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RESEARCH ARTICLE

# Naturalizing Data Centre Clusters: Sociotechnical Imaginaries of "Digital Ecological Civilization" in Contemporary China

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**Abstract**

This article investigates how China's national vision of ecological development integrates digital technology through the narrative of "digital ecological civilization." Employing the framework of sociotechnical imaginaries, it explores how this narrative emerges nationally and is localized in Guizhou, a burgeoning data centre hub. Nationally, "Digital China" and "ecological civilization" converge into "digital ecological civilization," portraying digital technology as a transformative force for human–nature harmony, distinct from Maoist ideals of dominating nature. In Guizhou, local discourse highlights the province's "natural" advantages – climate, resources and karst landscape – framing its digital growth as natural and inevitable. Yet, this narrative obscures extensive state interventions, mythicizing technology's role while sidelining historical complexities and socialist-era legacies. It legitimizes state-led infrastructural investments and projects a unified future vision. The study illuminates how a "techno-eco unity" sociotechnical imaginary shapes China's developmental path, revealing the intricate interplay of technology, ecology and modernity in crafting an alternative modernization narrative.

**摘要**

本文探讨了中国的国家生态发展愿景如何通过 "数字生态文明" 叙事整合数字技术。从 "社会技术想象" 的分析框架出发, 研究分析了这一叙事如何在全国范围内形成并在贵州这一新兴数据中心枢纽本地化。在全国层面, "数字中国" 与 "生态文明" 论述融合为 "数字生态文明," 将数字技术描绘为实现人与自然和谐的变革力量, 区别于毛时代征服自然的理念。在贵州, 地方话语强调该省的 "自然" 优势 –– 气候、资源和喀斯特地貌 –– 将其数字增长框定为一种 "自然的" 和 "必然的" 的发展道路。然而, 这一叙事掩盖了广泛的国家干预、神话了技术的作用、也淡化了历史复杂性和社会主义时代的遗产。它使国家主导的基础设施投资合法化, 并勾勒出统一的未来愿景。本研究阐明了 "技术-生态一体化" 的社会技术想象如何塑造中国的发展路径, 揭示了技术、生态和现代性在构建另类现代化叙事中的复杂相互作用。

**Keywords:** Digital China; ecological civilization; digital ecological civilization; data centre; digital infrastructure; sociotechnical imaginaries; south-west China

**关键词:** 数字中国; 生态文明; 数字生态文明; 数据中心; 数字基础设施; 社会技术想象; 西南中国

At the 76th UN General Assembly in September 2021, President Xi Jinping 习近平 introduced the Global Development Initiative (GDI) as part of China's broader diplomatic vision alongside its Global Civilization Initiative (GCI) and Global Security Initiative (GSI). The GDI promotes a "green and low-carbon economy," aiming for peak carbon emissions by 2030 and carbon neutrality

by 2060, and emphasizes "harmony between human and nature."[1] This slogan is central to China's environmental policy and reflects its developmental path, expressed through narratives like "ecological civilization" and the digital re-imagining of Chinese modernity.[2] Alongside environmental goals, China has advanced digitization through initiatives such as "New infrastructure," "Internet plus" and "Eastern data western computing" (EDWC). These efforts present "Chinese modernization" as an alternative to Western capitalism.[3] This article examines how China's mainstream narrative fuses digital technology with ecological development, producing an ecological mythification of digital technology and a transcendental narrative that portrays digital technology as a transformative force in harmony with nature, and explores how these imaginaries are localized.

This research examines the political and sociocultural narratives shaping the hybridization of digitization and the environment in contemporary China through an exploration of how digital technologies are imagined as embodying national visions of ecological development. It asks what kinds of "sociotechnical imaginaries" are produced,[4] and how are they locally negotiated to reproduce or reshape national aspirations? At the local level, how does public discourse construct sociotechnical visions that reflect the central state's governance goals while aligning with regional historical, environmental and geographical conditions? By addressing these questions, the study reveals how national sociotechnical imaginaries are "extended" into local everyday life.

The article argues that as China advances its infrastructural agenda, it is undergoing an ideological shift towards a holistic vision of human–nature unity through digital technology, moving beyond the Maoist ideal of conquering nature. This shift merges ecological concerns with technological innovation, positioning "Digital China" and "ecological civilization" as interconnected strategies rather than separate techno-political projects. The resulting "techno-eco unity" underpins China's sociotechnical imaginaries of a distinct "Chinese path" to modernization – an alternative modernity that harmonizes technology and nature. However, through the case of Guizhou, the study further shows that this apparent post-socialist break still carries a core Maoist-era contradiction: development both de-naturalizes nature through state-led transformation and is simultaneously framed as a natural, inevitable progression towards a socialist future.

This analysis proceeds in two steps. First, through an examination of key political documents, I show how "Digital China" and "ecological civilization" converge into a new ideological framework of Chinese modernity: "digital ecological civilization." This framework underpins China's vision of "Chinese modernization," merging digital and ecological aspirations into what I term a "techno-eco unity." I argue that this fusion mythicizes digital technology as possessing transcendental power to transform society. Second, using Guizhou – home to China's first National Big Data Pilot Zone – as a case study, I examine how this vision is locally negotiated. I demonstrate how sociotechnical imaginaries of "digital ecological civilization" are localized through a "natural/inevitable" narrative that aligns with Guizhou's historical, cultural and environmental context, revealing tensions within the myth of digital transformation. Before turning to the empirical analysis, I situate this research within the literature on technology studies, China's environmental politics and digital infrastructure.

