science and Technology in a Digital Era".

7.2.2. Topics & Instruments

Topic 1: Environmental Transformation
- The work domain "Global Sustainability" aims to rethink human development in the light of new technologies, socio-political realities and deep environmental changes. Through its programs, such as 'Transformations to Sustainability' the ISC aims at promoting social science research on social transformations that lead to environmental sustainability through solutions-oriented sustainability science solutions.

Topic 2: Digital Transformation
- The work domain "Converging Science and Technology in a Digital Era" focuses on the digital transformation of science of education, utilising digital technologies for sustainability and the impacts, ethics and governance of digital technologies.
- The ISC supports the UN's Roadmap for Digital Cooperation, acknowledges the transformational force of new digital technologies and aims to maximise their benefits for science and for the achievement of the SDGs. CODES is a part of this effort by the ISC.

7.2.3. Evaluation

Status: Green
The ISC emphasises a just and sustainable digital transition and works on both using digital technologies to achieve the SDGs as well as mitigating the environmental and social implications of digital technologies. The ISC is one of the eight founding co-champions of CODES.

8. ENVIRONMENT

8.1. ARENA: UNITED NATIONS ENVIRONMENT PROGRAM (UNEP)

8.1.1. Context

Background: UNEP is the UN's body responsible for coordinating efforts and policies on environmental issues. It helps countries achieve their low-carbon and resource efficiency goals. It is a leading agency in providing data and advisory services on achieving the Sustainable Development Goals (SDGs).

Policy levels (geographic scope): global / government level

Strategy: UNEP works on utilising digital technologies for ensuring environmental sustainability while at the same time promoting sustainable digital technologies by design. UNEP puts emphasis on both the potential risks of digital technologies on the environment as well as their potential benefits for climate action. UNEP's vision for a sustainable digital transformation can be found here.

8.1.2. Topics & Instruments

Topic 1: Green and Digital Transition

- UNEP is evaluating the opportunities presented by digital technologies to advance the shift towards a circular economy. The findings of the work done by UNEP together with One Planet Network and the Metabolic Institute are presented in this report.

Topic 2: Environmental sustainability

- Trade in Environmental Sound Technologies (Environment & Trade Hub) Policy and Strategy helps countries in developing sustainable trade policies and trade agreements that focus on environmental sustainability. It acts as an advisory body offering research findings and tools.
- List of UNEP publications on projects and initiatives working on digital environmental sustainability, including on topics such as e-commerce, remote sensing and the environmental impact on refugees and sustainable DPI among others.

8.1.3. Evaluation

Status: green
UNEP centralises the topic of digital transformation and environmental sustainability in its work and as part of CODES puts it forth on a global level, working with governments, think tanks and other actors. UNEP is one of the eight founding co-champions of CODES.

8.2. ARENA: INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (IPCC)

8.2.1. Context

Background: The IPCC is the UN's body responsible for evaluating the science related to climate change.

Geographic scope / policy level: global / government level

Strategy: The IPCC conducts research and provides governments with important information on the drivers, impacts and risks of climate change.

8.2.2. Topics & Instruments

Topic 1: Environmental Sustainability
- Report by the IPCC on Accelerating the Transition in the Context of Sustainable Development emphasises the need for the integration of climate change and sustainable development in global policymaking. It also highlights the importance of digitalization towards sustainable development.

Topic 2: Climate change and digital technologies
- Climate Change Synthesis Report 2023 Chapter 17: underlines the proven risks and benefits by digital technologies on the environment and social inequality, emissions and energy efficiency. However, the report's summary for policymakers does not include mentions of digital technologies.
- Climate Change Synthesis Report 2023 Chapter 16: focuses on technology innovation and climate change, including digital technology innovation.

8.2.3. Evaluation

Status: orange
Despite some mentions on the relationship between digital transformation and climate change, the IPCC does not seem to put specific emphasis or have a clear strategy on the topic.

8.3. ARENA: INTERNATIONAL RESOURCE PANEL (IRP)

8.3.1. Context

Background: The IRP was launched by UNEP in order to gather and share knowledge on better ways to use and manage our natural resources. It is a scientific panel and acts as an advisory body for governments.

Geographic scope / policy level: global / governments

Strategy: The IRP assesses the world's most pressing resource issues and provides governments with evidence-based solutions and policy advice. Among the solutions, the panel looks at potential innovations to reduce resource use and looks at different aspects of resource issues, such as the social justice perspective.

8.3.2. Topics & Instruments

Topic: Enabling Sustainability Transitions
- Among the IRP's High Impact Priority Areas (HIPA), is HIPA 4, which is enabling sustainability transitions. It focuses on trade, financing, governance

and innovation. In its Work Programme, the IRP defines innovation in this context as 'business model, digital & other technological innovations for sustainability transitions'. The IRP asks questions regarding resource use reduction and efficiency through digital innovations and recognizes the importance of the digital transition for the sustainability transition as well as the role the digital economy plays.

- In its annual 'Global Resources Outlook' the IRP assesses the impact of the increased use of digital technologies on resource use and the environment. It also explores material use and need in the different sectors.
- The IRP is active in different events, discussing the ways of utilising digital technologies for climate action, such as the biannual meeting between representatives from UNEP and the UNDP or the Meeting of the IRP.
- Report by the IRP in which the impact of digitalization on climate change as well as the use of digital technologies for environmental sustainability is discussed.

8.3.3. Evaluation

Status: green
The IRP emphasises the use of digital technologies for the green transition and for a more efficient and environmentally sustainable use of natural resources. At the same time, it presents findings on the impact of the production and use of digital technologies in terms of natural resources.