Discussion Paper for the GRC Regional Meetings organised in October-November 2025

Reimagining Inclusive Open Science for Equity, Justice, and Sustainability

Please note this version served as a basis for the discussions that took place at each Regional Meeting. This version was NOT amended following the meetings.

Reimagining Inclusive Open Science for Equity, Justice, and Sustainability

A Discussion Paper for the Global Research Council (GRC) 2025 – 2026

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Executive Summary

Brief context

The Global Research Council (GRC)[1] is considering how Open Science (OS) can advance equitable, inclusive, and sustainable science amid intersecting crises (AI disruption, geopolitical conflict, climate emergencies, inequality, and backlash against EDI). The paper argues that OS must ask not only what knowledge is produced, but how, by whom, for whom, and to what end. It cautions that one-size-fits-all approaches risk deepening existing inequities. It anchors OS in UNESCO's 2021 Recommendation and its four widely referenced pillars, noting uneven implementation, especially on "open engagement with community" and "open dialogue with other knowledge systems."

Key objectives of the paper

1. **Advance a situated, justice-centred OS agenda** responsive to local contexts and global responsibilities.
2. **Diagnose infrastructural and assessment lock-ins** that reproduce inequities and propose regenerative alternatives.

3. **Avoid policy cloning** by supporting plural STI futures grounded in responsible internationalization and co-creation.
4. **Recognize the challenge of integrating AI into OS responsibly,** upholding data sovereignty and epistemic diversity.

The paper operationalizes these through four themes and closes the first three with guiding questions and case studies for funders.

Equity, diversity and inclusion are centered throughout: the paper highlights how EDI is often invoked but rarely implemented, calling for concrete, values-aligned action and monitoring.

Key discussion questions for GRC funders

1. **Public-good governance:** What funding architectures and infrastructure strategies move OS beyond extractive practices—treating infrastructures as public goods with long-term, community-led oversight and shared stewardship?
2. **Baseline & branching:** What baseline, justice-centred OS agreements can all GRC funders adopt, and how should regions build contextual addenda that respect multilingualism, community data governance, and local and interoperable infrastructures?
3. **Reconfiguring publishing with communities:** How can funders work with publishers, both for and non-profit, to redesign policies that value care and contextual rigour over throughput, and to build participatory governance with affected communities?
4. **Plural metrics & monitoring:** Which co-designed indicators (equity, justice, sustainability—not just "openness") will be monitored, and how will affected communities help govern them?
5. **Responsible internationalization over policy cloning:** How can policy alignment across borders avoid epistemic colonialism, strengthen regional ecosystems (e.g., SciELO/AmeliCA), and surface hidden dependencies in "open" systems (e.g., DOIs/FAIR)?

Key opportunities for funders — policy interventions & practical levers

A. Re-Align what counts (assessment & incentives)

Expand on GRC's commitment to responsible research assessment to value stewardship, curation, multilingual outputs, software, datasets, community reports, and co-produced knowledge; fund the affective, translational, and relational labour that sustains OS.

B. Treat infrastructure as a public good

I. Invest in diamond OA and community-governed platforms (federated, standards-based, open APIs); tie grants to portability, open interfaces, and community oversight to prevent lock-in.

II. Support pluralistic indexing & metadata (multilingual vocabularies, provenance/permission tools like Local Contexts) so diverse knowledge is legible and citable.

C. *Embed EDI, participation, and sovereignty in funding rules*

Where applicable, require equity-centred partnership plans (co-led governance; fair resourcing; translation budgets) and rights-based data governance (CARE/OCAP-aligned agreements, TK/BC Labels, consent renewal).

D. *Co-creation & engagement by design*

Resource co-creation across the research lifecycle (from planning to evaluation), with budgets for facilitation, translation, and long timelines; align with GRC's Statement of Principles on co-creation.

E. *Monitoring that serves people and purpose*

Implement co-designed, OS monitoring frameworks that aligned with UNESCO/OSMI principles; avoid the "streetlight effect" of easy-to-measure proxies and focus on capabilities, relationships, and community-defined benefits.

F. *Responsible AI within OS*

Make governance artifacts (Data Statements, Model Cards, TRUST) mandatory and citable; fund compute commons with transparent regional allocations; prefer efficient, low-resource models; and recognize refusal (not to collect/train) as a legitimate outcome when governance is inadequate.

G. *Policy Alignment without enclosure*

Reframe "alignment" as coordination across difference; invest in regionally designed infrastructures and strengthen local governance capacity to avoid dependency and hidden "open" lock-ins.

Summary

The GRC can catalyze a justice-centred OS transition by aligning funding, infrastructure, assessment, and monitoring with UNESCO's pillars; co-govern with communities; and prioritize bibliodiversity, multilingualism, sovereignty, and care. Success is a truly global pluriversal knowledge ecology where many knowledge holders lead and benefit, not just the usual powerbrokers.

Introduction

As the Global Research Council convenes to advance equitable, inclusive, and sustainable science for human development and well-being, it is timely to ask not only what knowledge Open Science (OS) produces, but how, by whom, for whom, and to what end.

Our world is facing multiple intersecting crises: the rapid integration of artificial intelligence with far-reaching and undetermined implications; rising geopolitical tensions and conflicts; climate emergencies; growing inequality; and increasing antagonism towards measures intended to support equity, diversity, and inclusion. Could the diverse principles and practices of Open Science help us navigate these grand challenges, or might it inadvertently reinforce them?

In recent years, a strong convergence has emerged among regional and international scientific organizations, funders, and research-performing institutions around the transformative potential of Open Science. While priorities differ across contexts, a common belief persists: by opening up the entire research life cycle, OS can foster transparency, accessibility, collaboration, and public engagement to accelerate scientific discovery and amplify societal impact[2].

