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Research on the Evolutionary Dynamics of the Global AI Divide and Pathways toward Inclusive Development

Center for International Communication Studies, Zhejiang University
Wuzhen Institute for Digital Civilization

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Foreword

Artificial intelligence is rapidly emerging as a new general-purpose technology (GPT) and a form of cognitive infrastructure that is reshaping global relations of production. However, the highly uneven distribution of its benefits is giving rise to an AI divide that is more systemic and less visible than the traditional digital divide, raising the serious prospect of a new global "great divergence." This structural inequality manifests across multiple dimensions, including stratification in national AI readiness, the concentration of gains among large technology firms, unequal access to computing power, imbalances in the representativeness of data and models, polarization of labor skills, and misalignment in global governance frameworks. At its core lies an "impossible triangle" jointly constituted by high technological barriers, capital concentration, and geopolitical constraints. Overcoming this structural dilemma requires leveraging innovation pathways characterized by openness, efficiency, and low cost—exemplified by projects such as DeepSeek—to transform AI into a shared intelligent public good for humanity. The international community should integrate disruptive technological innovation with inclusive global governance in order to build a more equitable, inclusive, and sustainable global order of intelligence.

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Ⅰ、The Evolving Dynamics and Multidimensional Manifestations of the Global AI Divide

In the era of intelligent communication, the traditional digital divide is rapidly evolving into a deeper AI divide, widening disparities across four key dimensions: access to and production of knowledge, capabilities for livelihood and rights protection, participation in expression and social influence, and the capacity to critically reflect on and resist technological alienation.[1] The AI divide (Digital Divide 3.0) has moved beyond the earlier access divide—whether individuals can connect to the internet (Digital Divide 1.0)—and the skills divide—whether people can effectively use Internet (Digital Divide 2.0). It has evolved into a form of systemic inequality structured around computing power, algorithms, data resources, talent, organizational capabilities, and governance rules. Compared with the traditional digital divide, the AI divide is marked by stronger exogeneity and opacity. Its formation is often driven by external forces such as global capital flows, geopolitical competition, technological standard-setting systems, and the control of platform ecosystems. Its effects extend across critical dimensions including national development capacity, positions within global industrial value chains, labor market structures, and even influence over international governance discourse. Meanwhile, the inequalities it generates are frequently obscured by the appearance of "technological neutrality," making them difficult to detect, identify, and correct in a timely manner.

(I) Stratified Global AI Readiness and Emerging Development Barriers

From an evolutionary perspective, the global AI divide is undergoing a critical shift—from early disparities in basic digital capabilities toward deeper inequalities in the distribution of AI-driven benefits and the power to shape governance rules. This implies that a country or region' s ability o continuously capture dividends from the AI dividends from the AI wave no longer depends primarily on internet penetration rates or the general level of digitalization. Instead, it hinges on whether it possesses the comprehensive capacity to cross the AI readiness threshold, including robust infrastructure, a well-developed talent system, a dynamic innovation ecosystem, effective regulatory capacity, and sound ethical governance frameworks.The AI Preparedness Index (AIPI) introduced by the International Monetary Fund provides a concrete illustration of this transition. The AIPI evaluates 142 economies worldwide across four dimensions—digital infrastructure, human capital and labor policy, innovation and economic integration, and regulation and ethics—clearly revealing a stratified global landscape of AI readiness. Advanced economies as a whole occupy the leading tier, while low-income countries exhibit structural deficiencies across multiple dimensions, creating a difficult-to-overcome "starting-line gap" in the global race for AI development.[2] However, AI readiness itself is increasingly becoming a new development threshold. Unlike traditional digitalization, the effective deployment of AI requires countries to simultaneously possess high-quality network and computing infrastructure, a well-trained workforce, industrial systems capable of absorbing new technologies, and regulatory as well as ethical frameworks capable of responding to emerging risks. Advanced economies, benefiting from the synergy between

[1] Lan P. "Exploring the Trajectory of the 'AI Divide' in the Era of Intelligent Communication." Chinese Editors Journal,2024, (11): 19–26.
[2] Melina G. Mapping the World's Readiness for Artificial Intelligence Shows Prospects Diverge. 2024-06-25. https://www.imf.org/en/blogs/articles/2024/06/25/mapping-the-worlds-readiness-for-artificial-intelligence-shows-prospects-diverge

infrastructure and institutional capacity, are able to efficiently translate AI capabilities into productivity gains and industrial innovation, thereby generating a virtuous cycle of development. In contrast, even when low-income countries achieve progress in certain sectors, the weakness of their broader development ecosystems often prevents them from scaling AI applications or sustaining iterative technological upgrading.[3] This implies that AI readiness has shifted from a descriptive indicator of development status to a selective indicator of development status to a selective mechanism. Only by crossing this threshold can countries and regions secure long-term, sustainable structural benefits from the AI wave. Without overcoming this barrier, even if AI technologies are deployed in limited contexts in the short term, such efforts are likely to remain confined to demonstration-level applications, external technological dependence, and marginal value creation. As a result, these economies may find it difficult to truly integrate into the core trajectory of global AI development.

