# Observations on Community-Driven Diamond Open Access: Objectives, Actions, and Challenges

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## Abstract

[Purpose/Significance] Diamond Open Access (Diamond OA), as a community-driven, non-commercial model, aims to eliminate economic barriers to scholarly communication, restore academic sovereignty, and construct a fair and sustainable scholarly ecosystem. Its development aligns with the "Open Science Recommendation" and the global trend of "community over commercialization," representing a key pathway to address commercial publishing monopolies and promote equitable knowledge sharing. [Method/Process] Based on a community-driven perspective, this study employs a multi-dimensional analytical framework. It conducts qualitative analysis by clarifying core and ancillary objectives; analyzes the community-driven framework from four dimensions—policy, multiple stakeholders, collaboration, and ecological services—by integrating global cases; summarizes four typical organizational models, namely national alliances, academic autonomy, technology empowerment, and parasitic overlay, and examines their evolutionary trends through recent case studies; and identifies core challenges such as policy fragmentation, weak financial sustainability, disciplinary imbalance, and AI ethical risks through SWOT analysis. [Results/Conclusion] Diamond OA has significantly facilitated scholarly communication in non-English regions through community collaboration, as exemplified by SciELO in Latin America and AJOL in Africa, yet faces multiple challenges including funding dependence, technical compliance barriers, and limited impact. China needs to develop a "policy guidance–community autonomy–technology empowerment" triadic-driven model, and promote the localized practice of Diamond OA by constructing a layered community network (such as libraries transforming into publishing hubs), strengthening disciplinary community autonomy, enabling complementary resources between eastern and western regions, and utilizing AI to enhance governance efficiency.

## Full Text

# Observation of Diamond Open Access under Community-Driven Mode: Goals, Actions, and Challenges

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### Abstract

[**Purpose/Significance**] Diamond Open Access (Diamond OA), as a community-driven, non-commercial model, aims to eliminate economic barriers to scholarly communication, restore academic sovereignty, and build a fair and sustainable academic ecosystem. Its development aligns with the UNESCO Recommendation on Open Science and the global trend of "Community over Commercialization," representing a key pathway to counter commercial publishing monopolies and promote equitable knowledge sharing. [**Method/Process**] From a community-driven perspective, this study employs a multi-dimensional analytical framework. Qualitative analysis is conducted by examining core and subsidiary objectives. Based on global case studies, the community-driven framework is analyzed across four dimensions: policy, diverse stakeholders, collaboration mechanisms, and ecological services. Four typical organizational models are identified—national alliances, academic autonomy, technology empowerment, and parasitic overlay—with evolutionary trends analyzed through recent cases. SWOT analysis is used to identify core challenges including policy fragmentation, weak funding sustainability, disciplinary imbalances, and AI ethical risks. [**Results/Conclusion**] Diamond OA has significantly promoted scholarly communication in non-English regions through community collaboration, exemplified by SciELO in Latin America and AJOL in Africa. However, it faces multiple challenges including funding dependence, technological compliance barriers, and limited influence. China needs to develop a three-pronged driving model of "policy guidance—community autonomy—technology empowerment" by building a hierarchical community network (such as transforming libraries into publishing hubs), strengthening disciplinary community autonomy, enabling East-West resource complementarity, and leveraging AI to improve governance efficiency, thereby promoting the localization of Diamond OA practice.

**Keywords:** Diamond Open Access; Community-Driven; Scientific Community; Future Trends

International Open Access Week has centered its discussions and activities on "Community over Commercialization" for two consecutive years. SPARC (2025) notes that community-oriented open pathways, such as Diamond OA and Subscribe-to-Open (S2O), have achieved significant progress over the past two years, with increasing academic autonomy returning to individuals or institu-

tions [1]. This aligns closely with the knowledge-sharing pathways advocated by UNESCO' s Recommendation on Open Science and the Toluca-Cape Town Declaration, which promote "community-owned, community-led, non-commercial" models. The final statement of the 17th Berlin Open Access Conference (B17, 2025) emphasizes that deepening the open publishing transition requires not only steadfast support for diverse OA models but also building community-driven scholarly publishing models within the OA2020 framework and promoting scholarly communication development that meets local language needs or serves specific research communities [2].

