

***River Sand as a Disputed Resource: A Case of Illegal Sand  
Mining Near Zhuang Villages in Southwest China***

Inaugural dissertation

to complete the doctorate from the Faculty of Arts and Humanities

of the University of Cologne

in the subject, Social and Cultural Anthropology

Presented by

Qian Zhu

Born on 12.03.1984

In Guangxi Zhuang Autonomous Region, China

**Köln 2020**



## **Preface**

Since the late 20<sup>th</sup> century, southwest China has witnessed the large-scale commodification of river sand, which is obtained largely illegally. Such commodification follows a high demand for river sand to support large-scale infrastructure developments including the construction of roads, houses, and dams, which has led to a dramatic increase in sand prices across the rural–urban areas. The object of such illegal sand mining activities has been purely economic, with little concern for the fate of the environment, including riverbanks, water quality, adjacent farmlands, and aquatic life, among other aspects. Indeed, sand mining has great social, economic, and ecological implications, as discussed throughout this dissertation.

The dissertation focuses on the market orientation of river-sand mining and its socio-cultural and ecological consequences in rural Zhuang communities around the Maoling River – the largest river in Qinzhou City. It also investigates the diverse actors involved, including government officials, riparian Zhuang communities, and legal and illegal miners. This multiplicity of actors also relates to the growing complexity of institutions and policies at various levels, which often contribute to local-level disputes, conflicts, and the mismanagement of sand resources. By applying the political ecology perspective, this thesis explores resource conflicts and sand exploitation, addressing issues of institutions, power, contention, and scales. The long-term existence of illegal river-sand mining brings both formal and informal institutions into perspective.

The rural Zhuang villages are severely affected by the rampant river-sand extraction in terms of villagers' land, customs, agricultural production, and daily activities. Indeed, socio-cultural and ecological consequences are caused by rampant river-sand mining in rural agricultural areas. On the one hand, river sand plays a vital role in the river ecosystem. The over-appropriation of river sand has led to faunal destruction (i.e. the loss of fish species), water pollution, and the collapse of farmlands. On the other hand, river sand has been considered a property of riverfront communities, because it is needed for land, agriculture, and customary purposes in riparian communities. By conducting fieldwork in six riverfront Zhuang villages, this dissertation uses detailed

empirical research to explore the causes and consequences of illegal river-sand mining in Southwest China.

## Acknowledgements

It would have been impossible to finish writing this dissertation without great assistance from many helpful professors, colleagues, friends, and family members, among others.

I would first like to thank my first thesis advisor, Prof. Dr. Michael Bollig, who has great experience in supervising masters and Ph.D. students. I am very grateful for his patience in allowing me to take my time to improve my knowledge of anthropology, and he agreed with me that I could do the masters program studying Culture and Environment in Africa (CEA) under his supervision, which I succeeded in finishing in summer 2018. Importantly, he let me freely choose my own topics until I eventually settled on the topic that is at the heart of this dissertation. Furthermore, he taught me the major theories, e.g. political ecology and historical ecology, which I have applied in my writings. He also helped me greatly in clarifying what the dissertation is about. Following his advice, I paid more attention to the Zhuang people, who are those who share my own ethnic status, and this helped to steer me in the productive direction towards studying the relation between human beings and their environment.

I would also like to thank my second supervisor – Prof. Dr. Michaela Pelican. I am very lucky to have joined her colloquium and many other courses. I have greatly benefited from her advice in looking for a gap in the existing research and trying to bridge that gap by doing my own research and writing my own ethnography. Furthermore, her review of my chapters has given me other crucial insights that have helped me to improve this dissertation.

I greatly appreciate the teaching and help of Prof. Dr. Gerrit Dimmendaal, Dr. Clemens Greiner, and other professors/lecturers who offered courses for the MA and PhD students. These courses gave me an opportunity to approach many crucial theories in and gain interdisciplinary knowledge of the strong academic cooperation between Anthropology, Archaeology, Linguistics, African studies, and Chinese studies. Furthermore, they took their precious time to read my chapters and gave me wonderful feedback. Without their passionate participation and input, the thesis could not have been successfully written. My kind regards go also to the Global South Studies Center (GSSC) and the a.r.t.e.s. Graduate School of the University of Cologne for supporting

me with an office, assistance, and funds in conducting my research.

There are other people who have supported me in diverse ways: First, I thank Dr. Christiane Naumann, Dr. Gerda Kuiper, and Dr. Eric Mutisya Kioko, who read the first draft of my dissertation and gave me very detailed feedback. I also thank Bright Masocha and other colleagues who read some chapters and helped them to make more sense. Indeed, I cannot mention all the names of those who helped me here, but I will remember their kindness and assistance.

Last, but not least, I am grateful to the people in the Qinzhou City for helping me conduct my fieldwork. The villagers and the officials cooperated with me in agreeing to interviews, filling in questionnaires, and participating in focus-group discussions, all of which greatly supported this research. Without their cooperation, this thesis would have been impossible. Finally, I thank my family, relatives, and friends both at home and in Germany for their love and support.

## **Dedication**

To my grandmother

## Contents

Notes on the Text.....	XII
Abbreviations.....	XII
Unit.....	XIII
Chapter 1: Introduction.....	1
1.1 A Brief History of River-Sand Mining: A National Level Perspective.....	8
1.2 Overarching Objective and Research Questions .....	13
1.3 Literature Review .....	14
1.3.1 Political Ecology.....	14
1.3.2 Property Rights Theory.....	16
1.3.3 Indigenous Ecological Knowledge of the Zhuang.....	19
1.4 Structure of the Thesis .....	22
Chapter 2: Methodology: Conducting Research “at Home” .....	24
2.1 Preamble and Preparations .....	24
2.2 Topic Transformation during Fieldwork .....	29
2.2.1 Starting Research in Mei Village and Changing the Research Topic .....	30
2.3 Methods .....	34
2.3.1 Participant Observation .....	35
2.3.2 Multi-sited Research: Expanding the Field Sites and Moving between governance levels.....	38
2.3.3 Questionnaires .....	41
2.3.4 Choosing the Key Informants.....	42
2.3.5 Focus Groups .....	50
2.4 Multiple Positions: Advantages and Disadvantages.....	51
Chapter 3: Research Setting Context : The Zhuang Ethnic Group and Their Settlements .....	55
3.1 The Guangxi Zhuang Autonomous Region.....	55
3.1.1 The Zhuang in History.....	57
3.1.2 The Zhuang Belief System .....	63
3.1.3 Festivals of the Zhuang.....	66
3.1.4 The Language and Education of the Zhuang.....	70

3.1.5	The Zhuang Villages and the Transformation of Houses .....	74
3.2	Qinzhou City, Zhuang Towns, the River and The Settlements .....	79
3.2.1	Huangwutun Town .....	81
3.2.2	Xintang Town .....	82
3.2.3	The Maoling River and Six Villages along the River.....	90
3.3	Conclusion .....	94
Chapter 4:	The Commodity Chain of River Sand and the Ecological Consequences of River-Sand Mining .....	96
4.1	The Commodification of River Sand and Its Commodity Chain .....	96
4.1.1	The Increase in River Sand Prices and the Use of New Modern Technology .....	96
4.1.2	The Diverse Sand Sellers and Miners.....	98
4.1.3	A Sand Wholesaler in Qinzhou City .....	99
4.1.4	The Sand Market in Nanning City.....	100
4.1.5	Truck and Ship Owners for Sand Transportation.....	103
4.2	Sand Commodification's Ecological Consequences .....	105
4.2.1	Loss of Fish Species .....	105
4.2.2	Water Pollution.....	108
4.2.3	Destruction of Riverbanks and Adjacent Farmlands .....	110
4.2.4	Damage to Infrastructure: Roads and Bridges.....	114
4.3	Conclusion .....	116
Chapter 5:	Drivers behind the Commodification of River Sand .....	118
5.1	Project-based Development and Its Role in Sand's Marketization ..	119
5.2	Urbanization in Village Areas .....	122
5.2.1	Rapidly Expanding Township Areas .....	127
5.2.2	Rebuilding the Administrative Committee's Offices .....	130
5.2.3	Private House Construction in Rural Areas.....	131
5.3	The Infrastructural Projects in Rural Areas .....	134
5.3.1	Water Conservation .....	134
5.3.2	Two Case Studies of "One Project, One Discussion System" .....	136
5.4	The Counterproductive Aspects of the Project System in the Villages	

5.5	Conclusion .....	145
Chapter 6:	Ownership and Extraction Management of River Sand .....	147
6.1	The Related Laws of River-Sand Mining: River Sand belongs to the State .....	147
6.2	Horizontal Politics in Governing of River-Sand Mining.....	150
6.3	The Vertical Politics in Governing River-Sand Mining.....	155
6.4	Sand-Management Policies at the Provincial Level: Power Decentralization and Autonomy .....	162
6.5	River-Sand Auctions at Prefectural Level: Mining Licensing in Practice .....	164
6.5.1	The Problem of Auctions and its Governance.....	164
6.5.2	Corruption in and Mismanagement of the Sand-Mining License System.....	170
6.6	The Lack of Authority Governing River Sand at Township Level ..	177
6.7	Discussion and Conclusion.....	181
Chapter 7:	The Illegal Miners along the Maoling River .....	185
7.1	Legitimacy and Illegality: “Sand Belongs to Nobody”? .....	186
7.2	Illegal Sand-Selling Sites Upstream of the Maoling River .....	187
7.3	Illegal Sand Miners Downstream from the Maoling River .....	189
7.3.1	Case Study: The Family-Owned Company .....	190
7.3.2	The Outsiders and the Insiders: The Boom in Illegal Sand Mining ..	194
7.4	The Sand Production Methods Have Transformed from Mining to Crushing .....	203
7.5	Discussion and Conclusion.....	203
Chapter 8:	Zhuang Villages’ Perspectives on Property Rights: “This is Our Sand” .....	207
8.1	The Emergence of Sand “Thieves” and Ownership Problems .....	208
8.2	The “Blame Game” and the Complexity of Rights on the Commons .....	210
8.3	Selling Sand as Instructed by Government Officials.....	214
8.4	Villages Sold Sand, Thereby Defending Their Common Resources.....	217
8.5	An Illegal Sand Agreement and Its Implications.....	224

8.6	Discussion and Conclusion.....	228
Chapter 9:	Socio-Cultural Consequences of Illegal Sand Dredging .....	231
9.1	Agricultural Livelihoods.....	231
9.2	Social Disputes and Conflicts.....	234
9.2.1	Sand Conflicts: Hurling Stones at the Thieves .....	235
9.2.2	Struggles among the Natural Villages .....	237
9.3	The Tension between the Party Secretary and the Villagers: Revoking the Party Secretary’s Official Status .....	239
9.4	Social Media Petition.....	243
9.5	Sand Exploitation and Its Impact on Indigenous Belief Systems.....	246
9.5.1	Case One: The Supernatural Punishment of Violators .....	249
9.5.2	Case Two: Insects Infest Gods’ Trees .....	249
9.6	Discussion and Conclusion.....	253
Chapter 10:	Conclusion.....	256

## Photographs

Photograph 1: Checking and Confirming the Names and Land on the Maps and Documents in Mei Village .....	28
Photograph 2: The General Election of Nagan Village Committee's Leaders .....	45
Photograph 3: Lingtou Team in Huangwutun Town .....	68
Photograph 4: A Daily Scene of Morning Exercises at the Na Elementary School ....	73
Photograph 5: A Dry-column Building Can Still Be Found in Kuixi Township, Jingxi County, Guangxi .....	76
Photograph 6: The Traditional Houses (Sources: field data, 2017).....	76
Photograph 7: A New-style House in Xintang Town .....	77
Photograph 8: The Competitive Building of Houses, and the New Altar Hall.....	78
Photograph 9: A Farmer Watering His Paddy Fields (Source: field data, 2015) .....	84
Photograph 10: Sugar Cane Marketing (Source: field data, 2014).....	85
Photograph 11: Sanyou Market in 2017 Nanning City.....	101
Photograph 12: Importing and Exporting Sand in 2017 .....	103
Photograph 13: Zeng Pei's Boat for Clamming.....	108
Photograph 14: The Sand-Selling Sites on the Dam, and Big Dredgers on the River at Naxia Village .....	110
Photograph 15: The Collapse of Riverbanks .....	113
Photograph 16: Collapsed Bridge following Heavy Sand Mining by Dredgers.....	115
Photograph 17: Trucks Drive through a Wash Pool to Clean Their Tires of Sand and Mud before Entering the City Streets .....	116
Photograph 18: The 220-meter Road Project in Mei Village in 2015 .....	142
Photograph 19: The Broken Road and the Old Mud Irrigation Channel in 2017.....	144
Photograph 20: Invoice on the Confiscation of Illegal Sand-Mining Revenue .....	173
Photograph 21: The Chang Family's New Sand Dredger .....	192
Photograph 22: Two Big Dredgers in Nazhong Village's River Section and an Advertised Sign saying: Supplying Three Sizes of River Sand with Phone numbers .....	194
Photograph 23: Sand-Selling Sites.....	194
Photograph 24: Mr. Huang Performing a Rite for the Second-hand Dredger, and Mining Activities after Worship.....	197
Photograph 25: Illegal Sand-Selling Sites in Huangwutun Town .....	201
Photograph 26: Pan Jiu's Dredgers in Front of the Old and the New Bridge.....	212
Photograph 27: Receipts Recording the Village Sale of Sand in 2012.....	215
Photograph 28: A Shed beside the River at Naxia Village to Monitor the Sand Mining .....	221
Photograph 29: The Illegal Sand Agreement.....	225
Photograph 30: Farmer Storing and Transporting Sand to Grow Yams.....	233
Photograph 31: Villagers' Signatures on the Complaint Letter (left) and its Translation (right) .....	245

Photograph 32: Worshipping and Having a Banquet Together under the God Trees beside the River.....	250
Photograph 33: The Traditional Funeral and Labor Reciprocity.....	251

## Maps

Map 1: The Map of Three Villages Upstream of Maoling River .....	40
Map 2: The Location of Guangxi Province .....	56
Map 3: Map of Qinzhou City.....	80
Map 4: The Illegal Sand-Selling and Storage Sites in Huangwutun Town .....	92
Map 5: Dredgers near the Entrance of the Maoling River in Qinzhou.....	199

## Figures

Figure 1: Labor Situation in Mei Village.....	87
Figure 2: Number of Times Immigrant Workers Returned to Mei Village.....	88
Figure 3: Sand Import Record of a Sand Business Person in Xintang Town.....	97
Figure 4: Resource Ranking (N=29).....	111
Figure 5: Overview of Project System and Its Major Items .....	121
Figure 6: GDP, Fixed Assets, and Gross Industrial Output Value in Huangwutun Town .....	127
Figure 7: Public Rental Houses in Xintang Town .....	130
Figure 8: Renovation of Dangerous Buildings .....	133
Figure 9: Road Construction in Huangwutun Town.....	137
Figure 10: The Reports of a Joint Campaign in Qinnan District in 2017 .....	153
Figure 11: The Three Periods of Resource Governance.....	157
Figure 12: The River Chief System in GZAR and Qinzhou City.....	159
Figure 13: The Various Perspectives on the Ownership of River Sand .....	222
Figure 14: The Response to Disputes over the Extraction of Sand .....	223
Figure 15: Who are the Beneficiaries of Sand Mining? .....	223

## Tables

Table 1: The Fieldwork Phases.....	29
Table 2: The Research Sites in Qinzhou City .....	38
Table 3: Levels of Rural Power Structure and the Related Population .....	39
Table 4: Conducted Focus Groups.....	50
Table 5: Agriculture in Xintang Town.....	83
Table 6: The Statistics of Labor in Xintang Town .....	88
Table 7: The Migration Statistics of Xintang Town in 2014.....	89

Table 8: Fiscal Revenue and Expenditure in the First Quarter of Nagan Administrative Village in 2017.....	94
Table 9: Compensation to Households with Title Deed (House Property Certificate) .....	125
Table 10: Compensation to Household without Title Deed.....	125
Table 11: The Cost of Building a House .....	126
Table 12: Qinbei District Rental Housing Project Construction in 2015 .....	129
Table 13: Statistics on Completed Domestic Houses in Xintang in 2013 .....	131
Table 14: The Relevant Laws Regarding with Sand Management.....	148
Table 15: The Frequency of River Inspection .....	159
Table 16: Four Example of Corruption in Guangdong Province.....	174
Table 17: The Illegal Sand Miners in Nagan Administrative Village .....	188
Table 18: Sand Miners in the Territory of Nazhong Village .....	195
Table 19: A Selection of Dredger Owners in Huangwutun Town in 2016 .....	198
Table 20: The Age of the Respondents.....	221

## Notes on the Text

## Abbreviations

Abbreviation	Meaning
ANT	Actor-Network Theory
ASEAN	Association of Southeast Asian Nations
CCP	China Communist Party
CCTV	China Central Television
CJW	Changjiang Water Resources Commission
CLPRC79	Criminal Law of the People's Republic of China (in 1979)
CNS	China National Standard
CPC	United Nations Environment Programme
CPR	Common Pool Research
CPRM	Common-Pool Resource Management
EPB	Environmental protection bureau

EXPO	Exposition
FYP	Five-Year Plan
RS	Remote Sensing
GDP	Gross Domestic Product
GIS	Geographic Information System
HRS	The household responsibility system
RMB	Renminbi (ISO-4217-Code: CNY), the official currency of the People's Republic of China
3RS	The new Three-Runway System
TV	Television
UNEP	United Nations Environment Programme
USA	United States of America
FDI	Foreign direct investment
NGOs	Non-governmental organizations
OARs	Open-access regimes
CARs	Common-access resources
ANT	Actor Network Theory
PPPs	Public–Private Partnerships
PRH	Public Rental Housing

## Unit

Item	Describe	Calculation
Mu	The Chinese area unit	$1 \text{ mu} = 666.6666667 \text{ m}^2$
Yuan	CNY, also RMB, the Chinese currency	1 EUR = 7.9 yuan (In August 2017)



## Chapter 1: Introduction

This thesis focuses on the illegal mining of river sand, the actors involved, the complex policy environment in which this trade thrives, and its negative consequences in six Zhuang villages in southwest China. The dissertation adopts a political ecology perspective to understand how power relations at both formal/state and informal/local levels play out and contribute to an increasingly dangerous trade in river sand – ecologically, social-culturally, and economically. River sand has emerged as the latest natural resource that has been rapidly mined by diverse parties. This phenomenon, of course, closely relates to the political, environmental, hydrological, socio-economic and cultural situation. The study of sand mining is a fairly recent development in the history of political ecology (Krausmann, et al., 2009; Krause, et al., 2010; Maya, et al., 2012).

The emergence of China as arguably the fastest-growing economy in the world, whose GDP reached 74.4 trillion yuan (€ 10.009 trillion), and representing 6.7 percent growth, sees this country as outpacing most other economies (PRC, 2017). In 2012, China's urbanization rate exceeded 50% (Wen, 2012). This meant that China's urban population for the first time exceeded its rural population. In this respect, China's urbanization rate had entered a critical stage in development. There are significant changes to all aspects of life in adapting to the current wave of change. In terms of living standard, more than 6 million homes in rundown urban areas and over 3.8 million dilapidated rural houses were renovated (Li, 2017). For instance, the Report on the work of the Government in 2017 shows that,

*“Over 1,900 kilometers of new high-speed rail lines came into service, and more than 6,700 kilometers of expressways and 290,000 kilometers of rural roads were built or upgraded. Construction picked up pace on urban rail transit facilities and underground utility tunnels. Construction began on 21 major water conservancy projects” (Li, 2017).*

Due to the overwhelming number of state-driven constructions in both urban and rural areas, river sand is in high demand to support the construction-driven economy, including the rapid urbanization, numerous infrastructure projects, and building construction (e.g. Fidjett, 2003, Wu, 2008; Jia et al., 2007). According to the report on China Mineral Resources by the Ministry of Land and Resources in 2012, the mineral resources have made great contributions to the establishment of China's modern industrial system and provided support for the sustainable and healthy development of China's economy and society (MLRPRC, 2012). Nonetheless, the disparity between supply and demand of natural resources is increasingly conspicuous (Fidjett,

2003; Ho, 2006; Haller, 2010). Under this circumstance, river sand has been increasingly demanded, and hundreds of millions of trucks have been rushing to transport river sand mainly from rural rivers to various wholesale markets and various types of construction sites in rural and urban areas.

According to the report of the United Nations Environment Programme (UNEP) in 2014, China's demand for sand is greater than anywhere else in the world. It estimates the use of sand by analyzing the production of cement for concrete. One hundred and fifty countries had produced 3.7 billion tons of cement in 2012 (USGS, 2013a). For each ton of cement, the building industry needs about six to seven tons of sand and gravel (USGS, 2013b). China contributes heavily to this development, because it used 58% of the world's cement production, or 2.15 billion tons in 2012, while India used 6.75%, and the United States used 2% (USGS, 2013c). The demand for cement by China has increased by 437.5% in 20 years (1994 to 2012), while the use in the rest of the world increased by 59.8%. Each Chinese citizen is currently using 6.6 times more cement than a U.S. citizen (USGS, 2013a). This shows the relation between economic development (e.g. building booms) and resource consumption.

An article titled The Secret of Sand Shortage was published in Southern Weekly in China in 2019. It indicated that,

*“70,000 tons of sand and gravel are needed to build a highway per kilometer; and one kilometer of high-speed rail requires 80,000 tons of sand and gravel; about 800 kg of sand and gravel is needed in per square meter in construction of housing” (Liu, 2019).*

China's annual output of sand and gravel is 20 billion tons, making it the world's largest producer and consumer of sand and gravel in 2018 (MIIT, et al., 2019). Sand and gravel have become a huge industry, and have therefore become one of the most in-demand mineral resources in China, and an important support point for China to achieve a better life for its people.

In the last three decades, China's industrial revolution, rapid urbanization, and new socialist countryside construction have all been mainly based on the use of local cheap raw materials, cheap labor, and cheap imports from rural areas and other countries, including countries in Africa (Jiang, 2009), Southeast Asia, and South America, and have also depended on China becoming an increasingly important foreign direct investment (FDI) exporting country (Cai, 1999). These developments inevitably have significant implications in terms of both national

and international political ecology. In terms of sand as a resource, China had exported river sand to Japan, Taiwan, and South Korea for decades. However, the economic strategies and the rapid boom constructions have resulted in sand resource overexploitation all over China. Moreover, due to the increasing constraints of environmental policy in recent years, for instance in the form of environmental protection and water resources protection policies, the ban on river-sand mining in the country has tightened (CSSGLW, 2018a). The provinces and the authorities at and below the provincial level have carried out improvements of the River Chief System (河长制) (see Chapter 6). Thus, sand mining in many rivers has been shut down. Since 2017, China has begun to import river sand from Southeast Asia (CSSGLW, 2018b), and even from Africa (Mwesigye, 2018), to supply the increasing domestic construction demand. For example, the Shanghai Association of Sand and Gravel has begun dealing with high-quality sand and gravel suppliers, and begun importing river sand from the Pahang River in Malaysia in 2018. Meanwhile, according to the Report of the Chinese Sand and Gravel Association, the price of river sand in more than 20 areas has rapidly increased since the beginning of 2017; in some areas river-sand prices reached 220 yuan (€ 28) per ton in June 2018, compared with 110 yuan (€ 14) in June 2017 (China Sand-Stone Association, et al., 2018). Indeed, Hunan Province's river-sand prices soared, increasing nearly sixfold, as the ex-factory price exceeded 180 yuan (€ 23) per ton (China Sand-Stone Association, 2018).

On the one hand, the prices of global raw materials have risen, triggered by the demand of China's market. On the other hand, there are significant domestic changes to all aspects of life in adapting to the current wave of change, i.e. a lot of individuals can now afford to expand their personal luxuries and build even bigger, resource-intensive houses, among other examples.

There are various kinds of sand in China, categorized based on the sources of sand, including river sand, sea sand, desert sand, and crushed sand. According to the Standard for engineering classification of soil (GB/T 50145-2007) in China in 2007, there are classification methods for sand based on the average diameter of sand grains (between 0.075 mm and 2 mm, or bigger than 2 mm) for engineering and construction purposes (Zhu, et al., 2015). According to Jensen and Bateman (1979), "sand includes almost any comminuted rock or mineral, but technically it is restricted to quartz sand with minor impurities of feldspar, mica, and iron oxides" (Quoted in Sreebha S, 2008, p. 2).

The natural properties of river sand determine its value. The salinity of sea sand means that it

contains chlorine ions, which will cause corrosion of steel and make structures built of it susceptible to erosion (e.g. Hong, 2002, 2004). Desert sand is too small- and too round-grained to be bound well, and might contain alkalis (Wang & Li, 2014; Zhu, et al., 2015; Bagnold, 1954). Under these circumstances, river sand has become a “golden material” in the construction market, and is eagerly extracted by sand miners (see also Kondolf, 1997). River sand is a finite resource, an inseparable and important part of rivers, and plays a vital role in the river ecosystem (see also Sreebha S, 2008; Wu, 2008). River-sand dredging has resulted in severe damage and environmental impacts (Ladson and Judd, 2014; Collins and Dunne, 1987; Collins, 1991; Padmalal et al. 2005, 2008; Kondolf, 1994a; Kondolf et al. 2002; Kanehl & Lyons, 1992; Jia et al., 2007; Wu, 2008; Klingeman et al., 1999; Soman, 1999; Harvey & Smith 1998).

Wu (2008, pp. 110-111) observes that there are four types of sand mining in China:

1. Construction-oriented sand mining, or the sand-mining supplying the construction material market;
2. Sand mining for filling and land-making, when sand is used to fill construction foundations, or for land-making purposes;
3. Public welfare purposes of sand mining, or sand mining for reinforcement of dams and riverbanks, river regulations, and waterway dredging;
4. Mineral-based sand mining, sand mining for the purposes of obtaining minerals.

This dissertation focuses on the first category, sand mining for constructing infrastructure and houses. In particular, it focuses on illegal sand-mining activities (unlicensed mining) and their governance since the 1980s. Illegal river-sand mining and governance reflect the more general situation of resource exploitation and governance in the world’s second-largest economic country – China – which has become an emerging state for processes of marketization of natural resources; in this case, river sand. This thesis reveals the scarcity of river sand, apart from land, water, and energy, and asserts that it is one of the main resources for supporting China’s development, in turn transforming China’s economic model from an export-led model to a domestic consumer-led model.

Even though China seems to achieve “better” modernization compared to other developing countries in regard to its economic achievements, it has faced many severe environmental crises, such as water pollution, air pollution, waste pollution, land degradation, biodiversity losses,

cropland losses, depleted fisheries, seasonal flooding, drought, and health and social consequences (Wong, 2013; Diamond, 2011; Shapiro, 2001, 2012; Lewis, 2015; Lora-Wainwright, 2013; Stern, 2013; Liu & Diamond, 2005). These environmental issues in China have severely impacted nature and the Chinese people. In the last decade, China has had to face the increasing scarcity of its river sand and the negative social-cultural and ecological consequences of river-sand mining.

Ho (2006, pp. 3, 11) points out,

*“China’s development poses the greatest environmental challenge for the modern world in terms of speed, size, and scarcity. (...) China’s large population; its explosive economic growth and the increasing socio-economic cleavages which result; and its relative shortage of natural and energy resources. These three factors together imply that China will have a profound environmental impact at the global level.”*

Nonetheless, the severe environmental consequences of river-sand mining are unequally distributed all over China. While river sand has been overextracted in the Yangtze River and Huai River in eastern China, some other rivers have just started to experience illegal sand mining, such as the Left River, on the border between Guangxi Zhuang Autonomous Region and Vietnam. Thus, river-sand mining has various influences in different places depending on the location, economy, culture, ethnic groups, religious, and political-social situation.

China has many minority groups with diverse original ethnic ecological knowledges. Therefore, how does illegal river-sand mining take place in the minority regions? And what is the role of the original ecological knowledges in the processes of the river-sand crisis? This dissertation is based on long-term ethnographic research among members of the largest minority group in China – the Zhuang minority in Guangxi Zhuang Autonomous Region – to study the crisis of illegal river-sand mining. It describes the implications of sand mining in six Zhuang villages in two towns. The findings show that economic and social developments have been mainly driven by the state, accompanied by the commercialization of natural resources and rural labor.

Meanwhile, the sand crisis reveals the complex issues that are involved in both formal and informal institutions’ river-sand management. The issues of environmental and ecological conservation and resource overexploitation have engaged with the indigenous ecological knowledge in the form of the customs, beliefs, and social relationships of the Zhuang People. The struggles among state policies, local communities, and market forces are explored in detail in this research to illustrate the actual social-cultural and ecological transformation in the

Zhuang villages in southwest rural China.

By applying a political ecological approach, this study further explores the dynamics of ownership regarding access to and control of river sand in the rural Zhuang villages of China, with specific reference to Qinzhou City in Gaungxi Zhuang Autonomous Region. Formal institutions (laws and government) have often been blamed for ineffectively managing the river sand. The efficacy of these institutions in controlling illegal operations and in mediating arising disputes is questionable. (e.g. Wu, 2008; Hou, 2011; Li, 2006). The interconnectedness of current economic changes, cultural dynamics and politics on natural resource management will also be demonstrated.

The Chinese constitution is ambiguous about the details of ownership, protection, and management of river sand. According to the 1954 Constitution (Article 6), and in the 1982 revision under the Deng Xiaoping administration (Article 9), all natural resources fall under state ownership, which by extension was described as therefore under the ownership of the people. “The state ensures the rational use of natural resources and protects rare animals and plants. The appropriation of or damage to natural resources by any organization or individual by whatever means is prohibited” (CPRC82, 1982, p. Article 9). Based on the Resources Law of the People’s Republic of China, natural quartz sand belongs to the non-metallic minerals, which are owned by the state. Article 10 of this Law also states:

*“In mining mineral resources in national autonomous areas, the State should give consideration to the interests of those areas and make arrangements favourable to the areas’ economic development and to the production and well-being of the local minority nationalities. Self-government organs in national autonomous areas shall, in accordance with legal provisions and unified national plans, have the priority to develop and utilize in a rational manner the mineral resources that may be developed by the local authorities.”*

The issuing of sand-mining licenses is the major approach in governing state-owned river sand. According to Article 39 of the Water Law, “measures for implementing the licensing system for sand quarrying in river courses shall be formulated by the State Council.” Moreover, sand-mining licenses can be issued by any level of government at or above county level, and there is great flexibility in the ability to grant sand-mining licenses. Thus, it seems that the ones who are mining river sand with a governmental license are legal, while the unlicensed miners are illegal.