Critically, OS is also not seen as a one-size-fits-all technical solution. The 2021 UNESCO Recommendation on Open Science— a globally negotiated framework—articulates values, principles, and actions respectful of diverse regional and epistemic traditions, and calls for context-sensitive implementation, cautioning that universalized approaches championed by dominant institutions risk deepening intersecting inequities. Open Science, the Recommendation suggests, must be inclusive, multilingual, transdisciplinary, and open to societal actors and diverse knowledge systems[3].

UNESCO's finalized framing is widely referenced as having four pillars: Open Scientific Knowledge; Open Science Infrastructures; Open Engagement of Societal Actors; and Open Dialogue with Other Knowledge Systems (with science communication treated as a cross-cutting function). However, engagement with and implementation of the pillars have been uneven: funders and institutions, particularly in Europe and North America, have tended to focus heavily on the first two pillars, prioritizing Open Access, Open Data and shared infrastructures, while progress on Open Engagement and Open Dialogue lags significantly[4].

This unevenness in implementation stems from deeper systemic issues. Open access and research data sharing, the first two pillars, have long benefited from various development efforts, including significant infrastructure investment and market incentives that have promoted their widespread adoption. However, commercial publishing/analytics companies have actively steered the course of Open Science (OS) over the past decade. They have reinforced hierarchies of research visibility and value through their control over journal metrics, rankings, and proprietary platforms. The growing commercialization and enclosure of open

access by the publishing oligarchy, primarily through Article Processing Charges (APCs) and agreements designed to foster institutional dependency[5], have led to new forms of exclusion, particularly for under-resourced researchers and institutions, in both the Global North and South [6].

Meanwhile, pillars three and four require more profound shifts in institutional culture, incentive structures, research practices, and a rethinking of epistemic norms[7]. Open Engagement and Open Dialogue necessitate the co-design of research, reciprocity and shared benefits, and above all, epistemic humility. They call for meaningful collaboration with civil society, communities, and other knowledge holders, notably Indigenous Peoples from around the world. This requires moving beyond top-down agenda setting and unidirectional knowledge dissemination towards participatory, reflexive, and justice-oriented approaches to knowledge making[8].

The obstacles to the third and fourth pillars are therefore not merely technical, though technical barriers cannot be understated. Institutional incentives rarely reward community-engaged scholarship. Methodological norms often devalue non-Western epistemologies[9]. Legacies of colonialism, racism and patriarchy continue to shape who is heard, cited, and funded in science[10].

Without first addressing these underlying power asymmetries, OS risks becoming a vehicle for reinforcing the very hierarchies and inequities it seeks to dismantle. It is thus necessary to actively confront the colonial legacies, systemic exclusions, and metricized publishing regimes that structure global knowledge production. Failure to do so risks exacerbating inequality under the guise of openness.

To address these epistemic and governance gaps, funders and institutions should invest in frameworks, indicators, and reward systems that support relational, co-produced, and situated knowledge. It is also necessary to design open infrastructures that enable dialogue, stewardship, and informed consent, not simply access to publications and sharing of data. Technical architectures should not just facilitate the flow of information, but support people and values centering on care, reciprocity, and epistemic plurality. This means replacing extractive infrastructures of knowledge production with regenerative ones (see Theme 2).

Situated Openness and Epistemic Justice as Corrective Lenses

Situated openness draws on “situated knowledges” (Haraway), holding that all knowledge is created from particular social, cultural, and institutional locations, and is therefore shaped by partial perspectives[11]. Rather than striving for a false neutrality, it calls for accountability, reflexivity, and transparency about the assumptions, values, and power relations embedded in research practices. Openness should therefore be designed not only technically but also ethically and relationally, with careful attention to context and consequence. In practice, this challenges universal prescriptions such as “open by default,” aligning instead with “as open as possible, as closed as necessary,” in recognition of limits related to privacy, Indigenous data

sovereignty, ecological protection, respect for cultural protocols, research security, and national interests[12].

Epistemic justice works in concert with situated openness by addressing how structural inequalities influence the recognition, legitimization, and circulation of knowledge. It names forms of injustice such as testimonial injustice (when people are disbelieved because of identity or location) and hermeneutical injustice (when dominant frameworks lack the concepts to render certain experiences intelligible)[13]. These injustices are deeply embedded in global research and communication systems that prioritize English-language, methods, journal-centric outputs, and opaque evaluation metrics—systems that systematically marginalize non-hegemonic, multilingual, and community-based knowledges.

An epistemic-justice approach recenters diverse ways of knowing; embraces bibliodiversity across outputs, formats, languages, and models; recognizes multilingual and community-rooted outputs (e.g., oral histories, local reports, storytelling, community maps); and values the often invisible relational and care labour (e.g. editing, translation, cultural facilitation, stewardship, curation) that makes knowledge meaningful across contexts and generations.

Embedding epistemic justice is closely aligned with ongoing reforms in research assessment—an area actively pursued by the Global Research Council and numerous international initiatives. This converging movement seeks to redefine research excellence by moving beyond traditional metrics such as citation counts, journal impact factors and research awards. Instead, epistemic justice emphasizes locally relevant contributions, meaningful knowledge reuse, and tangible benefits for communities – equity sensitive indicators that tend to be ignored in the past[14].

The uneven implementation of the UNESCO pillars stems from treating them as discrete workstreams rather than a highly interdependent whole. In particular, Pillars 3 (Open Engagement of Societal Actors) and 4 (Open Dialogue with Other Knowledge Systems) are too often treated performatively—as “nice-to-haves.” A recent analysis of 52 OS policy documents (2020–2022) across Europe and the Americas found that although equity, diversity, and inclusion are frequently invoked, concrete guidelines and implementation strategies were “overwhelmingly lacking[15].” The call in this paper is therefore not merely technical or operational but a reframing to honour OS values—centering inclusive science in service of justice, sustainability, and the right of all peoples to participate in and benefit from science. An inclusive and equitable OS requires a closely integrated approach: progress on any one UNESCO pillar depends on meaningful, values-aligned action across them all.

