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Report 4

Digitalisation, sustainability and environmental justice: Leaving no one behind in the twin transition

Analysis report of the project “Digitalisation and sustainability at EU level: Opportunities and risks of digitalisation for the implementation of the 2030 Agenda at EU level”

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Abstract: Digitalisation, sustainability and environmental justice: Leaving no one behind in the twin transition

This report examines the environmental justice implications of digitalisation in the EU and provides recommendations for short to medium term action. Environmental justice covers the fairness of both the decision-making process as well as the differential environmental effects of different policies. The focus here is on participation in environmental decision-making and fairness in the ICT value chain because these are areas where there has already been some progress, but where civil society actors have also identified a need for further urgent action. The issues of access to information, digital tools, and systemic change are also examined, as well as suggestions for how to better integrate a broader agenda for justice in sustainable digitalisation into the EU policy framework, going beyond incremental improvements and taking into account broader issues such as social and economic inequality.

Kurzbeschreibung: Digitalisierung, Nachhaltigkeit und Umweltgerechtigkeit

In diesem Papier werden die Auswirkungen der Digitalisierung auf die Umweltgerechtigkeit in der EU untersucht und Empfehlungen für kurz- bis mittelfristige Maßnahmen gegeben. Umweltgerechtigkeit umfasst sowohl die Fairness des Entscheidungsfindungsprozesses als auch die unterschiedlichen Umweltauswirkungen der verschiedenen Politiken. Der Schwerpunkt liegt hier auf der Beteiligung am umweltpolitischen Entscheidungsprozess und der Fairness in der IKT-Wertschöpfungskette. In diesen Bereichen wurden zwar bereits einige Fortschritte erzielt, jedoch stellen zivilgesellschaftliche Akteure weiteren dringende Handlungsbedarf fest. Untersucht werden auch die Fragen des Zugangs zu Informationen, digitalen Werkzeugen und des Systemwandels sowie Vorschläge, wie eine umfassendere Agenda für Gerechtigkeit bei der nachhaltigen Digitalisierung besser in den politischen Rahmen der EU integriert werden kann, die über inkrementelle Verbesserungen hinausgeht und umfassende Fragen wie soziale und wirtschaftliche Ungleichheit berücksichtigt.

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List of abbreviations

Abbreviation	Explanation
AI	Artificial intelligence
BMUV	Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection
CE	Circular economy
CEAP	Circular Economy Action Plan
CSO	Civil Society Organisation
CSDD	Corporate Sustainability Due Diligence
CO2	Carbon dioxide
CoR	Committee of the Regions
DCE	Digital Circular Economy
DG	Directorate-General
DMA	Digital Markets Act
DPP	Digital Product Passport
DSA	Digital Services Act
EC	European Commission
ECI	European Citizens' Initiative
EEE	Electrical and Electronic Equipment
EESC	European Economic and Social Committee
EGD	European Green Deal
EP	European Parliament
EPR	Extender Producer Responsibility
EU	European Union
FTA	Free Trade Agreement
GHG	Greenhouse gas
HRDD	Human rights due diligence
ICT	Information Communications Technology
MEP	Member of the European Parliament
MFF	Multi-Annual Financial Framework
MS	Member State
Mt	Metric tonne
POP	Persistent Organic Pollutants

Abbreviation	Explanation
PPP	Polluter Pays Principle
SDG	Sustainable Development Goal
TSD	Trade and Sustainable Development
UBA	German Environment Agency (Umweltbundesamt)
UK	United Kingdom
UN	United Nations
UNGPs	United Nations Guiding Principles on Business and Human Rights
US EPA	US Environmental Protection Agency
WEEE	Waste Electrical and Electronic Equipment

Summary

This report examines the environmental justice implications of digitalisation in the European Union (EU) and provides recommendations for short to medium term action. The discussion and conclusions are based on consultations with Civil Society Organisations (CSO) and experts in the fields of digitalisation, sustainability, and social justice. Environmental justice covers the fairness of both the decision-making process as well as the differential environmental effects of different policies. The focus here is on participation in environmental decision-making and fairness in the Information Communications Technology (ICT) value chain because these are areas where there has already been some progress, but where civil society actors have also identified a need for further urgent action. The issues of access to information, digital tools, and systemic change are also examined.

Although the European Green Deal (EGD) is supposed to 'leave no one behind', this issue is not often discussed in the context of the twin transition toward a green and digital society. Although the sustainability implications of digitalisation are being considered more and more, they are still not fully integrated into the digital agenda, and vice versa. A next step should be to fully integrate all of the elements of the EGD into the twin transition by examining more fully the environmental justice implications of these technologies, and to act on them.

Using digital tools to enhance citizen participation in environmental decision-making is an area with significant promise that could be acted on immediately, but care needs to be taken to make sure that this does not deepen the 'digital divide' (see section 3). The EU has a relatively good system of consultation on specific initiatives, although a number of improvements could be made to make this system more accessible to average citizens both through technical means, but also through simplified language and better dissemination. However, in the area of proactive agenda setting much more could be done to include citizens through digital and non-digital tools. Care should be taken in this area not to rely too much on digital tools alone to best utilise the advantages of both digital and 'in person' tools. The European Parliament (EP) and the Council of the European Union could also do much more to meaningfully include citizens in consultations and to avoid gaps in the meaningful consultation of citizens.

The differential environmental consequences that result from the ICT product life cycle, through resource extraction, manufacturing, and disposal, are a classic example of environmental injustice, and it is clear that human rights abuses are significant. Despite efforts to combat these problems through domestic EU legislation and international agreements there are still significant problems. The best approach is to ensure a robust, ambitious circular economy (CE) legislative framework that is properly enforced to reduce material inputs in combination with effective corporate due diligence legislation. Complementary measures through environmental taxation, sustainable trade agreements and material reduction targets for the industry could also be very helpful.

Some other issues which still require urgent additional research to fully understand and act on their environmental justice implications are: access to environmental information, digital technologies (including AI and algorithmic decision-making, e-commerce, online platforms and the sharing economy), and systemic change. The individual digital technologies require further inquiry as they grow more and more important in order to appreciate both their sustainability and then environmental justice consequences in order to design the best possible policy responses. Systemic change relates more broadly to the choices society makes about resource allocation and its prioritisation, a fundamental aspect of environmental justice.

Zusammenfassung

In diesem Papier werden die Auswirkungen der Digitalisierung auf die Umweltgerechtigkeit in der EU untersucht und Empfehlungen für kurz- bis mittelfristige Maßnahmen gegeben. Die Diskussion und die Schlussfolgerungen beruhen auf Konsultationen mit Organisationen der Zivilgesellschaft und Expertinnen*Experten auf dem Gebiet der Digitalisierung, der Nachhaltigkeit und der sozialen Gerechtigkeit. Umweltgerechtigkeit umfasst sowohl die Fairness des Entscheidungsfindungsprozesses als auch die unterschiedlichen Umweltauswirkungen verschiedener Maßnahmen. Der Schwerpunkt liegt hier auf der Beteiligung an Umweltentscheidungen und der Fairness in der Wertschöpfungskette der Informations- und Kommunikationstechnologie (IKT), da in diesen Bereichen bereits einige Fortschritte erzielt wurden, die Akteure der Zivilgesellschaft aber auch weiteren dringenden Handlungsbedarf festgestellt haben. Auch die Fragen des Zugangs zu Informationen, digitalen Werkzeugen und systemischen Veränderungen werden untersucht.

Obwohl der Europäische Green Deal „niemanden zurücklassen“ soll, wird dieses Thema nicht oft im Zusammenhang mit der „doppelten Transformation“ zu einer grünen und digitalen Gesellschaft diskutiert. Obwohl die Auswirkungen der Digitalisierung auf die Nachhaltigkeit immer mehr in Betracht gezogen werden, sind sie immer noch nicht vollständig in die digitale Agenda integriert – und umgekehrt. Ein nächster Schritt sollte darin bestehen, alle Elemente des „Green Deal“ vollständig in die doppelte Transformation zu integrieren, indem die Auswirkungen dieser Technologien auf die Umweltgerechtigkeit eingehender untersucht werden, und daraufhin zu handeln.

Die Nutzung digitaler Instrumente zur Verbesserung der Bürger*innenbeteiligung an umweltpolitischen Entscheidungen ist ein vielversprechender Bereich, in dem sofort gehandelt werden könnte. Es muss jedoch darauf geachtet werden, dass dadurch die „digitale Kluft“ nicht vertieft wird. Die EU verfügt über ein gutes System der Konsultation zu spezifischen Initiativen, obwohl eine Reihe von Verbesserungen vorgenommen werden könnten, um dieses System für den*die Durchschnittsbürger*in zugänglicher zu machen – sowohl durch technische Mittel als auch durch eine vereinfachte Sprache und eine bessere Verbreitung. Im Bereich des proaktiven Agenda-Setting könnte jedoch noch viel mehr getan werden, um die Bürger*innen durch digitale und nicht-digitale Instrumente einzubeziehen. In diesem Bereich sollte darauf geachtet werden, sich nicht zu sehr auf digitale Instrumente zu verlassen, um die Vorteile sowohl der digitalen als auch der „persönlichen“ Instrumente bestmöglich zu nutzen. Auch das Europäische Parlament und der Rat der Europäischen Union könnten viel mehr tun, um die Bürger*innen sinnvoll in Konsultationen einzubeziehen und Lücken bei der sinnvollen Konsultation der Bürger*innen zu vermeiden.