However, there is a different situation regarding individual usage rights to river sand in rural

China. It is important to note that the central government decentralized the power to manage river sand by allowing the regional government to establish regional laws and institutions for sand management. The Guangxi Zhuang Autonomous Region established its sand-government institution in 1992. According to the reform record, the sand-government institution has been renewed every ten years to take into account the changing circumstances of sand mining. In November 2016, the Autonomous Regional People's Congress adopted the Guangxi Zhuang Autonomous Region River Sand Mining Management Regulations. These were implemented on January 1, 2017. Guangxi Zhuang Autonomous Region River Sand Mining Management Regulations (SCPCGZAR 2016, Article 14) say that rural residents can take less than one hundred cubic meters of sand for self-built houses, and that satisfaction of the demand for the construction of public infrastructure in the village must rely upon the river for sand mining, which is outside restricted areas and which is not subject to either mineral-sand licenses or sand-mining fees. The right to use river sand is considered a crucial right of rural residents and rural villages in Guangxi Zhuang Autonomous Region. This is because many rural Zhuang villages are located in close proximity to rivers, and many rivers are part of the village communities' territories. Rivers and river sand have been considered as a communal property of riverfront communities. It can be observed that the local riverbank dwellers have long interlinked their social-cultural life with rivers. In short, the long-term customary right to use sand cannot be regarded as being excluded by law-governing institutions in Guangxi. This study examines how different stakeholders are involved in river-sand extraction. It also explains different types of user rights and discourses in the Zhuang villages of southwest China in terms of uncontrolled resources. It is also of interest to know what kind of resource-management institutions have emerged to deal with the control of natural resources, how they have emerged, and why these institutional dynamics of river-sand governance in Southwestern China have resulted in a fragmentation of power.

Some scholars have studied sand mining and the river system. G.M. Kondolf, for example, is an outstanding example. Kondolf's writings (1993, 1994a, 1994b, 1995a, 1995b, 1997, 1998a, 1998b) emphasize the issue of sand mining, riparian zone management, and stream channel processes as they related to natural resource management in California and beyond since 1993. Meanwhile, dissertations have also been written studying the sand-mining issues. For instance, S. Sreebha's dissertation (2008), "The environmental impact of sand mining: A case study in the river catchments of Vembanad Lake, Southwest India", explains the linkage

between sand mining and ecological degradation of rivers and lakes due to population growth and economic development. Krishnakumar's (2002) research focuses on the topic of environmental degradation of two river basins of southern Kerala in India.

However, these studies seldom apply a political ecology approach to analyze the river-sand mining and to investigate how the stakeholders engage in the mining process. Fundamentally, the interrelationship of power, discourse, knowledge, and conflict needs to be further explored. Political ecology provides a crucial lens and key tools to explore river-sand mining issues by illustrating the multiple actors involved, and investigating the conflicts, river degradation, indigenous knowledge, and human-river interaction.

### **1.1 A Brief History of River-Sand Mining: A National Level Perspective**

China has an abundance of rivers and lakes<sup>1</sup>. According to the website of Changjiang Water Resources Commission (CJW), the Yangtze River is a key river in China's river system, which was governed directly by the state council even before the People's Republic of China was established in 1949. The central government established the Yangtze River Commission to govern the river during the administration of the Republic of China (1912-1949). Since 1949, the Ministry of Water Resources of the People's Republic of China has become a major authority responsible for governing the river. To effectively implement river management, the central government decided to follow the path taken by previous administrations, and maintained the Yangtze River Water Conservancy Commission beginning in February 1950 and subordinated it to the Ministry of Water Resources<sup>2</sup>.

According to Wu (2008), illegal sand mining became a huge issue in the Yangtze River in the beginning of the 1970s. Along with the economic development, the massive demand for river sand increased rapidly, which triggered sand-mining activities in the middle and lower reaches

---

1 There are 45, 203 rivers in China with a basin area of more than 50 square kilometers, with a total length of 1.5855 million kilometers. There are 2,865 natural lakes, which have a perennial surface area of one square kilometer, with a total lake surface area of 7.8 million square kilometers. The Yangtze River, with a length of 6,300 km, is the third-longest river in the world (National Bureau of Statistics, 2001: 5-7).

2 The commission management pattern has been implemented to six other rivers and one lake. These include the Water Conservancy Commission of Huanghe (Yellow) River, the Water Conservancy Commission of Pearl River, the Water Conservancy Commission of Songliao River, the Water Conservancy Commission of Huai River, the Water Conservancy Commission of Hai River, and the Administrative Bureau of Taihu Lake. They are directly governed by the Ministry of Water Resources of the People's Republic of China. All of the mentioned rivers and lake have problems with sand-mining management.

of the Yangtze River. The sand-mining boom occurred mainly due to the economic development of Shanghai and the Jiangsu Province (started in 1970) and the construction of various enormous dams, such as the Gezhou Dam (launched in May 1971) and Three Gorges Dam (began in December 1994), which demanded a great amount of river sand (see also Wu, 2008, p. 76).

Furthermore, it is also important to mention the shifting of the governance targets for the Yangtze River. Before the 20th century, the major problems concerning rivers were the safe governance of water traffic, flood control, the effective implementation of national projects, and the effective management of water resources (Wu, 2008). Combating illegal river-sand-related activities became the major target of the Yangtze River Commission in the 1970s and reached a peak in the 1990s (Wu, 2008, p. 1). At that time, the institutions and policies responsible for sand mining were far behind the actual mining processes. “Vacuum” was a term used to address the circumstances surrounding sand management at that time (Cai Qinhua, quoted from Wu, 2008, p. 2).

*“Before the ban on mining river sand in the middle and lower reaches of the Yangtze River in 2001, the amount of sand was allowed to excavate from the river sections in Hubei, Jiangxi, Anhui and Jiangsu provinces about 53 million tons. But the total amount of sand mining was far greater than 53 million tons” (Wu, 2008, p. 2).*

Wu (2008, pp. 3-4) further points out “rampant illegal sand mining and visible riverbank collapse, soil erosion, riverbed destruction, water pollution, the disturbance and endangerment of the reproductive habitat of rare dolphins, and social unrest in the regions around the river as evidence for the management crisis.” Indeed, a huge flood in 1998 forced the government to take action to prohibit any river-sand mining.

Facing the extreme chaos of river-sand mining, the state council established the Regulations on Sand Mining Management for the Yangtze River in 2001, which aims to govern sand mining in the river and set an example for other rivers’ sand-mining management (Wu, 2008). The Yangtze River has its own special institution in terms of sand-mining management. According to the regulation, the scope of their governance extended from Yibin City in Sichuan Province to Hubei Province, Hunan Province, Jiangxi Province, Anhui Province, Jiangsu Province, Chongqing municipality and, by extension, to Shanghai municipality, which includes a total of six provinces and two province-level municipalities. The Regulations on Sand-Mining Management on the Yangtze River empower the Ministry of Water Resources and its

subordinate authority and the Yangtze River Water Conservancy Commission, two major organizations governing the Yangtze River's sand.

In the last two decades, China has established a series of national policies on sand management. The Ministry of Water Resources held a national conference on sand management at the Yangtze River in 2004. The Deputy Minister, Mr. Chen, gave a public talk at the conference and announced that sand governance had made great progress. He said that new sand policies, institutions, and departments concerning sand management had been established at all levels in China since 2002, and that the ministry had built infrastructure to improve river-sand management. There were more than 150 agencies (collectives) entrusted with the task of sand-mining management and the enforcement of related laws (Chen, 2004).

While the Ministry of Water Resources celebrates the “positive outcome” of the first coherent sand-management strategy, the problems of illegal sand overexploitation in Chinese rivers are getting worse, including issues such as inadequate administrative supervision, low illegal mining costs, corruption, inefficient management, and rampant illegal sand gathering (Wu, 2008; Zhu, 2018, 2019). The illegal sand-mining activities have occurred in major lakes, rivers, and even oceans. In fact, due to the huge demand for river sand, the “efforts” to enforce sand-mining governance were not enough. In 2009, the Ministry of Water Resources and the Ministry of Transport signed the “Strengthening of the Yangtze River Sand Mining Management Cooperation Memorandum”, paying full attention to functional advantages and working together in order to rigorously proceed against illegal sand mining and to maintain control over sand mining in the Yangtze River, thus promoting a sustainable situation. In 2015, the same two ministries further called for the implementation of the responsibility system for sand-excavation management at the Yangtze River and the implementation of the accountability system (MWR, et al., 2015). The cooperation emphasized the need to scientifically plan sand excavation along the Yangtze River, and issued a draft for sand excavation in the upper reaches of the Yangtze River (2015-2019), as well as implementing clearly planned management requirements and measurements. At the same time, they organized the preparation of the Yangtze River's middle and lower reaches, and a flow plan of the river channel (2016-2020) (MWR & MTPRC, 2016).

In August 2015, the Ministry of Water Resources, the Ministry of Land and Resources, and the Ministry of Transport jointly released an official document titled the “Further Strengthening of

River Sand Management Notice.” Unfortunately, three cases of illegal sand mining were broadcasted by the “Economic 30 minutes” of China Central Television (CCTV) between January 21 and 23, 2016. On three consecutive days, it reported sand-management failures in the Henan Province, the Jiangxi Province, and the Hainan Province, where sand had been illegally extracted. The reports exposed the chaos within sand management, from the auction of sand-mining licenses, to issues in law enforcement and supervision in these three provinces. The report pointed out that the same three ministries had jointly issued a significant notice in 2015 (the above-mentioned notice), calling for a clear division of responsibilities, strengthening the management of sand mining and combating illegal sand appropriation.

The increasing environmental protests and complaints, including the shortage of clean water, arable land, and raw natural resources, have forced the government further to establish national institutions and policies for constructing a harmonious society and a sustainable economy. Significantly, “Construction of ecological civilization” which was raised in the 18th National Congress of the Communist Party of China in 2012 has become a slogan and national policy in China (Ma, et al., 2018). Under these latest political reforms, more and more provinces have taken action to reconstruct the environmental governance and resource conservation policies, e.g. the implementation of the River Chief System in 2016 (see also Liu et al. 2019). Significantly, on June 19, 2018, the Notice of the General Office of the Ministry of Water Resources on Launching the National River and Lake Sand Mining Special Remediation Action was issued to all provinces and authorities in China, it states that,

*“Illegal sand mining seriously affects the stability of the river and threatens flood safety, navigation safety and ecological security. According to the requirements of the central government for the full implementation of the River Chief System, the river chiefs and lake chiefs at all levels are responsible for leading the organization to clean up and rectify the outstanding problems such as illegal sand mining. Further strengthen the management of sand mining in rivers and lakes, severely crack down on illegal sand mining, and earnestly safeguard the healthy life of rivers and lakes. After research, from June 20, 2018, the Ministry of Water Resources organized a six-month river and lake mining nationwide” (MWRPRC, 2018).*

As a consequence of this governmental policy, illegal sand mining in rivers, lakes and ocean has been stopped in many provinces. Some local policies have been made with the same purpose, in order to effectively implement the Notice and related policies. However, there are still problems that need to be dealt with in order to further implement the state’s policy. The unclear boundaries of rivers and lakes have failed the Notice issued by the Ministry of Water Resources.

On December 20, 2018, the Notice of the Ministry of Water Resources on Accelerating the Delimitation of the Management Scope of Rivers and Lakes was issued by the Ministry of Water Resources due to the implemental result and the existing issues. This Notice directly points out that:

*“Demarcating the scope of rivers and lakes management according to law and clarifying the boundary line of rivers and lakes management is the foundation for strengthening the management of rivers and lakes. It is also the provision of the Water Law, the Flood Control Law, the River Regulations and other laws and regulations, and it is also comprehensive in the central government. It is the mission requirement in order to carry out the River Chief System” (MWRPRC, 2018b).*

In July 2018, the Notice on Launching Special Actions for Governing Violations of Sea Sands were jointly issued by eight ministries (agencies), including the Ministry of Housing and Urban-Rural Development, the Ministry of Public Security, the Ministry of Natural Resources, the Ministry of Ecology and Environment, the Ministry of Transport, the Ministry of Water Resources, the Ministry of Commerce, and the State Administration of the State of the People’s Republic of China due to the severe ecological and social consequence of illegal sea-sand mining. Sea sand has been over-mined to supply the construction market, which has led to significant issue in construction quality. Therefore, the eight departments at the national level have joined together to severely crack down on illegal sea-sand mining, trading, and use (MOHURD, 2018).

The above efforts toward effective sand governance were made at the national level, at which new cooperation was hoped to eliminate illegal sand mining, but the illegal sand appropriation still took place despite these new national policies. According to Li (2005, p. 391), “[T]he effects of planned interventions have to be examined empirically in the various sites where they unfold.” Yeh (2015, p. 623) furthered this argument by saying “how specific state interventions play out in their encounters with local agents whose subjectivities are shaped but not fully determined by state power.”

Indeed, similar situations of illegal sand mining have taken place in southwest China. On the one hand, the consistent in-stream sand mining, and in particular the overexploitation of riverbeds and riverbanks, has changed the physical structures, waterways, and appearance of rivers and has resulted in damage to river ecosystems, the loss of fish species, loss of land, water pollution, and riverbank collapse. Furthermore, the volume of sand being extracted is having severe, multiple impacts on rivers, lakes, deltas, and coastal and marine ecosystems (Kondolf,

1997; Kondolf et al., 2002; Padmalal et al., 2008; Sreebha S., 2008, Galero et al., 1998; Norman et al., 1998; Galay, 1983). Based on UNEP in 2014, sand and gravel are now being extracted at a rate far greater than that of their renewal (UNEP, 2014). Nonetheless, little attention has been paid to river-sand mining and its consequences worldwide (e.g. UNEP, 2014; Sreebha S, 2008).

## **1.2 Overarching Objective and Research Questions**

The main objective of this dissertation is to analyze illegal river-sand mining and its negative consequences in six riverfront Zhuang villages. By depicting the processes of the commercialization of river sand by diverse actors and their impacts on the river ecosystem, on disputes in the riverine communities of the Zhuang, and on sand governance, this study intends to provide new insights into this resource crisis to address power relations, institutions, culture, beliefs, narratives, conflicts, and peace-building in the context of the Zhuang communities in southwest rural China.

In order to achieve this objective, this thesis is guided by the following questions:

- 1) What drives the commodification of river sand in rural China?
- 2) How do competing rights of ownership of river sand affect its governance?
- 3) What is the role of the Zhuang communities and their ecological knowledge of the river-sand resource in the context of the river-sand crisis?
- 4) What are the social-cultural, economic, and ecological impacts of the ongoing market-oriented sand exploitation?
- 5) Which actors play a critical role in the commodification of river sand, and how does this multiplicity of actors create issues in the management of a “common-pool” resource among the six villages studied? This comprises questions such as: who is monitoring the public river sand? Who is sanctioning the offenders? To whom are such cases reported, and what action should be taken regarding the disobeying persons?

To answer these questions, an ethnographic study of 13 months’ duration was undertaken in order to investigate first-hand data on how the actors and institutions are involved in the extraction and management of this resource, and to gain an understanding of the various factors, such as decision-makers, diverse actors, conflicts, culture, beliefs, as well as environmental policy-influences, on the management of this resource.

### **1.3 Literature Review**

Political ecology has been a major approach for exploring natural resource management and common property, and its popularity has grown swiftly in the last three decades (Robbins, 2012; Blaikie, 1985; Blaikie & Brookfield, 1987; Vayda, 1983; Atkinson, 1991; Hecht & Cockburn, 1992). In terms of river-sand mining management and its consequences in China, Yuan and Liu (2000), Li (2006), Wu (2008), and Hou (2011) studied the river-sand crisis by focusing on the weakness of sand-mining institutions and management in China. Jia et al. (2007, pp. 197-198) studied the impacts of the large amount of sand mining on riverbed morphology and tidal dynamics in the lower reaches and delta of the Dong River in China by pointing out that sand dredging caused a substantial impact on the riverbed evolution, tidal level, tidal wave spread and other hydrological changes of the river. Other impacts of river mining have also been pointed out with regard to various rivers in China (Han, et al., 2005; Mao & Huang, 2004; Zhang, et al., 1996). Nonetheless, these writings either focus on environmental (e.g. physical, chemical, and biological) impacts, or on political and social consequences.

There is a gap in research on river-sand mining in China, especially from a political ecological approach. In this section, I try to link sand exploitation in rural China to three theoretical approaches, namely political ecology, property theory, and indigenous ecological knowledge, by illustrating how they apply to river-sand mining in the context of southwest rural China. Furthermore, the chosen six villages are Zhuang villages, where Zhuang history, culture, resource management, and ecological knowledge both shape and are shaped by the river; thus, the indigenous ecological knowledge of the Zhuang is rather special in terms of river-sand mining in their territories.

#### **1.3.1 Political Ecology**

The intensifying environmental crises and resource impoverishment worldwide have stimulated scholars to seek a new lens to interpret the issue of environmental degradation. From 1970 onwards, political ecology has played a crucial role in illustrating the complex causes of environmental degradation, resource exploitation, and political processes. Political ecology consists of “empirical, research-based explorations to explain linkages in the conditions and change of social/environment systems, with explicit consideration of relations of power” (Robbins, 2004, p. 12). It further explores “the relations between human society, viewed in its bio-cultural-political complexity, and a significantly humanized nature” (Greenberg & Park,

1994, p. 1). Notably, political ecology has broadened its concern to cover a wide range of topics (Vaccaro, et al., 2013, p. 255), including “access to and control over resources; marginality; integration of scales of analysis; the effects of integration into international markets; the centrality of livelihood issues; ambiguities in property rights and the importance of informal claims to resource use and access; the importance of local histories, meanings, culture, and ‘micropolitics’ in resource use” (McCarthy, 2002, p. 1283).

Importantly, political ecology has also explored conflicts and social movements, institutions, capitalism, identity, entitlements, gender, risks, vulnerability, and resilience. These themes, of course, also connect to “a range of actors, typically including agrarian communities, indigenous peoples, state agencies, non-governmental organizations (NGOs), corporations, and global and transnational governance institutions” (Neumann, 2015, p. 391). This complexity of themes and various actors, as well as their different places, have been studied in a broad range of empirical contexts.

Indeed, political ecology provides “key tools” and an important alternative framework to scrutinize land issues by illustrating “the contention, power, institutions and scales” (Walter, 2014, p. 21). Yet this approach has rarely been used in China’s context, where environmental woes and resource scarcity are burdening development, and can have severe effects beyond China itself (Ho, 2006). Therefore, China’s situation increases the demand for critical research in the field of political ecology to explore the complex relations between economic development, rising environmental upheaval, and environmental governance (Xie, 2015; Yeh, 2015). Nonetheless, “among the dozen major edited volumes and textbooks on political ecology published in English since the mid-1990s, only two include case studies from China” (Yeh, 2015, p. 619). Nevertheless, my own literature review shows that there are more and more case studies in the field of political ecology in China<sup>3</sup>. Furthermore, many of the works are written in Chinese<sup>4</sup>.

---

<sup>3</sup> For instance, Linda HersHKovitz (1993) published her article “Political ecology and environmental management in the Loess Plateau, China” in the *Journal of Human Ecology*. See also Bryan Tilt’s (2007) work: “The political ecology of pollution enforcement in China: a case from Sichuan’s rural industrial sector” and Emily T. Yeh’s (2000) work: “Forest claims, conflicts and commodification: The political ecology of Tibetan mushroom-harvesting villages in Yunnan Province, China”.

<sup>4</sup> In Baidu Scholar (the equivalent of Google Scholar in China), when I typed “political ecology” (政治生态学), I received 465,000 results, including “The Impact of Ecological Environment on the Political Life in New China: From the Perspective of Political Ecology” (Duan et al. 2000), “Ecological Theory of Politics: Ecological Investigation of Political Development” (Liu, 2007), “Marxism and Ecology: From Political Economy to Political Ecology” (Barratt and Yang 2009); and “International Experience of Political Ecology and China Practice” (Zhang, 2015).

Yeh (2015, p. 619) further points out that “such limited attention is disproportionate to China’s weight in the world, whether geopolitically, economically or in terms of its territory and population”. Yeh argues:

*“This lacuna is undoubtedly related to the contingencies of scholarly lineages and networks. In the USA, China geography as a subfield emphasizes urban and economic geography, rather than political ecology or political geography. But the lacuna also reflects Chinese state control on scholarship, which affects foreign researchers’ access while encouraging scholars in China to use the language and analytical lenses of the state” (ibid., p. 619).*

This control will hinder scholars’ ability to figure out the numerous reasons for the vicious cycle of environmental crisis (Economy, 2007; Smil, 1997) and the impoverishment of the major resources in China (Chen & Xu, 2017). In the end, more detailed ethnographic work is needed (Xie, 2015; Yeh, 2015). This dissertation specifically pays attention to the rural spaces and, for instance, to the role of local governments and communities. River sand plays a crucial role in riparian communities (see Clark 1996). Rivers and river sand have long been considered a communal property of riverfront villages (see also Zhu, 2018; 2019). It can be observed that the local riverbank dwellers link their social-cultural life to rivers (Liu, 1995; Marks, 1996, 2004). From the historical perspective, rivers and river environments have been shaped by these villages’ activities. Meanwhile, river landscapes have shaped the riverine society as well. Under this circumstance, river-sand mining has caused many disputes and conflicts in those rural Zhuang villages where river-sand extraction occurs.

My intention is to contribute a detailed ethnographic work to further the academic debate. Combining politics and ecology (Bryant & Bailey, 1997; Robbins, 2012), rather than apolitical (Forsyth, 2008) or depoliticized approaches (Swyngedouw, 2015), will facilitate a new lens to look at the critical problems of the river-sand crisis. It will address the interactions between various actors, political institutions (Peet & Watts, 1996), narratives and stories (Escobar, 1996), and environmental change (Watts, 1985), eventually providing new insight into modern China’s human–environment relationships.

### **1.3.2 Property Rights Theory**

Property rights are vital in the management of river sand, and its distribution, use patterns, and commercialization. In the cases of the research settings, the ownership of river sand is an ambiguous right because diverse actors have claimed different property rights. Therefore, this

study also takes property rights theory into account, as it deals explicitly with the processes used by the institutions,<sup>5</sup> both formal and informal (North, 1990) that govern the river sand. Property rights refer to some forms of recognized or formal ownership (Schlager & Ostrom, 1992). In the following section, I will present three major common approaches, including common-pool resources (CPRs), common-property resource (CPR), and common-access resource (CARs) approaches.

Ostrom's works on common-pool resource management (1990, 2000, 2008) are so valuable that her models are already being applied in government policy choices, with self-government, as part of the decentralization of environmental management, happening around the world (Ostrom, 1990). In Ostrom's definition, "the term common-pool resource refers to a natural or man-made resource system that is sufficiently large as to make it costly (but not impossible) to exclude potential beneficiaries from obtaining benefits from its use" (Ostrom, 1990, p. 30). She argues that apart from privatization and state management, self-government is a suitable approach to manage the common-pool resource under a set of critical conditions (design principles) (Ostrom, 1990, p. 90).

In many instances, policy shifts are redefining communities, resource management, and local arrangements to govern the common resources (Agrawal, 2003, p. 243). Li (1996) states that many governments have decentralized environmental management and community-based conservation programs (quoted from Agrawal, 2003, p. 243). Some known examples in Africa include Namibia, Botswana, and Zimbabwe, which have successfully introduced community-based management of natural resources.

Apart from common-pool resources, a common-property resource (CPR) is a resource owned by a group of people which is normally relied on for subsistence (Sinn, 1984; Mawere, 2013). Common-property regimes, as opposed to open-access regimes (OARs), have been regarded as important enhancers of collective action in natural resource conservation. This is contrary to Hardin's (1968) thesis of "The Tragedy of The Commons", in which he said land degradation is high in common-pool resource regimes because users compete to maximize gains from the resources, a notion that for decades had a profound influence on how the common-property

---

<sup>5</sup> North's (1995:15) classification of institutions includes formal rules (the constitution of a state) and informal institutions (convention, norms).

regimes were studied .

The Gordon model (1954) of fishery bio-economics demonstrates that common-access resources (CARs) are usually over-harvested. Individuals will exploit CARs until a bionomic equilibrium is reached (where the total revenue equals total cost). The common-property resource regimes have been well studied, especially in Africa. Scholars focusing on CPR have grappled with the question of whether communal resources are really common-property or just common-access resources (CARs), with the latter translating to open-access. Swallow (1990), shows that in a CPR regime there is “No single individual has exclusive rights to the income generated”, but the group manages them and governs access. Most common-property resources would fail to completely meet the requirements of a CPR regime, and thus would be partly open-access, while others will be closer to being private property. Generally, people want to manage a CPR from which they can benefit more than others (Campbell, et al., 2001).

Schlager & Ostrom (1996) suggest property rights institutions are best seen as “sets of rules that define access, use, exclusion, management, monitoring, sanctioning, and arbitration behavior of users with respect to specific resources” (Quoted from Bresnihan, 2016, p. 106). Aldo Leopold pointed at such institutions’ linkages to environmental degradation: “We abuse land because we regard it as a commodity belonging to us” (Leopold, 1968, pp. iii-ix).

If we study the Constitution of China and the Property Law of the People’s Republic of China passed in 2007 (NPCPRC07, 2007) on codified property rights, we see that there are three types of ownership: state, collective, and private. Historically, there have been several property regimes that have shifted many times in rural China. For instance, land could be collectively owned (village- or group-owned), or state-owned<sup>6</sup> (Ho, 2001, 2015). These ownership forms were unclear in regard to their economic development and legal implementation. Unclear land- and property rights have resulted in unstable alliances between real estate companies and local authorities, and the results have been devastating. The real situation of multi-type common resources and land use makes the boundary between ownership rights and usufruct rights fuzzier. According to Ho (2015, p. 355),

*“[d]espite theoretical foundations to the contrary, the country’s capitalist growth over the approximate past three decades has occurred without formalized, legally protected property*

---

<sup>6</sup> Land could be privately leased (individual-, household-, or company-owned), but the ownership is vested in the country or the collective (Ho, 2001)

*rights. In fact, it appears that the cadaster results from development rather than being an institutional precondition.”*

The 1982 Constitution provided for the “Socialist Public Ownership” of the means of production, which takes two forms: state ownership, and collective ownership. Many resources were claimed by the state, while in rural areas, the majority of land and resources are claimed by communities collectively. As far as river sand is concerned, the constitution makes clear that all the mineral resources belong to the state (CPRC54, 1954; CPRC04, 2004). The state council represents the country in governing the use of sand.

The most recent development was the enactment of the Property Law in March 2007 (after 14 years of debate), which has been noted as one of the most important core components of the evolving civil law in the People’s Republic of China (PRC). The common property rights have not changed much, while the private property rights have changed a lot<sup>7</sup>. The lack of clear laws, and the overlapping duties in terms of authority, has led to the failure of sustainable developments in the use of river sand, which will be presented in Chapter 6 and Chapter 8.

### **1.3.3 Indigenous Ecological Knowledge of the Zhuang**

In this era of environmental crisis, indigenous ecological knowledge (e.g. traditional philosophy/religion or local ecological knowledge) has attracted considerable interest as a potential means to deal with specific environmental issues (Aswani, et al., 2018; Duara, 2015; von Glasenapp & Thornton, 2011; Senanayake, 2006). China’s population includes 55 minorities in addition to the Han majority. Like many developing countries, the minorities and the Han Chinese are on their way towards modernity accompanied by unsustainable development and environmental crisis. The question is: can the ecological knowledge of minorities help to construct a sustainable future in the era of boom construction? Some scholars believe that local indigenous knowledge may contribute to solving the crisis of natural resource management and environmental degradation in rural minority areas. For example, in his book “The Crisis of Global Modernity: Asian Traditions and a Sustainable Future”, Prasenjit Duara (2015, pp.1-2) criticizes Max Weber, who emphasized that the notions of rationalization, calculability, prediction and, disenchantment, and Protestantism “culminated in modern

---

<sup>7</sup> Article 4 of Property Law of the People’s Republic of China stipulates that: “The property right of the State, the collectives, the individual persons and other obligees are protected by law, and no units or individuals shall encroach on it.” It is the first time that the property rights of individual persons and other obligees have been given equal status in law as those of the state – and collective ownership.

Western civilization”, and who underlined: “it was only in the West that knowledge came to have ‘universal significance and validity’ ”. Duara (2015, p. 2) criticizes: “[t]he cultural and subjective conditions needed for the modern revolution are no longer necessary. They have resulted in human overreach in the conquest by man of nature, and we are confronted today with the crisis of sustainability”. Duara (2018) states in his public lecture,

*“I re-consider the values and resources in Asian traditions – particularly of China and India – that Max Weber found wanting in their capacity to achieve modernity. Several traditions in Asia, particularly in environmentally marginalized local communities, offer different ways of understanding the relationship between the personal, ecological and universal” (Duara, 2018).*

Moreover, Miller (2006, pp. 220-221) points out,

*“The anthropocentric humanism of the European enlightenment mentality is beginning to clash profoundly with the findings of contemporary holistic sciences (...) All of this flies in the face of religious views that regard a single god as the focal point of human life and equally in the face of Europe. Secular and patriarchal humanism expelled such a god from the center of the universe, only to replace him with ‘man’ (...) Only putative gods and living humans are owed ethical obligations or endowed with inalienable rights. This is an anthropocentric worldview and has enabled the formulation of an unsustainable industrial, economic culture that threatens the very basis for life itself.”*

Thus, the role of non-Western philosophy/religion has been increasingly highlighted.

Anderson (1996, p. 166) points out that: “All traditional societies that have succeeded in managing resources well, over time, have done it in part through a religious or ritual representation of resource management.” The linkages between major religions/philosophies/cultures and their special worldview and value of nature have been explored worldwide (Hargrove, 1986; Rockefeller & Elder, 1992; Callicott, 1994; Kinsley, 1995). For instance, Roy Rappaport (1967) wrote about “Ritual Regulations of Environmental Relations among a New Guinea People.” The ritual is the regulation which “helps to maintain the biotic communities existing within their territories, redistributes land among people and people over land, and limits the frequency of fighting” (Rappaport, 1967, p. 17). The ritual is the regulator to monitor the “[r]elationships between people, pigs, and gardens”, the “slaughter, distribution, and consumption of pigs”, balancing the quantity of people and nature in the territory (Rappaport, 1968, pp. 3-4). The historian Lynn White’s article *The Historical Roots of Our Ecological Crisis* states:

*“What people do about their ecology depends on what they think about themselves in relation to things around them. Human ecology is deeply conditioned by beliefs about our*

*nature and destiny – that is, by religion” (Lynn White, 1967).*

The increasing awareness of the importance of indigenous knowledge in environmental conservation is mainly a criticism of Western philosophy. Paper (2001, p. 6) mentions the Western philosophical and religious traditions as the basis of our present plight. However, is the original ecological knowledge able to solve the situation? Existing studies (Huang, 2003a; 2003b; 2003c; Zeng, 2008; Fu Guanghua, 2014) have argued that the Zhuang ecological knowledge is profound and may contribute to the solution of ecological problems.

