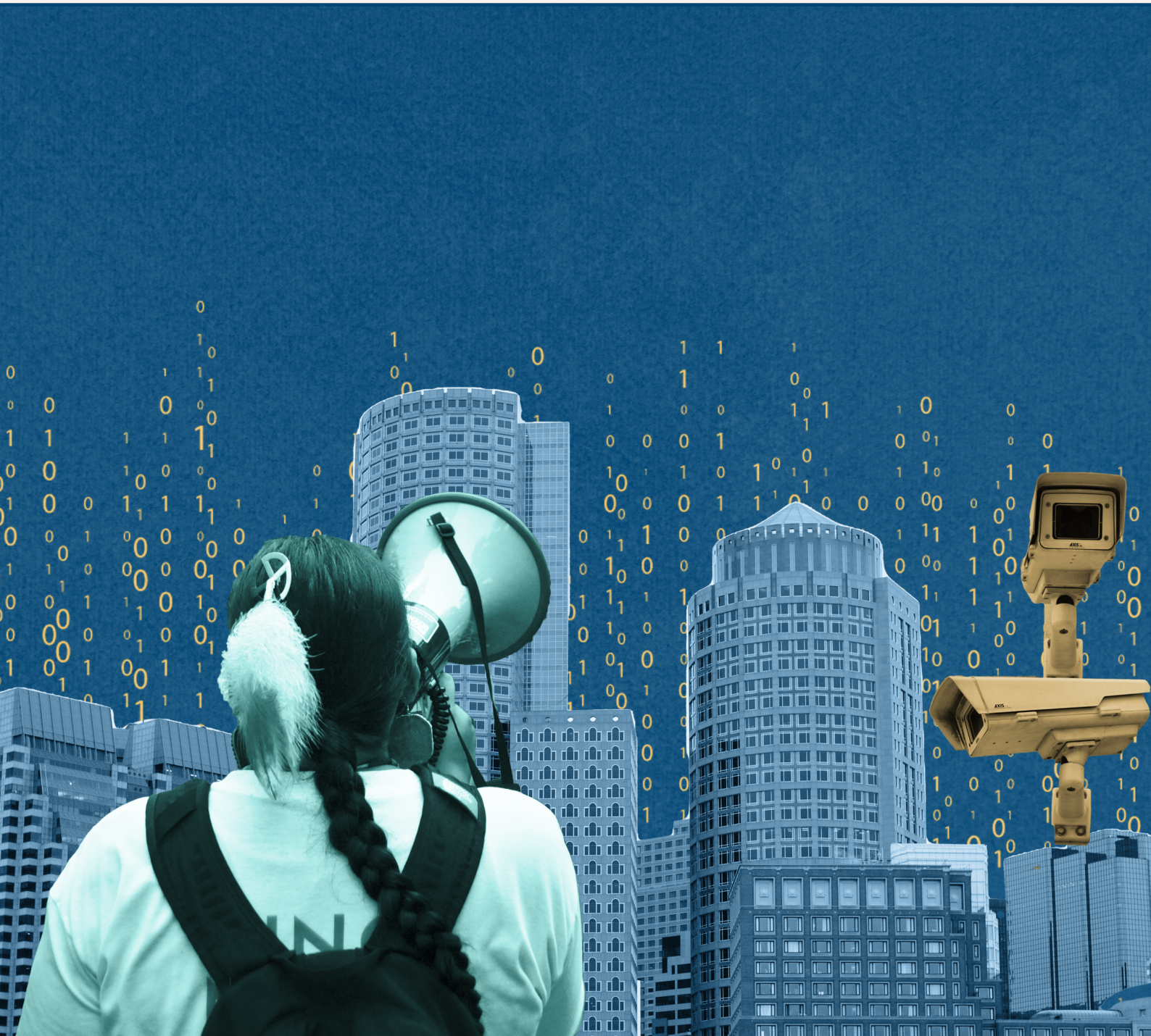
WHERE AI AND CLIMATE ACTION MEET

HOW IS THE CIVIC SPACE FOR ENVIRONMENTAL DEFENDERS AFFECTED BY AI?

European Center for
Not-for-Profit Law



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INTRODUCTION

The use of artificial intelligence (AI) has a major influence on climate action, climate change mitigation and the work of environmental defenders. It offers potential benefits as well as threats to the climate and its defenders, impacting the lives of people and communities around the globe. On the one hand, we are witnessing various AI-driven systems being developed to support climate change mitigation. AI can advance environmental knowledge, conservation and action. It is enhancing high-resolution mapping of deforestation, coral reef loss, and soil erosion. It is improving climate modeling as well as the forecasting of poaching, droughts, floods, and wildfires. And it is refining biodiversity calculations.[1] On the other hand, AI has the potential to spur wasteful consumption, natural resource extraction, and the production of electronic waste. Further, AI technologies – from biometric technologies, including facial recognition, to automated online surveillance – can enhance the power of states and corporations to suppress activism and grassroots resistance, especially in authoritarian states. They can be used for the purpose of surveilling climate activists themselves, for example when facial recognition cameras are used during protests, or on social media or when AI is used to monitor and take down activist content.

In the present paper we focus on three interconnected ways in which the civic space for environmental defenders is affected by AI-driven technology:

AI for sustainability- AI is deployed for sustainability reasons which intersects with environmental defenders' mission;

Sustainable AI-Environmental defenders are concerned about the ecological footprint of AI technologies;

AI against environmental defenders- Environmental defenders are subject to surveillance with the use of AI-driven technologies.

This brief aims to address various questions that are raised by these intersections: How is AI currently used at the intersection with climate change and environmental activism? How are these technologies developed? Do they really fulfil their purpose

1 Fei, F., M. Tambe, B. Dilkina, and A. J. Plumptre (Eds.). (2019). Artificial intelligence and conservation. Cambridge University Press.

and what are their societal costs? How is environmental activism affected by AI, both in terms of surveillance and in terms of narratives? What opportunities and obstacles exist for incorporating environmental defenders' perspectives into the design, development and deployment of AI for sustainability? How can we make sure that the relevant interests are taken on board? Does the current legal and policy framework, both in the field of AI and environment, acknowledge the role of climate action movements?

