Towards a Sustainable Data Commons Ecosystem

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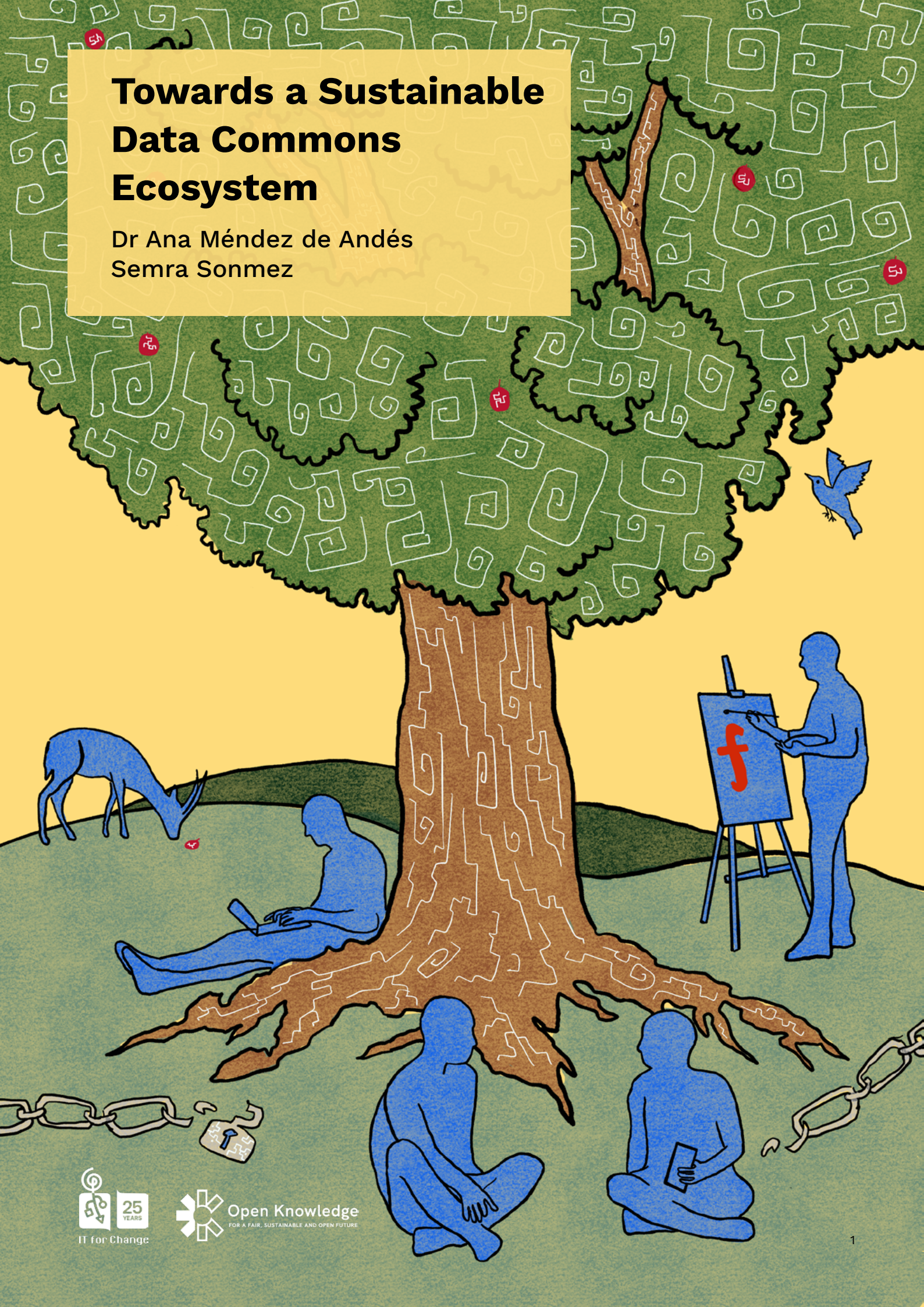

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Founded in 2000, IT for Change is a Southern NGO rooted in feminist principles and committed to advancing digital justice through the democratization of digital technologies. It holds Special Consultative Status with the United Nations Economic and Social Council (ECOSOC).

About the Open Knowledge Foundation

The Open Knowledge Foundation works at the intersection of cutting-edge digital tools and a distributed network of communities and movements to serve the public interest with open knowledge.

About the Fair Green and Global Alliance

Fair, Green and Global Alliance is a consortium of eight global organisations whose goal is to expand civil society voices to make trade and global supply chains just and fair in Global South contexts.

About the Centre for Global Digital Justice

The Centre for Global Digital Justice (CGDJ) is a policy resource center that aims to further Global South visions of digital governance and technological innovation.

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Executive Summary

This is a time of self reflection and change for many open data communities. Our current digital environment is characterized by extreme data extraction and consolidation of power by data and AI companies that aim to monopolize not just the tech sector, but the everyday art, media, commerce, and knowledge around the world.

As a movement, we are beginning to assemble the pieces of a giant puzzle. In the context of digital colonialism and corporate data surveillance and authoritarian control, we seek to understand what claims to data sovereignty do communities have, and how data governance frameworks should be adapted to local contexts, languages, and concerns. At the heart of the matter is how to put communities at the core of our understanding of what makes openness, in general, and open data, in particular, instrumental for unlocking social justice.

Considering data as a commons expands the opening of datasets to democratizing decisions about what kind of data is shared, who has access to it and for what purpose. Communities organized around open data, in institutional, academic and creative domains, foster alternative socio-technical imaginaries of collective governance grounded in diversity, inclusivity and care. This shift contributes to social justice principles of equity, access, participation, and protection of community autonomy, privacy, and benefit sharing.

The development of public data communities, low-tech research instruments and methodologies, and new tools and licenses that make it possible for communities to decide how their data is reused, assert a situated technological sovereignty by taking authority over the production, use, and stewardship of local knowledge and tools. Licence and governance regimes based on open principles protect communal authorship, ensure attribution and benefit-sharing, prevent data expropriation, and center the voices and rights of the citizens, researchers, and communicators who contribute to a common, shared, pool of resources we call ‘data’. This collective endeavor for democratic governance is an act of resistance against tech companies that vacuum up data through global digital surveillance.

This report is based on 28 interviews with open data project leaders across 12 countries and four continents about the current challenges and opportunities they see, across the fields of local government data, open science, and open graphic design.

Their perspectives and our academic readings inform our analysis of key aspects of the sustainable data commons ecosystem, as well as our related recommendations around collective data rights around four main aspects:

1. Civic technological sovereignty: Data-as-commons reframes sovereignty as who produces, interprets and controls socio-technical systems so openness supports collective justice rather than eroding it and includes:

- Right to data interpretation
- Right to community data integrity
- Right to fussiness and obfuscation

2. Conditions for sustainability: Sustainable commons require material, social and economic conditions that enable collective production, low-resource participation and protected experimentation without exclusive dependence on external funders:

- Right to low-tech
- Right to spaces for experimentation
- Right to transform shared needs into collective possibilities

3. Supporting structures of the data commons: Commons need public, collectively-stewarded infrastructure (material and social) plus governance, locally adapted open principles, and active stakeholder communities to ensure accountability and reuse:

- Right to civic data governance (institutional/legal tools)
- Right to develop open principles adapted to local contexts
- Right to build stakeholder communities

4. Logarithmic justice: AI should assist collective understanding, not replace democratic agency; communities must control AI's role, build local models, and federate data responsibly for accountable, context-sensitive systems:

- Right to civic agency in AI
- Right to a situated local-AI
- Right to collective data structures

Our central point is that if we want to see sustainable data commons, we need to care for the communities and ecosystems that will imagine, support and build them into existence together.

