



Perspective

China's imaginary of ecological civilization: A resonance between the state-led discourse and sociocultural dynamics

Ping Huang^{a,b}, Linda Westman^{a,*}^a Urban Institute, Interdisciplinary Centre of the Social Sciences (ICOSS), University of Sheffield, 219 Portobello, Sheffield S1 4DP, UK^b The Advanced Institute of Global and Contemporary China Studies, Chinese University of Hong Kong, Shenzhen 518172, China

ARTICLE INFO

Keywords:
Imagines
Ecological civilization
"Unity of Man and Nature"
China

ABSTRACT

The field of science, technology and society (STS) calls for greater geographical diversity that draws attention to 'the rich mosaic of non-Western cultures.' This perspective provides cultural insights into the construction of the imaginary of ecological civilization in China. From the lens of sociotechnical theory, this perspective presents the discourses and practices constitutive of ecological civilization. We argue that ecological civilization operates as an imaginary that builds on both state-led environmental narratives and sociocultural traditions. In particular, the Chinese perception of human-nature relationships, represented by the principle of "Unity of Man and Nature," constitutes a key cultural feature in the collective vision of a desirable life of Chinese people. The perspective piece shows how sociocultural roots might mediate or antagonize relations between national and community aspirations. Moreover, ecological civilization extends beyond any single sector or technology, and the unified diversity projected by the imaginary is a co-production of local knowledge with the normativity embedded in ecological civilization.

1. Introduction

The field of science, technology and society (STS) features interdisciplinarity that integrates social and cultural perspectives in science and technology studies [1]. The basic constituents of STS research (society and culture) underscore the importance of epistemological diversity, guaranteed by the involvement of not only a variety of actors but also different geographical locations [2]. Nevertheless, a recent review conducted by Sovacool et al. [2] identifies a general lack of diversity in energy-related STS research, with a disproportionate focus on developed, industrialized and Western societies. Sovacool et al. [2] hence call for a greater geographical diversity of STS research that draws attention to 'the rich mosaic of non-Western cultures.'

This perspective piece engages with China, a civilization with more than 5000 years of history, to provide cultural insights into the co-construction of the imaginary of ecological civilization by the state and Chinese society. China is the world's second-largest economy. A recent report estimates that, due to the COVID-19 pandemic, China will overtake the US economy by 2028, five years earlier than the previous estimate [3]. China hosted a third of the global renewable power capacity and consumed a quarter of the global renewable energy output in

2018 [4]. Given its significance in the global energy landscape, what happens in China will be globally relevant [5]. At the virtual UN General Assembly in September 2020, China announced the target of carbon neutrality by 2060. Realizing this ambitious pledge would mean deep structural changes in China's economy, including industrial structure, patterns of urbanization, and consumption. To the global community, whether China is ready or not for such a transition remains an open question.

From the lens of sociotechnical imaginaries theory, this perspective engages with a crucial but much neglected ecological turn in China, marked by the official integration of ecological civilization into its national agenda. We argue that ecological civilization constitutes an institutionalized environmental imaginary rooted in China's traditional cultural and social beliefs and perceptions of human-nature relationships. In particular, we show how a reconnection to societal cultural codes fosters the interplay between knowledge, normativity and materiality in the co-production of the imaginary of ecological civilization.

* Corresponding author at: 219 Portobello, Sheffield S1 4DP, UK.

E-mail addresses: p.huang@sheffield.ac.uk (P. Huang), l.westman@sheffield.ac.uk (L. Westman).<https://doi.org/10.1016/j.erss.2021.102253>

Received 7 January 2021; Received in revised form 7 August 2021; Accepted 12 August 2021

Available online 2 September 2021

2214-6296/© 2021 The Authors.

Published by Elsevier Ltd.

This is an open access article under the CC BY-NC-ND license

<http://creativecommons.org/licenses/by-nc-nd/4.0/>.

2. Sociotechnical imaginaries: The divide between national visions and local aspirations

Hess and Sovacool [1] identify the study of sociotechnical imaginaries as one of the four major energy-related STS perspectives. Sociotechnical imaginaries are “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 [6, p. 6].” Since it emerged in the late 2000s, sociotechnical imaginaries research seeks to understand sociotechnical systems from the perspective of cultural meanings [2]. Jasanoff [6] first introduced the imaginaries concept to STS scholarship in her 2001 piece “Image and imagination: The formation of global environmental consciousness” as a way of making sense of the emergence of a shared global environmental consciousness, and attendant political community-building, inspired by the 1960s Earthrise image. The eventual conceptualization of sociotechnical imaginaries in later STS work has helped to explain how scientific representations and technological endeavours both shape and are shaped by “collectively-held, institutionally stabilized and publicly performed visions of desirable futures.” According to this branch of Jasanoffian STS scholarship, sociotechnical imaginaries are collectively held and normatively desirable visions animated by sociotechnical projects, including the forms of knowledge and materiality that underwrite them.

Sociotechnical imaginaries may be institutionalized in public policies, but as they are lodged in the public consciousness, they often operate beyond the bounds of the state [1]. Nation-states can formulate public policies that align with specific imaginaries, such as in the well-known research of Jasanoff and Kim [7] on nuclear power in South Korea. This case illustrates the construction of a national imaginary around nuclear energy, associated with investment strategies and development plans, which supported the reconstruction and establishment of South Korea as a wealthy, technologically advanced nation [7]. In a similar way, Kuchler and Bridge [8] describe the deep and emotional ties between state-led dreams of nationalist modernization and an energy future based on coal in Poland. State imaginaries can gain strong traction, in part because of the formal authority that resides within national governments. As strategies for national development are a key objective of central governments, such plans can easily become entangled with infrastructures, funding, and knowledge production. Due to this special position, there has been considerable academic interest in normative analyses of national imaginaries of science and technology, particularly in the energy sector [9].