## Governing the Sociotechnical Imaginaries: An Infrastructural Approach

China's political-economic system has delivered large-scale, globally recognized infrastructure projects through programmes like the Belt and Road Initiative. However, aside from a few scholars

1 Xi 2021.
2 Geall and Ely 2018.
3 Heinzekehr 2020, 164.
4 Jasanoff and Kim 2009.

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addressing infrastructure in China,[5] "China's own 'infrastructural turn' remains understudied."[6] In communication studies, early research on digital phenomena in China focused on ICT technologies,[7] digital journalism and online activism.[8] Recently, scholars have adopted more interdisciplinary perspectives, including the infrastructural nature of social media WeChat and how the rationality of cyber-sovereignty is embedded in its regulation practice,[9] marginalized groups affected by digitization,[10] China's digitization policies,[11] and several detailed case studies on key locales.[12] Following Alessandro Rippa and Tim Oakes' advocacy in particular, this article adopts an infrastructural approach to understanding China's digitization endeavours.

This research problematizes infrastructure as both material objects and the relations among them, and interrogates the politics embedded in these entanglements.[13] Infrastructure is viewed as a relational process involving people, technologies and structures, which is shaped by cultural practices and political work.[14] Building on this perspective, the article examines how China's national aspirations for digital technology are materially and discursively articulated – particularly how state narratives (re)define the relationships among digital infrastructure, modernization and the environment. Additionally, as Rippa and Oakes emphasize, the intertwining relations and processes – themselves as the infrastructure – are not merely understood on a national level but with "more local-scale analyses of the … social, cultural and political … effects [they] have in the places where they are" established.[15] Accordingly, this study investigates how the ideology of "techno-eco unity" is locally negotiated in sites where "Digital China" infrastructures – namely, large-scale data centres – are built. As such, it approaches infrastructure on two levels: first, as material formations embedded in local contexts; second, as sociotechnical imaginaries that both shape and are shaped by these materialities. The research argues that state power is exercised and contested through these infrastructural complexes.

## Social imagination as a social governance

While technological infrastructures often involve "stuff you can kick,"[16] their invisibility in daily urban life remains central.[17] This invisibility creates space for the "imagination" of technology, which is itself material and integral to digital infrastructures. Following the principle of "co-production" – that how we know and represent the world is inseparable from how we live in it[18] – Sheila Jasanoff and Sang-Hyun Kim introduce "sociotechnical imaginaries" to describe the "collectively held, institutionally stabilized, and publicly performed visions of desirable futures, animated by shared understandings of forms of social life and social order attainable through, and supportive of, advances in science and technology."[19] This means that imaginations about what technologies *could* bring to society have always been a critical supporting system – a kind of infrastructure – of social governance. This concept is especially useful for analysing digital and data technologies, which are largely intangible and inaccessible compared to the visible presence of roads or bridges. As such,

5 Chu 2014; Oakes 2022; Rippa and Oakes 2023.
6 Rippa and Oakes 2023, 549.
7 Harwit 2008; Segal 2003.
8 Repnikova and Fang 2018; Yang 2009; 2014.
9 Plantin and de Seta 2019.
10 Au 2023.
11 Kostka 2022; Liu, Lizhi 2021.
12 Große-Bley and Kostka 2021; Liu, Kevin 2025.
13 Rippa and Oakes 2023, 551–52.
14 Ibid., 552.
15 Ibid., 549.
16 Parks 2015.
17 Star and Ruhleder 1996.
18 Jasanoff 2004, 2–3.
19 Ibid., 4.

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digital imaginaries are inherently abstract, making them open to de-articulation and re-articulation across different contexts.

Scholars have employed "sociotechnical imaginaries" to examine digital technology visions.[20] In the Chinese context, studies have explored railroads,[21] the social credit system[22] and AI.[23] However, little attention has been given to the "techno-eco unity" discussed in this article – the convergence of national slogans like "Digital China" and "ecological civilization," with a focus on their local negotiation and rearticulation. Emphasizing the link between global and local is crucial, as sociotechnical imaginaries often circulate globally and become re-embedded in local contexts.[24] Additionally, the term offers a framework to analyse how material infrastructures – such as data centres and institutions – interact with discursive elements like cultural imagination and collective memory. As such, this lens enables an exploration not only of what is at stake but also of how state visions and political ideas are locally adapted and transformed.

### *Rhetorical narrative as material practices*

This research addresses the sociotechnical imaginaries in the context of "Digital China" and its environmental articulations. Since China became the world's leading energy user, a growing body of literature has emerged on China's environmental policies.[25] A critical discussion within this literature is China's rhetorical articulation of environment and ecology. Ecological development has gained political vitality, particularly after China's commitment to reach peak carbon emissions by 2030 and achieve carbon neutrality by 2060. While some scholars criticize China's ecological policies as pretentious, "purely face" and mere "talk," [26] Sam Geall and Adrian Ely argue that this "talk" matters and warrants close examination.[27] In the context of "Digital China" as a techno-political slogan, this "talk" strongly appeals to the narrative of ecological development.

This article examines how digital technologies have been discussed by the state and local discourse as instruments of ecological modernization. Such "talk" matters because "powerful actors, institutions and discourse tend to shape dominant narratives, … [and] force a process of 'closing down' towards particular visions of the future."[28] The politics of narratives that define sociotechnical imaginaries materially engage institutions, ideas and practices that "reinforce each other … through [what Foucault calls] governmentality," so that "certain pathways become 'motorways', unrolling powerfully across the landscape of understanding and intervention, narrowing other tracks."[29] Such a "pathway" approach – understanding narratives as central to shaping certain pathways while marginalizing others[30] – substantiates the national–local connectivity through rhetorical construction, helping to conceptualize the local production and negotiation of sociotechnical imaginaries as means of governance.