Objectives of the Paper

Advancing OS requires moving beyond universalist frameworks toward a framework grounded in Situated Openness, Epistemic Justice, and Contextualized Sustainability.

To support deliberation and action, this paper sets out four interconnected strategic themes:

1. **Situated Open Science Agenda for Global Sustainability;**
2. **Towards Equitable and Generative Knowledge Infrastructure;**
3. **Rethinking Open Science Policy Alignment: Towards a Plural STI Future; and**
4. **Responsible AI and Open Science.**

Each thematic section offers a contextual framing of current challenges and opportunities, and closes with guiding questions for further deliberations. The overall goal is to move thinking beyond compliance with access mandates toward the material, structural, and institutional conditions, and the often-invisible human labour that shape knowledge systems. This entails reimagining infrastructure, redistributing power, and foregrounding neglected and marginalized knowledges across geographies.

Concretely, funders and institutions should invest in frameworks, indicators, and reward systems that support relational, co-produced, and situated knowledge; and design open infrastructures that enable dialogue, stewardship, and community consent, not simply access to publications and data. Technical architectures should support people and values centred on care, reciprocity, and epistemic plurality, replacing extractive infrastructures with regenerative ones.

Essentially, the paper's objectives are to:

i. articulate a situated, justice-centred agenda for OS that is responsive to local contexts and global responsibilities;
ii. diagnose infrastructural and assessment lock-ins that reproduce inequities and propose regenerative alternatives;
iii. avoid "policy cloning" by cultivating plural STI futures grounded in responsible internationalization and co-creation; and
iv. reflect on the integration of AI into OS in ways that uphold data sovereignty, protect communities, and enhance epistemic diversity.

The following sections expand on these objectives with concrete pathways, and questions for funders for further deliberation.

Theme 1: Situated Open Science Agenda for Global Sustainability

Context and Rationale

The escalating climate crisis is not only an environmental emergency, but also a justice crisis. Could Open Science, if reimagined through the lens of knowledge sovereignty, reciprocity, and shared benefit, help redirect power and resources toward those most affected? This theme explores how OS might support just transitions rooted in community governance, agroecological resilience, and cultural revitalization, rather than technocratic decarbonization alone.

The escalating climate crisis is a justice crisis because it is exposing and intensifying deep global inequities. Its cascading impacts - sea-level rise, biodiversity loss, food insecurity, forced displacement - fall most heavily on Indigenous communities, low-income populations, and countries least responsible for causing the crisis. An Open Science Agenda for "just transition[16]" therefore cannot be reduced to technocratic decarbonization; it must reckon with historical injustices, ongoing extractivism, and epistemic exclusions that shape who is harmed, who decides, and whose knowledge counts.

Mainstream sustainability narratives still lean toward Western, growth-oriented logics that privilege efficiency, productivity and innovation[17]. These framings, while useful in parts, can obscure land dispossession, colonial relations, and the erasure of alternative ways of knowing and caring for place or land. By contrast, many Indigenous Peoples—though a small share of the global population—act as vital custodians of biodiversity through biocultural practices grounded in reciprocity, responsibility, and relationality with land, waters, and non-human kin[18].

However, interest in Indigenous knowledge has too often reproduced extractive practices, treating communities and their knowledge as sources of data or "supplements" to Western models without appropriate consent, protocols, or benefit sharing.[19] This practice also mirrors "parachute science,[20]" where researchers arrive, harvest, and publish, leaving limited local capacity or governance in their wake. Indigenous scholars emphasize that sustainability, unless rooted in sovereignty, kinship obligations, and relational accountability, can replicate the very harms it claims to fix.[21] Scholars such as Zoe Todd call out how dominant discourses sever relations among people, fish, and waters, urging decolonial approaches that center Indigenous ontologies,[22] while Max Liboiron's work demonstrates how care-based, community-embedded methods can remake scientific practice towards ecological and epistemic justice.[23]

A situated Open Science (OS) agenda builds from these insights. It asks not only what is opened, but for whom, by whom, and under whose governance—and it aligns openness with justice, sovereignty, and shared benefit. Collectively, these scholars offer a roadmap for an ethically grounded and epistemically plural sustainability agenda.

1) Just Transitions for Climate Justice

To be meaningful, OS should redirect research priorities and funding toward those most affected by climate impacts and enable them to shape agendas, steward knowledge systems, and define outcomes. This includes, for example: securing Indigenous land and territorial governance as a foundation for ecological restoration and cultural survival;[24] advancing food and seed sovereignty through agroecology co-developed with local knowledge holders;[25] supporting communities navigating climate-induced relocation to lead research design and policy solutions;[26] addressing labour transitions in regions reliant on extractive industries;[27] and resourcing language revitalization, ceremony, and land-based practices as core elements of adaptation and resilience.[28]

For funders, a just-transition orientation means multi-year investments in Indigenous or local-led research; support for data sovereignty, community repositories, and legal/ethical infrastructure; and partnership models based on reciprocity rather than compliance. Success is measured not only by open datasets or models but by enhanced community capacity, decision-making power, and tangible improvements in community and ecological well-being.

2) Dialogue with Indigenous and Local Knowledge Systems

Indigenous and local knowledge systems are distinct epistemologies grounded in place, intergenerational stewardship, ceremony, and accountability. Genuine dialogue does not assimilate these systems into dominant scientific norms; it upholds the rights of communities to define, protect, and govern knowledge on their own terms.

