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Of Crisis, Chance, and Choice

Crafting a New Model for Climate Justice and Just Transitions in Southwestern China

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Foreword

The groundwork for this thesis was probably first laid during my time working in Ho Chi Minh City, Vietnam, in 2019 with the WUSC Uniterra program as part of my undergrad at the University of Ottawa. As part of my internship at the HCMC College of Economics, I participated in a weeklong homestay at a local dairy farm while facilitating student programming. There, I witnessed firsthand the impact of climate change on rural agricultural towns – as well as on urban areas during the rest of my stay in Ho Chi Minh City – and how the local community worked to adapt with their limited resources.

My post-undergrad work in the energy sector did little to help my Gen-Z climate anxiety, but it did inspire me to pivot towards climate change-oriented aspects of development work. My bachelor's in economics and international development had already inoculated me with a healthy desire to fight for human rights, particularly the economic, social, and cultural rights denied to so many in the Global South – and integrating my previous development experience with my clean energy expertise was essentially a no-brainer when it came time to deciding on a thesis topic for EMA. Linking this to China was my personal connection as a child of the diaspora born to Hong Kong immigrants to Canada, reinforced by my own work in the China-related civil society space with the Asia-Pacific Foundation of Canada and the Canada-China Forum.

I would like to make clear that I have no pretensions of speaking for or on behalf of China or Chinese society; I acknowledge my privilege as someone who comes from a wealthy consumer society who has never had to choose between pursuing higher education or feeding my family, and as someone who has the luxury of analysing climate change from a detached academic perspective instead of having disasters destroy my livelihood. Nonetheless, my ties to the Greater China region and my previous work in sustainable development and clean energy policy have instilled in me an interest in Chinese climate policy and its impact on the most vulnerable parts of Chinese society, a passion that I hope to make clear in this thesis.

Abstract

Like the rest of the world, southwestern China faces an unprecedented challenge from the effects of anthropogenic climate change. Densely populated, highly biodiverse, and home to many marginalized communities and ethnic minority groups, the region is both uniquely vulnerable and uniquely positioned to affect a climate transition that delivers justice to all.

This thesis first identifies the ecological and human vulnerabilities inherent to southwestern China and how the region experiences climate change, especially its most vulnerable groups. Future risks are also identified based on the expected trajectory of climate change in the coming decades.

This thesis then identifies how the Chinese Party-state and society have responded to southwestern China's vulnerability to climate change, and how the region perceives and implements climate justice and environmental transitions. Case studies from within China and the region are drawn upon with an eye to outline the southwestern Chinese model for just transitions.

Finally, a new, inclusive, and holistic model for climate justice and just transitions for southwestern China is built based on case studies from around the world, a dive into the ideological underpinnings of China's green transition rhetoric, and the challenges faced by the looming regional transition away from coal.

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First, to Professor Pim Martens, dank je wel for supervising and guiding the writing of this thesis. Your lecture in Venice on climate justice was just the inspiration that I needed to do something useful with my climate anxiety. To Professor Andrea Broderick, thank you for the check-ins and for taking good care of us in Maastricht. I am so grateful for the warm welcome I received from all the professors, staff, and amazing people who I met at Maastricht University and who helped make this such a wonderful adventure.

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To Doris 曹维娟, *thank you for inspiring me to study southwestern China and for the years of putonghua practice.* 我很幸福有你这样的好朋友。一起加油吧!

To all my friends from home or elsewhere who kept me grounded while in the Lido Bubble or while grinding away at this thesis, please know that you mean the world to me.

Finally, from the bottom of my heart, thank you to my parents for your unwavering love and support for my passions, wanderlust, and academic and career goals. Without you, none of this would have been possible.

媽咪，爸爸，大家，多謝晒。

Table of Abbreviations

AI	Artificial Intelligence
CHTP	Clean Heating Transition Project (2017)
CO2	Carbon Dioxide
ESC Rights	Economic, Social, and Cultural Rights
GHG	Greenhouse Gas
ICESCR	International Covenant on Economic, Social and Cultural Rights
IPCC	Intergovernmental Panel on Climate Change
LNG	Liquified Natural Gas
MW	Megawatt
NDC	Nationally Determined Contribution
RMB	Renminbi, Chinese Yuan
SDG	Sustainable Development Goal
SOE	State-Owned Enterprise
SLCP	Sloping Land Conversion Programme

Global Campus Europe

Table of Contents

1. Introduction

The 2023 short story City of Choice 择城 by Gu Shi 顾适 (translated by Ken Liu) opens with a line from the Records of the Grand Historian, Annals of Xia 史记 夏本紀 by Sima Qian 司马迁, written between the 2nd and 1st centuries BCE and set around 2200 BCE:

> In the time of Emperor Yao, the floodwaters surged everywhere, turning mountains into islets and submerging hills. The people were terrified.[1]
> 当帝尧之时，鸿水滔天，浩浩怀山襄陵，下民其忧。[2]

From her first sentence, Gu Shi 顾适 draws upon China's foundational mythology of a hero engineer creating flood controls and hydraulic systems to address a civilizational threat. It is a clear call to action reflecting the present-day threat posed by anthropogenic climate change and the hope that, through ingenuity and determination, the world can once more be saved.

City of Choice deals with two dilemmas: first, whether an artificial intelligence (AI)-powered escape navigation system has the right to prioritize the escape of certain individuals over others during climate change-induced disasters based on 'impartial' criteria such as age, physical ability, and potential contributions to society. Likewise, decisionmakers must often balance tradeoffs and determine winners and losers when implementing climate action policies, with real-world socioeconomic consequences for those left behind during transitions. The author thus asks us whether the moral and social costs of climate mitigation, adaptation, and transition are worth it, and how we can achieve justice for those left behind.

The second dilemma is the dichotomy between radical and incremental change in combating climate change. In the face of a "soft apocalypse," with the catastrophes wrought by climate change being both sudden and imperceptibly slow, humanity lacks the urgency and will needed to combat its effects.[3] While the main character Tu Shanjiao 涂山娇, an urban planner entrenched in the power structure of her flood-ravaged country, prefers incremental progress, her younger rival Dan Zhu 丹朱 calls for an entirely new developmental paradigm that is risky and promising in equal measure – yet lacks the political power to make changes until the system is overwhelmed by disasters. Here, the author asks how to deliver justice to those most vulnerable to climate change yet who are marginalized from socioeconomic and political power.

This thesis will seek to address these questions in the context of southwestern China, a region that is highly vulnerable to the ravages of climate change and yet uniquely positioned to affect a climate transition that delivers justice to all.

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[1] Gu Shi, *City of Choice* (Ken Liu tr, Climate Action Almanac 2023).
[2] Sima Qian, *Records of the Grand Historian, Annals of Xia* (c. 91 BCE) https://ctext.org/shiji/xia-ben-ji.
[3] Feng Zhang, 'Why Climate Change Is Missing From China's Sci-Fi Boom' (*Sixth Tone*, 4 August 2023) <https://www.sixthtone.com/news/1013467> accessed 30 June 2024.

1.1. Climate change, justice, and southwestern China

Humanity faces a climate crisis unprecedented in scope and scale. According to the latest Intergovernmental Panel on Climate Change (IPCC) report, our world has seen a global temperature increase of 1.1 degrees Celsius in the 10 years from 2011 to 2020, with human emissions of greenhouse gases (GHGs) contributing to almost all of that change.[4] At 410 parts per million, atmospheric CO2 concentrations in 2019 were the highest in 2 million years – the entire existence of humanity and our species' ancestors – and that number continues to grow.[5]

Today, around 3.5 billion people are highly vulnerable to the geographically-heterogenous effects of anthropogenic climate change, with areas facing developmental constraints such as Africa, Asia, Latin America, and the Pacific islands especially experiencing risks to food and water security.[6] Human mortality from extreme weather like storms, floods, and droughts is 15 times higher in the Global South than the developed Global North.[7] More frequent extreme heat events especially result in an increase in disease spread, human displacement, heat-related mortality, mental health challenges, severe economic damage and loss of livelihoods, and strain and damage to critical infrastructure that sustains our way of life.

On our current path, global warming is likely to reach 1.5 degrees Celsius in the near-term,[8] while sticking to the Nationally Determined Contributions (NDCs) announced prior to COP26 until 2030 is projected to result in median global warming of 2.8 degrees Celsius by the end of the century.[9] This is expected to result in more frequent, more intense extreme weather events,[10] increases in aridity and fire weather, an increase in heat-related deaths and morbidity, severe losses in biodiversity, and food and water insecurity.[11] Worse still, warming above 1.5 degrees is expected to especially threaten regions dependent on glacier and snow melt like the Brahmaputra, Ganges, Mekong, and Yangtze (Changjiang 长江) river basins, posing potential hard limits on adaptation.[12]

The People's Republic of China, the world's largest emitter and second-largest country by population, is no stranger to the risks posed by anthropogenic climate change. A land of great diversity and stark regional inequality, the country's inland southwest is particularly vulnerable to the effects of climate change and its associated disruptions. In contrast to the industrialized and wealthy eastern coast, the southwestern provinces of Sichuan 四川, Guizhou 贵州,

[4] IPCC, 'Climate Change 2023: Synthesis Report' (2023) https://dx.doi.org/10.59327/IPCC/AR6-9789291691647.
[5] Ibid.
[6] Ibid.
[7] Ibid.
[8] Ibid.
[9] Ibid.
[10] Ibid.
[11] Ibid.
[12] Ibid.

Yunnan 云南, Guangxi 广西, and the provincial-level municipality of Chongqing 重庆 are particularly impoverished and populated by many marginalized ethnic minorities and indigenous communities.[13] It is a highly biodiverse region that is home to unique and fragile ecosystems that remain threatened by urbanization, industrialization, and climate change.[14] The steep inequality between its developed urban centres such as Chengdu 成都, Kunming 昆明, and Chongqing 重庆 and the rural countryside provides much diversity in climate action initiatives and responses to climate change risks, as does the great deal of autonomy enjoyed by regional governments to execute the broad directives from the central government.[15] By virtue of currently emitting more than any other state or supranational group, China bears a great deal of responsibility to transition towards cleaner, more sustainable growth – both for the sake of its own people and for the rest of the world.

1.1.1. Chinese perceptions of climate justice and just transitions with Chinese characteristics

Climate justice in the southwestern Chinese context in this thesis is defined as addressing the risks posed to vulnerable parts of Chinese society by climate change through building community resilience and forging a just, equitable transition away from polluting or environmentally degrading industries towards a more sustainable model of development. Some scholars argue that justice, here, revolves around improving the living standards of Chinese people, paying only lip service towards more internationalist conceptions of inter-country and intra-country justice.[16] This contrasts with more holistic European perspectives on including procedural justice, distributional justice, and substantive justice in its climate justice framework – viewed perhaps as a luxury that developing states cannot yet afford. Others, by contrast, note that China's ambitions for global climate leadership have resulted in a shift in Chinese discourse towards accepting climate justice issues such as binding emissions targets and a more cooperative stance with other major economies.[17] China is, however, still facing a crisis of legitimacy given its thus-far inadequate response to international expectations and its lack of self-reflection in its climate policy.

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[13] Shih Chih-yu, *Autonomy, Ethnicity, and Poverty in Southwestern China: The State Turned Upside Down* (Palgrave Macmillan New York 2008).
[14] Sun Han and others, 'Contrasting vegetation response to climate change between two monsoon regions in Southwest China: The roles of climate condition and vegetation height' [2022] 802 Science of the Total Environment 149643 https://doi.org/10.1016/j.scitotenv.2021.149643.
[15] Wang Yamei and others, 'Impact of fiscal decentralization and local government competition on the supply of basic public services: Based on the empirical evidence of prefecture-level cities in China' [2024] 10(4) Heliyon 26511 https://doi.org/10.1016%2Fj.heliyon.2024.e26511.
[16] Stephen Minas, 'Financing climate justice in the European Union and China: common mechanisms, different perspectives' [2022] 20 Asia Europe Journal 377 https://doi.org/10.1007/s10308-021-00644-0.
[17] Yang Jilong, 'Understanding China's changing engagement in global climate governance: a struggle for Identity' [2022] 20 Asia Europe Journal 357 https://doi.org/10.1007/s10308-021-00643-1.

The concept of a just transition in China is linked to labour rights just as it historically was around the world.[18] Unlike in the Global North, however, labour unions in China are relatively powerless, and the country's rapid energy transition is one that disproportionately affects private businesses and their employees, leaving state-owned enterprises relatively unscathed for now.[19] Scholarship on just transitions in the region tends to focus on restorative justice over more politically contentious procedural justice,[20] with compensation for negative impacts and the creation of alternative livelihoods being commonly recommended.[21] However, some scholars argue that there is room for negotiation and pushback in implementing just transitions in southwestern China, even within the framework of the Party-state system of governance.[22]

1.1.2. International obligations for justice and sustainability

Apart from the moral and ethical obligations to avoid (or at least mitigate) climate catastrophe, the states that make up the United Nations have collectively committed to pursuing the Sustainable Development Goals (SDGs) in their national development strategies and foreign outreach.[23] While not 'hard' goals by nature, they serve as a lens through which to focus interventions and policy by state governments on all levels, as well as by communities, civil society, and other non-state actors. The achievement of these goals is, in many ways, a precondition for the enjoyment of human rights by all – a commitment to ensuring that nobody is left behind.[24]

Backing these commitments toward sustainable development is the International Covenant on Economic, Social and Cultural Rights (ICESCR), which imposes certain legal obligations on states to respect, protect, and fulfil the 'right to development' of their people.[25]

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[18] Dimitris Stevis and Romain Felli, 'Global labour unions and just transition to a green economy' [2014] 15 International Environmental Agreements: Politics, Law and Economics 29 https://doi.org/10.1007/s10784-014-9266-1.

[19] Shen Wei and others, 'Understanding the impacts of outdoor air pollution on social inequality: advancing a just transition framework' [2020] 25 Local Environment 1 https://doi.org/10.1080/13549839.2019.1687431.

[20] Wang Xinxin and Kevin Lo, 'Just transition: A conceptual review' [2021] 82 Energy Research and Social Science 102291 https://doi.org/10.1016/j.erss.2021.102291.

[21] Zhang Ying and Wang Mou, 'Climate Change Actions and Just Transition' [2018] 6 Chinese Journal of Urban and Environmental Studies 1850024 https://doi.org/10.1142/S2345748118500240; Xu Shengqing, 'The paradox of the energy revolution in China: A socio-technical transition perspective' [2021] 137 Renewable and Sustainable Energy Reviews 110469 https://doi.org/10.1016/j.rser.2020.110469.

[22] He Jun, 'Rights to Benefit from Forest? A Case Study of the Timber Harvest Quota System in Southwest China' [2016] 29 Society & Natural Resources 448 https://doi.org/10.1080/08941920.2015.1062949.

[23] UNGA 'Transforming our world : the 2030 Agenda for Sustainable Development' (21 October 2015) A/RES/70/1 https://sdgs.un.org/2030agenda.

[24] Office of the High Commissioner of Human Rights, 'OHCHR and the 2030 Agenda for Sustainable Development' (*OCHR*, 2024). <https://www.ohchr.org/en/sdgs> accessed 3 June 2024.

[25] UNGA 'International Covenant on Economic, Social and Cultural Rights' (16 December 1966) 993 United Nations Treaty Series 3 https://www.ohchr.org/en/instruments-mechanisms/instruments/international-covenant-economic-social-and-cultural-rights.