This brief aims to unfold these questions with the focus on how environmental defenders can play a greater role in the governance of AI-driven technologies in climate mitigation. Currently, civil society is often left out of this discussion, either because they are not invited to the table, or they think they lack sufficient expertise on the topic. It is important to make sure that their voices are heard.

Cutting across all three intersections is the powerful role of big tech companies which develop AI-driven solutions and use their lobbying influence to promote technology which – according to environmental defenders – is not developed in a just and sustainable way, and instead maintains an extractive status quo.

There is clearly a political willingness, as well as public and private funding, to explore the potential that the use of AI can have for addressing climate change. Although there is no broad consensus on opportunities and trade-offs involved, one things should not be up for discussion: human rights must be safeguarded, and environmental defenders' perspective must be included in the process. These considerations need to be included in standard-setting initiatives at global, regional and national levels, related to both environmental and technological policy.

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There is no single officially agreed definition of AI; various institutions, such as UNESCO[2], OECD[3] or the European Commission[4], have put forward their own proposals. Based on these definitions, we will refer to AI systems as machine-based systems that can – for a given set of objectives – make predictions, recommendations or decisions with some level of autonomy. At the same time, it is important to note that not all technologies commonly deployed in the area of climate change mitigation rely on AI. For example, drones used to support monitoring forest fires might incorporate computer vision, which is a form of AI, or they might function similarly to CCTV cameras and only record images for human analysis. Without access to internal documentation, it is often hard to tell which technology a specific solution relies on. Similarly, many digital surveillance tools which are still widely used by governments to surveil, police, and criminalise climate activism, do not rely on AI or even algorithmic systems, e.g., when the authorities intercept communications.

In the section below, we will discuss three main intersections where AI systems intersect with climate action: AI for sustainability, sustainable AI and AI against environmental defenders.

AI for sustainability

AI-based technologies are increasingly used to address climate change or contribute to sustainable development. This intersects with the very essence of the mission of environmental defenders. Proponents of AI for sustainability argue for two key benefits:

2 UNESCO. (2022). Recommendation on the Ethics of Artificial Intelligence. https://www.unesco.org/en/artificial-intelligence/recommendation-ethics

3 OECD.AI. (2019). OECD AI Principles overview. https://oecd.ai/en/ai-principles

4 EUR-Lex. (2021). Proposal for a regulation on the European Parliament and of the council laying down harmonised rules on artificial intelligence (Artificial Intelligence Act) and amending certain union legislative acts. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52021PC0206

first, that AI can increase the understanding and monitoring of climate change and second, that it can contribute to climate change mitigation and adaptation[5].

AI systems aimed at mitigating climate change have been adopted or are being researched and developed across many sectors: from agriculture and construction industries, to climate science. Based on their intended purpose, these systems can be divided into five broad categories[6]:

1. Understanding and monitoring climate change and environmental damage, for example: Earth observing systems based on remote sensors, aggregating available large data sets to bring new insights concerning the driving forces behind climate change (e.g., the Digital Twin Earth project[7]), high-resolution mapping of deforestation or coral reef loss;

2. Forecasting and prediction related to climate change and future events, for example: forecasting global mean temperature change, predicting future carbon emissions or anticipating extreme weather events;

3. Mitigating the effects of climate change by reducing emissions, for example: technologies increasing energy efficiency, including through smart meters, assessing carbon footprint of building materials, optimising transport, including through smart city projects;

4. Encouraging responsible business and consumer behaviour, for example: fintech solutions aimed to reorient economic decision-making toward sustainability by mobilising "green finance", consumer-facing AI systems aimed to incentivise more sustainable consumption or provide information about sustainable alternatives;

5 Cowls, J., A. Tsamados, M. Taddeo and L. Floridi. (2021). The AI gambit: leveraging artificial intelligence to combat climate change – opportunities, challenges, and recommendations. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8522259/pdf/146_2021_Article_1294.pdf

6 These categories were devised based on the following papers: Rolnick, D. et. al. (2022). Tackling Climate Change with Machine Learning. https://dl.acm.org/doi/10.1145/3485128; and Cowls, J., A. Tsamados, M. Taddeo and L. Floridi. (2021). The AI gambit: leveraging artificial intelligence to combat climate change – opportunities, challenges, and recommendations. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8522259/pdf/146_2021_Article_1294.pdf

7 The European Space Agency. (2020). Digital Twin Earth. https://www.esa.int/ESA_Multimedia/Images/2020/09/Digital_Twin_Earth

5. Supporting enforcement of environmental law, for example: smart meters for polluting enterprises to track compliance with emission limits, identifying environmental crime (e.g., detecting listing of wildlife for sale on e-commerce platforms).

Sustainable AI

Computation-intensive AI systems can in themselves have a significant carbon footprint related to considerable energy and resources consumption. In the last few years, we have seen an increased pressure on developers and deployers of AI to assess their systems' environmental impacts. Technology assessment methodologies are being developed by international organisations and businesses[8] and by environmental defenders[9]. However, a widely adopted – and legally binding – assessment methodology is still lacking.

The notion of sustainable AI is intertwined with AI for sustainability. Although AI is applied in various sectors to make energy or resource consumption more efficient, it is not entirely clear whether these gains outweigh the costs of AI-related emissions, as well as societal, legal and ethical concerns related to them. According to the European research network *Digitalization for Sustainability*, "digitalization, in its current and mainstream form, is rather aggravating than solving many of the pressing social and environmental crises at hand"[10]. Similarly, the authors of a study focused on the role of AI in achieving Sustainable Development Goals[11] emphasise that, although AI was identified more often as an enabler than an inhibitor for environmental SDGs, AI researchers and developers are biased towards publishing positive results and do not always give due consideration to assessing long-term impact of algorithms on equity and fairness.