Practically, this requires moving from "inclusion" to sovereignty and self-governance[29]. Funders and institutions should invest in Indigenous-led social and technical infrastructures—tribal/community ethics boards, community-governed repositories, land-based learning programs, language revitalization, and emergent Indigenous-led OS and AI initiatives[30]. Ethical governance frameworks like OCAP® and the CARE Principles provide starting points for agreements that respect community control and contextualized sharing.[31] Some knowledge should not circulate openly; openness must be conditional, negotiated, and reversible when communities decide it is necessary. Expanding policy space for epistemic pluralism to ensure Indigenous laws and cosmologies can inform assessment, peer review, and resourcing. This is essential to avoid flattening diverse values and principles into a single, dominant frame.

Protecting Indigenous and community protocols is not a barrier to openness; it is what makes a plural, just knowledge ecology possible.[32]

3) Co-Creation as Infrastructure for Sustainability

Co-creation is more than a method; it is an infrastructure of relationships. Doing it properly takes time, care, and resources to work across epistemic differences and past harms. It depends

on early and ongoing engagement (before project design and beyond publication), shared governance over decisions and resources, cultural and linguistic translation, and "bridging" roles that connect institutions and communities across knowledge cultures.[33]

Importantly, co-creation depends on what feminist and Indigenous scholars call "affective labour"[34]: the emotional, interpersonal, and care work of building and sustaining relationships. Such relational care is often carried disproportionately by women, racialized scholars, and community leaders. They play the important role of navigating trauma, mistrust and power differences yet their labour often remains invisible.[35]

Funders can change this by resourcing care and facilitation, building flexible timelines and milestones, recognizing relational work and affective labour in evaluation and authorship, and supporting benefit-sharing frameworks. When co-creation is properly supported, OS becomes regenerative: it redistributes power, builds local capacity, and sustains relationships that endure beyond project cycles.

4) Equity-Centered Monitoring for Transformative OS

Current OS monitoring relies on output proxies—publication and deposit counts, citation indicators—that reveal little about equity, justice, or sustainability and often reinforce extractive norms. A justice-oriented approach, building on Rafols et al[36], reframes monitoring around five questions:

- Participation & power**:** How are affected communities co-defining agendas, interpreting results, and governing data?
- Epistemic pluralism**:** Are oral, land-based, artistic, and community outputs recognized and valued alongside traditional outputs such as journal articles?
- Institutional change**:** Are funding, review, and partnership practices shifting toward shared responsibility and accountability?
- Transformative outcomes**:** Do OS initiatives strengthen climate resilience, empowerment, well-being, and knowledge sovereignty?
- Co-designed metrics**:** Are indicators designed with those most affected to foster trust, reciprocity, and learning?

This moves assessment from counting outputs to documenting capabilities, relationships, and community-defined benefits. This is in line with GRC's deliberation on research assessment.

5) Sustainable Conditions of Knowledge Production

OS also must be ecologically and socially sustainable. Today's incentives reward overproduction and channel public funds into APC-driven business models, leaving community initiatives under-resourced. Volume pressures also drive questionable practices (from paper mills to low-quality

AI-generated articles) now scaled by platform incentives. Meanwhile, data-intensive research and AI carry growing energy, water, land, and e-waste footprints that OS rarely accounts for.

A sustainable OS invests in non-commercial, community-led publishing (diamond OA, library consortia, Indigenous knowledge co-ops); reforms incentives to value care, collaboration, and local relevance; and supports low-carbon, sovereignty-aligned infrastructure (minimal computing, community data governance, culturally appropriate tech). Rather than "scale at all costs," funders can back "scaling small[37]", a networked approach that prioritizes community governance, autonomy, fit to context, and decentralized infrastructures over corporate cloud dependency[38]. Embracing scholarly slowness[39]: deep relationality, iterative learning, and time for consent and reflection, helps align research with ecological limits, community priorities and center careful production over throughput production[40].

Discussion Questions

1. From extraction to public-good governance: What funding architectures and infrastructure strategies move OS beyond extractive practices—treating infrastructures as public goods with long-term, community-led oversight and shared stewardship?
2. What new monitoring frameworks are needed to evaluate not only openness, but also equity, justice, and sustainability outcomes of Open Science?
3. How can funders ensure that Open Science infrastructures themselves are ecologically sustainable, reducing overproduction, promoting responsible consumption, and aligning incentives with sustainable knowledge production?

Theme 2: Towards Equitable and Generative Knowledge Infrastructure

Context and Rationale

Open Science infrastructures were once envisioned as decentralized, community-governed commons. Yet today, many have been absorbed into platform capitalism. Could a shift toward regenerative, care-centered infrastructures help restore democratic control, epistemic diversity, and sustainability? This theme outlines design principles and governance models that move OS from extraction to stewardship.

The early Open Access (OA) movement, as articulated in the Budapest Open Access Initiative (2002)[41], imagined a decentralized, community-governed scholarly commons aligned with the open architecture of the Web. "Green" self-archiving and "gold" born-open publishing, enabled by open protocols such as Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH)[42] and inspired by preprint servers such as arXiv[43], fostered a global distributed ecosystem

of institutional and community repositories. The aim was not only technical interoperability, but also to reclaim shared ownership and democratic control over scholarly communication.

The current problem: platform capitalism and "surveillance publishing"

Over time, however, the Open Access infrastructural space became highly fragmented and under-resourced, creating openings for commercial consolidation. Publishing/analytics conglomerates co-opted openness as a market offering, expanding "full-stack" platforms that integrate submission, peer review, discovery, analytics, funding workflows, OA payment tracking, and impact dashboards.[44] In this platformized model, metrics, rankings, and opaque defaults act as *invisible governance*[45], shifting authority from research communities to vendors and reproducing and exacerbating structural inequities and epistemic injustice the OA movement set out to dismantle.