Even though the Zhuang nationality is referred to as the largest ethnic group in China among the 55 minority groups, there is little academic research on the Zhuang. According to Katherine Palmer Kaup (2000, p. 25),

*“The Zhuang nationality is almost entirely unknown to Westerners. Few non-Sinologists have even heard of the group, and those scholars who mention the Zhuang at all in their analyses overwhelmingly dismiss them as ‘fully assimilated’ and essentially no different from the Han majority (...) [The Zhuang] as a minority group actually do not pose any minority problem for the Chinese administration.”*

This is in comparison with the most well-known autonomous regions – Tibet and Xinjiang. “Tibet and Xinjiang Provinces, in particular, have been intermittently rocked by violence since the Communists first declared them ‘liberated’ shortly after ousting the Nationalist forces in 1949” (Kaup, 2000, pp. 1-2). Guangxi is a rather peaceful and prosperous agricultural region and has been a good example of cooperation with, or obedience with regard to, the Chinese minority policy (Kaup, 2000).

There are only a few Western scholars (Kaup, 2000; Lary, 1972; Took, 2005) who have focused exclusively on the Zhuang. Furthermore, even in the context of these studies of the Zhuang, it is worth pointing out that the indigenous ecological knowledge of the Zhuang had been ignored by mainstream scholars for many years, until the signs of crisis in the ecological system began to emerge. Some Chinese scholars, in particular Zhuang scholars, have shifted their attention to the value of the ecological knowledge of the Zhuang ethnic group in constructing an “ecological community” and an “ecological Guangxi”, such as is argued in Qin’s (1999) paper. Other aspects of the ecological environment of Zhuang culture, including *Na* culture (*Na*, 那, means “paddy field” and “land” in the Zhuang language), have been studied by Qin (1997, pp. 68-69), Qin (1998, pp. 40-43), Deng (2012), Ling (2010) and Zeng (2008). *Na* culture could be understood as rice culture (稻作文化) or agricultural/land culture (农业或土地文化). In

Guangxi, many names of towns and villages begin with *Na*, such as Nagan, or Naxia, villages in this study's sample, pointing to certain locations and referring to a piece of paddy field or land (Qin, 1997) (see also Chapter 3 about agriculture).

Therefore, to understand these ethics is of great realistic significance for the building of an eco-civilization. However, these works have not explored settlement patterns, political-economic issues, house styles, or the current environmental crisis in the region. I will therefore present multiple aspects of the Zhuang people, society, and lifestyle in Chapter 3 in order to set a background for further discussion in this dissertation.

## **1.4 Structure of the Thesis**

This dissertation consists of ten chapters. Chapter 2 addresses the fieldwork process and the methodology used during the undertaking of this research. Chapter 3 first illustrates the field settings in the Guangxi Zhuang Autonomous Region, and then explores the Zhuang ethnic group, its history and belief system, related ecological knowledge, language, and education, and the Zhuang villages and the transformation of their houses.

Chapter 4 goes on to examine how the boom in the sand market has shaped the commodification of river sand and its commodity chain. This chapter introduces the river-sand prices, river-sand sellers, truck and ship owners, and river-sand markets which have constituted the river-sand exploitation/value chain. The chapter furthermore presents the ecological consequences of illegal sand mining.

Chapter 5 seeks to provide answers to the question of what drives the commodification of river sand by first discussing how government policies and economic dynamics have impacted upon river sand used in the research settings. The chapter provides rich data on the economic/financial aspects of house construction and infrastructural projects. Moreover, it introduces case studies to illustrate the problematic outcomes of infrastructural investment programs on the natural and social environment.

Chapter 6 presents the shortcomings of China's formal politics, both horizontal (agencies at the same level) and vertical (from the central government to administrative villages). It demonstrates the role of politics and the approach to control on the part of the government at various levels with regard to resource management in rural China.

Chapter 7 explores the consequences of ineffective river-sand control and management, as illegal miners have emerged around the Maoling River to illegally mine sand for marketing.

Chapter 8 focuses on river-sand mining from the perspective of the villages. The ownership debate and river-sand mining crisis are explored through case studies in the six Zhuang villages, where the statement that “river sand belongs to us” is heard in various forms, and involves not only the local communities, such as leaders of natural villages (see Table 3)<sup>8</sup> and cadres of the administrative village, but also the local government and its officials as well as the related laws.

Chapter 9 zooms in on the socio-cultural impacts and outcomes of sand marketization. Rural Zhuang people who settle along the rivers for ease of access to water and river-based resources often hold these resources as communal collectives, and are thus strongly linked to them in their diverse social-cultural ways of life (e.g. for livelihood dependence, as avenues for spiritual nourishment, and for group formation and belonging). In the conclusion, the main results are summarized.

---

<sup>8</sup> When I talk about “villages”, I refer to natural villages(自然村) rather than administrative villages(行政村). An administrative village consists of several natural villages, ranging from six to ten natural villages in my research region. Thus, a natural village is a subordinate unit of the administrative village and it includes one to three production teams(生产队). Production teams were established in the late 1950s. They refer to an organizational form in China’s socialist agricultural economy, consisting of about 10 households. An administrative unit is the name given to the lowest-level unit of the government structure. See also Xiaolin Pei (2015:209). A production team was a pattern to gather people to work effectively and was also a work unit in the Mao era when households were divided into diverse teams based on population.

*“A three-level organization was devised for the commune system: collective ownership rights were divided among the commune (the township since 1984), the brigade (the (administrative) village since 1984), and the production team (natural village). The team, consisting on average of 20 to 30 households and farming 15 to 20 hectares of land, was the primary unit of ownership, production, distribution, and accounting from the early 1960s to the early 1980s. The team members worked jointly on the land, and their remuneration was solely based on the labor they contributed to team production. This team system was replaced by the household responsibility system (HRS) in the early 1980s. Under the HRS, land is contracted to individual households and the rights to use it are separated from collective landownership, which is retained by the village”* (Ho, 2005, p. 209).

## **Chapter 2: Methodology: Conducting Research “at Home”**

This chapter describes the fieldwork process and methodology of the research described in this dissertation. I conducted thirteen months of multi-sited ethnographic fieldwork in six Zhuang communities which fall under the administrative area of Qinzhou City<sup>9</sup>, surrounding the Maoling River, the largest river in this city. I was able to carry out qualitative as well as quantitative methods. I collected data through participant observation and by conducting semi-structured and unstructured interviews. Standardized questionnaires and an ethnographic census were also used. Other methods, such as case studies, storytelling, and the collection of secondary data such as photographs, allowed for more extensive information to be gathered. In the following, I will describe these methods. Moreover, I will describe my personal involvement and research interest, the reality of the research area, and research difficulties I encountered, which shaped my use of methods. I will also explain the reason for my change of research topic during fieldwork, and I will offer an analysis of the events that led to the successful completion of data collection.

### **2.1 Preamble and Preparations**

In April 2013, I was granted admission to the University of Cologne, after I had proposed a dissertation project titled “The Plight of the Development of West China and the Relevant Mentality.” However, at the time I did not have an idea of how my fieldwork should be conducted, even though I was greatly interested in the topic. The proposal that I submitted did not closely relate to anthropology, and my methodology was not yet clear. In order to gather further research ideas and to prepare a basic outline for my research project, I went back to my hometown – Mei Village, Xintang Town, Qinzhou City, Guangxi Zhuang Autonomous Region, China – for one and a half months’ preliminarily fieldwork in February and March 2014.

During this first field trip, my attention was drawn most of all to changes in people’s lifestyles and to socio-economic changes, as shaped or induced by governmental infrastructure projects. A proverb, “earth-shaking changes” (翻天覆地 in Chinese), was used to depict this recent transformation by the people I spoke to. In the following, I describe these changes in the setting

---

<sup>9</sup> In the Chinese administrative system, certain sets of villages form part of and fall under specific cities in terms of regional administration and governance. That means that villages are subordinate to cities. I will explain the rural and regional governance structures and levels in more detail below.

where I was to conduct my research.

When I arrived in Qinzhou City, my relatives and friends were eager to discuss the anticipated high-speed train from Guangzhou City, in Guangdong Province, to Qinzhou City, which was about to be brought into operation: “Next time, you can take the high-speed train instead of the bus,” they told me, and they added that “likewise, we can go to other cities more easily than before.” By then, the road from Qinzhou City to Xintang Town had been seriously damaged by heavy goods vehicles transporting sand and other construction materials, and the quality of the roads was very poor. The community was complaining about these shortcomings and about the often completely jammed roads due to sand trucks. Only one vehicle could pass at a time, which led to severe traffic jams. During my research period, the condition of this road became worse. This gave me the impression that the developments had had an uneven impact, affecting different localities differently. On the one hand, many new highways and roads had been built, thus improving the traffic situation. On the other hand, many existing roads and bridges were decaying and had been severely damaged, becoming almost impassable.

Xintang Town and Huangwutun Town are two separate towns (see Chapter 3 for details). In Xintang Township, all the streets within the town had been improved and some streets newly built, while streets and market areas in Huangwutun Town had also been advanced since 2015. During a semi-structured interview, inhabitants of Xintang Township told me that one new road had originally been an agricultural field. The government had planned the new road and bought the land from the owners. Beside the new road, lots of residential housing was planned to be constructed, after shifting the legal status of farmland to housing land. Anyone who could afford to pay the price could buy a piece of this land from the government, the price being around 3,500 yuan (€ 443) per square meter, although this greatly depended on the location. The Department of Land and Resources would then issue a title deed, certifying the buyer’s land-use rights for a period of 70 years.

I found out that more and more villagers had built their homes beside the roads instead of locating them in the previous village settlements. Moreover, though lychee trees are a cash crop, I noticed that many lychee trees had been cut down, and that farmland alongside the road was now in use for residence in villages that I passed. The villages were expanding through the construction of housing.

When I travelled to my home village, I noticed that the road from the township to Mei Village<sup>10</sup> was a newly built concrete road, and easy to drive on. I was also quite surprised by the new concrete road that led from the entrance of Mei Village to the centre, as it was broader and more durable than the one that I had seen in 2012. As in other villages, several new houses had been built near the entrance of Mei Village on former farmland. Villagers had also built more new houses within the village.

At the entrance of Mei Village, the government had placed a new sign with a planning map to show its efforts to rebuild a new Mei Village. When I entered the village, a new pavilion for public entertainment and a new public toilet were easily noticeable.

Meanwhile, I frequently encountered sand-selling sites beside the main road along the Maoling River. I also heard many villagers talking about river sand and about how some people extracted sand from the river near the village, which prompted me to visit the river, where I saw the dredgers. Also, I recognized that the river was deeper and wider compared to when I was a child.

Some villagers mentioned the illegal sand-mining operators several times and talked about the issue of riverbank collapse and loss of land. However, people also talked about the new road, the pavilion, the new toilets, and a garbage collection point. They also discussed the case in which a household had refused to contribute a small piece of its land for a planned basketball court unless the household members would receive compensation. Several other landowners had sacrificed their land for the public benefit, so that the village could have sports infrastructure. A few villagers mentioned the issue of the spending of public money acquired through the selling of the river sand. The people generally seemed enthusiastic about the new projects in the village and discussed whether a household should sacrifice their land for the public benefit, as several other landowners had, so that the village could have sports infrastructure. I did not pay too much attention to their discussions, even though I noticed the development of the village's infrastructure since I left in 2012. Instead, I was interested in the topics of de-agrarianization (Bryceson 1993), immigrant workers, livelihoods, kinship, and how people were using social networks to find jobs.

While conducting my surveys in the villages, I mostly met women, the elderly, and children.

---

<sup>10</sup> The dissertation uses pseudonyms for participants and also for the villages of the research.

Some grandparents were taking care of children while their parents were working outside the village. I met an older woman who was looking after the four children of one of her sons while her other two sons had taken their family with them to Nanning City. Mothers must balance home and work. Some women must not only take care of children but also sick elders. Many men live a double life and are responsible for both taking care of the rural home and earning money outside the village. They commute between cities and villages. Some of them do so by riding motorcycles for one and a half hours or by traveling by bus for two hours from the Liangqing District in Nanning City to the village. Some of them live on the construction sites in the city until the building has been finished and their salary paid. These migrant laborers told me that it was impossible to work on construction during the rainy season. Many of them return for this reason. Otherwise, they come back to their villages for weddings, funerals, and festivals, as well as to “send our children to school” (see Figure 2 in Chapter 3). Translocality and flexibility are the main common characteristics of the male villagers’ lives, as well as those of some females. I later found out that, like labor migration, the mining and selling of sand also involves translocality.

I went to the villages at the time of the Lunar New Year Festival, when most of the migrant people returned for around two weeks before leaving again. Both happiness and sadness accompany them and their families. I learned about the interactions between households, and those with their relatives and friends. Moving away to work was the most popular topic for discussion in the village. This stood in sharp contrast to the topics that were discussed when I was a child. Back then, farming and harvesting crops had been important issues. In particular, since the land was distributed to each household at the end of the 1970s, agriculture became the major livelihood for the villagers, but now wage work is the main source of income.

After I returned to Germany, I read some influential anthropological works on China, such as *The Flow of Gifts: Reciprocity and Social Networks in a Chinese Village* (Yan, 1996); *The Individualization of Chinese Society* (Yan, 2009); and *Farewell to Peasant China: Rural Urbanization and Social Change in the late Twentieth Century* (Zhou & Gu, 1997). These studies all treat the topic of Chinese village social networks and rural development. I came to the conclusion that de-agrarianization would be a good topic to investigate, since the shift from villagers working as farmers to working, long-term or short-term, outside the village as wage laborers was obvious. I then discussed the topic and proposal with my supervisor, who suggested I should study something that I know about, perhaps even my original village, which

could be an interesting fieldwork setting. Thus, I submitted another proposal titled, “The De-agrarianization of a Rural Village: A Case Study of Southwest China.” My focus was supposed to be on the radical change of livelihood in rural areas since 1978, and especially on the economic reform which had and continues to have a great impact on social structures and values in village communities. The state-driven, rapid urbanization processes are linked to rural demographic dynamics and employment. The topic of de-agrarianization was therefore also clearly linked to the topic of changing land relations, agricultural tax reform, and the shifting of the state agricultural policies and the resulting livelihood transformation undergone by the population. Former peasants create alternative livelihoods at the fringes of urban agglomerations. Because of the abandonment of farming and the increase of idle land (Li, 2011), the government implemented a new land policy in 2008: that of land titling in rural China. In Mei Village, the area of available land was re-measured and confirmed in April 2017 by the Qinzhou Government<sup>11</sup>. One major goal of land titling is that farmers can freely conduct land transactions, in particular when they wish to rent out or sell their land after migrating to urban areas. The goals of this policy are to utilize the rural idle land to encourage the modernization of large-scale farms and orchards by supporting them through a small amount of funding and technology. This process of land titling therefore also caught my attention.



**Photograph 1: Checking and Confirming the Names and Land on the Maps and Documents in Mei Village**

(Source: field data, April 10, 2017)

---

<sup>11</sup> The original measurement of villages was conducted in 1952. In the recent process, the government used GIS and GPS techniques to re-measure. People were complaining that the official size and acreage of their land had become much bigger than their actual acreage had been before. They are afraid of the shift of the agricultural policy in the future, in case they will have to pay more taxes based on the bigger plots.

The actual fieldwork process can be divided into four phases, as is shown in Table 1. This process will be discussed in more detail in the following section.

**Table 1: The Fieldwork Phases**

Phases	Activities	Duration	Informants
1	Preparation, obtaining an overview of the research site, building up connections to informants	February to March 2014	Villagers in Mei Village and Na Village and Xintang Township government officials
2	Participatory research, survey, questionnaires, interviews and oral history interviews concerning the change of house-building style, and illegal sand mining, disputes, and conflicts in terms of sand management	October 2014 until March 2015	20 elders of Mei Village 7 elders in Na Village 4 village cadres 5 township officials 4 district officials 4 city officials 3 sand business persons
3	Multi-sited interviews and focus groups on the topics of illegal sand mining, the chain of sand, and the sand license system on diverse levels	August to December 2015	5 sand miners 12 sand wholesale sites 8 villagers 7 village cadres 10 township officials
4	Focus groups , questionnaires, interviews and participant observation concerning sand-mining management, conflicts between different stakeholders and recent developments	March to April 2017  WeChat communication with informants until August 2019	10 truck owners 4 dredger owners 3 sand miners 2 sand wholesalers 8 elders 6 officials 29 questionnaires

## 2.2 Topic Transformation during Fieldwork

The reasons why I shifted my topic from de-agrarianization to sand mining and sand management during the fieldwork will be presented below. In my perspective, this change of topic has been worthwhile. Sand mining is an ongoing issue. Significantly, sand mining reflects the dynamic transformations of Zhuang villages in present-day China. Furthermore, it reflects the changing relationship between infrastructure development and collective resource

management, in particular in terms of differing ideas about development, modernity, justice, and environmental conservation. In short, it shows the tensions between economic development and resource conservation in the Zhuang villages.

Even though few books and articles have been published on the river-sand crisis and its management in rural China, river-sand mining has emerged in rural communities and has become a source of dispute, conflict, and debate in the riverfront Zhuang villages. There is no doubt that river sand is not only a market product but has multiple meanings and even social-cultural functions. My supervisor drew my attention to the possible advantages of my own status – as a member of the Zhuang ethnic group – in exploring the political-economic position and culture of the Zhuang and their roles in river-sand management.

### **2.2.1 Starting Research in Mei Village and Changing the Research Topic**

After arriving in Mei Village again in October 2014, I stayed with my uncle's family. My uncle's two sons are married and have children of their own. All of them live in the same house. I stayed with them whenever I visited Mei Village during fieldwork. They had built a two-story house on a 220-square-meter premises in 2007. The house consisted of two halls, the one on the ground floor being the ancestors' hall where worship is practiced, and four apartments. Each apartment has three bedrooms, one living room, one toilet, and one balcony. Apart from the main house, there are four partial rooms connecting the main door to form a yard. This house was located in the same residential area as the old one in which I used to live as a child, and my father also has a room in my uncle's house. I am still a member of the village and I had been away for study and work like other migrant workers. Thus, as usual, I stayed in my uncle's eldest daughter-in-law's apartment, who cooked for me. My uncle had just passed away a few days before my arrival, and the whole family was still upset about the loss of this family member. They told me how many male villagers had come back from work elsewhere and helped them to organize the funeral. My fifth uncle, another cousin of my father, a retired primary school teacher and one of the elders of the village financial group, gave me a lot of up-to-date information about the deceased uncle and the village. The most important information was that my uncle was one of the elders who had organized the village's protests against illegal sand harvesting for the purpose of selling it, as well as against the over-extraction of sand from the village river.

At the beginning of fieldwork, I followed the outline of my proposal and tried to investigate the

mobility dynamics of farmers. I visited people every day and found out who was at home and what they planted, as well as what their daily schedules were. I was mostly able to talk to women, who told me about their daily lives, livelihoods, and where their husbands worked. I also talked to the elderly, who told me about the history of the village and about how the traditional funeral reciprocity and social structure had been influenced by socio-political developments (Zhu Q. & Qin Y. J., 2016). I wanted to find out how the villagers maintained the rituals and patterns of funeral and worship systems while many male villagers were absent from daily life. Moreover, I was interested in how many households had given up farming, in who was still planting and what they were growing, and in how the government's agricultural policies had influenced the peasants.

Even though I fully focused on changes in farming, migration, and social networks, I constantly came across a different issue, namely river-sand extraction. At first, I did not pay much attention to it, since my fieldwork proposal was not concerned with this topic and not related to sand issues at all. However, I also adhered to the principle of being open-minded. The problems relating to the sand-mining crisis persistently came up, prompting me to change my research focus. The reasons for this decision are explained below.

Firstly, some villagers, including the eldest daughter-in-law of my uncle, asked me to help them to stop illegal sand extraction from the river. The reason was that the land alongside the river was facing collapse, and some of the bamboo planted to protect the land was being lost due to the deepening of the riverbed. These villagers believed that I could ask the government cadres to stop the illegal operators in the river since I had often visited some of them. The villagers told me to take a look along the river. When I went, I indeed observed the loss of land beside the river and the damage to the river. Most of the households own land alongside the river, so that the tension between the households and illegal miners was clearly noticeable. Combating illegal sand mining was something they had already tried many times, and they had used every possible method, but had failed. The illegal operators continued to scoop out sand from under the people's land. Indeed, the severe collapse of riverside land has impacted the agricultural activities and changed the livelihoods of some people in the village. The daughters-in-law of my uncle told me that my uncle had organized some people to go to the township government several times, but without any positive result.

Secondly, several days after I had arrived in Mei Village, some villagers, and in particular some

women, asked me if it was possible for me to help them to apply for grant projects or government money to build a bridge across the river near the village. The nearby river, which was previously crossable in order to cultivate the fertile land on the other side, was now much wider and deeper than before – due to illegal sand extraction. I was told that seven women had fallen into the river when they were crossing on a bamboo raft to their field on the opposite bank. I actually did write several applications to the township government and to the Transportation Bureau of the district government, and also applied to the Secretary of the CCP of the Qinzhou government through the online government system, but failed to elicit any positive response.

Thirdly, whenever people talked about sand, they lowered their voices and spoke very carefully, and they always looked around and made sure that no special-interest-related person (e.g. relatives and family members of the illegal sand miners) heard what they said, as it would probably cause some trouble. Then, when my relationship with these villagers had intensified, they told me that there had been a big fight within Mei Village and beyond in 2008, which was followed by some disputes later on because some miners were residents of Mei Village (Zhu, 2018). As the days passed, I gradually realized that sand would always be part of a conversation whenever two or more people spoke to one another. Even if I just came by for a chat, someone would still mention it. “A big piece of land collapsed last night; the stakes that I put could not stop sand mining under my land,” a woman complained to her neighbors and me during a morning chat. “I saw the dredger mining at about 6:30 this morning; they were extracting our land,” an old man responded. “Half of our land disappeared, even the whole bamboo trees were washed into the river,” added another respondent (this conversation occurred in Mei Village in September 2014).

Last but not least, the ongoing mining of sand in the surrounding area that I observed showed me that the issue is a common one in many villages around the Maoling River. The most annoying thing for the villagers was that every day they could hear the sound of dredgers pumping sand out of the river while they were struggling with the consequences of the mining.

Thus, this second period of field research indicated the abominable management of sand mining around the Maoling River. People told me that “the thieves” were stealing their sand. The ownership and use-rights of river sand and its relation to land, houses, roads, channels, dams, and the village were frequently discussed in the interviews. Diverse solutions by various agents

have been attempted at the village level. Both villages and individual households decided to sell their land because they could not stop sand theft on their land while the district (county) government or city government conducted an auction to sell the river sand. Meanwhile, some local villagers decided to profit from the boom of a sand economy, and then secretly sold the river sand to dredgers at night, or bought dredgers to mine the sand directly. Outsiders also came to extract sand both with and without a license from the government or permission from the local village (Zhu, 2018).

Others decided not to participate in or facilitate sand mining. One woman told me that her husband would never sell their land on the riverbank in Mei Village, even though it had already collapsed and was now smaller than before. She further suggested that her husband was protecting the temple of the land god and the trees around the temple<sup>12</sup>. If they sold their land, the over-exploitation of sand would damage the adjacent temple of the land god as well as the sacred trees beside the temple. Among the Zhuang, the land god is considered to be the god who controls seasonal floods and protects the village's land and fields, as well as who guards people against evil in these Zhuang villages. In her own way, she was pointing out what a good man her husband was to protect the public temple rather than protecting the personal benefits (as illegal miners did) arising out of their land, because protecting the temple is a communal value.

Obviously, illegal sand extraction had not only influenced the relationship between the villagers and the village committee, as well as between the village and the township government, but had also influenced social networks, moral activities, and the belief system within the research communities. For these reasons, people kept talking about sand and, even though they lowered their voices, still discussed the conflicts and possible solutions.

Furthermore, online investigations and an analysis of output in the local media (television broadcasts, newspaper articles and local public websites, such as the 360 website) and further field research show that sand mining has become a huge issue in the country. But the ecological influence of river-sand over-dredging has not attracted enough attention at various scales, nor been given much attention by the scholars interested in river-sand scarcity. Yet the increasing scarcity of river-sand impoverishment is visible by looking at the rapidly increasing price of

---

<sup>12</sup> The temple of the land god is a public temple built on collective land. It is located in the south of Mei Village and beside the river. It is surrounded by privately owned land.

the sand, and the difficulty involved in mining and purchasing it, as revealed through my own survey. “They scooped out all the sand in the river,” the informants claimed (interview in October 2014). The Secretary of the Branch of Nali Administrative Village responded to me about sand issues in February 2015, saying, “The river is empty; the natural village obtained money (from selling sand), but not the administrative village. Actually, we (the village committee) should also get some benefits from the sand selling.” He pointed out that discussing the issue of river sand did not make sense since the sand was all gone. A wholesaler in Xintang Town pointed at the scarcity of river sand in the sand market in March 2017: “It is impossible to buy river sand since the price is so high and there is no river sand; apart from that, the governance is so strict.” And a sand miner of Huangwutun Town told me during an online chat in January 2018: “We will go to more remote towns where some parts of rivers still have sand.”

Whether I wanted it or not, the issues of sand mining and sand management constantly appeared in my surveys during my fieldwork. Moreover, I had to somehow respond to the sand problems and to the requests the villagers and the sand mining activities directed at me concerning this issue. All of this prompted me to alter my research topic and to make river sand mining the topic of my research. After taking this decision, I employed multiple methods to collect data on illegal sand mining in Southwest China. I elaborate on these methods in the following sections.

## **2.3 Methods**

After settling down in Mei Village, I began to conduct ethnographic research, engaging with the society by looking at people’s daily interactions. I also used diverse field techniques (note-taking, audio/visual recording, interviews, examination of indigenous literature, observation) which are the building blocks of participant observation (Falzon, 2009). This is called a mixed-methods fieldwork strategy (Bernard, 2006; Axinn & Pearce, 2006), because several qualitative and quantitative strategies are performed in order to gather field data and are triangulated in analysis. The qualitative approach included participant observation, oral history interviews, storytelling, actor approach, and focus group interviews. The quantitative approach was implemented by conducting 50 survey questionnaires in Mei Village in 2014, and 29 questionnaires in Naxia Village in Huangwutun Town in 2017. Respondents were selected by making use of disproportionate stratified sampling, the results of which I will present later on in this and subsequent chapters.

According to Denzin (1978, p. 28), “[N]o single method ever adequately solves the problem of

rival causal factors (...). Because each method reveals different aspects of empirical reality, multiple methods of observation must be employed.” Nahid Golafshani (2003, p. 597) argued: “[T]he triangulation as used in quantitative research to test the reliability and validity can also illuminate some ways to test or maximize the validity and reliability of a qualitative study.” Zimmerer and Bassett (2003, p. 2) point out that the field of political ecology also encourages the use of a broad range of approaches. I consequently employed multiple methods to gather and analyze data in order to interpret the complex processes of human–river–sand interactions. I was particularly influenced by research designs that combine ecological and social scientific analyses and that focus on the ecological dynamics of resource management. These methods together enhanced the findings’ validity, which furthered a “better understanding” (Greene, 2007, p. 98).

### **2.3.1 Participant Observation**

After I had settled in Mei Village for a second period of fieldwork in October 2014, many villagers were curious about the purpose of my research. They knew that I had studied abroad, but they did not know why I came back. One said: “You grew up here, and you know almost everything.” I clarified that I had come back for my Ph.D. project and that I was going to stay in the village for six months for the first phase – even though some of them did not understand what a Ph.D. project was. Generally, I did not mind being asked questions by my informants. At the beginning of my fieldwork research, however, they asked many questions about life and culture in Germany, rather than letting me ask my research questions. These were basic questions, for instance about the weather in Germany (whether it snowed). What did people eat there? Did they grow vegetables? What did the farmers in Germany look like? Were they really taller than we are? Do you speak their language? – And so on. They usually pelted me with questions before I could even ask them any of my research questions. This kind of interaction built up the trust between my informants and me. In particular, by asking and answering, information and knowledge were shared between us. This reciprocity continued during participant observation. The fieldwork was not only a matter of taking but also of giving, especially as I was later involved in helping the villagers with approaching the government. I was trying to give something back.

I was an insider when I conducted the research in Mei Village, while I was an outsider when I did my fieldwork in other villages and cities. “Participant observers can be insiders who observe

and record some aspects of life around them (in which case, they're observing participants); or they can be outsiders who participate in some aspects of life around them and record what they can (in which case, they're participating observers)" (Bernard, 2006, p. 347). Despite this differentiation, active participation with one's own body and mind allows both types of researchers to gain access to the meaningful psychological and physical experiences of others (Csordas, 1988; Csordas, 1993). The villagers and I shared feelings of frustration about the ongoing illegal sand mining and of disappointment with the failure of sand governance by township and county officials. Especially the physical experience of seeing the environmental degradation and river-land erosion made the fieldwork significant to me personally and showed me its relevance.

My rather long stays in the chosen villages allowed me to identify crucial actors and to map interlinkages between them. It is necessary to mention that doing research in Huangwutun Town was more difficult than in my village and my town, because apart from Cantonese, the villagers speak another dialect – the Zhuang language. I understand the language but cannot speak it fluently. Therefore, they shifted to Cantonese when speaking to me. Van Rooij (2006b, p. IX) stated, "I know how difficult it is to accept a stranger in a community, especially when this stranger sets out to learn about local problems" (in his case, regulating land and pollution in China). I faced the same problems in gaining the trust of both some cadres and some villagers in Huangwutun Town when attempting to discuss the sand-mining issues, which involved various conflicts and interests. Only after several visits were the elders willing to discuss the problems they had, mentioning the history of the dam, the pollution of the water, and sand thefts. Thus, the long-term engagement that comes with participant observation proved necessary to gain access to this sensitive information.

