



POWER IMBALANCES, DISPOSSESSION AND  
RISING INEQUALITY

# HOW DIGITAL TECHNOLOGIES AFFECT THE HUMAN RIGHTS OF PEASANTS AND SMALL-SCALE FOOD PRODUCERS



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## KEY MESSAGES

o The way in which human rights institutions have looked at digital technologies has important gaps, which opens the way for abuses and violations. While the focus has been on issues like privacy and freedom of expression, equally important economic, social, cultural, and environmental rights have been left aside.

o A comprehensive and critical human rights perspective on digital technologies requires addressing concentration of power within the digital economy, structural inequalities and discrimination, and the ecological impacts of digital technologies throughout their life cycle.

o Digital data and the intelligence derived from it are increasingly important resources and digital technologies more and more mediate access to services and control over resources and goods. Consequently, the ability to collect, store, process, analyze and use data increasingly determines the profit prospects and power of companies and other actors.

o In India, digitizing land registries has left Indigenous Peoples and other rural communities landless overnight. Collective tenure rights have not been considered and unequal access to technologies has entrenched structural discrimination.

o Transnational corporations capture peasant and native seeds by patenting digitized genetic sequences. This undermines the knowledge and management practices that have fed humanity for millennia.

o In Colombia, smallholder coffee growers are enticed to sell carbon credits for the carbon stored in their soil. Microsoft and Rabobank are behind efforts to use peasants to meet corporate “net zero” pledges, while obtaining remote control over their farming activities.

o Recognizing peasants, Indigenous Peoples and other rural people as data subjects, protecting their knowledge and innovation systems and addressing structural inequalities is critical for shaping the development and use of digital technologies in such a way that it serves the most marginalized and oppressed peoples.





## I. INTRODUCTION

The way in which digital technologies are rapidly impacting the lives of people around the world – individually, collectively, and within societies – underscores the pressing need to address their implications for human rights. The Human Rights Council has therefore highlighted “the importance of a human rights-based approach to new and emerging digital technologies taking into account States’ obligations under international human rights law, a holistic understanding of technology and holistic governance and regulatory efforts.”<sup>i</sup> This briefing paper argues, however, that there are significant gaps in the way in which human rights bodies and institutions are responding to the challenges posed by digital technologies, namely the lack of addressing their impacts on economic, social, cultural and environmental rights.

Although human rights are indivisible and interdependent, current discussions about digital technologies and human rights focus largely on civil rights.<sup>ii</sup> Issues of privacy, freedom of expression and of movement etc. are extremely important but leave aside equally relevant aspects. Data and data-derived intelligence are increasingly important resources and digital technologies more and more mediate access to services and the control over resources and goods. In such a situation, it is not only crucial for business actors to extract as much data as possible, but also to control the digital infrastructure.

The United Nations Conference and Trade and Development (UNCTAD) has pointed out that the emerging digital economy is dominated by a small number of “global digital corporations”, who acquire “huge financial, market and technology power; and control over large swathes of data”, resulting in a highly unequal capture of economic benefits arising from digital technologies and the use of data.<sup>iii</sup> The distribution of power and economic benefits

derived from digital data is also distributed unequally between countries. According to UNCTAD, China and the USA host 50 per cent of the world's hyper scale data centers and account for 90 per cent of the market capitalization of the world's largest digital platforms. <sup>iv</sup>

Moreover, digital technologies are deployed in contexts of structural inequalities and discrimination and, consequently, carry the risk of deepening them while creating new forms of dispossession. Therefore, the development and use of digital technologies are directly related to the overall distribution of wealth and resources in societies.

Recent research has further exposed the centrality of appropriating data and knowledge and the subsequent establishment of "intellectual monopolies,"<sup>v</sup> where data and data-derived intelligence can only be accessed through data holders, namely a few large companies who have the financial and technical resources to collect, store, process and use large amounts of data. Importantly, much of this data is not generated or produced by these companies, but extracted from public and private sources, while the profits they generate are concentrated in corporations and their shareholders.