Yet, Jasanoff [6] also explains that the concept of imaginaries helps us understand how “space and scale are linked in a normative coupling.” In this sense, imaginaries help to “reconfigure actors’ sense of the possible spaces of action but also their sense of the rightness of action, ranging from locality...to the planet” [6]. This means that imaginaries are not constrained to any specific scale of action, nor to any specific actor, but are co-constructed by constantly shifting collectives. In particular, the proliferation of grassroots-based sociotechnical imaginaries demonstrates that a diversity of actors are involved in the construction of competing and contested imaginaries [1]. As noted by Hess [10], “there is not a monolithic state imaginary of the public.” A plurality of ‘publics,’ including social movements, industrial coalitions, and opposing political parties, formulates opposing visions of the future, for example linked to new technologies and disruptive industries or visions of social justice [10]. In the context of imaginaries of energy futures, a wide range of actors proposes counter-hegemonic visions, which differ in their alignment with technologies, knowledge, social arrangements, and metrics of progress [11]. New visions materialize in communities through experimentation, adoption of new technologies, and formation of networks of actors [12]. For example, the articulation of energy imaginaries has been shown to depend on situated accounts that relate both to memories of the past, such as shared recollections of hardship, as

well as to the collective envisioning of a future ‘good’ life [13].

The fact that national imaginaries are frequently contested at the local level indicates that there can be a mismatch between the formulation of sociotechnical futures in national policy and visions constructed locally by communities and individuals [14]. The portrayal of national imaginaries in the literature sometimes seems to communicate that single and official state imaginaries (reflected in policies and elite perceptions) can represent the nation as a whole [15]. Nevertheless, state imaginaries often fail to resonate with the experiences and notions of idealized futures of ordinary people. This can materialize as a ‘gap’ between state imaginaries as manifested in policy and cultural beliefs or values held by the public that those policies are assumed to represent [15, p.104]. This divide between state and society in visions of low-carbon futures is sometimes notable. Official imaginaries can be technocentric, failing to resonate with the interests and aspirations of local communities. As noted by Jasanoff et al. [16, p.4], “states have not always correctly discerned the needs and wants of their own publics with respect to technological developments.”

This perspective piece engages with the relationship between national and community-based visions – in particular the putative ‘gap’ between national and local concerns. Despite calls for the integration of “real people’s cultural models” in national discourses [15], state imaginaries are frequently presented as being constituted by grandiose dreams of infrastructure and technological progress, disconnected from the everyday lives of ordinary people. Overall, there is a strong focus in the literature on contestation and antagonism between state-led visions and grassroots aspirations, or even a complete disconnect between the two. This antagonism is tangible in cases where technological development and infrastructure projects proposed by public policy generate public opposition [e.g., 17,18]. In response, members of the public mobilize alternative imaginaries to contest those led by the state. For example, Simmet [19] illustrates the conflict between globally circulating visions and locally grounded concerns. In a case study of solar power in Dakar, there was a deep disconnect between visions articulated by international policy communities based on ‘universal’ ideals of industrialization, and the actual needs or preferences of communities [19]. Smith and Tidwell [20] likewise demonstrate a divide between national energy imaginaries (focused on consumption) and locally formulated imaginaries, where the latter highlighted the importance of dignified work conditions within energy industries [see also 21,22].

This ‘gap’ is especially acute in the context of China. In governance and policy studies in China, the idea of a unitary state apparatus with the ability to control all aspects of life has gradually given way to interpretations of a fragmented, networked system interspersed with spaces of participation, dialogue, and contestation [23–25]. Nevertheless, research on environmental governance in China continues to emphasize the authoritarian components of the political system [26–28]. This tendency is reproduced in the emerging literature on sociotechnical imaginaries surrounding science and the environment. For example, in relation to wind power, Korsnes [23, p.52] attributes the influence over imaginaries to the state, describing energy imaginaries as “long-term, state-induced desirable futures,” which are “part of a larger process of nation-building and plan-based governance.” In an overview of sociotechnical imaginaries in research and innovation policy, Witrock et al. [29, p.83] argue that the dominant imaginary is “structured by the centralized power of the party and government not only in the control but also in the definition of societal goals and values.” Imaginaries of technology and innovation in China are therefore tightly intertwined with nationalist ambitions of economic development and scientific progress and shaped predominantly through public policy, allegedly in contrast with “deliberative and participatory traditions” observed elsewhere [30]. Likewise, in an examination of the circular economy, Schulz and Lora-Wainwright [31, p.2] speak of an imaginary “largely supported—at least by state actors.” This imaginary is constructed primarily through “state-led standardization and formalization of dismantling and processing in large plants and circular economy

parks,” driven by top-down agendas and geared towards profit generation [31, p.10]. In an analysis of ambitions for industrial automation, Lei [32, p.16] similarly refers to a “top-down national sociotechnical imaginary” shaped by state and business techno-fetishist interests, which explicitly excludes workers and unions.

The image that emerges from sociotechnical imaginaries in China is that of a set of ideas somehow monopolized by discourses and ideologies of the state, possibly influenced by business interests, but primarily dictated by the government. Our view is that such depictions misrepresent Chinese society, as well as the concept of imaginaries itself. Sociotechnical imaginaries, as a cultural analytical framework of science and technology, may be understood through analyses of national political cultures [16], but they are fundamentally inseparable from deeper structures of society, including cultures and philosophies embedded in worldviews and social practices. In this perspective, we engage with the case of China to deconstruct the idea that state visions operate in isolation from the rest of society. To do so, we interrogate the construction of the imaginary of “ecological civilization” in China and point towards a dynamic relationship between grassroots ideals and national objectives, which is mutually constructive, fluid, and adaptive. In this case, a ‘harmonization’ of knowledge and normativity occurs where the knowledge comes from below and the normativity from above. We illustrate the profound influence of ‘traditional’ thought and practices in the construction of ecological civilization as a sociotechnical imaginary. The political leadership in China has clearly formulated a state vision attuned to popular sentiment (including a long-shared history of culture and philosophy) and sought to embed cultural memories in state-led environmental policy narratives. At the same time, local environmental initiatives have revived these same systems of thought, contributing to the collective cognitive construction of the ecological civilization imaginary. Our argument is that culture has acted as a key enabling element in the orchestration of social and state imagination of a society in social-ecological balance. This means that, as elsewhere, sociotechnical imaginaries are co-produced in China through interactions between knowledge, normativity, and materiality.