Die unterschiedlichen Umweltauswirkungen, die sich aus dem Lebenszyklus von IKT-Produkten ergeben, von der Ressourcengewinnung über die Herstellung bis hin zur Entsorgung, sind ein klassisches Beispiel für ökologische Ungerechtigkeit, und es liegt auf der Hand, dass Menschenrechtsverletzungen erheblich sind. Trotz der Bemühungen, dieses Problem durch innerstaatliche EU-Rechtsvorschriften und internationale Vereinbarungen zu bekämpfen, gibt es immer noch erhebliche Herausforderungen. Der beste Ansatz besteht darin, einen soliden, ehrgeizigen Rechtsrahmen für die Kreislaufwirtschaft zu schaffen, der ordnungsgemäß durchgesetzt wird, um den Materialeinsatz in Kombination mit wirksamen Rechtsvorschriften zur Sorgfaltspflicht der Unternehmen zu verringern. Ergänzende Maßnahmen in Form von Umweltsteuern, Vereinbarungen über nachhaltigen Handel und Zielvorgaben für die Reduzierung des Materialeinsatzes in der Industrie könnten ebenfalls sehr hilfreich sein.

Einige andere Themen, die noch dringender zusätzlicher Forschung bedürfen, um ihre Auswirkungen auf die Umweltgerechtigkeit vollständig zu verstehen und entsprechend zu handeln, sind: Zugang zu Umweltinformationen, digitale Technologien (einschließlich KI und algorithmischer Entscheidungsfindung, E-Commerce, Online-Plattformen und Sharing Economy) und systemischer Wandel. Insbesondere die einzelnen digitalen Technologien bedürfen weiterer Untersuchungen, da sie immer mehr an Bedeutung gewinnen, um sowohl ihre Auswirkungen auf die Nachhaltigkeit als auch auf die Umweltgerechtigkeit besser zu verstehen, damit die bestmöglichen politischen Maßnahmen entwickelt werden können. Der Systemwandel bezieht sich im weiteren Sinne auf die Entscheidungen der Gesellschaft über die Ressourcenzuteilung und deren Prioritätensetzung, ein grundlegender Aspekt der Umweltgerechtigkeit.

1 Introduction

This report is the result of the project "Digitalisation and sustainability at EU level: Opportunities and risks of digitalisation for the implementation of the 2030 Agenda at EU level" on behalf of the German Environment Agency (Umweltbundesamt – UBA), and financed by the Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV). It was implemented by the Institute for European Environmental Policy (IEEP) and the Institute for Ecological Economy Research (IÖW).

The EGD is supposed to ensure that "no person and no place is left behind" (EC 2019) as well as moving to a climate neutral economy, that decouples economic growth from resource use by 2050. The political concept behind such a 'green deal' was to address two of the major challenges of our time as part of a political package: growing inequality and the ecological breakdown of our planet.

At the same time, it should "also promote and invest in the necessary digital transformation and tools" as "enablers" to support the transition to the EGD society (EC 2019, p. 4). In parallel, the EU places a special emphasis and priority on uniting the twin transition to a green and digital society (EC 2019). However, very little attention is paid to the social aspect of uniting the twin transition, even as they are increasingly considered as inseparable transitions (rhetorically at least) and key to achieving the objectives of the EGD. What is meant by leaving no person and no place behind in terms of uniting the twin transition and how can policy address this point?

This report considers this point by examining the environmental justice implications of digitalisation. The dialogue concerning environmental justice in Europe has progressed within the framework of the 1998 Aarhus Convention, which established the structure for environmental democracy (Antal 2022, p. 1). The Convention establishes a set of environmental rights for citizens and their associations broken down into three broad categories: the right to know, the right to participate, and the right to recourse in a court of law (Halleux 2022). According to Antal (2022, p. 7) the Convention's environmental democracy system has defined the concept of environmental justice to such an extent that it has mainly focused on the procedural and corrective aspects of environmental justice. However, in recent years academic thinking and activism about environmental justice in Europe has broadened in light of the ecological and climate emergency to address a wide variety of issues (such as global climate justice, minority rights, and different kinds of pollution and toxic exposure), and a focus on the equitable distribution of environmental quality and burdens has arisen, similar to the United States where the issue has been of greater academic and activist engagement since the 1980s (Antal 2022). Environmental justice is defined by the US Environmental Protection Agency (US EPA) as the just and meaningful participation of all individuals, regardless of their race, colour, national origin, or income, in the creation, execution, and enforcement of environmental regulations, policies, and laws (US EPA 2022). This report examines the issue of environmental justice in line with this definition in considering the fair treatment of all people, inside and outside of the EU, in the development, implementation and enforcement of policies related to the environmental impacts of digitalisation, while also considering the particular environmental rights accorded under the Aarhus Convention in the EU.

Digitalisation is an ever-increasing factor in our lives, and its impact on our environment and society is growing in parallel. As a contributor of up to 3.8% of global greenhouse gas (GHG) emissions (Bordage 2019), the Internet has a larger impact than international air transport with a share of 2.5% of GHG emissions (Lee et al. 2021). Since the access to internet is highly linked to income levels, there is a considerable degree of carbon inequality present in these numbers (Pew Research Center 2016). These emissions are increasing by about 9% per year (The Shift

Project 2019), a clearly unsustainable pace in a context where overall emissions should be decreasing. One major driver is the rapid growth in e-waste. Higher consumption rates of electric and electronic equipment, shorter life cycles, and reduced possibilities for repair make e-waste the world's the most rapidly increasing domestic waste stream. In 2019, a record 53.6 million metric tonnes (Mt) of e-waste were produced (UNEP 2021). The vast majority of this waste is simply disposed of, much of it in developing countries with serious negative health and environmental consequences.

The debate around this shift tends to be polarised, along similar lines to a broader debate between environmental techno-optimists and sceptics, with some seeing digital tools as the key to a greener, more equal future, while others see them as tools for growing social stratification, concentration of power, and continued environmental damage (Danaher 2022). Qureshi (2021) has argued that the increasing pace of technological change requires more responsive attention by policy-makers to ensure inequality is not worsened in the transition. This report will engage with this debate by presenting an examination of some of the most pressing environmental justice issues raised by digitalisation and propose practical policy recommendations to mitigate the injustices and promote environmental rights and equality.

Digitalisation refers to the integration of digital technologies into different aspects of society, the economy, and technology. When discussing sustainable digitalisation, we are referring to both the challenges related to making broader digitalisation more sustainable, for example through reducing the resource and energy consumption of these technologies (sustainable digitalisation), as well as the use of digital tools and solutions to achieve sustainability goals in various fields of action such as mobility, energy, or production (digitalisation for sustainability) (REPORT 1).

These are very broad issues that touch on many different sectors, technologies, and societal trends which cannot all be addressed here. The hope is to start a practical conversation on this topic within the EU context, and to expand the focus of the conversation to include environmental justice and environmental rights within and beyond the EU. With a continued emphasis on digital solutions, it becomes very important to interrogate the questions about who is making the decisions that matter in this space, who is benefiting, and who is facing the consequences of those decisions?

The focus of this report is on two main aspects of the discussion around sustainability, digitalisation, and environmental justice which are the most urgent and developed issues in this area in the EU context according to consulted CSOs: the first touching on involvement in the development of policy (**participation in environmental policy making**), and the second on the fair treatment of all people in the implementation and enforcement of policy (in particular, **Information and Communication Technologies (ICT) Product Lifecycle and Environmental and Human Rights**). Later in the report, some other related considerations in other thematic areas of **Access to Information, Digital Technologies,** and **Systemic Change** are also raised for consideration as part of a **broader agenda for justice in sustainable digitalisation** going forward. These issues were highlighted as important for future consideration by CSOs and could serve as the basis for future research, as well as being part of a more coherent approach to sustainable digitalisation.

Overall, the consideration of digitalisation and sustainability is portrayed positively in EU policy documents. Particular trust is put in digital tools to drive sustainable changes. However, research has shown that this potential is so far largely unfulfilled (Piétron et al. 2022), and indeed digitalisation has likely had small net-negative environmental effects worldwide until now (Lange and Santarius 2020) due to the rapid increase in the use of digital products, not to

mention the very considerable negative environmental and social externalities that ICT manufacturing and disposal has placed on particular communities and individuals involved in the resource extraction, manufacturing and disposal of these products. It is time to take these negative, differential effects more seriously within EU policy prioritisation and discourse and to better consider the trade-offs involved in the technological and political choices being made, as well as to challenge the basic assumptions that digitalisation is necessarily a support to a green transition. In presenting a twin transition, they are presented as almost parallel goals, but digitalisation needs to be maintained firmly as a supporting tool for other goals, rather than a goal in its own right.