(II) Divergence in Corporate AI Applications and Imbalanced Returns Driven by Capital

From an industrial and corporate perspective, the global diffusion of AI presents a situation where surface prosperity coexists with internal divergence. On the one hand, the Stanford AI Index Report 2025 shows that global private investment in AI remained substantial in 2024, reaching approximately US$315.9 billion, with US AI investment hitting US$109.1 billion, significantly leading other countries.[4] The global adoption rate of AI among organizations rose from 55% in 2023 to 78% in 2024, yet a significant gap exists between large enterprises and small and medium-sized enterprises (SMEs). More than 60% of large corporations are piloting or operating AI projects, compared with less than 40% of micro and small enterprises. Meanwhile, nearly 40% of businesses are piloting generative AI projects, but fewer than 5% of these projects have achieved stable implementation and delivered substantial financial returns.[5] On the other hand, "using AI" is not equivalent to "benefiting stably from AI". A growing body of evidence indicates clear adoption gaps, capability gaps, and value gaps among enterprises. Large enterprises, with their data accumulation, computing power budgets, process governance, and interdisciplinary talent, are better positioned to advance AI from pilot projects to large-scale applications. In contrast, most small and medium--sized enterprises remain at the stage of tool experimentation, partial integration, and demonstrative deployment. Relevant enterprise surveys also note that, despite the large number of AI projects, the proportion of those that can achieve stable implementation and continuously generate significant financial returns remains limited. Enterprises generally face the difficult challenge of scaling from pilot to production.[6] Thus, the reality of AI diffusion is not balanced and inclusive growth, but the centralizationof returns beneath a high adoption rate. This renders the AI Divide more insidious than the digital divide: while AI adoption appears widespread, only a select few entities have developed sustainable, intelligent productive capacity.

(III) Global Imbalance in Computing Infrastructure and Concentrated Distribution of Key Resources

If the core infrastructure of the digital age consists of broadband and terminals, the underlying infrastructure of the intelligent era is high-performance computing

[3] Cazzaniga M. et al. Gen-AI: Artificial Intelligence and the Future of Work. 2024-01-14. https://www.imf.org/en/publications/staff-discussion-notes/issues/2024/01/14/gen-ai-artificial-intelligence-and-the-future-of-work-542379
[4] Stanford HAI. The 2025 AI Index Report. https://hai.stanford.edu/ai-index/2025-ai-index-report/economy
[5] 199IT. Generative AI Divide: The State of Commercial Artificial Intelligence in 2025. 2025-08-29. http://www.199it.com/archives/1780923.html
[6] Singla A et.al. The state of AI: How organizations are rewiring to capture value. 2025-03-12. https://www.mckinsey.com/capabilities/quantum-

(HPC), large-scale data centers, cloud platform capabilities, and advanced chip supply. These resources are highly concentrated across the globe. According to the World Bank's Digital Progress and Trends 2025 report, high-income countries own the vast majority of the world's Top 500 high-performance computing systems and hold an overwhelming share of computing power. Low- and middle-income countries suffer from significant shortages in both the number of systems and computing capacity, creating a severe computing power deficit. The report also notes that the per capita number of secure internet servers in the United States is vastly higher than in typical middle- and low-income countries, with gaps ranging from hundreds to tens of thousands of times.[7] Meanwhile, the spatial distribution of AI data centers also exhibits obvious geographical bias. Public reports and policy studies show that only a limited number of countries possess large-scale AI data center capabilities, which are highly concentrated in the Northern Hemisphere and high-income economies. In terms of data center capacity, high-income countries account for the vast majority, while Africa accounts for less than 1%.[8] This is not merely a technical issue, but a comprehensive reflection of energy, infrastructure, and financial capacity. Large-scale data centers impose extremely high requirements on stable power supply, cooling systems, communication networks, and operation and maintenance systems. Many countries of the Global South are constrained by unstable power grids, high financing costs, and weak infrastructure, making it difficult for them to support the construction and sustainable operation of high-level data centers. Institutions such as the World Bank and CSIS have both emphasized that infrastructure constraints are becoming a critical bottleneck for developing countries in deploying AI.[9] The direct consequence is that many developing countries have to rely heavily on offshore cloud services and the infrastructure of transnational platforms. Sensitive data (such as health, financial, and government-related data) is subject to the rules of external platforms and extraterritorial jurisdiction during storage, processing, and access, thereby triggering risks to data sovereignty, security governance, and strategic autonomy.