The ICESCR outlines the need for states to strike a balance between economic development and the rights of people to a healthy environment, access to social security, and the exercise of their cultural rights, including with respect to their land and society. In its General Comment No.26 (2022) on land and economic, social and cultural rights, the Committee on Economic, Social and Cultural Rights indicates that rapid urbanization, land degradation, and climate change have had a significant impact on the rights of vulnerable groups such as rural communities and indigenous peoples. Poignantly, the General Comment also points out that measures to mitigate climate change like reforestation measures and large-scale renewable energy projects when poorly managed may also have negative externalities such as displacement, destruction of ecosystems, and loss of livelihoods.[26]

1.2. Research questions and methodology

Drawing from these clear risk and obligations, this thesis will seek to answer the following question: How might southwestern China pursue climate justice and a just transition for its most vulnerable communities, and what best practices might be integrated from the experiences of other regions? In the process, a number of questions smaller in scope will be addressed, including: How is southwestern China experiencing ecological and human vulnerability to climate change today, and what will the future look like? How are these risks and effects being experienced by vulnerable groups such as ethnic minorities, rural communities, migrant workers, and rural women and the elderly? What does the current model of climate justice and green (or green-adjacent) transitions implemented by the Chinese state and Chinese society in response to climate change look like for the region's most vulnerable communities? What lessons can be drawn from the experiences of other regions, and how can they be adapted to fit the socioeconomic and cultural-political context of southwestern China?

This thesis relies primarily on desk research, using Chinese sources whenever possible to outline vulnerabilities, policy initiatives, and specific case studies. Given the logistical difficulty I would have with performing research on the ground, publications from Chinese authors who have conducted field studies are the closest I can get to primary sources with minimal political influence. My Chinese language skills allowed me to more easily access untranslated sources, something critical to ensuring that otherwise-unheard voices could be included in my work. I purposely choose to minimise the usage of ideologically-tinged non-Chinese sources, especially when describing Chinese governance styles or political rhetoric, because these kinds of pieces tend to ascribe the author's own preconceptions to China in a tone that often feels uncomfortably Orientalist.[27]

[26] ICESCR GC No.26 (2022), I.2.a), c), d), e), f).
[27] Zhang Yunpeng and Xu Fang, 'Ignorance, Orientalism and Sinophobia in Knowledge Production on COVID-19' [2020] 111 Tijdschrift voor economische en sociale geografie / Journal of Economics and Human Geography 211 https://doi.org/10.1111/tesg.12441.

I chose to adopt a vulnerabilities-centric perspective in order to highlight the risks posed to southwestern China and marginalized populations by anthropogenic climate change. One of my courses during my second semester at Maastricht University, EBC4272 Case Studies of Sustainability Problems with Professor Tania Treibich, taught me to analyze climate change risks from a resilience-vulnerability perspective, and I found this to be useful for approaching policies at both the societal and local levels. While studying the text of laws and legislation has its value, of course, it is in the application of said initiatives that we can have a true measure of the state's intent. This is especially true in a country as diverse as China, where the tensions and contestation between the central government and local administration often result in creative interpretations of policy directives.

I have supplemented the analysis in parts with knowledge gained from unstructured conversations in with friends in China or from China, particularly but not exclusively in the southwest, as well as my own work and research experience in the China and clean energy spheres. An actual visit to southwestern China was unfortunately not logistically possible, although I was lucky to be able to observe some country-level trends while on a private visit to eastern China and Hong Kong during the tail end of the thesis writing process. The work of certain academics such as He Jun 何俊 (Yunnan University), Wu Hui 武慧 (Tsinghua University), Kevin Lo (Hong Kong Baptist University), and Juliet Lu (University of British Columbia) on climate (in)justice and green (or greenwashed) transitions in China proved especially useful, as well as industry experts such as David Fishman (Lantau Group), although this is by no means an exhaustive list.

1.3. Limitations and scope

Desk research on a country as opaque as China is by its nature limited in scope; without field research, this thesis can only be based on what information is available online and in print. Conversations with predominately urban, highly-educated, middle-class friends from the region, while helpful, cannot be seen as fully representative of the average lived experience of minority or farming communities in southwestern China. Where examples are used from other parts of the country, this is done with the knowledge that certain trends are area-specific and cannot be entirely extrapolated between regions that are afforded a great deal of autonomy and independence in policy implementation.

1.4. Structure

This thesis is presented in three parts. The first chapter identifies the ecosystem and human vulnerabilities to climate change in southwestern China, with a section dedicated to marginalized groups such as ethnic minority communities, migrant workers, and rural women. The region has suffered from droughts, flooding, and severe environmental degradation over the past decades, and its immense biological and cultural diversity has seen a variety of environmental action initiatives by the Chinese state in response.

The second chapter deals with the responses of the Chinese government and local communities to climate change and the environmental threats posed to the region, with several case studies of policy interventions and grassroots actions being examined. This chapter analyzes climate action through the lens of justice and sustainability with an eye towards what southwestern China may need to achieve a just transition moving forward. An example of southwestern China's model of environmentally-oriented development and just transition being exported across the border to the Laotian uplands is also explored, examining how varying perceptions of socioeconomic development result in negotiated justice for marginalized communities.

The third chapter will examine the ideological underpinnings of China's shift towards a more climate action-oriented model of development, and how the political imperative to build an Ecological Civilization 生态文明 – and all the other rhetoric that it entails – intersects with the socioeconomic realities of climate justice and a just transition for southwestern China. This will be followed by a case study on the phaseout of coal power and what such a transition will mean for the region, especially given the importance of the coal mining and other related industries to the livelihoods of many marginalized communities. Additional case studies from other similar contexts will also be examined to determine what best practices may be applied to southwestern China, with the goal being to suggest a more holistic model for climate justice and a sustainable, clean transition for the region.

2. Southwestern China and Climate Vulnerability

To reiterate, southwestern China is in this thesis defined as the provinces of Sichuan 四川, Guizhou 贵州, Yunnan 云南, and Guangxi 广西, as well as the provincial-level municipality of Chongqing 重庆. While Sichuan 四川 and Chongqing 重庆, spanning the fertile Sichuan basin, have historically been considered part of the Chinese heartland and have seen significant industrial and urban development, the other three provinces are markedly less developed and are home to many marginalized ethnic minority groups and isolated communities. Dependent on meltwater from the Himalayas and glaciers in the Tibetan plateau, the region's immense biodiversity and human population of 242 million are especially vulnerable to the effects of climate change.

This chapter will outline the current experiences of southwestern China in the context of anthropogenic climate change and its impacts, as well as identified vulnerabilities that will exacerbate the region's exposure in the future. This analysis will be done through the lenses of ecosystems, the population as a whole, and certain especially vulnerable groups and communities such as ethnic minorities, migrant workers, and rural women.

2.1. Environmental Vulnerability

China's growth and development over the past decades has nothing been short of a miracle, uplifting nearly 800 million people out of poverty through socioeconomic transformation.[28] This growth, however, came at significant environmental costs. Moving forward, the Chinese government is attempting to reposition itself as a world leader in biodiversity conservation and environmental restoration, reflecting a broader policy realignment towards an "ecological civilization."[29] China's co-hosting of the COP15 biodiversity conference in Kunming 昆明, Yunnan 云南 in southwestern China and in Montreal, Canada, is in many ways a symbol of the country's commitment to addressing its vulnerability to anthropogenic climate change and environmental degradation.[30]

2.1.1. Past and present vulnerability

The mountains of southwest China are recognized internationally as a biodiversity hotspot, being home to over 12,000 species of plants and hundreds of species of birds, mammals,

[28] World Bank Group, 'Lifting 800 Million People Out of Poverty – New Report Looks at Lessons from China's Experience' (*World Bank*, 1 April 2022) <https://www.worldbank.org/en/news/press-release/2022/04/01/lifting-800-million-people-out-of-poverty-new-report-looks-at-lessons-from-china-s-experience> accessed 15 June 2024.
[29] Ministry of Ecology and Environment, 'Vision of ecological civilization provides solutions for global crises' (*Ministry of Ecology and Environment of the People's Republic of China*, 15 October 2021) <https://english.mee.gov.cn/News_service/media_news/202110/t20211015_956692.shtml> accessed 15 June 2024.
[30] Juliet Lu and Tyler Harlan, 'COP15 in Kunming: A New Role for China in Global Conservation?' (*Wilson Center*, 19 October 2021) <https://www.wilsoncenter.org/blog-post/cop15-kunming-new-role-china-global-conservation> accessed 15 June 2024.

reptiles, amphibians, and fish.[31] Chief among the charismatic megafauna that call this region home is the giant panda, accompanied by the smaller red panda, the golden monkey, and the majestic snow leopard.[32] The tall forests here are important carbon sinks, offsetting global emissions and slowing the pace of global warming by virtue of absorbing and sequestering carbon dioxide.[33] The plants and fungi that grow within are important sources of food, medicine, materials, and cash income for the indigenous communities in the region, many of whom rely on nature's bounty as a substitute for products imported from urban centres.[34] Southwestern China's natural diversity also provides other ecosystem services such as regulating the water cycle, preventing soil erosion and landslides, and complementing human-driven agricultural practices.[35]

In short, the region's ecological richness is valuable in so many ways as to be priceless, and its conservation is critical to ensuring the resilience of the southwest in the face of anthropogenic climate change and ecosystem destruction. Political and socioeconomic pressures during the Mao Zedong 毛泽东 era[36] and into the 1980s caused quota management systems and regulators to be overwhelmed, resulting in rampant deforestation for commercial purposes.[37] Severe flooding of the Changjiang River 长江 in 1997 and 1998 due to land erosion and loss of water retention led the central government to impose a strict regional commercial logging ban in 1998.[38] When combined with the establishment of a vast network of protected areas over the past 30 years,[39] these measures resulted in the preservation of around 15% of southwest China's old growth forest cover.[40] The impact of these preservation measures on local communities will be further discussed in the next chapter.

Anthropogenic climate change and human impacts on the environment have already had visible results on ecosystems in southwestern China. From the 1960s onwards, the region saw an

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[31] Critical Ecosystem Partnership Fund (CEPF), 'Mountains of Southwest China' (*Critical Ecosystem Partnership Fund*, 2024) <https://www.cepf.net/our-work/biodiversity-hotspots/mountains-southwest-china/> accessed 26 May 2024.
[32] Ibid.
[33] Sun Han and others (2022) (n14).
[34] Cao Yilin and others, 'Ethnobotanical study on wild edible plants used by three trans-boundary ethnic groups in Jiangcheng County, Pu'er, Southwest China' [2020] 16 Journal of Ethnobiology and Ethnomedicine 66 https://doi.org/10.1186/s13002-020-00420-1.
[35] Wang Yahui and Dai Erfu, 'Spatial-temporal changes in ecosystem services and the trade-off relationship in mountain regions: A case study of Hengduan Mountain region in Southwest China' [2020] 264 Journal of Cleaner Production 121573 https://doi.org/10.1016/j.jclepro.2020.121573.
[36] 1949s to 1976
[37] Critical Ecosystem Partnership Fund (2024) (n31).
[38] Jodi S. Brandt and others, 'The relative effectiveness of protected areas, a logging ban, and sacred areas for old-growth forest protection in southwest China' [2015] 181 Biological Conservation 1 https://doi.org/10.1016/j.biocon.2014.09.043.
[39] Wu Hui and others, 'Maximizing the potential of protected areas for biodiversity conservation, climate refuge and carbon storage in the face of climate change: A case study of Southwest China' [2023] 284 Biological Conservation 110213 https://doi.org/10.1016/j.biocon.2023.110213.
[40] Critical Ecosystems Partnership Fund (2024) (n31).

increase in forest fires and droughts,[41] the disappearance of 70% of protected wetlands in the Zoigê / Ruo'ergai marsh 若尔盖湿地 in northern Sichuan 四川, significant eutrophication[42] in Dianchi Lake 滇池 in Kunming 昆明, and the loss of dozens of species of birds from the plateau lakes ecosystem.[43] On a more macro scale, the forest line in Yunnan's 云南 arid valleys moved upwards at a rapid pace from 1960 to 2010, while over 60% of Yunnan 云南 has been affected by invasive Crofton weeds[44] moving northward at a pace of 10 kilometres per year.[45] Changes in monsoon patterns have resulted in a gradual shift in precipitation levels from 1982-2015, with the east Pacific monsoon region of southwestern China[46] receiving more rainfall while the Indian ocean monsoon region[47] has seen less precipitation.[48] This corresponds to increased vegetation cover in the east Pacific monsoon region and a loss of vegetation cover in the Indian ocean monsoon region, as well as general water insecurity in the western half of southwestern China.[49] The tall forests in eastern Tibet and the mountains of western Sichuan are especially threatened by these trends, endangering a crucial carbon sink and biodiversity hotspot.[50] The heterogenous spatial distribution of environmental vulnerability in the face of climate change does pose some positives, in that interventions can be targeted and tailored to specific needs in discrete areas, while certain regions may have lower conservation needs.

2.1.2. Future vulnerability

As climate change progresses, southwestern China is expected to see significant temperature rise up to 2.78 degrees Celsius by 2050 in the most pessimistic models.[51] Without extensive action to cut global emissions, large swathes of the region (predominantly the western half dependent on the Indian ocean monsoon) will likely lose the capacity to serve as a refuge for native species by mid-century, while also losing carbon storage capacity and the associated ecosystem services that come from having large mountain forests.[52] Those nationally-designated protected areas that do exist tend to be incongruent with the biodiversity hotspots that are most at

[41] Yuan Zijie and others, 'Holocene fire history in southwestern China linked to climate change and human activities' [2022] 289 Quaternary Science Reviews 107615 https://doi.org/10.1016/j.quascirev.2022.107615.
[42] Eutrophication is the process in which excess nutrients accumulate in a water body, leading to increased growth of bacteria, algae, and other microorganisms that can deplete the water of oxygen and may excrete toxins or spread diseases.
[43] Ma Zhen-Feng, Liu Jia, and Yang Shu-Qun, 'Climate Change in Southwest China during 1961–2010: Impacts and Adaptation' [2013] 4 Advances in Climate Change Research 223 https://doi.org/10.3724/SP.J.1248.2013.223.
[44] *Ageratina adenophora* or *Eupatorium adenophorum*, originally from Mexico and highly toxic to horses
[45] Ibid.
[46] Guangxi, Guizhou, Chongqing, eastern Sichuan.
[47] Yunnan, western Sichuan, eastern Tibet.
[48] Sun Han and others (2022) (n14).
[49] Ibid.
[50] Ibid.
[51] Wu Hui and others (2023) (n39).
[52] Ibid.

risk, resulting in significant conservation gaps and greater vulnerability to human-induced climate change or environmental damage.[53]

SDG 15, Life on Land, is intrinsically tied to anthropogenic climate change's impact on ecosystems in southwestern China and with the enjoyment of human rights. The loss of species, genetic resources, and ecosystem functions in one place may have far-reaching effects elsewhere in the region and around the world, impacting human systems and having significant knock-on effects that may trigger chain reactions in conjunction with other consequences of climate change. The loss of little-known plant species, for instance, may mean the loss of novel medicinal extracts that could have been used to treat diseases. For example, the first major treatment for malaria, artemisinin, was discovered by Chinese scientist Tu Youyou 屠呦呦 from the leaves of *Artemisia annua* plants found in Yunnan 云南, saving millions of lives globally and winning Tu a Nobel Prize.[54] Threats to biodiversity, then, in turn pose a threat to human health. Alternatively, the die-off of ecosystems on the upper reaches of the Changjiang 长江, Mekong, Ganges, or Brahmaputra would in turn reduce the concentration of nutrients carried along by the river out to sea, altering the marine ecosystems that coastal China relies upon for aquaculture and fishing as well as riverine life across the country.[55]

The vulnerability of southwestern China's ecosystems to climate change is clearly visible today, with rising temperatures and changing rainfall patterns resulting in habitat loss, biodiversity loss, and the spread of invasive species. These trends are expected to continue and intensify over the next decades as the world approaches 2 degrees Celsius of warming, threatening important carbon sinks and likely having further knock-on effects across Asia and the rest of the planet. Achieving climate justice in southwestern China therefore requires the protection of natural ecosystems and a reassessment of how these systems are valued, as well as mitigation efforts to reduce the worst impacts of climate change on critical biodiversity hotspots to preserve their legacy for future generations.