3. China’s imaginary of ecological civilization: A resonance between the state-led discourse and sociocultural dynamics

3.1. The ideological and political framings of ecological civilization

Ecological civilization is a concept that was developed within the Communist Party of China (CPC), particularly by Yue Pan, the former deputy director of China’s State Environmental Protection Agency [33]. As early as 2003, in a keynote speech delivered in the first forum of “Greening of China,” Pan brought up the concept of “ecological industrial civilization” (*shengtai gongye wenming*) [34]. The concept was articulated as a green version of industrial civilization, an alternative mode of economic development to address ecological crises generated by the traditional mode of industrialization. At that time, the meaning of the concept remained vague and unspecified. In 2006, Pan [35] published a journal article entitled “On socialist ecological civilization” in *Green Leaf*, an influential journal on environmental issues in China. In this article, drawing upon a systematic review of socialist theory, particularly eco-socialism, Pan introduced the concept of “socialist ecological civilization.” According to Pan [35p. 16]:

“Ecological civilization refers to the sum of material and spiritual achievements obtained by human beings following the principle of the harmonious development of man, nature and society; It refers to a cultural and ethical morphology with the fundamental purposes of harmonious coexistence, a virtuous circle, all-round development, and sustainable prosperity between man and nature, man and man, man and society.”

This initial article published by Pan [35] laid the foundation for the

ideological and political framing of ecological civilization. Many concepts and ideas proposed by Pan were later integrated into the official narratives of ecological civilization of the Chinese government [36,37], and eventually endorsed by Xi Jinping [38].

The rise of ecological civilization in China’s political narratives occurred in parallel with the increasing environmental consciousness of Chinese society. Three decades of rapid economic development has brought China not only economic prosperity but also mounting environmental problems. Since the mid-2000s, with the proliferation of environmental protests across the country [39], environmental issues have become a main cause of social unrest. In 2007, about half of adults (54%) in China thought environmental protection should be given top priority, while the share increased to 68% in 2018 [40]. A social consensus is consolidating in Chinese society around the urgency of environmental protection and ecological restoration.

In 2007, ecological civilization, as a term, first appeared in the report of the 17th National Congress delivered by former President Hu Jintao. Ever since, it has been assigned an increasingly prominent and important role in China’s national agenda [33]. In 2012, the “Five-Sphere Integrated Plan” was put forward as a national strategy in the report of the 18th National Congress, adding “ecological civilization construction” to the previous “Four-Sphere Integrated Plan” (economic construction, political construction, cultural construction, and social construction) (Fig. 1). This indicates that “ecological civilization construction” has since been officially designated as one of the building blocks in the realization of China’s national priorities. Meanwhile, the 18th National Congress adopted the revised Constitution of CPC, and the aim to “build a socialist ecological civilization” was added into the Party Constitution.

From 2015 to 2016, a series of policies were published, including the “Opinions on Accelerating the Construction of Ecological Civilization,” the “Overall Plan for the Reform of Ecological Civilization System,” and the “Measures for Evaluating and Assessing the Objectives of Ecological Civilization Construction.” These documents specified the overall objectives, key tasks, and institutional arrangements for the construction of ecological civilization, representing concrete steps taken by the Chinese government in advancing this national environmental vision [41]. In particular, the leading role of science and technology innovation was highlighted, with a commitment to continued support for cleaner modes of production. The 19th National Congress, held in 2017, further consolidated the national strategy of building an ecological civilization. The amended Party Constitution enriched the 2050 national goal by adding “beautiful” to the original text of “build a great modern socialist country that is prosperous, strong, democratic, culturally advanced, and harmonious” (Fig. 1). In March 2018, ecological civilization was written into the Constitution of China. At the National Conference of Ecological Environment Protection held in May 2018, the “Xi Jinping Thought on Ecological Civilization” was formally established [42], which is considered an integral part of “Xi Jinping Thought on Socialism with Chinese Characteristics.” Ecological civilization was thereby incorporated into the CPC’s core ideology.

Fig. 2 presents the evolution of the concept of ecological civilization in China’s political discourse. Although China is a one-party state, since the 1980s, there have been ongoing institutional reforms to separate and balance the powers between the Party and the state [43]. Therefore, to understand policymaking in China, it is important to distinguish between the Party and the state [44]. If we see the state as a set of differentiated and autonomous government institutions [45], the Party controls the state and Party ideologies penetrate the governance logic of the state. Seen this way, the ideological framing of national agendas is more important than the political framing, as the former lays down the ideological and theoretical underpinnings and orientations, while the latter establishes political legitimacy and translates the top-level design into concrete actions. For the narrative framing of ecological civilization, we can therefore distinguish between the framing in Party ideology and the framing in public policies and governance.