This isn't only about protecting individual or collective data rights, but about articulating alternative visions for sustainable data commons ecosystems for the decades to come.

The original open definition is due for refresh, and the commons offers a framework to understand the challenges and also the possibilities of a paradigm change. The puzzle pieces are only just being laid out.

Introduction | Why Data Commons?

In this report, we explore how to shift the narrative about 'open data' so it centers more on community governance of data than on free access and use of data. Conceptually, it's about focusing on people and purpose more than on data and technology in a digital environment characterized by the extraction of collective goods by corporate powers. In practice, this shift can contribute to: new practices of openness that benefit data sharing communities, new license models that combine community protection and wealth generation, and a shared understanding of what frameworks and tools are needed for commons-based data governance.

The Open Knowledge Foundation (OKFN) and its global community has been at the forefront of defining 'openness' for the digital commons for the past decade—including with numerous legal and technical tools that are used by public institutions, civic organizations and social movements worldwide (Open Knowledge Foundation, n.d.; CKAN contributors, 2025).

Open data and the digital commons have long been proposed as an antidote to corporate dominance and digital inequity, but in reality "open data" is not a sustainable option for many communities unless they can gain more control over who generates wealth and power based on their data and how.

In response, OKFN has changed focus from 'open data infrastructures' to 'data commons ecosystems'. This gradual shift is a result of new understandings of digital harms and inequities, including around intellectual property for vaccines and medical devices; by the advance of blockchain and cryptocurrencies; and by the sudden ubiquity of artificial intelligence (AI) and large language models.

Too often, tech goes hand in hand with colonialism, climate harms, race and gender-based violence. And yet, the tools for communities to manage open digital assets still usually do not facilitate ethical and inclusive alternatives.

This is why OKFN has embarked on updating the original 'Open Definition' by identifying new modes of governance and ways of sharing value, whether in the context of open government data and information—produced by public organizations to serve public interest, to protect fundamental rights and to generate economic value—or in the collective production of knowledge and social justice advocacy (Ávila, 2023).

Questions of technical sovereignty sit at the intersection of public, collective and individual data. Thinking of data as a commons, opens up a space for negotiation between the complete openness of public data and the protection of private data with different grades of permission and restrictions, unlocking the economic, social and cultural value of communal data and knowledge while collectively protecting communities from exploitation and misuse.

Glossary

From a wide range of academic literature exploring the concept of ‘the commons’, ‘collective governance’, and ‘communities’ that we have reviewed, we wish to share a few shorthand definitions:

- **Commons** is a form of social organization created at the articulation of a shared resource, self-organized governance and a community through commoning practices (Linebaugh, 2008; Ostrom, 1990).
- **Data commons** is a socio-technical ecosystem that incorporates connections and interdependencies between communities and the creation, protection, dissemination of digital content (Oliveira et al., 2018; Singh, 2019; van Maanen et al., 2024).
- **Digital resources** can be created and shared by institutions or government bodies, formal or informal communities and collectives, individual contributions, or through collaborative co-production. (Gurumurthy & Chami, 2022b).
- **Communities** are stakeholders, subjects, creators or users of data. They can be researchers, civil society collectives, governments, businesses or people using data to advance social justice (Federici, 2019b).
- **Data governance** is a multi-layered system of legal, technical and social structures that are co-produced and collectively validated at different levels, from global to local (Gurumurthy & Chami, 2022b).
- **Sustainability**, in the context of data, refers to how shared data is valued and the structures and investments needed for the production and protection of data and collective activities in the public interest (Ávila, 2023).
- **Technological sovereignty** refers to the right to participate in decisions about technology as the ‘socio-material apparatus’ of societies that connects collective visions and actions (Latour, 1990).
- **Data sovereignty** is the individual and collective capacity to decide how “data and data-enabled intelligence” is used as part of ‘the public commons of social knowledge’ (Gurumurthy & Chami, 2022a, p. 9).
- **Data justice** is about equitable access to data, community ownership, shared accountability, and fair distribution of benefits and harms, as well as access to legal and technical tools (Dencik & Sanchez-Monedero, 2022).
- **Open government data** is data that is made publicly available following a triple logic of serving the public interest, protecting fundamental rights, and generating economic value (Tarkowsky & Zygmuntowski, 2022).

Sustaining a data commons ecosystem depends on interdependent relationships between data, people, and all their related activities, where sustainability "relates not only to the data but also to the community involved in their governance" (van Maanen et al., 2024, p.3). Technology standards based on openness, interoperability, and scalability—along with a protective governance model and a healthy community—prevent both clientelism and the capture of innovation benefits (Gurumurthy et al., 2025).

This is why 'data commons' should not be considered as a free-for-all, inexhaustible resource—as in the global commons—but rather as a necessary element of a 'digital intelligence' whose value arises from its "application to real world physical systems", based on community relationships with real, material, territories, embodied resources, and related systems of control (Singh, 2019).

Data commons paradigm

Our approach to data commons differs from open data in important ways that are inseparable from questions of social justice.

While open data is centered on 'sharing' and places emphasis on the technicalities of openness—data commons instead centers communities without which there are no commons (Mies, 2014).

When communities make deliberate decisions about what to share, how to share, for which purpose, and for whose benefit, this is not just about 'participation', but about addressing power and equity in terms of whose knowledge/data is recognized, whose interests are served, and how benefits are distributed.

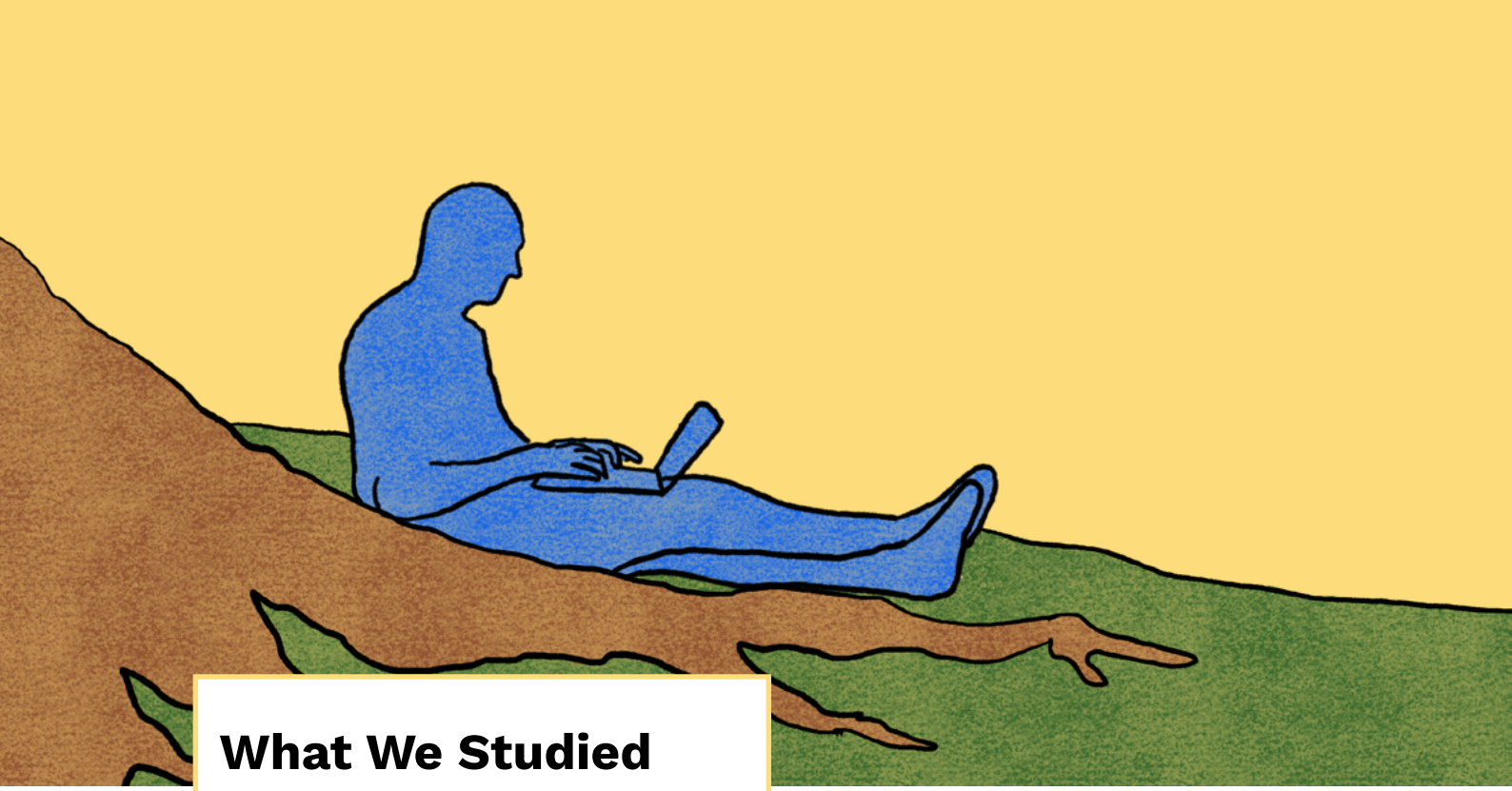
The reframing of open data infrastructures as a data commons ecosystem is also in line with recommendations of the Data Justice Policy Brief of the Global Partnership on Artificial Intelligence (2022).