When analysing digital technologies from a human rights perspective, it is important to keep in mind that all social and technological processes need to be shaped and are inherently political. Dominant narratives, which stipulate some kind of preconfigured path of "technological advancement" to which societies must adapt, are therefore misguided and dangerous. The same is true of the postulate that data and data-based technologies are neutral, and that more and more data is all societies need to take better decisions and achieve better human rights outcomes. <sup>vi</sup>

Finally, while it is important to understand where technological developments could lead in the longer term – thus potentially affecting the rights of future generations - it is critical to understand how digital technologies are already affecting people and their rights today. For instance, recent advancements in the field of so-called artificial intelligence (AI) have sparked fears that many jobs could be taken over by machines, but much less attention has been given to the exploitation of workers that is already happening, starting from the mining of raw materials needed for digital devices and infrastructure to the workers who train algorithms to make results acceptable to users, including reducing violent, sexist and racist outputs. <sup>vii</sup> Simultaneously, the clean imaginaries that are promoted by tech companies obfuscate the great ecological impacts of digital technologies, including through the enormous amounts of raw materials and energy that are required to produce, store, transfer, process, and use data. <sup>viii</sup> Therefore, a human rights perspective on these technologies needs to be based on the principles of intra and inter-generational justice, common but differentiated responsibilities and the precautionary principle.

The examples described in this briefing intend to shed some light on the ways in which the use of digital technologies affects the right to food and nutrition. The intention is to contribute to a more comprehensive and critical understanding of the intersection of technology and human rights, in order to shape the design, deployment, use and governance of these technologies in such a way that they support the realization of human rights, particularly of the most marginalized and oppressed groups and people.

## II. EXAMPLES

### 1. Digitalization fuels natural resource grabbing and land concentration

The use of digital technology in the land sector is promoted by governments, international institutions and business actors as a way to increase tenure security, transparency and efficiency of land administration, and to protect against fraud and corruption. Despite these promises, land-related digitalization has led to the impairment, or even nullification, of the enjoyment of human rights.

Two aspects are of critical importance when looking at digital technologies in the context of land: Firstly, digital technologies are pivotal to obtain and make accessible location-specific land-related data and information (such as soil quality, production outputs, water availability, forest cover, rainfall patterns, land price developments etc.). This is key for corporate investors and allows financial brokers in any part of the world to access information for a plot of land in, say, Colombia. In the process, land is transformed into data, which is functional to



its transformation into an investible asset. Secondly, the digitalization of land administration data and infrastructure, such as cadastral data and digital registries, increasingly allows for land transactions in the virtual sphere, generating (potential) abuses of power of those who gather, manage and access that information. Over the past years, for instance, block chain technology and so-called ‘smart contracts’ have been applied to land in several countries around the world.<sup>ix</sup>

The ability to collect, access, store, process, analyze and use land-related data therefore increasingly determines who controls land and related natural resources. A good illustration of how digital technologies have become central to the expanding control over natural resources by business actors is Aladdin (Asset, Liability, Debt and Derivative Investment Network), the data analysis system of BlackRock, the world’s biggest asset management firm. This system allows the company to optimize its financial operations by processing huge amounts of digital data about land and other “assets” to calculate risks and rates of returns.<sup>x</sup>

Whereas digital land registries are promoted under the guise of combatting corruption, research conducted by FIAN International and other civil society organizations has documented some of the ways in which digitalization reproduces existing patterns of exclusion, discrimination and inequalities.<sup>xi</sup> One example is India where a fast-paced digitalization process of land records data carried out under the government’s *Digital India Land Records Modernization Programme* (DILRMP) has reinforced the pre-existing exclusion of marginalized farmers, tribal groups, and Indigenous Peoples.<sup>xii</sup> In addition to concerns regarding the unequal access to digital technologies and registries, a key problem is the way

in which certain tenure rights, such as usage rights as well as collective and customary rights, are made invisible, thus increasing dispossession and land conflicts. Whereas civil society organizations in different parts of the world have engaged in bottom-up, community-driven participatory mapping, in some cases using Geographic Information Systems (GIS),<sup>xiii</sup> asymmetries of power often make such efforts vain when mapped areas collide with land claimed by corporations or the state.

Importantly, geospatial and other land-related data is increasingly used for spatial and land use planning, including in the context of climate change responses, conservation and land restoration, thus going beyond what has typically been the realm of land administration and governance. The introduction of a digital environmental cadaster in Brazil, for instance, has created new forms of dispossession for rural communities.<sup>xiv</sup> In a context of huge power asymmetries, including in the ability to harvest and analyze data, the FAO's recent initiatives to "unlock millions of data layers" by providing comprehensive geospatial maps<sup>xv</sup> risks leading to further entrenching inequalities rather than overcoming them.