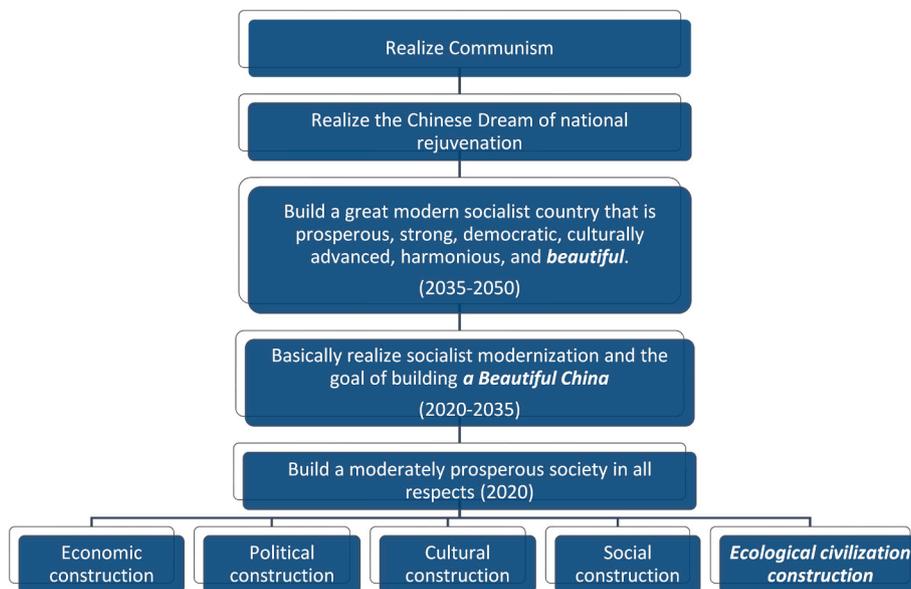


Fig. 1. The hierarchical tree of China's national agenda.

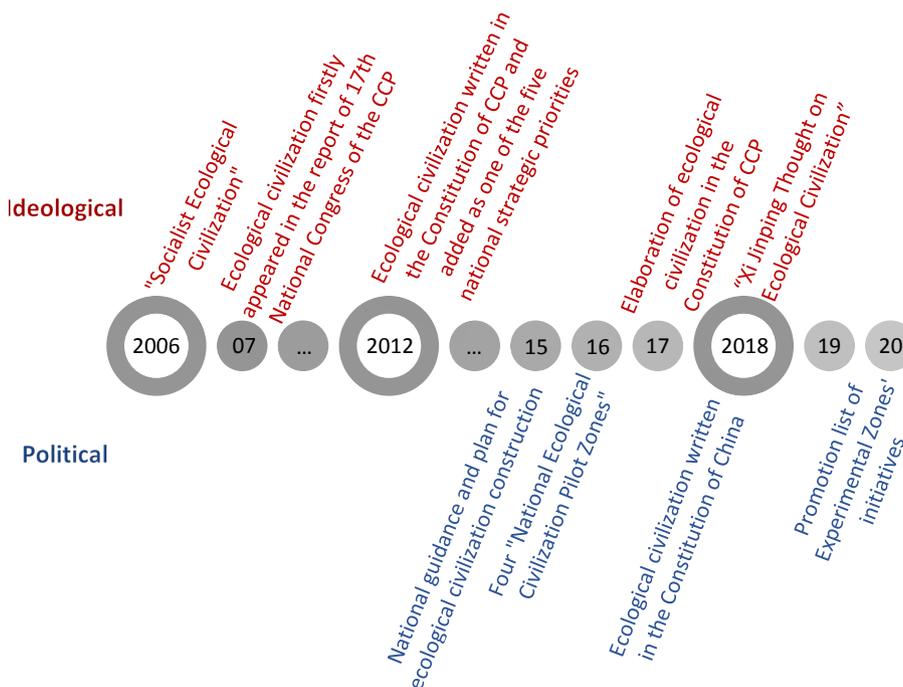


Fig. 2. The ideological and political evolution of the imaginary of ecological civilization.

Embedded in the political and ideological framings of ecological civilization are commitments such as sustainable development, the harmonious coexistence between man and nature, the idea of “lucid waters and lush mountains are invaluable assets” (the well-known “Two Mountains Theory” proposed by Xi), and holistic thinking of mountains, rivers, forests, farmlands, lakes, and grasslands as a life community¹. The interpretation of sustainable development in Chinese policy follows eco-modernist ideas about enhanced resource management, especially efficiency, which can be reached through technology innovation and industrial upgrading. This has been central to Chinese policy for many years, and it continues to be strengthened in recent plans. For example,

the “Guideline on Accelerating the Development of Ecological Civilization” emphasizes energy-saving and new energy development as key areas for scientific and technological research [22]. A novel aspect introduced in recent policy documents is the representation of ecosystems as valuable in themselves. These ideas seem to more directly translate traditional philosophies of ecocentrism into contemporary policy. Within this language, there is, on the one hand, ethics of aesthetics (preserve nature because it is beautiful), but also an element of holistic thinking that recognizes nature as an integral system that maintains all life on the planet. This refers to principles of maintaining balance and harmony within the natural world (which includes human activities), and in policy documents this translates into ideas about carrying capacities, ecological protection zones, and preservation of natural habitats. Because ecological civilization has been incorporated

¹ http://www.qsttheory.cn/2020-04/06/c_1125819117.htm

into the core ideology of the CPC, this national imagination penetrates the design and implementation of a variety of environmental policies, shaping science and technological development and the allocation of public expenditures. Statistics show that from 2016 to 2019, the national general public budget for ecological civilization construction expenditure reached 3.1 trillion yuan, with an average annual growth rate of 14.8%. The central special funds for ecological civilization in 2020 increased by 8.5% compared with 2016².

3.2. Culture as a key element in the co-production of ecological civilization

Culture and belief systems inspire and shape environmental imaginaries. In the last few years of the twentieth century, several leading philosophers in China (including Qian Mu, Tang Junyi, Feng Youlan, Ji Xianlin) independently concluded that the traditional Chinese view of human-nature relationships might be of crucial relevance for the future of humankind, potentially contributing to a revolutionary reorientation of the human developmental trajectory [46]. According to these scholars, the ingredient of environmentalism inherent in traditional Chinese philosophy might offer an alternative pathway in addressing multiple ecological crises. This Chinese environmentalism is best represented by the Chinese view of Nature, in particular the principle of “Unity of Man and Nature” (天人合一).