The two main aspects of data commons relevant to a data justice rights approach are:

- The individual and collective right to democratically participate in the design, development and deployment of data-intensive systems (including AI) as well as in the governance of the data and systems based on it. In other words: the right to produce and access shared data resources, to create the communities that sustain them, and generate self-organized modes of governance.
  This aspect is manifested in various ways: democratic participation in public decision-making enabled by open government data; open-research communities developing their own open-science principles to balance global standards with local priorities; and community-led graphic design enabling collective self-representation in visual communication.

- The right to alternative and collective forms of data stewardship within legal frameworks or other models —such as data trusts or cooperatives— managing data in the collective interest. Also, the articulation of national data sovereignty with global governance principles within a multi-layered personal, corporate, community and national responsibilities. This aspect is manifested in various ways: working with different civic and private stakeholders in the case of open government data; engaging with communities beyond academia in open science; and addressing cultural transformations in interconnected issues in graphic design.

All in all, we're talking about sowing the seeds of alternatives to Silicon Valley business logic and data extraction. Sharing data won't change the world on its own, but with communities defending their rights to data justice as part of a broader agenda, there is hope in the face of dystopian tech futures.



What We Studied

This study analyzes how communities make sense of shared data in environments that aim to support social justice. Our goal is to inform a new generation of legal, technical and governance tools that promote and sustain the production of data commons.

We had three general areas of focus:

- How should we promote the expansion of data commons worldwide?
- How can we address the difficulties communities face in collaborating and sharing?
- How do we define sector specific practices that contribute to data justice?

We examined three different community environments to better understand the social, technical and legal frameworks needed to support a robust, sustainable and inclusive open data commons.

Our findings and recommendations are based on interviews with 26 people across 12 countries and four continents involved with sharing data in three different types of communities: open local government, open science, and open graphic design [**See Annex: Interviews**].

Following feminist theories of the commons and of relational interdependence (Federici, 2019a), this qualitative research involves a bottom-up, reflexive, assembling of situated practices, understood as a multi-tiered ecosystem of data generation, interpretation, protection and sharing. In our practice, we sought to ensure that the research is of benefit to participants too, offering a distinctive alternative to top-down, centralized and hierarchical infrastructures of knowledge production and recognition.

Our Three Case Studies		
Open local government Initiatives to serve the public interest and protect rights. **Keywords:** good governance; economic development; transparency; public information; participation; accountability. **Social justice?** Supports democratic processes and freedom of information: not just due to technical efficiency, but by incorporating a fair distribution of socio-economic benefits and functions, including a deepening of community solidarities (Tauberer, 2014; Senabre Hidalgo et al., 2024).	**Open science** Open access to knowledge as a collaborative movement. **Keywords:** shared datasets; collaborative knowledge production; research for the common good; mutually agreed governance protocols. **Social justice?** It's part of a movement for "access to knowledge" that opposes intellectual property logics of accumulation in science, culture and arts, but also in health, Indigenous knowledge, and food production (Krikorian & Kapczynski, 2010).	**Open graphic design** Open licenses for creative works and copyleft culture. **Keywords:** collectively shared digital content; creative commons; freedom to reuse; modify; copy; share; redistribute. **Social justice?** In cultural production, 'copyleft' licences countered the appropriation and privatization of collectively shared goods, initially in the field of software, usually in the Global North (Lessig, 2004).

All three stakeholder communities deal with different content and sharing environments and alternative governance structures. In the diagram below, we show how these environments (open local government; open science; and open graphic design) are positioned in relation to each other in the open data ecosystem. Each occupies a different position along a spectrum of formality and structure—ranging from the tightly regulated realm of open government data to the loosely organized world of open design.

Where are case study organizations situated in the open data ecosystem?

