



ACTIONS FOR ENVIRONMENTAL JUSTICE
FROM AUTONOMOUS AND COMMUNITY-BASED
TECHNOLOGICAL INFRASTRUCTURES

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April, 2025

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1

Introduction

Contrary to popular belief, corporate internet monopolies are not in the business of facilitating communication. Their core business is data collection and data mining. These business models are fundamentally extractive and exploitative. Any communication services they provide are carefully engineered to coerce consumers into giving up their privacy. However, it is common to find responses to the climate crisis designed for these large data centers, leaving aside smaller projects with quite different characteristics and needs.

We must consider that these smaller projects are not alternative projects to corporate internet services. They

focus on the needs of their members, on providing the tools that facilitate communication, that allow them to organize and take action to create a better world on their own terms.

Because corporate internet services collect and store petabytes of personal data, the necessary computing resources and the environmental impact of running their operations are astronomically larger than those of a service offered by a small or medium-sized provider of technological infrastructure that is focused on serving other social groups and not reproducing the aforementioned data mining practices.

So, in terms of environmental sustainability, autonomous internet communications infrastructure projects are already at an advantage because they simply don't engage in surveillance and data collection. **But what other actions, options and strategies can these infrastructures implement?** This research is motivated by our interest in finding new ways to increase environmental sustainability and reduce our carbon footprint.

Currently, small and medium-sized providers of technological infrastructures have limited options. For example, the decision of where they can place their servers

is limited by both human resources and access to high-speed broadband. A community-based perspective could bring benefits to maintain and continue developing non-extractivist digital technologies. Another challenge is to find cost-effective solutions for processing e-waste. So, what conditions and partnerships could be put in place? What do we need to consider in our action plan for such projects?

We conducted a **participatory research assessment based on interviews with small and medium-sized internet service providers, including independent, feminist, cooperative and alternative projects**. In this report, we outline findings about the needs, ideas, options and action strategies that these infrastructures can consider in order to continue maintaining and developing non-extractivist digital technologies. The research has a **social justice perspective**, empathizing with the social and climate justice organizations that these technological infrastructures serve.



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Research questions

- * What actions for environmental sustainability can be taken by small and medium-sized providers of technological infrastructure, in order to maintain and improve their non-extractivist and community-based services?
- * What conditions and partnerships could be established? What are the elements that we must consider in our action plan for projects of these characteristics?
- * What kind of alliances would be necessary and what would these networks look like?

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Objectives

- * **Recognize** specific needs of autonomous technological infrastructure projects, which are different from those oriented to large data centers, and make recommendations accordingly.
- * **Promote** the exchange of strategies and encourage the exploration of joint actions (at local, regional and global levels) to address shared concerns to continue maintaining and developing non-extractivist digital technologies.
- * **Strengthen** the knowledge of the participant projects regarding the challenges and proposals coming from the communities affected by mega-projects, including technological ones.

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Literature Review

Before the interviews, we conducted a literature review that examined the intersection of corporate internet monopolies, technological infrastructures and environmental justice, highlighting the exploitative nature of current digital economies. First, we explore how infrastructure, particularly data centers, shapes territoriality and labor through the lens of data extraction and environmental degradation. Then we discuss the relation between digital infrastructures and waste management, focusing on e-waste and its impacts on communities. The following section addresses the sustainability challenges posed by the energy consumption of data centers, critiquing the limitations of

"green" solutions proposed for (and sometimes by) the same corporations causing the environmental harm.

Finally, we analyze the social and environmental consequences of these corporate practices on local communities, as well as community-driven projects and movements pushing back against digital extractivism. By doing so, we aim to highlight the broader implications of corporate dominance in digital spaces and the potential for community-based infrastructures to foster environmental justice.

Infrastructure and Territoriality

The exploitative and extractive business model of corporate internet monopolies is based on data collection and data mining practices. According to Neilson & Rossiter (2022), the interactions between data centers, waste management facilities and urban development in areas like Tseung Kwan O in Hong Kong, Tanjong Kling Data Centre Park in Singapore, or the inner-city suburb of Alexandria in Sidney, highlight the consequences of the aforementioned business model.

Neilson (2022) examines the case of Tseung Kwan O in Hong Kong, as a borderland that reflects the broader dynamics of capital, geography, and labor. Tseung Kwan O, home to a

major data center cluster and a waste dump, is an example of how spatial and infrastructural borders mediate the flow of capital and resources between mainland China and global markets. The proximity of these facilities raises questions about the overlapping and contrasting roles of data and waste in shaping economic, social, and political landscapes. Through the lens of Hong Kong's geopolitical positioning, the author demonstrates how data centers are technical infrastructures with political implications that influence power, sovereignty, and jurisdiction.

Magee & Rossiter (2022) explore the transformation of warehouses from physical storage and processing hubs into digital infrastructures like data centers, where habits of labor and data management intersect. According to the author, this shift has political, economic, and social implications related with surveillance, management systems, and automation of modern labor practices (Ganesh & Bruder, 2022). Companies like Amazon, Facebook or Google serve as case studies, with their labor-intensive warehouses and massive data centers reshaping economies through platform capitalism: The exploitative and extractive business model of corporate internet monopolies is based on data collection and data mining practices. According to Neilson & Rossiter (2022), the interactions between data centers, waste

management facilities and urban development in areas like Tseung Kwan O in Hong Kong, Tanjon Kling Data

The architecture of platform firms like Amazon illustrates how habit re-forms into a modular warehousing arrangement, operating both vertically and horizontally. Its warehouses are models of efficient labour extraction and exploitation. Less recognized in critical studies of labour, its data centres, operating under the brand of Amazon Web Services (AWS), are the largest and most successful cloud computing operation in the world. (p. 18)

The cited authors seem to agree that these architectures enable the extraction and processing of data across regions, complicating traditional forms of labor organization and governance. In that sense, understanding the network topologies within data centers is essential for imagining new forms of solidarity to challenge these extractive operations (Neilson & Notley, 2022). There is also an emphasis on the need for theory-building to have a better understanding of the problem. We recover the redefinition of data centers as data farms proposed by Neilson & Rossiter (2022):



These installations are essentially hangars packed with computers. They congregate servers, switches and wires that facilitate the storage, processing and transmission of data in high volumes and at fast speeds. Data centres present a scale of operations, potentially planetary in scope, that intensifies and multiplies the productive and extractive capacities of digital technologies. (...) data centres have precise locations, often clustering where there is access to energy, skills, land concessions, tax exemptions or undersea cables. **There are no data centres without land and water.** Like the ‘dark satanic mills’ associated with the factories of the industrial revolution, data centres burn fossil fuels. (p. 5)

Precisely because there are no data centers without land and water, in the next sections, we discuss the planetary-scale consequences derived from these technological infrastructures, framed within the business model of the large corporations that are shaping what the authors called a data-driven economy.