The “Unity of Man and Nature” as a term was first coined by Zhangzai to depict the holistic and anthropocosmic view of the universe. Ever since, the connotations of the “Unity of Man and Nature” have been enriched greatly, and it has become a core concept in traditional Chinese philosophy [47,48]. According to Tu [46p. 253], the idea of “Unity of Man and Nature” implies “a sustainable, harmonious relationship between the human species and nature.” The Chinese view of Nature follows a correlative epistemology, which understands the universe as a complex network consisting of innumerable, interdependent relations connected to and separated in diverse ways and distributed in uncountable levels [49]. Under this correlative cosmology, instead of viewing Nature and human beings as separated and independent entities, the natural world and humankind are perceived as organically united and intimately interconnected. This view is frequently articulated by ancient Chinese philosophers:

Man follows the laws of the earth; the Earth follows the laws of heaven; Heaven follows the laws of dao; Dao follows the laws of Nature. – Dao de Jing (Laozi)

Heaven and Earth co-exist with me, and all things and I are in oneness. – Qi wu lun (Zhuangzi)

Heaven is my father, and Earth is my mother, and even such a small creature as I finds an intimate place in their midst. Therefore that which fills the universe I regard as my body and that which directs the universe I consider as my nature. All people are my brothers and sisters, and all things are my companions. – Xi Ming (Zhangzai)

As can be seen, in Chinese philosophy, Nature is humanized and moralized. In the oldest classical Chinese book *Yi Jing*, for instance, Nature is depicted as a moral creator: “The great virtue of Heaven and Earth is called ‘producing [things]’ (*sheng*).” Implicit in Chinese culture, the “Unity of Man and Nature” goes beyond an abstract ideal and serves as a practical guide for everyday life, inscribed in material structures and social practices [50]. Huang [38], for instance, described how “man in harmony with nature” is an essential principle in landscape design in China. The traditional Chinese calendar (the *Nongli* calendar), with the spirit of living in the rhythm of nature and organizing human activities according to natural patterns and processes, is still widely used by Chinese nowadays, exerting a profound influence on agriculture

production, health care, and the daily life of Chinese people [51].

The “Unity of Man and Nature,” as a core Chinese cultural element, embraces the sociocultural dynamics of contemporary China and constitutes a key feature of the social imaginaries of a desirable life of Chinese people. This can be seen from the rise of the internet celebrity Li Ziqi. Li is one of China’s most popular vloggers, with more than 50 million subscribers on Chinese social media platforms. Living in rural China, Li’s videos on rural life present an ideal Chinese pastoral life rooted in the Chinese philosophy of living peacefully with nature [52]. Li’s rise as a cultural icon represents a trend of the rejuvenation of Chinese traditional culture in Chinese society [53]. Traditional cultural activities such as tea ceremonies, calligraphy, and pottery are gaining ground in popular culture, particularly among the younger generation. Liu [54] calls this cultural trend the revival of the Chinese living aesthetics, which represents a shift from *practicing* Chinese aesthetics to *living* Chinese aesthetics.

Ecological civilization, as a sociotechnical imaginary, resonates with the cultural, social, and institutional dynamics unfolding in Chinese society, co-produced by multiple social groups. The national vision of ecological civilization has already incorporated the core cultural ingredient of “Unity of Man and Nature.” In the article “On socialist ecological civilization,” Pan [35] argues that ecological ethics, which are inherent in both Confucianism (“Unity of Man and Nature”) and Daoism (“Dao follows the laws of Nature”), aligns with the values of ecological civilization. The 19th National Congress report incorporated “ensuring harmony between humans and nature” in the basic strategy of socialism with Chinese characteristics for a new era. The “Unity of Man and Nature” is also frequently quoted by Chinese leaders on different occasions. Under the imaginary of ecological civilization, the Chinese government portrays the long-term vision of a “Beautiful China” with harmony between humans and nature. Apparently, the “Unity of Man and Nature” has become a cultural language for the communist Party to connect with the public and to evoke resonance in the imaginary of ecological civilization. Fixed within ancient Chinese belief systems and reflecting a moral order accepted for centuries in Chinese society, ecological civilization goes beyond official political narratives in China.

The Chinese view of Nature serves as a primary epistemological element in the materialization of ecological civilization in local projects. State-driven narratives draw on lived experiences, histories, and material realities to continuously reshape what the imaginary consists of. This is conspicuously manifested in the nationwide rural revitalization campaign, a key agenda in building an ecological civilization. Pan [35] describes ecological civilization as an advanced form of civilization, following primitive civilization, agricultural civilization, and industrial civilization. In China, many remote rural villages that represent the agricultural civilization have been sacrificed for rapid industrialization and urbanization and are mostly forgotten places due to their remote geographic locale and a lack of transportation infrastructure to connect with the outside world. In the era of ecological civilization in China, these villages are being rediscovered under the national campaign of rural revitalization, a key principle of which is to preserve local cultures and traditional living practices.