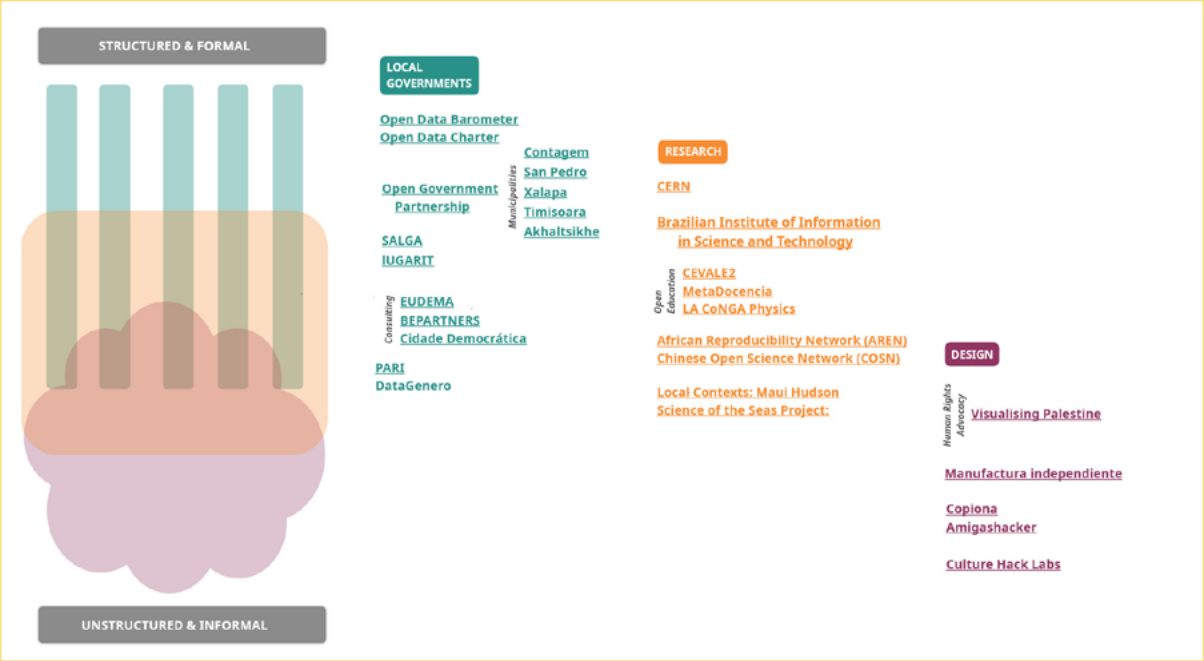


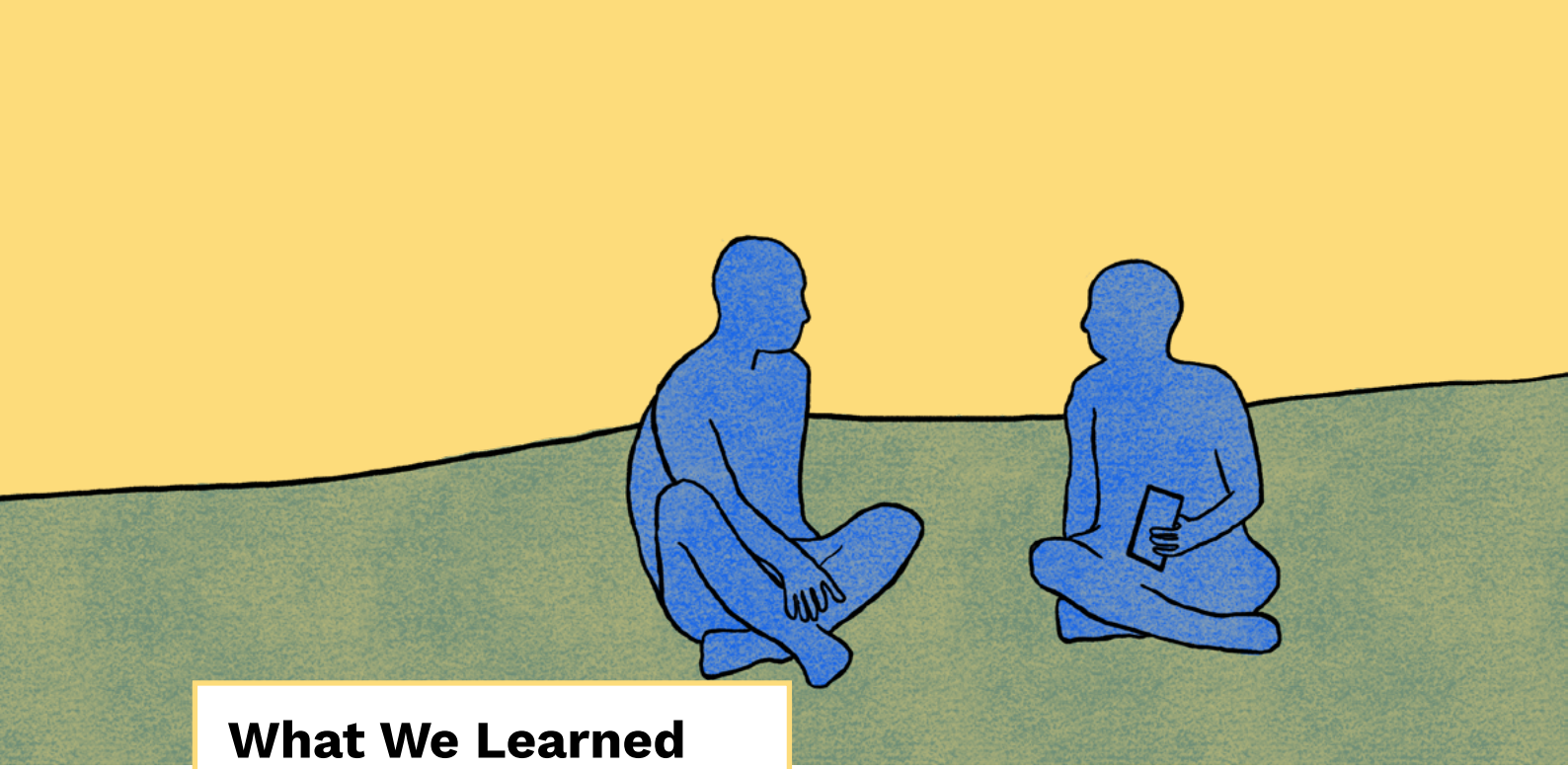
Figure 1: From structured & formal to unstructured & informal in the open data ecosystem: open government, open science, and open graphic design. Source: Open Knowledge Foundation (CC-BY) 2025

The diagram above shows how the three communities studied are situated in different positions, between structured and formal procedures and frameworks for data and unstructured and informal contexts.

At the structured and formal end, we have national and international open data initiatives operating under legal mandates, standardized policies, and institutional data schemas. However, we have also seen how small municipalities with limited resources, technical expertise, or governance systems rely on informal arrangements based on cultural norms. They may also need the collaboration of civic society and academic researchers to analyze and make use of the data, as in the case of the hackathons organized in San Pedro Garza García and Xalapa, in México.

At the informal end of the spectrum, individual designers and small collectives generate creative content that rarely adheres to metadata standards, licensing, or reuse protocols. It is often distributed through ad-hoc platforms, like social media or personal websites, and is difficult to discover, aggregate, or integrate with other data sources. Graphic productions that rely on research analysis, such as Visualizing Palestine, compile data from different institutions, while other initiatives deliberately choose methods that are not as machine readable.

The open science movement hovers somewhere in between. It has gained momentum through policy, funder mandates, cross-border collaboration, and shared infrastructure, but a significant portion of research is locked in commercial journals—often based in the Global North—and datasets are frequently created in bespoke formats, high-intensity technical facilities, or held in proprietary systems that hinder reuse and preservation. Open academic knowledge initiatives working to bridge Global North-South social and technical divides adapt large datasets to low-tech, low-resource environments as open education materials.



What We Learned

Below, we share our aggregate findings based on situated experiences [**see Annex - Interviews**] about challenges and opportunities faced in relation to open data right now. We have gathered lessons and learnings from the analysis of interviews and public documentation of initiatives. Our own experience with local governments, academic research and visual communications have allowed us to approach these initiatives with a purposeful sampling based on our own experiences.

Although not all of the challenges and opportunities are shared—and we do recognize that there are historical and contextual differences—in our analysis we have focused on overarching commonalities and resonances with the potential to contribute to a shared data commons ecosystem.

Case study | Open local government data

For this case study, we have focused on experiences that apply open data in open government efforts to promote democratic participation.

Although there are thousands of government open data initiatives, there is also major global disparity in where they have taken root. There are many challenges, but security threats and shrinking civic spaces in many regions often affect the actual implementation of government action plans and commitments. (Open Data Charter, n.d.; Open Government Partnership, 2021).

We interviewed people in places with fewer than one million inhabitants only, based on the idea that local initiatives are more connected to urban social justice paradigms, have greater proximity to city resources, and to decisions about them, an approach articulated as the ‘right to the city’ (Lefebvre, 1967) and to the urban commons (Urban Commons Research Collective, 2022).

The challenges and opportunities we have identified in the open local government data initiatives involve key elements of a sustainable data commons ecosystem, especially in relation to democratic governance.