Eventually, I was able to join the elders' meeting in Naxia Village in Huangwutun Town, where they discussed how to sell their river sand in March 2017. I also joined them at night to observe two or three dredgers scooping sand out of the river (illegally, as defined by the township government), while another three dredgers were mining in the same river, but on Nazhong Village territory. I was, in a way, taking part in sand-selling activities as well: I went to the river with the salesmen, and told them that, based on the information that I obtained from the township government, they should stop selling sand. I had kept in touch with an elder of Naxia Village, Mr. Hu, with regard to the government's response to their sand-selling activities. During the observation, it was found that only around 20 men out of a total of 300 villagers

from Naxia Village took part in sand mining, while more than 100 villagers out of a total of 1,000 villagers of Nazhong Village engaged in sand selling, including elderly people, women, teenagers, and even children.

The disputes and conflicts concerning the allocation of profits from sand mining were prominent in riverine villages during that period. The conflicts among those who were labeled “thieves” and other villagers, village communities, and certain villages’ cadres in the administrative village were well known in both towns. Over my fieldwork period, these in some cases violent disputes sometimes worried me and made me feel I was in danger. Moreover, they hindered my data collection. Some villagers in Nazhong Village did not talk to me if they thought it was risky telling me something about sand-mining activities. They would rather suggest to me that I talk to the secretary of the Branch of the CCP in Nadong who was in charge of selling sand together with other village officials. I did what they told me to do and obtained a better perspective from the secretary, and we conducted many telephone conversations both during the mining period and afterwards. He even told me about diverse disputes within different production teams in his and other villages. He went to the river with me where we could see the mining activities permitted by the Nazhong Village, and told me that some teenagers wanted the entire profits for themselves, and attempted to exclude others (mainly elders and children) from sand mining in Nazhong Village. I was told by the secretary that there had been several fights over the previous nights, and even on the night before I came. I felt safer with the assistance of this secretary than I had felt when alone in Nazhong Village. But it limited my participation to figure out how the villagers actually distributed the money from selling sand to each participant.

Finally, I actively participated in a road development project in Mei Village. In March 2015, the village head visited me and asked me to collect money for a new government project to construct a 220-meter-long road, which was mandated by the finance department of the township government in 2015. I asked him why he did not collect the money himself, and he answered that he had already tried hard to do so, but that the people had refused to give him any money, which meant that the new project would not go ahead. Several villagers in the grocery store told me that, “we would not give him (the village head) any money.” The new village head had lost trust among the villagers after the sand was sold and the money all spent without transparency. Eventually, a cadre of the administrative village, along with the owner of a shop, the village head, and I went to collect money together. In August 2015, the road was

constructed in Mei Village.

### 2.3.2 Multi-sited Research: Expanding the Field Sites and Moving between governance levels

As already mentioned, I conducted multi-sited research. “[M]ulti-sited ethnography involves a spatially dispersed field through which the ethnographer moves – actually, via sojourns in two or more places, or conceptually, by means of techniques of juxtaposition of data” (Falzon, 2009, p. 2). Expanding the research sites allowed me to form a clearer picture of sand mining, markets, and governance. In order to observe the sand management in other riparian habitats, I followed the value chain of sand, and the related conflicts and disputes of illegal sand mining, conducting my research in six villages of two towns along the Maoling River; see Table 2. In so doing, I was able to obtain more data on institutional sand governance and its conflicts, so as to then give a more complete picture of sand mining in Qinzhou City.

Before continuing, it is necessary to lay out the complex levels of rural governance in a table below.

**Table 2: The Research Sites in Qinzhou City**

District (county)	Town	Administrative village	Natural Village/groups	Located
Qinbei District Government	Xintang Town	Nagan Administrative Village	Mei Village	Upstream along Maoling River
			Na village	
			Nayang Village	
Qinnan District Government	Huangwutun Town	Naqiu Administrative Village	Naxia Village	Downstream along Maoling River
			Nachun Village	
		Nadong Administrative Village	Nazhong Village	

(Source: field data, 2017)

In this administrative system, counties and districts form part of the city while towns form part of district and county. The town encompasses the administrative villages and urban neighborhoods. The administrative village is constituted by what can be translated as “natural” villages (自然村)<sup>13</sup>, while a natural village can be further subdivided into several production teams (see Table 3). The Organic Law of the Village Committees of the People’s Republic of China (1987, 1998, and 2010) has been implemented since the late 1980s. It claims that the

<sup>13</sup> Natural villages can be understood as settlements and territories which are self-governed through particular lineages, village heads, captains of production teams, and elders.

villagers can elect their own leaders to practice grassroots democracy autonomy. Based on this law, the village committee is constituted by three to seven villagers including a director, deputy directors, and committee members<sup>14</sup>. The tenure of a village committee shall be five years. Apart from the elected village committee, there are branch parties of the CCP at all level of the village governance structure by law. Significantly, the party agency is the most powerful unit inside the government. Indeed, there is a lot of criticism on the realities of the implementation of the Organic Law of the Villagers Committees of the People's Republic of China (Feng, 2009) and of authoritarian control over village elections in China (Luo, 2014).

**Table 3: Levels of Rural Power Structure and the Related Population**

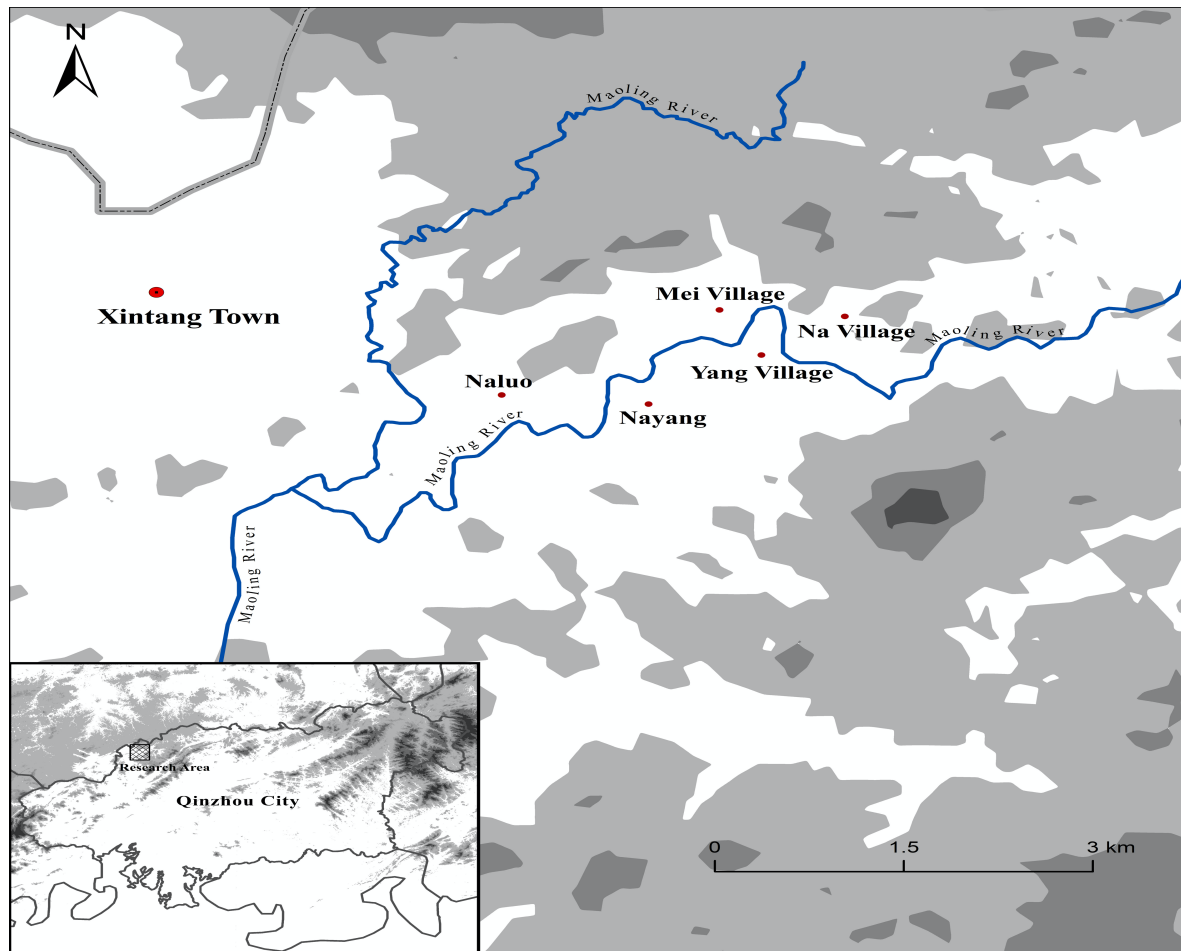
Level	Demography	Structure
Administrative villages  - a branch of CCP and one secretary with salary	a. Nali Administrative Village has 1,450 households; 7,229 villagers (85 party members of CCP). b. Naqiu Administrative Village has 910 households; 4,159 villagers (66 party members of CCP) c. Nadong Administrative Village has 1,368 households; 5,648 villagers (73 party member of CCP)	Nali Administrative Village has has ten natural villages and 20 village groups Naqiu Administrative Village has eight natural villages and 14 village groups Nadong Administrative Village has 11 natural villages and 20 village groups.
Natural villages  -production group with one captain per group without salary	a. Mei Village has 505 villagers b. Na Village has 1,200 villagers c. Nayang Village has 1,300 villagers d. Naxia Villave has 290 villagers e. Nazhong Village has 11,000 villagers f. The sixth production group of Nachun Village has 450 villagers	Mei, Na and Nayang Villages of Nali Administrative Village Nazhong Village of Nadong Administrative Village Nachun Village and Naxia Village of Nachun Administrative Village

(Source: field data collected from the three village committees and the natural villages in 2015-2017)

Map 1 shows the location of Mei, Na and Nayang Villages. It also displays Yang Village, which joined action against illegal sand mining by Mei and Na villages in 2018 (see Chapter 9). Furthermore, the Map displays Naluo Village because the ancestors of Mei Village originated from there. This shows the lineage connections between the villages.

---

<sup>14</sup> Administrative village has its governance structure: a village committee with three to seven elected cadres and a CCP branch with one secretary.



**Map 1: The Map of Three Villages Upstream of Maoling River**

(Source: cartographer Ke Zhang, 2016)

Among these six villages, my home village Mei Village became my central research site, because my focus on the sand-mining situation originated there. As Marcus (1995, p. 100) has pointed out, “not all sites are treated by a uniform set of fieldwork practices of the same intensity. Multi-sited ethnographies inevitably are the product of knowledge bases of varying intensities and qualities.” Accordingly, the case of Mei Village forms the most important part of the overall picture of illegal sand mining along Maoling River provided in this dissertation. Yet, it cannot stand on its own. Multi-sited research is required to demonstrate the circumstances of illegal sand mining.

Moreover, these diverse case studies can, as argued by Zimmerer and Basset (2003, p. 4), highlight “the role of geographical differences in political ecology. Geographic difference refers to the biogeophysical and social characteristics that are associated with the environments of varied places” (See Table 2 and 3 for the geography and population of the villages).

Apart from focusing on several village areas, I used “following the sand” as a method for gathering broader data; see also Foster (2005). In addition, I conducted research in towns, and in Qinzhou City and Nanning City, to gather first-hand data concerning illegal transport, truck owners, sand dealers, sand markets, and sand-mining governance.

### **2.3.3 Questionnaires**

In order to gather more information about sand mining and its relevance for livelihoods and environmental degradation, I designed two different questionnaires for a household survey in Mei Village and Naxia Village respectively. The sampling was random. I gave 10 yuan (€ 1.2) to each household that filled it out.

I designed a questionnaire related to the original research topic of de-agrarianization and collected quantitative data in Mei Village. From October 2014 to December 2014, with the help of the village head and a store owner, I administered 50 questionnaires of which 47 were completed. This questionnaire mainly focused on local households’ livelihood, farming and wage-working activities, education, house construction, and social interactions.

I visited households, gave them copies of my questionnaire, explained to them its purpose, showed them how to fill it out, encouraged them to be honest, and told them to contact or visit me at any time if they had any questions. Later, I gave 15 questionnaires to Mrs. Cai, the owner of a grocery store in the village center. This helped me to distribute questionnaires quickly to each household. I did this since some villagers were working outside the village and would return irregularly. I was not aware of who had returned or not, while the owner of the grocery store was the village information center, and people visited the shop whenever they came back. Thus, the ones who could read and write were given a questionnaire. Furthermore, I visited many households to confirm the data provided by the villagers, in particular the migrating workers, i.e. whether they farmed, how long those workers had been working outside the village, what their wages were, where they worked, when they built their houses and how much they had cost, and how much they had paid for relatives’ weddings or funerals in the last year. I had to do this data collection myself, as some villagers could not write, and many of them did not answer some of the questions. I therefore had to visit the respondents again and double-check.

Secondly, at a later stage I designed a sand-related questionnaire only for Naxia village, which contained three parts, half of which required explanations rather than simple yes/no answers.

Part one asked about the social-economic background of the informants; part two was about the situation of private houses; and part three was about sand and its related management.

In Naxia village, the elders decided to sell the river sand in the name of the village to reduce the loss of their natural resources in March 2017. I joined the meeting organized by four elders. In the following week, I conducted this sand-related questionnaire. Mr. Hu, a local wine-maker who owned a wine shop, and a respected elder of Naxia Village assisted me in conducting the questionnaires in Naxia Village. Nineteen males and ten females answered the questionnaire. Twenty-nine questionnaires for a total of 300 villagers were completed, the data from which will be presented in Chapter 7. The program IBM SPSS was used to analyze the data of both surveys.

### **2.3.4 Choosing the Key Informants**

Who is involved in sand-mining management? Who is affected by the decisions that are made? And who has been influenced by those decisions and by illegal sand mining? These are vital questions to ask when exploring the river-sand crisis. I used methods related to the approach of Actor Network Theory (ANT) when I investigated who was involved in illegal river-sand mining. Megha Sub (2017, p. 51) points out that “An actor approach is well suited to providing an understanding of local level micro-politics including how various actors interact with each other and the environment on a particular issue and how this affects them (and the environment).” Furthermore, Blaikie (1995) argues for the field of political ecology that observations about the actors’ roles can make the transformation of socio-environmental systems more tangible and meaningful. “There is a political economic arena in which various people pursue their ‘projects’ with very unequal access to power in which to pack their own particular knowledge claim and to enroll others into their own project” (Blaikie, 1995, p. 207). Bailey and Bryant (2005, p. 21) highlight that “ideas are developed to facilitate or block promotion of a specific actor’s interest,” and they point to the relation between the discourses and interests of diverse actors in the socio-ecological conditions in countries.

Actor-Network Theory has become crucial in the field of political ecology since the 1990s (see also Bailey and Bryant 2005, Lave 2015). Lave (2015, p. 213) states: “Political ecologists have engaged with Actor-Network Theory [in both the matrimonial and military senses of the word] since the mid-1990s, and it is now a key theoretical strand of post- structural political ecology.” Latour argues, “power relations can and should be explained solely on the basis of network size:

extensive networks are more powerful, smaller networks less so. Inequalities are thus not the result of structural forces but of the expansion or contraction of networks” (in Perreault, et al., 2015, p. 215). Indeed, inequality relates to power relations on between diverse levels of government structure, and it is easier to look at the daily power practices in terms of sand mining in the research settings.

The informants are crucial for this research. Illegal sand mining is a sensitive topic in my research area, as the uncertainty of sand rights and the boundaries of the sand business are not discussed openly. All informants with whom I consorted realized that the sand issues are a problematic topic. These informants are diverse actors who have various kinds of power in sand management within a given social structure. By analyzing the actors, one can, for instance, figure out who is involved in sand disputes, or who has the power over government-owned sand. The power dynamics of sand management will be carefully presented in this dissertation. Moreover, as Verschoor (1992) says, discourse and practice relations are keys to understanding how power is exerted, and I will therefore also focus on these. For example, people calling the illegal sand miners “thieves” and then stoning them is a kind of discourse and practice.

It took me a rather long period to figure out who the key actors in sand management were in my research settings. Doing in-depth fieldwork and employing a persistent approach are the key means to achieve the goal. People try to avoid being called “powerful,” because it always relates to trouble, as power is never unidirectional (Giddens, 1984). In the case of Qinzhou, this means that being accredited power can benefit certain actors, but can also change or harm them later on when disadvantages become overwhelming. Therefore, the relevant actors connected to sand-mining management are highly likely to hide their true ambitions and power. These actors are not only the government officials, but also the cadres of village committees or CCP branches, the directors of village committees, heads of natural villages, production captains, elders, and the villagers who make complaints to the government, the villagers who were arrested by the police due to the violence, and villagers in general. For the purpose of analysis, I grouped the key actors into five categories based upon their relative hierarchic levels in what follows:

- 1) Natural village/production team: heads of the village, elders, and villagers.
- 2) Administrative Village: village committee and the Party branch: director of the committee and the secretary of the party branch, other cadres.

- 3) Township government: mayors, deputy mayors, chairman of township people's congress, directors and officials of financial department and other agencies.
- 4) The deputy Head of a district (county-level) government
- 5) Government officials of Qinzhou City

The actor approach relates greatly to the analysis of stakeholders. "Stakeholder analysis (SA) is a powerful tool for policy analysis and formulation, and has considerable potential in natural resource policy and programme development. It is an approach for understanding a system, and changes in it, by identifying key actors or stakeholders and accessing their respective interests in that system" (Grimble & Wellard, 1997, p. 173). Indeed, stakeholder analysis contributed to assessing the actors' respective interests in power struggles in terms of sand-mining management in the riverfront communities. For instance, an official of the Xintang Township Government only eventually told me that the three bosses of an illegal sand company who bought the river sand of the Mei and Na Villages were three leaders of Xintang Township Government in April 2017. At that time, two of the three leaders had resigned and had been warned by the CCP of the district government for their illegal sand-mining businesses in 2011 and 2012. Then the cadres of Nagan Administrative Village, the secretary of the CCP branch, and the director of the village committee of Nagan Administrative Village (both of whom had held those positions for decades) and the headmen of Mei and Na Villages also confirmed the actual sand deals. As a result, I was able to obtain the original receipts and bills from sales of sand in Mei Village in 2017.

In August 2017, all five cadres of Nagan Administrative Village failed to win in the general election of the village committee's leaders and party election. It was clear that the failure of sand governance had played a crucial role in this election result. The general election in 2017 received significant attention from the government and the mayor of Xintang Township Government visited the office of Nagan Village committee and some natural villages in order to successfully change the old cadres and to elect new ones. Photograph 2 shows that seven ballot boxes were used for this general election. One ballot box was put in the office of the Administrative Village and the other ballot boxes would be carried to each natural village to collect the votes. The names of the candidate director, deputy director, and committee member were written on the blackboard. Notice that the party flag of the Communist Party of China, and that the half-length photos of the great international communist leaders and the state leaders of China were hanging above the blackboard.



**Photograph 2: The General Election of Nagan Village Committee's Leaders**

(Source: WeChat of the Secretary of the Party Committee of Xintang Government, August 2017)

The cadres of Tuanxian Administrative Village and Nadong Administrative Village were crucial for this research. These cadres were mostly engaged in river sand-mining activities. The cadres were local villagers but had been selected by the township government or via the election as the village leaders at the administrative level, and received a salary each month from the government. Some of the cadres, such as the secretary of the CCP branch in Tuanxi Administration Village, Mr. Nong, had had dominant power in each important decision for decades, including selling the river sand to a private company, and the income from selling sand was only received by the village committee (five cadres). I was told that Mr. Nong had two sons and two daughters, which violated the family planning policy, but he was still chosen to hold this powerful position for more than two decades. The informants in two natural villages told me that Mr. Nong always had a problem with corruption. “He had bought two apartments for his sons in Qinzhou City and built two houses in the village. Meanwhile, he had also bought two cars for his children”, an informant told me in Nachun Village in March 2017. Furthermore, the focus group interview in Naxia Village revealed the same opinion about Mr. Nong. I visited Mr. Nong’s home in the village and saw two new cars in Nachun village during the Qingming festival. During my fieldwork, the villagers told me that Mr. Nong had selfishly pursued profits

for himself and his family as well as his relatives. He embezzled money from the government's "Renovation of Dangerous Building" project, for which the poor households who applied for the government fund to build a new household had to pay Mr. Nong between 3,000 to 8,000 yuan (€ 380 – 1,013), since the households needed him to pre-approve the fund application (based upon the respective financial and domestic situations of the households in question). The director of the village committee, Mr. Zeng, was, at the age of 40, rather young for his position, and did not have much experience of politics; as a result, he did what Mr. Nong told him to do even though it is Mr. Zeng who is considered the director of the village committee. I interviewed Mr. Nong and Mr. Zeng and other cadres as a group in the administrative office, and conducted a solo interview with Mr. Zeng about the illegal sand contract (see Chapter 8 and 9).

The Secretary of Nadong Administrative Village, Mr. Huang, had also played a role in river sand-mining activities, but there was another issue in this regard involving Mr. Huang. He did not make the decision on his own, but first agreed that the river sand belongs to the village community, of which he was a member. He and his cadres organized a mass meeting inside Nazhong Village to discuss the possible solutions to the problems involved in river-sand mining. The decision to sell river sand was collectively made in this mass meeting, as was the decision as to how to distribute the money to the village, both as a collective and in terms of specific individuals.

During the interview, Mr. Huang's colleagues (the director of Nadong Administrative Village and the production captains) and most of the villagers that I interviewed believed in Mr. Huang and respected him when they talked about the sand-mining situation. Mr. Huang accepted my requests for interviews and explained to me the situation of river-sand mining in his administrative communities and the issues of conflicts of interest and disputes in diverse villages and production teams. Meanwhile, the director of Nadong Administrative Village, Mr. Zhou, explained his understanding of river-sand mining, and insisted that river sand belongs to the rural communities. Actually, the original village from which he came has faced disputes among three production teams. As one member of the first production team, he argued that his team had a right to benefit from the sand business since the second and the third production teams obtained a huge profit from selling river sand, but denied that the first production team had a right to share the income from this sand-mining business. Mr. Zhou argued that the cadres of the Nadong Administrative Village committee had gathered together twice to discuss the conflicts among the various production teams, but that no solution had been adopted by April

2017.

Indeed, while the villagers in Mei initially asked me to help to stop illegal sand mining (i.e. to act against sand theft), sometimes I had problems in other villages persuading people to tell me more about illegal sand mining. They either referred me to the village head or to administrative cadres, who were mostly unwilling to openly discuss sand issues or disclose their judgments about it. On the other hand, the villagers of Mei and Na Villages maintained that “there is something wrong in sand selling and the way the money is spent.” That was why they had complained to the higher-level government and thereby caused two of the three leaders and all cadres of Nagan Administrative Village to fail in their political careers.

The illegal sand miners, wholesalers, and the workers they hired were also crucial for this research. It was not difficult to get access to the local miners and selling sites around the river. I could simply visit these sites and talked to the miners and workers there. I interviewed some of those workers in the big dredgers and investigated their salaries and their work situation. The miners were very diverse, both insiders and outsiders, as were their sand-business chains. Some of them were family businesses in which all workers of the company at all stages, from sand mining to selling and transporting, were members of one family. They owned dredgers, trucks, and other machinery. Some of the sand dredgers came from other provinces and were owned by big bosses of sand businesses, who had bought a sand license from the government for a long section of the river and had hired more dredgers to work for them. Talk of conflict between local sand miners and the outsiders could be heard throughout my field research.

This contact I had with various people helped me to establish connections with key informants who contributed significant information to my research. The majority of key informants were villagers, village elders, village heads, and cadres of the administrative committee, township government officials, district government officials, prefectural officials, sand miners, sand business persons, and truck owners and workers in the sand chain.

Above the natural village level, there were three administrative villages and their officials, on which I have also focused. The point is that the cadres of this level were familiar with all the new policies of the state with respect to the administration of the village because they had implemented those policies. They were also members of the village communities and were greatly influenced by local culture. Nonetheless, they were all basically involved in sand mining to some extent (see Chapter 8 and 9).

Then, on the township level, my key informant was the vice chairman of the people's commission of Xintang Township Government, Mr. Cai. He was in charge of political and legal work for seven years, and who thus knew the sand governance policy and conflicts in rural areas very well. He was the only leading figure that did not change his position during my research, while many others were transferred to other towns or cities. Mr. Lin was the Secretary of Finance from 2014 to 2017, and who offered to explain to me the financial structure of road projects in the rural community. Another cadre, called Mr. Shi, was in charge of the projects and development in Mei Village in 2013 and 2014. Mr. Lei was the a township official, who had also served as the director of the Service Workstation of Party Members of CCP in the Nagan Village Committee. He claimed that the secretary of the administrative committee only wanted to drink and to benefit from any project. The new mayor of Xintang Township, Mr. Yao, who was appointed in early 2015, accepted my request to interview him in Qinzhou City in November 2015.

In Huangwutun Town, one of the worst illegal sand-mining towns in Qinzhou City, a focus group was conducted on how the township government deals with illegal sand mining with four leaders, the deputy secretary of the CCP, two deputy mayors (one of them female), the director of the Construction Office (so-called Sange, who had been in charge of illegal sand mining for more than 15 years), and a prefectural official. The formal institution of sand mining at the township level had been fully discussed in this focus group, which helped me obtain insights from the officials of the township, in which 91 illegal sand-mining and sand-selling sites had already existed for years. A deputy mayor helped me to gather data on illegal sand-mining sites and to build up a connection with local sand miners and sellers working alongside the river. Another three officials helped me to conduct a survey in two administrative villages along the Maoling River.

At the district level (which is equivalent to the county level), Mr. Yang, who was the deputy district head of Qinbei District government. He explained all the district policies related to the topics relevant for my research and outlined the actions that had until then been taken to cope with various problems. Indeed, he played a significant role in my research and also gave me some insights concerning sand issue-related petitions in rural areas. In 2016, he was promoted to Qinnan District, where Huangwutun Town is located, and continued to help me with my fieldwork in this district.

At the prefectural level, I became an intern at the Policy Research Department. The director of the Department, Mr. Li, helped me to conduct my survey in an official way and to build relations to related government departments government. He had quite a lot of power and influence over lower-level officers, and he helped me to interview some other key informants and to gather data by sending lower-level government employees notes and by accompanying me to Xintang Town in 2014. I then obtained detailed data from the Xintang Government. Mr. Liu, a city official, took responsibility for the Department of Reform and Service center, and he provided me with important information about the new reform of the CCP in rural areas. He not only told me that all office buildings were rebuilt and equipped with new office supplies, such as printers, televisions, projector, computers, and telephones, but also told me about how the transformation of governance of CCP in rural areas took place.

Regarding Zhuang history and culture, I contacted my friends who worked in the Capital City of Guangxi and asked them to collect Government literature. These classmates of mine at the university were of Zhuang nationality, and some of them had gone back home to teach at middle or high schools in Zhuang areas, such as Liuzhou City, Duan county, Rongshui City, Jingxi City, and Baise City. My connection with them helped me to learn more about the diverse Zhuang customs and festivals. My interview with Mr. Teng, the senior researcher of the Zhuang language, helped me a lot with regard to the language and education of Zhuang people. Furthermore, my brother was working at the Zhuang Ethnic School of Nameng Town until 2012, and my sister-in-law is still the music teacher of the same school. This offered me a good opportunity to learn the language and the education of Zhuang Ethnic School.

My sister, who worked at a TV station, helped me collect more data on cases of sand extraction, related conflicts, and the management of these. Also, she enabled me to interview some reporters and follow the cases of illegal sand extraction which were reported to the local TV stations.

Outside the village, I focused on different actors who were involved in the commodity chain of sand. I conducted a survey on the sand business and its value chain on the Maoling River, in two major cities, several towns, and diverse villages, which were related to sand harvesting, sand governance, and the sand market, and which had many users of sand and disputes concerning it. Furthermore, this was also related to the topic of rapid urbanization and rural projects systems. With the help of a smartphone and the messenger service WhatsApp, I could

still keep in touch with those main informants, even after my return to Germany. In sum, stakeholder analysis to look for key informants clarifies the complex natural resource management on policy-making, decision-making, conflicts of interest, resolution, and compromise.

The government's archives – in particular, the annual government reports from central government to local government – were important for my research. My friends who worked in the town offices sent me government reports and other documents. Meanwhile, the relevant departments' websites also promoted my research outside the actual field. Furthermore, national and international news on the internet, such as about sand mining in Kenya and Vietnam and elsewhere, proved crucial for understanding the sand-mining industry worldwide.

### 2.3.5 Focus Groups

“Focus groups” are one way of conducting qualitative research. Morgan (1996, p. 130) defined “focus groups as a research technique that collects data through group interaction on a topic determined by the researcher.” Robinson (1999, p. 905) has stated that a “focus group can be defined as an in-depth, open-ended group discussion of 1-2 hours' duration that explores a specific set of issues on a predefined and limited topic”. Morgan (1996, p. 134) points out that “focus groups provide data on how the respondents themselves talk about the topic of the survey”. Focus-group discussions have been widely used for data collection in diverse disciplines and have proven to be very useful in generating data on riversand management, because river sand is considered a common resource, which is why all members of a society, from elders to children, can relate to it.

**Table 4: Conducted Focus Groups**

Topic	Who	How many
Illegal sand governance at township level	Township government officials	5
Sand governance at village committee level	Administrative cadres	8
The issues of damaging public infrastructure due to illegal sand mining	Villagers	10
The decision-making on selling river sand as communal property	Villagers	6

Focus groups are productive in terms of sand governance at the town and village level. This dissertation explores the complex of river-sand mining in rural areas where illegal sand mining occurred in more detail (see Table 4).

To conduct focus groups with members of the village committee and the township governments was not easy. Fortunately, with the help of Mr. Li and Mr. Qin, who were the officials of the prefectural government, eventually I was able to do so in April 2017. In the name of Mr. Li, Mr. Zhang went to Huangwutun Town with me and I organized a focus group and visited many illegal sand-selling sites around the Maoling River. Following this focus group, I visited Huangwutun Town several times. I also visited Nachun Village personally several times to gather data. I conducted in-depth interviews with six major informants, three of them directly involved in a well-known conflict over river sand. Significantly, I obtained all the original documents of the contract and also documents detailing complaints relating to them. I also tried to conduct a focus group interview alone in the Naqiu Village committee, but the cadres there did not talk to me about sand mining. Later on, I went to Huangwutun Town in the name of Mr. Li again, and asked to do a focus-group discussion with Naqiu Village Committee and Nadong Village Committee. Three officials of the Huangwutun Town drove me to the relevant locations in order to do so. With the data from this trip, I was able to build up better conversations with the elders and villagers in the three villages, namely Naxia Village, Nachun Village, and Nazhong Village.