Diamond OA has garnered growing attention because it is defined as an equitable scholarly communication model. The cOAlition S, together with the French ANR, Science Europe, and other institutions, has proposed establishing a global Diamond OA network, an initiative adopted by UNESCO. In multiple international policy documents, Diamond OA is increasingly viewed as a crucial alternative to the inequitable and unsustainable commercial publishing model. Scholars such as Bosman (2021) [3] and Yu Linxi (2024) [4] have found through DOAJ data analysis that the number of compliant Diamond OA journals is growing rapidly, though regional and disciplinary disparities persist. Fortunately, Diamond OA is evolving in full alignment with Plan S principles.

Johan Rooryck, Executive Director of cOAlition S (2024), argues that the true uniqueness of Diamond OA lies in its "community-driven" nature [5]. International organizations represented by cOAlition S have actively pursued practices such as the European Diamond Capacity Hub (EDCH) and the ALMASI project, both focusing on Diamond OA. In May 2025, the German national Diamond Capacity Center (SeDOA) project officially launched, receiving support from the German Research Foundation (DFG) and DOAJ. In the Global South, SciELO and Redalyc represent voices from non-English regions. Following the Diamond Open Access summits in Toluca, Mexico (2023) and Cape Town, South Africa (2024), Diamond OA that "respects diversity and local needs" is rapidly developing.

In contrast, both Diamond OA practice and theoretical research remain limited in China. This paper adopts a community-driven perspective to provide a panoramic observation of Diamond OA development across three dimensions —goals, practical actions, and challenges—offering references for China' s open access development.

## 1. Analysis of Diamond Open Access Goals

In the open access movement, subscription models and gold open access have failed to effectively resolve the "paywall" problem, while Plan S has had limited impact on gold OA [4]. Transformational agreements, as a representative driving force, face a critical transition of "ecological reconstruction." The Gates Foundation announced it would cease paying Article Processing Charges (APCs) from 2025, shifting support to preprints and equitable publishing; the Wellcome

Trust has incorporated preprints (CC-BY licensed) into compliance pathways and begun supporting African Diamond OA publishing [6]. Both JISC' s next-generation open access publishing agreements in the UK and OASPA' s "Beyond 50%" project address common challenges of funding sustainability, global equity, and multi-stakeholder collaboration. cOAlition S has chosen to explore the Diamond OA pathway, aiming to build a fair, sustainable, and scholar-led scholarly publishing ecosystem. Based on the "Action Plan for Diamond Open Access" (2022) [7] and related literature, a Diamond OA goal pathway diagram is presented in Figure 1 [Figure 1: see original paper].

### 1.1 Core Goals of Diamond Open Access

The core goal of Diamond OA is to achieve free, open, and sustainable dissemination of scholarly outputs. Its most prominent feature is being free for both authors and readers—eliminating economic barriers without charging any subscription fees, APCs, or Book Processing Charges (BPCs). Funding comes entirely from academic institutions, foundations, and governments, completely removing publishing and access obstacles caused by economic factors. Simultaneously, it ensures the return of academic sovereignty: Diamond OA is scholar-led, with academic communities owning and controlling all content-related elements in scholarly publishing, such as journal and platform names, publications, peer review, and preprints, ensuring publishing decisions prioritize academic interests over commercial ones.

Sustainability is guaranteed through three aspects: funding, infrastructure, and community-driven mechanisms. For example, U.S. university library consortia collaborate to invest in Diamond OA journals and platforms [8]; the French government provides funding for Diamond OA journals through its national open science plan; the EU' s Horizon Europe program funds related projects to enhance infrastructure; and the UK' s Open Library of Humanities (OLH) supports Diamond OA journal operations through membership and institutional funding while providing technical and service support [9].

### 1.2 Subsidiary Goals of Diamond Open Access

Subsidiary goals of Diamond OA include community-driven scholarly publishing, supporting linguistic and knowledge system diversity, reconstructing academic evaluation systems, and infrastructure improvement. Community-driven is a distinctive feature of Diamond OA, particularly for small and medium-sized academic institutions or libraries that can better integrate and adapt to the evolving scholarly ecosystem within a community framework [10], obtaining publishing funding, improving efficiency and quality, and sharing resources and experiences. Multilingual and diverse research is also encouraged, especially as the Global South attempts to reshape scientific evaluation systems through Diamond OA' s "alternative impact metrics" [11] to mitigate East-West disparities caused by persistent power imbalances, research assessment biases, and epistemic inequalities. These subsidiary goals are interconnected with core goals,

collectively driving scholarly publishing toward greater equity, openness, and sustainability.