8 OECD.AI. (2022). Measuring the environmental impacts on artificial intelligence computing and applications: the AI footprint. https://oecd.ai/en/footprint

9 Assess.technology. (n.d.). How are technologies assessed? https://assess.technology/

10 Digitalization for Sustainability (D4G). (2023). https://digitalization-for-sustainability.com/digital-reset/

11 Vinuesa, R. (2020). The role of artificial intelligence in achieving the Sustainable Development Goals. https://www.nature.com/articles/s41467-019-14108-y

Anne Mollen, Senior Policy & Advocacy Manager of Algorithm Watch, recognises this conundrum:

> *"We simply do not have enough information on the sustainability impacts of AI systems. We know that some systems, for example large language models, have a very significant resource consumption in their development and training phase. Other systems might be quite energy efficient. We need to come to a lifecycle assessment of the resource consumption of AI systems, also accounting for the production and disposal of the necessary hardware and especially taking into account the inference phase, when AI systems are being applied. It is becoming evident that the inference phase might be much more energy intensive than development and training. What is worrisome is the tendency in the Machine Learning community, both industry and science, to build ever larger models, instead of aiming for more efficient systems."*

AI against environmental defenders

Digital technologies, including AI systems, do not only have an impact on the environment but also on those who stand up to protect it. Defending the environment has become one of the most dangerous pursuits: activists are regularly subjects of harassment and violence, and many have been killed. As the UN Special Rapporteur on the rights to freedom of peaceful assembly and of association noted in his 2021 report on climate justice, "over 70% of human rights defenders killed every year are involved in the protection of the environment or closely related work"[12]. A very worrying trend is portraying and treating environmental defenders as terrorists[13] or a threat to public security, particularly visible during recent UN COP conferences during which we witnessed increased exclusion, harassment[14] and surveillance[15] of civil society actors.

12 United Nations. (2021). Exercise of the rights to freedom of peaceful assembly and of association as assential to advancing climate justice. https://www.undocs.org/en/A/76/222

13 Lennard, Natasha. (2023). The crackdown on Cop City Protesters Is So Brutal Because of the Movement's Success. https://theintercept.com/2023/01/27/cop-city-atlanta-forest/

14 United Nations. (2022) Egypt: UN experts alarmed by harassment of civil society actors at COP27 climate summit. https://www.ohchr.org/en/press-releases/2022/11/egypt-un-experts-alarmed-harassment-civil-society-actors-cop27-climate

15 United Nations. (2018). UN experts urge Poland to ensure free and full participation at climate talks. https://www.ohchr.org/en/press-releases/2018/05/un-experts-urge-poland-ensure-free-and-full-participation-climate-talks

Against this background, increased digital surveillance is yet another example of the closing civic space for environmental defenders[16] and a common way to keep tabs on them or suppress their work, which often runs counter to powerful interests[17]. A 2018 survey revealed that almost 70% of environmental organisations in the Global South said that they had been subject to physical and digital surveillance, making it harder to implement their activities. The forms of surveillance ranged from being followed and monitored by a security company in South Africa to data intrusions in Brazil[18]. Other recent examples of digital surveillance targeted at environmental defenders include wiretapping and access to private information[19] and scraping of activists' pages on social media[20]. During the COP27 conference in Egypt cybersecurity experts warned that the official conference app which required access to location, photos and emails could be used to surveil and track activists[21]. In India, a Fridays for Future India's domain was blocked following the police's request to the hosting provider under the justification of countering terrorism[22].

While we have not identified cases of AI-based surveillance against environmental defenders, state authorities increasingly deploy these technologies against human rights defenders more broadly. Facial recognition technologies and other forms of video surveillance were for example used by Russian authorities to identify protesters during demonstrations in solidarity with

16 International Center for -Not-For-Profit Law and European Center for Not-for-Profit Law. (2020) Closing civic space for climate activists. https://ecnl.org/sites/default/files/2020-08/Climate-Change-and-Civic-Space-Briefer-vf.pdf

17 Bitar, J. (2018). 6 Ways Government Is Going After Environmental Activists. https://www.aclu.org/news/free-speech/6-ways-government-going-after-environmental-activists

18 Swedish Society for Nature Conservation. (2019). Environmental defenders under attack – The threats facing people who protect nature. https://www.naturskyddsforeningen.se/artiklar/report-environmental-defenders-under-attack-the-threats-facing-people-who-protect-nature/

19 For example, Denmark wiretapped climate activists around the Copenhagen climate conference and Poland accessed and stored private information about COP participants without judicial review, see reference 15.

20 ACLU. (2017). ACLU Challenges Warrant to Search Data of Facebook Page for Group Protesting Dakota Access Pipeline. https://www.aclu.org/press-releases/aclu-challenges-warrant-search-data-facebook-page-group-protesting-dakota-access

21 Michaelson, R. and O. Milman. (2022). Fears mount that Cop27 app could be used by Egypt to surveil regime's critics. https://www.theguardian.com/environment/2022/nov/06/egypt-cop27-climate-surveillance-cybersecurity

22 BSR. (2021). Human Rights Assessment: Global Internet Forum to Counter Terrorism. https://gifct.org/wp-content/uploads/2021/07/BSR_GIFCT_HRIA.pdf

those arrested for participation in peaceful assemblies[23] and by German police to analyse recordings from protests during the G20 summit in 2017[24]. The powerful Pegasus spyware was also used by governments in several countries to conduct covert monitoring of activists' devices[25].

The next section discusses the impact of these various intersections of AI and climate action on human rights and societies as a whole.

HUMAN RIGHTS AND SOCIETAL IMPACTS OF AI- ARE THOSE MOST AFFECTED INVOLVED?

There have been many debates and several concerns raised related to the human rights and societal impact of AI in the area of the environment. In this section, we discuss some of the key concerns, such as whether those most affected by the use of technologies are engaged in policy debates or the development and deployment of these technologies.