Open Science has increasingly been absorbed into platform capitalism[46]. Multinational firms do not simply publish and index journals, they now operate end-to-end systems that not only manage the research workflow but also set de facto rules for visibility and value. Proprietary standards, identifiers, hidden defaults, and black-box algorithms decide what and who gets discovered, counted, and legitimated by their systems and tools[47]. Researchers and institutions supply the labour and data that feed these machines and AI training, while companies monetize each layer—subscriptions, APCs, citation metrics, research analytics, funding trends—encouraging overproduction, hyper-competition, precarity, and erosion of care work across the knowledge lifecycle. Scholars have described this as the rise of "algorithmic attention rents"[48] where data cartels (referring to the publishers) extract value from identities, metadata, and behavioural traces, extending surveillance beyond the academy into legal and government sectors.[49] All these have direct consequence on the maintenance of scientific integrity.[50]

Why infrastructure is never neutral

Infrastructures are not passive pipes; they are operating systems for knowledge. Research infrastructures, much like computer operating systems, facilitate certain research practices while simultaneously hindering or preventing others[51]. They are not simply channels through which knowledge flows, but rule-setting environments (e.g. submission procedures, digital identifiers, keywords selection, paper formats, writing styles, citation rules, peer review), that shape what counts as legitimate knowledge, how it is valued, and who is recognized as a credible knower.

As "thinking infrastructures,"[52] they sort and rank information and normalize certain epistemic habits. As "infrastructural space,"[53] they enact power through standards and defaults that rarely appear as formal regulation. The result is an invisible, persistent ordering: English-language, journal-centred outputs become prioritized; oral histories, community reports, place-based and multilingual scholarship are rendered peripheral; and rankings dependent on bibliometric pipelines elevate citation-dense STEM at the expense of humanities, social

sciences, and community-engaged research. Identifiers like ORCID and DOI are useful, yet the surrounding data regimes and their governance can make invisible non-codified forms of knowledge, especially those that resist easy classification and quantification.

Seen this way, extractive infrastructures are engines of epistemic injustice. They encode privatized universal metrics, erase situated knowledges, and harden dominant hierarchies long after "access" appears solved. The task for Open Science, then, is not merely to open more content, but to redesign the foundational epistemic operating system itself.

From extractive to regenerative systems

A regenerative knowledge system reorients the ecology of knowledges toward sustainability, justice, and care. It redistributes power through shared governance; centres reciprocity, consent, and sovereignty in data and publication practices; values slow, situated, and context-rich work over speed and scale; and aligns with responsible research assessment. Regeneration is thus inseparable from the "just transition" and the situated openness described in Theme 1.

Design shifts: toward a new operating system

These five shifts are both principles and practices, concrete ways to begin to re-code infrastructures for equity and generativity.

1) Relationality over Rankings

Move from prestige economies and global league tables to relationship-centred ecosystems. Map networks of co-creation, community benefit, and place-based impacts rather than proxying value through journal metrics. Examples from community research networks show how knowledge thrives outside citation-maximizing logics.

2) Shared Governance and Democratic Control

Replace centralized gatekeeping with multi-stakeholder governance (researchers, communities, libraries, funders). Regional consortia in Latin America such as AmeliCA54 and SciELO55 demonstrate public-good stewardship, multilingualism, and regional ownership. Explore research co-ops and public data trusts that collectively decide data access, metadata standards, and resource allocation.

3) Care and Ethical Stewardship

Center questions of who is asked to share, who sets formats and terms, and what counts as contribution. Platforms like Mukurtu56 embed cultural protocols, enabling community-defined visibility and restrictions. Frameworks such as CARE and OCAP® operationalize consent-based, sovereignty-aligned data governance—vital for Indigenous and community knowledge.

4) Pluralistic Indexing and Metadata

Make epistemic diversity legible and citable. Support multilingual metadata, custom vocabularies, layered descriptions (including oral/visual annotations), and provenance/permission tools (e.g., Local Contexts, RightsStatements.org) that respect sovereignty and context. Interoperability should be a floor, not a ceiling that erases difference.

5) Commons-Based Infrastructure

Treat infrastructure as a public good. Fund diamond OA and community-led platforms (e.g., OPERAS consortia, Redalyc) with open APIs, open standards, and federated architectures to prevent lock-in. Tie grants and agreements to openness of operating systems, interfaces, portability of data, and community oversight.

These design shifts are not purely technical. They are political, ethical, and epistemic, following the idea of design as *world-weaving*[57] that holds space for plurality, interdependence, and shared futures. The goal is to re-make not only tools, but the cultures and conditions under which they are built and governed.

Discussion questions

1. How can public and philanthropic funders sustain Open Science infrastructures as public goods rather than rely on proprietary platforms?
2. What governance models can ensure shared control of infrastructures across researchers, communities, and institutions, particularly in the Global South?
3. How can policies and funding criteria be adapted to recognize the relational, affective, and ethical labour required to maintain generative infrastructures?
4. How might funders support locally designed repositories, vocabularies, or taxonomies that align with Indigenous, cultural, or linguistic worldviews?
5. What collective strategies can research funders adopt to counter the growing influence of full-stack commercial platforms in research evaluation, publishing, and data analytics?
6. How can funders strengthen safeguards for consent, data sovereignty, and rights-based governance in platform-mediated knowledge production?
7. What will it mean to embed ethics of care into research workflows, infrastructure development, and research assessment frameworks?

Theme 3: Rethinking Open Science Policy Alignment – Towards Plural STI Futures

Context and Rationale

Global policy alignment in science and innovation aims to foster collaboration and interoperability. But could uncritical replication of dominant models of OS risk epistemic colonialism and infrastructural dependency? This theme invites funders to consider equitable and responsible internationalization: co-creating frameworks that address power asymmetry, honor contextual diversity and plural value systems.