FIAN International's research points to the serious risk of digital technologies undermining the right to land, as recognized by the UNDRIP and UNDROP, as well as the guidance provided by the Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests and General Comment No. 26 of the Committee on Economic, Social and Cultural Rights.<sup>xvi</sup> Reality shows that digital technologies are often applied in the context of investment promotion policies, which have triggered land grabbing and speculation. Digitalization is therefore no shortcut to addressing the structural drivers of land-related human rights violations, such as high levels of land concentration and the lack of effective protection of customary and collective tenure systems. On the contrary, it risks exacerbating them in the absence of human rights-based tenure policies.

➤ **Further reading:**

FIAN International (2020). [Disruption or Déjà Vu? Digitalization, Land and Human Rights](#). Case Studies from Brazil, Indonesia, Georgia, India and Rwanda.

**2. Digital and biotechnologies enable biopiracy and undermine peasants' and Indigenous Peoples' right to seeds**

Technological advances over the last twenty years have allowed the sequencing of genetic information from plants, cultivars and wild species at an increasingly faster pace and reduced costs. This information is digitized, stored in huge electronic databases, and then analyzed to identify the genetic sequences underpinning specific traits, such as drought resistance. According to the seed industry, new genetic engineering techniques then allow for the introduction of the identified sequences into plants, thus creating 'new' varieties that express those traits. through processes that do not respect the natural physiological barriers of reproduction or recombination of living organisms.

In this way, the combination of digital and biotechnologies gives rise to a new way of plant breeding through processes that do not respect the natural physiological barriers of reproduction or recombination of living organisms. Moreover, these technologies are the basis of a new business model for seed and agribusiness companies, in which an increasing number of profits are generated through royalties and licenses – based on intellectual





property rights – rather than the selling of physical seed. These developments pose a number of threats to the rights of Indigenous Peoples and peasants over their seeds.

Firstly, digitized genetic sequences – often referred to as ‘Digital Sequence Information’ (DSI) – “dematerialize” seeds by separating genetic information from the microorganisms, plants and animals that it stems from, while also isolating it from the Indigenous Peoples and peasants who have created the existing agricultural biodiversity over millennia. The

seeds as well as the knowledge that is tied to them are thus appropriated by corporations and commodified. The profits from such biopiracy are captured by a small number of corporations who already dominate the global seed market.

Secondly, the concentration of the global seed market is set to increase since accessing and analyzing digitized genetic sequences requires enormous computing and data storing capacities, which only a few large corporate actors can afford. This will lead to further marginalization and discrimination of Indigenous Peoples and peasants who continue losing power over their seeds at the cost of the consolidation of oligopolies.

Thirdly, the scope of patents and other intellectual property rights on genetic sequences (whether physical or digital) extends to all plants that contain the respective sequence and expresses its function. This includes “native” biological material and peasants’ and Indigenous Peoples’ seeds so that the latter may be required to pay royalties to patent holders in the event of their seeds containing patented sequences.

Peasant and Indigenous Peoples’ organizations have denounced the violations of their rights to save, use, exchange and sell their seeds as well as their traditional knowledge, practices and innovations, as recognized by the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA), the Convention on Biological Diversity (CBD) and the UNDROP. However, the seed industry and some governments claim that digitized genetic sequences are not to be considered as plant genetic resources, but as mere information. If

such an interpretation prevails, agreements such as the ITPGRFA and the CBD would be obsolete, including their provisions on free, prior and informed consent and farmers' rights.

At the same time, most international discussions have focused on ways to ensure the equitable sharing of benefits arising from the use of DSI, thereby obfuscating the fact that the combination of DSI and intellectual property on genetic sequences is already undermining the rights of peasants and Indigenous Peoples as well as their agroecological farming and management systems, which states are required to protect.

➤ **Further reading:**

Alimata Traoré (2018). [The Dematerialization of Plant Genetic Resources: A Peasant's Perspective](#). In: When Food Becomes Immaterial: Confronting the Digital Age. Right to Food and Nutrition Watch, Issue 10.

### 3. Artificial Intelligence undermines pastoralists' knowledge and autonomy

The use of digital technologies in animal farming is usually promoted under the label of "precision livestock farming". Different technologies, such as on-animal sensors, milking robots, and facial recognition of animals are being increasingly used in North America, Australia and Europe, particularly in industrial livestock farms and the dairy sector. Targeted efforts are underway to apply these technologies also in the context of extensive livestock systems, where animals are raised on grazing lands or open pasture.