Scepticism towards AI for sustainability

As authors of this paper, it is not our intention to argue whether how beneficial or how dangerous AI is for mitigating climate change. However, we find it instrumental that environmental defenders are engaged in this debate and contribute their expertise and perspective. Therefore, we interviewed several environmental defenders about their approach to AI – both systems used to mitigate climate change and their views

23 Kruope, A. (2020). Moscow's Use of Facial Recognition Technology Challenged. https://www.hrw.org/news/2020/07/08/moscows-use-facial-recognition-technology-challenged; Panić, K. (2021). Activists fight against mass surveillance in BiH. https://www.fairplanet.org/editors-pick/activists-fight-against-mass-surveillance-in-bih/

24 The Hamburg Commissioner for Data Protection and Freedom of Information. (2020). Hamburg Police deletes the biometric database for facial recognition created in the course of the G20 investigations. https://datenschutz-hamburg.de/assets/pdf/2020-05-28-Press-Release_Biometric_Database.pdf

25 Walker, S., S. Kirchgaessner, N. Lakhani and M. Safi. (2021). Pegasus project: spyware leak suggests lawyers and activists at risk across globe. https://www.theguardian.com/news/2021/jul/19/spyware-leak-suggests-lawyers-and-activists-at-risk-across-globe

regarding sustainability of AI. We also built on the excellent conversations facilitated and summarised by the *Engine Room*[26].

During our conversations, we have seen various attitudes towards the deployment of AI-driven technologies to fight climate change. Some of our conversation partners expressed moderate optimism for the use of AI in climate action, while admitting they do not know enough to take a definitive stance.

On the other hand, a significant group of environmental defenders working on climate technology warns against some types of AI and technology more broadly, e.g., solar- or geoengineering[27]. These technologies aim to manipulate natural processes in a way which can negatively impact entire ecosystems and cannot be controlled. Environmental defenders also point out that certain AI systems, such as carbon offsetting technologies, are not based on scientific grounds and risk creating a false belief in easy "climate fixes"[28].

In general, environmental defenders were concerned that the attention given to AI for sustainability is often grounded in the "techno fix" approach promoted by influential technology companies[29]. This approach often serves as a smoke screen obscuring the conversation about more meaningful solutions to real problems of mass production, resource extraction, and use of fossil fuels that are at the heart of human-led environmental damage. Discussions about the use of technology for sustainability are in their view too often based on flawed premises. For example, one environmental activist pointed out that instead of discussing AI used for traffic management and optimisation on highways, the conversation should perhaps be shifted to devising solutions of how to limit the use of cars in the first place.

We acknowledge that this might not be representative of all the views in the sector. In fact, AI at the intersection with climate action is still a very new topic and most environmental defenders and CSOs seem to have not yet formed their approach

26 Kazansky, B., M. Karak, T. Perosa, Q. Tshui, S. Baker and The Engine Room. (2022). At the confluence of digital rights and climate & environmental justice: A landscape review. https://engn.it/climatejusticedigitalrights

27 Galey, P. (2019). Industry guidance touts untested tech as climate fix. https://phys.org/news/2019-08-industry-guidance-touts-untested-tech.amp

28 Real Zero Europe. (2022). To acoid the worst effects of climate chaos, we must radically transform systems and achieve Real Zero. https://www.realsolutions-not-netzero.org/real-zero-europe

29 Hankey, S. and M. Tuszynski. (2017). Efficiency and Madness. https://tacticaltech.org/news/efficiency-and-madness/

to these technologies. Some also feel that they lack the capacity to assess potential benefits or risks of AI due to the scientific and technical complexity of both AI systems and environmental challenges they are portrayed to address. More discussions are greatly needed, as well as opportunities for exchange between environmental defenders and the digital rights community specifically on the use of AI for tackling climate change.

Human rights and societal impacts of AI in the area of the environment

Apart from scepticism surrounding the narrative on AI for sustainability and its actual effectiveness, concerns arise as to the human rights impacts of such systems. Because AI systems used for sustainability primarily aim to optimise industrial processes and analyse non-personal data, they are often described as posing less severe, or less direct, risks for human rights[30]. Still, such systems can in practice exacerbate concerns similar to those already associated with AI in general, such as bias, discrimination or impact on privacy.

Impact on the right to privacy and civic freedoms

Some AI systems used for climate change mitigation, such as optimising energy use or designing sustainable transport networks, rely on data about how people behave to invent adequate responses. The collection of granular data about people's behaviour can impact their right to privacy by revealing information about their lifestyle, demographics, personal characteristics, or family situation. For example, patterns in energy consumption monitored through smart meters can reveal how many people live in the household and their personal habits and schedules[31]. Similarly, privacy can be threatened when people's transportation choices are monitored through their mobile devices. This information could be abused by energy companies or transport authorities, repurposed for marketing, or otherwise extracted for corporate gain.

30 Cowls, J., A. Tsamados, M. Taddeo and L. Floridi. (2021). The AI gambit: leveraging artificial intelligence to combat climate change – opportunities, challenges, and recommendations. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8522259/pdf/146_2021_Article_1294.pdf

31 European Data Protection Supervisor. (2012). Smart metering Systems. https://edps.europa.eu/data-protection/our-work/publications/opinions/smart-metering-systems_en

These solutions can have an adverse impact not just on the right to privacy but can also cause chilling effects on the enjoyment of civic rights and freedoms, including freedoms of association, assembly, and expression. AI-driven solutions, e.g. in smart cities, may result in depriving people of anonymity in public spaces, in turn leading to the fear of being identified or even arrested for participation in protests. This risk is not only limited to authoritarian regimes. In democratic countries we also recognise the trend of government agencies seeking new sources of information on citizens, especially in the name of counterterrorism. This often has disproportionate effects on vulnerable groups, including on environmental defenders who are regularly portrayed as "extremists".

The risk of bias and exclusion

AI systems use data to identify patterns and correlations to make predictions, recommendations or assessments. Existing research already documents how the process of developing AI systems can reflect biases and inequalities existing in society[32]: from biased datasets used for training algorithms, through unconscious prejudices of human developers to the systemic biases of institutions operating in a way which disadvantages certain groups[33]. When applied, AI systems may exacerbate these inequalities and lead to discriminatory outcomes, sometimes in concealed ways.