2.2. Human Vulnerability

Climate change today poses a distinct risk to human health and livelihoods in southwestern China, with the fragile infrastructure and systems that Chinese society relies upon being particularly vulnerable to shifts in rainfall patterns, starker temperature extremes, and the

[53] Wu Hui and others, 'Limited co-benefits of protected areas in southwest China under current climate change and human modification' [2023] 330 Journal of Environmental Management 117190 https://doi.org/10.1016/j.jenvman.2022.117190.
[54] Cindy Hao, 'Lasker Award Rekindles Debate Over Artemisinin's Discovery' (*Science*, 29 September 2011) <https://www.science.org/content/article/lasker-award-rekindles-debate-over-artemisinins-discovery> accessed 3 June 2024.
[55] Wang Yao and others, 'Recent Declines in Nutrient Concentrations and Fluxes in the Lower Changjiang River' [2023] 46 Estuaries and Coasts 1475 https://doi.org/10.1007/s12237-023-01216-8.

spread of diseases. With 242 million people living in an area half the size of western Europe,[56] the region is densely populated[57] and highly exposed to climate-induced disruptions.[58]

2.2.1. Past and present vulnerability

Significant risks have already been observed in the region due to climate change in the past decades; with a 0.8 degrees Celsius increase in average temperature from 1991-2010 came an increase in vector-borne contagions and respiratory diseases from fog and smog in eastern Sichuan 四川 and western Yunnan 云南.[59] The eutrophication of lakes across the Yunnan 云南 – Guizhou 贵州 plateau affected drinking water supplies, especially for rural communities, while shifts in agricultural zones due to changing temperatures and precipitation levels in turn increased plant diseases and pests, affecting livelihoods and public health.[60]

Massive heat waves in southwestern China in recent years, which have been linked to the loss of arctic summer sea ice,[61] have resulted in a significant rate of heat-linked excess deaths and heat-linked diseases.[62] China's rapid urbanization has contributed significantly to the constant increase in intensity and duration of heat waves, particularly in the southwest.[63] Adaptation measures, primarily air conditioning in commercial and residential settings, have been effective in addressing the individual health risks posed by excessive heat events – but air conditioners in turn dump waste heat into the atmosphere, amplifying the urban heat island effect in a vicious cycle.[64]

Increased demand for electricity from air conditioning during heat waves in southwest China also unfortunately coincides with intense drought conditions, a challenging combination given the region's reliance on hydroelectricity – 77% of Sichuan's 四川 installed generation capacity as of 2022 consists of hydropower stations,[65] while more than 80% of Yunnan's 云南

[56] From Portugal to Austria.
[57] 176 people per km2, compared to 117 people per km2 for the EU or 206 people per km2 for Italy.
[58] Wang Lin, Chen Wen, and Zhou Wen, 'Assessment of Future Drought in Southwest China Based on CMIP5 Multimodel Projections' [2014] 31 Advances in Atmospheric Sciences 1035 https://doi.org/10.1007/s00376-014-3223-3.
[59] Ma Zhen-Feng, Liu Jia, and Yang Shu-Qun (2013) (n4343).
[60] Ibid.
[61] Deng Kaiqiang and others, 'More frequent summer heat waves in southwestern China linked to the recent declining of Arctic sea ice' [2020] 15 Environmental Research Letters 074011 https://doi.org/10.1088/1748-9326/ab8335.
[62] Sun Zhiying and others, 'Heat wave characteristics, mortality and effect modification by temperature zones: a time-series study in 130 counties of China' [2020] 49(6) International Journal of Epidemiology 1813 https://doi.org/10.1093/ije/dyaa104.
[63] Wu Xiaojun and others, 'Quantitatively evaluating the effect of urbanization on heat waves in China' [2020] 731 Science of the Total Environment 138857 https://doi.org/10.1016/j.scitotenv.2020.138857.
[64] Cécile de Munck and others, 'How much can air conditioning increase air temperatures for a city like Paris, France?' [2012] 33 International Journal of Climatology 210 https://doi.org/10.1002/joc.3415.
[65] Xia Zhijian, 'China's power system needs to modernise' (*Dialogue Earth*, 8 November 2022) <https://dialogue.earth/en/energy/chinas-power-system-needs-to-modernise/> accessed 6 June 2024.

electricity was generated by hydropower in the same year.[66] The 2022 and 2023 heat waves and droughts caused a significant drop in hydro generation in both of these provinces, forcing factories to close in order for electricity to be diverted to residential cooling and leading to significant socioeconomic losses.[67] Long-term trends indicating decreasing wind speeds and annual sunshine hours also portend ill for renewable power generation in the southwest, effectively acting as a hard limit on adaptation measures based on current technologies.[68] Southwest China also exports electricity to the manufacturing centres on the east coast, with hydrogeneration shortages resulting in eastern provinces making up for the electricity shortfall by activating polluting coal and gas plants.[69] Climate change vulnerability in southwestern China therefore has clear direct knock-on effects on public health and carbon emissions beyond the immediately affected region.

Human vulnerability to heat wave-induced injuries and disruptions is heterogenous in distribution in southwestern China – women, the elderly, and people with lower levels of education have historically most been at risk, while cities and regions with higher concentrations of PM2.5 aerosols in the air and lower numbers of hospital beds also see higher mortality risks.[70] PM2.5 concentration in China is linked to industry – primarily coal power plants, metallurgy, and construction – as well as weather – exacerbated by climate change.[71] Hospital bed numbers are linked to municipal funding levels, and therefore to regional income disparities, with more impoverished regions and rural counties in the southwest being more vulnerable to heat-induced mass casualty events.[72] These structural vulnerabilities are in turn tied to socioeconomic development and marginalization, as will be detailed in the next section.

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[66] Ivy Yin and Eric Yep, 'Prolonged drought in China's Yunnan province likely to worsen hydropower shortage' (*S&P Global*, 27 February 2023) <https://www.spglobal.com/commodityinsights/en/market-insights/latest-news/energy-transition/022723-prolonged-drought-in-chinas-yunnan-province-likely-to-worsen-hydropower-shortage> accessed 6 June 2024.

[67] Li Xiuzhong, 'Heatwave Causes Hydropower Generation in China's Sichuan, Yunnan to Drop' (*Yicai Global*, 14 June 2023) <https://www.yicaiglobal.com/news/heatwave-causes-hydropower-generation-in-chinas-sichuan-yunnan-to-drop> accessed 6 June 2024.

[68] Ma Zhen-Feng, Liu Jia, and Yang Shu-Qun (2013) (n43)

[69] You Xiaoying, 'What a Chinese heat wave means for the world' (*Semafor*, 28 June 2023) <https://www.semafor.com/article/06/28/2023/what-chinese-heat-wave-means> accessed 6 June 2024.

[70] Yang Jun and others, 'Heatwave and mortality in 31 major Chinese cities: Definition, vulnerability and implications' [2019] 649 Science of the Total Environment 695 https://doi.org/10.1016/j.scitotenv.2018.08.332.

[71] Qiu Chengcheng, 'PM2.5 rebounds in China in 2023, after falling for 10 years straight' (*Centre for Research on Energy and Clean Air*, 22 December 2023) <https://energyandcleanair.org/pm2-5-rebounds-in-china-in-2023-after-falling-for-10-years-straight/> accessed 7 June 2024.

[72] Jay Pan and David Shallcross, 'Geographic distribution of hospital beds throughout China: a county-level econometric analysis' [2016] 15 International Journal for Equity in Health 179 https://doi.org/10.1186/s12939-016-0467-9.

2.2.2. Future vulnerability

Moving forward, heat wave frequency and intensity is expected to increase significantly throughout southwestern China under medium- and high-emissions scenarios, but even under a significant carbon emission reduction scenario the region is expected to see a nearly threefold increase in frequency by 2090 compared to the pre-2005 baseline.[73] The health burdens associated with these heat waves are expected to result in tens of thousands of directly attributable deaths per year, with China's growing aging population[74] facing the largest increase in death toll due to climate effects.[75]

Extreme weather events, environmental degradation, and the spread of vector-borne diseases all pose public health risks, threatening progress on SDG 3, Good Health and Wellbeing. The heterogenous distribution of risk, with women, the elderly, lower-income, and lower-education groups being more vulnerable to heat-induced morbidity and mortality, require action under SDG 5, Gender Equality, and SDG 10, Reduced Inequalities. Changes in precipitation patterns and water quality issues affect SDG 6, Clean Water and Sanitation, and SDG 7, Affordable and Clean Energy, the latter due to southwestern China's reliance on hydroelectricity. The presence of legacy polluting industries and power plants, loss of livelihoods and economic damage from climate change events, and the unequal distribution of resources and financing for climate adaptation or mitigation measures are lastly linked directly to SDG 8, Decent Work and Economic Growth, SDG 9, Industry, Innovation, and Infrastructure, SDG 10, Reduced Inequalities, and SDG 11, Sustainable Cities and Communities.

The achievement of these SDGs are preconditions for the enjoyment of economic, social, and cultural (ESC) rights, and as such progress on the fulfilment of said rights in southwestern China is inherently threatened by the effects of anthropogenic climate change. Achieving climate justice and a just transition will therefore require significant efforts to bridge inequalities, address risks at a systemic level, and build a sustainable model of development for southwestern China that can withstand and not contribute to the ravages of climate change.

2.3. Vulnerable Groups and Communities

Southwestern China is home to 31 recognized ethnic minority groups, many of whom live in isolated, typically less-developed autonomous villages, towns, and counties in the hills and mountains of the region. Far from the economic centres of power where the majority Han Chinese live, these minority communities are reliant on natural resources that are particularly

[73] Chen Huiqi and others, 'Projections of heatwave-attributable mortality under climate change and future population scenarios in China' [2022] 28 The Lancet Regional Health Western Pacific 100582 https://doi.org/10.1016/j.lanwpc.2022.100582.
[74] Elderly over 75 in this study.
[75] Ibid.

vulnerable to climate change, especially for those who still practice subsistence farming or forestry.[76]

Climate change risks are perceived heterogeneously by farming communities in southwestern China, with farmers who have non-farming supplemental income sources such as off-season migrant work or tourism viewing extreme climate events as being less serious than those who are entirely reliant upon agriculture for their livelihoods.[77] Ethnic groups which practice terrace farming perceive droughts as much more threatening than those who farm on lowlands with flat terrain, with the latter having greater water-holding capacity and being less susceptible to long-term drought.[78] Those communities farming in lowland valleys tend to be wealthier and more resilient[79] than groups who reside at higher elevations, correlated directly with their infrastructure levels and funding available for adaptation measures. Climate change impacts will continue to exacerbate this structural inequality and vulnerability without intensive state intervention.

Climate change also threatens cultural practices and traditional knowledge. In the case of the Jino peoples 基诺族 who live in southern Yunnan 云南, shifting precipitation patterns and volatile temperatures have rendered their traditional farming calendar invalid, which in turn hampers their shifting agriculture practices.[80] The Wa peoples 佤族 who live in the same region are threatened by flooding caused by unpredictable heavy rainfall, destroying their hillside fields.[81] State efforts to transition upland farming communities away from shifting cultivation towards more "modern" forms of agriculture in the name of environmental protection also pose a threat to minority cultural practices, yet without practical alternatives these groups face food and income insecurity and continued marginalization.[82]

Internal migrants in China make up a socioeconomic underclass in the country, a divide enforced by the hukou 户口 household registration system. Those registered to a rural residence typically face barriers to accessing social security benefits, housing rights, and access to healthcare or education within major urban centres.[83] While reform is ongoing,[84] internal migrant

[76] Xu Jianchu and others, 'The Melting Himalayas: Cascading Effects of Climate Change on Water, Biodiversity, and Livelihoods' [2009] 23 Conservation Biology 520 https://doi.org/10.1111/j.1523-1739.2009.01237.x.
[77] Yang Hua and others, 'Ethnic diversity and divergent perceptions of climate change: a case study in Southwest China' [2024] 11 Humanities and Social Science Communications 690 https://doi.org/10.1057/s41599-024-03207-x.
[78] Ibid.
[79] Ibid.
[80] Yin Lun and others, 'The Impacts of Climate Change on the Traditional Agriculture of Ethnic Minority in China' [2020] 9 Journal of Environmental Science and Engineering A 43 https://doi.org/10.17265/2162-5298/2020.02.001.
[81] Ibid.
[82] Cao Guangxia and Zhang Lianmin, 'Rubber Plantations as an Alternative to Shifting Cultivation in Yunnan, China' in Malcom Cairns (ed) *Voices from the Forest* (Routledge 2007).
[83] Hunan Provincial Government Portal, 'Deputy Minister of Public Security Huang Ming answers reporters' questions on the State Council's "Opinions on Further Promoting the Reform of the Household Registration System"

workers – generally those hailing from impoverished, marginalized rural communities – continue to be especially vulnerable to the kinds of disruption caused by climate change. Land degradation, meteorological disasters,[85] and the ensuing population pressures and loss of livelihood are major factors influencing the decision of migrants to seek out work elsewhere, in turn exposing the most vulnerable groups in Chinese society to precarious living and working conditions far from home.[86] Minority communities are also particularly at risk, with resettlement programs and agricultural restructuring rending it impossible for traditional subsistence farming to continue and leading to hundreds of thousands of ethnic minority workers from the southwest seeking livelihoods elsewhere.[87]

Rural women in southwestern China are also uniquely affected by the effects of climate change and its associated socioeconomic pressures, with women in rural communities increasingly being left responsible for agricultural work as young men migrate for off-wage farm labour elsewhere.[88] When faced with water shortages and drought, women in the region tend to be more proactive in response by shifting their cultivation strategies or changing paths entirely to go into forestry or animal husbandry instead.[89] And while men in these communities saw themselves as being responsible for water management by searching for new sources as their old sources dried up, as well as by repairing and maintaining pipes and water infrastructure, it is the women who largely perform the actual carrying and transporting of water for household use – and when water shortages occur, it is the women who see a significant increase in their daily workload.[90] Women in rural southwestern China are largely excluded from formal decision-making processes about water management in their communities despite taking on increasingly

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公安部副部长黄明就国务院《关于进一步推进户籍制度改革的意见》答记者问' (*Yueyang Municipal People's Government*, 8 February 2014) <https://www.yueyang.gov.cn/zcjd/47714/content_1303256.html> accessed 9 June 2024.