While extensive livestock farming and pastoralism are arguably not those sectors, which provide most incentives to corporations because they offer limited prospects of profits, a set of technologies is currently being proposed to pastoralists with the promise of enabling more precise and effective management decisions, inputs and treatments, reduced labor, improved productivity, better animal health and nutrition, and more sustainability, among others. These include electronic identification of animals, virtual fencing, geographic information systems and satellite imagery, on-animal sensors and drones. Moreover, research and pilot projects are underway to combine these technologies to put in place (largely) "automated herding" systems, which use so-called artificial intelligence (AI).<sup>xvii</sup>

However, European pastoralists' views on the proposed technologies differ substantially from such narratives and preconfigured technological pathways. While some of them use specific digital tools – either because they are obliged<sup>xviii</sup> or because they hope that they can respond to specific challenges they face<sup>xix</sup> – there are serious concerns that adopting certain technologies comes at the price of new dependencies and the imposition of new farming and management models. The extraction of data by all the mentioned technologies raises the question of who can access and use it, for what purposes, and who gets the benefits of such use, including economic benefits. Data extraction is particularly sensitive in the context of peasant farming (including pastoralism), where the line between personal and non-personal data is often blurred.

Another key concern is that delegating learning and decision-making to machines or algorithms undermines pastoralists' knowledge and innovation systems, which are based on experiential learning as well as the close interrelationship with their animals and territories. These systems are at the core of pastoralists' autonomy, which, in turn, is central to the

important economic, social, ecological, and cultural functions that pastoral systems perform. In this context, it is important to emphasize the high degree of resilience that characterizes these systems, and which is tied to shepherds' ability to take advantage of variability and to live with and from uncertainty – a key feature in the context of climate change.<sup>xx</sup>

Because of their importance, the knowledge, innovations and practices of peasants, pastoralists, Indigenous Peoples and other rural people have been recognized and protected in the UNDRIP, UNDROP and CBD, including their management systems.<sup>xxi</sup> Importantly, their knowledge and innovation systems are based essentially on collective and tacit knowledge, rely largely on oral transmission, and encompass dynamic knowledge that is constantly enriched by peasant/indigenous innovations. The CESCR has clarified that “the right to participate in and to enjoy the benefits of scientific progress and its applications in agriculture should preserve, not violate, the right of peasants and other people working in rural areas to choose which technologies suit them best.”<sup>xxii</sup>

This, as well as the important contributions that pastoralists and their strategies to deal with adversities and variabilities can make to the transition of food and farming systems to agroecology call for comprehensive risk assessments, democratic control over processes of technology development, deployment and use, as well as effective regulation of digital technologies and technology companies.

➤ **Further reading:**

Friends of the Earth Europe, FIAN International, and Centre for Agroecology Water and Resilience at Coventry University (Forthcoming). Remote Control and Peasant Intelligence. On automating decisions, suppressing knowledges and transforming ways of knowing.

**4. Digital carbon trade enables the corporate capture of peasant food and farming systems**

Carbon capture and storage is an important part of current climate change mitigation programs and included in many states' and corporations' so called 'net zero' pledges. Article 6 of the Paris Agreement on Climate Change gives an important role to carbon markets as a potential means to reducing greenhouse gas emissions, thus creating incentives for states and corporations to offset or compensate their emissions with carbon sequestration projects. While the focus has long been on carbon sequestration through forest conservation and afforestation, the potential of carbon sequestration in agricultural soils has received increasing attention over the past years. The multinational seed and chemical corporation Bayer, for instance, has incentivized US farmers to grow off-season cover crops in order to



generate carbon offset credits, which are used to compensate for Bayer's greenhouse gas emissions.

In Colombia, peasants and other small-scale food producers are currently targeted by campaigns that promote the selling of carbon credits as a way to increase their income, while promising to make their production more sustainable. One of the most active players is the non-governmental organization Solidaridad, which promotes sustainable supply chains through programs that contribute to climate change mitigation through the implementation of agroforestry practices in the cultivation of cocoa, coffee, oil palm and livestock in Colombia and other Latin American countries. One of the organization's programs in Colombia is called "Café del Futuro" and aims to promote so-called 'climate-smart agriculture' practices among small-scale coffee farmers and, in a second phase, to enable them to participate in carbon trading. Measuring carbon sequestration on farms requires the use of different technologies, such as georeferencing of farms, satellite data and so-called artificial intelligence (AI) models.