There are important policy initiatives such as the Circular Economy Action Plan (CEAP) already under consideration to improve the situation, but their understanding in terms of environmental justice is still under-developed and under-prioritised within EU policy making circles, and some new ideas for approaching these challenges coherently are needed.

Meanwhile the use of digital tools to enhance citizen participation in environmental policy making at EU level hold great promise to improve access, transparency and engagement. This is an area where the EU is already relatively well advanced, but there are still ways to improve the tools and move toward a new era of democratic legitimacy and engagement.

This report is structured into the following sections:

1. Introduction
2. Methodology
3. Participation in environmental decision-making
4. Fair implementation of ICT product lifecycle and environmental and human rights
5. A broader agenda for justice in sustainable digitalisation
6. Recommendations

2 Methodology

Within the broader project examining digitalisation and sustainability in the EU, this report is the result of a work package which sought to solicit and examine the views of civil society on digitalisation, sustainability and environmental justice in the EU context. These views are synthesised and presented in this report with recommendations for priorities for action that the German government can work on or pursue in greater depth at EU level in the coming years in this area.

The first step of the work package was to hold an online discussion forum from November 2021-January 2022. The format was open and flexible and designed to solicit input from a wide variety of CSO, primarily from the environmental and digitalisation CSO communities. Several questions were pre-selected for discussion, but participants were also encouraged to pose their own questions and explore related topics. The online forum gathered comments from 22 CSOs and 24 different individuals. The results of the online forum are summarised here: https://ieep.eu/publications/digitalisation-sustainability-and-environmental-justice.

The following questions were the basis of these discussions:

- Is digitalisation improving access to environmental information?
- Is digitalisation improving participation in environmental decision-making for citizens?
- How can digitalisation be directed to help civil society environmental initiatives to succeed?
- How are digitalisation and the need for systemic environmental change related?
- How to mitigate human rights and environmental impacts of ICT manufacturing?
- What are the justice implications of digital tools that aim to improve environmental sustainability?

Following-up on that event, an online expert workshop was held in May 2022 to discuss some of the questions in more depth and interactively. Participants from the original online forum were invited, as well as new participants. 29 people participated in the workshop, including 16 who had not been present for the online forum. The topics for discussion were:

- Digitalisation and effective participation in environmental policy making
- Digitalisation and environmental rights: Pollution, human rights and differential environmental effects arising from manufacturing and disposal of ICT products
- Environmental justice implications of online platforms and e-commerce

The analysis and recommendations in this report are based on the priorities, arguments and considerations presented in the online forum and expert workshop alongside complementary academic research.

3 Participation in environmental decision-making

There was a broad consensus among CSOs consulted that digital tools offer significant possibilities to improve participation in environmental decision-making, and that some progress has been made in this area in recent years. However, there is still much room for improvement, especially given recent concern about the erosion of traditional democratic engagement methods, and increasing disillusion about the fairness and effectiveness of democratic governance in a number of countries, and particularly among the young (Foa et al. 2020). The area of digital policy is also an area where private interests are lobbying particularly heavily (Transparency International EU 2021), and there is a strong need for some counterweight to represent citizen concerns adequately. However, caution is needed with regard to relying too much on digital participation tools or risk deepening the digital divide.

Public participation in the policy process can refer to a number of different steps in the policy making cycle, and it is important to differentiate between them, and ensure participation at all levels, not simply as a pro-forma consultation on decisions that have already largely been made. This includes the levels of:

a) Agenda setting

b) Formal consultation on proposals and evaluations

c) Access to justice, enforcement, and redress.

This report will address the first two as they are the main elements of the policy decision-making process, but it is worth reiterating that digital tools have a potentially important role to play in terms of better enforcement, through, for example, citizen science tools which allow citizens to better organise and take direct action to help enforce laws and gather evidence of non-compliance. The provision of timely and quality information and supporting evidence for policy making, throughout the policy cycle and decision-making process, is also a precondition for effective public participation (see also section 5 on access to information).

Environmental decision-making is a shared competence between the EU and Member States meaning also that any participatory mechanism will necessarily need to be split between the EU and national levels. Even within the EU level, there are numerous decision-makers and ensuring a clear input from citizens, as well as transparent feedback to them about why decisions have been made, and assuring them that their input has been taken into account remains a challenge. However, digital tools can play an important role in building accountability and interactivity into the process of citizen participation in environmental decision-making.

3.1 Feedback from CSOs in online forum and workshop

Broadly speaking, digital participation tools and platforms offer possibilities to involve more interested people, potentially more thoroughly than analogue methods would reach, especially in light of increasing dissatisfaction and disengagement with traditional forms of democratic participation (Bruno 2015). Many CSOs have highlighted the ability of digital participation tools to particularly reach young people. Additionally, digital participation tools can help to structure processes effectively and ensure transparency. They offer the opportunity to be more geographically inclusive and offer time for people with restricted schedules to effectively participate. These tools can be seen as the first steps and basic level of digital democracy, which at its best will enhance participation in democratic processes and governance through digital means.

The process of citizen participation, for example in **participatory budgeting, has been successful mainly at the more local level**. Examples include, Citizen Lab, which has successfully implemented participatory budget processes with over 200 local governments. Some lessons learned from these experiences include that it needs to be an ongoing process with realistic and transparent farming about possible outcomes, the need to actively recruit participants, ensure transparent feedback, and implement the changes (Lodewijckx 2021). **At a national level, Ireland is a country often cited as a good example** of citizen participation and deliberative democracy (Courant 2021).

However, **the major risk of digital consultations is to deepen the digital divide**, or participation divide in this case. The digital divide refers to the gap between those who have better access to digital tools and those who have less, either because they do not have effective access to the required technologies, the skills to effectively use them, or some other impediment to digital access. This divide refers to individuals but can also refer to the regions or groups which are generally less able to use digital tools or cannot gain access to it. Groups which generally suffer from the digital divide include rural inhabitants, the elderly, the less educated, people with severe physical or mental disabilities, people in the Global South, and the socio-economically disadvantaged, although there are wide differences within these groups. Some recent research suggests that in EU, the groups most at risk for being left behind by the adoption of digital governance tools are elderly residents of rural areas, particularly women (Botrić and Božić 2021), necessitating particular consideration and outreach to this group. There is thus a significant risk that the increased use of digital tools in decision-making may exacerbate existing divides and entrench potential policy blind spots. It is thus not appropriate to think about digitalisation as only improving or only hindering participation – it is doing both, to different people, to different extents.

Digital tools can also present several risks depending on the formats for interaction and publicity chosen, such as surveillance, hacking, harassment, polarisation, and adverse effects on users' mental health, particularly in an age of viral social media engagement. These are increasingly salient features of online discourse that should be taken into account in the design of online deliberation and consultation tools, as social media increasingly shapes the democratic discourse (see Haidt 2022 for a broader discussion). It has been noted by some stakeholders, that online spaces are not best suited for the development of empathy, trust, and relationships, which are crucial for human interactions and discussions, particularly for conflict averse individuals, or less professionalised or ideologically committed participants. It may be easier to discuss complex issues in offline settings and with some investment of time and trust building. These are issues that need to be borne in mind when designing the digital portions of online tools, and particularly in terms of not replacing existing forms of consultation and engagement. Ideally there may be a synergy of online and offline spaces and tools to provide a new, optimised policy consultation environment. A problem that undermines formal consultation processes is a lack of feedback to participants. Without a follow-up mechanism, it is not transparent what has been done with the input provided and to what extent, if at all, it has been considered in the decision-making process. This does not necessarily entail accepting all proposals made, but indeed providing clarity behind the decisions to incorporate or not incorporate it. This can lead to cynicism and disillusionment with the process, even if feedback has been considered in the policy, and a number of CSOs have highlighted the critical importance for the success of consultations to be as transparent as possible and respond as directly and thoroughly as possible to inputs.

3.1.1 Digital policy consultation at EU level

Overall, the EC should be commended for setting up the most robust public stakeholder consultation process in the world, including through the use of digital tools (OECD 2021). These tools have given a reasonably clear and accessible way for policy professionals to provide input to the EC's initiatives. However, there are a number of ways that this process could be made more accessible to the average citizen (to whom they are in principle targeted). In addition, the EU should consider following the model of some Member States, and the Conference on the Future of Europe, to establish a more proactive, agenda setting function for citizens through a mix of digital, as well as other tools.