[84] Hangzhou Public Security Bureau, 'Implementation Opinions on Further Deepening the Reform of the Household Registration System 关于进一步深化户籍制度改革的实施意见' (*Hangzhou Public Security Bureau*, 13 March 2023) <https://minyi.zjzwfw.gov.cn/dczjnewls/dczj/idea/topic_6248.html> accessed 9 June 2024.

[85] Zhou Linyi, Zhu Demi, and Shen Wei, 'Social Stability Risk Assessment of Disaster-Preventive Migration in Ethnic Minority Areas of Southwest China' [2022] 19 International Journal of Environmental Research and Public Health 6192 https://doi.org/10.3390/ijerph19106192.

[86] Shi Guoqing and others, 'Facing Climate Change: What Drives Internal Migration Decisions in the Karst Rocky Regions of Southwest China' [2019] 11(7) Sustainability 2142 https://doi.org/10.3390/su11072142.

[87] Ye Yang, 'The Double-Edged Sword of Modernisation: The Integration of Yi Migrant Workers into China's Labour Market' (*Made in China Journal*, 29 May 2024) <https://madeinchinajournal.com/2024/05/29/the-double-edged-sword-of-modernisation/> accessed 25 June 2024.

[88] FTA Communications Team, 'Why should China include a gender perspective in its climate change policies?' (*Forests, Trees and Agroforestry*, 25 August 2017) <https://www.foreststreesagroforestry.org/news-article/why-should-china-include-a-gender-perspective-in-its-climate-change-policies/> accessed 25 June 2024.

[89] Ibid.

[90] Ibid.

active roles, and largely are not engaged with or consulted by government officials who implement water management policies in the region.[91]

For vulnerable communities in southwestern China, then, climate change especially poses a threat to the enjoyment of their economic, social, and cultural rights. Environmental degradation and loss of livelihood result in the loss of traditional knowledge, displacement from their traditional homelands, and force people into precarious circumstances away from home. Those left behind are often marginalized and ignored by government initiatives, being denied agency and even a voice by those who are supposed to serve and represent them. Achieving climate justice therefore requires addressing these clear vulnerabilities and mitigating the risks posed by climate change to such marginalized groups. As will be discussed in the next chapter, while the Chinese state and communities in southwestern China have made efforts to address these vulnerabilities through reforestation, flood management infrastructure, and transitioning away from emissions-heavy coal heating and power generation, these interventions often struggle to navigate the intersectional nexus between environmental protection and social justice.

[91] Ibid.

3. Climate action, justice, and [un]just transitions in southwestern China

Climate and the environment are important issues in China, linked to societal cohesion, political stability, and in part to the ultimate legitimacy of the Chinese government.[92] Public opinion surveys indicate that most Chinese people are aware of anthropogenic climate change and the threat that it poses, and they largely perceive the state as the primary responsible actor in combatting climate change and in mitigating its impacts.[93] Beijing is remarkably responsive to public pressure on certain environmental issues, such as with its concerted efforts to all but eliminate air pollution across the coastal megalopolises since the 2010s[94] or the decades-long Great Green Wall afforestation program along the Gobi Desert.[95] Likewise, recent years under the Xi Jinping 习近平 administration have seen a pivot towards poverty alleviation and sustainable development initiatives for the poorer inland regions, part of a wider movement towards 'common prosperity' and addressing socioeconomic inequality.[96] This broadly ties in with how climate justice and a just transition are perceived within the Chinese context, where it is now time for urban, developed China to repay its debt to the rural countryside that built it; one word often used is 反哺 fǎnbǔ, translating to repaying a debt to an older generation or giving back to one's elderly parents, with strong connotations of filial piety.[97]

While launched with good intentions and with singleminded objectives of environmental protection or socioeconomic development, the success of these initiatives often wildly varies in practice. What the central government in Beijing 北京 means to achieve with a wide-sweeping directive may be interpreted loosely in a myriad of different ways by local officials and communities, or may be held to strict quantitative standards from the central government down to the village party chief in a way that may not properly reflect success on the ground. Tensions

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[92] Lian Chenchao & Li, Jinhong, 'Legitimacy-seeking: China's statements and actions on combating climate change' [2023] 45(1) Third World Quarterly 171 https://doi.org/10.1080/01436597.2023.2216135.

[93] Zeng Li, 'Chinese Public Perception of Climate Change on Social Media: An Investigation Based on Data Mining and Text Analysis' [2022] Journal of Environmental and Public Health 6294436 https://doi.org/10.1155/2022/6294436; John Chung-En Liu, 'Public opinion on climate change in China – Evidence from two national surveys' [2023] PLOS Clim 2(2) e0000065. https://doi.org/10.1371/journal.pclm.0000065; Tian Yuhong and others, 'Strengths and gaps of climate change perceptions in the Beijing metropolis' (2023) 30 Climate Services 100350 https://doi.org/10.1016/j.cliser.2023.100350.

[94] Xia Zhijian, 'New air pollution control plan released' (*Dialogue Earth*, 13 December 2023). <https://dialogue.earth/en/digest/new-air-pollution-control-plan-released/> accessed 24 May 2024.

[95] Zhu Jiaojun and others, 'A large carbon sink induced by the implementation of the largest afforestation program on Earth' [2023] 12 Ecological Processes 44 https://doi.org/10.1186/s13717-023-00455-8.

[96] David Bulman and others, 'Xi Jinping Says He Wants to Spread China's Wealth More Equitably. How Likely Is That to Actually Happen?' (*China File*, 3 March 2023). <https://www.chinafile.com/conversation/common-prosperity-China-wealth-redistribution> accessed 23 May 2024.

[97] David Fishman, 'Exploring the Reality of China's "New Countryside"' (Crossing the River by Feeling the Stones, 30 August 2022). <https://crossingtheriver.substack.com/p/exploring-the-reality-of-chinas-new> accessed 23 May 2024.

between national goals and regional or local interests may in turn lead to contestation and negotiation in order to properly align local values and desires with the central government's objectives – and where there is little room for flexibility or negotiation, then certain vulnerable groups may face unjust socioeconomic harm as they fall through the gaps.

It should be noted that while on paper the Communist Party functions separately from the state government and its civil service, in practice the two are tightly intertwined to the extent that Party cadres and organs can easily leverage state resources to organize community projects and local democratic institutions.[98] This will be referred to in this paper as the Party-state system, a feature also seen with Singapore's People's Action Party[99] or Tanzania's Chama cha Mapinduzi between 1977 and 1995,[100] (or, indeed, with many post-independence revolutionary parties) but is unrivalled in scale and entrenchment in China. That is not to say that the Party is a monolith; local branches tend to have a certain amount of autonomy in order to cultivate talented cadres, with creative or innovative successes resulting in recognition and promotion as part of the Party's meritocratic system of personnel management.[101]

Having established the outstanding environmental and human vulnerabilities to climate change in southwestern China, this chapter will describe the response of the Chinese state, local governments, Chinese society, and particularly vulnerable communities to the risks posed by anthropogenic climate change. Case studies at the international, national, and local levels will be examined, beginning with an analysis of authoritarian environmentalism in practice followed by cases of local innovation, negotiations, or pushback that can achieve a sort of just equilibrium balancing environmental protection and economic development with social justice and societal values. This chapter will round off with an example of how the Chinese model of a just transition as seen in the southwest is exported across the border to northern Laos, showing how state initiatives must navigate the intersection between environmental goals and the state's obligations to respect, protect, and fulfil its people's economic, social, and cultural rights.

3.1. 刻舟求劍 – Carving the boat in search of the sword: authoritarian environmentalism and climate [in]justice

There was a man from the state of Chu who was crossing a river. His sword fell from the boat into the river. He quickly carved a notch on the boat saying, "This is the place where

[98] Liu Chunrong and Tang Yanwen, 'Dancing with Diversity? The Evolving Party-Society Nexus in Urban China' [2021] 39 Copenhagen Journal of Asian Studies 33 https://doi.org/10.22439/cjas.v39i2.6400.
[99] Kenneth Paul Tan, *Singapore: A Depoliticized Civil Society in a Dominant-Party System?** (Friedrich-Ebert-Stiftung 2010).
[100] Lauren Hutton, *The Tanzanian Election 2015: Balancing Stability and Change* (Institute for Security Studies, 2015).
[101] Shuo Chen and Hon S Chan, 'Political meritocracy in Chinese cadre personnel management' in Andrew Podger and others (eds) *Dilemmas in Public Management in Greater China and Australia: Rising Tensions but Common Challenges* (ANU Press 2023).

my sword fell in. When the boat stops, I will go into the water and search for my sword from the spot where I made the notch." The boat was already moving, but the sword had not moved. Is it not stupid to search for the sword in this manner?
*– Lü Buwei, '*呂氏春秋 *Master Lü's Spring and Autumn Annals' (239 BCE).*

刻舟求劍 Kèzhōu qiújiàn – *to rigidly cling to an idea without adapting to changing conditions; to stubbornly cling to tradition*.

Climate and environmental interventions by the central government in Beijing 北京 are by their very nature sweeping and broad in intent and execution. Local governments are expected to exercise some discretion and flexibility in implementation, although this varies in practice based on officials' perceptions of the central government's demands or their ability to negotiate more heterogenous policy initiatives. Examples of key environmental policies pushed by the central government include the 2017 ban on commercial logging of natural forests across the country and the 2017 campaign to convert households from coal to gas or electric heating in the northeast. Notably, both of these initiatives were introduced by the Xi Jinping 习近平 administration, which has generally been less tolerant of creative interpretation of policy directives by local officials.

The Chinese state's practice of authoritarian environmentalism in implementing policy reforms and mandating environmental management has been well-documented, with Beijing 北京 navigating tradeoffs between speed of execution and local buy-in.[102] The assumption here is that public participation is an obstacle to expediency, and that the general public is passive, self-interested, and incapable of making meaningful policy contributions.[103] The discourse of ecological modernization is often invoked to add legitimacy to policy initiatives. This has the advantage of quickly achieving environmental protection goals, but often at the cost of unjustly harming vulnerable groups and undermining the just transition process.[104] There are, of course, always tensions between environmental protection and social justice in any society,[105] and it is in navigating this intersection that climate justice can be achieved.

3.1.1. Authoritarian environmentalism in action: forestry and coal transitions

China's forestry sector, which employs around 3.6 million people across the country, has long been managed intensively by the state. After the excesses of intensive extraction during the

[102] Mark Beeson, 'Environmental Authoritarianism and China' in Teena Gabrielson and others (eds.) *The Oxford Handbook of Environmental Political Theory* (Oxford University Press 2016).
[103] Kevin Lo, 'Authoritarian environmentalism, just transition, and the tension between environmental protection and social justice in China's forestry reform' [2021] 131 Forestry Policy and Economics 102574 https://doi.org/10.1016/j.forpol.2021.102574.
[104] Ibid.
[105] Leslie Solomonian and Erica Di Ruggiero, 'The critical intersection of environmental and social justice: a commentary' [2021] 17 Globalization and Health 30 https://doi.org/10.1186/s12992-021-00686-4.

Mao Zedong 毛泽东 and Deng Xiaoping 邓小平 periods from 1949 to the late 1990s, the year 2000 saw the launch of the National Forest Conservation policy under Jiang Zemin 江泽民.[106] State-owned enterprises who managed the majority of the forestry sector were ordered to reduce logging and promote afforestation and the protection of natural forests, with local governments actively managing the environmental protection-social justice nexus through flexible implementation – albeit with ambivalent conservation progress and issues with enforcement.[107] This changed from 2014 to 2017 under the gradual implementation of a nationwide natural forest logging ban under Xi Jinping 习近平.

The 2017 logging ban was well-intended – the shift to centralize the forestry sector gave powerful state-owned enterprises (SOEs) a stronger role in environmental governance and resulted in an increase in forest area corresponding with an increase in carbon sequestration capacity.[108] In practice, however, those affected faced procedural and distributional injustice that caused significant harm to vulnerable communities and people. Procedurally, the logging ban was unilaterally imposed by the central government without room for consultation or negotiation with local officials or their constituents. Small settlements that were founded for forestry work were unceremoniously abolished, their supporting infrastructure such as rail lines and medical clinics were shut down, and laid-off SOE workers were simply ordered to leave, while those who retained their jobs were reassigned without negotiations.[109] While some compensation was paid out for losses from logging operations, businesses further down the wood processing value chain were ignored by the central government, leading to layoffs, economic hardship, and other knock-on effects elsewhere.[110] Without recourse or the ability to push back, affected workers and businesses were forced to accept the limited compensation and support offered by Beijing.

The harm caused by the 2017 logging ban was distributionally heterogenous, with more vulnerable groups and communities seeing the most impact from the loss of livelihood and income. The central government invoked the spirit of a just transition through subsidies and compensation, rationalizing the move by retasking workers as forest managers or ecotourism entrepreneurs, while touting how local economies would have new opportunities such as with non-timber forest products – but in practice the transition supports were insufficient and unfair.[111] About 50% of SOE forestry workers lost their jobs in the reforms, with those who remained having low, frozen salaries[112] and a strong sense of insecurity, especially for those with elderly dependents. While younger, healthier workers who generally had more education

[106] Ren Guo-Pen and others, 'Effectiveness of China's National Forest Protection Program and nature reserves' [2014] 29 Conservation Biology 1368 https://doi.org/10.1111/cobi.12561.
[107] Kevin Lo (2021) (n103)
[108] Ibid.
[109] Ibid.
[110] Ibid.
[111] Ibid.
[112] 2700 RMB (~350 EUR) per month as of 2021, unchanged since 2011.

qualifications, could migrate elsewhere, older workers with lower levels of education and more health issues tended to be stuck with precarious, low-paying jobs – or risk losing their health insurance and social security coverage.[113]

Similarly, the 2017 Clean Heating Transition Project (CHTP) came about as a central policy initiative to respond rapidly to air pollution issues in northern China, especially around the capital region of Beijing 北京. Largely a scheme to promote the conversion of residential and commercial heating from coal to natural gas or electricity, it resulted in 5 million households transitioning within just a few months in 2017 and a reduction in annual bulk coal consumption of 100 million tonnes.[114] While an environmental success in that air pollution around Beijing and other major cities has markedly decreased from the 2013 baseline,[115] the actual implementation of the phaseout was marred with distributional, procedural, and recognition-based injustice.