For the "Café del Futuro" project, accounting and the actual trading of carbon credits is done via a platform called ACORN (Agroforestry Carbon Removal Units for the Organic Restoration of Nature), which has been set up by the Netherlands-based multinational bank Rabobank, with the technology of Microsoft. ACORN's stated objective is to "help smallholder farmers in the transition to agroforestry by offering their sequestered carbon as carbon removal units to responsible corporates." According to the General Manager of Solidaridad Colombia, ACORN is "a disruptive platform that connects small coffee growers to global carbon markets." Solidaridad thus effectively acts as a broker between Colombian peasants and these multinational corporations.

What this language obscures are the ways in which these digitized carbon trading systems risk creating new forms of exploitation and domination. Interviews conducted by FIAN with some of the peasants participating in the project have revealed that they are required to sign consent forms to share their farm data, while they are not guaranteed in writing that they will receive any payment, nor what the value of a carbon credit is. In fact, several people are still waiting for the promised payments after two or three years of participating in the project. Although some peasants participating in "Café del Futuro" have claimed that Solidaridad does not impose specific farming practices as a condition of participation in the project, testimonies indicate that on-farm decision-making is affected nonetheless.

Peasants have reported, for example, that they have been encouraged to replace existing trees on their farms with fast-growing varieties on the grounds that these supposedly increase the carbon storage potential of their [00]. This suggests that participation in carbon trading schemes risks undermining peasants' autonomous decision-making and management practices, as well as leading to the transfer of family farm data to large companies and remote monitoring of farming operations. Moreover, they risk creating new dependencies of peasants and instrumentalizing them for corporate needs.

Emerging models of carbon trading involving peasants and other rural people therefore require the establishment of adequate governance frameworks, which guarantee Indigenous Peoples', peasants' and other rural people's rights. This is particularly important in settings, in which huge power imbalances exist between peasants and the corporations who control the technologies and act as brokers on emerging global carbon markets. In the case of Colombia, it is striking that Microsoft, in addition to having developed the technology behind the ACORN



platform, is also a key player in providing digital infrastructure in rural areas. Such accumulation of power, including vis-à-vis public authorities seriously risks undermining peasant food systems, which feed 70 percent of the Colombian population and are at the heart of peasants' self-determination.

➤ ***Further reading:***

FIAN International and MAELA Colombia (Forthcoming). The Impacts on the Rights of Peasant Communities of their Inclusion in Digital Carbon Trading.

### III. CONCLUSION AND RECOMMENDATIONS

While the dominant narratives around digitization tend to present it as a necessary and inevitable process, requiring individuals and societies to adapt to digital technologies, a human rights perspective calls for proactively shaping the design, deployment, use and governance of these technologies in ways that support the realization of human rights, particularly for the most marginalized and oppressed groups and people. This requires addressing the structural factors underlying discrimination, exclusion, and inequality, considering that “the development of technology is completely embedded in the social, political, and economic structures of the society that actually develops the technology.” As the UN Secretary General and the Human Rights Council have emphasized, placing human rights at the center of regulatory frameworks and legislation on the development and use of digital technologies is therefore critical.

The examples in this briefing have shown that digital technologies risk reproducing and reinforcing patterns of exclusion and dispossession while creating new forms of exploitation, discrimination and injustice. These impacts concern present generations but also put future generations' rights at risk. There are many more areas where similar dynamics can be

observed, such as the protection of (food) workers' rights, the collection and use of capillary data on consumer behavior collected by supermarkets, and the control exercised through the digitalization of welfare and social benefit systems, among many others.

The international human rights systems should therefore work towards understanding and addressing more comprehensively the ways in which digitalization determines the distribution of goods, resources, and services. This constitutes the basis of contributing to the development of models and regulatory frameworks for technology that place human rights as well as social and environmental justice at center stage, and of recovering the regulatory capacity of states, so that they can put the public interest of the majority before the private interest of a powerful few. In this regard, special attention needs to be given to the collective nature of the practices, human rights, and ways of knowing of peasants, Indigenous Peoples, and other communities.