This concern is primarily relevant when AI is used to make or support decisions about individuals with potentially severe and irreversible consequences for their personal situation. But other types of systems can still disadvantage certain groups when they are used to support decisions impacting society at large without due regard for the experiences and expectations of disadvantaged communities. An oft-cited example is the use of AI to inform changes to transport systems with individuals' transportation choices inferred based on smartphone data analysis. If developers do not consider whether there are communities with lower smartphone uptake, relying solely on smartphone data

32 For a comprehensive overview of research and policy discussions around bias: Balyn, A. and S. Gürses. (2021). Beyond Debiasing. https://edri.org/wp-content/uploads/2021/09/EDRi_Beyond-Debiasing-Report_Online.pdf

33 National Institute of Standards and Technology. (2022). There's More to AI Bias Than Biased Data, NIST Report Highlights. https://www.nist.gov/news-events/news/2022/03/theres-more-ai-bias-biased-data-nist-report-highlights

analytics could lead to decisions which do not consider interests or circumstances of others[34].

Bias in AI research and investment incentives also needs to be considered when assessing the impact of AI systems on different groups. Research raises concerns that current AI technologies could increase inequalities between wealthy and less wealthy communities within and between countries. Existing AI systems are often designed in a way that they are beneficial for technologically advanced environments, but are at risk of amplifying problems in less developed environments. This happens for example when AI technologies to optimise the timing for harvesting are based on data that is not in line with the local climate of less wealthy states, leading to loss of harvest[35]. Research and funding should focus more on local circumstances and problems of less wealthy countries to decrease those inequalities.

Impact on local and indigenous communities

Local and indigenous communities increasingly embrace AI or technology more broadly to monitor environmental crime or protect biodiversity. However, the use of AI-driven technologies can also have adverse impacts on their lives. For example, much of the data collected by governments or businesses about the environment is not openly available to local communities, preventing them from benefitting from this knowledge. On the other hand, initiatives for open access to data, e.g., satellite images, can pose the risk of violating privacy, well-being or other vital interests of these communities for corporate gain. The Engine Room quotes an example from India where corporations used open map data that the local community used to find clean drinking water to buy land and water rights in this area. In another example, sensors used by environmental defenders to collect and publish data about ecological changes in a forested area were abused to conduct surveillance against the local indigenous community[36].

34 Cowls, J., A. Tsamados, M. Taddeo and L. Floridi. (2021). The AI gambit: leveraging artificial intelligence to combat climate change – opportunities, challenges, and recommendations. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8522259/pdf/146_2021_Article_1294.pdf

35 Vinuesa, R. et. al. (2020). The role of artificial intelligence in achieving the Sustainable Development Goals. https://www.nature.com/articles/s41467-019-14108-y

36 Kazansky, B., M. Karak, T. Perosa, Q. Tshui, S. Baker and The Engine Room. (2022). At the confluence of digital rights and climate & environmental justice: A landscape review. https://engn.it/climatejusticedigitalrights

Local and indigenous communities, especially from the Global South, are also experiencing the effects of increased energy and water consumption necessary for the development of AI systems and storage of vast amounts of data by big tech companies. For example, the expansion of data centres by Google and Microsoft resulted in diverting scarce local water sources and polluting local water systems in Chile[37]. Environmental defenders also point out how allowing the construction of new data centres on Native-owned lands in the US is indicative of how the US government has historically appropriated Native lands.

Opaque and non-participatory AI development

The previous section established that AI for sustainability and sustainable AI have a direct impact on human rights and societies as a whole. However, the crucial perspectives of environmental defenders, as well as society at large, are rarely directly sought and reflected in the process of developing and deploying AI systems or when assessing their environmental impact.

Environmental defenders acknowledge the important role that technology can play in addressing the challenges societies face with respect to climate change. But they also admit that they cannot see a path forward in a situation where businesses steer the direction of technological response to these challenges by themselves– often driven primarily by their commercial interests rather than societal good. They argue that instead, participation of civil society in shaping areas of technological development is imperative in democratic societies. In the context of the use of AI for climate purposes, meaningful engagement of civil society can contribute to verifying claims about sustainability or effectiveness of certain solutions, exposing their harms or side effects on people and communities, and ultimately ensuring a just, inclusive, and sustainable transformation.

There are various reasons for why environmental civil society is currently not sufficiently part of these discussions.

37 Mosacat Chile. (2020). Presentan recurso de invalidacion ante el sea contra cerrillos data center de Google. https://mosacatchile.cl/2020/04/10/presentan-recurso-de-invalidacion-ante-el-sea-contra-cerrillos-data-center-de-google/

1. Commercial interests

Trade secrets and competition: companies can be hesitant to make publicly available the details of the functioning of their AI systems or of their efforts for increasing sustainability of their technologies due to the fear of losing their competitive advantage over other businesses in the sector;

Procedural burdens: developers acting under business pressure to release an AI product as soon as possible might not consider engaging civil society due to the concern that the process will be burdensome and time-consuming or lack of knowledge how to design such a process;

Perception of lack of interest or added value: developers of AI might be under the impression that civil society is not interested in participating or that their contributions will not be useful or relevant for the process;

Fear of pushback: companies may be concerned that civil society criticism related to the environmental or human rights impacts, scientific validity or practical usefulness of their solutions might harm their commercial interests.

2. Institutional and regulatory contexts

Tenders and public procurement: the opacity and the complexity of these processes would make it harder for civil society actors to understand and effectively monitor public-private partnerships in developing or deploying AI systems in the environment area;

Difficult access to policymakers: some policymaking fora, especially on the international or regional level, do not prioritise the engagement of environmental defenders which may hamper including their perspectives in environmental or digital policies;

Lack of binding rules on civic participation: because there are no explicit legal requirements to ensure transparency and civic participation in the process of designing, developing or deploying AI, engagement of relevant stakeholders is dependent on the good will of the company or public authority;

Opaque sustainability pledges: companies do not publish the details or evidence of their sustainability pledges which makes it difficult for CSOs to challenge them or expose cases of "greenwashing";

Inaccessible standardisation organisations: international technical standards-setting bodies have an increased role in shaping the functioning of technologies in the environment area but they do not establish mechanisms for the inclusion of environmental defenders' voices.