A typical case is the Azheke renovation project in Yunnan province. Azheke village is located at the core area of the Honghe Hani Rice Terraces World Heritage Site, which was designated as the national innovation base for the “Two Mountains Strategy” in 2018. The area is characterized by a unique cultural landscape of a four-fold integrated system of ‘forest–water–terrace–village.’ In particular, the rice terraces form a resilient land management system to maintain social and environmental resources, demonstrating harmony between human and nature in both ecological and visual terms [55]. Villagers have lived in traditional mushroom houses for generations, but many of the houses have been left dilapidated due to a lack of proper maintenance. Initially, tensions existed between local governments and villagers because villagers built many new houses to improve their living conditions which damaged the unique landscape of the village. As a solution, local

² <http://sthjt.shaanxi.gov.cn/dynamic/zhongs/2021-03-25/68124.html>

governments invited experts to make an overall revitalization plan (the 'Azheke Plan') to improve villagers' living conditions without jeopardizing the village's traditional architecture. With the engagement of local villagers, the revitalization plan aims not only to preserve the traditional architecture and landscapes of the village but also to capitalize on the cultural heritage through eco-tourism to improve villagers' income levels. The local Hani community has strengthened its cultural identity by the maintenance of traditional ways of farming practices and lifestyles. In this case, the principle of culture preservation upheld by the local government in ecological civilization construction resonated with local villagers' lived experiences of the harmonious coexistence between man and nature.

As can be seen, the uniqueness of the imaginary of ecological civilization in China lies in that it is deeply grounded on Chinese traditional culture, and that it grants flexibility and inclusion in both the design and the implementation of its shared visions. The strategy of ecological civilization acts as an overarching assemblage of ideas that mobilizes the environmental agency of different sectors of society, including the research community, the private sector, non-profit organizations, and the wider public. For example, the "Action Plan on Fostering Civic Awareness of Ecological Civilization" aims to incorporate the values of ecological civilization in school education and develop a strong commitment of the whole society to building an ecological civilization. Under the banner of ecological civilization, environmental NGOs have initiated various environmental campaigns in China, such as the clean-tech incubator Powerlab launched by Greenpeace and the "Wildlife-Free E-Commerce Initiative" led by China Biodiversity Conservation and Green Development Foundation. Various businesses are also employing the concept to mobilize programs and campaigns. In 2018, China Post, a state-owned logistics enterprise, launched the "Three-year Action Plan for Green Post Construction," promoting green packaging and green transportation in the name of ecological civilization [56]. In 2019, Ant Forest, a green initiative linked with the concept of ecological civilization launched by Ant Financial (China's largest financial technology company), won the UN Champions of the Earth award for converting green behaviors into trees. By May 2020, Ant Forest had about 550 million users, and more than 200 million trees had been planted [57]. For ordinary Chinese people, although ecological civilization might not be directly articulated in their daily lives, the key messages delivered by the vision, such as environmental protection and energy-saving, are shared by the broader society [58]. As noted by Li Yan [59], the Chief Representative of Greenpeace China, the recognition of ecological civilization is becoming mainstream in China, and a consensus has been formed from the top to the bottom of society.

4. Conclusion

This perspective piece responds to recent calls for "more attention to diversity in non-Western or non-Northern countries and contexts" [2] and presents a cultural perspective in the co-construction of the imaginary of ecological civilization in China. Rooted in the ancient Chinese wisdom of "Unity of Man and Nature," ecological civilization echoes prevailing social and cultural perceptions and beliefs. The vision portrayed by ecological civilization not only represents the objectives of the state but also reflects common values of ordinary Chinese people. Ecological civilization serves as a guiding institution for the formulation of environmental and climate policies, the development of low-carbon experiments and renewable energy projects, and the mobilization of environmental agency of different social groups. In China, ecological civilization has become a plausible vision manifested in various social, cultural, and institutional practices [33].

This perspective piece responds to recent literature on imaginaries in China that describes the state as fully in charge of future visions. Often, the state is understood as a key source of authority in terms of the construction of environmental narratives. Nevertheless, the case of ecological civilization in China shows that, from a cultural perspective,

the state is not separated from society. Instead, we encounter a reality where there are no clear distinctions between state and grassroots ambitions and the relationship between actors is complex and ambiguous. Through this piece, we have attempted to explain how co-production operates in this particular socio-political context. We do not necessarily find a divide between 'scales' of action but instead a collective formulation of imaginaries that draws on both political ideology and public sentiment. In particular, we show how sociocultural roots might mediate or antagonize relations between national and community aspirations, thus moving away from the state/non-state divide prevailing in the sociotechnical imaginaries scholarship. The convergence between party rhetoric and public sentiment has allowed for the construction of ecological civilization as a widely supported imaginary. In China's rural revitalization campaign, for instance, the state draws on local histories, material realities, and lived experiences to foster the co-production of normativity, knowledge, and materiality in ecological civilization. Seen from this, China's imaginary of ecological civilization represents a resonance between state-led discourse and sociocultural dynamics.

Ecological civilization also represents an environmental imaginary that extends beyond any single sector or technology. As a result, we observe a unified diversity in the design and implementation of ecological civilization, in which an overarching principle of "Unity of Man and Nature" is interpreted and practiced quite differently in diverse local contexts. On the one hand, the long history of Sinicization within China's society has contributed to the transformation and integration of many non-Han cultures into Han Culture, represented for example by the permeation of Confucian ideas throughout the nation. Culture has contributed to the aggregation of varied expectations into a shared future vision [2]. This explains why ecological civilization, rooted in the philosophy of "Unity of Man and Nature," has aroused widespread resonance in Chinese society. On the other hand, China is a nation with 56 different ethnic groups, and cultural diversity and heterogeneity shape environmental narratives. Visions of ecological civilization are by no means unanimous and universal, and there are different beliefs, values, and interpretations of socio-ecological relations across different cultures and civilizations, even within the nation. The normativity embedded in ecological civilization can be contested, reinterpreted, and reconstructed quite differently with the input of local knowledge and also conditioned by local materialities. We show how the imaginary is taken forward by different actors with the recognition of local identities and histories and the incorporation of cultural elements in ecological civilization projects. In this way, China's framing of the ecological civilization discourse represents an effort of restoring something old and familiar, based on place-based traditions.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgments

This research was supported by H2020 European Research Council, Grant/Award Number: 804051-LO-ACT-ERC-2018-STG. We thank Professor Vanesa Castán Broto (University of Sheffield, Urban Institute) for her ongoing support of our work and for her critical reflections in developing the ideas for this manuscript.