In the case of the EC's online consultation platform, the 'Have-your-say-Portal', there are still a few shortcomings, despite it also being a relatively good example within the context of European Member States' digital consultation processes (ECA 2019). The platform is still too technocratic in orientation for a truly broad participation. **The language is quite technical and bureaucratic, and still suffers from a lack of a user-friendly interface** (Pauleweit et al. 2022). As the authors state, "the portal is mainly designed for professionals who are fluent in English and have relevant policy expertise and experience. The navigation on the site and the relevant documents are often not offered in all official EU languages. The public feedback, which is often provided in English, is not translated to other EU languages" (Pauleweit et al. 2022, p. 12). The questions are often formulated in a way which **requires substantial policy knowledge**. This makes it challenging for people participating in the process to not only understand the content of the decisions consulted on, but also the stage of the decision-making process in which the EC's proposal belongs to. This knowledge barrier impacts the relevance of the feedback delivered and the probability of it being considered in the decision-making processes, but most importantly it may result in a decision not to contribute to the whole process. Moreover, it gives also the impression that "the Commission had already decided a course of action and simply uses the consultation to validate or legitimise its pre-set decision" (Pauleweit et al. 2022, p. 11).

In addition, online consultations are **not conducted on all relevant policies**. In fact, some of the most important, which are either considered urgent or out of the scope of regular consultations do not undergo the usual consultation process. For example, at EU level financial regulations, such as the Multiannual Financial Framework (MFF), are not subject to public consultations, despite being the bedrock of all EU policies for seven years (Pauleweit et al. 2022). Another striking example is the second complementary delegated act to the taxonomy regulation (Regulation (EU) 2020/852) which was subject only to an expert consultation (which also was disregarded in its classification of natural gas and nuclear power). This was one of the most politically contentious policies adopted within the context of the EGD, yet was not even subject to a single public consultation.

Recent changes by the EC, following the Communication on Better Regulation (EC 2021a), have introduced some improvements to the consultation process, including an improved level of translation, a commitment to better promoting the portal, and a streamlined 'call for evidence' process, better feedback to participants, and publishing and linking more of the evidence used to formulate policy.

Nonetheless, some of the basic problems with the portal remain: it is **not as well-known as it should be**, and a broader push to promote it will be needed. The responses to the consultations are in no way representative of the population as a whole, and certainly suffer from deficiencies of representativeness related to the digital divide. This is linked to a broader problem of lack of awareness among the general public of the specific legislative activities at EU level, as well as on

how the EU legislative process work. This problem will need more than a technocratic fix, and will require political buy in across all levels of government to promote citizen engagement and understanding. This could start with the engagement of Member States more actively and publicly with this EU policy process.

In addition, a concerted attempt to simplify the language used in consultation procedures, as well as the inclusion of more explanatory documents and multilingualism in the portal itself would be useful in this case.

Another **fundamental problem relates to the separation of power between European institutions**. Although the EC has done a good job of ensuring that the public is consulted on its initial proposals, the co-legislators do not have the same level of systematic transparency with regard to public consultation and the evidence base for their decisions. This is particularly the case for the Council of the European Union where the practices of individual Member States vary, but generally speaking the decisions reached are far less transparent. The European Ombudsman has found that the Council is in a state of „maladministration" for not sharing documents relating to the positions of Member States (European Ombudsman 2022), and has criticised the institution for being „the most powerful" EU institution, but also the least transparent.

Within the EP the actions of individual Members of the European Parliament (MEPs) are of course subject to direct democratic oversight. It can thus be a fact that the EC is open to citizen engagement and feedback in good faith, but ultimately the decisions taken are made in a complex negotiation between different actors. Some form of enhanced integration of the EC consultation systems and the decision-making process of Member States could help to improve this situation, also aiding in the transparency of Council of the European Union processes in general.

In addition, **high quality decision-making should be supported by a solid evidence base** that is transparent and available in an online format. While the EC conducts impact assessments for most legislative initiatives in accordance with the 'Better Regulation' Guidelines, the other two institutions do not, or do very little, despite a commitment to do so in the case of "substantial amendments" in the Inter-Institutional Agreement on Better Law Making (EU 2016, p. 123/4). This constitutes another gap in the process of citizen oversight of environmental policy making. These amendments are often the vehicle for private interests inserting their priorities into environmental legislation without sufficient public scrutiny. Their assessment should be flagged to all interested commenters through an automated process via the 'Have your Say' portal.

3.1.2 Digital participatory agenda setting at EU level

Stakeholders in the online forum have commented on the reactive level of public consultation at the EU level, where citizens generally must respond to the proposals of the EC, and within the parameters defined by that institution. Although there are some ways for citizens to directly influence the policy process (European Citizens' Initiative (ECI) through petitions to the EP for example), these are rather difficult in practice (Bruno 2015). At the same time, the consultation process often presents rather restricted policy choices to citizens, (for example, the Fit for 55 consultation presented options only between 40-55% GHG reductions by 2030, despite calls from some political groups for higher ambition, and some for lower), and is more suited for specialised experts and stakeholders.

There is a **need for another level of engagement for the broader public to directly influence the policy formulation** of the EC and EU more broadly. Given increasing

dissatisfaction with democratic processes generally, and a continued disconnection between the general public and policy making at EU level, this could be an important step to increasing the legitimacy of EU policy. Experts pointed to fairly successful citizens' assemblies in Member States such as France and Ireland (ECF 2022), which were able to produce recommendations on future policies in a structured format. The Irish model is considered to have led to more tangible policy changes than the French (Courant 2021). The Conference on the Future of Europe held in 2021-2022 in a hybrid format also produced a number of recommendations for action at the EU level. The Conference, although ultimately unlikely to have its recommendations taken up, has been praised by some for its participative elements, including its hybrid organisation which is considered as one of the only clear successes of the conference (HLAG 2022). The Conference Observatory's High-Level Advisory Group has produced a number of proposals for taking citizens' assemblies forward as part of EU policy making, with some key recommendations such as keeping consultation topics narrow, allowing lots of time for the process, and ensuring that citizens are properly briefed on the background of policies (HLAG 2022).

In order to provide another option for more proactive input from citizens, a citizens' assembly or panel could be established to provide recommendations for action and priorities in the area of environmental policy (and other policy areas). This has worked quite well in other jurisdictions such as France or Ireland (ECF 2022) as a way of gaining input from citizens in a deliberative and transparent way. The format for this could be hybrid, meaning partially online and partially not. This would allow for easier access by citizens but also to take advantage of the trust building and iterative process that in-person meetings are better suited for. While not binding, such recommendations could provide opinions for the EC, for example on the model of the consultative bodies (EESC and CoR). The EC would be formally compelled to respond substantively to the opinion and justify its proposals in the case that they were not integrated into proposals.

European policy formulation presents a number of challenges, from the scale and diversity of the union, not least linguistically and culturally, to the number of actors involved in the lengthy decision-making process. These are challenges which need to be taken into account in the formulation of an agenda setting or policy formulation process for citizens. There have been a number of proposals for how to use digital tools to overcome some of these challenges, for example through the use of "crowdsourcing" (Bruno 2015, p. 1). Crowdsourcing for policy making has previously been employed in Finland, Iceland, and Paris and a proposal is advanced for how this could work at EU level. Some balance between purely digital tools and offline methods would still be needed, in line with the above discussion about the digital divide.

A truly impactful introduction of such a tool would likely require a change to the Treaties of the European Union, to integrate it as an equal part of the legislative process. This could be a possibility in the medium to long-term, but in the meantime, there could be some experimentation on a trial basis with different procedures and tools to enable such as process and inform eventual decision-making about it.

3.2 Timeline

What are the political or technical opportunities for action in this area in the next couple of years?

Continuing the monitoring of the implementation of the Inter-Institutional Agreement on Better Law Making and the EC's new Better Regulation Guidelines (EC 2021c) and the Better Regulation Toolbox (EC 2021b) which were published in late 2021 are necessary. The EP adopted a report on Better Regulation in July 2022 in response (EP 2022). The EC has promised to improve a number of aspects of the consultation process, which is welcome. It will be

necessary to monitor and evaluate the extent to which this is being done and follow-up where there are implementation gaps, particularly through the Better Regulation Working Party in Council during the next years.

With regard to an Agenda setting option, there are no particular openings on the current agenda. This would need to be something that builds on the work of the Conference on the Future of Europe, perhaps following the next EP elections in 2024.

4 Fair implementation of ICT product lifecycle and environmental and human rights

The health and environmental impacts from ICT product lifecycles are broadly known and well-documented (Benqassem et al. 2021). But because of a lack of transparency and complex web of interlocking supply chains, these impacts often remain unaddressed and are still ongoing due to a lack of legal protections or poor enforcement (BAN 2018). According to consultations with civil society, this was seen as the single most important environmental justice issue to be addressed in the area of digitalisation. The environmental and social burdens of manufacturing and disposing of ICT products falls very much disproportionately on communities far from their point of use, both inside and outside the EU. Much of the activity has so far fallen under 'soft law' provisions of international law, or poorly regulated areas of the informal economy.

4.1 Feedback from CSOs in online forum and workshop

Civil society actors have **highlighted continuing problems in terms of human and environmental rights in third countries due to the ICT product lifecycle**. Mining activities, mostly happening outside of the EU (Eurometaux 2022), have negative consequences for local communities, often in the form of human rights violations. Among these are forced relocation of people, limited access to clean land and water, and harassment by mine managers or even governments (Oxfam 2022).