**Table 1 . Major Diamond OA Platforms Statistics**

| Platform | Region | Journals | Primary Funders | Key Features |
|---|---|---|---|---|
| SciELO | Latin America | 1,470+ | Governments, foundations (e.g., FAPESP) | Multilingual publishing (Spanish/Portuguese/English), national cooperation network, preprint integration |
| Redalyc | Latin America | 1,200+ | University consortium (UAEM-led) | Free XML structured markup, semantic publishing technology, advocacy for American academic sovereignty |
| Érudit | Canada | 300+ | Library membership (global) | Focus on humanities, supports complex texts (poetry/ancient texts), no APC alternative funding model |
| Episciences | France | 19,800+ (including diamond) | Inria (French National Institute for Research in Computer Science and Automation), SCOSS, Wellcome Trust | Overlay journal platform: builds peer review layer based on preprints (arXiv/HAL), supports rapid journal creation |

| Platform | Region | Journals | Primary Funders | Key Features |
|---|---|---|---|---|
| AJOL | Africa | 10,000+ | Foundation/institutional consortium | Prioritizes African indigenous research, provides publishing capacity training, multilingual abstracts (English/French/local languages) |
| DOAJ | Global | 18,000+ | Various | Largest OA journal directory, strict certification standards, distinguishes APC/non-APC journals |
| PKP | Global | 30,000+ | Mellon Foundation, Canadian government | Technology enabler: provides open-source publishing system OJS, supports global journal self-hosting |
| J-stage | Japan | 3,200+ | Japan Science and Technology Agency (JST) | Japanese academic journal integration portal, supports Japanese-English bilingual, fully government-funded |

| Platform | Region | Journals | Primary Funders | Key Features |
|---|---|---|---|---|
| CRKN | Canada | N/A | Social Sciences and Humanities Research Council of Canada | Focus on social sciences and humanities, develops CRKN collaborative tool chain, supports digital humanities multimodal publishing |

## 2. Community-Driven Action Mechanisms

### 2.1 Diamond OA Community Framework

As a typical community-driven open access model, Diamond OA has attracted global attention, particularly in Latin America and Europe. Under open access project frameworks, former "free" journals and OA journals are transitioning to Diamond OA standards, forming numerous Diamond OA platforms or infrastructures, with brief statistics shown in Table 1. Within these platforms, international organizations, libraries, research institutions, and scholars form an active network community. Under community leadership, they obtain funding and technical support, jointly control scholarly publishing, participate in decision-making, and enable fully open knowledge sharing and collaboration, forming a scholarly ecosystem driven by policy, diverse stakeholders, collaboration mechanisms, and ecological services. The framework is illustrated in Figure 2 [Figure 2: see original paper].

**Policy-Driven:** To address existing scholarly publishing problems, cOAlition S began exploring the Diamond OA model to reconstruct the scholarly publishing ecosystem, return to academic essence, and achieve equitable knowledge dissemination and sharing. This model fully aligns with UNESCO' s Recommendation on Open Science. Subsequently, under the guidance of the "Action Plan for Diamond Open Access," the EU' s Horizon Europe funded the strategically significant and complementary DIAMAS and CRAFT-OA projects, which became the foundation for the European Diamond Capacity Hub (EDCH, 2025) [12]. In the Global South, the Toluca-Cape Town Declaration represents a major milestone for the Diamond OA movement, explicitly defining scientific outputs as "public goods" and making non-commercial operation mandatory—arguably the most important outcome of the two global Diamond OA summits. Under this policy drive, the Global South has launched a series of Diamond OA practices.

**Diverse Stakeholders:** Diamond OA operates through multi-stakeholder collaboration. Diversity, equity, and inclusion are key principles of Diamond OA, with equal participation from academic institutions, scholarly societies, pub-

lishing platforms, technology platforms, funding agencies, government bodies, and international alliances. For example, over 150 organizations have formally signed to support the Diamond OA Action Plan (Johan Rooryck, Executive Director, cOAlition S). SciELO covers journal resources from 14 countries in Latin America, committed to multilingual publishing in Spanish, Portuguese, English, and French. Professional publishing platforms such as Redalyc and OLH, along with open-source software like OJS and Janeway, actively participate, providing diversified options for Diamond OA.