References

- [1] D.J. Hess, B.K. Sovacool, Sociotechnical matters: Reviewing and integrating science and technology studies with energy social science, *Energy Res. Social Sci.* 65 (2020), 101462.
- [2] B.K. Sovacool, et al., Sociotechnical agendas: Reviewing future directions for energy and climate research, *Energy Res. Social Sci.* 70 (2020), 101617.

- [3] BBC. Chinese economy to overtake US 'by 2028' due to Covid. 2020; Available from: <https://www.bbc.co.uk/news/world-asia-china-55454146>.
- [4] REN21, Renewables 2019: Global status report. 2019.
- [5] P. Huang, L. Westman, V. Castán Broto, A culture-led approach to understanding energy transitions in China: The correlative epistemology. *Transactions of the Institute of British Geographers*, 2021.
- [6] Jasanoff, S., Future Imperfect: Science, Technology and the Imaginations of Modernity, in *Dreamscapes of modernity: Sociotechnical imaginaries and the fabrication of power*, S. Jasanoff and S.-H. Kim, Editors. 2015, University of Chicago Press.
- [7] S. Jasanoff, S.-H. Kim, Containing the atom: Sociotechnical imaginaries and nuclear power in the United States and South Korea, *Minerva* 47 (2) (2009) 119–146.
- [8] M. Kuchler, G. Bridge, Down the black hole: Sustaining national socio-technical imaginaries of coal in Poland, *Energy Res. Social Sci.* 41 (2018) 136–147.
- [9] S. Jasanoff, S.-H. Kim, Sociotechnical imaginaries and national energy policies, *Science as culture* 22 (2) (2013) 189–196.
- [10] D.J. Hess, Publics as threats? Integrating science and technology studies and social movement studies, *Science as Culture* 24 (1) (2015) 69–82.
- [11] N. Longhurst, J. Chilvers, Mapping diverse visions of energy transitions: co-producing sociotechnical imaginaries, *Sustain. Sci.* 14 (4) (2019) 973–990.
- [12] F. Engels, A.V. Münch, The micro smart grid as a materialised imaginary within the German energy transition, *Energy Res. Social Sci.* 9 (2015) 35–42.
- [13] H. Kim, S.H. Cho, S. Song, Wind, power, and the situatedness of community engagement, *Public Understanding of Science* 28 (1) (2019) 38–52.
- [14] S. Batel, P. Devine-Wright, A critical and empirical analysis of the national-local 'gap' in public responses to large-scale energy infrastructures, *J. Environ. Plann. Manage.* 58 (6) (2015) 1076–1095.
- [15] J.H. Tidwell, A.S.D. Tidwell, Energy ideals, visions, narratives, and rhetoric: Examining sociotechnical imaginaries theory and methodology in energy research, *Energy Res. Social Sci.* 39 (2018) 103–107.
- [16] S. Jasanoff, S.-H. Kim, S. Sperling, Sociotechnical imaginaries and science and technology policy: a cross-national comparison, Harvard University, NSF Research Project, 2007.
- [17] S. Zilliox, J.M. Smith, Colorado's fracking debates: citizen science, conflict and collaboration, *Science as Culture* 27 (2) (2018) 221–241.
- [18] T. Sternberg, Conflict and contestation in Kyrgyz mining infrastructure, *The Extractive Industries and Society* 7 (4) (2020) 1392–1400.
- [19] H.R. Simmet, "Lighting a dark continent": Imaginaries of energy transition in Senegal, *Energy Res. Social Sci.* 40 (2018) 71–81.
- [20] J.M. Smith, A.S.D. Tidwell, The everyday lives of energy transitions: Contested sociotechnical imaginaries in the American West, *Soc. Stud. Sci.* 46 (3) (2016) 327–350.
- [21] J. Marquardt, L.L. Delina, Reimagining energy futures: Contributions from community sustainable energy transitions in Thailand and the Philippines, *Energy Res. Social Sci.* 49 (2019) 91–102.
- [22] Y.A. Fatimah, Fantasy, values, and identity in biofuel innovation: Examining the promise of Jatropa for Indonesia, *Energy Res. Social Sci.* 7 (2015) 108–116.
- [23] Lieberthal, K.G. and D.M. Lampton, Bureaucracy, politics, and decision making in post-Mao China. Vol. 14. 2018: University of California Press.
- [24] Q. Mai M. Francesch-Huidobro Climate Change Governance in Chinese Cities 0 Routledge.
- [25] E.J. Leib, B. He (Eds.), *The Search for Deliberative Democracy in China*, Palgrave Macmillan US, New York, 2006.
- [26] K. Lo, Ecological civilization, authoritarian environmentalism, and the eco-politics of extractive governance in China, *The Extractive Industries and Society* 7 (3) (2020) 1029–1035.
- [27] M. Beeson Environmental authoritarianism and China, in *The Oxford Handbook of Environmental Political Theory* 2016.
- [28] Li, Y. and J. Shapiro, China goes Green: coercive environmentalism for a troubled planet. 2020: John Wiley & Sons.
- [29] C. Wittrock, et al., Overview of National Sociotechnical Imaginaries, in: *Implementing Responsible Research and Innovation*, Springer, 2021, pp. 75–103.
- [30] Wittrock, C., et al., *Implementing Responsible Research and Innovation: Organisational and National Conditions*. 2021: Springer Nature.
- [31] Y. Schulz, A. Lora-Wainwright, *In the name of circularity: environmental improvement and business slowdown in a Chinese recycling hub*. *Worldwide Waste, Journal of Interdisciplinary Studies* 2 (1) (2019).