Workers in manufacturing are also impacted, and since these workers are mainly female (Swedwatch 2020) and hazardous chemicals affect female and male workers differently, for example through antenatal health impacts, human rights due diligence (HRDD) must be gender sensitive.

Downstream, the lack of proper collection and recycling of e-waste alongside illegal trading of e-waste in the EU leads to the accumulation of e-waste in landfills in inappropriate conditions. Accumulation of e-waste as well as informal disposal of it causes soil and water contamination and GHG emissions if burned to extract valuable metals (PACE 2019).

The majority of e-waste recycling is carried out by migrants, children and other vulnerable groups in informal economy settings. Working conditions are for the most part poor, unsafe and unhealthy. In addition, labour rights for informal e-waste workers are often not followed (ILO 2019). Disposal of e-waste also exposes workers to highly carcinogenic substances such as mercury, lead, and cadmium (PACE 2019).

Yet, despite the negative environmental and human rights impacts, and the strategic importance of preserving electrical and electronic equipment (EEE) raw materials such as lithium and platinum, **recycling rates in the EU remain low** (EEB 2022). 48.5% of e-waste is currently recycled in the EU, with wide variation among the Member States. Despite the 2012 Waste from Electrical and Electronic Equipment Directive (WEEE) (EU 2012) targets to improve recycling rates, they are failing to keep pace with the EU's growing consumption and most Member States missed their targets in 2019. It is expected that the EEE consumption will increase further, both in the EU and worldwide (Grand View Research 2014). An annual growth rate of around 5% is predicted for the global market for electronic components from 2020 to 2027 (Fortune Business Insights 2021).

This expected growth will be accompanied with an increase of natural resources necessary to produce EEE, mainly metals. The EU is:

- between 75% and 100% reliant on imports for most metals,

- 100% import reliant for platinum, lithium and magnesium,
- 86% for cobalt (EC 2020).

With some variation, most of these materials are imported (in the form of raw materials, components and finished goods) (Eurostat 2022a) (Schüler 2017) from Turkey, China, Brazil, and several African countries. A more detailed list of the different critical metals being imported into the EU by countries can be found in the Annex 1 of the EC's Communication on critical raw materials (EC 2020).

The scarcity of some of these metals contrasts with the expected increase of demand of them in the coming decades driven by both the sustainable and digital transitions. For instance, the greening of the energy mix and the deployment of electric mobility will require huge amounts of lithium for batteries (Greim et al. 2020).

The increasing levels of e-consumption also translate into growing levels of e-waste. With 2% growth per year, it is one of the most rapidly growing waste streams in the EU (EC 2020). Globally, e-waste generation was estimated to amount to 53.6 million tonnes in 2019. Of this total amount, a staggering 44.3 million tonnes had an uncertain destination, ending up either in landfills, burned, illegally traded, or disposed of by informal workers in poor conditions. By 2030, e-waste generation is expected to reach 74 million tonnes (Forti et al. 2020).

According to Eurostat, the EU-28 exported 119,279 tonnes of e-waste containing hazardous substances and 14,557 tonnes of non-hazardous e-waste in 2019 (Eurostat 2022b). However, the UN estimated 1.3 million tonnes of discarded electronics departed the EU in undocumented mixed exports. The study also estimates that approximately 4.7 million tonnes are incorrectly disposed of or illegally traded within Europe.

4.1.1 International legal context

According to the Basel Convention, exporting hazardous substances to developing countries is illegal. Yet this practice, linked to waste from EEE, and despite the WEEE Directive, is still widespread in the EU (BAN 2018). Despite this, and the provisions of other UN conventions such as Minamata and the Stockholm Convention on Persistent Organic Pollutants (POP), polluting and hazardous manufacturing processes operated in developing countries directly or indirectly by companies from developed countries lead to the breach of human rights and environmental standards. This leakage contradicts the concept of CE adopted in EU environmental policy and damages EU ambitions to play a leadership role in the field of human rights and the environment.

Thus, **the current soft law-based approach does not seem to be effective in preventing the export of environmental externalities and human rights abuses**. Companies should undertake robust human rights due diligence though global supply and value chains in-line with United Nations Guiding Principles on Business and Human Rights (UNGPs) (OHCHR 2011). In addition, at the EU level, the problem should be addressed by adopting legislation setting mandatory HRDD and full disclosure regarding which safety precautions have been taken along the entire supply and value chains of ICT products and components entering the EU market, as is already the case in some Member States, such as the duty of vigilance law in France. Similarly, Germany is in the process of implementing the Act on Corporate Due Diligence in Supply Chains (EU 2022) that will enter into force in 2023. Such measures would mark a change in paradigm, as there would be legally binding human rights and environmental standards instead of a solely voluntary corporate social responsibility.

4.2 What can be done?

Given the increasing competition for resources and high prices for certain commodities, there is a significant risk that human rights due diligence and environmental standards will be disregarded as political priorities for cheaper consumer goods take over.

Ultimately, **a two-pronged approach is necessary to address the environmental justice concerns in the ICT product life cycle**: increased circularity to reduce resource inputs and thus environmental impacts, and increased corporate responsibility and sustainability requirements (due diligence) to improve the situation within the value chain as it exists. These are discussed in the next two sub-sections.

4.2.1 Circular economy

In the context of the EGD, the EC released a new CEAP (EC 2020), with a specific section targeted at the electronics sector. It has explicitly acknowledged the importance of increasing circularity in electronic goods in order to mitigate the environmental and social impacts of the sector. Specific actions initiated by the EC that address the ICT sector include:

- The **Common Charger Initiative** should extend the lives of ICT products and reduce redundancy, although the overall impact is likely to be limited. The initiative may represent more of a symbolic initiative, and willingness to go against the wishes of large tech firms.
- The **EU Batteries Regulation** is a centrally important regulation for the material footprint of ICT products, as it will mandate recycling targets and replaceability standards for batteries in the years ahead.
- The **Sustainable Products Initiative** includes a revision of the Ecodesign Directive, extending its scope to all products in the internal market, not only to energy related products, and including provisions related to the repairability and durability of new products. It will introduce a digital product passport (DPP) which should provide information about each stage of a product's life cycle, including the origin, durability, composition, reuse, repair, dismantling possibilities and end-of-life handling of products. To ensure successful implementation, standards for a common DPP format should be established for each sector. Furthermore, clear guidelines for the processes of providing data by the manufacturers and making data available by data intermediaries are necessary (Piétron et al. 2022).
- **Ecodesign initiatives on smartphones and computers** will improve the performance of these products to some extent.
- **The Sustainable consumption of goods – promoting repair and reuse initiative** has been reformulated from the initial 'right to repair' idea to an attempt to make repair a more favourable sales option (as opposed to a 'right').
- **Review of EU rules on restrictions of hazardous substances** in electrical and electronic equipment. An important aspect of health effects for those involved in manufacturing.
- **EU-wide take back scheme** to return or sell back old mobile phones, tablets and chargers.
- The **European Green Deal Data Space** will create a common framework for sharing environmental data. The data space should be built in "support of the Green Deal priority actions on climate change, circular economy, zero-pollution, biodiversity, deforestation and compliance assurance" (Piétron et al. 2022, p. 32). It will be important to expand the

producer level data disclosure rules in order to truly start taking advantage of the possibilities afforded by digitalisation.

- **The Data Act** is particularly important for a Digital Circular Economy (DCE) is legal clarity on data sharing between companies, whereby producers' (intellectual property) rights over product data must be carefully weighed against the interests of society and the environment (Piétron et al. 2022).
- **Critical Raw Materials Act** is promised "to ensure an adequate and diversified supply for Europe's digital economy as well as for the green transition – and prioritise re-use and recycling" (EC 2022b, p. 6.) The Act will define "critical raw materials" and take measures to ensure strategic access to theses in Europe.

For a detailed timeline of these initiatives, refer to section 4.4.

An ambitious implementation of these CE initiatives has the potential to reduce the number of ICT products demanded by the EU market and thus reduce environmental pressures derived from natural resource extraction such as soil degradation, deforestation, CO2 emissions and water pollution, both inside and outside the EU. Civil society groups have highlighted that ensuring an integrated implementation of all these initiatives as a baseline for reducing the broader environmental injustice in this field. If designed with quality of jobs and working conditions in mind, the move to a CE can additionally help to move people out of dangerous, precarious work conditions into more secure, well-paid jobs (Gore 2022). This will require active attention to ensure that such conditions are fostered, which is not necessarily the focus of legislation at the moment.

However, it is worth bearing in mind the risk of 'material leakage' in the case that stricter EU standards results in exporters substituting their export of metals and other resources to the EU for other export markets with lower environmental standards for the treatment of e-waste. Similarly, if the CE regulations result in a reduction of e-waste exports to third countries, where informal recycling may constitute an important source of income and where consumer demand for recycled or repaired products remains high, those countries may seek to import e-waste from alternative markets. Again, if the environmental standards of EEE products are lower in those alternative markets than in the EU, the result would be a worsening of environmental impacts overall in the importing countries.