(IV) Lack of Data Representativeness and Contextual Misalignment in Algorithmic Systems

The AI Divide exists not only at the hardware level but also more profoundly in the underlying construction of data and models. At present, the training corpora, evaluation benchmarks, and value-alignment mechanisms of mainstream global large models are still predominantly based on the English-speaking world and developed-country contexts. As a result, many low-resource languages, local knowledges, and non-Western social experiences are underrepresented or even absent from training data. Consequently, a large number of global users are not truly included in AI systems on an equal footing, but instead reduced to a state of "approximate technical treatment". That is, they may encounter degraded model performance, intensified judgmental biases, and "AI hallucinations" in language understanding, professional terminology, policy contexts, cultural metaphors, and social norms. This phenomenon can be summarized as the overlap of data poverty and cultural alignment bias. The former refers to insufficient valid sample support for certain groups in AI training data, making accurate identification and representation by models difficult. The latter means that even when included in data, such groups may be forced into ill-fitting

[7] World Bank. Digital Progress and Trends Report 2025: Strengthening AI Foundations. 2025-11-24. https://openknowledge.worldbank.org/server/api/core/bitstreams/f2509a0f-7153-4f32-b180-bc11e90c4940/content
[8] Satariano A., Mozur P.The Global A.I. Divide. 2025-06-21. https://www.nytimes.com/interactive/2025/06/23/technology/ai-computing-global-divide.html
[9] Kaur A. From Divide to Delivery: How AI Can Serve the Global South. 2025-10-08. https://www.csis.org/analysis/divide-delivery-how-ai-can-serve-global-south

classificatory logics and value frameworks, ultimately leading to a disconnect between model outputs and real-world needs. Relevant research and policy reports indicate that, in high-sensitivity application scenarios such as public health, financial credit, and social security, algorithmic bias can further push groups with limited digital footprints — including credit, and social security, algorithmic bias can further push groups with limited digital footprints — including residents in remote areas, indigenous peoples, and disadvantaged women in developing countries — into becoming "algorithmically invisible", and even subject to systematic exclusion in "seemingly objective" automated decision-making.[10] Therefore, technology transfer without local adaptation does not necessarily solve development problems; in some cases, it instead reproduces and amplifies existing urban-rural, gender, and class inequalities in the name of technological efficiency.

(V) Skill Polarization and Value Chain Stratification in theGlobal Labor Market

Another key manifestation of the AI Divide is skill polarization and value chain stratification at the labor market level. AI does not simply reduce or increase employment; rather, it restructures labor patterns, revalues skill sets, and reshapes the global division of labor.

High-skill positions such as algorithm engineers, machine learning researchers, data scientists, and AI product architects typically command a higher wage premium and stronger bargaining power. By contrast, a large number of middle- and low-skill, routine white-collar jobs—including basic customer service, entry-level administrative work,some forms of translation, and standardized content processing—face a higher risk of replacement or occupational downgrading. Official research and policy scenario analyses on the employment impact of AI also widely emphasize that these effects are unevenly distributed and tend to reinforce inequalities across skills, industries, and regions.[11]Of greater concern is the division between upstream and downstream in the global value chain. On the one hand, high-income countries and a small number of tech hubs attract top talent by virtue of computing power, capital, and research platforms, forming an agglomeration effect where talent follows computing power. On the other hand, many developing countries are increasingly undertaking low value-added, labor-intensive segments of the AI industry chain, such as data labeling, content moderation, and data cleaning. Studies by institutions including the Brookings Institution note that the Global South is playing an increasingly important role in data and AI-related labor. However, such jobs are often characterized by low wages, weak social protection, precarious platform-based employment, and mental health risks—particularly evident in high-intensity content moderation tasks.[12]This means that the intelligence gap is not merely a disparity in the ability to use AI, but a structural divide in positioning within the AI value chain. Some countries invent models, set interfaces, and control platforms, while others provide cheap labor and raw data, with limited access to corresponding intellectual property benefits and opportunities for industrial upgrading.

[10] World Bank. Digital Progress and Trends Report 2025: Strengthening AI Foundations. 2025-11-24. https://openknowledge.worldbank.org/-server/api/core/bitstreams/f2509a0f-7153-4f32-b180-bc11e90c4940/content
[11] Haag A. The State of AI Competition in Advanced Economies. 2025-10-06. https://www.federalreserve.gov/econ-res/notes/feds-notes/the-state-of-ai-competition-in-advanced-economies-20251006.html；Cerutti E. et al. The Global Impact of AI：Mind the Gap.
[12] Kaur A. From Divide to Delivery: How AI Can Serve the Global South. 2025-10-08. https://www.csis.org/analysis/divide-delivery-how-ai-can-serve-global-south