3. Narrow understanding of expertise

Bias towards academic expertise: even when external stakeholders are consulted by companies or institutions, we can observe bias towards a certain kind of expertise, namely academic expertise or experts affiliated with big institutions or think tanks. This excludes not only environmental defenders but also communities like farmers or indigenous people whose expertise is not considered relevant. Meanwhile, these groups' perspectives and lived experiences can be crucial for example for assessing sustainability of a certain type of technology, its human rights or societal impacts, or whether an AI system can benefit the environment.

4. Lack of resources of CSOs

Lack of capacity to engage: only a small fraction of the climate action movement feels sufficiently confident in the topic of AI or technology more broadly to participate in the discussions about their benefits and shortcomings. Many environmental defenders and other relevant stakeholders admit to feeling intimidated by the technical complexity of AI. This is linked to the obstacles raised above – when technical/AI-related expertise is prioritised by companies and institutions and when there are insufficient efforts for inclusive engagement of different groups of stakeholders, environmental defenders might fear that their perspective will be considered irrelevant and will be ridiculed.

Financial and institutional resources: environmental defenders struggle to build AI capacity which would empower them to demand their views are taken on board by companies and policymakers. They lack the financial and institutional resources to build in-house AI capacity and may face high risks or costs in procuring external capacity.

Example: smart city initiatives

Local governments around the world increasingly engage in 'smart city' initiatives under the justification of developing more sustainable cities. These projects usually entail the use of sensors, AI and Internet of Things (IoT) technology for the management of city life, including transport. We are using the example of smart city development to illustrate risks and concerns described in this part of the paper.

Surveillance-related concerns. In Toronto, a smart city project was planned to be developed as a public-private partnership between Waterfront Toronto and Google's Sidewalk Labs. It relied on AI-based technologies aimed at increasing the affordability of housing, availability of transport and the general sustainability of the waterfront area in the city. However, despite wide assessments and consultations, it was later abandoned due to concerns about excessive surveillance, lack of residents' control over their data, and worries about Google repurposing collected data for the company's own gain[38]. Lack of transparency as to how data collected via smart city sensors will be safeguarded against misuse for profit is a concern relevant for most smart city initiatives which are often developed as public-private partnerships.

Lack of clarity as to the usefulness of smart city solutions. Linked to lack of transparency when it comes to data collection, smart city initiatives like the one in Toronto raise doubts as to whether planned solutions are useful and beneficial for the community. Shoshanna Saxe, a civil engineering professor at the University of Toronto warned against dangerous simplifications embedded into smart city projects, noting that the Sidewalk Labs system was based on the flawed assumption that extreme weather events, such as floods, can be predicted, or that the city wouldn't lose power necessary for the operation of the rain water management system during a severe storm[39].

Non-participatory and exclusive design. Another concern related to smart city initiatives is the discrimination or lack of considerations for certain

38 Tusikov. N. (2019). Sidewalk Toronto's master plan raises urgent concerns about data and privacy. https://theconversation.com/sidewalk-torontos-master-plan-raises-urgent-concerns-about-data-and-privacy-121025

39 Cecco, L. (2021). Toronto swaps Google-backed, not-so-smart city plans for people-centred vision. https://www.theguardian.com/world/2021/mar/12/toronto-canada-quayside-urban-centre

groups of people. For example, in "Invisible Women: Exposing the Data Bias in a World Designed for Men", journalist Caroline Criado Perez points out that even practices such as clearing snow from roads before footpaths disproportionately disadvantage women who on average are more likely than men to walk rather than drive. She also argues that women's travel patterns are often more complicated than men's and more reliant on public transport. These patterns are not sufficiently taken into account by city planners[40]. While these examples did not entail the use of AI, the risk of exclusion in AI-driven smart cities is even more relevant when we consider the issue of datasets biased against historically underrepresented or marginalised people.

On the other hand, good practices in the field of urban policies emphasise that decisions about technology should be made based on the real needs of residents who should be involved in the design and implementation of policies. The Toronto smart city project was preceded by a human rights impact assessment and extensive stakeholder consultations. While environmental defenders are not explicitly listed among stakeholders engaged, the city created ample opportunities for the participation of interested citizens, including a town hall, a stakeholder advisory committee, a digital public consultation, drop-in sessions at public libraries, public roundtables etc.[41] In the Polish city of Lublin residents were invited to participate in determining the allocation of budget resources while the Dutch city of Amsterdam engages in a number of initiatives aimed at increasing civic participation and outreach[42]. However, the materials published by these municipalities also do not explicitly mention the role of environmental defenders and CSOs in these processes or whether these groups' views are actively sought.

In the next section, we discuss which policies strengthen environmental defenders' rights meaningful participation in the development and assessment of AI systems related to the environment.

40 Ward, J. (2019). Why is a lack of gender balance in transport planning an issue we must address to move forward? https://www.intelligenttransport.com/transport-news/88953/why-is-a-lack-of-gender-balance-in-transport-planning-an-issue-we-must-address-to-move-forward/

41 Ontario Superior Court of Justice (2020). Affidavit of Kristine Lynne Verner. https://ccla.org/wp-content/uploads/2021/06/Affidavit-of-Kristina-Verner_TSC.pdf

42 Van den Bosch, H. (2022). A closer look at Amsterdam's digitization agenda. https://amsterdamsmartcity.com/updates/news/a-closer-look-at-amsterdams-digitization-agenda

HOW CAN ENVIRONMENTAL AND TECH POLICIES ENABLE THE PROTECTION AND ENGAGEMENT OF CLIMATE ACTIVISTS?

The previous sections show that environmental defenders deserve and need to be protected in their rights to freely associate, protest and participate in the development of policies that affect them, including the development and use of AI systems related to climate. This section addresses some of the key existing standards and policies and to which degree they provide safeguards for environmental defenders.

Environmental policies and mechanisms

There are global and regional standards that protect environmental activists' civic freedoms such as their rights to freedom of association, peaceful assembly, expression, privacy and participation in decision-making.

They are enshrined in various UN Conventions, including the Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention), the Geneva Roadmap (A/HRC/RES/40/11), the United Nations Framework Convention on climate change (UNFCCC), the Paris Agreement, and the UN Convention on biological diversity (UNCBD), among others. In the below we reference some of the relevant standards that safeguard the rights of environmental defenders and their participation in decision-making processes.