**Collaboration Mechanisms:** Typically, multiple working groups are established under the community framework to handle specific tasks, with members including librarians, library consortium representatives, research funders, and publishers. Other members can fairly participate in any activities initiated by working groups. Typical working groups include OA2020' s "Middle and Low-Income Countries Working Group," COAR' s Evaluation Working Group, and EDCH' s Journal Standards Development Working Group. Through community collaboration, EDCH' s Journal Standards Development Working Group has released standardized frameworks such as the "Diamond Open Access Standard Journal Guide," while COAR' s IRD emphasizes "community co-building and decentralized responsibility," an architecture considered more sustainable [13]. Beyond these collaborative activities, communities like COAR and EDCH provide online forums for real-time member communication and collaborative work on common topics, greatly promoting Diamond OA advancement efficiency.

**Ecological Services:** Comprehensive ecological services are provided within the community framework, including publishing standards, guidelines, and frameworks such as the Diamond Open Access Standard (DOAS), JISC Open Access Community Framework (OACF), and COAR Repository Best Practices Community Framework. Capacity-building opportunities are offered, such as EDCH' s staff training to enhance publishing personnel skills in technical operations, editorial processes, and compliance management. Resource support is obtained through SCOSS funding for Diamond OA infrastructure and open-source software like DSpace. Cooperation and data sharing are achieved through the European Open Science Cloud (EOSC) integrating Diamond OA journals and preprint platforms for data interoperability and resource sharing. Latin America' s Latindex and Africa' s Libsense support localized publishing ecosystems while accommodating linguistic and cultural diversity. DOAJ has long collaborated with Diamond open infrastructures, maintaining partnerships with major service organizations like Latindex, Redalyc, and SciELO. In 2025, DOAJ announced it would provide platform data to EDCH, which will become the cornerstone of the Diamond Discovery Hub (DDH) [14].

### 2.2 Organizational Models

Diamond OA exhibits a complex spectrum of organizational models, often presenting hybrid forms in practice. Based on governance structure, funding sources, and collaboration levels, four core models can be identified, as shown

in Table 2 .

**(1) National/Regional Alliance Model:** Typically, government agencies collaborate with universities and libraries to form a public funding pool, coordinating resources through national nodes. For example, SciELO was initiated by Brazil' s FAPESP foundation, with 16 member countries sharing platform costs according to GDP ratios to ensure regional equity. J-stage involves strong government intervention in Japan, requiring national university journals to join the platform.

**(2) Academic Community Autonomy Model:** The typical representative is OLH, where platform rules are decided by editorial boards elected by scholars, with funding 主要来自 library membership fees or small donations. Additionally, OLH has attempted to collaborate with mathematics journals, borrowing from these "wealthy" journals to fill funding gaps.

**(3) Technology Empowerment Model:** Primarily based on open-source software platforms, non-profit organizations like PKP and Redalyc develop open-source publishing systems for free journal use, though journals generally operate autonomously. Typically, technological innovation brings management upgrades and efficiency improvements. For instance, PKP' s OJS-AI plugin can automatically generate multilingual abstracts and verify references, while Redalyc' s XML structured tools can automatically generate knowledge graphs, greatly enhancing paper machine-readability.

**(4) Parasitic Overlay Model:** This model directly reuses preprint platforms' (arXiv/HAL) storage and distribution systems, adding only lightweight peer review functions to achieve zero-cost typesetting and rapid journal creation based on research hotspots.

Beyond these four core models, there are dispersed cases such as the Association of European University Presses (AEUP) and the Library Publishing Coalition (LPC) promoting scholar-led publishing [15]. This library-supported fair publishing model directly converts original subscription fees into Diamond OA publishing support. The decentralized concept of blockchain technology aligns perfectly with Diamond OA community principles, making future blockchain-based practices a direction worth monitoring.

### 2.3 Evolutionary Trends and Community Governance

Diamond OA development has evolved from simple "alliance-platform" binary opposition to an innovative form of deep coupling among "technology-funding-governance." This evolution is reflected not only in organizational model diversification (as shown in Table 3 ) but more profoundly in continuously improving community governance mechanisms, pointing toward a more resilient, equitable, and efficient future. In 2025, with EDCH' s formal operation, the launch of Germany' s national Diamond Capacity Center project, and deepening cooperation between Africa' s Libsense Alliance and Latin America' s AmeliCA network,

the Diamond OA community is actively addressing challenges and exploring key development pathways.