The following issues deserve special consideration:

1) Safeguard the rights of peasants, Indigenous Peoples and other rural people (such as pastoralists, small-scale fishers and rural workers, among others) in a context where data and data-derived intelligence is an increasingly important resource, while state and private actors increasingly collect data from rural people. This includes, among others to:

- Recognize smallholder food producers and Indigenous Peoples as data subjects who hold primary rights over the data they produce/generate, including economic benefits derived from it.
- Ensure data sovereignty, understood as the right to decide what data to share with whom, under which conditions and for what purposes; including the right to object the sharing of data.
- Develop regulatory frameworks that recognize the difficulty of drawing a clear line between personal and non-personal data in the context of peasant and family farming.

2) Further analyze, make public and address the ways in which digital technologies contribute to discrimination and exclusion regarding the access, use and control over natural resources. This includes, among others, to:

- Ensure that land-related digitalization processes are embedded in human rights-based tenure policies, which put particular emphasis on marginalized people and support broader policy objectives such as the realization of the right to food and nutrition, poverty eradication, social justice, and the sustainable use of land and related resources.
- Put in place adequate and effective mechanisms to assess human rights impacts of land-related digitalization processes, including the distribution of land and the recognition, protection and fulfilment of collective and customary tenure systems. Such assessments should consider potential impacts in the short, middle and long term, including for future generations, and their outcomes disseminated among the affected or threatened communities,

- Establish accountability mechanisms which allow rural populations to inform the competent authorities about the impacts of digital technologies on their rights and to access corrective measures and remedies.
- Implement rigorously the right to effective, meaningful and informed participation of rural populations, including Indigenous Peoples' right to free, prior and informed consent (FPIC), taking into account power imbalances between different actors.

3) Protect peasant and Indigenous Peoples' knowledge and innovation systems in the face of the appropriation of data, information and knowledge by corporate and other actors. This includes, among others, to:

- Develop policy frameworks, which ensure the respect and protection of peasant and indigenous knowledge within their own knowledge and innovation systems, and establish sanctions for attempts by state and non-state actors to appropriate such knowledge.
- Prohibit patents and all other forms of IPR on genetic sequences (physical and digital).
- Develop a human rights-based data governance approach, which is grounded in the recognition of the data sovereignty of all peoples and a legal acknowledgment of aggregate non-personal data as inappropriable social commons, to overcome the current day restrictive intellectual property regime that enables data companies to enclose data and data-based intelligence in perpetuity.

4) Advance toward human rights-based governance of digitalization and technologies to address the concentration of control over digital data and infrastructure as well as data-derived profits within a few corporate actors. This includes, among others, to:

- Ensure public interest control over digital infrastructure.
- Ensure the effective participation of the public, including peasants and other people working in rural areas, Indigenous Peoples, and other marginalized communities, in the development of institutional, policy and regulatory frameworks for the design, development, use and monitoring of technologies, including data-based technologies.
- Put in place effective regulation and accountability mechanisms for technology and other data companies, including the dismantling of oligopolies. Those mechanisms should include clear prevention and liability mechanisms, which provide for remedy for the affected and for sanctions for the perpetrators.
- Create intersectoral institutions in charge of implementing policies and regulations regarding the development, management and use of digital technologies and data, ensuring the needed budgetary measures to ensure its function.
- Ensure that regulatory and implementation bodies are provided with the needed regulations to impede the interference of vested interests linked to the digital sector.
- Ensure equitable access to essential technologies and services, while ensuring that he

latter are provided in socio-culturally appropriate ways and considering local circumstances; access to them does not entail giving up data rights (concerning privacy and economic rights, among others); and that digitalization does not result in discrimination regarding the access to public programs and services (e.g. subsidies), incl. ensuring that accessing them is not conditioned to giving up data rights.

- Prevent the privatization of public data and define what data held by private actors has social good functions and therefore needs to be publicly shared.
- Develop models that ensure the redistribution of wealth accumulated by corporate actors, particularly wealth generated from data that has been extracted from public and private sources, including through the taxation of data flows.
- Provide support to peasants and other people working in rural areas, Indigenous Peoples and other communities to develop initiatives and models for the use of data and technology, which support their distinct knowledge, innovation and management practices, and are independent from corporate-dominated structures and protect them from vested interests.

5) Promote environmental justice in the face of the massive consumption of raw materials and energy by digital technologies. This includes, among others, to:

- Integrate independent and participatory environmental impact assessments into the development and deployment of digital technologies to assess the potential environmental consequences throughout their life cycle, from extraction and procurement of raw materials to manufacturing, use and disposal, and include measures to prevent negative impacts and ensure accountability.
- Put in place participatory processes to define priorities of energy consumption for various uses, including digital technologies, and to develop targets for energy consumption for data centers, servers, and other energy-intensive components of the digital infrastructure.