(VI) Governance Deficit and the "Rule Divide"

Finally, and most easily overlooked, is the "rule divide" at the governance level. AI technology is characterized by rapid iteration and strong cross-border spillover social effects, and its development naturally falls into the Collingridge dilemma: risks are difficult to identify and effective regulation is hard to establish in the early stage of technology; when risks emerge and spread, technological paths, market structures, and interest configurations have already become deeply entrenched, leading to a sharp rise in governance costs.[13]This dilemma is further amplified at the global level, as countries differ significantly in their core concerns regarding AI. Developed nations place greater emphasis on the safety of cutting-edge models, national technological competition, and the governance of high-risk scenarios. By contrast, the more pressing issues for most Global South countries are raising agricultural productivity, improving access to healthcare, expanding educational services, and strengthening public governance capacity. When international AI rule-making is dominated by a small number of advanced economies, a serious misalignment of governance agendas is highly likely to emerge. Regulatory texts may appear universally applicable, yet in practice they prioritise the risk tructures and industrial interests of the rule-makers, rather than the real needs of developing countries.

This misalignment will further widen the digital and AI Divide. It affects not only whether technologies can be accessed, but also the ways in which they are adopted, who interprets compliance, who bears the costs of compliance, and who ultimately holds the authority to interpret the rules.

II、The Underlying Logic of the AI Divide: The"Impossible Trinity"of Technology, Capital, and Politics

The underlying logic of the AI Divide is rooted in the interweaving and deep contradictions among three forces: technology, capital, and politics, which together form the "impossible trinity" hindering the global inclusive development of AI. In this structural dilemma, public interests, private interests, and national interests are difficult to reconcile. As a result, the AI Divide is not merely an issue of technological diffusion, but has evolved into a systemic crisis that cannot be resolved by the market or a single policy alone. Under this dynamic, the rapid expansion of commercial interests (capital) has marginalized public interests. Meanwhile, tech companies and national security authorities have formed a community of interests, with political power intervening to uphold technological monopolies.[14]

The development and iteration of AI technologies rely heavily on three core factors: computing power, data, and top-tier talent. These resources tend to concentrate and converge among a small number of leading actors, thereby creating a global landscape marked by highly concentrated computing power and prominent data barriers. First, the training cost of cutting-edge large models is growing exponentially. For instance, the computing cost of training GPT-4 by OpenAI is estimated at $78 million, while the computational cost of Google' s Gemini Ultra has reached $191 million. [15]Such a prohibitive computational moat blocks the vast majority of actors from the core research and development circle. Second, the distribution of physical infrastructure

[13]Xiangming Z,,Xingdong F, Yeye G. "Research on Governance Challenges and Countermeasures of ChatGPT: The "Collingridge Dilemma" in Intelligent Communication and Its Breakthrough Paths,".Media Observer, 2023(03):25-35.
[14]Xiangming Z,,Xingdong F, Keyang S. "How Technological Innovation Breaks the 'Impossible Trinity' of the AI Divide: The DeepSeek Path from a Public Goods Perspective," Journal of Social Science of Hunan Normal University,1-13[2026-02-25].https://link.cnki.net/urlid/43.1541.C.20250623.1557.002.
[15]Maslej N. et al. Artificial Intelligence Index Report 2024. 2024-05-29. https://arxiv.org/abs/2405.19522

of the world's data centers are concentrated in North America, Europe, and East Asia, while Africa as a whole accounts for only around 1%. High-income countries possess the vast majority of the world's high-performance computing systems, leaving most low- and middle-income countries trapped in severe "computing power dependence" and "data poverty." Third, due to the lack of high-quality localized datasets and computing infrastructure, developing countries not only struggle to conduct independent large model research and development but are also forced into a passive, low-end position in the AI industrial chain. This technological monopoly solidifies the global division of labor, leaving latecomer countries stuck in long-term technological dependence and making upward breakthroughs extremely difficult.

In the current wave of AI development, the traditional "Silicon Valley model" is essentially a deep integration of technology, capital, and political interests. The venture capital (VC)-driven tech race prioritizes short-term financial returns and the consolidation of commercial ecosystems. On the one hand, the geographic concentration of capital is extremely high. In 2024, private investment in AI in the United States reached $109.1 billion, 12 times that of China ($9.3 billion), and far outpaced investment across the entire Global South. This massive capital injection has accelerated the technological expansion of leading enterprises. On the other hand, a small number of tech giants, including Microsoft, Google, Amazon, and Meta, not only develop cutting-edge models but also control cloud computing, data centers, and end applications, forming a high degree of vertical integration. They build barriers through enormous sunk costs, create network effects with massive user bases, and lock users and businesses into their closed ecosystems via proprietary standards and high switching costs.[16] Under this winner-takes-all capital logic, small and medium-sized enterprises and developing countries with limited resources not only face extremely high financial barriers, but their weak innovation capacity is also easily absorbed or suppressed by giants, ultimately leaving them excluded from the distribution of core innovation benefits.