Energy Consumption and Sustainability

In this section we discuss the environmental impacts of data centers —or data farms, as Neilson & Rossiter (2022)

defined them— and the impacts of cloud computing, including energy consumption, carbon emissions and resource usage. We examine the ongoing debate about the sustainability of these infrastructures, and the current efforts to adopt the so-called greener practices. We will mention several articles that propose solutions related to reducing computing footprints and using renewable energy and cite other resources that propose that we need to question whether these “solutions” are sufficient, in the face of the planetary scale impact of the extractive and exploitative business models from big technological corporations.

Several reports, papers, journalistic and corporate articles are concerned about the significant environmental impact of data centers and AI technologies, focusing on energy consumption, carbon emissions and the role of cloud computing. Vanderbauwhede (2023) discusses the substantial energy demands of large-scale AI models like ChatGPT, emphasizing the unsustainable nature of their widespread use despite the “potential for technological advancements in energy efficiency.” Lavi (2022), Arbabzadeh (2022), and Baulig (2022) explore how cloud service providers like AWS, Azure and GCP are addressing these emissions, while noting the challenges in evaluating the carbon footprint of computing infrastructure. Chidoule

& Ohenhen (2024), Van Geet & Sickinger (2024) and Santamaria (2024) further detail how data centers can “adopt green and energy-efficient practices, such as renewable energy integration and innovative cooling systems.”

Moreover, other authors propose solutions to “mitigate the environmental impact of data centers.” For example, Chidoule & Ohenhen (2024) emphasize energy-efficient hardware and cooling systems as “vital components for sustainable data centers,” while Santamaria (2024) and González Monserrate (2022) highlight the need for greener infrastructure and regulatory measures. Roundy (2023), CREA United (2023) and Supermicro (2023) point to the “growing demand for data storage and computation,” calling for “sustainable practices” to reduce the environmental footprint. Across these works, there is a shared understanding that the “transition to green data centers and frugal AI” requires a mix of technological advancements and societal shifts toward minimizing “unnecessary resource usage.”

The aforementioned means that most of the solutions to the problems derived from the technological infrastructures of large corporations, and especially those solutions proposed by the same corporations that have

caused the problem, do not question the currently existing economic model. They are always focusing on improving energy efficiency, adopting renewable energy and providing transparency to “help users” make more “sustainable choices.”. But as we will see, what is unsustainable is the data-driven, exploitative and extractive dynamic that continues historical capitalist narratives about innovation and progress.

According to Reseco de Dios (2024), the promotion of renewable energy projects is being clouded by corporate “eco-myths” that misinform about environmental consequences. This includes biodiversity loss, habitat fragmentation, unsolved management of toxic waste and increasing the risk of fires. Just like tobacco and fossil fuel industries have done in the past, the information provided by energy companies is not always truthful.

Actually, the massive energy consumption by tech companies such as Google, Microsoft, Meta and Apple raise urgent sustainability questions. Hale (2024) compares their electricity usage to that of entire countries, especially with their recent investments in AI: Google and Microsoft are now consuming more than countries like Jordan, Puerto Rico or Croatia. Just to mention some other references that help us to size up the problem, Google has generated 14.3

million metric tons of carbon dioxide, which is equivalent to the emissions released by 38 gas-fired power plants in a year (González, 2024). Also, according to Ethic (2024), if the Internet were a country, it would be the sixth most polluting country in the world in terms of emissions.

Going deeper into AI, we find that its rapid integration into everyday internet interactions has drained local energy grids and consumed vast amounts of water (Hale, 2024). With the AI boom, corporations are planning to build massive data centers, even if a single one of those can use “as much electricity as 900,000 households, and consume the same amount of water as a city of 50,000 people” (NTIA, 2024). By 2030, these facilities are expected to use as much power as 26 million average homes, which is 8% of the electricity in the United States (Goldman Sachs, 2024)

From the above, we see how the energy consumption of large corporations is unsustainable for the environment. That is why it is also urgent to question discourse and metaphors associated with technologies. While the cloud is maybe the first one we need to question, the “network” metaphor is also insufficient, according to Neilson & Rossiter (2022), in that “the network metaphor cannot explain how the physical wiring of data centers generates

distinct topologies that determine how different clients, users and labour forces interact (or don't) in digitalized environments" (p. 11).

The power of such metaphors, and the inadequacy of political-corporate discourse and actions to achieve a truly sustainable future, is demonstrated by the report *Behind the could: environmental impacts of digitalization* (Grupo ETC, 2024).¹ They use a qualitative approach, combining case studies from different regions with data analysis on the environmental and social impact of digital infrastructures, to illustrate the broader implications of cloud computing and data storage. The report highlights the hidden environmental costs of those technologies, including land use, water consumption, carbon emissions and the socio-economic effects on vulnerable communities worldwide. The latter will be discussed in the next sections.

Interconnections Between Data and Waste

In this section we consider how technological infrastructures and waste management interact. This issue raises questions about the implications of digital extractivism, and the environmental challenges associated

¹ Translation from the original title: *Detrás de las nubes: impactos ambientales de la digitalización* (Grupo ETC, 2024).

with managing data in conjunction with physical waste, emphasizing the need for actions and solutions. We also mention some proposals that are already addressing the problem.

Notably, Steyerl (2011) has argued that “despite its apparently immaterial nature, digital wreckage remains firmly anchored within material reality” (p. 25). She mentions the example of Guiyu, in Guangdong, China, which was the largest e-waste hub in the world, characterized by hazardous informal recycling practices. According to Mujezinovic (2019), the government intervened in 2013 by creating an industrial park as a “solution,” to centralize and formalize e-waste recycling, pushing smaller workshops out of business to make the city “cleaner.” But that cleanup meant that most recycling is now taking place in the industrial park under still very poor and harmful conditions. It has disproportionately burdened local workers, who face decreased income and continuing health risks, while elites and the government benefit from the changes.

Circular Tech (2023) examines the growing issue of e-waste and the challenges associated with its disposal and recycling. They highlight the unsustainable practices that lead to piles of digital waste and stress the importance of proper e-waste management, which,

although expensive, can recover valuable resources. The text discusses the social and environmental costs of improper recycling, particularly in poorer countries that are often burdened with hazardous e-waste from richer nations, as in the case mentioned above by Mujezinovic (2019) in China.

What is being done? The so-called circular economy has been implemented in some major cities nowadays, to have “some sort of e-waste recycling project,” but some of these “might be doing a better job than others” (Circular Tech, 2023). Recycling, alongside social mobilization, is demonstrated through initiatives like “Recylatron” at the Autonomous University of Nayarit in Mexico, which has launched participatory projects for the collection and management of electronic waste (Saldaña-Durán & Messina-Fernández, 2021). Other examples are the experimental e-waste processing facility at the National University of La Plata in Argentina (Poll, 2019), or the Nodo TAU’s establishment of an e-waste plant in that same country (Rovero, 2023).