Aarhus Convention[43]: According to the Aarhus Convention, each Party shall guarantee the rights of access to information, public participation in decision-making, and access to justice in environmental matters in line with the provisions of the Convention. Individuals and/or CSOs can communicate their

43 United Nations. (1998). Aarhus Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters. https://unece.org/DAM/env/pp/documents/cep43e.pdf

concerns about a Party's compliance directly to a board of independent experts, the Compliance Committee, who have the mandate to examine the merits of the case. Even though the Committee cannot issue binding decisions, it may make recommendations either to the Meeting of Parties, or, in certain circumstances, directly to individual Parties. Environmental information is defined broadly under Article 2 point 3[44]. However, as adopted nearly a quarter century ago, the Convention lacks any specific reference to the use of AI in environmental matters.

In June 2022, the world's first Special Rapporteur on environmental defenders, Michel Forst, was elected with the role to take measures to protect any person experiencing or at imminent threat of penalisation, persecution, or harassment for seeking to exercise their rights under the Aarhus Convention. This is the first such mechanism specifically safeguarding environmental defenders to be established within a legally binding framework either under the United Nations system or other intergovernmental structure. Any member of the public, Party to the Aarhus Convention, or the secretariat can submit a complaint to the Special Rapporteur, even if domestic remedies have not yet been exhausted.

Paris Agreement[45]: The Paris Agreement recognises the importance of technology development and transfer and the critical role of accelerating, encouraging and enabling innovation for an effective, long-term global response to climate change. According to Article 10, "Parties, noting the

44 "Environmental information" means any information in written, visual, aural, electronic or any other material form on: (a) The state of elements of the environment, such as air and atmosphere, water, soil, land, landscape and natural sites, biological diversity and its components, including genetically modified organisms, and the interaction among these elements; (b) Factors, such as substances, energy, noise and radiation, and activities or measures, including administrative measures, environmental agreements, policies, legislation, plans and programmes, affecting or likely to affect the elements of the environment within the scope of subparagraph (a) above, and cost-benefit and other economic analyses and assumptions used in environmental decision-making; (c) The state of human health and safety, conditions of human life, cultural sites and built structures, inasmuch as they are or may be affected by the state of the elements of the environment or, through these elements, by the factors, activities or measures referred to in subparagraph (b) above.

45 United Nations. (2015). Paris Agreement. https://unfccc.int/sites/default/files/english_paris_agreement.pdf

importance of technology for the implementation of mitigation and adaptation actions under the Agreement and recognizing existing technology deployment and dissemination efforts, shall strengthen cooperative action on technology development and transfer." According to the same Article, "such effort shall be, as appropriate, supported, including by the Technology Mechanism and, through financial means, by the Financial Mechanism of the Convention, for collaborative approaches to research and development, and facilitating access to technology, in particular for early stages of the technology cycle, to developing country Parties." It is a question, however, to what extent cooperative actions entail the engagement of environmental defenders and whether financial means are allocated to this.

UN Convention on biological diversity (UNCBD)[46]: According to Article 14, each Contracting Party, as far as possible and as appropriate, shall "introduce appropriate procedures requiring environmental impact assessment of its proposed projects that are likely to have significant adverse effects on biological diversity with a view to avoiding or minimizing such effects and, where appropriate allow for public participation in such procedures".

ECNL's Handbook on international standards protecting the climate and its defenders[47] includes further international and regional standards and mechanisms to use to enforce these rights.

Digital policies and regulation

In the field of global and regional digital policy, there is currently no legal or policy instrument which would create specific requirements or accountability mechanisms for AI systems used for the purposes of mitigating climate change, nor specific rules for sustainability of AI. However, the last few years have brought significant developments when it comes to new regulatory frameworks for AI as such, which might to some extent apply to aspects of AI relevant for the environment.

46 United Nations. (1992). Convention on Biological Diversity. https://www.cbd.int/doc/legal/cbd-en.pdf

47 European Center for Not-for-Profit Law. (2022). International Standards Protecting the Climate and its Defenders. https://ecnl.org/handbook-climate-internationalstandards#Standardsthatprotectenvironmentalactivists

UNESCO Recommendation on the Ethics of Artificial Intelligence[48]: On the global level, a non-binding UNESCO Recommendation on the Ethics of Artificial Intelligence is the most comprehensive document to date, addressing also the policy area of environment and ecosystems (paragraphs 84-86). It includes the recommendation to countries and businesses to assess the direct and indirect environmental impact throughout the AI system life cycle. It also calls on governments to promote the development and adoption of rights-based AI solutions and explicitly mentions that these solutions should involve the participation of local and indigenous communities.

OECD's Principles on Artificial Intelligence[49]: Regional non-binding instruments include OECD's Principles on Artificial Intelligence which call on governments and businesses to engage in developing AI that has beneficial outcomes for the planet. The organisation has also published a report outlining environmental impacts of AI and reviewing existing measurement frameworks[50].

Council of Europe's Recommendation on the human rights impacts of algorithmic systems[51]: The Council's recommendation mentions that efforts to meet internationally agreed sustainable development goals should drive private sector actors. Furthermore, the Recommendation calls on Council of Europe's member states to" take account of the environmental impact of the development of large-scale digital services and take the necessary steps to optimise the use and consumption of natural resources and energy."[52]

EU AI Act and Convention on AI, Democracy and Rule of Law: Binding regional regulations of AI are currently being developed by the European Union (the EU Artificial Intelligence Act) and Council of Europe (Convention on AI, Democracy and Rule of Law).