Today, AI has transcended its purely technological and commercial dimensions.To maintain their absolute technological superiority and strategic control globally, some technologically leading nations are using AI as a geopolitical tool. Operationally, developed countries impose strict export controls on high-end semiconductors (such as advanced GPU chips) and semiconductor manufacturing equipment, and attempt to restrict the free flow and diffusion of technology by forming exclusive technological alliances.This profound tendency towards politicization and "weaponization" has had catastrophic global consequences.It has severely fractured the once open and cooperative global scientific community, hindered open-source sharing and cross-border academic exchanges, artificially fragmented the global innovation ecosystem and supply chains, and increased the overall costs and uncertainties of global technological research and development.[17] For the vast number of Global South countries, this disordered international political environment has plunged them into a deeper dilemma between security and development. Without developing AI, they face the risk of marginalization; yet if they attempt to develop AI, they may at any time encounter infrastructure embargoes or technological blockades, losing their strategic space for equitable development in the digital era.

[16] Bandama R. How Big Tech's Monopoly of AI Threatens Fair Competition. 2025-11-28.https://trendsresearch.org/insight/how-big-techs-monopoly-of-ai-threatens-fair-competition/?srsltid=AfmBOoq1uU7LcL_AVvv9jf8_3iAbOV6rf0iUo-5ZMoeLiDpOWoauJhio

[17] Xingdong F, Xiangming Z,."Generative AI and theAI Divide: Trends, Logic and Countermeasures of Digital Inequality in the Intelligent Era," Journal of Social Science of Hunan Normal University, 2024, 53(06): 121-131.;Xingdong F, Keyang S. "The Collingridge Dilemma in Global AI Governance: Multidimensional Challenges and Collaborative Governance Pathways," Future Communication, 2025, 32(03): 19–28, 116–117.

III. Technological Innovation as the Fundamental Engine to Bridge the AI Divide

In addressing the global AI Divide, traditional top-down models of financial aid or hardware donations cannot fundamentally resolve the structural imbalances caused by technological barriers, capital intensity, and the concentration of computing power. In particular, within the conventional capital-driven approach, AI development typically entails high proprietary model barriers, costly API licensing, and closed ecosystems. Yet, as a practical manifestation of the ideals of "global collaboration" and "open data," the disruptive technological pathway represented by DeepSeek—characterized by openness, efficiency, and low cost—is emerging as the most fundamental force in breaking the "impossible trinity" of technology, business, and politics, and achieving global AI equity. By positioning AI as an Intelligent Public Goods, this paradigm systematically deconstructs the traditional capital-centered logic of development.

High barriers, high costs, and closed-source nature constitute the structural dilemma of the traditional capital-driven development model. For a long time, AI development has followed the traditional capital narrative of "Scaling Laws", under which the training costs of cutting-edge large models have grown exponentially. The capital-intensive "Silicon Valley model" has built extremely high industrial moats and technological patent barriers.[18] This monopoly of technology and capital has given rise to a rentier dynamic, whereby foundational large models are mainly owned by a small number of entities in the Global North. Lacking independent research and development capabilities, countries of the Global South can only access intelligent of the Global South services through costly subscriptions and API licensing. Leading developers usually adopt a closed-source strategy, refusing to release model weights and training data, thus forming complex "model black boxes". This closed ecosystem not only prevents public scrutiny of algorithmic bias and safety risks but also severely restricts the potential for vertical innovation in emerging markets based on local data, local languages, and local needs.[19]

It is against this background that the disruptive technological pathway characterized by open-source, high-efficiency, and low-cost features is offering a more fundamental possibility for bridging the AI Divide.[20] The practice represented by DeepSeek carries global significance not merely for its model performance or commercial competitiveness, but more importantly for the paradigm shift it embodies: through open collaboration, algorithmic innovation, and engineering optimization, it systematically challenges the established narrative that cutting-edge AI can only be dominated by heavy capital investment.[21] DeepSeek explicitly emphasizes its open orientation and provides explanations of its modelmechanisms and training methods. Its open-source model projects also demonstrate an emphasis on efficient approaches such as the Mixture of Experts (MoE) architecture. DeepSeek-V3 adopts the MoE architecture and a cost-efficiency-oriented design, reflecting the idea of "replacing pure computing power stacking with structural innovation." The significance of this paradigm lies in that it provides a practical foundation for intelligent public goods. The concept of intelligent public goods does not mean eliminating commercial incentives or denying the value of corporate innovation. Rather, it stresses that at this critical stage of reshaping global productivity, data, algorithms, model capabilities, and basic computing power should not be entirely enclosed