- [32] Y.-W. Lei Upgrading China through Automation: Manufacturers 2021 Employment and Society Workers and the Techno-Developmental State. *Work* 0950017021999198.
- [33] M.H. Hansen, H. Li, R. Svarverud, Ecological civilization: Interpreting the Chinese past, projecting the global future, *Global Environ. Change* 53 (2018) 195–203.
- [34] Pan, Y. Huanjing wenhua yu minzu fuxing [Environmental Culture and National Revival]. 2003; Available from: http://www.mee.gov.cn/gkml/sthjbgw/qt/200910/t20091030_180661.htm.
- [35] Y. Pan, Shehui zhuyi shengtai wenming [On socialist ecological civilization], *Lvye [Green Leaf]* 10 (2006) 10–18.
- [36] Environment, M.o.E.a. Shengtai wenming yu qita wenming de guanxi [Relation between ecological civilization and other civilizations]. 2010; Available from: https://www.mee.gov.cn/home/ztbd/rzdl/stwm/zjwl/201211/t20121106_241409_wap.shtml.
- [37] Resources, M.o.N. Lishi huhuan yige xinde wenming shidai [History calls for a new era of civilization]. 2018; Available from: http://www.mnr.gov.cn/dt/pl/201807/t20180717_2347755.html.
- [38] QSTHEORY. Xi Jinping shengtai wenming sixiang lishi ziran de xingcheng he fazhan [The formation and development of Xi Jinping's ecological civilization thought]. 2020; Available from: http://www.qsttheory.cn/zoology/2020-01/07/c_1125430884.htm.
- [39] H.C. Steinhart, F. Wu, In the name of the public: Environmental protest and the changing landscape of popular contention in China, *The China Journal* 75 (1) (2016) 61–82.
- [40] Cary Funk, et al. Concern over climate and the environment predominates among these publics. 2020 September 29, 2020; Available from: <https://www.pewresearch.org/science/2020/09/29/concern-over-climate-and-the-environment-predominates-among-these-publics/>.
- [41] Geall, S. Interpreting ecological civilisation. 2015; Available from: https://chinadiologue.net/en/pollution/8018-interpreting-ecological-civilisation-part-one/?qclid=CjwKCAIA57D_BRAZEiwAZcfCxyMbeoMB1g4JJdKWD4CRnShRprsgn0mOwX7c1c_J8TcfNZ9jZrohoC9t8QAvD_BwE.
- [42] Environment, M.o.E.a. Chuanda xuexi guanche Xi Jinping shengtai wenming sixiang [To convey and study Xi Jinping's thought of ecological civilization]. 2018; Available from: http://www.mee.gov.cn/gkml/sthjbgw/qt/201805/t20180522_440847.htm.
- [43] J. Shigong, Chinese-style constitutionalism: On Backer's Chinese party-state constitutionalism, *Modern China* 40 (2) (2014) 133–167.
- [44] H. Snape, W. Wang, Finding a place for the Party: debunking the "party-state" and rethinking the state-society relationship in China's one-party system, *Journal of Chinese Governance* 5 (4) (2020) 477–502.
- [45] Zheng, S., Party vs. state in post-1949 China: The institutional dilemma. 1997: Cambridge University Press.
- [46] W. Tu, The ecological turn in new Confucian humanism: Implications for China and the world, *Daedalus* 130 (4) (2001) 243–264.
- [47] M. Qian, Zhongguo wenhua dui renlei weilai keyou de gongxian" [The possible contribution of Chinese culture to the future of humankind], *Zhongguo wenhua [Chinese Culture]* 1 (1991) 93–96.
- [48] Zhang, D., Zhongguo zhexue dangang [Outline of Chinese Philosophy]. 1997, Zhongguo shehui kexue chubanshe [China Social Sciences Press].
- [49] Zhang, D., Zhishi yu wenhua [Knowledge and Culture]. 1947: Shangwu yinshuguan [The Commercial Press].
- [50] F. Keli, "Tianren heyi" yu zhongguo gudai de shengtai zhihui ["Unity of Man and Nature" and ecological wisdom in ancient China], *Shehui kexue zhanxian [Social Science Front]* 4 (2003) 207–217.
- [51] G.e. Chen, J. Shi, From solar terms to medical terms (Part I): A first step with big data, *Science China Earth Sciences* 60 (9) (2017) 1707–1718.
- [52] Times, G. Chinese video maker Li Ziqi impresses the world with her pastoral lifestyle. 2019; Available from: <https://www.globaltimes.cn/content/1172856.shtml>.
- [53] W. Shufang, The Revival of Confucianism and the CCP's Struggle for Cultural Leadership: a content analysis of the People's Daily, 2000–2009, *Journal of Contemporary China* 23 (89) (2014) 971–991.
- [54] L. Yuedi, From "Practice" to "Living": Main Trends of Chinese Aesthetics in the Past 40 Years, *Frontiers of Philosophy in China* 13 (1) (2018) 139–149.
- [55] Esco, U.N., Cultural Landscape of Honghe Hani Rice Terraces. 2013.
- [56] ChinaPostNews. Tuijin lvse fazhan zhongguo youzheng zai xingdong [To promote green development, China Post is in action]. 2020 November 11, 2020; Available from: <https://www.chinacace.org/news/view?id=11957>.
- [57] People'sDaily. Ant Forest initiative contributes to desert greening. 2020 June 30, 2020; Available from: <http://en.people.cn/n3/2020/0630/c90000-9705204.html>.
- [58] M. Halskov Hansen, Z. Liu, Air pollution and grassroots echoes of "ecological civilization" in rural China, *The China Quarterly* 234 (2018) 320–339.
- [59] ChinaDevelopmentBrief. Zhuanfang lvse heping zhongguo shouxi daibiao liyan [Interview with Li Yan, chief representative of Greenpeace China]. 2018 August 17, 2018; Available from: <http://www.chinadevelopmentbrief.org.cn/news-21785.html>.