Efforts to coordinate and harmonize Science, Technology, and Innovation (STI) systems across borders have long shaped global research cooperation. Foundational frameworks such as the OECD's science indicators, the 2004 Declaration on Access to Research Data, and UNESCO's 2021 Recommendation on Open Science promote shared commitments to transparency, accessibility, and collaboration. The European Union's Framework Programmes and the European Open Science Cloud (EOSC) similarly aim to align infrastructures, priorities, and evaluation systems across national boundaries.

In recent years, this process has been described as policy alignment: harmonizing policies through shared standards, infrastructures, and indicators (e.g., mandates on OA, open data sharing, and FAIR data). While alignment is often framed as an unqualified good such as enhancing interoperability and comparability, it can obscure deeper tensions. Top-down alignment can reproduce historical power asymmetries when infrastructures, norms, and metrics developed in and for the Global North become defaults elsewhere.

The global uptake of FAIR[58] (Findable, Accessible, Interoperable, Reusable) data principles shows both promise and risk. Operationalization, however, is frequently embedded in ontologies, metadata schemas, repository designs, and compliance frameworks that assume specific technical standards, linguistic categories, and institutional capacities. Applied uncritically across disciplines, regions, or to Indigenous knowledge systems, these can conflict with culturally grounded governance protocols. As noted earlier, Indigenous data sovereignty scholars argue that FAIR is insufficient alone, calling for CARE[59] (Collective Benefit, Authority to Control, Responsibility, Ethics) and TRUST[60] (Transparency, Responsibility, User focus, Sustainability, Technology) to guide repositories and data practice.

These are not merely technical issues. Policy studies describe such processes as policy transfer, borrowing, and convergence. But in today's OS landscape, policy cloning—replicating institutional models, standards, and metrics regardless of context—may be the more apt term. Much of this cloning is encoded in the infrastructural space constructed by global publishers, allowing them to replicate them anywhere, while simultaneously shaping funders' expectations and research community practices. This is akin to ceding public governance to private interests.

An additional concern is infrastructural lock-in: adopting a system or standard that later becomes prohibitively costly—technically and epistemically—to replace or to switch. This can occur even with seemingly open infrastructures.

When Policy Cloning Becomes Structural Dependency (brief case studies)

1) Digital Object Identifier (DOI) infrastructure. While widely accepted as open infrastructure for citation and persistence, governance of this technology remains centralized among a few commercial actors, and metadata assumptions reflect particular views of authorship, ownership, and institutional legitimacy. Institutions in the Global South (and researchers everywhere) often comply with DOI requirements to gain recognition or eligibility, yet they have little influence over design or governance.

Open infrastructures can therefore reproduce extractive dynamics when governance and incentives are not co-developed with those expected to use them. Mandating DOIs and other persistent identifiers (PIDs) such as the Open Researcher and Contributor ID (ORCID) without inclusive governance risks marginalizing local institutions and consolidating external control. More equitable options include PIDs that are community governed, decentralized, and not-for-profit (e.g., Archival Resource Key, ARK[61]), with a growing number of regional consortia supporting their development.[62]

2) Ebola data repatriation (West Africa). During the 2013–2014 outbreak, substantial data collected in Liberia, Sierra Leone, and Guinea were eventually stored in Global North repositories, limiting local access and capacity building. The result: knowledge extraction without durable regional preparedness or data stewardship.[63] What are the lessons for Open Science?

3) Cross-border research funding is often described as “collaborative,” yet Southern institutions are frequently excluded from agenda-setting, evaluation design, and governance. Funders from the North typically define themes, metrics, and accountability standards. Southern partners, meanwhile, are enlisted to implement projects with little power to shape priorities or long-term strategies.

This dynamic creates what might be called governance without representation, undermining the very principles of co-creation and mutual accountability that open science aims to uphold.

Responsible Internationalization as a Corrective

The GRC’s emphasis on responsible internationalization reframes policy alignment around discretionary responsibility and mutual value creation. As Shih[64] notes:

“Responsible internationalization focuses on the discretionary responsibilities that researchers have when building international relationships… For responsible practices to be effective, they also need to be co-created in relationships, rather than representing the expectations of one side only.”

This approach prioritizes:

- Relational over transactional ties built on trust and reciprocity;
- Discretionary responsibility over compliance, allowing judgment and co-creation of shared norms;
- Plural value systems, accommodating diverse epistemologies, languages, governance systems, and definitions of impact and excellence.

Implications for the GRC

1. Reframe alignment as coordination across difference. Build co-governed frameworks that respect contextual diversity rather than enforcing uniformity. Contrast models illustrate why coordination should not discipline actors into sameness.
2. Invest in regionally designed infrastructures. Support systems like SciELO and AmeliCA that sustain multilingual, cooperative ecosystems and local governance; avoid outsourcing public initiatives to commercial platforms.
3. Align funding with local governance capacity. Co-design infrastructures and policies with local actors; resource governance, editorial independence, and standards development—not just technical adoption.
4. Institutional routines for anticipatory responsibility**.** Back reflexive practices (e.g., narrative CVs via DORA; ethics/governance reviews for data sharing) that mitigate platform dependency and metric capture while safeguarding academic freedom.
5. Monitor for meaningful power, not just inclusion. Use community-governed standards (e.g., CARE) and emerging Open Science monitoring principles to assess distributed authority, sovereignty over data, and epistemic justice—not only deposits and counts.