Challenges	
‘We don’t have the data we need’	At the local level, data is often scarce, unavailable or unaccountable. In countries with highly centralized governance, open data by local government is mostly produced as part of a national system, making it less available and useful locally.
‘Open government data serves no purpose’	A lot of local data refers to administrative questions for reporting to national governments with no apparent utility for other stakeholders. Even when it’s potentially useful—or sought after—it can be of low quality, unstructured and fragmented. Data repositories may be difficult to locate or access and may not have been updated. Open government data in the Global South often relies on external funders who initiate projects, but do not fund over time.
‘What use is data without interpretation?’	Raw data is difficult to interpret. Often open formats are not user friendly (eg. APIs or basic .csv files) without metadata or data visualization tools. AI could potentially be used as a tool for analysis and interpretation of datasets, but there is not enough open government data at the required scale to feed models in low data environments. AI also tends to fail on reliability and accuracy.
‘We don’t have the institutional motivation or capacity’	Often public officials do not see the benefits of making data available, even if civil society wants it. Others may endorse openness simply to follow a trend, to comply with laws, or to add to their portfolios—in which case, there may be no real commitment to implementation. Also, many public institutions fear negative consequences from opening data, while private data holders can be protective of maintaining a competitive advantage by restricting access to open government and other publicly available data.
‘The tools aren’t built for us’	Tech from the Global North can lead to unsustainable dependencies when deployed in the South. For instance, through use of commercial freeware (e.g. Google Docs, ChatGPT) that do not comply with data privacy rules or are not fit for task. Or it can involve the use of paid software that is too complex or costly to customize and modify or update. Small municipalities who don’t have the capacity to create or analyze their own data, often partner with universities who then do not share data or metadata they use, nor the methods and tools they develop.

Opportunities	
‘The purpose is clear now’	Ten years ago, open data was a promising concept that did not have as many clear use cases. Now open government data plans and policies can be updated to introduce accountability and transparency measures; implement more efficient service delivery; promote citizen participation and co-production.
‘There is an appetite for open tools’	The rise of training datasets for AI have made openness newly relevant. At the same time, many of the tools used for open projects (whether personal or institutional) are commercial freeware or cloud services by Big Tech and Big AI companies. Open source tools can be easier to customize. For instance, in Brazil, the government chose the free and open source software platform Decidim for their participatory processes precisely because of its openness and adaptability.
‘Civil society can play a bigger role’	WIth a more general understanding of what open data is (and how to create it) the focus can shift towards who will benefit from the data and how. With emphasis on collaboration between different sectors, including civil society—the narrative around AI or Smart Cities, for instance, can be less centered on private actors and service providers to focus on common good.

The policies and projects by local administrations to make data publicly available are especially illustrative of the differences between setting up open data infrastructures and developing data commons ecosystems. Public projects focused on infrastructure are more focused on data itself, while a focus on community ecosystems emphasizes data’s usefulness for advancing social rights.

The former is often evaluated by the number of data sets and their accuracy, and the latter by their usefulness to different communities. One relies on technical expertise, the other on social relations.

Local governments often benefit from a combined approach. Open data initiatives are boosted by community initiatives—including by public workers and collectives for various populations at risk. In Mexico, citizen datathons and hackathons—for instance, on gender violence and climate remediation—were organized to connect researchers and activists for social and environmental justice with open data initiatives. In Timisoara in Romania, civil society organizations propose to make use of AI tools to empower disenfranchised communities in their interpretation of open local government data . At the same time, many government initiatives have had issues keeping their data relevant and updated over time.

Case study | Open science

In this case study, we explored the challenges and opportunities of sustainable data commons among pioneering initiatives in the Global South. These include open education initiatives in Latin America, a governmental institution in Brazil, traditional knowledge-based science in India and Navajo Nation mainland US, and researcher-led open science initiatives in Africa and China.

All of these initiatives are experimenting with new models for sharing various research artifacts, educational materials, and traditional knowledge.

A core principle of open science is FAIR—Findability, Accessibility, Interoperability, and Reuse. However, ethical and legal concerns have led to complementary frameworks like the CARE Principles—Collective Benefit, Authority to Control, Responsibility, and Ethics—developed by the Global Indigenous Data Alliance to protect Indigenous rights. (GO FAIR Initiative, n.d.; Global Indigenous Data Alliance, n.d.).

Often, open science policies in Europe and the Americas emphasize open access and data but neglect equity, diversity, and public engagement (Chtena et al., 2023). As a counteract, Nicki Cole, Stefan Reichmann and Ross-Hellauer (2023) propose to adopt a “global thinking”—a systemic, inclusive strategy fostering shared understanding and aligning infrastructure, incentives, and policies—paired with “situated openness” (Chan et al., 2019) that centers local contexts over Global North models.

Moreover, the rise of AI has raised concerns about exploiting local data in proprietary models without fair return, underscoring the need for decolonial approaches that go beyond abstract ethics to emphasize mutual learning, and community solidarity for equitable AI systems (Mohamed et al., 2020).

In other words, efforts to build sustainable data commons must navigate a complex mosaic of languages, disciplinary norms, and power dynamics, balancing global open-access ideals with local priorities and sovereignty over knowledge resources and governance.

We consider open science as a strategic opportunity for researchers/scientists to address epistemic injustice (Fricker, 2007) in the Global South by:

- Claiming, reclaiming and reappropriating their technological sovereignty, by assuming authority and control over their own data production and the knowledge generated around it.
- Reclaiming science and research as a knowledge/data commons as a way out of a competitive, unbalanced system of incentives and rewards towards a collaborative model.

- Fostering a science open for all (Santilli, 2025) by recognizing other ways of knowing (Indigenous, feminist, decolonial, community-based) that are pluralistic and self-critical.

The challenges and opportunities we have identified in open science involve key elements and characteristics of a sustainable data commons ecosystem, especially in relation to scarce resources.

Challenges	
'There are no incentives for open science'	Career advancement and funding in academia is largely evaluated on the basis of publications, not on the basis of openness or knowledge sharing. The most high impact journals are typically commercial publications that require a subscription or article processing charges. The highly time consuming effort of sharing reusable data is not rewarded. On the contrary, there is often bureaucratic resistance to open science from late-career researchers in management roles due to systemic inertia.
'Our data is used unfairly'	Major research institutions often appropriate data from less-resourced researchers without fair recognition or benefit sharing. We heard repeated concerns that contributions from the Global South are undervalued or rendered invisible ("epistemic injustice") without proper citation—on final works as well as on intermediate artefacts. For cultural rights to be protected in open science, we need equitable academic credit for a sustainable data ecosystem that respects the dignity of all contributors, especially people from historically marginalized communities.
'Our tech infrastructure isn't reliable enough'	Limited access to stable internet connections, electricity, and computational resources impedes effective data sharing and reuse. Even when the infrastructure is available, there may be few training opportunities for educators and researchers to clearly understand how to utilize open tools effectively and responsibly. This also constitutes a risk in relation to sensitive and private data, which further hinders the spread of open science.
'We haven't figured out the licensing or governance'	The datasets in our open education cases were not especially sensitive, but broader concerns about privacy, consent, and misuse remain critical, especially in regard to traditional and Indigenous knowledge. Although there have been key governance mechanisms and initiatives, such as Local Contexts, IEEE Standards Association P2890, and Kaitiakitanga License, developing labels, protocols, structures, standards and licenses for sharing, use, re-use, and interoperability remain big challenges to overcome.

Opportunities	
'We can work together'	Interviewees see opportunity in cross-border cooperation with academic and nonacademic peers that are respectful of reciprocity principles. This cooperation strengthens collective regional agency and can help mitigate the isolation of institutions, and facilitate the sharing of infrastructure and knowledge between countries and municipalities.