Much like the nationwide logging ban, the CHTP initiative was pushed down from the central government onto local officials with no room for pushback, negotiation, or flexibility; despite pressure from residents, local governments shut down coal shops, set harsh punishments for illegal coal sales and use, and instituted frequent monitoring to ensure compliance.[116] Older residents, especially those on low fixed pensions, struggled to afford the replacement costs and gas supplies even with subsidies, while younger working residents tended to be able to better afford the transition.[117] Communication on the initiative was pervasive, but not persuasive – there was limited local buy-in, with residents often complaining that they were left in a worse state after the conversion[118] and that the timeframe for the transition was far too short.[119]

3.1.2. A more just transition? Sloping land conversion in rural China

Not all climate action or environmental protection initiatives by the central Chinese government are so disconnected with local needs, however. China's Sloping Land Conversion Programme (SLCP) is the world's largest payments for ecosystem services programme, with local households receiving public payments to convert marginal upper watershed cropland into highland forests that prevent soil erosion and protect downstream areas of the Changjiang 长江 from devastating floods, achieving success by engaging with local expectations of justice and

[113] Ibid.
[114] Hu Zhanping, 'When energy justice encounters authoritarian environmentalism: The case of clean heating energy transitions in rural China' [2020] 70 Energy Research and Social Science 101771 https://doi.org/10.1016/j.erss.2020.101771.
[115] United Nations Environment Programme, 'A Review of 20 Years' Air Pollution Control in Beijing' (2019) UN Environment 2019. https://wedocs.unep.org/bitstream/handle/20.500.11822/27645/airPolCh_EN.pdf?sequence=1&isAllowed=y.
[116] Hu Zhanping (2020) (n114)
[117] Ibid.
[118] Only one radiator per household was covered by the subsidy, which was often just kept in the bedroom – leading to reduced quality of life elsewhere in the home.
[119] Ibid.

having sufficient leeway for local interpretation and responses.[120] The SLCP incorporates distributive and procedural justice in that losses should be compensated for and that public participation is strictly voluntary, while being perceived by local communities as being a way for rural people to access their fair share of the benefits of China's economic growth while transitioning away from low-return on-farm work to new livelihoods.[121] This programme, importantly, works hand-in-hand with other rural development initiatives such as the national push to construct a New Socialist Countryside, which aims to reform land management rights, strengthen water conservation and other ecosystem services, improve rural infrastructure, and improve compensation mechanisms for farmers and agricultural communities.[122] When the affected communities feel as though they have secured a fair deal with the central government, and where they feel as though they have sufficient recourse to address injustices, then an equilibrium is achieved between environmental protection and social justice.

As China looks to continue its transition away from coal power towards cleaner forms of electricity generation, it will be crucial for the central government to be more aware of the various forms of injustice that can come about from rushed policy initiatives without local buy-in or consultation. Despite having identified certain climate vulnerabilities and their root causes such as deforestation and pollution, care must be taken to ensure that the cure does not in turn cause more harm. Achieving climate justice and a just transition necessitates an approach where nobody is left behind, especially including marginalized groups and communities.

3.2. 山高皇帝远 – The mountains are high and the emperor is far away: local adaptation and responses to state intervention

> 山高皇帝远 Shāngāo huángdì yuǎn – *to be far away from the central government and therefore out of its control. Variant of* 天高皇帝远 – Heaven *is high and the emperor is far away. Southern China's mountain ranges historically isolated the region from imperial administration in the north, lending local officials and communities a great deal of autonomy.*

Historically, Chinese governance has tended to be fairly decentralized in practice. Local officials are encouraged to experiment with policy and implementation, especially when the

[120] He Jun and Thomas Sikor, 'Justice notions in Payment for Environmental Services: insights from China's sloping land conversion programme' in Meine van Noordwijk (ed.) *Sustainable development through trees on farms: agroforestry in its fifth decade* (World Agroforestry (ICRAF) Southeast Asia Regional Program 2019).
[121] Ibid.
[122] Communist Party of China Central Committee and State Council, '中共中央国务院关于推进社会主义新农村建设的若干意见 Several Opinions of the CPC Central Committee and the State Council on Promoting the Construction of a New Socialist Countryside' (*Gov.cn Gongbao*, 31 December 2005) <https://www.gov.cn/gongbao/content/2006/content_254151.htm> accessed 15 June 2024.

central government has no strong opinions on the subject.[123] In many instances, this can allow for greater local buy-in and policies that are crafted to fit the unique needs and circumstances of communities, as opposed to the one-size-fits-all approach seen in the previous examples from 2017. Provincial and municipal governments often have the ability to push back on directives from the central government, although this has seen a decline in recent years,[124] while even small villages and rural towns may be able to negotiate with local bureaucrats to apply their own practices instead of following national directives. With success comes recognition, and for local officials a chance to move up to higher positions, thereby providing incentive for innovation and creativity – but failure to meet goals set by higher authorities can just as easily mean the end of one's career, defining the push-and-pull tensions that so characterize Chinese governance at the local level.[125]

3.2.1. Grassroots and negotiations: Xinqi Village 新歧村

The village of Xinqi 新歧村 in Tengchong 腾冲市, Yunnan 云南 is one such example of locally-driven forestry best practices achieving environmental justice and being recognized for their innovative style of community management. After facing severe deforestation during the Cultural Revolution and the Great Leap Forward, the village invested in afforestation and established multiple collective forest farms, alternating between redistributing the land to individuals and then re-collectivizing them after overharvest.[126] Re-collectivization led to forest growth and regeneration of biodiversity in the area, and in 1997 the villagers re-distributed the forest farms, but having learned their lesson this time reallocated them in the form of shares, with the forests themselves being managed by collective farms while the profits were distributed as cash or as investments in public services such as a school, a clinic, elder centres, roads, and social security for villagers.[127] Despite pressure from the central government to encourage individual ownership and management of forestry resources, Xinqi villagers continued to practice collective management in line with their social values and justice norms while also transitioning away from relying solely on farming for their livelihoods.

Under their collective management and afforestation scheme, forest cover in the village increased from under 50% in 1989 to 78% in 2017, while net income per capita skyrocketed from 314 RMB to 10,500 RMB in the same period.[128] Most farmers preferred to see the profits

[123] Sebastian Heilmann, 'From Local Experiments to National Policy: The Origins of China's Distinctive Policy Process' [2008] 59 The China Journal https://doi.org/10.1086/tcj.59.20066378.
[124] Xiao Ma, 'What The West Misunderstands About Power In China' (*Noema Magazine*, 10 November 2022) <https://www.noemamag.com/what-the-west-misunderstands-about-power-in-china/> accessed 11 June 2024.
[125] Ibid.
[126] He Jun and others, 'Explaining success on community forestry through a lens of environmental justice: Local justice norms and practices in China' [2021] 142 World Development 105540 https://doi.org/10.1016/j.worlddev.2021.105450.
[127] Ibid.
[128] Ibid.

from the collective forests be invested in the community, seeing this as the best way to ensure that the entire village would fairly benefit from the use of public goods and services – thereby ensuring distributive justice.[129] The actual distribution of profits was conducted fairly through the village assembly, with the entire village nearly unanimous in viewing the private sector as being a worse way to distribute the benefits – thereby practicing procedural justice.[130] A special block of camellia (tea) forest was allocated to benefit the village's elders association, with the justification being threefold: first, that this was a way to repay older generations whose foresight to begin afforestation resulted in the profitable forests that the village enjoys today. Second, local cultural norms[131] promote respect for elders and a sense of piety. Third, that the camellia forest could be more easily managed by the elderly. As such, local values and norms translated directly into distributive and recognition-based justice in practice.

Xinqi village was recognized by local officials and the central government for their unique model of forestry management, techniques, and knowledge. The village has been allowed greater freedom and flexibility compared to other nearby villages, who often face difficulties obtaining sufficient harvest quota from the local state forest department.[132] Xinqi, by contrast, was always provided with the required quota. One local government official was quoted as saying:

> The quota system is used to control overharvesting (of timber); Xinqi never has this problem. They always have a plan for selective logging, and immediately planting after the logging. So, we never see deforestation in Xinqi, and I think they have achieved so-called "sustainable forestry management" … we need to be favorable to them for quota allocation, which also gives them opportunities to develop their village's collective economy [public funds].[133]

Despite efforts by the central government to push for the privatization of collectively-owned forests, Xinqi village was able to negotiate with local officials to retain their collective management system. The village committee referred to central policy documents that stipulated that privatization could only occur with a two-thirds majority agreement from the villagers, while the majority of the residents did not agree with the individual allocation of the forests. The county government eventually relented, with one official saying: "while [the central] government required allocation of collective forest, the village wants to keep their forest as a collective. But

[129] Ibid.
[130] Ibid.
[131] Confucian beliefs, given that Xinqi village is majority Han Chinese.
[132] He Jun, 'Rights to Benefit from Forest? A Case Study of the Timber Harvest Quota System in Southwest China' [2016] 29 Society & Natural Resources 448 https://doi.org/10.1080/08941920.2015.1062949.
[133] He Jun and others (2021) (n126).

we know the ultimate goal from both sides is to have good forest management. Xinqi already has good practice, we need to recognize and encourage them."[134]

When local values and community consensus coincide with the Party-state's environmental goals, then climate justice can clearly be achieved, at least on a small scale. While communities in southwestern China do have to struggle and negotiate for the external recognition necessary to sustain their best practices in the face of pressure from government authorities, their model of intersectional justice has proven to be an example for other villages to follow. As a consequence of its economic success and equitable distribution of profits, Xinqi village was also able to retain its traditions and cultural practices while also bucking the trend of youth leaving the village to find better opportunities in the cities.[135] In this way, climate justice can directly mean the better fulfilment of marginalized communities' economic, social, and cultural rights – blending environmental protection with social justice and sustainable development.

3.2.2. Good intentions and stranded assets: 3M carbon sequestration

When local-scale interventions fail to secure adequate buy-in from the population, however, these projects tend to be far less successful. A high-profile carbon sequestration forest project in Tengchong county 腾冲市, Yunnan 云南 financed by the multinational manufacturing conglomerate 3M claimed to have achieved "triple win" outcomes for population incomes, biodiversity, and climate action – yet failed to achieve tangible outcomes for the participating households.[136] Launched in 2007, intended to convert agricultural land into tree plantations to sequester carbon emissions, with local farming households being paid to maintain the forests on their land instead of using it for crops or grazing. The project sold 21,000 tonnes of CO2 at a price of $10 per tonne in 2008, resulting in around RMB 1 million (~$137,000 USD) being transferred to the county forestry bureau, with the farmers receiving their first and only payment in 2012 – around RMB 1,800 (~$250 USD) per hectare for the first five years of the project. A full 40% of the sales income ended up going towards transaction fees or administrative costs – with the average household ending up with just around $10-$20 USD each as a result.[137] The project closed down in 2012 without further payments to households due to decreased demand and lower carbon sequestration prices, with the county government taking over management of the forests.

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[134] Ibid.
[135] Ji Zhepeng, '云南腾冲新岐村传统村落保护见闻 Observations on the Protection of Traditional Villages in Xinqi Village, Tengchong, Yunnan' (*环球网 Huanqiu Net*, 7 September 2015) <https://china.huanqiu.com/article/9CaKrnJPbez> accessed 12 June 2024.
[136] He Jun and Wang Jiping, 'Certificated exclusion: forest carbon sequestration project in Southwest China' [2023] 50 The Journal of Peasant Studies 1 https://doi.org/10.1080/03066150.2022.2163163.
[137] Ibid.

The 3M-financed carbon sequestration project ultimately failed to take into account the needs of the households involved in the project, directing farmers to plant an unsustainable, non-diverse selection of trees that yielded little socioeconomic benefit. This resulted in the spread of invasive species, die-off of planted trees, and a shortfall of actual carbon sequestration.[138] Participating farmers also lost the chance to take part in the better-paying nationwide sloping land conversion programme,[139] causing economic hardship and leading them to abandon the carbon sequestration project to replant more profitable species instead.[140] Ultimately, the top-down nature of the project meant that the project financiers retained authoritative rights, in turn having the right to control who had the right to use the forests – in short stripping local households of power over their own land use. This is clearly not an example of climate justice working because it was imposed on its participants without much consultation or transparency, taking away their agency and excluding the community from the tangible benefits associated with possessing control and authoritative rights despite their physical possession of the forests.[141]

From these case studies, it is clear then that climate justice and a just transition in southwestern China can only be achieved through collaboration between local stakeholders and the Party-state. Where state or private sector interventions are imposed top-down without recourse or consultation with the population, the consequences are often procedural, distributional, and recognitional injustice – translating directly to harm to the most vulnerable members of society. When individual communities seek to build their own model of best practices, lasting success can only be sustained through obtaining recognition from the Party-state and, if not support, then at least the promise of non-interference.

3.3. Exporting China's model for a just transition to the Southeast Asian highlands

Southwestern China is not an island, of course. It must be noted that patterns seen in the region are often mirrored or reproduced elsewhere in the Southeast Asian highlands,[142] encompassing the uplands of northeast India, eastern Bangladesh, Myanmar, Thailand, Vietnam, Laos, Cambodia, and Malaysia. Populated by a variety of highly diverse ethnolinguistic groups on the periphery of the imperial states of the lowlands, this cultural sphere was historically a place of overlapping sovereignties and contestation, largely stateless and a place of religious, cultural, linguistic, and commercial flows.[143] Despite the coalescence of Westphalian states in the

[138] Ibid.
[139] He Jun and Thomas Sikor (2019) (n120)
[140] He Jun and Wang Jiping (2023) (n136136).
[141] Ibid.
[142] I choose not to apply the term "Zomia" coined by UvA's Willem van Schendel in 2002 as being an exonym unused by the peoples living in the region. Using a neutral, descriptive term like Southeast Asian highlands seems more appropriate than van Schendel's prescriptive name here.
[143] Jean Michaud, Meenaxi Barkataki Ruscheweyh, and Margaret Byrne Swain, *Historical Dictionary of the Peoples of the Southeast Asian Massif*, (2nd edn, Rowman & Littlefield 2016).

region in the aftermath of colonial rule, cross-border exchanges and flows continue to this day, now backed by Chinese state power and a booming Chinese economy. It holds, then, that Chinese models of climate justice and a just transition towards a certain modernist, ideological perception of "Ecological Civilization 生态文明"[144] are also distributed along the same winding mountain valleys – albeit this time via pickup trucks and high-speed rail instead of by merchant caravans and imperial armies.