Guiding Questions for Discussion

1. How can global funders avoid imposing policy alignment as a soft form of epistemic colonialism?
2. How can national access strategies reduce dependency on commercial platforms and invest in sustainable, community-governed infrastructures?
3. How can funders and institutions surface hidden dependencies in “open” infrastructures (e.g., DOIs, FAIR compliance) and evaluate appropriateness across contexts?
4. How might governance be redesigned so openness includes shared control, co-design, and viable exit strategies?
5. What would it mean to design STI systems in, from, and for the South—and invite Western institutions into that process?

Theme 4: Responsible AI and Open Science

The challenge—and opportunity—for funders lies in establishing a foundation for responsible, community-led infrastructure to support inclusive AI applications. Numerous obstacles exist, including the tendency to prioritize what is easily measured and automated over what truly matters, which can undermine inclusive, context-sensitive monitoring as well as the core values of equity and diversity central to research assessment reform.

Responsible AI and its intersection with open science is a complex and far-reaching issue that is deserving of its own scoping paper. We recommend that the Global Research Council consider exploring this integration more comprehensively as a future topic.

To help guide the way forward, the following section was contributed by:

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AI in a situated Open Science agenda

Open Science (OS) and artificial intelligence (AI) are mutually shaping. Context-aware OS—rooted in inclusivity, multilingualism, participation, and shared stewardship—creates the conditions for AI that is auditable, governable, and equitable; conversely, AI can *operationalize* openness by translating, connecting, and curating multilingual, multi-format scholarship at scale. UNESCO's Recommendation on Open Science frames openness as an **inclusive construct**—multilingual, participatory, and attentive to equity across the research lifecycle, not just free PDFs (2021)[65]. UNESCO's global standard on AI ethics anchors development and deployment in **human rights, social justice, transparency, and human oversight**, with attention to environmental sustainability. Read together, these instruments point to AI systems whose data, models, and impacts are **documented, governable, efficient,** and **co-stewarded** with affected communities.

Regulatory alignment—without "checkbox" compliance

The EU AI Act now sets a phased, risk-based baseline: it entered into force on **1 Aug 2024**; **prohibitions and AI-literacy duties** apply from **2 Feb 2025**; **GPAI** and governance rules became applicable **2 Aug 2025**; most **high-risk** obligations apply **2 Aug 2026**; embedded high-risk products get an extension to **2 Aug 2027** Digital Strategy. Treat these **as floors**, then layer OS values (FAIR/CARE/TRUST) to move from *compliance-as-maximum* to **responsibility-by-default**.

Recent reporting also confirms the Commission is holding to these dates despite calls to delay, underscoring the need for preparedness rather than deferral[66].

Governance artifacts as first-class research outputs

Responsible AI starts with documentation that **travels** with data and models:

- **Data Statements**: provenance, consent, linguistic/cultural scope, demographics, intended/out-of-scope uses, known risks (Bender & Friedman, 2018). Funders should require these for any dataset used to train or evaluate AI[67].
- **Model Cards**: intended purpose, evaluation across sub-groups, limitations, recommended contexts, and resource footprint (Mitchell et al., 2018/2019). These should be public alongside releases and updates[68].
- **TRUST self-assessments** for repositories and data services (Transparency, Responsibility, User focus, Sustainability, Technology) to signal long-term reliability and user-centred stewardship, complementing FAIR[69].

Data rights, sovereignty, and culturally appropriate access

"Open" does not mean "everything for everyone under the same license." For Indigenous and community-derived data, pair FAIR with **CARE** (Collective Benefit, Authority to Control, Responsibility, Ethics) and, where applicable, **OCAP®** (Ownership, Control, Access, Possession) to uphold self-determination and community governance (Carroll et al., 2020[70]; FNIGC). Operational tools exist and should be budgeted for: **Local Contexts' TK/BC Labels** communicate community rules and attribution; **Mukurtu CMS** enforces cultural protocols and tiered access in practice. Funders can require community sign-off for any training or deployment using community data, and ensure **benefit-sharing** plus community audit access[71].

Assessment and incentives that reward responsibility

To avoid recreating extractive incentive structures, align evaluation with **DORA** and **CoARA**, the GRC Statements of Principles on **Recognising & Rewarding Researchers** and **Dimensions of Responsible Research Assessment**, and use the **Leiden Manifesto** and **Hong Kong Principles** to diversify what "counts." In practice: score proposals on governance artifacts (data statements, model cards, TRUST), co-governance with affected communities, and plans for **long-term stewardship**—count curation, documentation, maintenance, and community facilitation as scholarly contributions[72].

Environmental responsibility: "Green AI by default"

AI's footprint includes **energy, carbon, and water**. "Green AI" calls for reporting and minimizing compute/energy, making **efficiency** a co-equal metric with accuracy (Schwartz et al.[73]). Credible exemplars show how to disclose: the **BLOOM** project quantified training emissions and discussed inference impacts—evidence that detailed, lifecycle reporting is feasible at scale[74] Water impacts are increasingly salient; Li et al. quantify AI's **water footprint** and the

spatiotemporal factors that can reduce harm[75] (e.g., shifting workloads by location/time). Funded AI should include **lifecycle disclosures** (hardware, GPU-hours, kWh, grid carbon intensity, **litres withdrawn/consumed**, cooling method) and set **reduction targets** over the grant period, mindful that headline efficiency claims can mask growing total demand[76] (the Jevons dynamic).

Equity in access to compute and methods

Openness without **means** reproduces inequity. We propose a **Compute Commons** approach:

- tiered, shared GPU pools with transparent allocation for under-resourced partners;
- subsidized hosted fine-tuning/inference for low-compute institutions;
- pathways to national supercomputers for high-risk/high-benefit work under strict documentation and community oversight;
- **federated learning/analytics** to keep sensitive data in place while enabling participation and model improvement. (Federated learning's seminal formulation keeps training data[77] decentralized and aggregates local updates.)