Opportunities	
‘Open from the bottom up”	Official resistance to open science or to changing the curriculum can be gradually addressed from the bottom-up, with new elective courses at universities that allow for more organic adoption and integration over time. Sometimes limitations of infrastructure—say for electricity and internet access—lead to new innovations on formats and citizen science methods for data initiatives that can be adopted by others worldwide. For example, new methods and tools developed in low resource contexts in Latin America were later also used in Global North environments for citizen science.
‘From grassroots to government’	Grassroot leadership of data initiatives can align with a sense of community, participation and inclusivity. It can enhance local ownership and adoption of open science practices, and it can unlock culturally and linguistically appropriate access to education, which is essential for decolonizing knowledge systems. However, you also need government policies that can support the continuation of open sharing practices for real systemic change.
‘We can reconfigure traditional institutions’	Libraries could be transformed into information centers that also offer services for open sharing and support students and researchers in adopting data-sharing practices. This is an important transformation that some academic libraries work towards in Brazil, according to our interview with the General Coordinator of Scientific and Technological Information at the Brazilian Institute of Information in Science and Technology [see Annex - Interviews]. In this regard, universities and educational institutions can lead changes in academic assessment.

The difference between considering open data as infrastructure or as part of a commons ecosystem is especially evident in our Indigenous open science cases.

Data as infrastructure emphasizes machine-actionability and broad reuse, but often overlooks collective rights, territorial authority, and long-term relational obligations, which are central to the concept of Indigenous Data Sovereignty. A commons approach, by contrast, foregrounds stewardship and puts communities in the center of the decisions about the boundaries of access and reuse.

In the Science of the Seas project in India, for example, discussions over what counts as data or as expertise in the realm of fishing, exposes the epistemic injustice of dismissing spiritual and relational knowledge about planetary resources. (The Wire Science, n.d.).

Explicitly recognizing these aspects of knowledge, is a way of affirming cultural rights. In another Indigenous data project, Local Contexts, communities are equipped with metadata labels for their datasets and digital collections—such as Traditional Knowledge (TK) and Biocultural (BC)—in order to assert collective governance over how they are accessed, displayed, and reused. (Local Contexts, n.d.) The purpose is to assert the cultural rights to transmission of Indigenous knowledge as well as spiritual relationships to land and waters. At the same time, it is a way to assert social rights for community participation, consent, and institutional accountability. And finally, it also relates to economic rights, in terms of power of resources, benefit-sharing, and negotiating commercial or non-commercial uses of genetic or biocultural data.

Case study | Open graphic design

This case study is based on conversations about content sharing with graphic designers and organizations working on open culture, feminism, open source tech, and human rights in Latin America, Europe and the Middle East. We consider data justice in the context of authorship from and for communities, and the use of licenses to help govern open and equitable sharing.

Over the past decades, the internet has enabled unprecedented levels of knowledge production, transfer and collaboration in the realm of art and culture. On the other hand, the rise of tech monopolies and oligopolies has also limited the potential of ecosystems. Right now, art and design is at the core of controversies- as well as numerous lawsuits- over digital extractivism for AI training data. (Brittain, 2024).

In our research, we discovered deep interdependencies between our three case study communities. Governments often serve as custodians of public data; data is interpreted by social scientists; and communication is facilitated by the data visualizations of graphic designers.

An example of a community that combines data, research, and graphic design, is Visualizing Palestine. This women's design collective turns data into visual stories about conflict and humanitarian crisis in Gaza for advocacy. This initiative (Visualizing Palestine, n,d.) is part of a growing field of design-focused human rights projects which includes, among others, A Cartography of Genocide (Forensic Architecture, n.d.), and Tracking the Urbicide in Gaza (Beirut Urban Lab, n.d.).

The challenges and opportunities we have identified in open graphic design involve key elements and characteristics of a sustainable data commons ecosystem, especially in relation to collaboration and the involvement of communities.

Challenges	
'We want to restrict access'	While some share graphics in all possible formats, others restrict access to editable formats to preserve information integrity. Designers are increasingly aware that online data is mined, and there is little to do about it. Beyond the mere extraction of images, there is also valuable metadata associated with digital files. Some designers have removed their work from Instagram to avoid data mining by Meta, but many can't afford to be invisible to potential clients.
'The information ecosystem is polluted'	One effect of AI, is the proliferation of uninteresting, boring and repetitive illustrations and stock images that cater to different markets. AI-generated images that contribute to misinformation and confusion are prolific on the internet. It pollutes the information ecosystem to an extent that it casts doubt on the genuine work shared by activists.

Challenges	
‘Who is responsible for data?’	Population data is frequently nonexistent in the Global South (one term for it is “data poverty”). In data-based graphics related to conflict and human rights, public data from national and transnational institutions is scarce, fragmented, and unevenly categorized. For instance, there are few institutions responsible for data creation about people who are stateless or seeking refugee status, and therefore there is no real data sovereignty.

Opportunities	
‘Openness offers inspiration’	Open culture revolves around an acknowledgement that knowledge production is collective: the designer takes data describing reality, translates, synthesizes, and generates something new, but the process is only possible because of what existed before. Open source acts both as an ethical reference and as a creative tool.
‘The margins are great spaces for experimentation’	While corporate digital design becomes slicker and more uniform, activist graphics can be experimental, barebones or ‘unconventionally pretty’. There are opportunities to develop new ‘visual imaginaries’ that obfuscate machine surveillance with unconventional formats and queerness. From the margins, Global South creators have a unique vantage point from which to innovate on the role of communities and collective data projects.
‘Real life matters!’	Cooperative, informal economies can be resilient against AI and digital monopolies, because they also involve physical production and distribution networks. As Karen Barad (2003) wrote, “matter matters”. Designers also download and print content, and share artefacts in analog form. Not everything happens on the internet.

In our analysis of open graphic design initiatives , one important distinction between open data and data commons approaches was the kind of infrastructures needed for public commons agreements.

Some of the initiatives we studied, such as Visualizing Palestine, demanded public access rights to accurate data about conflict. Other communities demanded rights to conceal their data from extraction by AI companies, situating themselves—as one interviewee said—‘outside the homologable universe’ of AI. These initiatives all reclaim, first, the sovereignty of communities to produce and make sense of the data. Secondly, they recognize the role of cooperative and informal economies in sustaining these collective processes, outside of the sphere of extractive economies. Finally, they recognize the right to use visual stories as tools to communicate, campaign, and make data analysis more accessible by bridging the gap between deep research,advocacy, and rights to knowledge. At the same time, open graphic design produced from and for communities reveal the need to sustain a work, often developed in precarious conditions and depending on different forms of material and immaterial support.

Data Sustainability

Study cases reveal that data justice in practice requires more than just open access—it requires strong communities and ethical governance to increase the benefits. Communities also need to have the capacity and skills to use data—something that is often lacking even within data institutions. Finally, democratic data governance is needed, which may be limited by institutional reluctance or the absence of collective governance structures for redistributing social value (Gurumurthy & Chami, 2022b).

The three case studies in this report help illustrate how economic, social and cultural rights (ESCR) can be strengthened through a commons approach to data that applies not just to individual rights but to collective rights, especially in the context of widespread data privatization and exploitation.

Commons-based approaches exemplify how open sharing practices should be appropriately resourced with technical infrastructures and legal frameworks that are culturally grounded.

Because distributive justice is at the center of commoning practices, economic and democratic purposes overlap. Commons approaches also address epistemic justice by incorporating equity and inclusivity in the deliberate valuations of the communities involved. This is very different to a more object-oriented focusing on sharing data. Finally, commons approaches often recognize the role of public state institutions in the protection of public value, but also call for more self-organized governance of community-related aspects across all different types of interdependent initiatives.