**Table 3 . Key Comparisons Across Models**

| Assessment Dimension | National/Regional Alliance | Academic Community Autonomy | Technology Empowerment | Parasitic Overlay |
|---|---|---|---|---|
| Governance Complexity | High (requires government support) | Medium (consensus-driven) | Low (tool reuse) | Low (minimal oversight) |
| Implementation Speed | Slow (policy negotiation) | Slow (consensus-building) | Fast (tool adoption) | Fast (on-demand creation) |
| Disciplinary Adaptability | Medium (region-specific) | Strong (customized by discipline) | Medium (general tools) | STEM priority |
| Funding Sustainability | 4 (public budget) | 2 (membership fluctuations) | 3 (foundation support) | 4 (near-zero cost) |

**(1) Germany' s SeDOA "Hub-and-Spoke" Structure:** Germany' s SeDOA project, implemented on May 1, 2025, aims to coordinate German Diamond OA practices with EU standards as the German node of EDCH. The DFG serves as the primary funder, with the Max Planck Society responsible for technology development, jointly leading policy coordination and infrastructure hosting. According to the project proposal [16], the project comprises six work packages: governance and communication, publishing services, community support, network services, registration systems, and innovation labs, each executed by one or several member institutions (primarily universities and university libraries). Its sustainability design involves a two-phase execution (3 years + 3 years), with the latter phase attempting to shift to institutional membership fees while adhering to DOA principles. Through AG Universitätsverlage (33 members), it leverages the existing publishing ecosystem to set annual DOA book publishing plans and Diamond OA journal conversion targets. A distributed service network is built: Bielefeld University manages the registration system, constructing a DOA journal database incorporating quality/technical standards and supporting article-level monitoring; the German Economic Center (ZBW) handles community support, conducting needs surveys, training, and legal consulting, with Hamburg City Library assisting in building OJS technical support networks; and an innovation lab is established at the University of Applied Sciences Potsdam to explore frontier technologies (AI, semantic publishing) and organize co-creation activities (Ideathon), connecting with the OPERAS innovation ecosystem. Ultimately, through decentralized infrastructure and multi-level capacity building

(publishing support + community training + innovation incubation), DOA is positioned as the backbone of German academic publishing.

**(2) Global South Cooperation:** Latin America pioneered non-commercial open access models decades before the Global North [11], with SciELO founded in 1997 and Redalyc established in 2003. Global South practices have profoundly influenced Europe and North America; for example, SciELO's Diamond OA model provided APC alternatives for Plan S, which in 2024 proposed the "Towards Responsible Publishing" initiative, partially drawing from SciELO's experience [17].

Intra-Latin American cooperation is extensive and sustained. Since 2022, Redalyc (Mexico), La Referencia, and RedCLARA (Uruguay) have collaborated to build a regional open science ecosystem, improving metadata interoperability between Diamond OA and Green OA [18]. Based on open-source XML-JATS markup software, they have achieved efficient, sustainable scholarly publishing with qualitative improvements in standardization, automated processing, and long-term preservation. By 2024, Redalyc had enabled digital transformation for 1,238 journals, while AmeliCA covered 438 [19].

The Libsense initiative is Africa's primary Diamond OA driver. Beyond building cross-regional collaboration networks, it has borrowed extensively from Latin American experiences, such as introducing La Referencia's distributed storage technology and sharing OJS deployment experience with RedCLARA [20], transforming global frameworks into Africa-specific policies and practices. Through African regional coordination (e.g., library-REN partnerships) and intercontinental technology sharing, LIBSENSE has preliminarily constructed an African open science ecosystem. The cooperation foundation between Latin America and Africa ultimately formed the Global South's important voice, the Toluca-Cape Town Declaration [21], marking a milestone for the global consensus on science as a public good and ushering in a new phase of comprehensive practice in building non-profit infrastructure, unifying technical standards, policy coordination, and capacity transfer.

## 3. Realistic Challenges Facing Diamond OA

Based on the above analysis, a SWOT analysis is presented in Figure 3 [Figure 3: see original paper]. Through identification of external threats and internal weaknesses, the core challenges for community-driven Diamond OA development clearly lie in funding, technology, governance, and influence balance.

### 3.1 Policy and Technical Barriers

Diamond OA development is constrained by policy fragmentation and non-unified technical standards. In terms of policy barriers, open access policies vary across countries and regions. While the EU strongly promotes Diamond OA through Horizon Europe, some countries still prioritize gold OA. The anticipated direction of U.S. research funding cuts in 2025 is expected to further

exacerbate funding gaps in coming years, impacting sustainable development across multiple key areas. U.S. policy uncertainty has intensified global collaboration difficulties. Regarding technical barriers, the lack of unified interoperability standards results in low data-sharing efficiency between journal platforms and repositories. For example, some Diamond OA platforms rely on specific open-source tools like OJS, but their functional expansion is limited by development team support capacity. Diamas project leader Mounier argues that only through coordinated, strategic action by the global Diamond community can it potentially compete with commercial publishing giants like Springer and Elsevier.