This further suggests **the need to carefully evaluate the potential spill overs of CE legislation beyond the EU** (Meysner and Urios 2022). Ensuring that third countries have continued access to 'high quality' electronics for repair and resale in their domestic markets may be an important consideration in ensuring an overall positive environmental impact of these measures (Brink et al. 2021).

Further ambitious initiatives with important implications for the CE include improvements in environmental taxation (Milios 2021), enhanced sustainable trade provisions where possible (Blot et al. 2022a; Blot et al. 2022b), and potentially the introduction of absolute material waste targets (EP 2021).

Tax systems across the EU are, overall, still neither green enough nor fair enough. But Member States with greener tax systems – where polluters pay for a bigger share of the costs of their environmental damage – also tend to have more progressive tax systems and lower inequality. The European Semester process should put more emphasis on green and fair tax reform in all Member States to underpin a just transition to a carbon neutral and more equal EU

(Gore et al. 2022). Individual Member States also have considerable latitude to pursue their own consumption and Polluter Pays Principle (PPP) taxes in the area of CE.

Greener trade is an area of exclusive competence for the EU, so this is an area of potential influence. Recent moves to better align the principles of the EGD and Free Trade Agreements are a positive step, but there needs to be continued pressure to implement and monitor these trade agreements rigorously (Blot and Kettunen 2021), as well as extending them to countries of relevance for ICT manufacturing. As of 2022, only one EU FTA, the EU-UK Trade and Cooperation Agreement, references the CE. Four other draft agreements still under negotiation mention the CE, in particular the agreements with Australia, Chile, Mexico, and New Zealand, in addition to the still to be ratified EU-Mercosur trade agreement. Although other agreements in force acknowledge the need for sustainable production and consumption of goods, as of yet, the concept of CE is far from being a regular feature in FTAs (Blot et al. 2022a).

Other important trade instruments in this area include the international harmonisation of waste quality standards, direct capacity building and technology sharing with partner countries to improve their standards for dealing with WEEE. The Trade and Sustainable Development provisions of EU FTAs offer a useful basis for developing e-waste related Aid for Trade strategies (Kettunen et al. 2019).

4.2.2 Due diligence

In February 2022, the EC released the Corporate Sustainability Due Diligence Directive (CSDD) proposal which aims to ”ensure that companies active in the internal market contribute to sustainable development and the sustainability transition of economies and societies through the identification, prevention and mitigation, bringing to an end and minimisation of potential or actual adverse human rights and environmental impacts connected with companies’ own operations, subsidiaries and value chains” (EC 2022a, p. 31).

With the proposal, the EC focuses on improving corporate governance practices, avoiding fragmentation of due diligence requirements in the single market and increasing corporate accountability and improving access to remedies for those affected by adverse human rights and environmental impacts of corporate behaviour. **This marks a very significant change in the approach to human rights and environmental abuse beyond the borders of the EU, away from soft law toward a more enforceable standard**. The effective adoption and implementation of this directive will be extremely important for the environmental justice of ICT supply chains, especially given the influence that this may have even beyond the borders of the EU. Conversely, if this Directive is diluted and ineffective it will be very hard to address the problems seriously in the next decade.

An important consideration in this context is that the adoption of an EU Directive should not lead to downgrading the current levels of national legal protection, which fortunately is the case as the Directive is currently proposed.

Nevertheless, in its current form, the scope of the CSDD proposal is extremely limited, covering very large and large companies who equate to only 1% of companies in the EU market overall. Within the ICT sector, “(f)ewer than 0.01 percent of the companies active in the sector satisfy the criteria established by Article 2.1.a of the Proposal (i.e. only 675 out of over 6,795,408 million ICT companies)” (Borelli 2022, p. 21).

Moreover, it is important to highlight that climate change-related adverse human rights and environmental impacts should be central to the corporate sustainability mechanisms and CSDD proposal specifically (Gore and Meysner 2022). In light of the severity of climate change, the

growing number of climate litigation cases and importance of developing coherent corporate responsibility frameworks, climate change should play a key role in CSDD proposal.

4.3 Timeline

What are the political or technical opportunities for action in this area in the next years?

- **Batteries Regulation** – In trilogue (Nov. 22) – Likely adoption 2022.
- **Ecodesign regulations for mobile phones and tablets** – Adoption foreseen Q4 2022. Will enter into force in 2023.
- **Ecodesign regulations for computers** – Public consultation held in 2018. EC plans a proposal for Q4 2023. Likely adoption in 2024. This has been long-delayed, but this is still the stated intention on EC consultation portal.
- **Sustainable Products Initiative (SPI)** – Proposed by EC in March 2022. EP report due in winter 2022-2023. Possible adoption in late 2023, early 2024.
- **Sustainable consumption of goods – promoting repair and reuse** – To be proposed by EC in Q4 2022. Unlikely to be adopted before EP election in 2024. This is a file with considerable scope for changes in ambition, and will be in discussion likely throughout 2023-2024.
- **Corporate Sustainability Due Diligence Directive** – Proposed by EC in February 2022.
- **WEEE Directive** – Evaluation is due in 2023. Revision proposal is likely in 2024/2025.
- **GreenData4All Proposal** – Expected in Q4 2022. Revision of the Directive establishing an infrastructure for spatial information in the EU (INSPIRE) and the Directive on public access to environmental information (REFIT).
- **Data Act** – Proposed in February 2022. EP rapporteur appointed June 2022. Adoption likely in 2023.
- **Critical Raw Materials Act** – Announced in autumn 2022, concrete proposal forthcoming. Proposal expected Q1 2023.
- **Review of Hazardous substances rules** – Promised in CEAP, but timeline currently unclear. Not in 2023 work programme, so unlikely before election in 2024.
- **Electronics 'Take back' scheme** – Promised in CEAP, but timeline currently unclear. Not in 2023 work programme, so unlikely before election in 2024.

5 A broader agenda for justice in sustainable digitalisation

This report has focused primarily on the issues of participation in environmental decision-making, as well as environmental justice and human rights in the ICT life cycle because of the priority that civil society actors placed on these in early 2022, during the online forum and workshop consultations for this report (see methodology). However, there are a number of other important issues that were raised during the online forum and workshop. Stakeholders highlighted that although the EGD is supposed to 'leave no one behind', this issue is still not often discussed in the context of the twin transition toward a green and digital society. Although the sustainability implications of digitalisation are being considered more and more, as shown to some extent in the attempts to improve the circularity of the ICT products outlined in the previous section, a broader reflection on the systemic roots of unsustainability (such as economic and social inequality, political marginalisation, and corruption), and the social implications of these technologies, and possible solutions, is still mostly lacking. Digitalisation is now an inescapable fact of life which is revolutionising social processes, the economy, and the structure of society which needs a more integrated, systematic approach to govern more effectively rather than through siloed, sector specific approaches. The environmental justice implications of digitalisation are important, but hard to address in isolation from other areas of policy such as competition, trade, economic, social and even democratic and good governance policy. Despite a high-level official acknowledgement of the importance of these links, in the EGD and the UN's 2030 Agenda for Sustainable Development, civil society has still identified a need for more concrete action to integrate a just digital transition into the low carbon, circular economy transition.

Highlighted in this section are a number of issues that are important elements of this 'ambition gap' between rhetoric and concrete policies that have not been addressed in the previous two sections, which addressed specific aspects of this challenge. Issues that have been highlighted as important are:

- Access to environmental information
- Environmental justice implications of digital technologies (including AI, e-commerce and online platforms)
- Systemic change.

A part of the challenge is to address these issues in a more holistic, systematic way, taking into account challenges across sectors. Despite awareness of the problem of policy silos, this continues to be a challenge to address concretely. Even within civil society there is infrequent contact between environmental campaigners and those dealing with digital issues. As a first step there needs to be more awareness from policy-makers and shapers about the inter-related challenges in the area of environmental justice and digitalisation. The issues of access to information is especially complementary to the issues of participation, and these are very inter-related topics, that also fall under the Aarhus Convention. The discussion of environmental justice implications of digital technologies deals with the direct and indirect resource implications of these technologies as well as the governance of these technologies, also touching on online platforms and e-commerce. Systemic change relates to, and can be linked to the discussion of digital sufficiency as outlined in REPORT 3, accompanying this one. Conceptual work carried out by Santarius et al. (2022) defines digital sufficiency as "any strategy aimed at directly or indirectly decreasing the absolute level of resource and energy demand from the production or application of ICT" (Santarius et al. 2022, p. 4). The concept thus addresses levels

of production and consumption, including digital designs that govern the consumption of energy and resource and social impacts of ICT. All of these topics are important and need to be explored in more depth to better understand their environmental justice implications.