The above-mentioned examples are noteworthy, but concerns remain regarding the broader implications of extractivist economic models, particularly in relation to the technological infrastructure, production, environmental

degradation and social justice. To build future technologies that are truly committed to the protection of life, it is necessary to “reconnect with other local, nearby models of consumption that foster diversity,” giving rise to proposals that are “based on caring for people, communities and environments” (Ciacci, 2023).

Community Impact and Environmental Justice

The hidden ecological damage behind the digitalization narrative has consequences on bodies, territories and communities. For that reason, we need to address issues such as water scarcity, land use, and the exploitation of local resources by the Tech Giants.

The report *The dirty side of clean energy in Puerto Rico*, commissioned by Mijente and Idebajo (2024), investigates how corporate interests have exploited the country's transition to renewable energy, particularly in the context of megaprojects like CIRO One and Two. These industrial-scale solar projects, framed as “clean energy solutions,” are criticized for their environmental and social harm, corruption in approval processes and because of their failure in delivering the promised lower energy prices. The research demonstrates how private entities have prioritized profits at the expense of local communities, agricultural lands and

Puerto Rico's food security, questioning the legitimacy of those projects as sustainable energy solutions.

Something just as serious is happening in Querétaro, México, where two large Microsoft data centers are located. Lara (2024) explains that despite the extreme drought affecting the region and the scarcity of water, Querétaro is planned to become a major hub for data centers, attracting investments up to US\$ 12 billion in the coming years. People of Colón, a nearby municipality, do not perceive benefits from technological development or understand how artificial intelligence works, but they are aware that water is essential for their survival. The lack of regulation in Mexico allows companies to build their centers without adequate supervision, unlike other countries such as Uruguay, where the population has protested against the excessive use of water by technology companies.

Despite statements by officials highlighting job creation through these centers, there is a disconnect between local needs and policies to attract investment. Lara (2024) mentions that water use by Microsoft and other companies has increased significantly, with reports indicating a 24% increase in water use since the launch of Chat GPT. However, no clear figures are provided on the water consumption of these companies in Mexico, raising concerns and questions

about the sustainability of their operations in a region already affected by drought.

Tech giants are also expanding their data centers in Chile, particularly in Santiago's metropolitan area, where 16 centers have been built since 2012. These centers consume vast amounts of water, posing a significant threat to local water supplies in a country experiencing a prolonged drought. Local activists and environmental groups are pushing back, filing complaints and demanding stricter environmental regulations. Despite promises from companies to mitigate their impact, locals remain skeptical of the environmental costs, especially regarding water usage and the need for more robust environmental impact assessments. It is remarkable how the communities and environmental groups are protesting, demanding transparency and compensation (Urquieta, 2024).

Another meaningful example is explained by McGovern & Branford (2023), who describe how local communities in Uruguay are protesting against the construction of data centers due to their high-water consumption and limited local benefits, asking corporations to hold accountable for their environmental impact. Residents are questioning the decisions by their governments allowing companies to build “water-hungry mega-data centers.” In Latin America and

other countries from the Global South, the building of these facilities prioritizes corporate interests over the basic human need for water.

According to Masood & Bhattacharya (2024), local villagers from Mekaguda, in Telangana, India have filled a petition claiming that Microsoft has illegally encroached on their land and dumped industrial waste into a nearby lake. Despite the company's assurances that they are complying with local laws, villagers remain concerned about environmental contamination and the impact on their livelihoods. The case remains unsolved, and the data center is expected to be completed by 2025, with Microsoft denying the accusations and claiming full compliance with regulations.

Microsoft's ambitions are striking, as shown by their interest on using nuclear power as a reliable solution for their energy-intensive AI operations. Valisnky (2024) reports that the Three Mile Island's Unit 1 nuclear reactor, shut down five years ago, will reopen in 2028 to provide "carbon-free energy" exclusively to Microsoft under a 20-year agreement. It will also power Microsoft's data centers for its artificial intelligence ambitions. Enabled by President Biden's climate bill, which promotes nuclear energy as part

of the “clean energy transition.” they promise to generate 800 megawatts of electricity and create jobs. However, the issue of waste disposal is still a long-standing environmental concern.

Tech corporations are pushing their technological infrastructure projects through with “as little transparency as possible,” so the people don’t know how harmful they can be (Cooper, 2024). As we mentioned, giants like Amazon, Meta and Microsoft are building expensive facilities that require immense water and energy resources, and their projects are concealed from the communities due to nondisclosure agreements (NDAs) and misinformation (Cooper, 2024).

Sánchez Contreras & Matarán (2023) propose the concept *Colonialismo energético* [*Energy colonialism*] to describe how the energy transition, driven by corporations and states, leads to the dispossession of indigenous and rural territories in Mexico and worldwide. Despite the promise of clean energy, such as wind and solar, the aforementioned projects benefit major companies while local communities face the exploitation of their lands. The concept critiques the lack of prior consultations with these communities and the unequal access to the benefits of renewable energy.

There are ongoing tensions between large corporations, communities and environmental management. While companies assert full compliance with regulations, activists and people from the communities allege that those corporations have instead deepen environmental degradation, displaced communities and fail to provide the promised jobs or affordable energy. Thus, these projects do not maybe represent viable solutions, reinforcing the premise that we need a community-driven approach to achieve environmental justice.

Community-Based Projects and Digital Activism

All of the above reinforces the need for alternative and autonomous models for internet communications infrastructure projects that prioritize community needs and environmental sustainability. For that reason, this section will emphasize the importance of grassroots movements and collective action against extractive technological practices.

...We must reverse the 'winner takes it all' approach that dominates digitalization and challenge the new 'space race' that favors military technologies, geoengineering and other forms of earth manipulation (...) [to] ensure that all current and future digitization and space-

related tech is carefully assessed before deployment, based on the precautionary principle, with a view to prioritizing and promoting the well-being of all people, the environment and our planet (Grupo ETC, 2024, p. 15).

Digitalization, cloud computing and data centers are not as environmentally friendly as often portrayed (Grupo ETC, 2024). Instead, they act as an engine for new forms of extraction that threaten ecological balance and exacerbate already existing social inequalities. For that reason, we have to ask why responses to the climate crisis are designed for these large data centers, leaving aside smaller projects with quite different characteristics?

By analyzing the evolution of digital networks, Sursiendo (2019) also questions the monopolization and exploitation of the internet by major corporations. They highlight the degradation of user experience and the environmental impact of massive data centers. However, they propose a shift toward “small web” initiatives—personal, community-driven projects that prioritize privacy, creativity and sustainability.

Nancy Mauro-Flaude (2022) agrees on the need for autonomous, community-driven digital networks that subvert traditional hierarchies and help to reimagine how servers operate, shifting from centralized and authoritarian control to participatory, ethical and intersectional systems that reflect different values from those of corporations and governments. Her idea promotes digital literacy and creativity in network design, enabling alternative ways of interacting with digital infrastructures, while also addressing issues of sovereignty, data control and environmental impacts.