When it comes to requirements for AI systems under the proposed EU AI Act, they will most likely not apply to AI

48 UNESCO. (2022). Recommendation on the Ethics of Artificial Intelligence. https://www.unesco.org/en/artificial-intelligence/recommendation-ethics

49 OECD.AI. (2019). OECD AI Principles overview. https://oecd.ai/en/ai-principles

50 OECD. (2022). Measuring the environmental impacts of artificial intelligence compute and applications. https://www.oecd-ilibrary.org/science-and-technology/measuring-the-environmental-impacts-of-artificial-intelligence-compute-and-applications_7babf571-en

51 Council of Europe. (2020). Recommendation CM/Rec(2020)1 of the Committee of Ministers to member States on the human rights impacts of algorithmic systems. https://search.coe.int/cm/pages/result_details.aspx?objectid=09000016809e1154

52 Ibid, Preamble, para 8.

systems used for sustainability purposes. Most requirements are addressed only to developers or deployers of so-called "high-risk" AI systems – a category which currently does not include any systems used for tackling climate change. While the draft law mentions AI systems used for management and operation of road traffic and the supply of water, gas, heating, energy and electricity, requirements would only apply to AI-driven "safety components" of these technologies. This means that as such, AI for sustainability systems for the time being remain beyond the scope of this regulation.

The Council of Europe's current zero draft version of the future Convention on AI, Democracy and Rule of Law includes a provision specifically entitled to the "Preservation of public health and the environment", but it only generically mandates each state party to take the necessary measures to preserve the environment and it limits such obligation to the context of "application" of an AI system, leaving out other phases of its lifecycle, such as the design, development and testing of the system.[53]

For environmental defenders this means that there will be no binding mechanisms to demand civic participation in the process of the design, development or deployment of AI used for sustainability purposes. However, there might be some promising opportunities for monitoring the adverse environmental impact of AI systems or technology more broadly. According to the European Parliament's amendments to the AI Act, deployers of high-risk AI systems would be required to assess the systems' adverse impact on the environment as part of the fundamental rights impact assessment and publish the results in the public EU database. In this process, they would also have to consult relevant stakeholders.

Corporate sustainability due diligence directive: This is another relevant upcoming EU legislation aimed at making companies responsible for violations to human rights and international environmental standards along their value chain. The legislative process is not yet concluded but some proposals extend the application of this directive also to companies in the technology sector, requiring them to identify, mitigate and remediate risks and violations to human rights and the environment. The European Parliament's environment committee voted on amendments for stricter obligations on environmental and

53 Council of Europe. (To be published). Article 11, Zero Draft Convention.

climate impacts, including requirements to reduce their carbon emissions across value chains.

Under both laws, environmental defenders could play a key role not only in contributing to the assessment of specific technologies during the consultations but more broadly in advocating for what these assessments should look like, e.g., using existing assessment methodologies developed by civil society[54].

RECOMMENDATIONS

The previous chapters describe how the use of AI brings new opportunities in climate mitigation. At the same time, AI systems pose risks both to the environment and its defenders. We argue that any application of AI in climate change mitigation and adaptation will need to ensure that environmental impacts are not externalised onto the most marginalised populations and respect the rights to freedom of association, peaceful assembly, expression, privacy and participation in decision-making. Accordingly, the consideration of environmental impacts and the responsibility to care for our planet should be reflected in our technical infrastructure, our ways of working and our practices and policies for fair, accountable, transparent and human rights-respecting AI systems. Shaping a positive scenario for our future requires collective action, clear policies, greater awareness and more dialogue on this topic. To facilitate this, we put forward a set of recommendations to the various stakeholders, including the international/regional bodies; national and local governments; civil society and environmental defenders; technological companies and developers; academia and the donor community.

To international and regional bodies:

- Promote and safeguard the work of CSOs and environmental defenders and their crucial role in climate change mitigation, including technologies that affect them;

54 Assess.technology. (n.d.). How are technologies assessed? https://assess.technology/

- Ensure that environmental defenders' and local communities' voices are sought and meaningfully taken into account in the process of developing and adopting policies related to the use of technology for sustainability purposes;
- Adopt binding mechanisms to demand meaningful civic participation in the process of the design, development or deployment of AI systems in the area of sustainability and in the process of assessing environmental impacts of AI systems;
- Adopt policies that require to reliably measure the environmental impacts of new technologies and develop methodologies for environmental impact assessment and set up an effective system of accountability for the use of AI and it impact on the environment.

To national and local governments:

- Ensure that the rights to freedom of association, peaceful assembly, expression, privacy and participation in decision-making in support of climate justice are fully and equitably enjoyed by all groups and communities, including by eliminating existing barriers and adopting positive measures to ensure that they can exercise the full extent of these rights in the context of climate justice;
- Ensure that digital tools are not used to surveil, police, and criminalise climate activism and withdraw/refrain from adopting any laws and policies that allow for the surveillance of environmental defenders;
- Recognise the important role that CSOs and environmental defenders play in cooperative action on technology development as well as in environmental impact assessments and provide technical and financial support for them to continue doing so, e.g., by allocating to them part of the funding received via the Financial Mechanism of the Aarhus Convention;
- Put in place transparent and inclusive processes to ensure that CSOs and environmental defenders can meaningfully participate at all levels in climate and just-transition policy developments and implementation, including participation embedded in AI and environmental laws;
- Adopt laws and policies that require to reliably measure the environmental impacts of new technologies and develop

methodologies for environmental impact assessments and set up an effective system of accountability for the use of AI and its impact on the environment.

To civil society and environmental defenders:

- Facilitate the exchange of knowledge between environmental activists and digital rights activists on the use of AI for tackling climate change;
- Advocate for meaningful stakeholder engagement in laws regulating the development and deployment of AI systems;
- Contribute existing assessment methodologies and best practices to institutions developing evaluation standards for environmental impacts of AI;
- Take advantage of upcoming regulations on AI and corporate sustainability to establish a high standard of engagement of environmental defenders which could serve as a best practice for other regions or countries.

To technological companies and developers:

- Ensure participatory assessments of environmental impacts of AI systems and consult relevant stakeholders, including environmental defenders and local communities, in the process of developing systems to be used for sustainability purposes;
- Improve environmental transparency and equity by providing evidence to sustainability pledges.

To academia:

- Contribute to open and free access to scientific knowledge and information on topic such as new technologies and their climate and societal impacts.

To the donor community:

- Secure funding for the capacity building of environmental defenders in the area of AI/technology, including participation in environmental impact assessments throughout the lifecycle of AI/technological systems, and to promote more discussions on this topic.

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