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<sup>i</sup> Resolution adopted by the Human Rights Council on 13 July 2021 ([A/HRC/RES/47/23](#)).

<sup>ii</sup> See, for instance, the report of the Human Rights Council Advisory Committee (2021). Possible impacts, opportunities and challenges of new and emerging digital technologies with regard to the promotion and protection of human rights. (UN Document A/HRC/47/52). Available at: <https://undocs.org/A/HRC/47/52>.

<sup>iii</sup> UNCTAD (2021). Digital Economy Report 2021. Cross-border data flows and development: For whom the data flow, p.2. Available at: <https://unctad.org/publication/digital-economy-report-2021>.

<sup>iv</sup> Ibid.

<sup>v</sup> Rikap, Cecilia (2021). Capitalism, Power and Innovation Intellectual Monopoly Capitalism Uncovered. Routledge. [www.routledge.com/Capitalism-Power-and-Innovation-Intellectual-Monopoly-Capitalism-Uncovered/Rikap/p/book/9780367750299](http://www.routledge.com/Capitalism-Power-and-Innovation-Intellectual-Monopoly-Capitalism-Uncovered/Rikap/p/book/9780367750299).

<sup>vi</sup> This supposition has sometimes been referred to as “big data state of mind”. Please see Kempeneer, Shirley (2021). “A big data state of mind: Epistemological challenges to accountability and transparency in data-driven regulation”. *Government Information Quarterly* 38, no. 3 (2021): 101578.

<sup>vii</sup> Please see <https://time.com/6247678/openai-chatgpt-kenya-workers>.