In the conference about digital extractivism organized by Sursiendo, Red Tierra Común, (f<A+i>r) and Rancho Electrónico, Jaime Villarreal (2022) from May First highlights that the data we generate on online platforms is raw material for digital capitalism. He discusses how AI algorithms depend on our data to function, and how our online actions contribute to the construction of profiles and content used by corporations for profit. He also mentions the importance of Latin America as a market for these platforms and discusses how Internet access is often provided through services subsidized by large corporations such as Facebook or Google.

Villarreal also mentions the connection between digital extraction and physical resource extraction, especially in relation to the growth of data centers and the energy and water consumption they require. He presents the May First cooperative as an example of how an alternative, community-based digital infrastructure can be built not based on extractive practices. He stresses the importance of raising awareness about the environmental and social impact of our use of technology and emphasizes collective responsibility in caring for these infrastructures.

We need a radical rethinking of how digital infrastructures can operate and challenge the dominance of current systems (Mauro-Flaude, 2022). That is why we interviewed groups in this research that are already making that change possible, in order to find answers (or generate more questions) on climate change on our own terms, considering our worldviews and our needs to move forward.



5

Methodology

Our main instrument was in-depth open interviews to allow groups to guide the conversation themselves and share experiences and perspectives in their own words. We complemented with surveys to gain further insights. This type of participatory methodology is ideal when the research objectives are related with social change, regarding an issue or problem that needs deep understanding (Franz, 2024); it is also helpful for working on under-explored topics, and for mapping or naming issues that still need theoretical construction. We wanted participants to feel comfortable sharing authentic perspectives (Robinson, Barron & Pottinger, 2021).

To select the groups, we tried to have diverse cases considering the type of service they offer, years of experience and geographic location. Our conversations and questions were centered around the sustainable practices they have already implemented in their organizations, the main blocks and obstacles they have found when thinking on environmental justice and the maintenance of their technological infrastructures, their future projections, ideas and needs for continuation and support.

6

Results

The topic, questions and objectives described in the introductory section are related with action strategies for environmental sustainability. They are from and for groups that, like our participants, represent a diverse array of autonomous and community-based providers dedicated to offering technological infrastructures. Their services include hosting websites, creating email accounts, system administration and more, designed for movements and organizations advocating for social and environmental causes.

Each group operates with a commitment to privacy, supporting collectives, organizations and other movements working for social justice, standing in stark contrast to the profit-driven and extractive practices of

large tech corporations. Here we list and briefly describe the interviewed and surveyed groups:²

Interviews

- * **Maddix**: platform based in Spain that simplifies server management for people without technical knowledge, promoting free software adoption.
- * **GreenNet**: collective based in the U.K. providing internet services and hosting to activists supporting human rights, peace and environmental causes.
- * **Cloud68**: collective that offers managed hosting services prioritizing privacy and security for grassroots organizations. Members are based between Italy and Germany.
- * **Koumbit**: worker-run cooperative based in Canada that supports open-source technologies and collaborative infrastructures.

² The brief description of each group has been taken from their website and from the way in which their members characterized them in the interviews and surveys.

- * **Riseup:** secure provider of communication tools for activists and social justice movements, based in the US.
- * **MariaLab:** feminist organization based in Sao Paulo, Brazil, working at the intersection of gender, technology and politics to promote digital security and care.
- * **Sutty:** collective based in Argentina specializing in static web solutions, to minimize energy consumption and promote accessible, lightweight digital infrastructure.
- * **Código Sur:** organization based in Costa Rica focused on creating digital tools for social change and fostering technological sovereignty.
- * **Numun:** feminist tech fund from the larger/majority world that seeds and sustains feminist technology infrastructure for movement organizing.
- * **May First:** non-profit membership organization based between US and México that promotes collective control of technology for social transformation and local struggles.

- * **Sursiendo:**³ Organization, based in Chiapas, Mexico, that works in the defense of collective digital rights to achieve more open and collaborative environments.

Surveys

- * **Colnodo:** non-profit organization based in Colombia that offers internet services using free software, with a strong focus on community autonomy and data privacy.
- * **Undernet Uruguay:** collective based in Uruguay providing alternative communication tools and services, emphasizing autonomy, reuse and minimal resource use.
- * **Archipiélago I:** project based between Central America and Europe, offering community-driven digital services with a focus on care, expression and minimal infrastructure.
- * **Sindominio:** autonomous collective based in Spain that runs free software infrastructure through

³ Sursiendo was consulted because of their experience in accompanying territory defense processes and because of their work around technologies and environmental justice. They are not a technology infrastructure provider.

voluntary, trust-based participation and without commercial interests.

- * **Access Now:** international organization offering internal tech infrastructure and encrypted communication tools to support digital rights and collective security.
- * **Electric Embers:** worker cooperative based in San Francisco providing open-source web and email hosting with long-term support for grassroots organizations.
- * **Greenhost:** independent provider based in the Netherlands offering secure web hosting for civil society, with a focus on privacy and reliability through a responsive, human tech support.

Most of the groups mention their **Community-centered models**, emphasizing that they operate through democratic, community-based structures, rejecting the surveillance and data mining practices of big corporations. They highlight privacy, autonomy and alignment with anti-capitalist values. They also find **local and non-expansionist philosophy** important, addressing specific needs and having direct interactions with local users rather than pursuing exponential growth.

While there is a common basis that characterizes these groups, the people interviewed mention specific issues that are at their core values. For example, Código Sur (2024) emphasizes its emergence "from social movements with another vision of the world; an anti-capitalist, anti-patriarchal, anti-racist, anti-sexist world, another possible world, above all from the people, for equality and equity." Also, in the case of Numun and MariaLab, they emphasize their feminist approach that stems from a need for more spaces made by and for women, especially in the technological field. More details about the characteristics and visions of each group will become available as these results are outlined.

Sustainable Practices Already in Place

When asked about the practices they have already implemented to make their infrastructure more environmentally sustainable, most groups agree on the indirect benefit of not collecting data to have lower consumption. There is also a conscious data usage promoted at the discourse level, because these groups challenge corporate narratives about "unlimited resources," encouraging people to rethink the value of their data and the environmental impact of storing it forever.

Most groups are dissatisfied with their current environmental sustainability practices and express a desire to make further improvements. However, they all keep the issue in mind and comment on some actions already implemented. First, they strive to **extend hardware lifecycles** as long as possible, reducing e-waste to the minimum, as Koumbit (2024) mentions:

We use servers that are 15 years old, there is a difference there. Some are very old. There are other groups that take them out after 5 years. We do a rotation, we try to put the best ones where they are most needed, but if not... we take that to a recovery center that removes the metals, we do what we can.

—Koumbit, interview 2024

All the groups prioritize reusability and repairability of hardware. Just to mention a few examples, MariaLab incorporates donated and second-hand equipment into their infrastructure, while Maddix uses recycled hard drives, and Cloud68 uses refurbished laptops. Suttty even has an **electronics workshop geared towards**

modern recovery and other telecommunications devices. As another group explained: “We try to make sure no piece of hardware goes to waste—repairing and reusing are at the core of our practices” (MariaLab, interview 2024).