### 3.2 Funding Sustainability

Diamond OA operations rely on external funding, facing severe sustainability challenges. Financially stable journals are more likely to achieve sustainability, requiring national and international support [22]. A large proportion of Canada' s Diamond OA journals rely on library funding, and their cluster-based differentiated development is prompting funding agencies to revise policies to adapt to the changing scholarly ecosystem [23]. The current reliance on volunteer labor and donations from universities and academic societies is the main cause of poor sustainability. Since 2022, Jisc has launched two rounds of crowdfunding under OACF (13 publishing plans total), with only three receiving full funding [24], and the program is limited to monographs and series, leaving its crowdfunding capacity yet to be evaluated. Beyond Diamond OA journals and books, Diamond OA publishing platforms and other infrastructure also face funding pressures, such as OLH' s membership model bottleneck, where adding one Diamond OA journal requires 15 additional small library members, and its cross-disciplinary subsidy policy has not fully resolved funding issues. The IOI annual report "State of Open Infrastructure" (2025) emphasizes that in macro uncertainty, open infrastructure has become a "critical dependency" of the research system, but funding source vulnerability is increasingly severe due to international policy changes [25].

### 3.3 Influence and Compliance Challenges

Currently, Diamond OA journals are predominantly in the humanities and social sciences, with low recognition in STEM disciplines. This disciplinary imbalance makes enhancing academic influence difficult. The current academic evaluation system over-relies on traditional metrics like impact factors, making it difficult for Diamond OA journals to gain full recognition and affecting their attractiveness and acceptance. Furthermore, many Diamond OA journals are limited by technical facilities and academic reputation, struggling to attract high-quality submissions, as researchers still prefer publishing in high-impact hybrid or gold OA journals.

Conversely, according to Delta Think statistics [26], Diamond OA journals'share of global OA journals has decreased from 26% to 19.6%, while the proportion

of APC-charging gold OA journals is rising. Transformational agreements and hybrid OA are squeezing Diamond OA' s development space.

Additionally, factors such as non-standard copyright agreements, missing data archiving, and incomplete metadata affect Diamond OA compliance. According to Bosman et al. [3], only about 4.3% of Diamond OA journals fully comply with Plan S, 37% adopt CC-BY licenses, and approximately 68% have no data storage policy. The lack of unified technical platforms and management standards affects compliance in data archiving and metadata management. As policies adjust, some funding agencies (Wellcome Trust) require preprint compliance [6], but Diamond OA journals' publishing processes may not meet these policy requirements.

### 3.4 AI Rationality

Diamond OA' s fully "open" nature inevitably leads to integration and collision with AI. While AI can improve publishing efficiency, AI dependency may lead to "algorithmic black boxes" in academic evaluation, undermining peer review authority. The DFG maintains a neutral, prudent stance on AI, advocating adherence to transparency, integrity, and quality principles in specific application scenarios, making AI an important tool to assist research, drive innovation, and promote openness rather than a "substitute" replacing scholars' critical thinking and ethical judgment [27]. Scraping academic knowledge to train AI models and integrating AI into academic workflows without authors' consent is affecting academic fairness. CAOR' s latest survey (2025) shows that AI crawlers are increasingly impacting global open access repositories, even severely affecting service stability [28]. To counter crawler attacks, open platforms may implement restrictions such as access frequency limits and CAPTCHA verification. Unrestricted AI scraping and utilization of research outputs is increasing academic ethical risks. How should open science respond? Practices such as DFG' s requirement for detailed AI usage explanations, Switzerland' s AI usage clauses in transformative agreements with Wiley, and OpenAI' s timely release of latest terms and rules are exploring reasonable boundaries. AI can only be an auxiliary tool, not a replacement for human decision-making.

In summary, Diamond OA' s challenges are multi-dimensional and require coordinated responses through policy alignment, technological innovation, and funding model optimization. Community-driven collaboration mechanisms and rational AI application will provide key solutions to these challenges.