## **2.4 Multiple Positions: Advantages and Disadvantages**

A reflection on the multiple positions I assumed while conducting my research will help the reader to understand my research outcomes better. As mentioned above, I was born and grew up in Mei Village, and I am still an officially resident of that village. The police state's census of 2015 shows that only 15 of the 483 villagers are Han Chinese; the rest are of Zhuang nationality. My Chinese identification card shows my affiliation to the Zhuang people, and my official address is also registered as being in Mei Village. Certainly, this was advantageous for my research, as it was easy for me to enter the field and build up many connections with diverse people in the village of my origin. As a person of Zhuang nationality, I also need to reflect upon the identity of Zhuang ethnic group as well as the settlement, customs, and ecological knowledge of the Zhuang villages in terms of river-sand mining.

Indeed, it was also an advantage that I speak the Xinli language<sup>15</sup>, Cantonese, and Mandarin, while I also understand the Zhuang language, which enabled me to freely interview people and

---

<sup>15</sup> Xinli language is spoken by Zhuang people and other ethnic people apart from the Zhuang language.

gain access to diverse data. My duty as a community member to protect common-pool resources, support public affairs, and to assist some poor households became important paths through which to understand the social dynamics of the village. I do not have much to say regarding the legal status of the Zhuang, since I was born with it. As far as I am concerned, the only difference between my status as Zhuang and that of the local Han is that I obtained seven extra points for the college entrance examination, while my classmates who originated from the Zhuang/Miao/Yao autonomous county could obtain 20 extra points. However, my first supervisor suggested that I should also write a chapter about the Zhuang ethnic group. I took some months to collect related documents and books and conducted several interviews. In so doing, I realized that the supervisor's advice was very helpful and productive regarding this research, since I ended up deleting the whole of the original Chapter 6, relating to house transformation, and instead rearranging the information therein to constitute several pages of Chapter 3, where I describe the shift of house style of the Zhuang.

Even though I conducted my fieldwork in my "own" village, this did not mean that it was an easy task to collect data or conduct interviews. Let me illustrate this with the example of Mrs. Pan, the wife of the former village head of Mei Village, who lived with her three grandchildren, while her son worked in the city.

In a conversation with a former village official, who was in charge of land resources and labor management during the Mao era and Deng Xiaoping epoch, it became clear that no one clearly remembered the exact dates and methods of the land reform or the demographic situation of that time, since it was quite some time ago. However, Mrs. Pan's daughter-in-law told me that Mrs. Pan probably still had the original documents concerning the land reform. Therefore, from 2014 to 2015, I visited Mrs. Pan several times and asked for these documents, which allegedly were in the possession of her husband before he died. However, she told me that all the documents had been burnt during the funeral of her husband simply because, according to local tradition, everything that belonged to the deceased was burnt when they died.

One day later, I called a doctor when I coincidentally found out that Mrs. Pan was lying in bed sick. She was touched by my help, because none of her three sons or their families had taken care of her. To thank me, she showed me a huge number of original documents, which I had been seeking for some time. There was a huge bag of documents with many different kinds of files from the people's committee of the township and the Production Brigade (the

Administrative Village) and the Party Branch of the CCP in the Brigade and the data of demography and land tenure during those periods. The files contained data on December 13, 1981, and was addressed to the Mei production committee: according to the county conference, a production team was to be implemented. After a discussion of the Village's Branch of the CCP, it was decided that the village head was Zhu Jin and the accountant was Zhu Wen, who was Mrs. Pan's husband. Later, in 1982, Zhu Wen became the village head and the secretary of the CCP's group in Mei Village.

I registered at the office of the Department of Policy Research of Qinzhou Prefectural Committee of the CCP in order to gain access to more government documents and to help the field research to continue smoothly. This department is responsible for analyzing policies, reforms, and drafts related to Qinzhou City. The director of the department had the duty of writing all the reports and speech texts for the secretary of the CCP in the city government, who held the highest leading position in Qinzhou City. The most interesting part for me to see was that the department's officers needed to do a lot of short-term fieldwork and investigate the city, counties, towns, villages, and harbors. Furthermore, it provided me with a vast amount of information concerning policies. As a "member" of the department, I could easily interview some officers on the city level and below, and through this expand my research areas and the circle of informants. This government background assured the informants that I was trustworthy and hence they gave me more internal information, even though sometimes my questions touched upon a sensitive topic. After trust was built, some officers became my friends, and they invited me to office banquets and to spend free time in the township areas. We are still in touch today. However, this kind of friendship also caused some trouble, and it significantly influenced my fieldwork and even changed the research topic.

The multiple identities I assumed during my fieldwork helped me to gain access to secondary data, such as government documents, and to political resources. With the help of my government colleagues, I could more easily interview the people that were involved in issues concerning sand, and I could even conduct focus groups with officials.

In conversations, my colleagues in the prefectural government always introduced me in the following way: as a Ph.D. student who was pursuing a Ph.D. degree at a German university, which is the home country of Karl Marx, whose theory guides the development of CCP and the country. Thus, the officials learned that I was a Ph.D. student at the University of Cologne of

Germany, as well as an intern at the Department of Policy Research in the city government. These two different “identities” were valued by the people that helped me build personal friendships with various cadres in different towns. Meanwhile, these identities also motivated the villagers to ask me for help concerning government actions in stopping illegal sand mining. By complying with this request, I became even more engaged in the sand-mining issue in Mei Village.

It is also necessary to address here that during my short stay at the prefectural government office there were demonstrations for justice on land acquisition, house demolition, and fair compensation in front of the main entrance of the building. It seems that rural people are fighting for their land and rights during the rapid urbanization in Qinzhou City. They were farmers from the areas near the ocean where the government was building a university, a golf course, real estate, a tourism center, and other properties, which they did by dismantling villagers’ houses and buying their land at low prices.

## **Chapter 3: Research Setting Context: The Zhuang Ethnic Group and Their Settlements**

This chapter focuses on the history, belief system, language, education, and ecological knowledge of the Zhuang ethnic group. It also describes the changing settlement patterns and building practices around the Maoling River by focusing on six villages in two Zhuang-dominated towns. The two towns are Huangwutun Town and Xintang Town administrated by Qinzhou City that will be presented in this Chapter. In addition, the descriptions illustrate the perspectives of local villagers on environmental conservation, resource management, and social-economic development. Moreover, the historical perspective can help the author in exploring the relation between ecological knowledge, human activities such as sand mining, and ecological transformations.

### **3.1 The Guangxi Zhuang Autonomous Region**

The Zhuang form one of the 56 officially recognized ethnic groups in China based on the state's "minority classification system" (also called the "nationalities identification" system). It was developed from the 1950s to the 1970s<sup>16</sup> and it is composed of 55 ethnic groups, as minorities, and one majority group of Han. The Zhuang ethnic group is the largest minority group. Nearly 86% of the Zhuang population (GBSYC, 2011) live in the same region in Southwest China, therefore the Zhuang were given their own autonomous region on March 5 in 1958 by the Chinese central council based on the "nationalities work."<sup>17</sup> This region formed one province, named "Guangxi Zhuang Autonomous Region (GZAR)", or more generally, Guangxi.

According to the data of the sixth national census carried out at the end of 2010, the residents of Zhuang in GZAR numbered about 16.9 million, accounting for 36.7 % of the total population of the region (COSC & DPES, 2012). Other Zhuang reside in Yunnan, Guangdong, Guizhou, and Hunan Provinces (Kaup, 2000, p. 33). Nevertheless, and although GZAR is a multi-ethnic

---

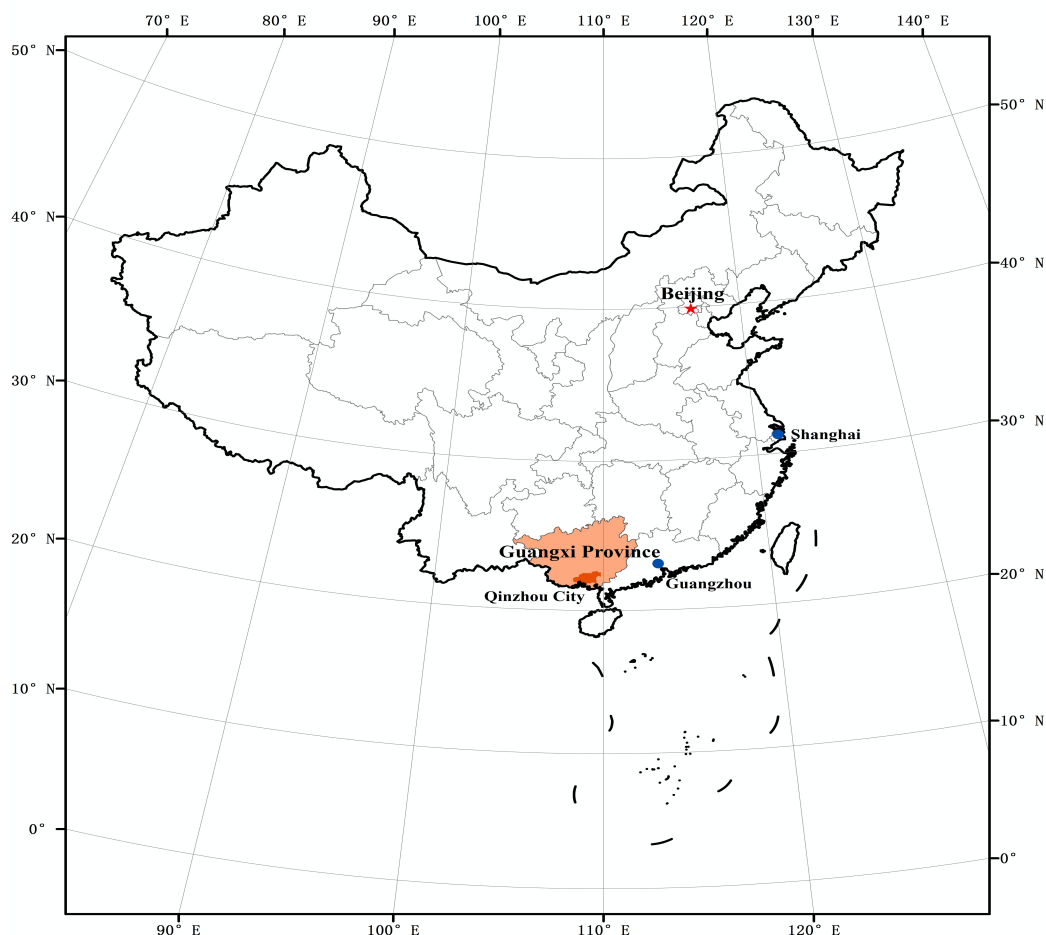
<sup>16</sup> Five Stalinist criteria, including "possession of a common language, territory, economic life, and psychological make-up", were used to identify the ethnic status and names (Took, 2005:5).

<sup>17</sup> According to China's Yearbook of Ethnic Work 2003, China has 5 Autonomous Regions, which are provincial-level administrative divisions. Like a province, an autonomous region has its own local government, but has more legislative rights. An Autonomous Region is a minority entity of which a large proportion of the population belongs to a particular minority ethnic group. (Source online: [http://www.chinatoday.com/city/china\\_autonomous\\_regions.htm](http://www.chinatoday.com/city/china_autonomous_regions.htm). Accessed on September 7, 2018).

region, it is the main settlement area of the Zhuang. The autonomous region offers advantages for the Zhuang.

*“This administrative structure with elements of self-government makes it possible for different levels of the government to support ethnic minorities by lowering taxes and increasing public expenditures. Further, in minority areas, having minority status makes it easier to become a cadre (that is, a village head, village party secretary, or village accountant)” (Gustafsson & Sai, 2009, pp. 193-194).*

From a state perspective, Autonomous Regions were intended to assist national security and to facilitate the socialist transformation of all the national ethnic groups towards socialism (Harrell, 1995, p. 24). The year 2018 marked the 60th anniversary of the Guangxi Zhuang Autonomous Region. However, the Zhuang culture is much older than 60 years. The history of the Zhuang will be presented in the following section. The map below shows the geographical location of the GZAR in Southwest China.



**Map 2: The Location of Guangxi Province**

(Cartographer: Ke Zhang, 2016)

The GZAR covers an area of 237,600 square kilometers, and administers the Beibu Gulf area of approximately 40,000 square kilometers (Guangxi Government, 2018). It is in the subtropical monsoon climate zone, with an average annual temperature of 17.5 to 23.5°C, average annual rainfall of 841.2 to 3,387.5 millimeters, and average annual sunshine of 1,213 to 2,135.2 hours. The GZAR borders Guangdong Province to the east and Beibu Gulf in the south, and faces Hainan Province across the sea. It borders Yunnan Province to the west, Hunan Province to the northeast, Guizhou Province to the northwest, and the Socialist Republic of Vietnam to the southwest (Guangxi Government, 2018). The GZAR and Guangdong Province have historically been called *Lingnan*. Qinzhou City was part of Guangdong Province in the Ming dynasty and Qing dynasty, the periods between 1912-1951 and 1955-1965 respectively. During the Song dynasty and Yuan dynasty, the time periods between 1952-1954 and from 1965 to the present respectively, Qinzhou City was and is administered by the GZAR (QCCC, 2012; QLCCC, 2018; Li & Pang, 2000). The history of the Zhuang will be presented in the next section, which is followed by the introduction of the city of Qinzhou, Xintang Town, and Huangwutun Town, and the six chosen villages.

### **3.1.1 The Zhuang in History**

This part illustrates when the Zhuang ethnic group emerged, what the political system was like before the central government took over from local chiefs; what was done by the government to “civilize” the Zhuang, who were considered to be “barbarians” (Took, 2005), and what kind of culture the Zhuang have. It also explains what connections exist between international trade, the agricultural system, and environmental (biodiversity) transformation in the GZAR. Finally, the agricultural policy of the Chinese Communist Party (CCP) and the current debates on a forest monoculture economy and its crisis will be briefly presented.

According to archaeological discoveries, there were primitive human races living in the area of GZAR as early as 800,000 years ago. About 20,000 to 10,000 years ago, people living here learned to make and use sharpened stone tools. Between 10,000 and 6,000 years ago, the ancient people in the territory gradually moved out of the caves and river valleys and began living on the plains and coastal areas and formed tribes (MFAPRC, 2018). According to Zhang (1997) and Qin (1998), ethnic groups who live in GZAR today (including the Zhuang) are descended from these tribes. One of the old names of the Zhuang ethnic group is Luo Yue (骆越部族/ 雒越) which means “a paddy field in the mountains” (Zhang, 1997; Qin, 1997; Qin 1998). This

finding shows that an agricultural economy based on farming rice has long been the main economy in this region (Li & Pang, 2000). Rice farming depends on a rich river system in this area, including the Red River, Left River, Right River, West River, Liu River, Rong River, and Maoling River, among others.

The Zhuang were recognized as an ethnic group by the governors of China mainly from the Song dynasty (960-1279) (Took, 2005, p. 7), when there was a rebellion by Zhuang leaders, e.g. Nong Zhigao, between 1025 and 1055 (Huang, 1962). The political system in this area was originally defined by the so-called Tusi system (chieftaincy; literally, “native superintendency”) in which the officers of the Tusi administration were Zhuang (Li & Pang, 2000, p. 194). Took (2005, p. 1) explains:

*“The native chieftaincy system, a form of indirect rule, was employed by the late-traditional Chinese state as a pragmatic means of exercising political control over the tribal chieftains who ran China’s indigenous frontier societies. Under this system, the Chinese court officially recognized indigenous tribal chieftains who had submitted to it, thus nominally incorporating them into the Chinese system of government.”*

The last native chieftaincy administration in Guangxi was ended in April 1928 (under the political reform of bureaucratization of native offices, 改土归流) when government officials completely replaced the Tusi officers (Took, 2005; Zhang, 1997, pp. 657-676). The Zhuang living at that time felt oppressed by the local headmen, who were backed by the central government (Li and Pang, 2000, p. 194). This discontent led to numerous uprisings in the 19<sup>th</sup> Century, such as the Taiping Revolution – the biggest peasant uprising in Chinese history, which broke out in this area in 1851 (MFAPRC, 2018).

Moreover, people living in the south of China (e.g. in Guangxi) were called *man* (literally, “uncivilized”) by the central government in the ancient times. Meanwhile, the Chinese (the Han) attempted to “civilize” the “barbarians” (Took 2005; Zhang, 2015c). As the Chinese Empire expanded, the transformative impact of civilizational forces took place, including the establishment of schools, the propagation of the ethics of feudalism, the passing-on of ironworking and cattle-farming techniques, the construction of water management, and the introduction of the irrigation of farmland (GBSYC, 2015). Although the Zhuang were considered to be barbarians, they have a rich and colorful culture which brought forth thousands of songs and dances, Zhuang brocade, a specific clothing style, a rich food culture, and musical instruments (MFAPRC, 2018).

The agricultural system has played a significant role in shaping the local environment of the Zhuang settlement, where two rice crops could be harvested from the same plot of irrigated paddy field (Marks, 1998, p. 53). Marks's work offers a good interpretation of the interaction between the nature and the people in this region. In his work on the relationship between people's activities and the environment in Lingnan (1996; 1998, published in Chinese in 2004), Marks has offered a view on understanding how "the Han people had come to occupy the richest farmland in the river valleys and the Pearl River Delta, while the non-Chinese held hands in the hills of northern and eastern Guangdong and in the western half of Guangxi" by the late imperial period (Marks, 1998, p. 53). Marks reasoned that population growth had significantly contributed to land clearance and that the commercialization of crops (tea, silk, and rice) was another key force remaking the landscape, the environment, and wildlife. Marks explored the river system's role in shaping people's livelihoods and the transformation of the nature in Lingnan.

Significant for my study, Marks (1996, 1998) explored the river system's role in shaping people's livelihoods and the transformation of nature in Lingnan. He argued that the function of many cross-border rivers was to transport silt, which shaped river deltas in Guangdong Province, including in areas where the Zhuang lived. Marks (1998, p. 66) says: "To be sure, silt carried downstream in the West, North, and East Rivers had been setting out in the bay, slowly creating the upper reaches of the delta." The fertile plains and valleys of upstream rivers where the Zhuang had settled attracted other ethnic groups to the river valleys – in particular the Han people (*ibid.*). Over time, big cities such as Guangzhou City grew hugely because of this area's agriculturally rich capacity, and through practices of water control and irrigation (Marks, 1998, pp. 63-65). Furthermore, rice and other crops became cash crops because of the growth of cities and global trade connections (such as the trade in silk and tea trades). "The most immediate stimulus for the commercialization of the economy was the new demand for Chinese goods – in particular silk and porcelain – from European traders who arrived in the South China Sea in the sixteenth century" (Marks, 1996, p. 60).

Significantly, the growing silk industry resulted in the commercialization of the major crops and the transformation of land-use patterns. "Commercialized agriculture, even in the early decades of the eighteenth century, may have claimed half or more of the arable land in Guangdong Province" (Marks, 1996, pp. 65-67). This resulted in the expansion of the "mulberry tree and fish pond system" (桑基鱼田) (Marks, 1996, p. 61). Marks (1996)

domestrated that an increasing portion of land was planted with mulberry trees to support the silk export trade. As a result, less land was available for growing rice, and the price of rice began to increase. Furthermore, state land-reclamation policies were used to support the increased population. Tax exemption for newly reclaimed paddy land and unirrigated land was used to encourage the farmers to reclaim scattered land plots. Thus,

*“For Guangdong, according to figures gleaned from the Qing Shi Lu for the years 1737-1800, about 800,000 mu of land was cleared for cultivation, or about 1,500 mu per recorded year. In Guangxi the reported amounts were considerably less, totaling just 150,000 mu, and most of that was irrigated paddy. (...) That was not a small amount of land: between 1693 and 1853, an additional twenty million mu each was brought into production both in Guangdong and Guangxi Provinces, doubling to 80 million mu the cultivated land acreage in Lingnan. In terms of the percentage of the total Lingnan land area under cultivation, the amount increased from about 14 percent around 1713 to 24 percent in 1853, representing about ten thousand square kilometers of land” (Marks, 1996, pp. 69-70).*

The land-use changes had ecological consequences, such as deforestation. Marks also pointed out the environmental impact of the arrival of Yao people in Guangxi and Guangdong Provinces: “their preferred habitat was the hills and mountains, where they organized themselves into villages, or at best into groups of villages that might be called ‘tribes’, that practiced slash-and-burn shifting agriculture” (1998, pp. 54-55). It was not only the Yao, but also the demand for tea for commercialization that contributed to the clearance of forest.

Steward (1934) (quoted in Marks, 1996, p. 71) observed that the peasant farmers “habitually fire most the burnable slopes in the vicinity of the homes during the dry season each year. The continuation of this practice tends to destroy the majority of the species of woody plants and change the aspects of a once richly forested country to that of a hill or mountainous grassland.” The deforestation had damaged the tiger habitat in the region:

*“Along with notations on natural disasters, rebellions, and dragon sightings, the chronicles of local gazetteers are filled with reports of tigers’ attacks on villagers.(...) In Guangxi Province tigers entered villages and attacked people and animals, as in Huaijia country in 1752, or in Liucheng county in 1699. Villagers thus had reason to fear tigers, and tigers may well have been more numerous and threatening than bandits to peasant farmers. The relevance of tigers is their habitat: they live only in forests; particularly favoring lowland riverine forests. (...) The relation is simple: no forest, no tiger. The converse also holds: where there were tigers, there were forests in Lingnan. (...) Burning off the forest cover reduced the tigers’ food supply, and contributed both to tiger willingness to enter villages searching for food, and to attack and eat people. (...) Tiger attacks are meaningful indicators simultaneously of forests and of the encroachment of humans into tiger habitat. (...) Today, just a few tigers survive in the mountains on the border of northern Guangdong and Guangxi. This is not surprising in light of extensive deforestation*

*documentable by the twentieth century” (ibid., 1996, pp. 72-73).*

Marks also stated:

*“Significantly, in Guangzhou prefecture the last tiger attack on record is for 1690. After that, the record of tiger attacks ends (...). Records are more sparse in Guangxi, but in Wuzhou and Xunzhou, the last attacks were scattered from 1752-1777” (1996, p. 74).*

In Marks’s view, the connection between tigers, rice, silk, and silt has contributed to the shifting of the regional environment, culture, and economy in Guangdong and Guangxi Provinces. This offers an interpretation of Guangxi’s environmental history.

Marks has focused mainly on the Han Chinese, in particular on the interaction between Han Chinese and minority groups, and on their environmental impact on frontier areas through the growth of population and state policies. The minority groups and their ecological knowledge are mentioned only briefly. Peter C. Perdue (2013, p. 184) responded to Marks’s argument as follows: “Since scientific understanding of natural processes in China is still rather underdeveloped, we might object that his story puts too much weight on human action (...) Marks’s overall picture is not encouraging.”

In addition, the immigration of the Han and other minorities to Guangxi and Guangdong Provinces contributed to the demand for land and other natural resources. In the meantime, the emergence and development of the global trade led to a change in the land-use model and the decline of agrarian society (such as the traditional silk industry) in the 18th and 19th century (see also Li and Pang, 2000; Marks, 1996). The Zhuang region imported more and more goods, mainly from Europe. After the Opium Wars (1840) and the war between China and France, opium and other Western goods were rapidly brought into the region by Western countries. These goods were transported from trading ports to the interior via boats on the rivers (Zhang, 1997; Li and Pang, 2000). Zhang (1997) argued that the development of international trade in the Qing dynasty (1636-1912) had greatly impacted the self-sufficient agricultural livelihoods in Guangxi. The trade resulted in the outflow of silver, the bankruptcy of farmers, the concentration of land, and the demise of the domestic silk industry (Zhang, 1997, pp. 820- 825).

In particular, the development of technology in modern silk manufacturing in Western society and Japan greatly resulted in the decline of the rural silk industry in Guangxi. A similar situation was observed by Fei (1939, pp. 16-17) in the Yangtze River area.

*“As Japanese silk was dumped on the American market in the latter part of the year (1934)*

*China's silk export dropped to the lowest point accordingly. The volume of silk exported amounted to only one-fifth of that in 1930, a fact which is indicative of the depression of the Chinese silk trade. (...) the internal market for silk has shrunk at the same time due to the same forces of industrial revolution affecting the weaving industry. The consequence of the shrinkage of the market is the break-down of the traditional domestic silk industry in the rural industry."*

Nevertheless, the Zhuang area has kept its agricultural system, even in the face of the depression of the Chinese silk trade. The majority of people still conducted agriculture. For instance, the Guangxi chronicles recorded how the diffusion of agricultural skills improved the local Zhuang peasant farmers' grain harvests (Wang, 1988; QLCCC, 2018). A similar argument is held by the CCP and the central government:

*"The Zhuang area is basically agricultural, but before 1949 the local people never had enough to eat despite their hard work and the favorable natural conditions. By 1983, they had raised grain output by 158 percent thanks to improved field management and the 500,000 water conservancy projects built since liberation" (MFAPRC, 2018).*

This shows the achievements of the CCP in increasing the Zhuang people's harvest. The construction of waterworks has raised the capacity to control water in order to avoid flooding and drought. The land reclamation policies contributed to the increase of land under cultivation under the CCP's agricultural policies since the 1950s (Wang, 1988). However, these policies have profoundly changed agricultural practices and the ecological situation in the Zhuang region. For instance, land reclamation also resulted in deforestation, which the government has tried to address (Wang, 1988, pp. 519-520).

More recently, in the last decade, the forest crisis in Guangxi Zhuang Autonomous Region has taken a new turn. Based on my limited interviews with local officials and peasants, there has been a debate about the rapid development of a forest monoculture economy based on eucalyptus in order to support a paper and timber industry in this region since the 2010s. Eucalyptus has been imported from Australia and other seven countries to the region since the 1980s. An email reply from the Chairman of the autonomous government to a complaint letter written by a local resident on the eucalyptus crisis on March 5, 2018 shows the magnitude of the situation with regard to eucalyptus:

*"In the past 10 years, the eucalyptus plantation in Guangxi has developed rapidly, with an average annual increase of 2 million mu. (...) At present, the area of eucalyptus plantations has reached more than 30 million mu in Guangxi, accounting for half of the total area of eucalyptus in China. The stock of eucalyptus stands more than 90 million cubic meters, accounting for 14% of the total forest reserves in the region. Wood production exceeds 17*

*million cubic meters, ranking first in the country” (Liu, 2018).*

Peasants on the other hand say that eucalyptus is a “pumping machine for water”, “pumping machine for fertilizer”, “a green desert” and “a type of toxic tree” (Interview city officials in Qinzhou City, April 2017). People are arguing that the eucalyptus grows too fast and has consumed most of the water and has eliminated other plants. This has resulted in the loss of water and soil erosion. Meanwhile, people point out that there are no birds living under or in eucalyptus because its leaves are poisoning the environment. For example, the leaves of eucalyptus have poisoned the water consumed by rice, animals, and people (Qinzhou 360, March 20, 2015). Even though the government argues that these kinds of discourses are false, the debates are still going on and the government has started to remove the eucalyptus from the water sources and tries to control the area of its plantations. Thus, the history of the Zhuang has been characterized by economic and environmental contestations up until today.

### **3.1.2 The Zhuang Belief System**

In the following, the Zhuang belief system will be described. This offers an interpretation of the crucial relations between the nature gods, temples, and environment within the Zhuang communities. Rivers, rocks, trees, and other natural elements constitute the environments for the settlements of villagers and their gods. River-sand mining is interacting with the indigenous ecological knowledge, especially in the form of the local religious practice in this context. Chapter 9 will discuss in detail how sand over-mining in the river has impacted local people’s beliefs and seasonal worship practices.

The Zhuang created numerous works of ancient literature, particularly the creation epic “Buluotuo”, which illustrates Zhuang cosmology. “Buluotuo” is a transliteration of a term in the Zhuang language meaning “the head of the mountain”, “the old man in the mountains”, or “intelligent old people who know anything.” According to the “Buluotuo”, the thunder king (the heavens), the dragon king (the earth) and the first ancestor of the Zhuang were born from the same stone (Guangxi Government, 2018). It points out that the heavens, the earth, and humans are like brothers who share the same mother. This “mother” was a stone which condensed from black, yellow, and white gases. Therefore, the gods and humans are from the same source. (Ling, 2010; Zhou, et al., 1986). “‘Mojing Buluotuo’, a Mojing classic, prefigured the ecological ethics of the Zhuang in ancient times. To seek a harmonious and orderly development of human beings and nature, people are required to comply with nature, respect

natural rules, treat nature nicely, respect life, and establish friendly relationship between human beings and nature” (Ling, 2010, p. 90). This epic has significantly informed Zhuang belief and customs. Thus, stones play a crucial role in the life of the Zhuang, who worship diverse kinds of stones for various purposes, including the stone-god of the field, the stone-god of the village, and the stone-god of the mountain (Liao, 1997).

Since ancient times, the Zhuang have been polytheists, believing in the power of many inanimate things in nature, such as giant trees, high mountains, the earth, the sun, rivers, frogs, and their ancestors (see also Ling, 2010, p. 91). Sacrifice activities are usually held because of their belief that in doing so they are being blessed by the divinity, thus preventing all kinds of disasters (Deng, [邓艳葵] 2012). For instance, the Zhuang maintain a large tree around a temple on their land where land gods are worshiped. This worship symbolizes the prosperity of the village. Similarly, to the stone worship, trees are also worshiped during the festivals, and considered as the spiritual fathers or mothers of some of the villagers (Xu, 2006; Wang, 2003). It is forbidden to cut down these trees or even to urinate around them, otherwise it is believed that punishment will come to the violator. Actually, the Zhuang realize that the trees, forests, and frogs have a positive function with regard to their farming as they influence the rainfall and environment. (Guangxi Government, 2018; Ling, 2010)

In Huangwutun Town and Xintang Town, ancestral worship, land-god worship, ghost worship, water/river god worship (Chuan tou gong worship), and the geomancy system (Fengshui, literally, the “wind and water system”) constitute the major belief system. The ancestors are considered the gods of the household, who protect and provide benefits for their offspring if the ancestors are buried in a good geomantic position in the mountains and if the house is located in an appropriate environment according to the rules of Fengshui. The land god is considered the god of the village, who protects the harvests and the people of the village. Ghost worship is another side of worship practiced when bad things happen. The villagers then visit a wizard to deal with the problems that ghosts have caused.