Green Net, Riseup, and Koumbit (interviews 2024) mention their **renewable energy adoption**, especially because in places like Quebec and Seattle the power is all hydroelectric. Greenhost (survey 2025) selects high-efficient data centers and hardware, as well as wind energy, and they invest in wind farms, while Electric Embers (survey 2025) purchases “Native Energy carbon credits each year to offset” their electricity usage.

Even though, Riseup is not completely happy with measures like using only hydroelectric power, nor do they see it as a definitive solution to the problems derived from the consumption of technological infrastructures. As one of them mentions:

There are solutions being proposed but they don’t challenge those that are in power and have control over these things. The changes that we really need are much more threatening to the

power structure. Corporations control the media, politicians and other groups are interested in keeping the system going. The changes we need are more fundamental than that.

—Riseup, interview 2024

Another group mentions that, even if this is not a definitive solution, **getting data centers to check their environmental policy** can help:

Lots of data centers have certifications, we check that proof. In the beginning we didn't know how to do this. There are certifications done by third parties. You need to do homework and research and see if they have a focus on that, or check where they are located. Data centers in Spain or Italy would require more energy than a data center in Stockholm for example. So, the location matters. Also check for transparency: Do they mention how much they have reduced their

**emissions, if they have a pledge to try
to become more sustainable?**

—Cloud68, interview 2024

A recurring theme among the groups is their **support for environmental organizations**. By providing secure hosting and digital tools, they enable these collectives to focus on advocacy and actions, creating “bridges between their know how and the specific needs of those organizations” (Cloud68, interview 2024). As Código Sur put it, “helping environmental groups amplify their message is part of our contribution to social justice” (interview 2024).

The groups also identify the **use of free software** as something more committed to sustainability, because it means not having to write everything from scratch. As one of them mentions:

**... everything that Riseup does is based
on free software and we participate in
free software communities. We are
trying to be as efficient as possible
providing services to movements, and
the most efficient way to do that is
also not write a bunch of software**

ourselves but take a bunch of existing software that is already out there and combine it together to make it work and generate services.

—Riseup, interview 2024

May First (interview 2024) adds that although free software may also have contradictions, it is an enabler to generate things from a shared open source, with philosophies that try to build community around that common good. The idea connects with the intention of Maddix (also very committed to the use of open source software) in **collectivizing time**: “Instead of working so many hours on each small project, why don't we try to collectivize this time by thinking of a way to automate and split development and maintenance costs? There is an idea of **time ecology**; to share efforts and experiences” (Maddix, interview 2024). This focus on sharing is also very present in the values of Código Sur, since among their sustainable practices they mention that they make pacts and alliances with other organizations, making trueques [non-monetary exchanges], in order not to waste so many resources.

Sutty, in addition to agreeing on the preference for free software and the interest in collectivizing knowledge and

time, is focused on creating **lightweight, static websites that consume less energy and data**, catering to resource-limited environments:

The panel developed by Sutti generates a site that is html, with images, and practically nothing else. Then, when someone asks for it, the server says: I have it here. That's what it is, I don't have to compute, ask, compose, or integrate anything. Here is the html, the images, it's finished. A site with these characteristics consumes less energy, less hardware, and in general uses less bandwidth. (...) Our sites consume much less energy and that helps a lot, because we don't need to keep expanding through data centers and data centers for so many issues.

—Sutti, interview 2024

They are also working on projects **enabling offline access to websites** via cellphones, so people in remote areas can use digital tools without needing constant connectivity:

There is a technology that Sutti is pioneering in the southern cone, integrated with site fabrication, which allows systems to operate in remote areas without connectivity. For example, a person in a phone can have a local copy of the knowledge of their community, go to another community, and exchange without being connected to the Internet. These are projects that explore other types of networks.

—Sutti, interview 2024

The technology of static websites and experiments with offline web accessibility, among other actions, reflect that Sutti's solutions are especially impactful for environmental collectives and for the organizations they support.

On the other hand, GreenNet (interview 2024) considers that their use of **virtual servers** also helps with environmental sustainability, because software can be used to make one physical server “act like 5 or 10 servers.” That is a way to try to do as much as they can using the least hardware and energy that they can.

Regarding virtual servers, Archipiélago I, Access Now (surveys 2025) and MariaLab (interview 2024) also mention that they **share machines** and use virtual ones to make better use of the physical structures of the servers:

If each server is for a single service, it would be unthinkable, what is often done then is to share space with other groups. This is something that a lot of server activist projects do, they are used by many groups. The virtual machines are for each group to have its own autonomy.

—MariaLab, interview 2024

From the consulted groups, only Colnodo and Código Sur are maintaining **an autonomous data center**. Colnodo (survey, 2025) mentions that theirs is connected to a solar energy system (18 panels, 30% of energy consumption), and they expect to reduce that consumption with a recent acquisition of a new server that allowed to shut down other two servers. On the other hand, Código Sur recycles a lot of equipment to maintain their data center, trying to optimize bandwidth as much as possible. They believe that this practice contributes to social and environmental justice, since all of their practices are usage-dependent. In other

words, by being aware of what they must maintain, the volume of data they have and its implications, there is greater care in the use of services: “everything in its right measure” (Código Sur, interview 2024), unlike corporate monopolies that simply ask the user for more money to have more gigabytes.

Another sustainable practice is to **have a long-term vision when developing technologies**: “it is not about solving something specific, but about thinking in the long-term so that it lasts and works well” (Código Sur, interview 2024). They also make a conscious review of the applications they use, trying to be as selective as possible. Finally, we highlight the mention made by most of them about the incorporation of **“not using IA” as one of their fundamental policies**. As Numun mentions, when developing or using a specific technology, they do so in a way that is “intentional, careful and not indiscriminately consuming data” (Numun, interview 2024)

Main Blocks and Obstacles

Most of the groups find **economic barriers**, high operational costs and limited funding that **restricts their opportunities to experiment** and explore new things to have more sustainable technological infrastructures. They also find a lot of **cultural resistance**, based on user

preferences for visually-heavy, data-intensive web designs and lack of open-source adoption, which present educational and advocacy challenges.

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MariaLab, Maddix, Numun (interviews 2024) find important **geopolitical constraints** when thinking on environmental justice, since infrastructure placement is often dictated by urban connectivity hubs, making decentralization very difficult. Archipiélago I (survey 2025) mentions the lack of reliable regional/local infrastructure that sometimes forces dependance on large-scale data centers. In relation to those ideas, Numun (interview 2024) mentions:

**We need a conscious de-centering.
Not always going to the metropolitan
or capital city but reaching out people
beyond our comfort circles. I know**

that on one hand activism is built on friendship, and there is a geographical factor of proximity. But how do we allocate more for those outside this already existing circles? In Indonesia we talk a lot about waste management. There is a lot about “oh reduce waste,” but what about the waste pickers? We have mountains of waste being dumped here and almost nobody knows about this.