Risk management and assurance (beyond "does it work?")

For high-risk domains—or GPAI used in high-risk contexts—require **risk/impact assessments, subgroup evaluations, adversarial testing plans, incident reporting,** and **post-deployment monitoring**, mapped to EU AI Act categories where relevant. Publish these **alongside model cards**, and treat **refusal**—choosing not to collect, train, or deploy when governance is inadequate—as a legitimate, fundable outcome.

Summary and Conclusion

Epistemic justice reframes Open Science from a question of access and efficiency to a question of power: whose knowledge counts, who sets agendas, who is resourced, and who benefits. Growing evidence suggests that without redistributing voice and resources, openness risks reproducing entrenched centre–periphery dynamics of knowledge production under a new guise. A justice-centred approach advances “situated openness,” in which diverse knowledge systems, including Indigenous, local, and practice-based, co-create research questions, methods, interpretation, and collective care of knowledge. This reframing also requires decentering dominant canons and languages of science while decentralizing infrastructures so that regions historically excluded can produce, steward, and circulate knowledge on their own terms.

For funders, this shift has concrete implications. Research assessment has begun to move beyond one-size-fits-all metrics to value diverse outputs: multilingual publications, community reports, software, datasets, and co-produced knowledge. Excellence becomes plural, inclusive, and value-based. Partnerships should be equitable by design, with co-led governance, fair resourcing, translation budgets, shared benefits, and extended timelines to build relationships and trust. Open infrastructures should be community-governed and non-extractive, fostering bibliodiversity and resourcing affective labour, knowledge translators, curators, stewards, and maintainers to ensure sustainability. Data sharing and governance must respect rights and local protocols, especially for Indigenous and community data, through mutual consent, benefit-sharing, and local control. AI adoption should narrow—not widen—divides by supporting transparent, low-resource, and locally relevant models and capacity.

GRC members can catalyze these reforms by aligning funding, infrastructure, and assessment with the UNESCO Open Science pillars and emerging principles of responsible research assessment; investing in regional, community-governed interoperable platforms; requiring equity-centred partnership plans; resourcing translation and stewardship; and embedding rights-based data governance. Success will be evident in a bibliodiverse, multilingual, epistemically plural ecology of knowledges, with distributed leadership and policy uptake that reflects many knowledge holders and their communities—not just the usual powerbrokers.

The myriad of complex and interconnected “grand challenges” confronting the global community today necessitate a fundamental shift towards collective action, robust multilateral frameworks, and the reflective and meaningful implementation of Open Science principles. The climate crisis, pandemics, economic inequality, and geopolitical instability transcend national borders and defy unilateral approaches. In an increasingly interdependent world, the well-being and prosperity of one nation are inextricably linked to those of others. Therefore, recognizing that "we are all truly in this together" is not merely a philosophical statement but a pragmatic imperative—underscoring the need for situated open access to research, contextualized data sharing, collaborative methodologies, openness to diverse communities, dialogue with other knowledge systems, and the upholding of Indigenous Peoples’ sovereignty.

[1] The Global Research Council is a voluntary, participant-based organization that recognizes the different missions, mandates and remits of its participant organizations within their respective national research eco-systems. Its positions, decisions or statements are non-binding on participant organizations. Endorsement of such reflects that participant organizations may adopt statements in ways that are consistent with national policies and priorities.

[2] These recent publications also affirm this converging vision of Open Science:
UNESCO & OSMI. (2025). *Principles of open science monitoring*. United Nations Educational, Scientific and Cultural Organization. https://unesdoc.unesco.org/ark:/48223/pf0000383328
Global Research Council. (2025). *Statement of principles: Co-creation for addressing global challenges*. https://www.globalresearchcouncil.org/publications
International Association of Universities. (2025). *Open science: The challenge for universities*. IAU Open Science Expert Group. https://www.iau-aiu.net/IMG/pdf/os_the_challenge_for_universities.pdf

[3] UNESCO, *UNESCO Recommendation on Open Science*, UNESCO General Conference (Paris: UNESCO, 2021), https://doi.org/10.54677/MNMH8546

[4] *Open Science: Monitoring progress, assessing impact | UNESCO*. (2025, July 8). https://www.unesco.org/en/articles/open-science-monitoring-progress-assessing-impact

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The Citational Justice Collective, Ahmed, S. I., Amrute, S., Bardzell, J., Bardzell, S., Bidwell, N., Dillahunt, T., Gaytán, S., Karusala, N., Kumar, N., Guzmán, R. L., Mustafa, M., Nardi, B., Nathan, L., Parvin, N., Patin, B., Reynolds-Cuéllar, P., Rouse, R., Spiel, K., … Wong-Villacrés, M. (2022). Citational justice and the politics of knowledge production. *Interactions*, *29*(5), 78–82. https://doi.org/10.1145/3556549

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[42] This is a protocol developed to facilitate the interoperability of digital repositories. It enables the structured sharing and harvesting of metadata between systems, allowing services like search engines and aggregators to collect and index scholarly content from decentralized sources efficiently.
[43] Implemented in 1991, arXiv is an open-access repository for scholarly preprints, widely used in physics, mathematics, computer science, and related fields to share research before formal peer review.
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[55] SciELO (Scientific Electronic Library Online) is a publicly funded, cooperative Open Access platform launched in Brazil in 1998. It supports multilingual, peer-reviewed publishing across Latin America, the Caribbean, and other regions, aiming to increase visibility and accessibility of scientific literature from the Global South. https://www.scielo.org/

[56] Mukurtu is a free, open-source content management system developed with Indigenous communities to manage and share digital cultural heritage. It supports culturally specific access protocols, TK Labels, and community governance, ensuring that Indigenous knowledge is preserved and shared on Indigenous terms. https://mukurtu.org/

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