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- <sup>viii</sup> Data centers and data transmission networks are currently responsible for nearly 1% of energy-related greenhouse gas emissions and their energy use is growing fast. Data centers' overconsumption of energy has caused some countries to put moratoriums on data center construction because they take too much energy away from households and other basic functions. See [www.iea.org/reports/data-centres-and-data-transmission-networks](http://www.iea.org/reports/data-centres-and-data-transmission-networks). Some estimates say that the information and communication technology sector could produce 14% of global emissions by 2040, see [www.theguardian.com/environment/2017/dec/11/tsunami-of-data-could-consume-fifth-global-electricity-by-2025](http://www.theguardian.com/environment/2017/dec/11/tsunami-of-data-could-consume-fifth-global-electricity-by-2025).
- <sup>ix</sup> REF to Digi paper, chapter II.2
- <sup>x</sup> REF Rogue Capitalism
- <sup>xi</sup> FIAN International (2020). Disruption or Déjà Vu? Digitalization, Land and Human Rights. Case Studies from Brazil, Indonesia, Georgia, India and Rwanda. Available at: [www.fian.org/files/files/FIAN\\_Research\\_Paper\\_Digitalization\\_and\\_Land\\_Governance\\_final.pdf](http://www.fian.org/files/files/FIAN_Research_Paper_Digitalization_and_Land_Governance_final.pdf). See also GRAIN (2020). Digital fences: the financial enclosure of farmlands in South America. Available at: <https://grain.org/en/article/6529-digital-fences-the-financial-enclosure-of-farmlands-in-south-america>.
- <sup>xii</sup> IT For Change (2022). Recasting Land Tenure Rights in the Data Epoch: Insights from a Country Case Study of India. Available at: <https://itforchange.net/recasting-land-tenure-rights-data-epoch-insights-from-a-country-case-study-of-india>.
- <sup>xiii</sup> One example is Indonesia where a consortium of non-governmental organizations has developed maps covering an area of over 10 million hectares of Indigenous Peoples' territories, see FIAN International (2020). Disruption or Déjà Vu? Digitalization, Land and Human Rights. Case Studies from Brazil, Indonesia, Georgia, India and Rwanda, chapter III.2.
- <sup>xiv</sup> FIAN International, Rede Social de Justiça e Direitos Humanos, Comissão Pastoral da Terra (2018). The Human and Environmental Cost. Available at: [www.fian.org/files/files/The\\_Human\\_and\\_Environmental\\_Cost\\_of\\_Land\\_Business-The\\_case\\_of\\_MATOPIBA\\_240818.pdf](http://www.fian.org/files/files/The_Human_and_Environmental_Cost_of_Land_Business-The_case_of_MATOPIBA_240818.pdf).
- <sup>xv</sup> Please see [www.fao.org/hih-geospatial-platform/en](http://www.fao.org/hih-geospatial-platform/en).
- <sup>xvi</sup> Committee on Economic, Social and Cultural Rights (2022). General comment No. 26 (2022) on Land and Economic, Social and Cultural Rights. UN Document E/C.12/GC/26. Available at: <https://undocs.org/E/C.12/GC/26>.
- <sup>xvii</sup> See, for instance: <https://viacampesina.org/en/itpgrfa-our-rights-are-the-only-hope-against-the-confiscation-of-all-seeds-by-multinational-patents>
- <sup>xviii</sup> FIAN International, Friends of the Earth Europe and Center for Agroecology, Water and Resilience (Forthcoming). Remote Control and Peasant Intelligence. On automating decisions, eradicating knowledges and transforming ways of knowing.
- <sup>xix</sup> In the European Union, for instance, the use of electronic identification systems for animals is mandatory since 2004 (Council Regulation (EC) No. 21/2004).
- <sup>xx</sup> According to media reports, some Saami reindeer herders, for instance, use drones to locate and move their animals. See [www.mirai-port.com/en/people/847](http://www.mirai-port.com/en/people/847).
- <sup>xxi</sup> Scoones, Ian (2021). Pastoralists and peasants: perspectives on agrarian change, *The Journal of Peasant Studies*, 48:1, 1-47, DOI: [10.1080/03066150.2020.1802249](https://doi.org/10.1080/03066150.2020.1802249).
- <sup>xxii</sup> See, for instance, CBD art. 8 (j) and UNDROP, art. 20.2
- <sup>xxiii</sup> Committee on Economic, Social and Cultural Rights' (2020). General Comment No. 25 on science and economic, social and cultural rights. Available at: <https://undocs.org/E/C.12/GC/25>.
- <sup>xxiv</sup> Please see: [www.reuters.com/markets/commodities/farming-climate-off-season-cover-crops-expand-us-growers-eye-low-carbon-future-2022-01-04](http://www.reuters.com/markets/commodities/farming-climate-off-season-cover-crops-expand-us-growers-eye-low-carbon-future-2022-01-04).
- <sup>xxv</sup> According to Microsoft, the ACORN platform is based on Microsoft's Azure Cloud. Please see <https://news.microsoft.com/europe/features/banking-on-green-financial-service-firms-use-tech-to-nurture-a-more-sustainable-planet>.
- <sup>xxvi</sup> <https://acorn.rabobank.com/en>.
- <sup>xxvii</sup> [www.solidaridadsouthamerica.org/news/tecnologiasostenibilidadquelllevabeneficios](http://www.solidaridadsouthamerica.org/news/tecnologiasostenibilidadquelllevabeneficios).
- <sup>xxviii</sup> Information based on interviews conducted in May 2023.

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<sup>xxix</sup> Several media revelations over the past months have revealed the highly speculative nature of carbon credit trading. See, for instance, [www.theguardian.com/environment/2023/jan/18/revealed-forest-carbon-offsets-biggest-provider-worthless-verra-aoe](https://www.theguardian.com/environment/2023/jan/18/revealed-forest-carbon-offsets-biggest-provider-worthless-verra-aoe).

<sup>xxx</sup> Please see Monsalve Suárez, Sofia, and Seufert, Philip (2022). The Big Tech Takeover of Food Systems in Latin America: Elements for a Human Rights-based Alternative. In *State of Big Tech 2022: Dismantling Digital Enclosures*. Available at: <https://projects.itforchange.net/state-of-big-tech/agritech-and-food-systems-in-latin-america-corporate-takeover-and-elements-for-a-human-rights-based-alternative>.

<sup>xxxi</sup> [www.the-syllabus.com/ts-spotlight/right-climate/conversation/benedetta-brevini](https://www.the-syllabus.com/ts-spotlight/right-climate/conversation/benedetta-brevini).

<sup>xxxii</sup> Please see: Resolution A/HRC/RES/47/23 adopted by the Human Rights Council on 13 July 2021. Available at: <https://undocs.org/A/HRC/RES/47/23>.

<sup>xxxiii</sup> <https://botpopuli.net/harnessing-the-data-revolution-for-world-food-security-is-a-global-public-good-approach-good-enough>.