—Numun, interview 2024

For some other groups the main obstacle is **not having even had this conversation** (Sindominio, survey, 2025) or not having a clear idea about what else they could do (Koumbit, interview, 2025). For instance, one of them expressed they don’t believe additional actions are feasible within their constraints: “We run our servers as long as we can and use the resources we have efficiently. I don’t know if we can do much more” (Koumbit, interview 2024).

This sentiment reflects broader challenges among small organizations balancing sustainability with operational realities. However, most of them express interest in

knowing what others are doing, how they have thought or how they have imagined their possibilities for implementing improvements in environmental terms.

Although most groups use their infrastructure for as long as possible, Riseup (interview 2024) mentions that sometimes “older equipment can be less efficient,” and that means that **the way hardware is designed involves a very tricky obstacle** in terms of environmental sustainability. Electric Embers (survey 2025) comments on their increased need for hardware upgrades due to growing web traffic from bots, AI crawlers, and CDN proxies. Greenhost (survey 2025) adds that their small-scale sometimes limits negotiating power with sustainable hardware suppliers. Riseup express their desire to overcome this problem, and tell us how they have handled it so far:

We have had to kind of try to balance those things. Big corporations and computer manufacturers charge so much money; thousands of dollars for these new servers is because they are more efficient, and those corporations are trying to drive everything towards efficiency. But to get those efficiency

gains there is an externalized cost in terms of e-waste and other things. So, what we've been doing is trying to just stay one or two generations back.

—Riseup, interview 2024

May First concurs with this difficulty, adding that it can be a frustrating place, because sometimes extending the life of hardware and reducing the amount of energy consumption can go against each other, and there are other similar situations: “We want to be more decentralized but we want to meet the needs of the communities that we serve and sometimes, that implies that we can't be that close” (interview 2024). As one member of the group continues explaining, there are contradictions between our desires and what “the actual layout of the internet permits.”

Many interviewees highlight concerns regarding **hardware and resource exploitation**, to which we referred in the literature review, mentioning the environmental and social costs of hardware production, including community displacement, exploitation and excessive natural resource extraction. As one of them noted, “the true cost of these machines lies not just in their energy use, but in the exploitation involved in their



creation” (GreenNet, interview 2024). Another group emphasizes that many of these systems are designed with minimal consideration for reparability or sustainability: “Machines today are built to be replaced quickly, not repaired. This perpetuates extraction and waste” (MariaLab, interview 2024). This is related to a major obstacle in the **structural inequalities behind the creation of digital technologies**, which the commercial discourse made almost invisible; that invisibility enables the reproduction of those inequalities and aggravates the disconnection between communities and their territories (Sursiendo, interview 2025).

The aforementioned is deeply connected with the obstacle that Cloud 68, May First and GreenNet (interviews 2024) find in the **narratives controlled by big techs**, as one of them mentions: “modern technologies, cloud technologies come with a mindset; the assumption that everything is available and infinite” (GreenNet, interview 2024). That is one of the reasons why, as MariaLab explains, it is so difficult to embed the environmental care with technological infrastructures in terms of knowledge and social struggles: “a lot of people don’t know that there are alternatives to Google and Microsoft, we are a very small part of the chain of digital infrastructure communication technologies.” They also comment on the difficulties of the system demanding constant connection:

It is complicated to fight to make things different when everything around is constantly telling you that you need to be connected: the deadline is tomorrow, the funding expires tomorrow, you need to be connected, work, work, work!

—MariaLab, interview 2024

Future Projections and Ideas Regarding Sustainability

When asked if they have any future projections or ideas on how to solve problems related with the environmental cost of maintaining technological infrastructures, all the groups interviewed agree on the importance of **continuing to support projects dedicated to promoting and enabling environmental justice**. They also agree on the importance of **improving reutilization and repairability protocols**, as well as collaborative protocols for sharing efforts to achieve sustainability-related goals.

GreenNet does not rule out the possibility of **transitioning into cloud computing models**, including **the use of containerization technology** (they specifically mentioned Docker containers and Kubernetes). According to them, that could allow for more efficient use of server resources

by allocating memory dynamically, reducing hardware requirements and enhancing scalability. As one of the members explained: “using docker containers enables us to make efficient use of hardware, running multiple services securely on fewer machines” (GreenNet, interview 2024).

Among the groups surveyed (2025), Colnodo mentions that they are working on projects to **improve the monitoring of energy consumption**, and on developing **more community-driven environmental data collection**. Sindominio is also exploring environmental sustainability within its community. They expressed their desire to “**think about lowtech models** and discuss them in assembly and seek collective learning” (survey 2025). About that last idea, Undernet Uruguay (survey 2025) shares interest in **reviving old low-energy computing technologies**, such as BBS-style servers and CollapseOS.

Another thing that came up several times in different interviews is their desire of **having more collaborative infrastructures**. Shared infrastructure models, such as pooled servers and even joint data centers, could benefit in terms of resource efficiency and reduce hardware needs. MariaLab mentions the idea of having shared **activist servers** and considering “how to organize ourselves to not only to offer more possibilities of access to other groups, but also to **share the infrastructures we have and to organize ourselves jointly, in solidarity, to maintain those**

infrastructures” (MariaLab, interview 2024). In the surveys, Access Now (2025) also demonstrated interest on getting better at promoting shared hosting infrastructure to reduce redundant server deployments.

Maddix (interview 2024) express their desire to have one new member in the team, dedicated almost exclusively to **investigate and inform the user community** about relevant topics on energy consumption and the environment. In relation to this, Greenhost (survey 2025) mentions that they are now involved in research about sustainable hardware and permacomputing with other groups. This would directly support the intention expressed by May First and Cloud68 to have more interaction and outreach about the work they do with technology infrastructures. In this way, they could “build more communities that work around the issue” (Cloud68, interview 2024) and “maybe have a formal, **official position on technology and the environment**” (Koumbit, interview 2024). As part of those efforts, we as groups can advocate for repairable, modular technology and promote lightweight software solutions (GreenNet, Koumbit, Cloud68, interviews 2024; Archipiélago I, survey 2025).

MariaLab agrees with the ideas of these three groups, adding that they would like **the gender-technology experience** to be considered in those conversations (interview 2024), because:

If we think about the communities that have been involved in environmental issues for a long time, most of them have a strong gender component. Many are women who work in the field, indigenous women, black women, who have long been involved in the struggles and talking about the problems of technology, and the exploitation of nature in general

—MariaLab, interview 2024

In the same spirit of generating more collaborations, Sutti comments: “There is no turning back, but there is a possibility to raise awareness, to make things visible and to accompany each other, as a community, in our survival” (interview 2024). They also mention the importance of **communities being part of these dialogues**, talking about social justice and questioning together with them things like the concept of ecology:

Companies and big monopolies hide a guilt washing, they say 'I do this ecological thing, and in the background I put 800 contaminating

servers'. As an alternative, there is the community, the territorial, which makes the ecological take another value. The anchoring in the community involves learning together: what is ecological? what do we need? It is not a canned package of what is going to work, and that brings complications because each territory has particularities, issues, urgencies, access, difficulties. This varies a lot from territory to territory.