## Data and Methodology

This research primarily employs rhetorical and discourse analysis to examine how political ideologies are articulated through various policy documents. It draws on key central government publications

20 Bridges 2024; Hockenhull and Cohn 2021; Wijermars and Makhortykh 2022.
21 Xiao 2023.
22 Bloch 2022.
23 Wang, Weili, Downey and Yang 2023.
24 Jasanoff and Kim 2015, 333.
25 Gilley 2017; Kostka and Nahm 2017; Ran 2013; Van Rooij et al. 2017.
26 Vanderklippe 2017.
27 Geall and Ely 2018, 1179–80.
28 Ibid., 1181.
29 Leach, Scoones and Stirling 2010, 87.
30 Geall and Ely 2018, 1181.

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related to "Digital China" and "ecological civilization," using close reading to identify how a specific political vision is constructed – one that frames a particular "pathway," as discussed earlier, as the primary, correct or even sole route to the future. In the second part, the research analyses local mainstream texts, including government reports, policy documents and media coverage from official outlets such as local Party newspapers. These materials reveal how local discourse aligns with and reproduces the central state's vision, demonstrating how local institutions re-imagine and naturalize the sociotechnical imaginary of "techno-eco unity" within specific local contexts.

This research also builds on a larger project, for which I conducted nine consecutive months of fieldwork in Gui'An New Area 贵安新区 in 2020, two site visits in 2019, and four follow-up visits in 2022, 2023 and 2024. During this time, I conducted over 70 semi-structured interviews with local residents, professionals and government employees. I also visited key local enterprises such as the Gui'An Supercomputing Centre (*Gui'an chaosuan zhongxin* 贵安超算中心), Apple's local partner Guizhou-Cloud Big Data (*Yun shang Guizhou* 云上贵州, GCBD hereafter), the Huawei Cloud Data Centre and several government-affiliated institutions. In addition, I collected local archival materials, including official publications such as books, brochures, internal government and SOE reports, and local Party media reports. While not all of these materials are used directly in this study, they provide crucial context for analysing the local discourse at the heart of this research.

## Green as the New Red, but Through the Digital: Towards a "Digital Ecological Civilization"

In the communiqué of the Third Plenary Session of the 20th Central Committee of the Communist Party of China, China's top leadership reiterated the principle that "clear water and green mountains are mountains of gold and silver."[31] This phrase, which is frequently used by President Xi, has become central in political documents on ecological development in China. Undergirding this emphasis, the codification of "ecological civilization" as a core value of "Chinese modernization" marks a continuous departure from the old Maoist ideology of "humans must conquer nature."[32] While China commits to a developmental path distinct from the "polluting and 'black' economic models of the West," the political significance of "green" is becoming the new "red," reminiscent of Maoist socialism, to demonstrate "Chinese ecological 'wisdom' against 'overindulgent' lifestyle in the West."[33] This section shows that the construction of "ecological civilization" as a core rhetorical narrative of Chinese modernity aligns with China's aspirations for "digitization" as promoted by the central state. I reveal that "ecological civilization" and "Digital China" converge to form "digital ecological civilization," creating a narrative of green digitization that mythicizes human–nature harmony.

### *The rhetoric of "Digital China"*

As part of the global trend of datafication and digitization, China has undertaken several large-scale digitization projects over the past decade, culminating in the national strategy of "Digital China." In response to "the new wave of global scientific revolution and industrial transformation," the State Council announced the "Internet plus" project in 2015.[34] This project aimed to digitize government public services nationwide and expand basic ICT technology, initiating large-scale government–corporate partnerships with tech giants like Alibaba and Tencent.[35] From 2018 to 2019, the central state launched a series of techno-infrastructural policies, including the "New infrastructure" project in 2020. This national strategy advances the use of digital technologies, including 5G, big data and

31 Central Committee of the Communist Party of China 2024.
32 Geall and Ely 2018, 86.
33 Imbach 2020.
34 State Council 2015b.
35 Liu, Kevin 2025, 218–221.

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cloud computing.[36] More recently, China launched the EDWC project in 2022, establishing national data hubs and data centre clusters across eight regions,[37] as a crucial part of the National Integrated Big Data Centre System supporting nationwide digitization needs.[38]

Behind these national infrastructure policies lies a narrative that views digital technologies as vital for China's modernization and national power, as highlighted in the Five-Year Plans. The 13th Five-Year Plan announced the "deployment of a national big data strategy," recognizing big data as a strategic resource "like electricity and water."[39] This narrative, which elevates data to an essential national security resource, was further solidified in the 14th Five-Year Plan, which aimed to achieve socialist modernity through "modernization of the national governance structure and governance capacity."[40] The concept of "Digital China" was formally declared as building a "modernized infrastructural system" to support the creation of a digital society and government.[41] Digitization has thus become central to China's future governance and a core component of "socialism with Chinese characteristics." Importantly, "Digital China" – and by extension, I suggest, the whole ideology of digitization – is more than the platformization and infrastructuralization of the digital economy; it is a core rationale and worldview of modernity that is closely associated with the Chinese state's long-term goal of achieving "Chinese modernization."[42]