[18] Muthukrishna M.,Schellekens P. The Geopolitics of the AI Divide: Infrastructure, Labor Polarization, and the Structural Mechanics of the Next Great Divergence. 2026-01-08. https://www.brookings.edu/articles/next-great-divergence-how-ai-could-split-the-world/

[19] Maslej N. et al. Artificial Intelligence Index Report 2024. 2024-05-29. https://arxiv.org/abs/2405.19522

[20] Xingdong F, Ben W, Xiangming Z. "The DeepSeek Moment: Technology-Communication-Society (TCS) Framework and Bridging the Mainstreaming Divide," Journal of Xinjiang Normal University (Philosophy and Social Sciences), 2025, 46(04): 126–135.

[21] Xingdong F,Lixue D, Ben W. "DeepSeek Popular Narrative Trap and Innovative Narrative," Youth Journalist, 2025(09): 51–60.

and exclusively controlled by capital. Instead, under certain institutional arrangements, they should be endowed with greater accessibility, auditability, collaboration, and adaptability for local customization. In other words, AI should not be regarded merely as a tool for capital appreciation, but also as a new type of public infrastructure supporting education, healthcare, agriculture, governance, and the transformation of small and medium-sized enterprises.

Technological innovation serves as the fundamental engine for bridging the AI Divide precisely because it does not merely supplement resources within the existing distribution structure, but rewrites the underlying logic of technology and benefit distribution at its root. It continuously lowers the entry barriers for AI research and application through innovative technological pathways; reconstructs the fundamental mode of global knowledge production and sharing via open collaboration; enhances the auditability and accountability of AI governance through transparent mechanisms; greatly expands the accessibility and implementability of intelligent technologies through lightweight deployment solutions; and strengthens the adaptability of technology to regional cultures and institutions via localized customization. In contrast to the traditional aid model, which only achieves short-term improvements through external resource injection, this innovative pathway enables developing adaptability of technology to regional cultures and nstitutions via localized customization. In contrast to the traditional aid model, which only achieves short-term improvements through external resource injection, this innovative pathway enables developing countries to foster endogenous growth and independent iteration of AI capabilities, truly realizing the shift from “passively receiving technology” to “actively mastering technology”.

From a broader perspective, the explosion of AI represents an unprecedented transformation of the social contract, fundamentally redefining the relationships and the distribution of power among individuals, institutions, and states. Technology is no longer merely a tool for corporate competition and capital gains; it has increasingly become a critical foundation for national governance capacity, public service provision, and international development opportunities. If the traditional capital-driven logic remains fully applied, the dividends of AI will be more easily captured by a small number of monopolistic actors, thereby exacerbating global inequality and developmental imbalance. In contrast, the paradigm of intelligent public goods points to a new global consensus: states, enterprises, research institutions, and international organizations need to share collective responsibilities to advance the building of an AI development order that balances innovation incentives and inclusive sharing. This ensures that AI serves not only capital accumulation but also human development, social equity, and capacity-building in the Global South. Only when AI capabilities gradually assume the attributes of public goods can the international community break the “impossible trinity” and foster a more inclusive, equitable, and sustainable new global intelligent order.

IV、Strategic Pathways Toward Global AI Inclusion

The emergence of the global AI Divide is not caused by a single technological gap, but by the combined effects of computing infrastructure, capital structure, model ecosystems, data governance, talent capacity, and international rules. Bridging it therefore cannot be achieved through a single policy tool. Neither spontaneous market diffusion nor traditional equipment aid and financial transfers can address the structural roots of the

AI Divide. Going forward, the international community needs to build a comprehensive pathway that balances technological innovation, institutional arrangements, national capacity-building, and social equity — transforming AI from a productive tool monopolized by a small number of actors into new public infrastructure shared by all humanity.

(I) The bottom-up open-source innovation pathway represented by the DeepSeek model

An Open-Source Model Accessibility Program for developing countries and small and medium-sized enterprises should be promoted. International organizations, foundations, research institutions, and platform enterprises can jointly support the public provision of high-quality open-source foundation models, toolchains, and evaluation resources, lowering the threshold for local teams to train models from scratch. Focusing on high-public-value scenarios such as education, healthcare, agriculture, and government services, model solutions that support direct fine-tuning, local deployment, and low-bandwidth operation should be provided, enabling more countries to shift from "calling external APIs" to "owning local transformation capabilities." provided, enabling more countries to shift from "calling external APIs" to "owning local transformation capabilities."

Regional open-source AI collaboration hubs should be established to transform "scattered developers" into "calling external APIs" to "owning local transformation capabilities."