—Sutty, interview 2024

In a similar tone, Código Sur (interview 2024) explains that their future projections do not have so much to do with the virtual, but with having a **physical space** for meeting, training and exchange for **collective creation of solutions**. Numun agrees on the importance of making possible spaces with those characteristics, since among its future projections is the continuity of its *Feminist Tech Playground*: **“a space for people to exhale, play, experiment, work with ideas** that they’ve long had but didn’t have the resources, the space or the friends to do it with...” (Numun, interview 2024). About that project, they consider the possibility of having more conversations around the environmental crisis on their next gathering.

Numun shares some ideas that emerged from one of their brainstorming sessions, related to environmental justice. One of them is experimenting on making electricity or **generating power through mud**, or try to **build solar panels using bamboo**. In the case of the latter, they clarify that explorations are already underway in Indonesia. About other ideas, they continue commenting:

Also, biomechanics. In one of our brainstorming sessions, we discussed that in Indonesia we have many places that are remote, and you must walk a lot to reach other places. What if cycling can be used to generate electricity? In remote places you need maybe a bike, or whatever... We haven't hosted the gathering to discuss these ideas, we have gathered those ideas from friends, etc... there are many other interesting ideas that applicants may have.

—Numun, interview 2024

May First (interview 2024) considers the issue of **decentralization** to be important, pointing to an ideal scenario in which “we have a huge ecosystem of alternative

providers so people can choose the closest.” So, instead of becoming “giant centralized providers,” these groups desire “**a network of organizations doing the same** thing, supporting users in more places and allowing more collectives to appear” (Riseup, interview 2024). To move towards this goal, it is important to question the narratives, as mentioned above, starting with the words themselves, as May First suggests:

If you are looking for an alternative to a situation you have to change the way you look at the world, for that alternative to be sufficient and desirable (...). That is why we are not an alternative to the big corporations, we do not want to be another mega company that has all the clouds and emails, because we do not want to be a replacement for the world we do not like; we want another idea of the world, and our way of putting that other idea of the world into practice is through technologies.

—May First, interview 2024

The groups are oriented to the idea that things can work better “**having closeness and proximity**” (Numun, interview 2024), giving more **autonomy** to the people that are using the services, “to collectively face and build capacities to improve our practices, from a place that keeps us safer and where we care about the other person and the groups we work with” (Sursiendo, interview 2025). Código Sur explains that decentralization would help to solve problems such as the environmental cost of technological infrastructures, because:

**When projects are small, autonomous,
decentralized, they find better
solutions. More consensual,
discussed, in relation to technologies.
Capital has always tried to eat
everything, but in the end it cannot eat
everything and cannot buy everything.
That has been a philosophical bet: you
cannot buy everything, we are not for
sale. That has to do with why we do
what we do.**

—Código Sur, interview 2024

This decentralized and autonomous vision that promotes consensual technologies, allows us to see that it is not only about having more efficient communications services, but

also about “accompanying processes of political construction that respond to the limited world in which we live, from the logic of finitude (not infinitude)” (Sursiendo, interview 2025).

Something remarkable that Maddix and Numun mention is that **the solution cannot be individual**. As one of them puts it: “we can’t stay with individual actions, we need to consciously and politically allocate the resources to the open source, advocating for its use in government offices and schools” (Numun, interview 2024). They continue explaining:

I haven’t specifically looked at the environmental impact, but... I feel like for example Microsoft is the one company forcing to adopt AI. If we consciously push for more adoption of open source it reduces the number of people, units that are using Microsoft and using AI. Also we won’t be paying them. Although is true that not all open source are by default not doing data mining... That means you are not paying the company that is making the most damage to the environment.

—Numun, interview 2024

Speculative Ideas

When we asked them to think speculatively about what would need to happen to make infrastructures more environmentally sustainable Numun, MariaLab and Código Sur emphasize the importance of creativity in addressing sustainability. About that, one of them mentions: “we would be **making our own hardware and software**, with more **decentralized access and bandwidth**, with more rights regarding Internet access, because Latin America has a high bandwidth gap in relation to Europe and the United States” (Código Sur, interview 2024).

May First, Koumbit, Sutti and Código Sur explicitly mention how beneficial it would be if we could have machines fabricated with less environmental impact, that respect our values, but those kinds of machines don't exist yet. In relation to this interest, another group mentions the importance of a **free hardware movement**:

We are subjected to technologies driven by corporate models. It is interesting to think of other ideas. Just as there is a free software movement, there might be a free hardware

movement; people trying to figure out how can we de-marketize stuff and make it not just controlled by big corporations, but also create some of this things... It's easier with software, but with hardware... there is people thinking about it, but is a tough problem.

—Riseup, interview 2024

Riseup was very enthusiastic with speculation around solutions or ideal scenarios, among the things that came up during the conversation, they mentioned: recapture the heat produced by waste and machines in collocation facilities and repurpose it for other uses, make biodegradable servers, computational photosynthesis, plants that can produce electricity during photosynthesis, plant-based fuel cells, micro-organic matter that release electrons that can be used to power servers and fermentation process where you produce electricity.

Most of the ideas imagined by Riseup are related to biological and natural processes, which empathizes with Sursiendo's vision of **digital technologies as socio-technical processes**: “There are many technologies prior to digital ones, which are results of socio-technical

processes. If you think about agriculture (not the current one), food or cooking, they are technologized systems that many times respond to their own communities, environments, climate conditions; they respond to their cycles, why couldn't we generate digital technologies like that? We have not tried, how do we know it is not possible?" (Sursiendo, interview 2025)

Other insights that came from the speculative brainstorming (sometimes between jokes and laughter and some other times in a more serious tone) were: to interfere in the decisions of the ministry of education, to stop power based data centers in nuclear plants (Cloud68, interview 2024), to eliminate AI (Koumbit, interview 2024), to turn off the Internet sometimes, block Google and Meta and go to ecovillages (MariaLab, Sutti, interviews 2024), and to stop looking at evolution from the colonial model (MariaLab, interview 2024).

Necesidades de continuidad y apoyo

When we asked the groups about their main needs to continue providing their services and accomplish the social and environmental justice that they desire, almost all of them highlight **financial resources as a critical need** to accomplish goals like being more environmentally sustainable.

The use they would make of that extra money is varied. Among several things, they mention “play and experiment” (May First, interview 2024), hiring someone part-time dedicated to investigation and networking (Maddix, interview 2024), involving more in educational initiatives so people can understand the importance of our existence (GreenNet, interview 2024), and investing time in learning from other initiatives (Cloud68, interview 2024). Suttty mentions their need of finding ways to strengthen community subsistence:

Those ways can be through money, financing, or deciding that we need to live in ecovillages and generate another form of subsistence and aggressively go there. Burning ourselves out the way we're doing it doesn't seem to be very consistent with our own livelihood and resistance approach.