### *The rhetoric of "ecological civilization"*

The Chinese state's approach to "nature" has followed a clear trajectory. Mao's slogan, "humans must conquer nature," fuelled industrialization campaigns like the Great Leap Forward and the Cultural Revolution, contributing to severe environmental degradation. In the post-Mao era, Deng Xiaoping's 邓小平 1978 reforms paved the way for "ecological civilization," a concept introduced by the intellectual Ye Qianji 叶谦吉 in the 1980s. Drawing on traditional ideas such as *tianren heyi* 天人合一 (the unity of heaven and humans), it promotes harmonization with nature. The concept gained political traction in 2007 when President Hu Jintao 胡锦涛 included it in his report to the 17th Party Congress. It emerged in response to the environmental consequences of China's growth-first policies.[43] Under Hu's "scientific view of development," ecological concerns entered mainstream policy and intellectual debate.[44] However, it was during Xi Jinping's first term that "ecological civilization" gained greater prominence in political discourse and policy documents, leading to its "codification." This process involved establishing clearer definitions from policy-oriented rhetoric, which gradually closed down previous public debates and transformed the concept into an actionable political narrative.[45]

Under Xi's administration, the No. 14 Document issued by the State Council in 2015, "Advice from the State Council and the Central Committee of the Communist Party of China on accelerating the promotion of the construction of ecological civilization," solidified this concept.[46] It defines "ecological civilization" as essential to "socialism with Chinese characteristics, [concerning] the happiness of people and the future of the Chinese nation," supporting "the formation of a new pattern of modernization that promotes the harmonious development between human and nature."[47]

36 NDRC 2020b.
37 Yan and An 2022.
38 NDRC 2020a.
39 State Council 2016.
40 State Council 2021.
41 Ibid.
42 Yuan and Zhang 2025, 2.
43 Geall and Ely 2018.
44 Ibid., 1182–85.
45 Ibid., 1186.
46 Geall and Ely (2018) erroneously refer to this document as the No. 12 Document; it is in fact the No. 14 Document.
47 State Council 2015a. Notably, while "ecological civilization" is increasingly becoming a central tenet of China's environmental governance, it remains a relative "blind spot" in global media coverage (Chen, Sibo, and Zhao 2022).

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There are two critical aspects to this concept. The first is its strong emphasis on "Chinese" characteristics and advancing a "Chinese modernization" rhetoric, which is most explicitly demonstrated by appealing to the traditional human/heaven symbiosis cosmology. This appeal stands in stark contrast to the Maoist doctrine of "humans must conquer nature," as represented by "extreme human interference in the natural world" and the idea that human power can bend the physical world, especially through "science" permeating all levels of society.[48]

Second, previous administrations' policy slogans were primarily responses to the environmental damage caused by industrial developments, such as Hu Jintao's "scientific development" and "sustainable development" slogans – that is, they were merely addressing the consequences of industrial development; however, Xi's new concept aims for something bigger. Xi's "ecological civilization" is formulated as a Marxist response to the questions about the future direction of humanity,[49] showcasing a "dialectical materialist argument that ecology represents the next historic step of civilizational development, following agricultural and industrial civilization."[50]

Therefore, Xi's "Chinese modernization" promises not only a green economic development but also an alternative civilizational path. This alternative path is explicitly "Chinese," aspiring to the "Chinese wisdom" of the human–heaven/nature symbiosis.[51] It is also a Chinese critique of modern civilization,[52] and a demonstration of an "environmental worldview" that distinguishes China from the West.[53]

### *"Digital ecological civilization" – making human–nature harmony digital*

What happens when Chinese modernization combines the traditional value of "human–nature harmony" with a technologically deterministic view that sees digital technologies as key drivers of national progress? The state's answer is the integration of "Digital China" and "ecological civilization" into a new vision: "digital ecological civilization." Technological imaginaries have long been central to China's pursuit of an alternative, non-Western modernization path.[54] Since 1972, China's environmental policy has shifted towards protection and sustainable development,[55] yet it has consistently emphasized the role of science and technology in fostering environmental harmony, as most clearly reflected in Hu Jintao's slogan, the "scientific view of development." "Digital ecological civilization" advances this trajectory by linking green development with techno-infrastructural progress, relying on an ideological mythification of both digital technologies and the natural environment.

The concept of "digital ecological civilization" has been endorsed by the major Party presses and by President Xi himself. In a 2023 speech, Xi called for "advance[ing] a modernization that promotes a harmonious symbiosis between human and nature … construct[ing] the digital governing system of the Beautiful China, … [and] the green and smart digital ecological civilization."[56] Following this, official Party media, including *People's Daily*, elaborated on the term, highlighting the integration of "Digital China" with "ecological civilization." In addition to the repetitive use of the phrase "digital ecological civilization," slogans portray digitization as inseparable from green development –

48 Shapiro 2001, 1–2.
49 Zhou 2021, 87–90.
50 Imbach 2020.
51 Huang and Westman 2021, 5–6.
52 Foster 2017; Huan 2017.
53 Weins et al. 2023, 15.
54 Wu and Yun 2018; Zhang and Wu 2023.
55 See a detailed examination of China's narratives on environmental policy in Geall and Ely 2018, 1182–84.
56 "Xi Jinping zai quanguo shengtai huanjing baohu dahui shang qiangdiao: quanmian tuijin meili Zhongguo jianshe, jiakuai tuijin ren yu ziran hexie gongsheng de xiandaihua" (Xi Jinping emphasizes comprehensively advancing the building of a Beautiful China and accelerating the modernization of harmonious symbiosis between humanity and nature during the National Ecological Environment Protection conference). *People's Daily*, 19 July 2023, https://paper.people.com.cn/rmrb/html/2023-07/19/nw.D110000renmrb_20230719_1-01.htm.