## 4. Implications for China' s Diamond Open Access Development

China has achieved remarkable progress in open access journals, repositories, and open infrastructure in recent years. The number of Chinese Diamond OA journals is increasing, particularly under the "Excellence Action Plan for China' s Scientific and Technological Journals," with newly established English journals

mostly adopting Diamond OA models. Chinese Diamond OA journals are concentrated in science, technology, and medicine (STM) fields [29], contrasting sharply with the global distribution dominated by humanities and social sciences. In terms of basic platforms, the Chinese Academy of Sciences' preprint platform (ChinaXiv), the Pubscholar public academic platform, and Tsinghua University' s OpenSign and SciOpen platforms provide diverse options for researchers. However, no unified national-level network has yet formed. Scholars (Cui Liyuan, 2022) [30] have proposed establishing a national open access capacity center to conduct efficient, standardized, and transparent Diamond OA practice under unified planning. The Chinese University of Hong Kong, in collaboration with CNKI, is planning a "Diamond OA Megajournal Project" to build a solid platform in social sciences and humanities [31], offering significant inspiration. Based on the above observations and international practice summaries, from a community-driven perspective, China' s Diamond OA development should focus on multi-stakeholder collaboration within the academic ecosystem, emphasizing bottom-up participation and resource integration. Specific recommendations are as follows:

### 4.1 Strengthen Community Collaboration Networks and Build Localized Capacity Centers

**(1) Library Role Transformation:** Under China' s current strategies of becoming a science and technology powerhouse and advancing digital education, libraries must achieve strategic transformation—from "resource procurers" to "publishing supporters," and from "resource providers" to "open science service hubs."For example, the "Fair Open Access Funds"at KU Leuven and Berlin Institute of Technology libraries are important sources for supporting equitable publishing. Top Chinese university libraries such as Tsinghua and Peking University actively participate in publishing lab practices, promoting digital publishing innovation through resource provision, technical support, and knowledge services. Libraries should also lead the formation of regional Diamond OA alliances, integrating institutional repositories, data management tools, and publishing platforms. They could adopt the Max Planck Society' s "Open Access 2025" model, where university libraries jointly establish capacity centers providing technical standards and copyright management training.

**(2) Co-building Journal Communities:** The "Excellence Action Plan for China' s Scientific and Technological Journals" encourages and supports open access directions through pilot cluster projects without mandatory requirements, allowing journals to choose suitable open access types. Based on this, leading journals should be encouraged to establish disciplinary communities, such as in materials science and artificial intelligence, using community voting to decide APC exemption rules and peer review processes, avoiding unilateral dominance. Large journal groups like the Chinese Medical Association journals and Chinese Academy of Sciences journals could also adopt the form of "Diamond OA Alliances" to share reviewer pools and infrastructure, enhancing overall influence.

### 4.2 Layered Activation of Multi-Stakeholder Participation

**(1) Funding Crowdfunding and Community Autonomy:** At the policy level, China could follow the Netherlands' transformation experience by establishing open access funds for structural investment in open access [32]. For example, publishing reserves could be allocated from research funds, and "Double First-Class" universities in eastern and western China could pair up to build a sustainable funding ecosystem. The National Natural Science Foundation could pilot a "research fund publishing reserve" system to specifically support Diamond OA publishing, integrating publishing budgets from natural and social science foundations to establish a national Diamond OA special fund with increased support for social sciences. Beyond the national level, institutional membership and scholar crowdfunding models could be introduced, designing eastern university subscription conversions to support western Diamond OA, with economically developed regions sharing costs to achieve public access to academic outputs.

**(2) Industry-University-Research Collaboration:** Universities and research institutions can establish their own publishing platforms to reduce dependence on commercial publishers. Researchers should be encouraged to actively participate in Diamond OA journal editing and peer review, strengthening control over publishing processes. Libraries can assist journals in digital construction and management to improve publishing efficiency and quality. Active participation in international Diamond OA projects can help China learn from experiences and enhance its capabilities. Universities and research institutions should incorporate Diamond OA into research evaluation systems to activate multi-stakeholders in building academic communities.

### 4.3 Discipline Community-Driven Differentiated Development

**(1) Prioritize Support for Interdisciplinary and Vulnerable Disciplines:** Before unified national or alliance-level Diamond OA platforms are established, discipline-community-driven differentiated development is a practical path. While piloting Diamond OA in advantageous disciplines, humanities and social science journals could be supported through community proposal mechanisms, maintained through donations and volunteer peer review—drawing from OLH' s cross-disciplinary subsidy mechanism. Diamond OA inherently focuses on marginalized research groups, emphasizing diversity, equity, and inclusion, and supporting multilingual, multicultural academic community development. Vulnerable disciplines can enhance visibility through open access platforms to attract more attention and support, providing fairer opportunities for interdisciplinary and vulnerable fields and contributing to equitable scholarly communication.