5.1 Access to environmental information

Digitalisation undoubtedly improves access to environmental information. It has the opportunity to provide timely, up-to-date environmental data and information to the public. Access to information is the starting point in successful activism and bottom-up engagement by civil society on many environmental issues. The importance of properly resourcing government authorities to provide high quality, and contextualised information online is underlined by CSOs (EEB 2019).

The gap in the public's digital skills is a key issue that hinders access to information for the broader population. It remains important to provide basic environmental information, and avenues to request it, through non-digital means to ensure broadest possible access. It is also important to highlight that digitalisation allows information flows to become much more bi-directional, as citizen science projects and other bottom-up initiatives can provide important information to authorities. There are a number of good examples of this, including a bottom-up initiative utilising and analysing environmental data called the Open Environmental Data Project (https://www.openenvironmentaldata.org/).

5.2 Environmental justice implications of digital technologies

Another area with important implications is the environmental justice implications of digital technologies and applications themselves, such as Artificial Intelligence (AI) and other data intensive software, online sharing applications, and e-commerce. These emerging technologies have an increasing impact on society. They have important environmental implications both directly in terms of their energy usage for data servers, storage and processing, and also more indirectly in terms of the changes in consumption and behaviour patterns that they encourage.

These changes also have major social implications in terms of the relationships between those controlling the technologies and those using and affected by them. The trends in terms of digital technologies have tended toward a concentration of power in terms of control over the technologies, as well as the wealth that they generate. These power and resource control dynamics have an inherent environmental component, but it is an area where it is hard to separate out environmental justice from broader equality and economic justice on a macro scale. A handful of powerful actors have very high levels of control over the technologies that dominate entire economic sectors. **The EU has made efforts to address concerns over market concentration and various negative externalities of digitalisation, such as market tipping, lock-in-effects, rent extraction, tax avoidance, labour rights violations, data abuse, mass surveillance, dark patterns** through the Digital Markets Act (DMA) and Digital Services Act (DSA). The AI Regulation has established a framework for some democratic oversight of AI. This legislation undoubtedly represents a step forward in terms of re-establishing democratic oversight of these technologies and companies.

However, **civil society actors have commented that these measures still do not fully address many of their concerns**. The EU Digital market regulation barely addresses environmental concerns around data-based products, despite the substantial environmental implications of these digital tools and the immense power of the sector's biggest actors (Piétron et al. 2022). Some commentators have argued that the EU lacks a coherent overview to regulate the sector, that EU data governance is becoming fragmented (Lopez Solano et al. 2022), and that

a new approach is needed which conceptualises data governance from a different 'data justice' perspective. According to Lopez Solano et al. (2022, p. 3), "a data justice approach is one that centres on equity, the recognition and representation of plural interests, and the creation and preservation of public goods as its principal goals." The current approach to data governance, which is dominated by the interests of the biggest players in the technology industry and the states in which they operate, views data primarily as an asset and citizens as mere suppliers of that data. This often leads to the appropriation of data without proper consent, resulting in the creation of immense value for the most powerful actors in the global digital economy who have the ability to gather and manage it. This creates imbalances in access to data, control over its use, and the distribution of the associated costs, benefits, and risks. In contrast, a data justice approach differs from this approach by prioritizing a fair distribution of these aspects and is not limited to the interests of a specific group or industry (Lopez Solano et al. 2022, p. 1). They argue that the EU should define more "constitutional" ways to limit the power of both public and private actors performing public functions using data tools, and to make them accountable to the people. Such a framework would need to establish a more coherent approach to the sector, less focused on managerial solutions.

Some continuing justice-oriented concerns raised by CSOs include:

1. Loss of autonomy of users and consumers
2. Unequal access to technology
3. Risks of unintended harms
4. Technologies might not be fit for all social and cultural contexts, yet become increasingly unavoidable to engage in normal life
5. Explicit discrimination, whether intended or not, against certain user groups based on gender, race, religion or other characteristics, for example in the implementation of proprietary algorithms
6. The tech company landscape populated by relatively big and few tech companies, which can result in problems such as dependence, lack of competition and power asymmetries
7. Induced demand and promotion of unsustainable product choices through online platforms and e-commerce (see also Systemic Change)

The specific environmental justice implications of specific technologies urgently need to be studied in greater depth to understand them better. The sustainability concerns around e-commerce, online platforms and the sharing economy have come under increasing scrutiny (Zarra et al. 2019), as these technologies have grown, but the specific environmental justice concerns are still largely unexplored, particularly outside of the American context.

5.3 Systemic change

Several CSO inputs highlighted that technology's potential is double-edged due to unintended rebound effects, such as increased energy consumption and e-waste resulting from increased usage of ICTs and other digital infrastructure, as well as through changes in behaviour and consumption patterns. In addition, the use of digital tools may shift the attention away from deeper, systemic shifts which would have more long-lasting and resilient environmental benefits. Digital tools can be seen as attractive solutions because they can often allow a continuation of 'business as usual' with more efficient tools. These tools can thus perpetuate fundamentally flawed business and social models which will ultimately always carry a heavy environmental cost that take us beyond planetary boundaries. An example could be a ride sharing app which perpetuates a car centric mobility model by prioritising profitable, but still being a polluting single car model, potentially inducing additional demand and congestion while contributing to the environmental problems associated with the current unsustainable

mobility model. An alternative model could have prioritised public transport, active mobility, and better land use planning.

There is a strong environmental justice component here, because of the potential for conflicts of interest among vested interests in perpetuating proprietary technological solutions at the expense of broader social interests. Therefore, some stakeholders indicated the importance to tackle digital and environmental challenges jointly and using participatory governance models, and possibly looking at more active regulation and limits on the uses and deployment of digital technologies. At the same time, others caution about excessive pessimism about the possibilities of technological solutions and the difficulty in ultimately forecasting the effects of such technologies.

This is a debate whose uncertainties should be more explicitly acknowledged within EU level policy making. Governments should certainly be sceptical of digital 'fixes' for ecological problems and probe deeply the opportunity costs of deploying them, rather than pinning all hopes on such fixes. Rigorous impact assessments need to consider rebound effects and opportunity costs in a more serious way than they usually do today. Oversight of interactions between industry and business in these environments are certainly needed.

One way to begin approaching this challenge from a practical point of view would be to start to invest in serious way in Digital Public Infrastructure, a new approach that aims at redistributing power over the internet by building a more vibrant, diverse and resilient ecosystem of trustworthy open solutions based on a shared set of rules and open protocols and standards, as suggested by Bego (2022). This would require governments to establish the right institutions and rules to ensure the Digital Public Infrastructure can enhance trust, scale and openness. Bego (2022) believes that building on the DMA, DSA, and Data Governance Act, the EU could now start to make this a reality with the investment of some political will and funding.

6 Recommendations for EU and national policy-makers

A selection of recommendations based on the previous three sections targeted to EU policy makers and German policy makers is presented in this section.

6.1 Participation in environmental decision-making

Following are recommendations for the implementation of policy to better include citizens in digital processes for environmental decision-making, aimed at both the EU and German level of decision-making. Digital tools have significant potential to improve citizen participation in environmental decision-making and help to overcome some of the democratic and legitimacy challenges facing the EU today. However, care is also needed to avoid deepening the ‚digital divide' between those with effective access to digital tools and those without.

6.1.1 Recommendations to EU policy makers

- **Creating a direct, participatory agenda setting process for citizens at the EU level**

At the moment, direct citizen participation in the legislative process at EU level is mainly reactive to the proposals as decided by the EC, and is mostly constrained by the framing of issues lead by the EC on specific initiatives. In addition, a high level of technical expertise is usually needed to engage effectively. A digital tool, in combination with in-person formats, could be used to engage citizens into a higher-level agenda setting process which could define policy priorities at an earlier stage, for example in line with the recommendations of HLAG (HLAG 2022). This could be an effective way of injecting more democratic engagement into the EU policy process using a balance of digital and offline tools.

- **Integrating the EP and European Council into the EC's online policy consultation process and portal**

Although each institution has its own important prerogatives and role to play in the policy making process, these distinctions are not of primary relevance to citizens engaging on particular elements of policy making. At the moment, consultation of citizens on the actions of the different institutions is not connected with the 'Have your say portal', and decision-making derived from these processes is not maximally transparent for citizens. Therefore, the engagements of these institutions should as much as possible be integrated into the online public consultation platform of the EC, with meaningful feedback to citizens to enhance accountability, transparency, and understanding.

- **Enhancing and better resourcing the Better Regulation process, and particularly the online ‚Have your say' portal**

For the Better Regulation process to be successful there needs to be adequate training and resources made available for the personnel of the EC, both technically to create the IT infrastructure needed, and in terms of experience in running successful consultations. The IT infrastructure needs to be simple, modern and robust in order to make it easy and intuitive to participate. There needs to be resources to ensure that the language used is accessible and understandable, including for people with disabilities, and translations need to be high quality. The EC needs to be able to conduct targeted outreach to get a more representative pool of respondents to overcome the digital divide. This may have to involve physical consultations, focus groups, and similar fora to reach certain groups. A first step could be to agree on an enhanced budget and human resources for the relevant units.