On the border of southwestern China's Yunnan 云南 province lie the uplands of northern Laos, far from the national capital of Vientiane and populated largely by marginalized ethnic minority groups. During the period of French colonial rule and after independence, opium production was widespread among the region's farming communities who incorporated the poppy into their shifting system of cultivation.[145] China was and remains the primary market for opium in the region, with Beijing 北京 viewing the eradication of the drug trade as a political imperative due in large part to historical trauma from the 19th-century Opium Wars.[146] While previous efforts by the Laotian government under UN and Chinese pressure in the late 1990s resulted in the temporary eradication of opium cultivation in northern Laos, a lack of alternative livelihoods caused acute food insecurity and a return to poppy farming soon afterwards.[147]

China's Opium Replacement Program was launched in 2004 as an alternative development scheme meant to draw away labour from opium production towards cash crop plantations, largely run by Chinese agribusinesses supported by low-interest loans, administrative support, and import quotas of produce back into China.[148] The idea was that large corporate investments would be the mechanism to transition the region away from opium production towards new livelihoods, eradicating both poverty and the drug trade in one fell swoop. These investments invariably take the form of monoculture rubber tree plantations, promoted by the Lao government and their Chinese backers as being a sustainable, profitable, and politically desirable alternative to opium.[149] Categorized as a form of forest cover by the state and other governments around the region, the irony is that the expansion of rubber

[144] Communist Party of China, '习近平生态文明思想 Xi Jinping Thought on Ecological Civilization' (*12371.cn*, 2018) <https://www.12371.cn/special/xxzd/hxnr/st/> accessed 23 June 2024.
[145] UNODC Regional Office for Southeast Asia and the Pacific, 'Southeast Asia Opium Survey 2015: Lao PDR, Myanmar' (2015) United Nations Office on Drugs and Crime.
[146] Andrew M Law, 'Remembering and forgetting the Opium Wars: British colonial injustice, education, and heritage' in Lucas Lixinski and Zhu Yujie (eds.) *Heritage, Conflict, and Peacebuilding* (Routledge 2024).
[147] Paul T. Cohen, 'The post-opium scenario and rubber in northern Laos: Alternative Western and Chinese models of development' [2009] 20 International Journal of Drug Policy 424 https://doi.org/10.1016/j.drugpo.2008.12.005.
[148] Juliet N. Lu, 'Tapping into rubber: China's opium replacement program and rubber production in Laos' [2017] 44 The Journal of Peasant Studies 726 https://doi.org/10.1080/03066150.2017.1314268.
[149] Ibid.

plantations is one of the top drivers of primary and secondary forest loss in mainland Southeast Asia.[150]

Smallholder farmers have been the biggest losers as large-scale agricultural plantations continue to expand across northern Laos and across the border in southwestern China, with land previously used by ethnic minorities for shifting cultivation being increasingly reallocated by state officials to commercial use.[151] The dispossession and displacement of these marginalized groups in turn often leads to the resumption of opium cultivation elsewhere and the clearing of more forest land into new agricultural plots, leading to a vicious cycle of deforestation and injustices inflicted on already-vulnerable communities.[152] The patterns seen in northern Laos are mirrored in the Xishuangbanna Dai Autonomous Prefecture 西双版纳傣族自治州 in Yunnan 云南, where monoculture rubber plantations owned largely (but not entirely) by state-owned enterprises and large corporations became the symbol for the region's economic boom and prosperity over the past decades.[153] The socioeconomic success of many minority communities in Xishuangbanna 西双版纳 who participated in and profited from the state-driven rubber boom is seen as a sort of environmental and development justice by both the Chinese government at the central, provincial, and local levels, as well as by many members of those communities – and by extension the model that worked in China is perceived by Chinese investors and the Lao government as being one that is desirable and replicable in Laos.[154]

Like in southwestern China, communities in northern Laos enjoy some recourse and ability to push back against government initiatives. Chinese companies flush with funds partnered with the Lao government to acquire land in the remote, underdeveloped, and politically unstable north of Laos for investment, yet found themselves being forced to negotiate bitterly with villagers insistent on obtaining fair compensation for land reallocation and willing to lobby the local government extensively to ensure that Chinese companies held up their ends of any deals made.[155] While perhaps not intentional – Chinese corporations certainly expected to have the upper hand when dealing with local actors and the backing of the Lao government in Vientiane, but having neither ended up being co-opted by regional players instead[156] – this

[150] Kaspar Hurni and Jefferson Fox, 'The expansion of tree-based boom crops in mainland Southeast Asia: 2001 to 2014' [2018] 13 Journal of Land Use Science 198 https://doi.org/10.1080/1747423X.2018.1499830.
[151] Cornelia Hett and others, *Land Leases and Concessions in the Lao PDR: A Characterization of Investments in Land and their Impacts, Based on field data of 2014-2017* (Bern Open Publishing 2020).
[152] Juliet Lu, Laura Dev, and Margiana Petersen-Rockney, 'Criminalized crops: Environmentally-justified illicit crop interventions and the cyclical marginalization of smallholders' [2022] 99 Political Geography 102781 https://doi.org/10.1016/j.polgeo.2022.102781.
[153] Juliet Nadeau Lu, 'Rubber's Reach: Chinese land investments and state territorialization in the Sino-Lao borderlands' (DPhil thesis, University of California, Berkeley 2020). https://escholarship.org/uc/item/8q36k9v9.
[154] Ibid.
[155] Ibid.
[156] Ibid.

represents an emulation of southwestern China's model of climate justice and just transition being exported across the border to the highlands of Southeast Asia.

4. Building a model for climate justice and a just transition in the 21st century

China's vision for the future is multifaceted, encompassing calls for an ecological civilization 生态文明[157] as well as common prosperity 共同富裕[158] and a moderately prosperous society 小康社会,[159] all wrapped up in the nebulous idea of achieving the Chinese Dream 中国梦.[160] In practice these slogans are broad directives to drive Chinese socioeconomic development in a manner that at least pays lip service to environmental protection and climate action goals, aligning with the government's efforts to position China as a global leader on climate governance while at the same time competing with energy security needs.[161]

To be clear, environmental goals for the time being largely take second place to the imperative to continue to develop economically and raise the living standards of China's vast population, particularly the rural or marginalized regions which were left out during the initial post-80s industrialization boom. As discussed in Section 3, poverty alleviation and helping 'left-behind' communities catch up to the wealthy coast are political priorities under the current Xi Jinping 习近平 government, accepted largely by Chinese society as a form of filial piety to the backbone of the country's growth. Former paramount leader Deng Xiaoping 邓小平 famously said that China's policy would be to "let some people and some regions get rich first, in order to drive and help the backward regions,"[162] with the implication being that the grand bargain struck would have neglected provinces be offered the support of the rest of China to achieve more equitable living standards following the success of state capitalism on the coast.

The question facing China now, then, is what form will this development take? The first wave of industrialization famously neglected environmental or human rights concerns, relying on cheap, polluting coal, minimal labour protections, and a breakneck drive to extract value from the land and human capital stock.[163] Yet Chinese society, now largely wealthier, better informed and connected, and cognizant of the risks posed by environmental degradation and climate

[157] Ministry of Ecology and Environment, (2021) (n29).
[158] David Bandurski, 'The CMP Dictionary: Common Prosperity 共同富裕' (*China Media Project*, 8 July 2022) <https://chinamediaproject.org/the_ccp_dictionary/common-prosperity/> accessed 15 June 2024.
[159] BBC News, 'China's Xi Jinping unveils new 'four comprehensives' slogans' (*BBC News*, 25 February 2015) <https://www.bbc.com/news/world-asia-china-31622571> accessed 15 June 2024.
[160] Xi Jinping, 'Achieving Rejuvenation is the Dream of the Chinese People' (*National Ethnic Affairs Commission*, 29 November 2012) <https://www.neac.gov.cn/seac/c103372/202201/1156514.shtml> accessed 15 June 2024.
[161] Gu Bin Joyce, 'Understanding China's changing climate change rhetoric' (*East Asia Forum*, 5 April 2024) <https://eastasiaforum.org/2024/04/05/understanding-chinas-changing-climate-change-rhetoric/> accessed 25 June 2024.
[162] David Bandurski (2022) (n158) - 让一部分人、一部分地区先富起来，以带动和帮助落后的地区
[163] Zhou Xufeng, 'The Four Waves of Industrialization in China' in Andreas Oberheitmann and others (eds.), *German and Chinese Contributions to Digitalization* (Springer Nature 2020) https://doi.org/10.1007/978-3-658-29340-6_7.

change, is no longer as tolerant of the externalities imposed by the breakneck pace of development that so characterized the 1990s through to the 2010s.[164] Economic growth and societal stability are still linked to government and state legitimacy,[165] yes, but these are in turn also tied to environmental protection – air quality is one visible measure, as are responses to droughts and floods[166] – and to justice in the court of public opinion for the most vulnerable parts of Chinese society. The new model of Chinese development, then, incorporates a certain societal perception of climate justice and a just transition for those once left behind, driven by a cultural and political desire to allow the entire country to enjoy the benefits of modernization while mitigating the impacts of climate change and environmental degradation.

With that in mind, this chapter will discuss the ideological underpinnings of China's model for climate justice and a just transition, how this model continues to evolve, and how it may be applied to achieve a just transition for the coal sector in southwestern China. Case studies from similar regions around the world will also be examined to determine best practices which may also be applied to the southwestern Chinese context, with the aim being to craft a holistic approach and model for the region's sustainable, just, and equitable development in the years and decades to come.

4.1. Ecological Civilization 生态文明 – Towards a greener future?

China's declared goal of building an ecological civilization, launched in 2007 at the 17th National Congress of the Communist Party of China, is a one of a vision for a societal change, not just one that reflects the objectives of the party-state but one that is (ostensibly) reflected in Chinese social values.[167] Programmes linked to ecological civilization goals have spurred rural revitalization for villages ravaged by industrialization, urbanization, and depopulation, including providing funding for ethnic minority villages in the southwest to preserve and restore traditional architecture so that they can prosper from eco-tourism.[168] Urban areas which have implemented policies that contribute to ecological development often see investment from "strategic emerging industries" that are higher up the value-added chain without the environmental degradation seen from traditional industries,[169] improving local incomes while rewarding environmental protection

[164] China Dialogue, ''It worries me deeply': Five Chinese experts on climate change' (*Dialogue Earth*, 7 March 2024) <https://dialogue.earth/en/climate/it-worries-me-deeply-five-chinese-experts-on-climate-change/> accessed 25 June 2024.
[165] Ranna Mitter and Elsbeth Johnson, 'What the West Gets Wrong About China: Three fundamental misconceptions' (*Harvard Business Review*, May 2021) <https://hbr.org/2021/05/what-the-west-gets-wrong-about-china> accessed 25 June 2024.
[166] Even after 3000+ years, China is still a hydraulic civilization.
[167] Huang Ping and Linda Westman, 'China's imaginary of ecological civilization: A resonance between the state-led discourse and sociocultural dynamics' [2021] 81 Energy Research and Social Science 102253 https://doi.org/10.1016/j.erss.2021.102253.
[168] Ibid.
[169] Meng Fanxing and others, 'Urban ecological transition: The practice of ecological civilization construction in China' [2021] 755(2) Science of the Total Environment 142633 https://doi.org/10.1016/j.scitotenv.2020.142633.

and re-greening efforts. The benefits of this ideologically-driven approach, however, are heterogenous in distribution, and in many cases result in marginalized communities and regions suffering from injustice with little to no recourse or alternative.

Local governments are generally incentivized to adopt the rhetoric pushed down by the state, and the trappings of an ecological civilization are no different. Regions which adopt policies framed around ecological civilization goals and that create a positive environment for sustainable innovation tend to attract human capital and green investment,[170] albeit at the cost of surrounding regions who experience out-migration. This can lead to a race-to-the-bottom effect for communities that are competing for a finite stock of human capital and funding, in turn harming marginalized, less-developed, and resource-scarce rural towns and villages.[171] The poorest regions that rely upon extractive industries such as forestry and coal mining often bear the brunt of environmental protection and green development policies imposed by the state under the guise of the ecological civilization movement without having the resources needed to pursue alternative models of socioeconomic development, thereby being stuck in a vicious cycle of underdevelopment and exploitation.[172]

The central government has historically been fairly compliance-oriented when evaluating the performance of municipalities and provinces, leading local officials to 'tick the boxes' to meet policy targets instead of promoting actual policy innovation.[173] It is common for officials to chase short-term quantitative results that satisfy Beijing 北京 without effecting long-lasting qualitative change,[174] with the end result being a municipality that looks good on paper but is an unsustainable, stagnant backwater in reality.

Promoting the energy transition from coal to cleaner sources of electricity may be far more feasible for one city over another, for instance, especially since it is a known national policy to move polluting traditional industries inland to lower-income areas to act as economic drivers.[175] To ask a city to play host to carbon-intensive steel refining, only to then severely clamp down on its emissions quota, is all but setting it up to fail. The heavy-handed nature of central government interventions often results in local officials and communities being unable to push back, as noted in the previous chapter, which means that the environmental protection goals

[170] Hu Jin, Hu Mingjun, and Zhang Hong, 'Has the construction of ecological civilization promoted green technology innovation?' [2023] 29 Environmental Technology and Innovation 102960 https://doi.org/10.1016/j.eti.2022.102960.
[171] Ibid.
[172] Kevin Lo, 'Ecological civilization, authoritarian environmentalism, and the eco-politics of extractive governance in China' [2020] 7 The Extractive Industries and Society 1029 https://doi.org/10.1016/j.exis.2020.06.017.
[173] Wu Jing and others, 'Mind the gap! Barriers and implementation deficiencies of energy policies at the local scale in urban China' [2017] 106 Energy Policy 201 https://doi.org/10.1016/j.enpol.2017.03.057.
[174] Ibid.
[175] Ibid.

of the ecological civilization movement can cause severe socioeconomic harm to more marginalized, vulnerable regions.

As China works towards its declared climate action and environmental protection goals, it is clear that care must be taken not to undermine the successes of the previous decades of economic development and industrial policy, either. Climate justice and a just transition for southwestern China means no retrogression on socioeconomic gains, but instead the adoption of alternative livelihoods and lifestyles that account for local needs and circumstances. One such region where this may be seen is in the coal mining and power generation sector, the historic driver for China's industry-driven economic miracle in the last quarter of the 20th century which today is a dirty, polluting symbol of climate change. Its gradual phaseout has long been promised by Beijing 北京, but in practice presents a climate justice challenge.

4.2. The Chinese word for "crisis" is *not* the same as the word for "opportunity":[176] the looming coal transition and its consequences for southwestern China

Coal power makes up just over 60% of China's total electricity generation as of the end of 2023, a fall from 80% in the 2000s but still leaving the country as the world's largest carbon emitter by far.[177] New coal power plants continue to be built, largely a product of increased electricity demand in line with the post-COVID economic recovery and China's energy security needs in the face of unreliable hydroelectricity generation in the southwest and vulnerable natural gas (LNG) import chains.[178] Coal mining accounts for $50 billion in wages[179] and employs just under 3 million people across China, primarily concentrated in relatively rural and impoverished areas, many of whom are poorly educated and nearing the end of their working lives.[180] Parallels can be easily drawn with Appalachia in the United States or the coal towns in

[176] It is an unfortunate orientalist misconception that the Chinese word for "crisis" 危机 wēijī is composed of two characters meaning "danger" and "opportunity". This is incorrect; while the second character 机 makes up half of the word for "opportunity" 机会 jīhuì, the individual character itself has many different meanings (like machine, inflection point, or idea). While a nice sentiment, it's at best a meme for business consultants and motivational speakers who don't have any Chinese-speaking friends.

[177] Ember, 'China' (*Ember Climate*, May 2024) <https://ember-climate.org/countries-and-regions/countries/china/> accessed 22 June 2024.

[178] Ivy Yin, 'China's emissions from power sector may peak around 2024' (*S&P Global Commodity Insights*, 12 January 2024) <https://www.spglobal.com/commodityinsights/en/market-insights/latest-news/energy-transition/011224-chinas-emissions-from-power-sector-may-peak-around-2024> accessed 22 June 2024.

[179] D'Arcy Carlson and others, 'China's climate ambition: Revisiting its First Nationally Determined Contribution and centering a just transition to clean energy' [2021] 155 Energy Policy 112350 https://doi.org/10.1016/j.enpol.2021.112350.