Fengshui has always been a big part of the belief system in the villages in China. Freedman (1958; 2007) has shown that the village’s settlement bears a strong relation to geomancy in South-eastern China. He has pointed out that:

*“[m]igration has been a constant feature of South-eastern Chinese society. Sometimes whole villages have moved when continuing sickness, lack of sons, or some other kind of misfortune has convinced their inhabitants that their geomancy is wrong” (Freedman, 2007,*

*p. 11).*

The connection also seems to be the same in the local villages where the villagers insist that any residence land must be chosen in accord with the customs and the geomantic rules (i.e. the rules of Fengshui). Weddings, funerals, housing, moving, and other big events of each household are planned in consultation with the local masters (Li and Pang, 2000). Local people become masters through a series of rituals and by observing restrictions. First, a man who wants to become a master has to find two existing masters to be his mentors. He has to send them gifts and other required items such as rice, pork, duck, chicken, and red paper containing money. The initiation ritual takes place during a religious event, such as a funeral or a prayer. The master-to-be performs the ritual with his two masters at this event. Through these rituals, he is said to be reborn and is then given a religious name and uniform, which he can use to perform rituals moving forward. After the initiation ritual, he also needs to be confined for forty-nine days (49 天的闭关修行) and comply with his own masters' teachings. He stays at home, focuses on reading his masters' books without going out, keeps away from women and "unclean things" (such as public toilets or a household in which a woman has given birth recently), and obeys the prohibition against eating dog meat and killing animals. After all rites are performed, he will have new gods and a new spiritual master who will guide his future. This means the new master can change his fortune for the better – benefiting both him and his household – and he is allowed to conduct religious rites for the religious events.

The villagers worship the god of land four times each season collectively, while households may also worship at the temple of land at any festival and any ceremonial activities such as weddings or funerals. These kinds of worship are so normal in local life that they demonstrate the continual interaction among the gods, village, households, and individuals in the village. Indeed, ancestors and the land gods play a crucial role in the villagers' daily lives. Each household carries out a prayer ritual at the beginning and the end of a year, during which rice is added to a specific container (添粮, means adding a longer life or a blessing for a person) for the elderly, mainly for parents and grandparents. Zhuang believe that when an elderly person reaches a certain age, his or her "food" (meaning life energy) may be "used up" (which would result in their death). It is necessary then for his or her children, grandchildren, and married daughters- and sons-in-law or other close relatives to make offerings of rice, grain, or money (添福添寿) for him/her. Rice has been frequently used in most of the religious rituals by the masters in the Zhuang region (Chen, 2011).

Apart from collective and household worship, there are also many individual worship activities. For instance, during the Lunar New Year, an individual should worship the trees, stones, and special masters that he/she has built a spiritual relation with. For example, my niece built a religious relationship with a big stone beside the river. On one occasion, she could not go back to the village and worship her own spiritual god. Therefore, my cousin's wife and I went to worship that stone for her with a piece of red paper, some food, and three scents. The god-trees around the land temple would be full of red papers, which indicate their strong religious relationship with many individuals.

In my own experience, the household worship in the New Year is also crucial in claiming property. When I was a child, I had to stick a red paper to each litchi tree, pig ring, and toilet, and to a bullpen that belonged to our household after the domestic worship. This is because people believe that their gods and ancestors will then protect their belongings and bless the households' harvest and income. Nowadays, this red paper also has to be stuck on their new cars and boats for the same purpose.

This belief system has been maintained for generations, and the Zhuang gather together for these religious activities (Liao, 2004). I observed that the collective worship helps the local people in many ways. Firstly, the worship system maintains common activities by gathering most of the villagers together, even those who have migrated away from the villages. The religious activities are still the duties of each household in each village. Secondly, this system also serves as a way of dealing with all the conflicts and common issues regarding the village collective situation. Thirdly, it is a platform to discuss the collective affairs of the village. Worship mainly takes place during the various festivals. I will describe some of the local festivals in the following.

### **3.1.3 Festivals of the Zhuang**

Festivals are integrated into the Zhuang people's beliefs, customs, food culture, and entertainment, all of which play a key role in people's personal and collective lives. There are diverse kinds of festivals based on either village unit, lineage unit, or household unit. Sometimes there is not really a clear boundary between village-based and household-based festivals because they overlap and interact. The collective events have always been integrated into household activities regarding funds, labor, participants, and performances. The festivals thereby answer many needs of (and require much engagement by) both collectives and

individuals in the research settings. Actually, these festivals put pressure on the villagers, for instance to find funds through sand-mining activities and other activities. These activities exhaust the natural environment.

Nowadays, the Guangxi Zhuang Autonomous Region assigns March 3 (Lunar calendar, 三月三日) as the beginning of a three-day provincial festival holiday. March 3 is not only the birthday of the Zhuang ancestor Buluotuo, but also has become the day of a regional and traditional singing festival. In addition, The Lunar New Year (the Spring Festival, 春节), and the Ghost Festival (七月节) are well known in Guangxi (Guangxi Government 2018). Nowadays, the Zhuang songs, costumes, festivals, and other cultural items have been used to develop cultural tourism projects.

The famous village-based and household-based festivals are known as “dancing on the head/slope of the mountain” (Tiao Lingtou, 跳岭头), “worshipping the common ancestral temples and graves” and “worshipping the Land of Gods.” The “Tiao Lingtou” is the most famous festival in Qinzhou City, and this mainly takes place at the level of the natural village. The major activity is dancing by the masters (*Tiao* means dancing and performing in the local language), accompanied by local drummers. This is a traditional folk festival of the Zhuang and the Han celebrated in the Qinzhou area (QLCCC, 2018, pp. 1869,1891; Lin, 2007). Some scholars argue that the movements of the “Tiao Lingtou” dance are similar to the postures of figures depicted in the rock paintings<sup>18</sup> in the Huashan along the Ming River (Lin, 2007; QLCCC, 2014). The official record of Qinzhou shows that the festival has at least a 470-year history, and it is held at various times for a period of ten days (Li & Pang, 2000).

When I was a child, I experienced the “Lingtou festival” (岭头节, in my aunt’s village – Dawan Village in Xintang Town. The local people explained: “Before the ‘Tiao Lingtou’ celebration, the villagers will be fishing in the village ponds, and the households will sacrifice ducks, chicken, or fish to the ancestors and the gods.” This is the same in Huangwutun Town. Such collective actions need to be well-organized under the control of traditional institutions, such as funding-collection and voluntary labor organizations. On the one hand, conflict and dispute among the members occur. On the other hand, the collective banquets and drinking

---

<sup>18</sup> The Huashan Rock Art Cultural Landscape Guangxi was listed as the 49th UNESCO World Heritage Site in China in 2016. [www.chinadiscovery.com](http://www.chinadiscovery.com).

together help them to build a better neighbourhood and brotherhood. The “Lingtou Team” (master Team) meet at the mountain slope of each village to carry out dance activities and spiritual cleaning rituals, and to pray for peace and a good harvest (see Photograph 3). The masters, who are also local peasants like the other villagers, wear masks and perform “Tiao” (dancing) and also sing songs and enact dramas. There are also martial arts and folk magic performances. The performance program includes setting up altars, inviting the gods, and exorcisms (catching evil spirits and sending them away in a dragon boat, burning the boat as it floats along the river). There is a drumming accompaniment to the singing and dancing (Lin, 2007; Li & Pang, 2000).



**Photograph 3: Lingtou Team in Huangwutun Town**

(Source: Ke Zhu, 2017)

These are village-based collective celebrations that rely on the collection of funds from each household or from public income (e.g. from renting out common mountains or selling river sand). The better the Lingtou team, the more expensive it is (Interview in Nazhong Village, April 2017). The quality of a Lingtou team is evaluated by its history, costumes, tools, familiarity, performance, singing, and dancing. These village-based activities are based on folk beliefs and common consciousness, integrating festival customs, village customs, and entertainment. The “Tiao Lingtou” is regarded as a sacrifice made in order to send away evil spirits, to pray for good harvests, and to protect the village (Lin, 2007). If the income is low and some households fail to contribute to the public fund, the festival of the “Tiao Lingtou” will not occur. Although the public will still pray for the security and prosperity of the village, the village as a whole will then have failed to put on a collective show of unity and capacity. But this seldom occurs because the local villagers still maintain the Lingtou festival (Interview in Nazhong Village, April 2017).

“Tiao Lingtou” is followed by “Eating Lingtou,” (吃岭头) which involves each household hosting a banquet for relatives and friends. This subsequent household-based festival illustrates the connection and interaction between a single household and the village community. The Lingtou Festival is just one folk festival among many village-based worship activities in Huangwutun Town and other towns in Qinzhou City, but it is the most important and celebrated one. During the period of the Lingtou festival, migrants will return to their villages, and many friends/relatives of the households will be welcomed to join in with the celebration and banquets. The overarching principle of “Eating Lintou” is “the more, the better.” It is a time when the local people pay a lot of attention to their social relationships and try to improve their social networks by hosting many guests. This public event has been said to be a means for the young people to find potential partners, as well as a way for the local village to build up a sense of kinship with other nearby villages. Showing the unity and wealth of the village is also a goal of this overnight performance and several-day-long banquet (Interview in Nazhong Village, April 2017).

The “Tiao Lingtou” was selected into the fourth batch of national intangible cultural heritage representative projects in 2014, marking a new step in the protection and inheritance of the intangible cultural heritage of the city of Qinzhou. It has now evolved from a religious festival into a form of folk entertainment in some tourism places (Lu, 2015).

In addition to “Tiao Lingtou”, the religious event “Worshipping the God of Land” which is followed by “Eating Tudi”/ “Zuo She” (吃土地/做社, having a banquet together in the temple of the land gods) is also very popular. Furthermore, the Qingming Festival (清明节) and Chongyang Festival (重阳节) are important lineage- and village-based ancestor-worshipping activities in the setting areas. Villagers in Xintang Town worship the graves of the ancestors. The people in Huangwutun Town will do so during the Qingming Festival. Other regular festivals are special festivals for ghost worship; for instance, the ghost festival. During these events participants pray for a blessing for the agricultural harvest, more job opportunities, safety, and smooth progress for a better life.

Villagers told me that they would use some of their money earned from selling sand to celebrate Lingtou festival, “Eating Tudi”, and “worshipping the common ancestor graves” as well as to build agricultural channels and more cement roads. This expansion for collective worship can be seen in the village expenditure record during my fieldwork. Most of the time, the details of

donations, fund collections, other public income, as well as the expenditure will be written on a big red paper and posted on the public bulletin board. In addition to money, the contribution of labor is also demanded by the elders for the collective events of the village. During the banquets, the names of the households which need to contribute labor will be announced by the elders, as was the case in Mei Village.

### **3.1.4 The Language and Education of the Zhuang**

Cultural practices such as festivals are taught to children, and young people are required by their parents to engage in these collective activities in addition to their schooling. I will explain the overall Zhuang language and education system in what follows.

The Zhuang have a language of their own, which belongs to the Zhuang-Dai branch of Zhuang-Dong Austronesian, part of the Sino-Tibetan family (Li & Pang, 2000). Although there are few differences between them, the language is mainly divided into two dialects (so-called Southern Zhuang and Northern Zhuang) (GBSYC, 2015b). Chinese characters were used before 1955 for writing. However, a writing system based on the Latin alphabet was created in 1957 with the help of the Chinese government (GZARLRC, 2000). This is regarded as the Zhuang language. In this language, the Zhuang refer to themselves as “Bu duo”, “Tu ren”, “Bu tu”, “Ban ren” (Kaup, 2000, p. 46; QLCCC, 2018, p. 2146). The Han were referred by the Zhuang as “guest people.” “Of these guest people, the Zhuang called those who spoke Mandarin ‘Bu he’, and those who spoke Cantonese ‘Bu guang’” (Kaup, 2000, p. 46).

The people of Qinzhou mainly speak Zhuang, Yao, and Chinese languages<sup>19</sup>. Nowadays, most of the schools only use Mandarin for teaching, and Mandarin is overwhelmingly used in the media. Therefore, the children in rural areas can also speak Mandarin. This is very different from my own experiences: I barely spoke Mandarin at my primary school; all my teachers at primary school taught in the Condonese or Xinli dialect, apart from those teaching the Chinese course (Mandarin and Chinese culture). When I conducted my fieldwork in the villages, however, many local pupils could speak Mandarin, and some of the younger parents even used Mandarin to communicate with their children at home. I observed that this is driven by the

---

<sup>19</sup> The Chinese language mainly includes Cantonese dialects (粤语), Hakka dialects (客家话), Official language (官话), Min Language (闽语), and Ping language (平话), which are distributed throughout the city. There are also some outsiders who speak Mandarin. Cantonese can be further subdivided into five dialects, including the Cantonese of Qinzhou (钦州白话), Xinli dialect (新立话), Lingshan dialect (灵山话), Xiaojiang dialect (小江话), and Xiniujiang dialect (犀牛角话).

popularity of smartphones, Internet, and TV, through which the Zhuang people can easily access cartoons, movies, and news in Mandarin. It may also be because of the villagers who immigrated to work outside this region, who have to communicate with others in Mandarin.

Nonetheless, the Zhuang language has never been widely used in schools, or in the government or the media. Recently, the government and educational departments of the GZAR established a plan to enhance Zhuang language education. “The Development Plan of – Han Bilingual Education in Guangxi Zhuang Autonomous Region (2016-2020)” was published on April 21, 2016. The goals of the Plan are to increase the number of bilingual education primary and secondary schools in the region to 300, and the number of students in the bilingual schools is projected to reach 150,000 by 2020.

A teacher at one of the Zhuang ethnic high schools (also called Guangxi Zhuang Language School and Guangxi ethnic secondary school) in Wuming County (which recently become part of Nanning City) describes as the following:

*“My school is a Zhuang ethnic school, where some Zhuang language teachers are working. However, the Zhuang ethnic school keeps this title, though it lacks students. This school claims to offer an elective course in the Zhuang language as well as bilingual classes in Zhuang and Han. But there is no bilingual class (the only teaching language is Mandarin). The school also opens a three-one-three program for the students, meaning each student must learn a Zhuang song, a Zhuang dance, and three-sport projects of Zhuang (means three kinds of the Zhuang’s sports). This program is quite successful so far. Meanwhile, my son also goes to the kindergarten (which belongs to this Zhuang ethnic school) where they must wear ethnic costumes and learn to sing some Zhuang songs in special ‘Liu Sanjie’ lessons during the March 3<sup>rd</sup> Festival” (Interview on September 20, 2018).*

There is no ethnic school in Huangwutun Town or Xintang Town. The only Zhuang ethnic middle school of Qinbei District is the Middle School of Nameng Town, which was established in August 1995, and the ethnic classes were set in 2004 (the establishment of the Middle School of Nameng Town was in 1964). There are three grades, and each grade had an ethnic class with 50 students of the Zhuang nationality in October 2018. They take lessons in the Zhuang language once per week (Interview a teacher of the Middle School of Nameng Town, January 2019).

Education was focused on training the local youth to study Marxism so as to be able to communicate and work for the new government in the 1950s. According to the central government’s “Tentative Proposal for the Training of Minority Cadres” in November 1950, and the launching of the Central Nationalities Institute, followed by the regional Nationalities

Institute, the training of nationality cadres/students was crucial to conduct land reform and autonomous regional governance (see also Kaup, 2000, pp. 129-138).

Minority cadre education is an institution for constructing autonomous regions (Li & Pang, 2000). My interviews with a former production captain and an accountant of the production brigade highlighted that the land reform was launched after they finished the trained workshop in the city. Indeed, they had often gone to the city for cadre conferences to study how to distribute or measure land, in order to educate production captains in every household at the end of the 1970s. The original documentation of Mei village clearly shows who out of these cadres attended the government/party's conference, when they did so, and what subjects were discussed. The trained cadres were the main force to implement the party and government's policy in the villages.

None of these trained cadres can obtain their pension in Mei Village. The accountant of the production brigade asked me to do him a favor and apply for his pension. But I was told by the deputy mayor of Qinbei District that there were 3,000 of these "former" cadres who could not obtain this pension, though they had applied for it. "The government cannot support all of them." (January 2015). I was told that most of them had lost their original contacts/ documents. As a result, they could not prove their cadre identities. One potential way to do that is to submit more than 100,000 yuan (€ 12,658.23) to the government in order to obtain about 800-1,000 yuan (€ 104-130) each month. The former cadres told me that they did not have money for that. "I am 80 years of age. Therefore, I am not sure how long I may live. Whether it is worth to pay the government this big amount of money is debatable because nobody knows when the money will be refunded" (Mei village, January 20, 2015). This also happened to my Chinese teacher at the primary school I attended, who had taught for 40 years but received no pension to live on.

Nine-year compulsory education with free schooling has encouraged many families to send their children to schools since 1992 (QLCCC, 2018, p. 1764). Facing uncertainty concerning careers, some households support their children to go to a technical school to learn some skills after middle school, such as mechanics, hotel management, or nursing. I was the first member of my village to obtain a bachelor's and then a master's degree. I am also the only member of Mei Village who has studied abroad. In 2019, when this dissertation was written, 10 villagers were attending university, 7 of them attending high school (technical school), and 17 studying

in middle school. In 2015, 42 pupils were studying at the primary school in Mei Village.

In addition, the frequent migration of parents and the issue of leaving children behind is a social-education issue in the region. The number of rural children who were left behind in the villages by their families has recently been calculated by the local education bureau. Na elementary school has 282 pupils, of whom 97 were left behind (see Photograph 4). Of these, 94 lived with their grandparents, while 3 lived with other close relatives (quoted from the statistics of Na elementary school in 2015). Those pupils' parents usually work outside the villages for months or years. The children have to stay with their grandparents or relatives.



**Photograph 4: A Daily Scene of Morning Exercises at the Na Elementary School**

(Source: field data, 2015)

The students of the ethnic groups are awarded extra points (from 7 to 20 points) for entering the colleges<sup>20</sup>. This policy is still valid based on The Development Plan of Zhuang–Han Bilingual Education in Guangxi Zhuang Autonomous Region (2016-2020).

Apart from language and education, the most outstanding transformation of local villages is evident in the change of the house style. Therefore, the transformation of houses will be

---

<sup>20</sup> I obtained seven points when I entered the University in 2003 as a Zhuang.

described in the following.

### **3.1.5 The Zhuang Villages and the Transformation of Houses**

The Zhuang residents of Qinzhou have a tradition of living in a group, but they are very different from those of the Han people regarding the locations and architectural style of their settlements (QLCCC, 2018). My main finding and argument in this part is that the new style of houses demanded river sand, cement, and other materials, a demand which has contributed to the boom in river-sand mining.

Freedman (2007, pp. 5-6) cited Van der Sprenkel: “The evidence shows that lineage organizations were more numerous, better organized and more influential in South China than in the North. This may be partly due to southward population movements of the Han Chinese under ‘barbarian’ pressure. Such internal migrations were important as early as the Six Dynasties period, and notably after the fall of the Northern Sung and during the Mongol conquest” (Van Der Sprenkel, 1964, p. 367). Freedman (2007, pp. 5-6) pointed out that “there is a temptation to look upon the single-lineage settlement as the historically prior form and mixed settlements as evidence of a later disturbance of the primordial pattern.” Kaup (2000, p. 45) illustrated that “Generally speaking, the Zhuang and Han live in the most fertile valley areas and grow rice as the main crop. The Yao, Miao, and Yi, which are the groups in closest proximity to the Zhuang, tend to live in the more mountainous areas.” An old saying about the locations of each ethnic group goes: “The Miao and the Yao live at the head of the mountain; the Zhuang and the Dong live at the head of the river, and the Han stay at the head of the street” (Naxia Village, March 2017). The Zhuang villages of Qinbei District are mainly located along the Maoling River and its tributaries, where they are situated beside the mountains or hills, close to the fields and near the river. This means that there are similar single-lineage settlements among Han people and other minorities group in Guangxi. Before liberation (December 1949), Zhuang residents used stones to form a wall around the village, planting thorns outside the wall, and built a gatehouse at the entrance of the village, setting up fences in the gate building; some villages also built a cannon building, standing in the middle or at the side of the village, to facilitate observation and defense (Li & Pang, 2000).

The locations of Zhuang villages are affected by various issues, such as the number of residents, natural resources, religious practices, ethnic identities, agricultural technology, condition of education, and business skills of the villagers, as well as the history of the previous aspects.

Furthermore, the distribution density of the villages also depends on the capacity of the environment. That is to say that it follows the basic principle of having to have sufficient land for subsistence. The villages are generally about one kilometer apart. Around each village, people often plant a variety of bamboo trees to create a green environment to prevent soil erosion. As discussed, the Zhuang villages have at least one big tree in their territories where their collective worship activities take place (Li & Pang, 2000).

Housing in the Zhuang villages on which this study focuses has undergone a major transformation in the past 30 years. And this transformation is closely related to river-sand mining. Therefore, I will discuss the transformation of housing styles in the Zhuang villages in the following. The main argument is that housing styles of Zhuang villages have become modernized, and this represents the modernization of households and the modern lifestyle of peasants in the villages. Yet, the cement-and-steel houses with big glass windows in a modern style demand much more sand than wooden-beamed traditional houses. This is reflected in the transformation in value of river sand and other construction materials in rural areas. River sand as a material has been rapidly depleted by utilizing new mining technology in rural areas.

In the Song Dynasty, due to the environmental situation with dense jungle, rampant wild animals, hot climate, and damp ground, the local Zhuang popularized a house structure with two floors, made of bamboo and wood (Li & Pang, 2000). The upper level of such houses was for the family, while the lower level housed the livestock or was used for storing firewood (Chen, 2011). In the Ming Dynasty, according to the “Qinzhou Gazetteers – Customs”, “The tree and wood pile were used to build the wall, the roof was thatch, the middle half was the cabinet for the people, under the cabinet were the cattle. The ancient traditional housing style of the high nest had not changed”<sup>21</sup>. Later on, the house changed to the “dry column” style of building, in which the upper story was raised up on wooden posts while mud was put on the wooden/bamboo framework (similar to the European “wattle-and-daub” manner of construction) (Li & Pang, 2000; QLCCC, 2018).

---

<sup>21</sup> People built their dwellings on top like a nest because of the danger of snakes.



**Photograph 5: A Dry-column Building Can Still Be Found in Kuixi Township, Jingxi County, Guangxi**

(Source: Xiaoye, 2018)

In the Qing Dynasty, the homes of Zhuang residents underwent a major change. The numbers of dry-column houses with their all-wooden structures gradually decreased (see Photograph 5), being replaced with buildings with dry columns composed of earth and rocks. That is to say, the wall base part was built with stones, and the gable part was made of adobe brick or rammed earth. The top of the gable was erected with rafters, and the roof was covered with small tiles to form a double-sloping suspended rooftop. The interior was erected with a horizontal row of beams made of wood, which was covered with wooden boards to form floors and separated into small rooms by wooden boards. Between 1912 and 2005, the Zhuang residents' buildings were basically the same as the Chinese-style buildings (Li & Pang, 2000; QLCCC, 2018). This is the typical traditional housing style of Zhuang villages.



**Photograph 6: The Traditional Houses** (Sources: field data, 2017)

The raw materials required to build a traditional house are timbers, mud bricks, fired bricks and tiles, and lime. The mortar for this style of house is made of mud to stick the bricks together. This mud mortar does not require any sand. Sand is used mainly for building the cement-floored courtyards of these houses. These courtyards are vital for agricultural households in that they have an important agricultural function. Moreover, the yard is also the public place of a house, where children can play and domestic animals are wandering around<sup>22</sup>. This kind of traditional house has been replaced by new style of house, as the pictures below show.



**Photograph 7: A New-style House in Xintang Town**

(Sources: field data, 2017)

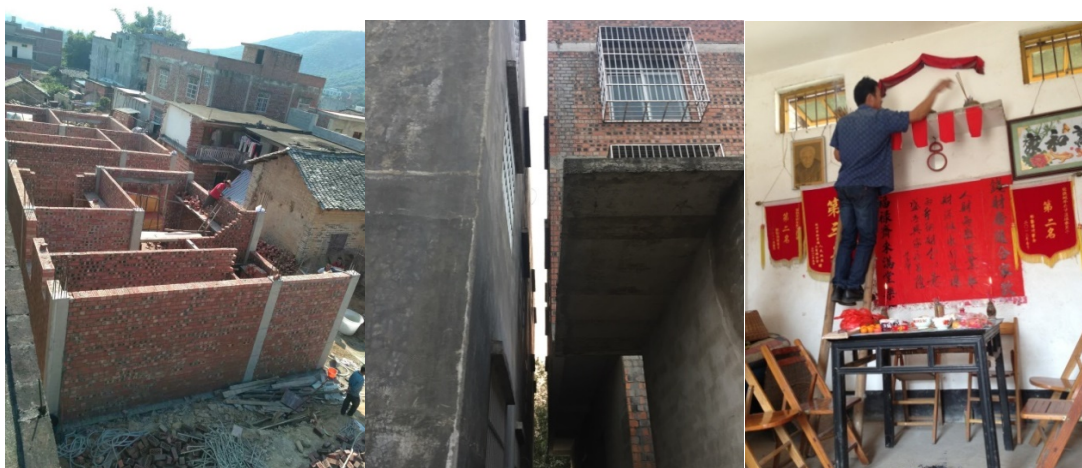
Six items constitute the cost of building a new house, namely, the prices of cement, steel, bricks, sand, gravel, and labor wages. Labor wages, bricks, and decorations are the costliest components when building a new house (see Photograph 7). The modern house demands much more building materials than the traditional wood-based house structure. I collected data from 10 households about the necessary material. Mostly multi-storey houses were built between 2012 and 2018, and the average amount of sand used ranged between 60 and 200 cubic meters. The local households commonly took more than ten years to collect the money for building their new houses. For instance, one household bought a piece of land near the main entrance for 60,000 yuan (€ 7,595), in addition, he paid 210,000 yuan (€ 26,582) for building the three-story houses respectively. He did not have money for decoration when the house was completed in 2015. The main way for local villagers to be able to afford new houses and improve their

---

<sup>22</sup> Even though the people repaired their houses every single year (basically at the end of the year and before the Lunar New Year, the timing of which depends on an auspicious day that a priest announces), the wooden-beamed roofs were still problematic, with fired tiles which did not achieve the goal of being waterproof. Not only were many tiles broken over the years, damaged by either mice, naughty children, or storms, but also the poor quality of these tiles would mean that some of them would not connect properly to one another, leading to gaps in the roof.

well-being is to become migrant workers.

Some households even borrow money in order to build a better and taller house. Competition in the building of new houses was reported during my fieldwork. “Our house is bigger than everyone else’s” is a typical statement that I heard. This statement indicates that villagers fully recognize this competition to display their wealth and capacity. During my fieldwork in 2014 and 2017, I observed that there were some households located very close to each other – even so close that there were only 60 centimeters between the two new houses to show their family solidarity (see photograph 8). Brothers of some households might even build their new houses at the same time to show their capacity and family solidarity to the community. The competition is tense inside the village. Vulnerable groups (the poor, the elderly, and the sick) are disadvantaged in this sense, but they can obtain funding from the government to build a new house.



**Photograph 8: The Competitive Building of Houses, and the New Altar Hall**

(Source: field data, 2017)

By 2018, all of the 94 households in Mei Village had built their new homes. Living space for elderly parents is a common issue when moving to new houses. Although a married couple enthusiastically invite their ancestors to their prepared ancestral hall (which will be the biggest hall of the new home), some of the young couples do not prepare a specific room for their parents in most of the new houses. Therefore, the new houses are mostly made for the married sons. As a result, the older generation is treated as less important than both the younger generation and the ancestors.

The social value of the house is significant to each household. The villagers told me in 2015,

“The new house looks pretty, modern and big; it is fairly comfortable to live in it.” It represents the economic capacity of the household, and the probability that the sons will get married. Furthermore, I observed that the kinship activities have been changed by the transformation of house styles. The relation between kinship and architecture was studied by some scholars (e.g. Stafford, 2000). The shift in the architectural style impacts people’s kinship interactions. My finding is that the second floor of the modern houses is used for bedrooms, which are rather private for the family. The first floor is most likely used as living rooms for social activities and worship. Furthermore, it has become more and more common that relatives team up to buy an air conditioner, a sofa, or a computer rather than each of them just buying a small gift like a bucket, since the price of items like an air conditioner is rather high, and the old items, such as a bamboo fan, are not appropriate in the new houses anymore.

### **3.2 Qinzhou City, Zhuang Towns, the River and The Settlements**

According to the Qinzhou government’s geographic census in 2017, the population was around 4.1092 million (QZGOV, 2017). Qinzhou City has 23 ethnic groups including Zhuang, Yao, Miao, Jing, Yi, Li, Yi, Maonan, Yi, Tujia and Han. The Zhuang group, as developed from the Luo Yue people, is the oldest ethnic group in Qinzhou (QLCCC, 2018, pp. 2144-2145). The city’s ethnic minority population is about 413,000, making up 10.24% of the total population, of which the Zhuang number 406,000, accounting for 10.06% of the total population. There are 943 Zhuang-inhabited natural villages (communities) which are distributed over 116 administrative villages in 16 different towns of Qinbei District, Qinnan District, and Lingshan County, all part of Qinzhou City. The Zhuang population accounts for more than 50% of the population in the six towns of Dazhi, Guitai, Dasi, Nameng, Xintang (in Qinbei District), and Huangwutun (in Qinnan District) (QZGOV, 2017; QLCCC, 2018, pp. 2144-2145). For example, Xintang Town has 50,762 residents, including 48,899 Zhuang, 46 Miao, and 23 residents in other minority groups. There are also 1,789 Han residents (Record of Xintang Government, 2015). Qinbei District was granted the status of a Zhuang Autonomous County in May 10, 1958, but this was withdrawn by the central government in November of the same year. And then established Zhuang Autonomous County of Qinzhou in January 31, 1964 and was withdrawn by the central government the June 26, 1965 (Li & Pang, 2000, p. 195). According to the “Minority Autonomous Township Administrative Work Rules” from 1993, “a township can apply for Minority Autonomous Township status if the percentage of ethnic minority households accounts for over 30% of the total population in the jurisdiction” (Gustafsson & Sai,

2009, p. 195). Therefore, the selected Huangwutun Town and Xintang Town are two Zhuang towns also in this regard (QLCCC, 2018, pp. 2144-2145, see Map 2). These two chosen Zhuang towns will be presented in the following.



**Map 3: Map of Qinzhou City**

(Source: cartographer Ke Zhang, 2016)

### **3.2.1 Huangwutun Town**

Huangwutun Town is located in the western suburbs of Qinzhou City. It is one of the Zhuang Townships (QLCCC, 2018, p. 2147). The peasants grow commercial crops such as rice, silkworm mulberry, vegetables, fruits, sweet potatoes, corn, peanuts, and soybeans. Huangwutun's administrative area is 226.7 square kilometres (QCCC, 2012, pp. 283-284). It has 16 village committees (administrative villages) and one neighborhood committee, a total of 156 natural villages (Li & Pang, 2000, p. 102). And the per capita income of farmers was 3980 yuan in 2008 (QCCC, 2012, p. 282).