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for example, "promote the deep integration of digitization and greenification, let digitization lead greenification, and let greenification drive digitization."[57]

While political elaborations on "digital ecological civilization" continue, the term already appears to embody an ideological mythification of Chinese modernization, attributing transformative power to digital technology, which is seen as essential for advancing both national modernization and a harmonious future for humans and nature. Although the term does not specify particular technological policies, it serves as an overarching narrative to justify large-scale, state-led techno-infrastructure developments. In a sense, the term captures a "sublime" characteristic of digital technology, suggesting that the digital possesses a transcendental power – one that has no history, no politics and is capable of creating new histories without limitation.[58]

## Guizhou Hub: Striving for Natural and Inevitable Development

The sociotechnical imaginaries promoted by the central state and public media must be understood within specific local contexts rather than assumed to be effective or ineffective. Guizhou serves as a pertinent example. Once among the poorest of China's provinces, it has become a leader in digital governance through major investment in big data. In 2016, it launched China's first National Big Data Development Pilot Zone in Gui'An New Area (established in 2012). Since 2015, it has hosted the International Big Data Expo and has built a major data centre cluster that serves firms such as Apple and Huawei. In 2022, Guizhou was designated as one of the eight national data hubs under the National Integrated Big Data Centre System, as part of the EDWC initiative. Branding itself the "China Data Valley," Guizhou seeks to emulate Silicon Valley. Its experience reflects both local dynamics and broader national and global trends, making it a valuable lens for observing how national strategies and global digitalization are locally adapted.[59] This section analyses Guizhou as a case study in the emerging "digital ecological civilization" narrative, illustrating how its digital and ecological efforts combine "ecological civilization" with "Digital China."

In recent years, Guizhou has attracted scholarly attention from multiple angles. Oakes frames it as an "infrastructural space" of state governance,[60] while Darcy Pan interprets its cloud technology initiatives as part of China's state-building efforts, cautioning that emphasis on local resources can obscure local economic inequality.[61] Bingchung Meng examines Apple's local partner GCBD, arguing in response to Pan's work that state-building need not necessarily imply an "antithetical relationship between the state and the society,"[62] a view echoed in my previous work that highlights the complex state–commercial dynamics shaping Guizhou's rise as China Data Valley.[63] Meng further argues that locally based platform companies like GCBD challenge dominant logics of platform capitalism, with local institutions re-articulating the digital through socialist histories such as the Third Front to assert their significance. Expanding on Meng's insights, the following analysis suggests that such histories function more as a haunting ghost rather than a popular champion of local development in the digital economy.

Nevertheless, scholarly discussions on this historically marginal region remain sparse. This case study contributes to the growing interest in Guizhou and south-west China. Drawing on local mainstream discourse, I argue that attempts to link digital futures with socialist pasts are complicated

57 Ren 2023.

58 Scholars have used the concept of the sublime to explain how transcendental power is attributed to technology. For example, David Nye's "technological sublime" describes how artificial and natural wonders in the US evoke a quasi-religious awe and symbolize national greatness (Nye 1994). Building on this, Mosco's "digital sublime" refers to how cyberspace is mythologized as transcending history and politics (Mosco 2004).

59 Liu, Kevin 2025.

60 Oakes 2022; 2023.

61 Pan 2022.

62 Meng 2025, 8.

63 Liu, Kevin 2024; 2025

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by a core contradiction: the legacy of human intervention clashes with Guizhou's aspiration for a "natural" or "innate" path to modernization. Importantly, this tension potentially undermines the seemingly post-socialist narrative of a human–nature harmony that underpins the rhetoric of digital ecological civilization. In this light, the contradiction itself reflects the unresolved legacy of the socialist era attempts to reconfigure both nature and development. Therefore, while cultural references to the socialist past are obscured by the nature–intervention paradox, this contradiction itself continues to echo the dilemmas of early socialist modernization.

### *Official mythmaking: "naturalizing" the local digital endeavour*

Guizhou's shift to the digital industry began in 2012 when Gui'An New Area was established as a provincial economic pilot zone. Soon after, the provincial leadership focused on the big data industry as Guizhou's primary economic driver. Since 2012, Gui'An New Area has become home to data centres for China Telecom, China Mobile and China Unicom, along with Huawei's largest data centre and Apple's only iCloud data centre in China. Guizhou has also invested heavily in digitizing governance platforms, leading the growth rate in digitization in China.[64] By examining the local discourse established by the government and mainstream media, this section suggests that the official discourse promotes a mythicized story of "natural and inevitable" development, emphasizing Guizhou's geographical and climatic conditions as the "natural" and "innate" advantages. This narrative suggests that Guizhou's environment is ideal for developing data technologies, making it a "natural" leader in digital ecological development.

Local official discourse highlights Guizhou's natural environment as a key advantage. Most local narratives focus on three aspects: abundant natural resources, a pleasant climate and superior geographical conditions.[65] For example, a local newspaper ran an article under the headline, "Cool Guiyang, the China Data Valley," which highlights Guiyang's reserves of aluminium, coal, iron, quartzite and other minerals, adding that Guiyang has over 70 per cent of China's premium phosphorus ore.[66] Another local publication, *China Data Valley*, points to Guizhou's theoretical reserves of hydro power, significant coal reserves and ranking as a leading province in both resources, arguing that it is impossible to find another province in China that is as resource-abundant as Guizhou in both water and coal and describing Guizhou as a giant in hydro and thermal power generation.[67]

The cool climate is another major advantage promoted in official discourse. Guiyang's city slogan, "Cool Guiyang," reflects the local branding of its relatively cool climate. According to *China Data Valley*, the province's forest coverage contributes to its high air quality, with an average annual temperature of 14–16 degrees Celsius (57.2–60.8 degrees Fahrenheit) and a summer average of 22.5 degrees Celsius (72.5 degrees Fahrenheit). It adds that due to the region's natural "mega-air conditioning" and "mega-oxygen bar," the cooling and dust-cleaning maintenance costs of data centres could be dramatically decreased.[68]