A new practice of openness

Over the years, the tech community has fetishized openness with serious consequences. The case of OpenAI (which is neither open nor protects data communities) is instructive. What began as an open, non-profit initiative to democratize AI research has evolved into a closed, profit-driven entity with tightly held models and decision-making processes.

This shift illustrates how “open” can serve as a rhetorical device rather than a structural commitment—used to cultivate trust or goodwill, only to be abandoned when inconvenient for power or profit (Widder et al., 2024).

The commons framework is especially relevant for AI, as it can lead to decentralized community frameworks that are more resilient and adaptable to technical, social and ecological change. In particular, the cases under study highlight the following issues:

- **AI colonialism**

  As the AI Localism project states: “Artificial Intelligence is here, and here to stay” (The GovLab, n.d.). In the Global South, AI influences decision-making with models trained on data that is alien to local contexts. In this respect, AI was compared by one interviewee with the measles brought to Latin America by Spanish colonists.

- **AI epistemologies**

  AI developed in the Global North is based on Western rationalist epistemologies that exclude other knowledge frameworks. In response, projects like Abundant Intelligences work to develop AI in ways that better serve Indigenous communities (and others) with systems that are grounded in Indigenous ways of knowing, and honor the diverse, abundant expressions of intelligence in the world (Abundant Intelligences, n.d.).

- **AI for good**

  These choices of how to build AI (or not) directly link back to community and purpose. While AI is frequently used to shield institutions from accountability, it can instead be used to make data and processes more visible. (United Cities and Local Governments [UCLG], 2025). For instance, DataGenero, a project in Argentina used judicial data from Buenos Aires to train an AI model AymurAI, that analyzes gender violence impact in court cases.

The design, development and use of AI illustrates the articulation and interdependence of data production, interpretation and communication shared across the communities we have studied. In this respect, the new kind of openness defined by data commons ecosystems contribute to economic, social and cultural rights by acknowledging a collective capacity and co-responsability.

A new generation of licenses

Our analysis of the interrelated ecosystems of open data production, data analysis and visual content production can contribute to defining a new license framework that combines community protection and wealth generation. While it is a widespread perception today that 'data will be mined no matter what', communities are looking to create their own defence mechanisms via collective agreements and licenses. It is largely a social decision about the freedom to govern their own cultural, epistemic and political artifacts.

The adoption of open licenses (including public domain and Creative Commons) over many years has simplified the use and redistribution of knowledge, and reduced legal and technical barriers for open access. However, new mechanisms are needed to adjust the levels of openness and expand rights for self-determination.

Collective open licenses will not automatically ensure enforceability. Meanwhile, data trusts, cooperatives, and associations are emerging as models for alternative (non-state) custodians of data for collective data stewardship. These are bottom-up, collective governance instruments which act as stewards of data on behalf of people and communities. They act as negotiators that enforce and monitor how that data is used so that reuse follows shared rules and values, protects individuals, and supports a data commons rather than leaving control to platforms or commercial actors (Benhamou & Dulong De Rosnay, 2024).

These legal frameworks present a middle ground between rigid institutional control and the unregulated self-organizing, potentially unlocking more equity. However, it is still very much the prototyping phase and the process of refining these new frameworks for data governance needs to be iterative for a wide diversity of communities to participate.

A new governance framework and tools

In our three case studies above, we encountered many existing material and social challenges for open data communities that are tangential to the general question of how to define the governance mechanisms and specific tools that define data as a commons.

In the face of these constraints, different strategies emerged in our research to support and sustain the data commons ecosystem across time and space. Among the most important, is to recognize that the main value from open data is in making it useful for a specific purpose.

For example, in deploying large datasets from the European Organization for Nuclear Research (CERN)'s Large Hadron Collider experiment for particle physics, to also facilitate open education so that students in Latin America can be on par with students in Europe. Or that when tailoring open government data for improvements in traffic, air quality, or climate to empower communities in decision-making processes.

In our case studies, we saw precarious ecosystems that depend on Global North organizations for financial sustainability. At the same time, we saw a connected productive ecosystem in all three domains, where different parts of the ecosystem support the work of others (e.g. research and data visualizations).

> **It's the communities who do things with data who need to be central in our imagination, rather than the datasets they use.**

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This ties directly to how we think of retribution and sustainability in the ecosystem, as well as tech business models. The emotional investment of producing or owning something collectively is real. The time and care invested by communities has value and should not be exploited.

The involvement of an ecosystem in the production and use of information and knowledge is not achieved just by sharing data or content: it needs to be articulated through governance models that establish protocols, frameworks and community rules around data rights regarding the layers of authority, access, authorship, attribution, acknowledgement, etc (Hudson et al., 2023).

There isn't widespread awareness of this in all open data communities, and it will take more than just writing rules, changing laws, or suing companies, because these practices will also need to be socialized as was once the case with copyright and sharing (Karaganis, 2011).

Working across the North/South divide

Global North dependencies and influence were evident across many of our cases—not least because of funding from the North—for instance for research and advocacy projects in the South. Despite the technical and financial dominance, there are countless initiatives from the Global South that are exemplary for communities worldwide. For instance, data formatting and sharing methods developed for low-tech environments in the South increased reuse and accessibility in the North as well.

With so many unanswered questions about how exactly to move forward with an open commons, we wish to see even more experimentation that is locally grounded in the margins.

Recommendations for Collective Data Commons Rights

The commons approach seeks to address principles of social justice when generic, technocratic forms of openness contribute to the erosion of peoples and collectives' rights. Considering data as a commons ecosystem is -among other things- a means to enhance a specific class of rights in data and AI.

Under the lens of the commons, **the right to civic technological sovereignty**, depends on socio-material aspects of how data is produced, maintained, used and distributed, and by whom, under which kind of agreements. This right entails:

- **Right to data interpretation** is the right to access open analytic tools so public data can actually be understood by civil society and inform social policy and institutions. In Brazil, Maritaca AI is a ChatGPT alternative trained with Brazilian public policy data to support education and democratic participation.

- **Right to community data integrity** is the right of communities to determine their representation in data systems. Local Contexts enhances and legitimizes Indigenous authority over, ownership, access, and cultural conditions for any sharing and future use via metadata labels.

- **Right to fussiness and obfuscation** is the right to decide who has access to what level to details. It entails the existence of different kinds of communities, with different levels of access. In the Science of the Seas Project, strategies to withhold or obfuscate information about fishing grounds according to the decisions of fishing communities, illustrates how data commons can help protect livelihoods and self-determination.

The right of technological sovereignty is directly linked to the **right to conditions for sustainability**, that recognize the role of collective production but also of reproduction and the value of community in the process. It entails:

- **Right to low-tech** is the capacity to downscale and experiment with low-tech datasets and methods that are more accessible and inclusive. For instance, in the open education initiative CEVALE2VE, project datasets and digital tools were adapted for low-resource environments to be inclusive of students of particle physics in Latin America.

- **Right to spaces for experimentation** in the margins of technological hegemony. The tradition of practicing and learning in open source communities has been the nurturing ground of many open graphic design initiatives, such as Copiona or Manufactura Independente, that depend on offering opportunities for experimentation that are increasingly restricted.

- **Right to transform shared needs into collective possibilities**, by developing economic instruments of community economies, either formal or informal. At the moment, many civic initiatives based in or connected to the Global South—either in open graphic design (Visualizing Palestine), open science (Latin American Alliance for Capacity Building in Advanced Physics), or open local government initiatives (Open Governance Partnership)—depend on funding from the Global North as much as from individual and collective contributions.