—Suttty, interview 2024

There was also a lot of interest in **fostering stronger networks of like-minded organizations** that could facilitate resource sharing, collective problem-solving and mutual support (MariaLab, Código Sur, Numun, May First, Maddix,

interviews 2024). Finally, an interesting idea that MariaLab proposed is our need to radically imagine:

Here we are, imagining things for an hour and a half, but have you noticed that every time we talk about speculating, we are almost apologizing with each other? Apologizing because we don't know if those things are possible. That's how we lose possibilities, it does not matter if it is not something concrete, we need to imagine, but life is all the time telling you: no, you are not going to create things that are not possible. These spaces to imagine are important and we have less and less of them. We need more of these conversations. We must be radical in some situations, I don't see any other possibility; we have to break some things.

—MariaLab, interview 2024

7

Conclusions

This report concentrates the contributions of small and medium-sized technological infrastructure providers to environmental sustainability. The groups demonstrate the viability of community-based, non-extractive practices in an atmosphere that is largely dominated by big corporate monopolies. While they agree on facing significant challenges, related not only to environmental justice but to sustainability more broadly, their unique ideas and deep commitment to the communities and people they support offer valuable insights towards our shared desire of more sustainable technologies.

One of the things groups seem to agree on the most is that they don't want to do this alone, but instead share the effort towards sustainability. Together we could imagine and dream big but start small, coming up with shorter road-maps that build towards long-term goals. We could share infrastructures, have more accessible ways of reusing equipment and take more steps on technical information sharing and training to get more people involved not only in environmental struggles, but also as participants in back-and-forth conversations between the technical and the political to understand and make more visible how they are intertwined.

We could also continue evaluating the feasibility of having our own data centers based in our environmental principles, seeing things as common goods and not resources, and never stop asking fundamental questions about the way in which Internet communication technologies are designed, sold and used. We could dedicate time to receive feedback from our surroundings, to understand if what we are doing is having the impact we would like it to and respecting life cycles.



8

Possible Actions Towards Sustainability

The following is a brief and concise summary of possible actions that can help us to make our infrastructures more environmentally sustainable, derived from the interviews, the surveys and the reflections expressed in the previous sections:

Hardware & Infrastructure Practices

* Establish more local and collaborative repair workshops, like Sutti's electronics recovery efforts, to extend the life-cycle of hardware and keep working on repairability and reusability.

* Evaluate the possibility to set up autonomous, small-scale or locally-run data centers where feasible.

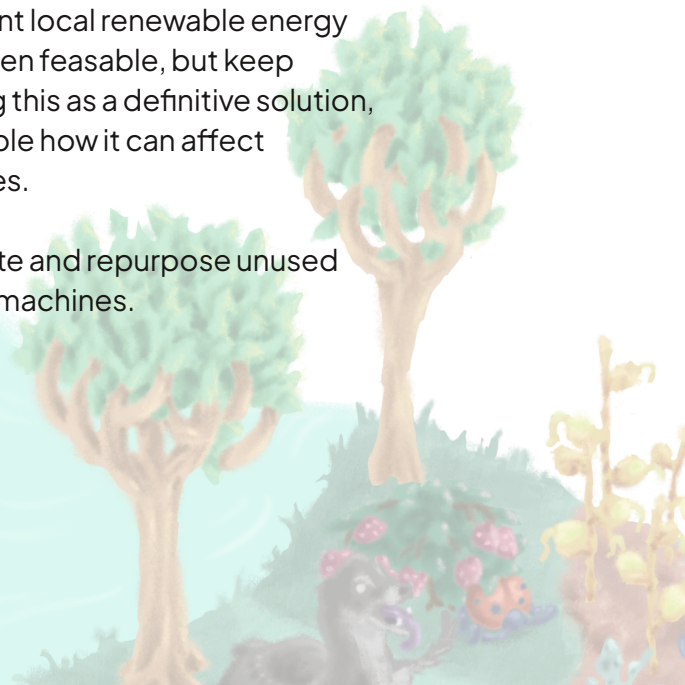
* Explore containerization, virtualization and lightweight options for better common goods use.

* Continue advocating for **free hardware** movements to design technologies more aligned with our principles.



Energy Use and Common Goods Awareness

- * Choose low-energy solutions: static websites, lightweight applications and limited multimedia.
- * Evaluate and choose data centers based on real sustainability commitments (e.g. location, transparency).
- * Implement local renewable energy systems when feasible, but keep questioning this as a definitive solution, making visible how it can affect communities.
- * Deactivate and repurpose unused services or machines.



Software & Digital Practices

- * Adopt and contribute to free and open-source software to avoid proprietary lock-ins and unnecessary resource use.
- * Avoid AI-based or data-intensive services that replicate extractionist models.
- * Favor modular, low-tech and repairable digital solutions over centralized platforms.
- * Investigate permacomputing in software design and deployment.



Collective Approaches & Political Imagination

*Think more on shared infrastructure with aligned groups to avoid redundant equipment and increase mutual support.

*Make more agreements based on solidarity: non-monetary exchanges, shared maintenance or community training.

Keep supporting environmental justice

*movements through tailored tools, digital security and strategic partnerships.



Knowledge, Culture & Learning

- * Dedicate time and roles for environmental sustainability research, reflection, documentation and community education.
- * Promote collective learning spaces to explore more solutions from a gender perspective.
- * Keep encouraging digital hygiene and intentional data use.
- * Question dominant tech narratives (e.g., "the cloud," "innovation," "infinite resources") that obscure diverse realities.



Creative & Speculative Proposals

- * Experiment with new possibilities of generating energy (mud, bamboo solar panels, pedal power, heat recovery).
- * Imagine and demand repairable, biodegradable and ethically-sourced hardware.
- * Propose non-digital or hybrid infrastructures for low-connectivity areas.
- * Reclaim the right to turn off the internet, reduce connectivity pressure and slow down tech rhythms.
- * Create more spaces for radical speculation, collective dreaming and anti-colonial approaches to sustainability, without apologizing for imagining a different world.



9

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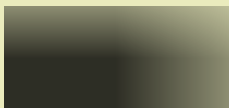


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Sursiendo, along with May First Movement Technology, is researching action strategies to embed environmental sustainability into autonomous internet communications infrastructure projects. Drawing on participatory methodology based on conversations with autonomous and community-based providers, this report documents current sustainable practices already in place, key obstacles, future projections and speculative ideas toward environmental justice. Groups emphasize shared infrastructures, hardware longevity, free software, and collective approaches. Challenges include dominant narratives about “unlimited resources,” limited time to experiment, centralized infrastructures and lack of repairable hardware. The report highlights the importance of collaborative action and radical imagination to create technologies more committed to the protection of life.



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