Lastly, the karst landscape is lauded as another major advantage. Karst landscapes are characterized by a large amount of limestone, which dissolves and erodes to form sinkholes, caves and underground springs. The South China Karst, of which Guizhou is a part, is a World Heritage Site and described by UNESCO as "one of the world's most spectacular examples" of its type.[69] Local

64 Liu, Kevin 2025, 209–214; Pan 2022.

65 To identify local official discourse on big data development, I used the keywords "cloud," "cloud computing," "big data" and "data centre" to collect 81 reports from *Guizhou Daily* and *Guiyang Daily* (2008–2020). I also gathered reports from the local evening news, *People's Focus* and brochures from the 2019 and 2021 Big Data Expo. Additionally, I examined official publications, such as *China Data Valley*'s Guizhou Big Data Academy 2018; 2020 and *A Cadre's Reader of the Big Data* (CBDIO 2018).

66 Wang, Taishi 2016.

67 Guizhou Big Data Academy 2018, 12.

68 Ibid., 33.

69 UNESCO 2007.

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discourse often highlights the benefits of the karst landscape. For example, local Party press reports and official publications repeatedly highlight three major advantages Guizhou offers for developing cloud technology: abundant water resources, numerous natural caves and stable geographical conditions.[70]

In addition to local publications, these narratives are reinforced in statements by industry leaders and key politicians. For instance, in 2014 Li Yue 李跃, former CEO of China Mobile, cited the "cool climate, plentiful natural resources, superior geographical conditions, and infrastructure" as reasons for setting up the company's cloud computing centre there.[71] Wang Xiaochu 王晓初, former chairman of China Telecom, also praised Guizhou's regional advantages, unique ecosystem and resource abundance in 2013.[72] Chen Gang 陈刚, a former Party secretary of Guiyang, claimed that Guizhou's "cool climate, ample reserves of electricity resources, stable geographical conditions, [therefore offered] a cost advantage and security advantage to develop cloud services."[73] It could be argued that there exists a clearly defined and staged official narrative surrounding the "karst landscape advantage," serving as a major justification of Guizhou's developmental strategy.

While these narratives merit further interrogation, it is important to acknowledge that these "natural" advantages are largely valid. For example, data centres require a stable and cheap supply of electricity and water for cooling systems. Guizhou's cool climate and good air quality make it easier to cool and maintain servers. Tencent's data centre, for instance, uses natural wind for cooling 70 per cent of the year.[74] These conditions legitimize Guizhou's self-promotion as a major data hub. However, the local narrative not only describes Guizhou's development as *reasonable* but also as *inevitable*, adding that these are "innate" advantages. Consequently, a double articulation of "naturalness" has emerged – it is (1) *natural* for Guizhou to develop data technology because of its (2) *natural* conditions. As such, the natural/innate rhetoric shapes the material conditions of the local environment, naturalizing and normalizing Guizhou's path towards a digital development. Such a narrative reflects the construction of a sociotechnical imaginary that aligns with the national vision of "digital ecological civilization." This imaginary serves to legitimize the state's infrastructural investments and positions Guizhou as a key player in China's digital future.

### *The untold stories: water, karst and human/state intervention*

However, it is essential to question whether the above-discussed narrative tells the whole truth. Vincent Mosco highlights the importance of examining myths for both "what they reveal … [and] conceal,"[75] especially when they promise an inevitable bright future. This section uncovers untold stories about local resources, geographic conditions and the history of significant human/state intervention. The narrative of natural and inevitable development is achieved by exaggerating environmental advantages and selectively concealing or neglecting local histories that might challenge this narrative. These operations show how the natural/innate narrative is not so "natural" – it is a mythicized political narrative diverging from actual local conditions and technological materialities, appealing to imaginations of a collectively held future. As such, local sociotechnical imaginaries of digital and ecological futures are established.

The tendency to exaggerate local climate conditions is pervasive in official discourse, with little public discussion about potential drawbacks or environmental impacts. One example is the myth of water abundance. Although the area's water resources are promoted as a major advantage for data centre operations and electricity supply, research shows otherwise. A 2019 report on local water

70 See, e.g., Guizhou Big Data Academy 2018; Wang, Taishi 2016.
71 Jin 2014.
72 Zhao 2013.
73 Sun 2016.
74 Deng 2018.
75 Mosco 2004, 19.

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supply capacity detailed the water conditions in Gui'An New Area, where all data centres are located. The region experiences high annual rainfall and Gui'An New Area is located close to major water reserves and conservancy projects. However, the water supply is insufficient, as the major reservoirs and channels currently meet the needs of Guiyang, leaving little surplus for the new district. Consequently, the average water supply per person for Gui'An's 720,000 residents is only half the provincial average. Additionally, the nearby water conservancies are primarily drinking water reservoirs, which means industrial use is heavily restricted and there are significant water protection responsibilities. The report concluded that Gui'An New Area's water resource development and supply–demand relationship is at a relative disadvantage compared to other regions of the province.[76]

Another untold story is Guizhou's history of large-scale human and state intervention, which critically underpins today's digital development. While the official narrative suggests that Guizhou's natural advantages are easily accessible, extensive industrial infrastructure is required to transform water and coal into hydro- and thermal power, along with a power transmission network to supply data centres. Two key interventions significantly contributed to this infrastructure: the Third Front and the West to East Electricity Transmission (WEET) project.