**(2) Balanced Community Practice:** While network communities eliminate geographical restrictions, advantageous resources tend to concentrate in network-dense areas. To eliminate this disparity, balanced practices should be

implemented, such as establishing an "East-West Journal Pairing Program" where eastern journal communities provide editorial operation experience to the west, and the west provides characteristic research content (e.g., ecological, ethnic studies), forming resource complementarity. Beyond eliminating regional disparities, Diamond OA communities should actively guide academic research fairness, breaking the "SCI supremacy" inertia by incorporating Diamond OA into academic evaluation systems, such as recognizing 本土 Diamond OA papers in professional title reviews.

### 4.4 AI Empowering Community Autonomy and Efficiency Enhancement

**(1) Intelligent Community Governance:** AI's impact on scientific research is comprehensive. Open-source large language models' processing of academic literature and big data is incomparable to humans, supporting multimodal processing of text, images, and audio. Proper AI utilization can enable intelligent governance of academic communities. AI-assisted publishing and resource management, such as OJS' s offline AI tools, can significantly reduce manual labor, shorten publishing cycles, and improve efficiency. Its semantic annotation capabilities and automatic knowledge graph generation can reduce linked data error rates and enhance machine readability, meaning management efficiency is greatly improved. AI can also assist community decision-making, such as developing community decision-making tools that automatically generate recommendation texts and multilingual summaries to help dispersed members efficiently participate in rule-making.

**(2) Co-building Open Data Communities:** Through community collaboration, China can build a 本土 Diamond OA database, using AI to automatically identify compliant journals and track funding flows to enhance transparency. Academic-specific large models can achieve academic language conversion, research compliance review, and cross-disciplinary identification. In evaluation systems, AI can enable paper deposit verification, peer review contribution confirmation, and citation data traceability, all of which can mitigate academic monopoly impacts to some extent. Particularly given China' s AI technology advantages, its algorithmic and computational resources can lower technical barriers, such as DeepSeek supporting open sharing and reuse of its algorithms. Global collaboration, localized promotion, and evaluation system optimization through extensive practice are common experiences in open science development [33].

As an important practice of open science, Diamond OA, represented by the European Diamond Capacity Hub and Global South joint practices, is gradually reshaping the scholarly publishing landscape. Numerous practical explorations have been conducted in Diamond OA journal standards, infrastructure, capacity building, and community governance. However, the contradiction between idealized academic autonomy and realistic resource constraints cannot be eliminated immediately. Under commercial model monopolies, Diamond OA requires

long-term policy and funding guarantees, and journal operators' publishing and management capabilities still need standardized improvement. Fortunately, typical community-driven means such as decentralized governance and open-source technology have brought some innovation to practical actions; AI applications have brought revolutionary benefits to standardization, publishing efficiency, and interoperability; and regional alliances in Latin America and Africa are moving toward cooperation, showing a "South-South" collaboration trend attempting to address Africa' s weak open infrastructure. These cases provide valuable experience for China' s open science development.

China' s sustainable Diamond OA development needs to move beyond the simple "policy-funding" top-down design logic and instead cultivate community self-organization capabilities. Through layered activation of library alliances, disciplinary communities, and regional collaboration networks, combined with AI technology to reduce collaboration costs, China can ultimately form a "policy guidance—community autonomy—technology empowerment" three-pronged driving model with Chinese characteristics.

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## Appendix: Chinese-Foreign Abbreviations

- **AI:** Artificial Intelligence
- **ANR:** Agence Nationale de la Recherche (French National Research Agency)
- **ALMASI:** African, Latin American and Mediterranean Solidarity for Open Access Publishing
- **IOI:** Invest in Open Infrastructure
- **IRD:** International Repository Directory
- **JISC:** Joint Information Systems Committee
- **OASPA:** Open Access Scholarly Publishers Association

- **OPERAS:** Open Scholarly Communication in the European Research for Social Sciences and Humanities
- **Redalyc:** Red de Revistas Científicas de América Latina y el Caribe, España y Portugal (Network of Scientific Journals of Latin America and the Caribbean, Spain and Portugal)
- **SciELO:** Scientific Electronic Library Online

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*Note: Figure translations are in progress. See original paper for figures.*