[180] Patrick Wen Rui Leong, 'What Does a Just Energy Transition Look Like for China's Coal Sector?' (*Asia Pacific Foundation of Canada*, 24 February 2023) <https://www.asiapacific.ca/publication/what-does-just-energy-transition-look-chinas-coal-sector> accessed 22 June 2024.

the United Kingdom of the 1960s-1980s.[181] While China is determined to accomplish a gradual coal phaseout given the political need to protect public health and mitigate climate change impacts, achieving a cost-effective, just transition for China's coal mining and power generation sectors is still a policy challenge.[182]

The benefits of phasing out coal use, of course, are fairly obvious. Air quality improvements in 74 cities across China due to the central government's 2013 push to clamp down on emissions already resulted in nearly 50,000 fewer annual deaths in 2017 and a significant improvement in health outcomes,[183] while an aggressive coal phaseout pathway could see a nationwide annual excess death reduction of 224,000 by 2050 and an annual reduction in water consumption of 4.3 billion cubic metres.[184] The considerable emissions reductions would also help mitigate the pace of climate change and contribute to China achieving its domestic net zero targets, which are broadly supported by the Chinese public and contribute to the central government's legitimacy.[185] This would also very clearly be in line with China's international obligations, including its Paris Agreement NDCs,[186] its commitment to fulfilling the SDGs,[187] and its international human rights commitments.[188]

For southwestern China, the drawbacks of the coal transition are fairly minimal compared to the north; the region relies mostly on hydropower for electricity and has lower heating requirements in the winter, with most urban and many rural residents using electric heaters instead of the ubiquitous coal stoves or coal-powered central heating of the northeast.[189] Coal mining and power generation, however, still employs hundreds of thousands of people in Guizhou 贵州, Yunnan 云南, and Sichuan 四川, and remains an important economic driver for many rural communities.[190] The loss of employment and the chain reaction of hardship that

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[181] Ibid.
[182] Yan Xizhe and others, 'Cost-effectiveness uncertainty may bias the decision of coal power transitions in China' [2024] 15 Nature Communications 2272 https://doi.org/10.1038/s41467-024-46549-5.
[183] Huang Jing and others, 'Health impact of China's Air Pollution Prevention and Control Action Plan: an analysis of national air quality monitoring and mortality data' [2018] 2 The Lancet Planetary Health 313 https://doi.org/10.1016/S2542-5196(18)30141-4.
[184]He Gang and others 'Enabling a Rapid and Just Transition away from Coal in China' [2020] 3 One Earth 187 https://doi.org/10.1016/j.oneear.2020.07.012.
[185] Liu Hongqiao and others, 'The Carbon Brief Profile: China' (*Carbon Brief*, 30 November 2023) <https://interactive.carbonbrief.org/the-carbon-brief-profile-china/> accessed 24 June 2024.
[186] UNFCCC, 'China First NDC (Updated submission)' (*UNFCCC*, 28 October 2021).
[187] United Nations, 'China Voluntary National Review 2021' (*Sustainable Development Goals Knowledge Platform*, 2021) <https://sustainabledevelopment.un.org/memberstates/china> accessed 24 June 2024.
[188] Qin Gang, Foreign Minister of the People's Republic of China, 'Following a Chinese Path of Human Rights Development and Contributing China's Strength to Global Human Rights Governance' (Speech at the High-level Segment of the 52nd Session of the United Nations Human Rights Council, Geneva, 27 February 2023) <https://www.fmprc.gov.cn/eng/wjb_663304/wjbz_663308/2461_663310/202302/t20230228_11032426.html> accessed 24 June 2024.
[189] Zheng Guozhong and Bu Wentao, 'Review of Heating Methods for Rural Houses in China' [2018] 11 Energies 3402 https://doi.org/10.3390/en11123402.
[190] He Gang and others, (2020) (n184)

would follow needs to be mitigated by state and societal action in order to achieve a just transition and to deliver true justice to China's marginalized populations. Like elsewhere in China, regional governments need to balance their health and environmental protection goals with the potential socioeconomic harm that would come with a green transition. And, with the region hosting massive reserves of rare earth minerals crucial to the clean energy transition,[191] it is critical that the southwest not trade the environmental damage of deforestation and coal mining for the same scale of devastation from rare earth mineral extraction and refining – becoming, essentially, one massive "Green Sacrifice Zone" for short-term economic gain for a few.[192]

The Clean Heating Transition Project discussed in Section 3.1.1 is one such example of how the phaseout of coal can have significant knock-on effects on vulnerable groups and communities regardless of the environmental protection outcomes. Impoverished rural households often fell through the gaps and did not receive sufficient state support or compensation for the transition from coal to gas or electricity. A lack of sufficient coordination between industries also resulted in gas shortages and loss of guaranteed winter heating, with many communities experiencing a lower standard of living as a result.[193] Bulk coal shops and traders also were shut down without recourse or adequate compensation, and often failed to find alternative business models or livelihoods due to a lack of government support. The top-down imposition of policy directives from the central government meant that local communities were unable to negotiate a more gradual transition, had limited buy-in, and ultimately did not receive justice.

Politically, China's decentralized model of governance means that local-level initiatives to relieve the burdens imposed by a clean transition are often incoherent at best, and without stronger coordination from an often-detached central government, local officials may be unmotivated to work beyond their remit to cooperate with other regions.[194] As seen in the case studies in Section 3.2.1, local officials and communities need to be empowered to push back and negotiate tailor-made local solutions that align with broader national goals, while the central government needs to be prepared to offer the external recognition and guidance required to sustain these efforts. For those coal industry workers who will lose their livelihoods – around 62 jobs lost for every 10 MW of coal capacity shut down, according to an International Labour Organization study[195] – the state needs to offer re-training, compensation, and alternative pathways to employment or retirement. To its credit, the central government has promised to

[191] Mining.com, 'Rare earth mining growing in both China, Myanmar bordering regions' (*Mining.com*, 14 December 2024) <https://www.mining.com/rare-earth-mining-growing-in-both-china-myanmar-bordering-regions/> accessed 28 June 2024.
[192] Christos Zografos and Paul Robbins, 'Green Sacrifice Zones, or Why a Green New Deal Cannot Ignore the Cost Shifts of Just Transitions' [2020] 3 One Earth 543 https://doi.org/10.1016/j.oneear.2020.10.012.
[193] He Gang and others, (2020) (n184)
[194] D'Arcy Carlson and others, (2021) (n179)
[195] ILO Office for China and Mongolia, 'Study on Green Employment in China' (ILO March 2010).

spend around 100 billion RMB ($14.3 billion USD) to affected steel and coal workers from 2016 onwards, with employment-support policies including free employment guidance, job placement, consultation, and some subsidies to bridge the gap between jobs.[196] While China's renewable energy sector is booming, with the country expected to meet its renewable capacity target five years ahead of schedule by 2025,[197] jobs in clean energy are generally not aligned with the skillsets associated with the coal mining and power industry.[198]

As the coal transition continues – new plants are still being built, but they will likely not be running 24/7 as more renewables and nuclear plants come online, being relegated to filling generation gaps and serving as emergency backstops in the event of outages, meaning that the amounts of coal actually being burned will continue to go down over time[199] - the central government will need to do a lot more to ensure that laid-off workers can easily transition to new roles. Re-employing them in environmental restoration and conservation would present fairly low barriers to entry for those with coal worker skillsets, for instance, with the positions being funded through taxes on emissions and pollution – thus achieving both environmental protection and social justice goals at the same time.[200] Expanding the social security protections available to these workers would also go a long way towards easing their transition, including improving access to healthcare outside of their place of household registration, larger payouts for unemployment insurance, and higher levels of state pensions after retirement.[201] The latter is especially crucial, but equally difficult to achieve, especially as the Chinese population continues to age while the country has yet to reach high-income status – the danger is that China may grow old before it becomes rich.[202]

4.3. 教学相长 – Teaching and learning flourish together: best practices for climate justice and a just transition

So only after learning can one know one's shortcomings, and only after teaching can one know one's difficulties. Knowing one's shortcomings can help one reflect on oneself, and

[196] He Gang and others, (2020) (n184)
[197] Hema Nadarajah, Sasha Lee, and Alberto Iskandar, 'Major Asian Emitters Cling to Coal, Resist Global Renewables Pledge' (*Asia Pacific Foundation of Canada*, 19 January 2024) <https://www.asiapacific.ca/publication/COP28-series-major-asian-emitters-cling-coal-resist-global-renewables> accessed 26 June 2024.
[198] Camilla Naschert, 'Skills shortage imperils global energy transition' (*S&P Global Market Intelligence*, 12 September 2022) <https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/skills-shortage-imperils-global-energy-transition-71565735> accessed 26 June 2024.
[199] Hannah Ritchie, 'China is building more coal plants but might burn less coal' (*Sustainability by numbers*, 14 February 2024) <https://www.sustainabilitybynumbers.com/p/china-coal-plants> accessed 26 June 2024.
[200] He Gang and others, (2020) (n184)
[201] Ibid.
[202] Adi Ignatius, '"Americans Don't Know How Capitalist China Is": An interview with Weijian Shan' (*Harvard Business Review*, May 2021) <https://hbr.org/2021/05/americans-dont-know-how-capitalist-china-is> accessed 26 June 2024.

> *knowing one's difficulties can help one strengthen oneself. Hence it is said that 'teaching and learning flourish together'*
> – Dai Sheng 戴圣, 'Book of Rites 礼记·学记' (Western Han Dynasty 西汉, 202 BCE – 9 CE)
>
> 教学相长 *jiào xué xiāng zhǎng – teaching and learning flourish together; when imparting knowledge to others, one can also improve oneself.*

While China's model for development is not something that can be copy-pasted and applied directly to a different context, certain key lessons can be drawn from it and adopted by other developing states in the Global South.[203] The same applies in reverse – China's own model for economic growth and governance is drawn from examples as diverse as Sweden[204] and Singapore, with practical lessons on governance and applicable best practices taking priority over ideological impulses.[205] Pursuing a just transition is no different; the methods used in South Africa, Japan, the United Kingdom, India, or the United States may be just as applicable to southwestern China if adapted to local circumstances and needs – Chinese Characteristics, as it were. This section will examine a number of case studies from around the world to find lessons that may prove useful in the southwestern Chinese context, thereby building a more holistic model for climate justice and a just transition for the region.

4.3.1. Societal perceptions of a just transition – what is "justice" anyways?

Of course, one must first determine how a "just transition" or "justice" are actually perceived by different societies. For instance, when asked to define a just transition, study participants in Bristol, UK emphasized a replacement of what is lost, those interviewed in a small coal-focused town called Yubari in Japan highlighted the need to maintain and rehabilitate the quality of life while experiencing industrial decline, and those in Cape Town, South Africa expected an improvement on the status quo.[206] While all participants largely shared the same concerns with social justice in biodiversity management, they framed the concept of a just transition differently – some saw it as a way to position their own efforts globally, others perceived it as a framework or organizing concept for the necessary processes and sub-processes that need to be implemented to realize environmental protection and social justice, while others

[203] Hagan Sibiri, 'The Chinese Development Model in Perspective and Lessons for Africa' (*Africa China Centre for Policy & Advisory*, 14 September 2023) <https://africachinacentre.org/the-chinese-development-model-in-perspective-and-lessons-for-africa/> accessed 26 June 2024.
[204] Yang Kai and Stephan Ortmann, 'From Sweden to Singapore: The Relevance of Foreign Models for China's Rise' [2018] 236 China Quarterly 946 https://www.jstor.org/stable/10.2307/26865552.
[205] Liu Hong and Wang Ting-Yan, 'China and the "Singapore Model": Perspectives from Mid-level Cadres and Implications for Transnational Knowledge Transfer' [2018] 236 China Quarterly 988 https://doi.org/10.1017/S0305741018000462.
[206] Leslie Mabon and others, 'What does a just transition mean for urban biodiversity? Insights from three cities globally' [2024] 154 Geoforum 104069 https://doi.org/10.1016/j.geoforum.2024.104069.

still felt that the language of just transitions was just confusing, distracting, and exclusionary.[207] Many feared that the language of biodiversity, conservation, climate action, or environmental protection might be used to exclude marginalized communities,[208] for example an environmental assessment being used to block social housing near a wealthy neighbourhood. For those in the coal mining region of the Powder River Basin in Wyoming, United States, transitioning away from high-paying coal industry jobs is unacceptable unless equally well-compensated positions are positioned as a viable alternative, especially when the coal industry continues to see political support at the state level.[209] The human rights principle of non-retrogression can equally be applied here, where economic measures taken by states, such as cuts to social protection systems, may impede the realization of economic, social, and cultural rights to the point of retrogression.[210] Likewise, state measures to shut down the coal industry and deprive entire communities of the livelihoods upon which they rely without providing equally-prosperous alternatives and transitional support may in turn be viewed as retrogression in the enjoyment of their ESC rights – and likely as a betrayal of the social contract by those who are left behind.

For a low-middle income economy like southwestern China, which is still industrializing and developing at a rapid pace, societal expectations of a just transition must by definition include progressive improvement of living standards and greater prosperity.[211] Any interventions by the state must be seen as a new way to improve livelihoods and offer healthier, balanced, and profitable forms of employment. Shifting from agriculture to forestry and ecotourism is one such attractive alternative that also aligns well with primary industry skillsets, but the problem of course remains that there may not be enough high-paying jobs in alternative industries to adequately absorb the newly-unemployed workforce. Without meeting these criteria, any transition imposed by the state may be viewed as retrogression in the affected communities' enjoyment of their ESC rights and may contribute to grievances against local or central governments – something which Chinese authorities try strenuously to avoid.

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[207] Ibid.
[208] Ibid.
[209] J. Mijin Cha, 'A just transition for whom? Politics, contestation, and social identity in the disruption of coal in the Powder River Basin' [2020] 69 Energy Research & Social Science 101657 https://doi.org/10.1016/j.erss.2020.101657.
[210] Gema Ocaña Noriega, 'Using the non-retrogression principle to prevent far-right erosion of rights' (*Global Campus of Human Rights*, 2 November 2023 <https://gchumanrights.org/gc-preparedness/preparedness-economic-social-and-cultural-rights/article-detail/using-the-non-retrogression-principle-to-prevent-far-right-erosion-of-rights.html> accessed 27 June 2024.
[211] Ning Libiao and Yang Xiaodi, '公正过渡:"双碳"背景下中国绿色转型的规制理路 Just transition: the regulatory approach for China's green transformation under the background of "dual carbon"' [2022] 36 湖南大学学报（社会科学版）Journal of Hunan University (Social Science Edition) 147 https://doi.org/10.16339/j.cnki.hdxbskb.2022.02.019.

4.3.2. Responsibility for a just transition

Governments are generally expected to carry the most responsibility for planning and implementing a just transition, all the way from the national legislative level down to the municipal or community programming level.[212] Where third party actors hold responsibility but may no longer exist – such as the privately-owned Hokkaido Coal leaving slag heaps on state-owned land and then withdrawing from the region[213] or the case of so-called "orphaned" oil wells that were left uncapped and abandoned by their dissolved corporate owners[214] – then the state is often expected to also step in and rectify the imposed externalities in order to fully achieve a green transition. This may be hampered by regional distrust of the federal government as well as by contestation and obstruction between different branches of government, as is the case in Wyoming.[215] Where governments are unable or too slow to act, however, communities may take it upon themselves to take the lead on transition projects in the form of community gardens, constructing temporary housing, or running employment assistance programming.[216] These sorts of *faits accomplis* can in turn galvanize further government action to support and sustain these initial societal efforts, which also have the benefit of already having considerable local support and buy-in.

In urban southwestern China, there is little difference between the state, the Party, and the community at the neighbourhood level. Each street or residential complex has a Party branch, which works tightly with the neighbourhood council and neighbourhood committee.[217] Delegated significant autonomy to manage local programs and projects, and with high levels of community attachment and engagement thanks to inclusive governance and decision-making, Chinese urban communities are able to easily organize and implement their own vision for a just transition with support from the omnipresent Party-state.[218] Thus it comes as no surprise that while the government is expected to take the lead on larger-scale projects and initiatives, responsibility for community-level interventions is perceived to be shared evenly among the population and the Party-state.