In the 1960s, as relations between China and the Soviet Union deteriorated, Mao Zedong 毛泽东 proposed the Third Front construction project in anticipation of a potential nuclear war.[77] Mao designated the coastal region as the First Front, the area from Inner Mongolia to Gansu province as the Second Front, and south-west China as the Third Front. The focus was on developing transportation, coal and electricity industries to prepare "a rear area [that] is necessary for the age of the atomic bomb," according to Mao.[78] Guizhou became a major Third Front location, as workers and factories from the First Front regions were relocated there. From 1964 to 1978, with state support, Guizhou completed nearly one billion yuan worth of industrial construction and received more than a million migrant labourers who established 14 industrial ministries and 64 industrial cities within the province.[79] Between the late 1950s and 1980s, Guizhou built its first modern railway network, including three lines connecting neighbouring provinces.[80] From 1958 to 1981, seven hydropower stations were built on the Maotiao River 猫跳河 basin,[81] alongside thermal power stations across the province.[82]

The WEET project was launched in the 1990s to address electricity shortages experienced by coastal regions undergoing rapid industrial development. Guizhou was designated as a major electricity supplier for Guangdong province and the Huadong area 华东地区, utilizing its hydropower capacity across four major river basins.[83] Many hydropower stations involved in this project, including several newly constructed ones, were built by Third Front enterprises, such as the Sinohydro Bureau Nine, which constructed nearly all of the major hydropower stations near Guiyang. Consequently, although these power stations appear to be plentiful, they are required to prioritize electricity supply to coastal regions, which explains why most power stations around Gui'An New Area are already operating at full capacity.

Finally, a key unspoken narrative is that of the karst landscape as an obstacle to industrialization. The uneven distribution of rainfall over the karst mountains presents many challenges. For example, during the Third Front construction period, 591 workers from the Railroad Corps died while constructing the Guiyang–Kunming railway.[84] Local accounts describe frequent casualties due to

76 Chai 2019.
77 Li 2015; Meyskens 2020.
78 Chen, Xi 2014, 43.
79 Xu and Tian 2011.
80 Tan 2020, 20–29.
81 Archives from the Sinohydro Bureau Nine, a Third Front enterprise established in Guizhou in 1958.
82 Chen, Xi 2014, 435–443.
83 Ibid.
84 Meyskens 2015, 256–57.

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rockfalls, firedamp explosions, and landslides during heavy rains. Indeed, the memorial cemeteries along the Guizhou–Hunan railway line were established to honour such sacrifices.[85] Local reports on the WEET project pointed to the problems posed by "a thin soil layer and a lack of capacity to store water; and the mountainous terrain [making] it challenging to access water," as well as the "problem of insufficient industrial water."[86] A close examination of the official narrative reveals that stories about "obstacles" and "human and state intervention" are frequently omitted or altered in the accounts of Guizhou's digital endeavour, despite these histories forming the industrial groundwork for the region's current digital infrastructure.

### *Innate advantage or not? The mythification of data technology*

So, why does official discourse articulate the history in such a particular way? This section argues that local official narratives reframe Guizhou's history, political economy and environment to portray it as inherently advantaged and destined to lead in a digital future. As Mosco notes, "myth does not just embody a truth, it shelters truth by giving it a natural, taken-for-granted quality."[87] The narrative encourages a transcendental view of data technology, devoid of history and politics, promising a bright future for Guizhou. More importantly, it portrays Guizhou's path as inevitable, obscuring the historicity and politics of this development. Ultimately, this narrative encourages the local public to believe in a collective and taken-for-granted understanding of Guizhou's future and its trajectory.

Demystifying the official narrative reveals that the local mythification of data technology relies on sociotechnical imaginaries to overcome two key contradictions. The first is the contradiction between naturalness and human intervention. The local narrative omits the history of human and state intervention to create a sense of "naturalness" in the official narrative. Acknowledging this history would undermine the "innate advantage" rationale, leading to scepticism. After all, if everything were the result of human and state intervention, these advantages would no longer seem "natural." This contradiction also manifests in the shift from Mao's "humans must conquer nature" ideology to Xi's "ecological civilization." Digital technology is now seen as an integral part of creating a "human–nature harmony" and a modernized Chinese civilization, not an artificial instrument to alter nature.

The second contradiction lies between innate advantage and innate disadvantage, rooted in China's reform-era "development/backwardness" dichotomy. It stems from three factors: (1) Guizhou's mountainous karst terrain and uneven rainfall once hindered infrastructure construction and contributed to its poverty; (2) these same conditions are now framed as assets for developing the digital industry; and (3) the landscape and climate are unchanging, "innate" features. By combining (2) and (3), local narratives claim Guizhou is naturally suited to lead the digital economy and is destined for modernity. However, based on (1) and (3), one could argue that Guizhou was inherently disadvantaged, thus was considered to be "backward" in the past. Since both the perceived advantages and past disadvantages derive from the same environment, the narrative omits the earlier hardships to mythicize data technology and construct a sociotechnical imaginary of a digital-ecological future.

Importantly, the narrative of Guizhou's digital rise as "natural" and "inevitable" gains traction not merely through official promotion but through its dual articulation with local and national histories. That is, it draws on local aspirations for *development* and the broader "backward/development" dichotomy. Consequently, historicizing this narrative risks undermining local pride – either by suggesting Guizhou was destined for past backwardness because of its karst landscape, or by implying current success is coincidental rather than rooted in innate advantage. As one informant put it: "[Guizhou's data technology development] shows that we are not inferior to others."[88] Thus, the

85 Tan 2020, 28.
86 Guizhou Bureau of Statistics 2010.
87 Mosco 2004, 29–30.
88 Interview with author, 22 February 2021.

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mythification of Guizhou's digital progress reflects sociotechnical imaginaries that are shaped by both infrastructural presence and historical memory. As data centres materialize, they interact with local histories and must resolve "sociocultural frictions." To sustain the narrative of innate advantage, local discourse reinterprets environmental conditions, navigating "environmental frictions" in the process.