Regional open-source AI collaboration hubs should be established to transform "scattered developers" into a "collaborative innovation network." For regions such as the Middle East, Africa, and Southeast Asia, regional collaboration centers can be built based on universities, technical communities, innovation incubators, and public digital institutions. These centers will provide shared computing time slots, support for open-source model adaptation, standardized toolchains, compliance guidance, and application testing environments, upgrading technology diffusion from "single-point project trials" to "regional capacity accumulation" and avoiding short-term problems such as lost capabilities, brain drain, and unsustainable systems after project completion.

The "DeepSeek pathway" should be integrated with local scenario innovation mechanisms to prevent open-source resources from remaining at the technical demonstration level. Progress should be made through "small entry points, high-frequency demands, and rapid validation" to form low-cost, replicable scenario templates. Policy support should focus on the "last-mile" local adaptation, including language fine-tuning, industry knowledge base construction, terminal compatibility, user training, and feedback iteration, rather than only funding model-level research and development. For most developing countries, the real bottleneck is often not "whether models exist," but "whether there is organizational capacity to turn models into services."

A risk governance and quality assurance mechanism for the open-source AI ecosystem should be established to ensure that "low barriers" do not evolve into "low quality" or "high-risk diffusion." Mechanisms such as basic evaluation benchmarks, bias review, data source labeling, and accountability tracking should be promoted simultaneously. In other words, support for the open-source pathway must not only emphasize innovation freedom but also establish minimum safety and ethical bottom lines, so that open-source innovation can truly become a trustworthy and inclusive pathway, rather than technological spillover in a regulatory vacuum.

(II) Strengthen multilateral governance and the implementation of the Global Digital Compact (GDC)

The AI Divide is not only a matter of capacity but also a matter of rules. The current global AI governance structure still suffers from obvious inadequate representation and misaligned agendas. The rule system dominated by some high-income economies focuses more on cutting-edge model safety, competitive advantages, and compliance thresholds, while the more urgent practical needs of the Global South are how to use AI to improve agricultural efficiency, enhance healthcare access, promote inclusive education, and strengthen public governance capacity. Without inclusive multilateral mechanisms, AI governance rules may reinforce substantive inequality under “formal universalism.” Therefore, the GDC should be taken as an important opportunity to promote the translation of international consensus on eliminating digital and intelligence inequalities into enforceable institutional arrangements.

Establish a global data and model commons mechanism. Within the framework of the United Nations and multilateral platforms, encourage the development of high-quality open-source datasets, benchmarks, and model libraries with multilingual and multicultural backgrounds. In particular, support the supply of public data and model goods for low-resource languages, developing-country scenarios, and public service sectors. This will not only help alleviate “data representation poverty” and cultural alignment bias but also provide basic corpora and tool resources for localized innovation in the Global South. Special support mechanisms should be established for resource-scarce languages and vulnerable contexts to prevent new forms of linguistic and cultural marginalization in the AI era.

Enhance the voice and institutional participation of the Global South in AI governance. Promote the establishment of an international scientific and governance advisory mechanism under the United Nations framework with greater regional representativeness, disciplinary diversity, and inclusiveness across development stages. Ensure that developing countries have substantial voice in standard-setting, ethical review, risk classification, assessment frameworks, and governance agenda-setting. The key to multilateral governance is not merely to involve more countries in discussions, but to enable them to truly participate in rule definition, standard formation, and the design of governance tools. Only in this way can global intelligence governance shift from a competitive framework to a collaborative one that balances development, equity, and security.

(III) Implement a National Capacity-Building Strategy of “Dual-Track Progress: Hard and Soft Infrastructure”

Ultimately, narrowing the AI Divide depends on national capacity-building. For most developing countries, AI capacity is not an off-the-shelf product, but a composite capability supported by infrastructure, institutional capacity, talent systems, and industrial ecosystems. Therefore, a national strategic pathway of dual-track progress: hard infrastructure and soft capacity systems should be promoted to avoid one-sided approaches that overemphasize either hardware investment or short--term training.

On hard infrastructure: International organizations (such as the United Nations Development Programme) and multilateral development institutions can assist developing countries in conducting AI readiness assessments, identify fundamental gaps, and formulate differentiated roadmaps. Priority support should be given to the construction of key infrastructure including broadband access, clean energy supply, regional computing nodes, sovereign clouds, and data centers. The focus here is not on blindly pursuing state-of-the-art configurations, but on building a moderate and sustainable computing system that matches the country' s development stage, scenario needs, and fiscal capacity, ensuring the physical accessibility and sustainability of AI capabilities.

On soft capacity systems: AI literacy should be integrated into national education and public capacity-building agendas. AI literacy should not be narrowly defined as operational skills for using specific tools, but include: basic understanding of algorithmic mechanisms;awareness of data and privacy risks; ability to identify bias and misleading information; capacity to judge the boundaries of AI-assisted decision-making; organizational ability to work collaboratively with AI. For government agencies, public schools, primary healthcare institutions, and small and medium-sized enterprises, such capacity-building often has greater long-term value than simply introducing software systems.