6.1.2 Recommendations to German policy-makers

- **Enhancing transparency for European Council decision-making procedures, including digital tools for transparency**

German policy-makers could push the Council, which represents the Member States, to adopt more digital transparency tools to complete gaps in citizens' overview of EU decision-making. Insisting on higher adherence to the Inter-Institutional Agreement on Better Law Making, through for example the more systematic implementation of impact assessments of substantial amendments to legislative proposals. The proper notification of these assessments to members of the public who have expressed an interest in the legislation through the 'Have your say' portal would be a good first step. These could be better linked to the EC's consultation procedure, both for feedback to citizens who have engaged, as well as to justify decisions. This way the online consultation process can be more transparent for those who have participated and help to circumvent last minute changes by lobbyists and special interests.

- **Promoting of the EC's consultation procedures toward German citizens and other stakeholders**

Despite an already reasonably good system of consultation at EU level, one of the continuing problems is a lack of awareness by citizens. Member States could help to publicise and amplify the existing system through their own domestic publicity channels, also ensuring that a broad range of groups are targeted and made aware of the initiatives.

- **Overcoming the digital divide in Germany through targeted training, outreach for IT skill building, and ensuring that IT tools are available to all citizens**

The digital divide remains a very real phenomenon, and efforts are needed at national level to overcome it through targeted skills training, outreach, and ensure that effective access to the internet is available everywhere. This is a particular problem in rural areas, for the elderly, and the socio-economically disadvantaged.

6.2 Fair implementation of ICT Product Lifecycle and Human Rights

There are a large number of legislative proposals on the policy agenda already at EU level to address the general circularity and sustainability of ICT products, as well as governing the due diligence of some corporate actors. A key factor for success in this area will be to ensure that these are well designed and implemented in the coming years.

6.2.1 Recommendations to EU policy makers

- **Ensuring EU CSDD legislation includes binding human rights and environmental standards for companies**

However, this will only apply to the largest companies which significantly limits the impact of the initiative. Consideration of the smaller actors in the value chain is highly needed. Extending the scope of the legislation, both in terms of the size of enterprises and the sectors covered will be critical to ensure the legislation has any real-world impact in the ICT sector, where less than 0.01% of businesses active in the EU would currently be impacted (Borelli 2022). Such an approach would be in-line with guidance from the UNGPs that actions should be prioritised in relation to the severity of the adverse impact rather than the size of that company's contribution to that impact (Gore and Meysner 2022).

- **Ensuring a full adoption and implementation of the CE initiatives with an impact on the ICT value chain**

Common Charger Initiative, Batteries Regulation, Sustainable Products Initiative, Ecodesign for smartphones and computers, and Sustainable Consumption of Goods Initiative and a real right to repair are crucial to consider for the ICT value chain. The synergies and complementarities between these initiatives should lead to a significant reduction in the material footprint of the ICT industry, and thus of negative externalities and the injustices that these lead to.

- **Optimising the Data Act to include data relevant to the environment**

Data which companies will be required to share about their products in a transparent way with governments should be related to climate and environmental goals in a way that can impact the sustainability of these products. These standards ought to be overseen with sufficient public scrutiny to ensure that the public interest is being served in their development. Companies' exclusive corporate access rights to non-personal data can be a major impediment to developing circular ecosystems. A key element to achieve a DCE is a clear legal framework for data exchange between companies that carefully balances the producers' (intellectual property) rights over product data against societal and environmental concerns (Piétron et al. 2022) to ensure that environmental justice is considered.

- **Enhancing the provisions and enforcement of Trade and Sustainable Development (TSD) chapters, particularly with regard to CE, in future EU trade deals**

The focus should be on countries that are important sources of ICT products, raw materials, or destinations for WEEE (Blot et al. 2022b). This is an important area for influential EU action where the businesses not covered by the CSDD legislation will be influenced.

- **Investigating ways of implementing 2030 material use reduction targets with the ICT industry aiming toward consumption footprints within planetary boundaries by 2050, as the EP has called for (EP 2021)**

Absolute material use reduction targets are the next step to ensuring a genuine reduction in environmental footprint in the sector. This is a concept that has been explored in the Netherlands, and can provide an example for other economies (Langsdorf and Duin 2021).

6.2.2 Recommendations to German policy makers

- **Pursuing environmental taxation relating to electronic goods and waste**

Using the Polluter Pays Principle is still underutilised in the EU, and environmental taxation as a percentage of overall taxes has been reducing over the last decade, despite political commitments to use them more. Specifically, promoting repair and refurbishment would be an under-exploited avenue, for example by lowering taxes on such services compared to new products. Additionally, lower Extended Producer Responsibility (EPR) fees for highly repairable or sustainable WEEE products could be a significant incentive, similar to initiatives already tried under packaging EPR schemes.

- **Enhancing implementation and enforcement of WEEE Directive**

Enforcement of existing initiatives such as the WEEE Directive is not sufficient and has led to underwhelming results from this Directive (BAN 2018). A first step could be promoting the increased use of port investigators and GPS tracking techniques for waste. Enforcement needs more funding, and more aggressive prosecutions of violations are needed.

- **Developing capacity building agreements with third countries which are significant recipients of WEEE**

This will help them to process the waste according to good environmental and human rights standards. The TSD provisions of EU FTAs offer a useful basis for developing e-waste related Aid for Trade strategies which could be a concrete way to develop such provisions. It has been suggested that the Vietnam-EU FTA could be a useful test case for such a mechanism (Kettunen et al. 2019).

6.3 A broader agenda for justice in sustainable digitalisation

These recommendations cover some additional approaches to enhancing environmental justice in terms of access to information, civil society engagement, different digital technologies, and a broader approach to systemic change. What are ways of integrating policy approaches across the digital, environmental, and other policy domains in a way that can enhance the democratic oversight and environmental justice of digital technologies?

6.3.1 Recommendations to EU policy makers

- **Take a more coherent approach that integrates environmental concerns into the regulation of the digital market**

Environmental concerns are still mostly treated separately. The DSA and DMA have established a framework, and some real disclosure obligations for the largest market actors. However, the next step needs to be more action on the basis of these disclosures to address the environmental impact of these companies, setting explicit environmental objectives for them to achieve, set in cooperation between the relevant Directorates-General (DG). Regulation of digital markets and tools need to provide meaningful access to justice provisions for citizens and CSOs. This aspect is still largely neglected in EU digital market regulations. An evaluation of the effectiveness of current disclosure requirements will need to be carried out within a brief period of time. At the same time, impact assessments should acknowledge more uncertainty around digital solutions and their rebound effects as well as their opportunity costs in terms of systemic changes.

- **Integrate data justice as a concept into EU policy frameworks**

A data justice approach focuses on equity and aims to ensure that diverse interests are recognised and represented, and that more public goods are created or preserved. This contrasts with the current approach which rewards the largest industry players, treats data as an asset, and rewards the 'owners' of this data with significant justice-oriented consequences because the public has no meaningful control of this data. This frame can help to guide policy formulation going forward. Embedding this frame into law through additional rights can help to balance private abuses of digital power and rebalance the system toward public priorities such as environmental and climate protection.

- **Invest into Digital Public Infrastructure to begin to provide a real alternative to the current internet model, dominated by private interests**

Contrary to what is implied by the terminology 'infrastructure', a Public Digital Infrastructure is not a (cyber-) physical assemblage, nor is it build on just one single tech fix or regulatory intervention. Rather, it describes a logic consisting of different technical, governance and funding components, that in combination provide a shared set of rules and protocols based on which a new ecosystem of alternative solutions can emerge. The main components of this approach focus on opening up access to data and identity management in a fair and reciprocal

way, devising new governance models and institutions that ensure underlying infrastructures remain open and secure, and creating the conditions for a vibrant alternative ecosystem of solutions to emerge on top of this model through strengthening interoperability (Bego 2022). This will give public authorities more leverage to act on the public interest in areas of digital policy and provide a practical governance framework to take issues of justice and sustainability forward in the digital space.

- **Improve transparency around interactions between industry and government of all levels**

This will ensure that input of special interests is transparent and well understood. The immense economic power and concentration of digital industries make this a particularly important point with regard to digital solutions and policy. Such industries will have a vested interest in hindering a number of the possible improvements for environmental justice. The European Council is particularly poor at disclosing such links, but it is important to improve across all institutions.

6.3.2 Recommendations to German policy makers

- **Improve public administration's resources and training in providing information digitally**

This is particularly important at Member State and sub-national levels. Public environmental data needs to be more proactively published within a reasonable time frame across all EU Member States, even where legal requirements do not exist. This is still not consistently done across all areas but could make a big difference to timely environmental monitoring.

- **Make more publicly available data and information machine readable and interoperable to ease access, as well as open source**

Help to build the capacities of civil society to access and use this data. The imbalance in power between CSOs and some private interests in this area is an area of concern for environmental justice.

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