For smaller rural villages, such as those populated by ethnic minority groups, there is far less perceived integration with the Party-state and a strong "othering" divide aimed at other ethnicities, especially ethnic Han 汉族 but also including other neighbouring minority

[212] Leslie Mabon and others, (2024) (n206)
[213] Ibid.
[214] US Department of the Interior, 'Orphaned Wells' (*US Department of the Interior*, 2024) <https://www.doi.gov/orphanedwells> accessed 27 June 2024.
[215] J. Mijin Cha (2020) (n209)
[216] Leslie Mabon and others, (2024) (n206)
[217] Cheng Xiuying, Zhong Wei, and Li Dongquan, 'Urban neighborhood self-governance and community attachment: Evidence from southwest China' [2021] 112 Cities 103128 https://doi.org/10.1016/j.cities.2021.103128.
[218] Ibid.

communities.[219] This makes for a stronger sense of community founded on exclusion, as well as a more contentious relationship with the government where the latter is seen as an outside force to negotiate with, instead of as a grassroots part of the community that can be harnessed and drawn from.[220] While the villagers do of course have freedom to implement their own projects according to local values and priorities, their perception of a 'just transition' largely stems from central government initiatives such as the New Socialist Countryside 社会主义新农村建设 as mentioned in Section 3.1.2 – something imposed upon them that they must negotiate with the government to adapt to their needs or that they must petition to have implemented in their community.[221] Southwestern China's continued urbanization has led to significant brain drain and population flight from rural regions, endangering local traditions and sense of community – and in that vein, programs that incentivize villagers to stay instead of leaving to seek livelihoods elsewhere are essential to any just transition that seeks to include and value rural voices.[222]

4.3.3. Case studies and best practices for climate justice and a just transition

A just transition in southwestern China by definition cannot target just urban or rural communities on their own, but must incorporate a multitude of targeted, inclusive, and equitable interventions that together add up into a greater whole. There can be no justice while there are still people left behind, a principle that must be made central to the Chinese model for a clean transition. The best practices for a just transition do not have to be high-tech in nature. Just as Liu Bang 刘邦, later known as Emperor Gaozu of Han 汉高祖,[223] rose to prominence from a humble farming village, so too can the best ideas come from the least conspicuous places.

The village of Hivre Bazar, located in Maharashtra state, India, had long suffered from environmental degradation, extended periods of drought, poverty, and depopulation due to migration to urban areas.[224] Yet a single man named Popatroa Pawar chose to return to his home village after completing his postgraduate studies, mobilized the villagers, and got to work building watersheds and reforesting the area; the result was improved irrigation for the village and increased crop diversity and yields, with average incomes increasing 400% in 20 years.[225] Social and cultural programs followed, improving sanitation and education for both boys and

[219] Tami Blumenfield, 'Resilience in Mountainous Southwest China: Adopting a Socio-Ecological Approach to Community Change' [2014] 23 Cahiers d'Extrême-Asie 281 https://www.jstor.org/stable/44167531.
[220] Ibid.
[221] Ibid.
[222] Ibid.
[223] Liu Bang's 刘邦 seat of power during his reunification of China from 206-202 BCE was the ancient state of Han 汉, encompassing the modern southwestern Chinese provinces of Sichuan 四川 and Chongqing 重庆. To this day, Han 汉族 is the name for the largest ethnic group in China, and Mandarin Chinese is referred to as Hanyu 汉语.
[224] Mark Swilling, *The Age of Sustainability: Just Transitions in a Complex World* (Routledge 2020).
[225] Ibid.

girls.[226] Pawar's grassroots intervention kickstarted the revitalization of his hometown, with the village parliament crucially serving as a forum for community buy-in and coordination.[227]

After Gujarat state was hit with a devastating earthquake in 2001, the village of Ghandi Nu worked together with local NGOs to rebuild with traditional circular dwellings made of adobe brick instead of modern brick and concrete rectangular buildings.[228] The former were found to have better survived the quake, with traditional knowledge and villager participation in the design and construction process ensuring full community buy-in.[229] By rebuilding according to local values and norms, while also integrating modern technology such as renewable energy generation and water sanitation, this project ensured a just transition for the village that left them more resilient, more prosperous, and better prepared for future disasters or climate events.[230]

In both of these cases, the blending of traditional knowledge with modern technologies in a respectful manner is key to project success. Local participation in community democratic institutions ensure that buy-in is obtained, justice is achieved, and long-term sustainability is assured. In China, too, local-level democracy can be a potent tool for mobilizing community support for initiatives – provided that the population feels represented and included in the planning, implementation, and evaluation stages. The lesson drawn from these examples, then, is that the Chinese government from the central level down should encourage greater levels of public participation in local governance, reversing the current trend of pushing down policy directives with little room to push back or negotiate. Local practices can be harnessed and used to build a more just transition for marginalized communities, and in turn those best practices can be taken and applied elsewhere in China, too.

In Denmark and Germany, the clean energy transition in the early 2000s was driven remarkably by the commons, with 84% of wind capacity in Denmark being owned by communities in 2000 and about 50% of renewable capacity Germany being owned by private citizens.[231] While China's renewable buildout tends to favour large, sweeping state-owned grid-scale megaprojects[232] (which creates the problem of not having sufficient transmission infrastructure to transport the electricity from the isolated, sunny northwest) or rooftop solar installations owned by individuals and leased by small power producers,[233] (which are

[226] Ibid.
[227] Ibid.
[228] Ibid.
[229] Ibid.
[230] Ibid.
[231] Ibid.
[232] Colleen Howe, 'World's biggest solar farm comes online in China's Xinjiang' (*Reuters*, 7 June 2024) <https://www.reuters.com/world/china/worlds-biggest-solar-farm-comes-online-chinas-xinjiang-2024-06-03/> accessed 29 June 2024.
[233] Joseph Webster, 'There's something odd about where China is building solar power' (*Atlantic Council*, 27 July 2023) <https://www.atlanticcouncil.org/blogs/new-atlanticist/theres-something-odd-about-where-china-is-building-solar-power/> accessed 29 June 2024.

concentrated in dense urban regions along the coast with less favourable weather), neither of these solutions are particularly just or cost efficient. And, while the Chinese government is likely very willing to sacrifice efficiency for energy security,[234] building resilience does not preclude creating a just transition, either. Community buy-in can literally be leveraged by involving nearby towns with larger-scale power projects and granting them equity shares or ownership in said projects, with rural communities especially benefiting from off-farm passive income and a visible symbol of their participation in the building of an ecological civilization. While there is always the economic problem of oversupply and negative energy prices,[235] which tends to go hand-in-hand with mass renewable buildout,[236] leveraging state funds to have the state-owned grid purchase power at a guaranteed rate from these community-owned installations can at least speed up the coal transition and generate much-needed cash flows for these marginalized communities that can then be invested in more productive economic drivers further up the value chain, thus funding a just transition and making the region more resilient to the effects of climate change.

Justice must be intrinsic to climate interventions, of course, not just in the broader outcomes but also in the process. Cases of how electrification efforts promoting small hydropower in Tanzania further entrenched local elites, the development of wind and solar farms in Greece enabled the appropriation and enclosure of farming land by businesses, and biofuel development or climate-smart agriculture policies resulted in the displacement of indigenous communities in Malaysia, Cambodia, and Myanmar are clear examples of what *not* to do.[237] Similarly, the southwestern Chinese model of leveraging large-scale corporate cash crop plantations to provide paid work for local villagers, thus diverting or displacing them from traditional farming methods that are deemed unmodern or ecologically damaging, enriches entrenched business interests that can extract value from the land and the local population while passing down little profit in return. Some farmers are winners, of course, but often these tend to be ones who already have made large investments to establish themselves at the top of the local economy. Care must be taken in the process, therefore, to ensure that the resulting power structures are equitable, harm is minimized, and victims are fairly compensated – all outcomes that can be tied to community participation and decision-making.

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[234] Lisa Hyland and David Fishman, 'China's Electric Power Sector: Leading on Renewables and Coal?' (*Center for Strategic & International Studies*, 12 June 2023) <https://www.csis.org/analysis/chinas-electric-power-sector-leading-renewables-and-coal> accessed 29 June 2024.

[235] Great for consumers, not so great for generators who are incentivized to shut down, which can lead to brownouts or load shedding – thus harming the public in the longer run.

[236] Ibid.

[237] Benjamin K. Sovacool, 'Who are the victims of low-carbon transitions? Towards a political ecology of climate change mitigation' [2021] 73 Energy Research & Social Science 101916 https://doi.org/10.1016/j.erss.2021.101916.

4.4. 鲤跃龙门 A carp leaping over the dragon gate: Climate justice and a just transition with Chinese characteristics

According to tradition, a carp that swims upstream and then leaps the waterfalls of the Yellow River at the Dragon Gate at Longmen 龙门 would be transformed into a dragon by the will of the Jade Emperor.[238]

鲤跃龙门 *Lǐ yuè lóngmén – carp leaps over the dragon gate; with sufficient effort, even the most ordinary can become extraordinary.*

Having determined the current models and perceptions of climate justice and a just transition in southwestern China, this section will now seek to incorporate the best practices identified in Section 4.3.3 to craft a more holistic approach for the region.

Largely, it is clear that a just transition for southwestern China must be one that engages local communities at the grassroots level. The exercise of extant local democratic institutions such as village or neighbourhood councils and committees and their cooperation with the Party-state at all levels of governance is the key to ensuring community buy-in and representation. Without the support and inclusion of both local communities and the government, it will prove difficult if not impossible to achieve justice for all involved parties. Local governments and community organisations should be given more flexibility in implementation of central government directives, with assessment and evaluation being performed with more holistic benchmarks rather than simple short-term wins which can be easily gamed by local bureaucrats looking just to check off boxes in their resumé. And, if grassroots initiatives achieve justice in both process and outcomes, regional governments should be proactive in taking the best practices observed and adapting them to other situations, as well.

The Party-state should also strive to build a more trustful relationship with rural communities, including those populated by ethnic minorities. Rather than a government-community dichotomy, the relationship should be one founded upon collaboration, dialogue, and mutual support. This can be achieved through consultation, negotiation, and inclusive decision-making. Adapting central government initiatives to the needs and circumstances of these groups on the ground, including treating traditional practices with respect instead of as 'backwards' methods to be modernized and discarded, will greatly improve community buy-in and project sustainability. Reversing the population decline by providing alternative non-farm sources of income will also go towards the government goal of building a New Socialist Countryside, thereby aligning local interests with the Party-state's efforts to maintain its legitimacy in rural

[238] Shi Congxin and Qian Yongxia, 'A Jungian Analysis of the Archetypal Image of the Fish From a Chinese Cultural Perspective' [2021] 61 Journal of Humanistic Psychology 766 https://doi.org/10.1177/0022167819850947.

areas as well as the state's obligations to protect, respect, and fulfil the ESC rights of its most vulnerable groups.

For communities reliant upon industries that will be phased out as part of southwestern China's clean transition, the state must work on a large scale to provide the required subsidies, compensation, social protection systems, and alternative livelihoods in order to bridge the inevitable income gap. The global low-carbon economy is expected to produce 6 jobs for every role lost under the net-zero transition by 2030,[239] but ensuring that southwestern China enjoys the benefits of this employment shift in an equitable manner requires sustained government action. Laid-off workers, particularly those more vulnerable, older, and less-educated employed by SOEs that have been ordered to divest from extractive primary industries, should receive extensive re-training and unemployment support, and every effort should be made to co-locate new industries to minimize displacement and human capital flight. For those who are too aged to retrain, adequate retirement benefits should be provided, with funds coming from taxes on emissions and community investments. Granting shares or partial ownership of clean industry to nearby communities should enhance local buy-in and provide the passive income needed to kickstart further socioeconomic development further up the value chain away from primary industries.

In all climate action and transitional interventions, care must be taken to ensure that nobody falls through the gaps. While it is often simpler to take advantage of existing power structures to affect change, these same power structures may inherently be unjust in procedure, distribution, or recognition. A just transition is an opportunity for deep, lasting change, and that also means investing in or reforming local democratic institutions to ensure that they protect the vulnerable, respect societal contributions, and fulfil their mandate to deliver more sustainable, equitable, and prosperous outcomes for their communities.

[239] Fergus Green and Ajay Gambhir, 'Transitional assistance policies for just, equitable and smooth low-carbon transitions: who, what and how?' [2019] 20 Climate Policy 902 https://doi.org/10.1080/14693062.2019.1657379.

5. Conclusion

City of Choice 择城 ends on an ambiguous note; the reader is left to decide whether or not Tu Shanjiao 涂山娇, after a moment of hesitation, shuts down the AI system. A shutdown would come at the cost of millions of lives, but ultimately so would the cold machine logic of the system as it prioritizes the survival of some over others. And, while her rival Dan Zhu 丹朱 succeeds in building her radical new model of climate-adapted urban development, it comes at the cost of alienating the older generation who refuse to move from their flood-prone homes.[240]

Ultimately, true climate justice and a fair, equitable transition may be impossible to achieve. Every policy choice or community project has its costs and benefits, and making the right choices that leave nobody behind is a challenge that may seem insurmountable. Yet despite it all, we owe it to ourselves and our descendants to try.

This thesis advocates for a more human-centric approach to a just transition in southwestern China, one that incorporates procedural, distributive, and restorative justice in equal measure. For southwestern China, vulnerable as it is to the ravages of climate change, those same vulnerabilities can also mean new opportunities to shift gears and build a more prosperous, sustainable, inclusive, and equitable future. This will mean redefining the relationship between the Party-state and the people it serves, forging a more respectful, collaborative bond that seeks to address inequalities and allow for greater flexibility. The investment of the people in China's march towards becoming an ecological civilization needs to be made clear, and the resulting fruits of the clean energy transition must be shared fairly among all those who have contributed to their country's prosperity.

Broadly, southwestern China's approach to achieving climate justice and a just transition should be inclusive and should be a constantly evolving process of consultation, collaboration, and self-improvement. More bespoke initiatives and solutions should be implemented to fit local needs and circumstances, ensuring greater public buy-in and a more effective, equitable transition where nobody is left behind. Any projects implemented should be evaluated on a holistic basis with accountability for local officials, with a focus on ameliorated outcomes that are fairly distributed and that improve the livelihoods of society's most vulnerable, instead of benefiting a select few.

Moving forward, additional research could be directed towards identifying more best practices that could be applied to the southwestern Chinese context. While the difficult logistics prohibited me from performing field research for this thesis, future work would likely benefit from interviews, surveys, and in-person case studies in the region that can better determine societal perceptions of and experiences with climate justice and ongoing transitions.

[240] Gu Shi (2023) (n1)

Our generation is at the forefront of the climate crisis, being able to expect to experience the worst ravages of anthropogenic climate change in the decades to come, and as we come of age and into the reins of power, it is critical that we seize the opportunity to effect lasting change. Our parents have left us with a myriad of challenges to tackle – inequality, poverty, and scarcity, to name a few – but we have no choice but to confront them head-on in our fight for a better tomorrow. After all, as Confucius 孔子 once said: "Within the four seas, all men are brothers. 四海之內皆兄弟."[241]

[241] Confucius 孔子, *Analects – Yan Yuan* 論語·顏淵 (Han Dynasty, 206 BCE – 220 CE).

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