The right to supporting structures of data commons considers data as a non-state public infrastructure under collective stewardships to guarantee a shared responsibility and accountability. These structures can be material - the servers and buildings that host them, and the connecting networks - but mostly social, cultural and economic structures. It incudes:

- **Right to civic data governance** through institutional and legal tools. Among such tools are data trusts: a third-party that negotiates and enforces licences, monitoring compliance, and sometimes pools datasets to enable commons-based reuse while protecting privacy and shared values (Benhamou & Dulong De Rosnay, 2024).

- **Right to develop open principles adapted to local contexts**, instead of expecting a ready-made template to work worldwide, such as the Feminist Peer Production Licence used by graphic designer Amigas Hacker, or like MetaDocencia's localization of NASA's Open Science 101 project—originally designed for English speakers in well-resourced research environments—by incorporating local knowledge, perspectives, and Latin American examples. (Feminist Peer Production Licence, n.d.; Amigas Hacker club, n.d.; MetaDocencia, 2025).

- **Right to build communities** to engage stakeholders in the governance of the data, infrastructure, tools, and organize constituencies such as civic organizations, researchers, journalists, investors, etc., around the public data they need. For example, the Mapatón Ciudadano in Xalapa, involved Open Street Map, Xalapa City Council, the Instituto Tecnológico Superior de Xalapa, Universidad Veracruzana, and citizens to create an open repository of urban mobility data. (Mapatón, n.d.)

The right to logarithmic justice considers AI as a tool and not as a human replacement or technocratic solution. For example, in processes of deliberation, algorithmic analysis can provide a better understanding of the discussions, but should not replace the decisions. It entails:

- **Right to civic agency in AI** is the right to retain capacity for decision-making. AI should not be used to make decisions or set conditions on behalf of people, but can assist in processes. In a participative democracy, for example, AI can help to synthesize and organize deliberative processes, but should not replace collective decision-making. (International Observatory on Participatory Democracy, 2025).

- **Right to a situated local AI** is the right to create situated outputs for a territory or field of action, and to have access to the data needed to develop such models. For example, DataGenero produced their own ethical AymurAI, “to help criminal courts in Latin America to collect and make available data on gender-based violence”. (AymurAI, n.d).

- **Right to collective data structures** is the right to federate relevant public data between institutions and communities to triangulate and acquire enough data to train models. In South Africa, the Public Affairs Research Institute is working on a pioneer project to make data not only accessible but also sharable across municipalities. (Public Affairs Research Institute, n.d).

In closing, this report makes a clear, urgent case: building sustainable data commons means shifting resources, power and care toward the communities who produce, interpret and live with data—not treating datasets as free, extractable inputs. It asks us to refresh the idea of “openness” so that new licenses, governance forms (data trusts, cooperatives), low-tech practices, and situated AI models protect community integrity, enable fair benefit-sharing, and support experimentation from the margins.

Practically, that requires sustained funding and infrastructure, legal and technical toolkits adapted to local realities, democratic processes for stewardship, and cross-border solidarity that resists extractive North-South dynamics. If we act on these principles—centering collective rights, building relational infrastructures, and valuing the care work of commoning—open data can become a durable engine for justice rather than another vector of extraction. This is both a practical roadmap and a political invitation: join the iterative, community-led work of making a just data commons real.

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Annex - Interviews

Interviewee	Role	Area
AFRICA		
Jugal Mahabir	Local Government Programme Lead, Public Affairs Research Institute - PARI (South Africa)	Open local government data
Emmanuel Boakye	Founder, Co-Director & Community Engagement Lead at the African Reproducibility Network (AREN)	Open science
ASIA + OCEANÍA		
Nityanand Jayaraman	Engineer-turned journalist and a social activist. PhD Scholar in political science at The University of Waikato (Aotearoa/ New Zealand) and co-creator at Science of the Seas Project (India)	Open science
Maui Hudson	Director Te Kotahi Research Institute at University of Waikato (Aotearoa/New Zealand), Council Founding Member and Strategic Advisor of Local Contexts (Navajo Nation mainland US)	Open science
Hu Chuan-Peng	Faculty at Nanjing Normal University and Executive Committee at the Chinese Open Science Network (COSN)	Open science
SOUTH & EAST EUROPE + LEVANTE		
Michelangelo Secchi	Research Fellow at Politecnico di Milano, Public Sector Consultant and Co-founder of EUDEMA (Italy)	Open local government data
Jadd Hallaj	Urban planner and data science consultant at Lugarit (France - Syria)	Open local government data
Calin Rus	Evaluator for the OGP Action Plan of the Municipality of Timișoara and Director of the Intercultural Institute (Romania)	Open local government data
Tamar Gzirishvili	Evaluator for the OGP Action Plan of the Municipality of Akhaltsikhe (Georgia)	Open local government data
Reina Camacho Toro	Venezuelan researcher at the National Center for Scientific Research (France)	Open science
Ana Carvalho	Graphic designers and founders of Manufactura Independente (Portugal)	Open graphic design
Ricardo Lafuente	Graphic designers and founders of Manufactura Independente (Portugal)	Open graphic design
Arturo Sánchez Pineda	Venezuelan Devops Engineer, lead IT Infra at INAIT (Switzerland), manager and co-founder of CEVALE2V - Virtual Centre for High Energy Studies	Open science

Interviewee	Role	Area
LATIN AMERICA		
Juan García Rodríguez	Coordinator of the Sustainable Development Commission, Consejo Nuevo León + former Participation and Citizen Innovation Secretary at San Pedro Garza García (México)	Open local government data
Ivana Feldfeber	Data science specialist and feminist activist, CEO of DataGenero (Argentina)	Open local government data
Gerardo Pérez Gallardo	Former Director of Digital Government at Xalapa, Former Subdirector of Open Government in Veracruz and CEO at BEPARTNERS (México)	Open local government data
Ricardo Poppi	Participation and Digital Transformation of the Public Sector Consultant and Director of Instituto Cidade Democrática (Brazil)	Open local government data
Barbara Nishimoto & Edgar Maturana	Coordinator of the Center for Transparency and Corruption Prevention of the Municipality of Contagem (Brazil) Advisor to the Attorney General of the Municipality of Contagem (Brazil)	Open local government data
Alexander Martínez Méndez	Researcher at the Universidad Industrial de Santander (Colombia) for LA CoNGA physics (Latin American alliance for Capacity buildiNG in Advanced Physics)	Open science
Washington Luís Ribeiro de Carvalho Segundo	General Coordinator of Scientific and Technological Information at the Brazilian Institute of Information in Science and Technology (Brazil)	Open science
Jesica Formoso	Researcher at CONICET (Argentina), Impact Measurement Advisor at MetaDocencia and ALTa Ciencia Abierta (Latin America Transforms to Open Science)	Open science
Librenauta	Independent graphic designer and founder of Copiona (Argentina)	Open graphic design
Berenice Zambrano	Independent graphic designer (España / México)	Open graphic design
Constanza Figueroa	Independent graphic designer and founder of Amigashacker (Chile / México)	Open graphic design
Transnational (based on USA + UK)		
Joe Foti	Principal Advisor, Emerging Issues at Open Government Partnership (Global)	Open local government data
Nasreen Abd Elal	Researcher and graphic designer, Information and Graphic designer at Visualizing Palestine (Transnational)	Open graphic design
Felipe Viveros	Multi-media artist, independent researcher and strategist, co-founder of Culture Hack Labs (Transnational)	Open graphic design

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