In addition, facing the risk of employment restructuring driven by AI, developing countries should arrange cross-skilling and re-employment training systems at an early stage. Focus should be placed on women, youth, and low-skilled labor groups vulnerable to automation, providing training in digital competence, problem-solving ability, and human-machine collaboration skills needed for cross-industry mobility.Meanwhile, policies should establish supporting social security and transition support mechanisms to prevent technological upgrading from leading to employment exclusion and social instability in the short term.

(IV) Adhere to the People-Centered Principle in Application Governance

Global AI inclusion depends not only on access to AI but also on how AI is used. Without transparency, accountability, and equity in key sectors such as education, healthcare, public security, and social welfare, even advanced technology can become a new tool for amplifying social inequality. Therefore, promoting AI inclusion must uphold the people-centered governance bottom line, integrating human rights protection, procedural justice, and inclusive design into the entire life cycle of AI applications.

Establish mandatory accountability mechanisms in high-risk application areas. For AI applications that directly affect individual rights and opportunities, including predictive policing, automated welfare eligibility screening, employment filtering, credit approval, and medical triage, mandatory Human Rights Impact Assessment (HRIA), risk-tiered management, and human review mechanisms should be implemented to avoid technological determinism that "replaces governance judgment with algorithms." All critical decision-making scenarios should provide interpretable algorithmic explanations, clear responsible entities, and effective appeal channels to ensure that the public has access to basic rights remedies when facing AI systems.

Implement Equity by Design at the application design stage. AI systems should not aim only at maximizing average efficiency. Instead, they should integrate real-world factors such as urban-rural disparities, gender gaps, linguistic diversity, and educational inequalities from the initial design stage to ensure that systems prioritize narrowing structural gaps. For example: In education, prioritize usability and low-bandwidth adaptation in resource-scarce regions; In healthcare, focus on deployability and interpretability for primary-level institutions; In public services, guarantee manual support channels for vulnerable groups. Only by embedding equity into the design logic can AI inclusion move beyond a mere slogan.

(V) Advance Data Sharing and Local Data Governance

Data is a fundamental factor of production in the AI era, and one of the most easily overlooked yet critical structural variables in the AI Divide. If developing countries lack high-quality local data resources, data governance capacity, and institutional leverage to participate in the global data value chain for a long time, it will be difficult to form sustainable local innovation and value creation capabilities even with access to models or computing power. Therefore, to achieve AI inclusion, it is essential to advance data sharing and local data governance capacity-building simultaneously, and establish a sustainable balance between open collaboration and sovereign security.

Build regional data spaces and public data collaboration platforms. Regional data spaces and cross-institutional collaboration platforms can be prioritized in areas with significant public value, such as agriculture, public health, climate, disaster early warning, and education, to promote data sharing and cross-domain collaboration on the premise of complying with privacy protection and sovereignty requirements. For many developing countries, such scenario-oriented data collaboration is more operable than abstract data openness policies, and more likely to generate practical governance and industrial value.

Promote privacy-preserving technologies to lower barriers to cross-border collaboration. The application of technologies such as federated learning, secure multi-party computation, and differential privacy in public services and cross-institutional collaboration should be encouraged, enabling local data to participate in model training and capability improvement without large-scale cross-border transmission of raw data. This can enhance the capacity of local data to participate in global model improvement, help alleviate conflicts between data sovereignty and privacy protection, and provide a more acceptable technical path for global collaboration.

Implement policy arrangements oriented toward data for public welfare. Open public data and research data appropriately, establish clear boundaries for data authorization, benefit distribution, and public use, and prevent critical data assets from being completely locked into a small number of transnational platforms and closed commercial systems. The goal of data governance should not only be "preventing leakage" but also "realizing public value" and "enhancing local bargaining power." Only when developing countries can take greater initiative in data resource organization, governance rule-making, and data value transformation, will the global AI corpus and model ecosystem become more diverse, equitable, and sustainable.

In the intelligent era, failure to develop is the greatest insecurity, and technological monopoly is the greatest inequality. Bridging the global AI Divide cannot rely solely on spontaneous market adjustment, nor can it be trapped in the zero-sum game of geopolitics. The international community urgently needs to take the Global Digital Compact as an opportunity to vigorously advocate for an open-source and open scientific and technological innovation system, and transform AI capabilities into a new type of public infrastructure shared by all humanity. Only by closely integrating disruptive technological innovation with global inclusive governance can humanity truly cross the AI Divide, and enable artificial intelligence to become a universal welfare for the sustainable development of a community with a shared future for mankind, rather than an epochal trap leading to “The Next Great Divergence”.