Huangwutun Town's annual output was 1.11 billion yuan (€ 140 million) in 2016, an increase of 11% compared to the previous year, and its fiscal revenue was 18.52 million yuan (€ 2 million), which meant that it accomplished and exceeded the development goal set by the previous year's People's Congress 100.1%. Furthermore, the fixed-assets investment amounted to 690 million yuan (€ 87 million), an increase of 4.7% year-on-year by March 2017. The industrial output was more than 1.2 billion yuan (€ 152 million), thus meeting and exceeding the task assigned at 100.4%. Importantly, its rural residents' disposable income per capita was 11,200 yuan (€ 1,418), an increase of 9.8% in 2017 compared to the previous year (AGWRHT, 2017).

The expansion project of the Huangwutun Bridge, which was damaged by sand dredgers, was started in September 2016, and the envisaged construction period is 18 months. A total amount of 5.7 million yuan (€ 721,000) was invested by the town's renovation project, which made up 70% of the project, and the cumulative investment of 4.8 million yuan (€ 607,000) had enabled the installation of 84 solar street lights. Construction work was begun on the town sewage treatment plant, and two major drains were built to transfer stations, which were in use. Due to the investment of 4.8 million yuan (€ 607,000), the construction of a so-called "ecological countryside" (生态乡村建设) was fully completed, and a total length of 6 km of portions of three village roads were repaired (AGWRHT, 2017).

In order to fight the roots of poverty, the establishment of a poverty alleviation assistance program targeted the implementation of supporting measures. Hence, in April and September 2016 two clusters of poverty alleviation projects were started, investing a total amount of 350,000 yuan (€ 44,000), donating 17,400 chickens, more than 200 pigs, 260 ducks, and 14,000 kg of feed to poor households (AGWRHT, 2017).

From the report above, it is clear that the township government basically implemented the projects that the higher government had planned in advance. My fieldwork research in Huangwutun Town shows that the town had a rather high out-migration rate. In Naxia Village, a whole branch of the village's lineage (one fourth of a total of 500 villagers) migrated to Qinzhou City, while there were many households of Nazhong Village that worked and lived in Nanning City. During the Qingming festival, many households came back, worshiped at their ancestors' graves, and stayed for two days in the village. These households had no idea about what had actually happened in the village. According to the local farmers, they were planting single-season rice each year.

According to oral history, sand extraction had been a common phenomenon in their river since the 1990s. It was easy to find out that dredgers of different sizes were mining sand even during flood seasons. The villagers pointed out that they were used to these kinds of situations, i.e. to the fact that dredgers would only stop pumping out sand during the New Year Festival period. "Who can buy a dredger and who can appropriate sand for selling? This is a business. You invest money, and then you make profits" (interviews with township residents and cadres, March 2017).

### **3.2.2 Xintang Town**

Xintang Town is located on the northern border of Qinzhou City. The township is 58 km from Qinzhou City and 70 km from Nanning City. It is governed by Qinbei District. Xintang's administrative area is 116 square kilometres (QCCC, 2012, p. 434). It has eight village committees (administrative villages) and one neighborhood committee, and a total of 65 natural villages (Li & Pang, 2000, p. 106). The farmers' annual income per capita was 3,675 yuan (€ 460) in Xintang Town in 2008 (QCCC, 2012, p.434). At the end of 2014, the total population of the town was around 50,762, with a male population of 28,128 and a female population of 22,634. 41,429 of those people live in villages while the rest live in the township communities (AGWRXT, 2015) .

Xintang Township is a small agricultural town in Qinzhou City. Until the year 2000, most of the people depended on farming to make a living. Their chief crops were rice, Chinese yam banana, lychees and silkworm mulberry (Li & Pang, 2000, p. 106). The average per capita farmland area is 0.6 *mu* (400 m<sup>2</sup>) (Gazetteers of Xintang Town, 2013). As Jing has pointed out, this extremely limited farmland has made it virtually impossible for villagers to meet their basic

needs solely through agriculture (Jing, 1996, p. 7). Kaup (2000, pp. 29-30) states:

*“The harsh mountainous terrain in China’s southwest has historically kept the area even more removed from the central government than has its actual distance from the capital. Of Guangxi’s more than 230,000 km<sup>2</sup>, over 70 percent is covered with mountains and 20 percent with rivers, leaving only 10 percent suitable for farming (...) The seventy-two percent of Guangxi’s agricultural fields are still rice paddies, however, and rice accounts for over 80 percent of Guangxi’s total food production.”*

A survey of more than 900 minority villages located in 22 provinces in 2002 shows that,

*“(...) minority villages located in southwest China clearly have a poorer economic situation than the average majority village (...) Location is found to be the single most important circumstance working against a favourable economic situation for Uyghur, and particular for Zhuang, Miao, Yi, and other southwestern minority villages. We also find that a low village income induces many ethnic minority persons to be involved in long-distance migration, but for some minorities, this potential source of economic development is thwarted by their ethnicity” (Gustafsson & Sai, 2009, p. 194).*

Even though there is little available farmland, the Zhuang people living here have heavily relied on farming as their primary source of income; this can be seen in the form of the Longji Rice Terraces of the Zhuang in Guangxi.

**Table 5: Agriculture in Xintang Town**

Title	The total acreage of farming of crops (in <i>mu</i> )	The total of crops (including beans)		Rice	
		Acreage (in <i>mu</i> )	Production (in tons)	Acreage (in <i>mu</i> )	Production (in tons)
Total	83,026	49,740	16,703	36,105	13,853

(Source: XTGS, 2015)

The town had more than 20 cars, and 400 tractors and agricultural vehicles, as well as 3,500 motorcycles. Furthermore, there were 3,300 households with fixed telephone lines, and more than 8,424 televisions, in 2011 (LGCXT, 2011). The farmers’ annual income per capita had increased to 5,086 yuan (€ 644) in Xintang Town in 2011. Of the peasant families, 80% had built concrete houses (LGCXT, 2012).

The farmers’ annual income per capita had further increased to 7,703 yuan (€ 975) (LGCXT, 2014). The total grain output in Xintang Town was 17, 544 tons in 2013. Sugarcane planting has expanded to 632.16 *mu* (0.42 km<sup>2</sup>), and it was the number-one crop plant in Qinbei District. The yam cultivation area amounted to 3,800 *mu* (2.53 km<sup>2</sup>) and the output was 9,500 tons; the

cultivation area under lychees was 830,000 *mu* (553.33  $km^2$ ), including the black leaf lychee taking up 70,000 *mu* (46.67  $km^2$ ) (LGCXT, 2013). Table 5 shows the crop production in 2015.

### 3.2.2.1 Mei Village: An Example of the Settlements and Agricultural Crisis

When I started my research in Mei Village, I learned that it had 70 residents when the Communist Party took over the government of China in 1949, and 505 members in 2014. The Household Responsibility System (家庭联产承包责任制) was implemented at the end of the 1970s, and Mei Village had 235 members who signed the contract (承包合同) with the Nagan Production Brigade (equal administrative village) for a term of 15 years (from January 1, 1985 to December 31, 1999) on November 17, 1984, meaning that every adult would gain 0.683 *mu* of farmland (455  $m^2$ ). The total land area of Mei Village was about 148.3 *mu* (9.8 hectometres, including paddy field, dry land, and homesteads). As land was limited, the income of village farmers was relatively low, because it was generated through paddy rice harvest, poultry breeding, and lychee harvest. The same contract was signed again in 1994, which extended it until December 31, 2029 (field date of Mei Village in 2014).

In Mei Village, even though the income from agriculture is not the main source of income for households anymore, it still plays a significant role in a household's economy. Some farmers informed me that there is barely any profit from farming, but growing rice and vegetables, as well as fruits, is still significant for a family for self-subsistence. According to the interviews, some households would make only 10,000 yuan (€ 1,250) per year in 2014, while others might obtain less. For instance, a peasant had planted 0.8 *mu* (533  $m^2$ ) of rice paddy in 2014, from which he obtained 800 *Jin* (400 kilograms) of rice (worth € 150) and received 300 yuan (€ 38) subsidy from the government.



**Photograph 9: A Farmer Watering His Paddy Fields** (Source: field data, 2015)

The peasants of Mei Village plant double-season rice each year (see Photograph 9). My survey

showed that 44 households had stopped farming the second round of rice in 2014. The lack of manpower is one of the major reasons why people have stopped planting late rice; in particular this is the case when both parents of a household are working outside the village.

Cultivating sugar cane was encouraged by the government by offering financial aid: 1,000 g for 460 yuan (€ 58) in 2013, and for 360 yuan (€ 46) in 2014 (see Photograph 10). There were two households that had a good harvest in 2014. One household earned 8,000 yuan (€ 1,012) and the second household more than 10,000 yuan (€ 1,265) from sugar cane. Moreover, there were more than five households that gained around 3,000 yuan (€ 379) from sugar cane.

Besides out-migrant workers, the agricultural crisis has been consistent, with lower prices of rice and fruits. “Good harvest does not mean better income,” the peasants said. In 2018, there was a great harvest of lychees in Xintang Town. However, the price of lychees was rather low in the region. Pictures and videos of the peasants dropping their lychees onto the roads and destroying the fruit by stamping on them were reported on social media and the official websites. The peasants were doing this because no businessmen were buying their lychees or would only buy them at the incredibly low price of 0.5 yuan (€ 0.06) per 500g. This situation hurt the peasants deeply. On September 23, 2018, the Chinese president set up the first “Chinese Farmers Harvest Festival” (中国农民丰收节) in Chinese history. This shows that the central government has realized that there is a crisis in agriculture, and an associated threat to food security. Attaching great importance to agriculture forms the foundation for social stability and plays a key role in governance (Liang, 2018).



**Photograph 10: Sugar Cane Marketing** (Source: field data, 2014)

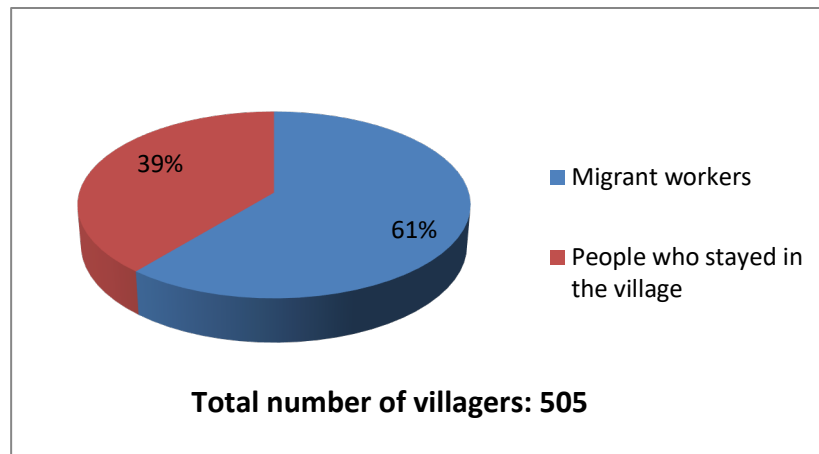
### 3.2.2.2 Migrant Workers Settling Down in Urban Areas

Following Deng Xiaoping's market-oriented reform in the late 1970s, rural China has experienced a fundamental transformation in terms of people's livelihoods and lifestyles. Residents of Mei Village have increasingly moved to urban areas to look for employment and for businesses, see also (Zhang, 2002). The villagers have learned some new things during their working experiences in urban areas (Zhou, 1996). For instance, the new machines they worked with, the knowledge and information that they have acquired, the lifestyles they have seen and admired in the urban areas. They have also picked up new ideas from television (Yan, 2009). They have become "rural-to-urban migrants" (Lei & Li, 2012). Meanwhile, a "rural acquaintance society" (Fei, 1998) has become a "semi-acquaintance society" (He, 2013). Howell (2017, p. 200) states: "[m]igration leads to substantial increases in rural incomes and decreases poverty rates in rural China. In particular, migrants' remittances are the most important contributor to rural household income growth."

Migrant workers have become a common phenomenon in rural Xintang Town and Huangwutun Town. However, until the 2010s, the Hukou System<sup>23</sup> (the government's household registration system) did not allow migrant workers to hold a citizen identity in Qinzhou City. Nonetheless, "[m]inority designated households are on average generally less likely to migrate as well as migrate for shorter periods of time relative to the Han majority households" (Howell, et al., 2018).

---

<sup>23</sup> Residency status in China is determined through the Hukou or household registration system. Lei and Li (2012, p.1) explain: "Beginning in the 1950s, the Chinese government officially promulgated its hukou system to differentiate residential groups... There is a dual classification in a person's hukou. The first is one's residence, which is commonly referred to as rural/urban area; and the second is one's socio-economic eligibility, which is commonly referred to as agricultural/non- agricultural category. Individuals registered under the agricultural category depended mainly on their own labor and the fluctuating harvests for survival; individuals registered under the non-agricultural category, on the other hand, were entitled to a "cradle-to-grave" welfare package provided by the government. As a result, urban residents were seen as superior to rural residents in terms of socio-economic status."



**Figure 1: Labor Situation in Mei Village**

(Source: field data, 2014)

Figure 1 shows the number of migrant workers and of villagers who stayed in the village. The migrant workers (309 persons, 61% of total) were those who regularly worked outside the village for more than six months. Nonetheless, every household had members working outside the village in Guangdong Province, or in Nanning City, Qinzhou City, or other towns. Middle-aged men would work as construction workers in Nanning City or nearby towns. The daily wage for a construction worker ranges from around 180 yuan to 300 yuan (€ 23-38), while factory workers can earn between 3,500 and 6,000 yuan per month (€ 443-759). In March 2015, an informant told me that he had earned the highest amount of money as a construction worker in 2013, namely 60,000 yuan (€ 7,594) in that year, while his entire income in 2014 was only 45,000 yuan (€ 5,696). Usually, it was easy to find a job on construction sites in Nanning City (1.5 hours away by bus), where urbanization was taking place rapidly.

Some female villagers told me that they had been working for years in factories in Guangdong Province before they got married. They believed that they could also earn money for the family just like men. Some women pointed out that working outside the village broadened their horizons and gave them more financial independence. During my research period from 2014 to 2016, many married women were working hard in the factories in Guangdong Province or nearby cities. As a result, the wealth differences apparent in the village are based on family labor. Essentially, peasants have become workers, while they are still trying to keep their farmland in the village.

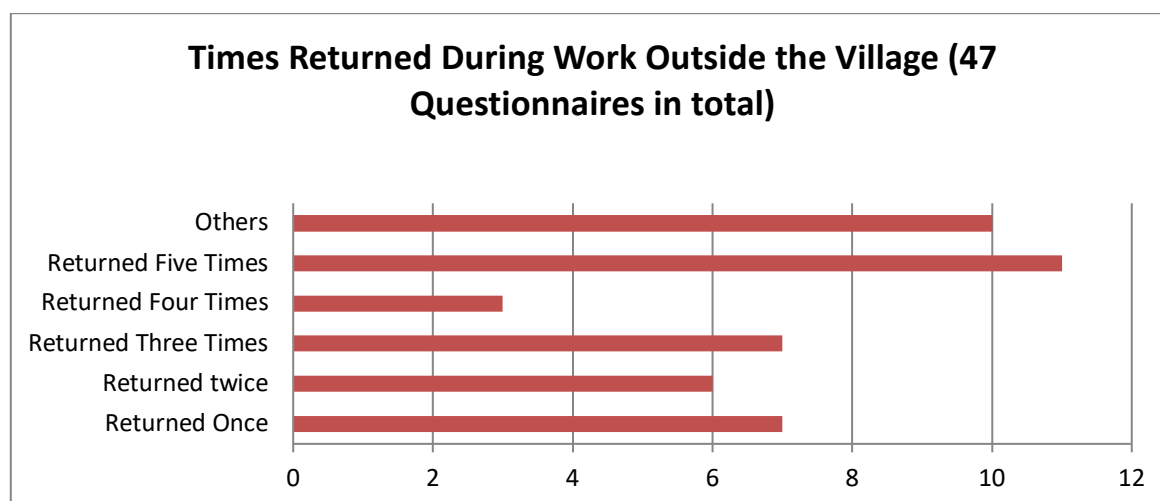
**Table 6: The Statistics of Labor in Xintang Town**

	Laborers in total	Agricultural Laborers			Migrant Workers	Migrant workers outside Guangxi Province	Resident Households	Resident Population
	Total	Total	male	Female				
Total	31,495	30,348	16,707	13,641	10,351	7,557	10,807	49,732

(Source: XTGS, February 2013)

Table 6 shows that the number of laborers in Xintang Town was 31,495 in 2013, and the total of agricultural laborers amounted to 30,348. Migrant laborers numbered 10,351, and 7,557 migrant laborers went out to other provinces. The number was a bit overlapping because the migrant workers also included in the resident population of resident households. Even though the residents were moving in and out, they were officially recorded by the Township Government. Labor economy had become the main economy in Xintang Town.

Some villagers gradually settle down in cities and towns. In particular, younger generations move to the cities because they hold a degree from a technical school or other universities. In Mei Village, around 20 households moved to the cities and settled down there in 2014, and there were five more households that had bought apartments or residences in cities and towns between 2015 and 2017. A rather new phenomenon was that some migrant households would take their children and elderly with them, and the children attended school in the cities.

**Figure 2: Number of Times Immigrant Workers Returned to Mei Village**

(Source: field data, 2014)

Figure 2 shows that migrant workers usually return to Mei village. The Mei villagers frequently return home during their periods of work outside the village. Celebrating Lunar New Year is the most important reason for migrant workers to come home. In addition, they return in order to fulfil their socio-cultural duties, such as worship, and to attend weddings or funerals. Some villagers confirmed that they return eleven times per year, while some just visit three times. These trips have contributed to consolidating their social relationships (Zhu Q. & Qin Y. J., 2016). However, how often villagers return to their village is a rather individual matter and varies widely.

**Table 7: The Migration Statistics of Xintang Town in 2014**

Items	Immigration		Emigration	
	Immigration within province	Immigration from other provinces	Emigration within province	Emigration outside province
Total	156	17	1,535	87

(Source: XTGS, 2015)

Table 7 shows that 173 people immigrated to Xintang Town, while there were 1,622 residents who migrated out of the town.

The Qinzhou government implemented the Unified Urban and Rural Household Registration System on September 1, 2014. The new policy allowed all residents to have the same residence status regardless of their original location of Hukou. In Qinzhou City, there are many communities with many immigrants. One retired teacher's three sons, for instance, have bought a total of four flats in Qinzhou City. The whole family moved to the city and left their village land to their relatives. They said that,

*“Ninety percent of the households in our sons’ communities are our people, who speak the Xinli language<sup>24</sup>. We speak the same language. Thus, we do not need to speak Cantonese or Mandarin at all. The owners of the grocery stores, and the people who sell vegetables and fruit, all speak the Xinli language” (Interview with Zhu Shiji, his wife, and one of their sons, in their new apartment in Qinzhou City, August 2015).*

The mobility of the local people between urban and rural areas has contributed to the growth of this special urbanization. As I have stated, some households not only have apartments in the cities, but have also built new houses in their home villages. They live in their rural homes

---

<sup>24</sup> Xinli language is spoken by Zhuang people and other ethnic groups in addition to the Zhuang language.

during the festivals or public worship activities, while they live in their urban apartments (whether bought or rented) during their working periods. Chinese governments have vigorously implemented rapid urbanization policies, and they have reformed the residence registering system to encourage more migrant workers to settle down in urban areas. They have built more schools and hospitals to provide those migrant workers with better public services. These policies have encouraged Mei residents to move out of the village and settle down in the cities.

Some background knowledge about the Maoling River and the six villages are provided below.

### **3.2.3 The Maoling River and Six Villages along the River**

Some studies have discussed the relation of rivers, local economics, and the environment in rural China. Skinner (1977) conducted doctoral dissertation research on the structure of markets in the Chengdu Plain in China in 1949. He highlighted the significance of the river system significantly in forming the regional economies and livelihoods. Skinner (1977, p. 282) writes:

*“Taking the river basin as the essential regional determinant is particularly appropriate in the case of agrarian China, where crop inventories and productive technique were specially adapted to a plains-and-valley ecology and where water transport was of the greatest importance. In most Chinese physiographic regions, the river system provided the skeleton of the transport network that underlay the region’s functional integration.”*

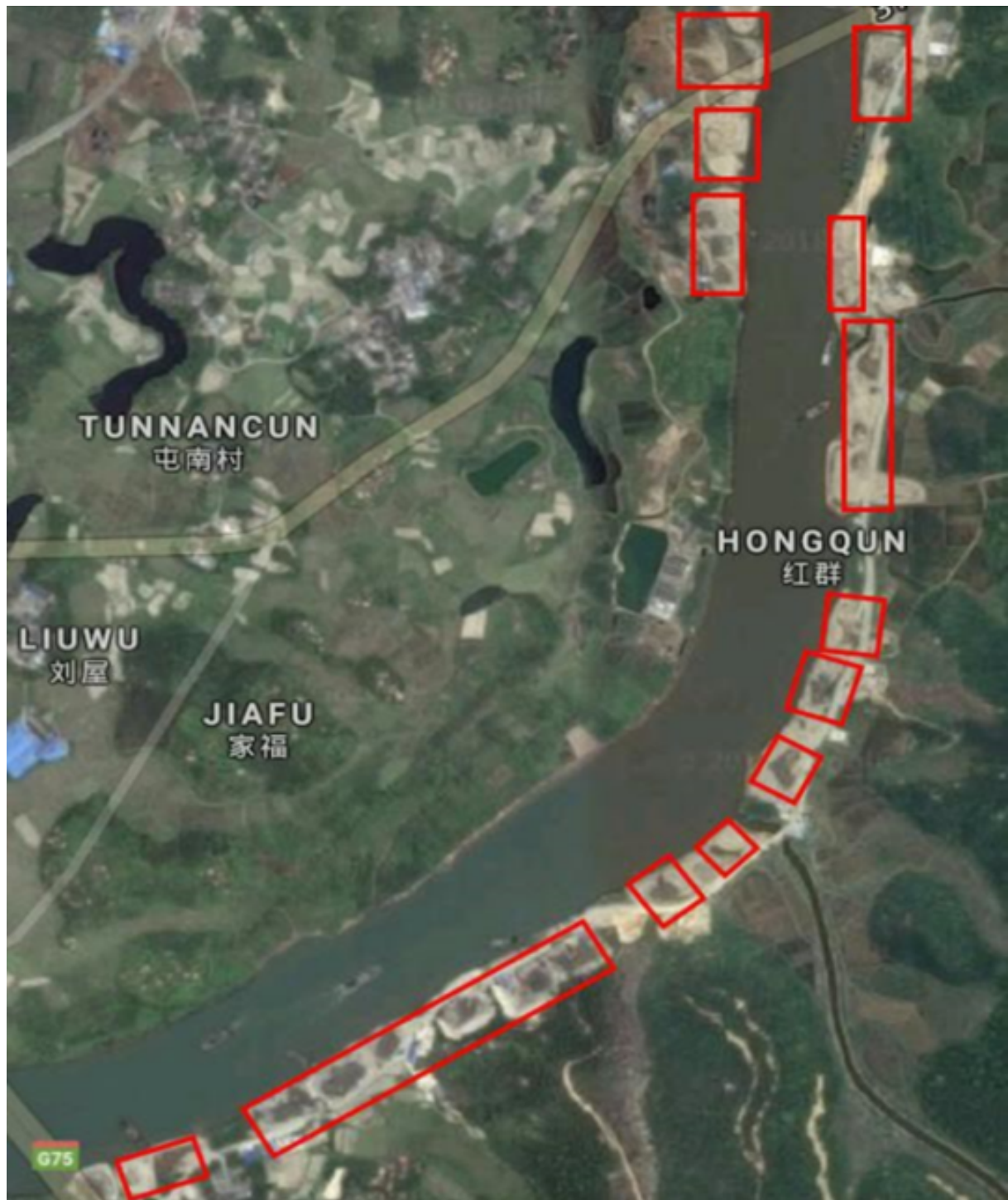
Apart from Skinner, Marks (1998, 2012) is another scholar who has highlighted the crucial role of the rivers in forming the regional eco-culture system.

This dissertation focuses mainly on the Maoling River, which is the biggest river in Qinzhou city; its source is in Bancheng Town, and it flows through Xintang Town, Huangwutun Town, and several other towns in Qinzhou City, and it eventually flows into the Maowei Sea in the south. Mei Village, Nayang Village, and Na Village are located upstream along the Maoling River, while Naxia Village, Nachun Village, and Nazhong Village are located downstream.

The total length of the main river is 112 kilometres, and the basin area covers 2, 959 square kilometres. The basin’s average elevation is 109 meters. The river passes through Qinzhou City and also through the nearby Fangchenggang City. The normal depth of the Maoling River is one to four meters, while the normal width of the river is about 150 to 300 meters. It has a sandy riverbed. The tide from the Maowei Sea can be traced upstream to Huangwutun Town’s Leather Dam. In this regard, from downstream of the Leather Dam, the river section is a tidal river. River water is abundant, according to many years of observation by the Huangwutun

Hydrological Station. The average annual flow is 82.12 cubic meters per second, the average annual runoff is 25.9 billion cubic meters, and the annual runoff depth is 1,000 mm. Due to the change of precipitation, the river flow changes greatly during the year. During the flood season between April and September, the average runoff is 1,999 million cubic meters, accounting for 77.2% of the annual runoff. The maximum monthly runoff generally occurred between June and August, accounting for about 50% of the year; dry-season (October to March) runoff is 590 million cubic meters, accounting for 22.8% of the annual runoff; the minimum monthly runoff occurred in December–February, accounting for only 9% of the entire year. Erosion modulus of the river is 187 tons per square kilometer. The annual sand transportation volume of Maoling River is 553,000 tons, which is the highest among Qinzhou rivers. River sand is mostly yellow-white fine sand, suitable for building materials (ibid, 2000, p.175). The Maoling River hosts diverse fish species and plays a significant role as a means of water transport. It also provides water for agriculture and drinking, as well as industrial purposes (Li and Pang, 2000, pp. 146-148).

Since the 1990s, the sand of the Maoling River has been harvested, in particular, through illegal sand mining and illegal sand marketing, and deals have occurred along the Maoling waters and riverbanks. According to the government officials of the government of Huangwutun Town in 2017, those mining sites, as well as mining ships, have lacked mining/business licenses. Streamlined sand mining and effective sand governance are absent in the region. As a result, the Maoling River is undergoing rapid transformation, and the violators have stolen many of the river's resources due to the prices of sand used for construction, which have shot up from several yuan (around € 1) per cubic meter to more than one hundred yuan (€ 13) per cubic meter in the last two decades. Chapter 4 will discuss this in detail.



**Map 4: The Illegal Sand-Selling and Storage Sites in Huangwutun Town**

(Google Map, Lat.: 21.981065°, Lon.: 108.523119°, July 20, 2017)

In recent years, the sand of Maoling River has been extracted in large amounts, and many disputes and conflicts concerning sand have emerged along the river (see Map 4). Many villages, local governments, and private sand companies are involved in these disputes. My intention was to capture and render the bigger picture of illegal sand mining in Qinzhou City. Therefore,

I eventually chose six villages within Xintang Town and Huangwutun Town as research sites. Xintang Town is located upstream along the Maoling River, while Huangwutun Town is situated downstream. From each town, three villages were chosen. The three villages of each town are located close to one another, and the decisions concerning sand-mining activities and management of each of the villages have an impact on the others in the respective town. I will describe the villages in more detail.

Mei Village is a natural village (also called a village group) that is governed by the Nagan Village Committee of Xintang Town. Mei Village is my original village, where I was born and grew up. It was built during the Qing Dynasty, and it is thus approximately 170 years old (according to the pedigree of Mei lineage). It is a patrilineal society, with all the villagers originating from the same ancestor, which is why they all have the same surname, Zhu.

Na Village is a nearby village with inhabitants with the surname Lu, while Nayang Village is two kilometers from Mei Village, the inhabitants of which share the surname Pan. During my fieldwork, I did my survey in the villages in Xintang Town. Those villages are riverfront villages that have a strong interaction with the Maoling River in terms of resource appropriation, environmental health, and the local belief system. The same situation applies to some other research villages that are situated downstream along the River.

Similarly, Naxia Village is a village group that is governed by the Naqiu village committee of Huangwutun Town. Nazhong Village is a village nearby, but Nazhong Village is governed by the Nadong Village Committee. Both villages sold sand to private miners. Nachun Village of Naqiu Village Committee was the village where the cadres and members of the local CCP branch together signed a contract to sell river sand to an illegal sand miner in 2015, which caused a physical conflict in the village. These three villages are located around the Nadong River, a major branch of the Maoling River. I visited these villages in Huangwutun Town in 2017. It should be made clear that the unit of a production team/natural village which established in Mao's era is still being used in sand-mining management.

My investigations showed that the five cadres of the Nagan Village Committees have received salaries from the township government since the early 2010s, and their office expenses are supported by the government. Fiscal revenue and expenditure of Nagan Administrative Village in the first quarter were collective, according to the publication of the Committee in 2017 (see Table 8).

**Table 8: Fiscal Revenue and Expenditure in the First Quarter of Nagan Administrative Village in 2017**

First quarter financial statements of Nali Village Committee, Xintang Town, Qinbei District in 2017							
Unit: yuan							
	item	current month	grand total		item	expenditure of current month	grand total
1	Balance brought forward	87,524.22	87,524.22	1	Government financial allocation (expenditure)	14,976	73,052
2	Government Subsidy (income)	17,189	92,314	1.1	Basical expenditure	14,976	73,052
	Government financial allocation (income)	9,653	9,653	1.1.1	Performance Bonus and Salary of village cadres	7,986	39,402
2.1.1	Salary of village cadres	7,986	32,022	1.1.2	Office expenses		1,725
2.1.2	Official expenses of village	1,667	5,001	1.1.3	Party construction expenses		3,060
2.2	Cleaning cost	7,536	48,972	1.1.4	Travel expenses	2,220	5,040
				1.1.5	Conference expenses		1,680
				1.1.6	Cleaning cost	4,770	20,145
				1.1.7	Subsidy of natual village head		2,000
	Aggregation / Summary	104,713.22	179,838.20		Aggregation / Summary	14,976	73,052

(Source: field data in 2017)

Consequently, the cadres answer mainly to the government. It follows that the cadres do not always represent the villagers' interests, but solely listen to the government. This also explains their behaviour as the township government's proxies in sand governance.