## Implications: The Only Pathway Forward

A key consequence of the "natural/inevitable" rhetoric is its role in reconciling tensions between local realities and national aspirations by constructing a cohesive narrative that obscures historical and political complexities. This narrative establishes a linear "pathway" linking past, present and future, framing the current development trajectory as the only legitimate route to modernization. Central to this is a "techno-eco unity" imaginary that mythically fuses technology and ecology, disregarding historical contradictions and promoting a transcendental, apolitical vision of "green" digital technology. Such mythification contributes to what Pan observes as an overemphasis on natural resources at the expense of addressing local economic disparities.[89] Additionally, I further contend that it fosters an ungrounded collective memory, which, rather than empowering locals, alienates them from their lived realities.

Nevertheless, the two contradictions underlying the "natural/inevitable" narrative also complicate Guizhou's digital imaginaries in light of its socialist past. Zhu Yu explores how early socialist China grappled with reconciling "nature" within the frameworks of nationalism, socialism and developmentalism.[90] He argues that during the socialist era:

> In the natural world, "nature" first appears as the object of labour. Yet even before the dawn of conscious "revolution," the processes of production and daily life are already embedded within a certain "natural state." This state shapes the prevailing notion of "human nature," marked by a degree of spontaneity and governed by economic laws that operate much like the laws of nature. The practice of socialism in China is not a mere intervention into one aspect of this condition – it is a comprehensive, total transformation.[91]

As a result, Zhu further argues, "on the one hand, socialist practice continuously denaturalizes what once appeared 'natural'; on the other, it must rely on the very 'natural state' to transform both 'nature' and 'human nature' – and even to justify itself as a new form of nature."[92]

In Guizhou's case, the rhetoric of "nature" and "inevitability" obscures both historical-geographical challenges and the political interventions behind its development. Yet the mythicized sociotechnical imaginaries of "techno-eco unity" still resonate with early socialist efforts to redefine "nature." Although memories of past obstacles and state projects complicate the claims of an "innate" path to a "digital ecological civilization," contradictions in imagining nature continue to inform local visions of modernity. In this light, while the discourse of "ecological civilization" signals a departure from Maoist interventionism, the vision of a "digital ecological civilization" – driven by digitization fantasies – retains a teleological and revolutionary impulse. Its sociotechnical imaginaries frame a mythic historical progression in which a digitized ecological future, inherent to Chinese modernity, follows agriculture and industry as the next civilizational stage.[93]

## Conclusion: Making the National Dream Local

This article examines how digital technologies are conceptualized to embody China's national vision of ecological development and how these sociotechnical imaginaries are negotiated locally. Through

89 Pan 2022, 2421.
90 Zhu 2018.
91 Ibid., 5. Author's translation.
92 Ibid., 17.
93 Imbach 2020.

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rhetorical and discourse analysis of key policy documents and local narratives in Guizhou, it demonstrates how "digital ecological civilization" fuses "Digital China" and "ecological civilization" into an integrated vision of "Chinese modernization." Nationally, this narrative positions digital technology as a transcendent tool for achieving harmony between humans and nature, mythicizing it as a transformative force within a broader ideological shift towards human–nature unity. However, the case of Guizhou reveals a selective articulation of this vision, emphasizing the region's "natural" advantages – climate, resources and karst landscape – while downplaying the state interventions that have shaped its development. This mythification legitimizes infrastructural investments and projects a coherent future that masks tensions between ecological rhetoric and the material realities of digital expansion.

The findings show that sociotechnical imaginaries of "digital ecological civilization" are not simply top-down impositions but are reconfigured locally. In Guizhou, official discourse presents data centre development as a natural outcome of environmental conditions, aligning with national goals while adapting to regional histories. However, this framing obscures contradictions: reliance on past interventions undermines claims of "naturalness," and reframing disadvantages as advantages reflects a selective historical memory. These tensions echo socialist-era conceptions of nature, revealing unresolved legacies in China's developmental model. The paradox of portraying development as both de-naturalizing and "natural" reflects the enduring complexity of socialist modernization, complicating the post-socialist turn towards ecological harmony.

This study extends the concept of sociotechnical imaginaries by highlighting their role in China's techno-ecological governance and challenging simplistic notions of digitalization as an environmental solution. The "digital ecological civilization" narrative, while framing China as an alternative modernity, remains deeply rooted in its socialist past. Guizhou's local adaptation demonstrates regional agency, complicating centralized development visions. By framing digital expansion as the inevitable result of "innate" conditions, local discourse legitimizes state investment, reshapes collective memory and distances people from their lived experiences.

The implications are significant for understanding China's development and global positioning. "Digital ecological civilization" reframes modernization and positions China in global sustainability debates, presenting a model in which digital technology mediates ecological goals. Yet persistent historical contradictions expose unresolved ties to the socialist past, even as the model promotes a forward-looking ecological vision. This tension underscores the broader role of sociotechnical imaginaries in shaping national identity, local realities and collective futures. Future research could explore how other actors, such as local communities, environmental groups or private firms, engage with or contest this narrative. Comparative studies with other regions or countries pursuing techno-ecological models could further clarify global digital–environmental dynamics. By examining the intersections of technology, ecology and modernity in China, this study sheds light on how sociotechnical imaginaries shape 21st-century developmental trajectories.

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