### 3.3 Conclusion

This chapter presents some background information and findings of the Zhuang ethnic group in the research setting of this dissertation. In particular, I explore the history, cultural practices, settlement pattern, the transformation of houses, livelihood, and education of villagers around the river. Through a historical perspective, an idea of territory with certain collectively owned resources and forms of cultural–environmental interaction has been formed in these areas, such as collectively owned mountains, rivers, land, and temples. This has had an influence on contemporary river-sand mining management in the village near the Maoling River.

Significantly, the village resource management and the rights of the members to access a river, mountain, or other public infrastructure have impacted the river-sand mining activities. Meanwhile, the belief system and festivals have shaped the value of life, and are also a means to build peace and solve disputes and conflict within the villages and between the villages and outsiders (e.g. governments and sand miners). The transformation of the house style and the demand for new modern houses in the Zhuang villages reveal the influence of state-driven rural modernization. The prospects for the households' livelihoods, such as job opportunities, are highly influenced by the government's development projects, and this may lead to frequent immigration into rural areas. Meanwhile, the householders' lives and their capacity to build new homes have been impacted by their religious and socio-cultural customs and rural natural

resources. The drive to build new households has shifted the demand and supply for river sand in the Zhuang communities. As a result, river-sand mining activities have played a major role in the political-cultural and economic-environmental transformation in these rural areas. This interaction between rural villagers and river sand reflects the mechanism of ecological resource degradation in the construction era in contemporary Southwest China.

## **Chapter 4: The Commodity Chain of River Sand and the Ecological Consequences of River-Sand Mining**

This chapter discusses the commodification of river sand in Guangxi Zhuang Autonomous Region. How did river sand become commodified, and how did it become gradually incorporated into a larger sand market? The chapter then goes on to examine how the boom in the sand market has shaped the commodification of river sand and its commodity chain and has further formed the local sand-mining activities and management. Following the political ecology approach, the second part of the chapter calls attention to the severe ecological consequences of the river-sand mining.

### **4.1 The Commodification of River Sand and Its Commodity Chain**

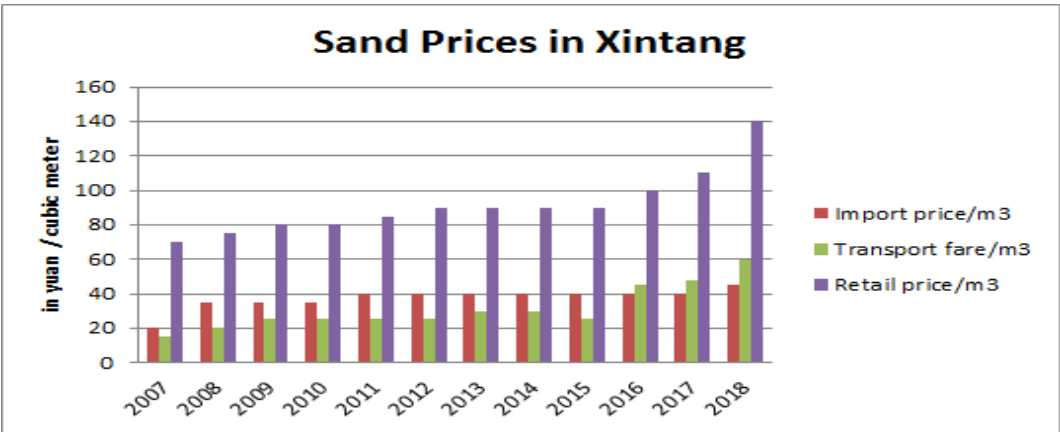
River-sand extraction, transportation, wholesale, and retail sale to final consumers are part of the daily market phenomenon, and highly transboundary in nature. The commodity chain of river sand has become more mature at regional, national, and international levels. In particular, exporting and importing river sand reflects the construction dynamic and economic situation. The sand commodity chain deploys the liquid trope of “flows”, which is one characteristic of globalization (Appadurai, 1990); while a commodity chain is “a network of labor and production processes whose end result is a finished commodity” (Foster, 2005, p. 287; see also Hopkins & Wallerstein, 1986, p. 159; 1994, p. 17; Hartwick, 1998, 2001). Therefore, the cost–benefit analysis in the commodity chain will also be discussed.

The analysis, from the village level to the city level, shows why river sand has been in increasing demand to supply diverse public construction projects and private buildings. Consequently, the market-orientation of river sand mining responds to the boom in construction in China. The transformation of the river sand value chain responds to the many drivers of the dramatic commodity of river sand and also its effects on the natural and social environment.

#### **4.1.1 The Increase in River Sand Prices and the Use of New Modern Technology**

Due to the scarcity of river sand in the market, the price of one cubic meter of river sand in Xintang Town has risen from 70 yuan (€ 8.90) in 2007 to 100 yuan (€ 12.70) in 2016, then to 110 yuan (€ 13.92) in 2017, and finally to 140 yuan (€ 17.70) in 2018 in Xintang Town (see Figure 3). Over-extraction in the last decade has contributed to the current scarcity of river

sand and the increase in sand prices.



**Figure 3: Sand Import Record of a Sand Business Person in Xintang Town**

(Source: field data, 2017)

Figure 3 was recorded based upon the words of Mr. Lu, who launched his sand business in Xintang Town in 2007. The sale site was the biggest and oldest in the township. According to Mr. Lu, most sand was imported from outside the Xintang Township between 2007 and 2018. The import price kept increasing over time, from 20 yuan per cubic meter to 37 yuan per cubic meter (€ 2.5 – 4.6/m<sup>3</sup>), and the transport fare also rose over the past nine years. As more and more people joined the sand business between 2008 and 2015, the profit rates fell steeply. The sand business was not consistent across the whole year. The best time for selling sand was at the beginning and at the end of the year when migrant workers came back with wages. They would buy construction materials to build their new houses, or to add one more floor to their existing houses. Therefore, Mr. Lu humbly claimed that he could earn around 30,000 yuan a year (3,797 €/ year).

I was told by the sand miners in Huangwutun Town that the price of river sand had increased there due to the entrance of big companies engaging in sand mining in the town since 2008. These companies, originating from Zhejiang Province and Guangdong Province, which bought river-sand mining licenses from the prefectural government through river-sand auctions (part of a kind of privatization of sand as a resource), applied new technology and techniques<sup>25</sup>, chiefly big dredgers, to effectively improve sand appropriation. The emergence of new

<sup>25</sup> A small dredger can contain 20 to 25 cubic meters of sand each time, while a medium-sized dredger can contain from 250 to 350 cubic meters of sand. A bigger dredger can contain 500 cubic meters of sand, and the largest have a capacity of up to 2,000 cubic meters per time.

technology for harvesting river sand is a big change in the local area.

Sand extraction by large machines replaced the traditional harvesting models, in which sand is carried by hand or on shoulders with bamboo baskets and shoulder poles. Sand pump dredgers, sand pumps, sand pumping motors, sand washers, sand conveyors, forklift trucks, lorries, and other machines are now commonly used when acquiring and transporting sand; these machines come in a range of sizes to suit different places, such as rivers, pools, seas, lakes, reservoirs and so forth, since there is a huge demand for dredgers and boats for sand mining. Many machine manufacturers have shifted their product lines to produce more sand-mining machines to suit the sand-mining industry, which aims to make more profits and reduce costs. One company producing sand pumps is based in Jinan, in Shandong Province. The company supplies single-stage and centrifugal pumps for mining sand. The export diameters of a sand mining pump are divided into 4-inch, 6-inch, 8-inch, 10-inch, 12-inch, 14-inch, 16-inch, 18-inch, 20-inch etc. (WJW, 2011)

Downstream along the Maoling River, some dredgers with a 1, 000-horsepower sand-mining pump can pump out 1,000 tons per hour, while some 40-meter-long dredgers can contain 450 cubic meters of sand in 2017. These big ships contribute to effectively quarrying the river sand and sea sand.

#### **4.1.2 The Diverse Sand Sellers and Miners**

Sand sellers are a major part of the value chain of the sand market. Due to the ambiguities in the ownership of river sand in the research setting, there are several actors who claim ownership: the state (the government agency), the village community, and the individual households when river sand relates to their land. Importantly, the illegal sand miners claim that river sand belongs to nobody (see Chapter 7).

According to article 17 of the regulations of the Sand Mining Management of the Yangtze River (2002), “If a company or an individual wants to harvest sand at the Yangtze River, they must pay the resource fee for mining sand and gravel to the same authority which issues the river-sand mining license.” This rule means that the government is the seller that brings sand to the market via its license and auction system. For instance, the government at and above county level can conduct river-sand auctions to sell the sand rights to a certain length of a given river to a private company based on the river-sand license system (采砂许可制度, see Chapter 6).

The profits from sand auctions, which are required by the sand-mining system, will provide revenue for the government. The holders of a sand-mining license issued by the government are legal miners, whose rights are clarified by the government. In practice, the legal miners normally sub-sell their sand to illegal sand miners.

Illegal river-sand miners play a key role in commodifying river sand in diverse rivers, and then benefit from the river-sand marketization processes. They have violated the laws in order to mine river sand without paying tax or fees to the government. Furthermore, they have stolen river sand from areas around the rural communities and this has resulted in many social and environmental problems (see also Chapter 8 and 9). Chapter 7 focuses on the issue of illegal river-sand miners due to the relevance of this research.

#### **4.1.3 A Sand Wholesaler in Qinzhou City**

Wholesalers play an import role in sand's value chain. They supply sand to all construction sites across the whole province. Several in-depth interviews with a sand wholesaler were conducted between 2015 and 2017. Mr. Xie, who was 35 years old, originally came from Hepu County, had bought a flat in Qinzhou City and started a business in raw building materials. He basically sold his sand to big construction sites and mixing stations. He hired two drivers and owned two trucks. His statement regarding the sand business is a brief history of sand marketization.

*“My sand is from various places, so, there are different kinds of sand. I import freshwater (river) sand from inland areas and salty (sea) sand from coastal towns. The entire cost of sea sand is 50 yuan per cubic meter (€ 6/m<sup>3</sup>), including the cost of the sand and the transport fee. The import price of river sand is around 20 yuan to 30 yuan per cubic meter (€ 2.5-3.8/m<sup>3</sup>). The transport fee and sand price are almost the same. The sand business has several separate sections. Essentially, there are four or five major players and steps from the harvesting to final clients. Specifically, from the owner of the dredger to the riverside transfer stations, to the trucks' terms, to the dealers, and then to the clients, which is the complete industrial chain. My business belongs to the third and fourth part of the total five steps of the commodification of sand” (Interview in Qinzhou's sand market, July 2, 2017).*

According to Mr. Xie, the profit from sand is decreasing. Several years ago, the profit was really high, even several times the current profit. With the increasing cost of hiring workers, and the rising price of oil and other items, the dredger owners can only obtain a profit of around ten percent. However, the retail and other sections of the chain are better off than the ship owners, because the other sections' profits are dependent on sales. Meanwhile, because of the huge demand for sand, none of the sand businesses worried about the sale of sand. What they did

worry about was whether they could supply enough sand for the big market. However, Mr. Xie complained that the business was not doing well. “However, if I don’t continue in the construction raw materials business, what should I do?” For him, the sand business is the best option for a successful livelihood.

#### **4.1.4 The Sand Market in Nanning City**

My own research in Guanxi Province’s capital city Nanning found that the city has three big sand markets which have greatly supported the rapid urbanization and the development of the local real estate market. Sanyou Sand Market is among the biggest three sand markets in Nanning City, and it had 17 sand companies, which were very busy importing sand from other cities to supply the boom in infrastructural construction in 2017. Sixteen sand companies were owned by the businessmen from Hubei Province. Only one sand businessman was a local resident. These outside businessmen brought their families or relatives to Nanning to help them in the sand business.

One accountant of a sand company in the Sanyou Market told me that the company could sell more than 800 cubic meters of sand each day between 2012 and 2014: “It is normal to sell 500–600 cubic meters.” This had fallen to only around 300 to 400 cubic meters in 2017 when I visited the market. Each company had a handful of employees, apart from family members. “Two accountants (salary 4,000 yuan per month, around € 506), two workers to load sand (4,500–5,000 yuan per month, around € 570 – 633), one chef (3,000 yuan per month, around € 380), and the boss are the staff of our sand company” (March 27, 2017). The sand company had cooperated with an electrician who would charge 1.25-1.5 yuan (€ 0.16 – 0.19) for loading one cubic meter of sand from the ship to the market.

Interviews in Sanyou Market indicated there are two ways to transport sand to the sand market in Nanning City: waterway transportation, and overland. Both methods have been heavily used to import sand from other places (e.g Huangwutun Town and other towns) to support the booming sand market in the capital city. The road towards the sand market was badly broken by diverse trucks, “transporting sand around the clock”, as it was described to me by three managers who were local peasants hired by the government to maintain the road and control the traffic of the road in March 2017.

I saw some trucks come to the sand market to load sand in the daytime, while more trucks with

sand arrived at night. I was told by a hired worker in a sand company that this was because of traffic controls which only allowed transport during the night before dawn. The following photographs show the sand market and its transportation situation during the daytime in March 2017. The picture on the left side shows there were several sand piles, which were different kinds of sand based on their various sizes and origins (two of the categories are sea sand and river sand). An empty truck came to load sand in a sand-selling site beside the main road. The original cement road on the site was broken and there was a mud road in its place. Meanwhile, waterway transportation also plays a crucial role in sand transportation.



**Photograph 11: Sanyou Market in 2017 Nanning City**

(Source: field data 2017)

Photograph 11 on the right side shows a boat in the river dispatching sand to Sanyou Market. At the same time, some other ships were waiting for the unloading of sand. One worker whose job was conveying sand from the ship in the river told me that he would charge the sand company one yuan (€ 0.13) to convey one cubic meter of sand. “Basically, I load about 10,000 cubic meters of sand each month, but in some busy months, it would be about 30,000–40,000 cubic meters of sand. For instance, one boat can obtain about 500 cubic meters of sand and it will take me 6 hours to finish loading” (March 28, 2017). He and his wife could earn 12,500 yuan (€ 1,582) per month but would earn much more than that based on 1.25 yuan/ cubic meter (€ 0.16 / m<sup>3</sup>) in a busy month. In the background of the photos above is the newly built local real estate, which is one of the biggest consumers of river sand.

The price of sand in this market has been steadily increasing. The wholesale businessmen would sell each cubic meter of river sand as middle-size sand for between 85 yuan (€ 10.70), and 110

yuan (€ 13.90), and sea sand for 120 yuan (€ 15.20) to project construction sites, while its import price was about 70 to 75 yuan (€ 9.86–9.50) (the price varies according to the size and quality of sand) in March 2017. By the end of 2018, the sand prices were double or three times what they were in the capital city in 2017.

The only local businessman in Sanyou Market told me that the sand market in Nanning City was facing demolition by the city government in 2017, to make space for city expansion and to reduce pollution and damage to the roads due to the overloading of trucks. Indeed, the sand business has caused problems – for instance, dirty streets and damaged roads. However, the problem is also that the translocal sand commodity chain has led to the overextraction of river sand in rural areas to supply the urban sand market.

The river flowing through Nanning City, the Rong River, has been used for transporting river sand from other cities, such as Wuzhou City and Hengxian County, because sand mining in the Rong River, has been forbidden in recent years. Therefore, as Photograph 12 (on the left) reveals, the water in Rong River in Nanning City was clear and blue, even though some boats were loading sand there. In the background of this photograph are many new buildings, which have been constructed to supply new homes for citizens and new migrants. In contrast, the photo on the right below was taken in Huangwutun Town, where the Maoling River was heavily sand-mined to supply the sand demand transported by trucks, which has caused water pollution and the damage of roads and bridges. Therefore, the color of the river there was yellow and muddy. The background of the photo also shows that many private houses have been built there, but they are small when compared to those in Nanning City.

These two photos show the contrast between the areas where river sand is mined and where river sand is in high demand. The aim behind mining river sand is to supply the booming construction characteristic of government-planned urbanization.



**Photograph 12: Importing and Exporting Sand in 2017**

(Source: field data, 2017)

I have mentioned all these projects simply because these were the largest sand consumers in Xintang areas. My interviews with sand wholesalers showed that they have supplied tons of sand for the above-mentioned government projects. Meanwhile, the huge demand of the government projects has forced the local sand dealers to increase the import of river sand from Huangwutun Township.

#### **4.1.5 Truck and Ship Owners for Sand Transportation**

Transporters play a crucial role in sand's commodity chain by transporting this good. There is no single pattern for buying and selling. Commonly, miners extract sand from the rivers directly and unload river sand on the shore where the storage plots or initial wholesale markets are. From there, trucks and ships will transport the sand to diverse destinations, including urban and rural wholesale markets or construction sites.

A truck owner from Mei Village bought a second-hand truck for 30,000 yuan (€ 3,797) in 2016. He charged between 80 and 150 yuan (€ 10 – 19) per trip to transport sand in 2017. He said that he could earn around 50,000 yuan (€ 6,329) each year from this business. Another truck owner said that he would charge 500 yuan (€ 63) for one trip from Huangwutun Town to Xintang Town in 2017 (Interviews, Huangwutun Town, Xintang Town, in 2014, 2015, 2017 and January 2018).

In Nanning City, river sand is mainly sold to mixing stations which supply mixed gravel, sand, and cement as construction materials for diverse buildings – for instance, private households, public streets, subways, and real estate. In the case of Mei Village, the scooped river sand has been sold immediately to the local households who then construct their new houses. The truth

is that the amount of river sand available is not sufficient to supply the local rural market in Xintang Town, since there is so much construction.

Truck owners, as well as ship/boat owners, play an important role in sand transportation. For each transporting trip (carrying ca. 45 cubic meters of sand from Huangwutun Town to Nanning City) truck owners could earn more than 500 yuan (€ 63). Meanwhile, big ships (containing 560 cubic meters of sand) could earn 10,000 yuan (€ 1,266) each time. One ship owner told me that he could earn 20,000 yuan (€ 2,532) for each trip if he could carry sugar and other goods on the return trip. He said, “My boat is 90 tons. I have 4 workers. It takes us five days for one trip. In addition, I need 20,000 yuan (€ 2,532) to buy the sand. The costs of hiring four staff and for the fuel are 20,000 yuan (€ 2,532). The sand can sell for 40,000 yuan (€ 5,063)” (Sanyou market, March 28, 2017). So, he must also carry some goods back to the city from Pingnan County in order to make a profit for his family.

In order to make a profit, trucks were often overloaded and owners and drivers disobeyed the traffic laws. The legal carrying capacity of a medium-sized truck is 22 cubic meters. However, all the trucks loaded about 40-45 cubic meters each time, which is double the quantity allowed. In Mr. Huang’s sand quarry in Nazhong Village, his dredger was parked in the river beside his sand quarry. There were trucks coming and going to transport sand. He pointed to a truck to tell me:

*“This truck can load 22 cubic meters each time. Before 2017, they used to raise the capacity of this style of truck by adding planks. By doing so, they could load another 22 cubic meters. Therefore, each time the truck can earn around 500 yuan (€ 63). That meant the owner of the truck could earn more. However, this action caused the trucks to be too heavy, and they seriously damaged the bridges and road. The traffic policemen banned this retrofit. If a truck was found transporting with additional planks, the traffic policemen fined them 30,000 yuan (€ 3,797)” (Interview at his sand-selling site in Huangwutun Town, April 1, 2017).*

The new, stricter sand-transporting traffic policy was published by Guangxi Government in March 2017. During field research, I heard many complaints about this stricter policy. When I interviewed some owners of this kind of truck, they said: “We (truck owners) could not survive under the new policy, because the same truck uses the same amount of petrol but transports half the amount of sand. The government just knows how to collect fines and taxes.”

The drivers did not say these words politely to me, but rather angrily. They believed that I was a journalist looking for a news story.

*“You reporters just show up for two hours to get the news story that you need, and return to your office. Meanwhile, we have to drive overnight and are afraid of the policemen. Otherwise, how can we feed our families?” (Nazhong Village sand-selling sites, April 3, 2017).*<sup>26</sup>

## **4.2 Sand Commodification’s Ecological Consequences**

Extensive commercial sand mining is a rather new phenomenon in southwest China, following rapid industrialization and modernization in the late 20th century and early 21st century. These processes have had severe ecological and environmental consequences regarding geomorphology, hydrodynamics, water environment, flood control, riverbed evolution and deformation, bank erosion, and channel recovery in diverse rivers (Kondolf, et al., 2002; Sreebha, 2008; Jia, et al., 2007; Han, et al., 2005; Mao & Huang, 2004; Zhang, et al., 1996; Erskine, 1988). Elizabeth Economy (2007, p. 38) argues, “China has become a world leader in air and water pollution and land degradation and a top contributor to some of the world’s most vexing global environmental problems.”

In this part of the chapter, I focus particularly on the ecological effects of over-appropriation of river sand, which is tied to the expanding market, especially for river sand. The focus will be mainly on faunal destruction (i.e. of fish species), water pollution, destruction of river banks, river degradation and consequent loss of farmlands, and damage to infrastructure which is heavily dependent on the water and riparian soils.<sup>27</sup>

The focus on the governing of resources remains a major problem, particularly in “developing” countries (Blaikie & Brookfield, 1987). For example, Shapiro (2001) argues that the environmental destruction that took place under Mao was caused by the abuse of nature. These ecological consequences of sand harvesting are already increasing anxiety and confusion at the local level, as discussed below.

### **4.2.1 Loss of Fish Species**

The most important effects of in-stream sand mining on aquatic habitats are riverbed

---

<sup>26</sup> These same complaints were voiced by all the truck owners and drivers. Later on, on April 6, 2017, the owners of trucks organized a big demonstration at the entrance of a highway toll station. The armed policemen had to arrest more than ten people at this demonstration. “Illegal assembly” was the designation term used for this demonstration. Conflict occurred and the dispute lasted longer than the government thought it would.

<sup>27</sup> See also the National and international news which have reported the consequences of sand mining, such as in Kenya, Vietnam, India, China and elsewhere. See also the links:

<https://www.youtube.com/watch?v=CAPfwwb59uY>; <http://www.bbc.com/news/magazine-41123284>. Accessed on 15 July 2017

degradation and sedimentation, which can have substantial negative effects on aquatic life. Meador and Layher (1998, p. 1) pointed out that in “fisheries, biologists often find themselves involved in the complex environmental and regulatory issues related to instream sand and gravel mining.” Paukert et al. (2008, pp. 624-631) found that “the effect of dredging on the distribution and abundance of fish has been mixed (...). Therefore, agencies evaluating these effects have little information on which to base their decisions.” However, their study on the Kansas River in the USA showed that: “creation of low velocity habitats at dredged sites may not be suitable for large-river fishes, and efforts to reintroduce these fishes or provide suitable habitat could be hampered by these low velocity habitats” (Paukert, et al., 2008, p. 631). For instance, numbers of “Sportfish (centrarchid species) were reduced in dredge sites in the Brazos River, Texas and gravel-bed streams in Arkansas” (Forsage & Carter in: Paukert et al. 2008, p. 624).

Fish are an important food resource for riverine people; a household survey in Mei Village revealed that at least three families out of 94 are heavily dependent on fishing for a living. A woman shared the story below, which resonated in most of my interviews:

*“Apart from feeding my five children, I could also sell the fish that my husband obtained each day. Together with other women, we often went to Na Village and other villages to sell our fish, because our families could not consume all the catch. Primary school teachers constituted my main customers. However, since the death of my husband in 2016, I have not sold any fish. Before his death, my husband was already complaining about the increasing depth of the river following the excavation of sand from the riverbed for selling. He had to purchase new nets because the old ones were already too shallow for his fishing activities. The Hong Kouma fish and Pu Sha fish [locally translated as “a fish lying on sand” and “fish playing with sand” respectively] are no longer found in this river although they were dominant some seven years ago before the expansion of commercial sand mining” (In Mei Village’s grocery store, April 10, 2017).*

There was general agreement during fieldwork that these two species of fish prefer shallow waters. Sand over-exploitation has deepened the riverbed, thereby disturbing the fish habitats and their reproduction. Jia et al. (2007, p. 203) show the consequence of sand mining: “the riverbed level between Boluo and Dong’an was lowered by 3.95 m, 1m annually (...) with the lowering of river bed elevation, the water depth of the waterways also became deeper.” Sadly, those behind the illegal extraction of sand are only driven by profit-seeking and have little concern for marine life.

In addition, the river clam, also known as “the Asian Clam, *Cobocula fluminalis* or *Corbicula fluminea*” (Müller, 1774), survives in sandy and shallow-water conditions and is also a

threatened species. Apart from its medicinal value, indigenous people claim the river clam has a high nutritional value.

Oral history and storytelling accounts from Xintang Township and Huangwutun Township indicate river clams were especially crucial food resources during periods of famine prior to the market-driven sand exploitation during the twenty-first century. Mr. Huang, a town official, qualifies the importance of river clams:

*“We were catching and even selling river clams during tough periods in order to supplement our diet. There were times that my grandmother would be very harsh on me for harvesting too many clams. She thought that I was punishing her because she had to cook all of them and to find the right ingredients, including salt, for the meal. Some twenty or so years ago, clams were the food from the most celebrated rivers in our Townships. They have fed generations, unlike dog meat, which is gaining popularity, and they are written in books, thereby making them a special part of our culture. It is only a shame that clams will soon disappear from our diets. Following the uncontrolled harvesting of sand, river clams are increasingly becoming scarce. Local restaurants, which thrived on river clam dishes, have to gamble for their availability from local fishermen. In recent years, the price of clams has increased dramatically, from 2 yuan (€ 0.25) per 500g in the 1990s to 25 yuan (€ 3.16) per 500g in 2017” (Interview in Huangwutun Town, April 13, 2017).*

These price margins demonstrate the increasing scarcity of a once coveted food in villages and across parts of China. Due to its scarcity, fishermen are increasingly innovating technologies for harvesting clams.

Zeng Pei, a 35-year-old local peasant who owns land beside the river, mainly involves himself in gathering clams. He noted during an interview that the way people harvest clams has been rapidly changing. According to him, the new machines for harvesting clams have been popular since the 1990s, thereby replacing the traditional methods of harvesting with hands or hoes. The rise of this technology indicates the effect of excessive sand mining, which has changed the river environment (see Photograph 13). Zeng Pei noted that the sand extractors do not need clams, only sand. However, the sand dredgers scoop up both sand and clams, and while some operators may try to separate clams from the sand, they rarely do so because the numbers of clams have consistently diminished – they sell sand perhaps with remnants of river clams, which could otherwise breed future generations.

At the time of the interview, Zeng Pei had docked his boat for a couple of weeks following days of unsuccessful fishing due to the disappearance of the clams. In anger he said:

*“I have not been driving the boat for more than ten days. Why should I continue to do so*

*when I am clamming nothing from the river almost every day? On the other hand, I use up so much fuel each time with no returns... no sand, no clams” (Interview in Nachun Village, March 2017).*

These sentiments were echoed by other fishermen who had docked their boats out of frustration.



**Photograph 13: Zeng Pei’s Boat for Clamming**

(Source: field data, 2017)

#### **4.2.2 Water Pollution**

In March 2017, I conducted 29 questionnaire-based interviews in Naxia Village. While reporting on the impact of sand extraction, almost all informants complained about the brownish color of the water. The majority of women claimed that they were not able to wash their clothes in the river anymore and that the river had almost turned into a death trap, as the depth increased following the excavation of sand from the riverbed. About ten people said that the water levels had dropped significantly, thereby affecting their irrigated farming activities. Others noted that over-harvesting of sand had even drained some of the water from behind the area’s dams, which are considered to be the life-protection lines of the village (see below sections and Chapter 8). A good number complained about the lack of clear institutional mechanisms to address these challenges, blaming their leaders at village, township, and state levels for the predicament.

Nobody wants to live in an environment where huge trucks frequently transport sand, roads are wet the whole year, and dredgers make lots of noise scooping out riverbeds. In the view of local people, sand is part of a living body, which is important for both cultural and environmental purposes.

It was also noted that the dirty water has negatively affected the happiness and positive emotions that villagers had previously enjoyed for years. Indeed, sand mining impacts their ability to live well. There are diverse interpretations of the notion of living well in literature<sup>28</sup>. “Living well” becomes a concept based on a memory of river health in the pre-extraction period, but the current communities have been suffering from the degradation of their river environment. A retired primary school teacher in Nazhong Village told me that villagers and the school rely heavily on the water. He noted that other rivers had also been suffering not only due to sand mining but also because of mineral mining upstream. Informants supported his sentiments when they told me that many iron-mining sites, which had been built upstream along their river, were polluting the river water as well. Surface runoff washes iron into the rivers, thereby increasing levels of pollution. Stronberg (2016) argues that,

*“Sand mining operations are large consumers of water and mining operations can impact groundwater quality and flow. Concern about the consequence of silica dust due to mining, storage and transport of frac sands have been raised. As mining operations occur exclusively in rural areas, the presence of a noisy industrial activity – often occurring 24/7 – has been cited as having a negative impact on otherwise quiet communities.” (Stronberg, 2016).*

However, the local government, which is keen to support such infrastructure for economic reasons, differed from the villagers regarding opinions on the best approach to limit the iron pollution. Finding no solution from the local government, villagers were already planning to report the matter to the city government for a solution.

Mr. Hu, a 70-year-old elder, accompanied me to the river to show me how polluted the water was. He said:

*“As you can see, the color of the water is yellowish and with a huge amount of dirt. Apart from the sand dredgers, commercial-based iron mining has led to serious damage to the*

---

<sup>28</sup> The interpretation suggested by Acosta (2008) perhaps fits best this situation of sand-mining in riverfront Zhuang villages. “Living well ultimately has to do with another way of life, with a series of rights and social, economic and environmental safeguards. It is also reflected in the guiding principles of the economic system, characterized by promoting a harmonious relationship between human beings individually and collectively, as well as with nature” (Acosta, 2008, quoted from Ulloa, 2015, p. 326).

*river environment. School-going children and students have been warned to keep away from the river to avoid possible accidents and diseases. They can no longer swim in the river. When I was growing up, this river was a paradise for all children during the hot summer. As you already know, the sand is gone; sandy beaches have also disappeared. The riverbed is one big hole now, the water is excessively polluted, yet dredgers and mining engines are still roaring” (Interview on the dam of Naxia Village, March 28, 2017).*

It is important to emphasize that these changes have only occurred within the last three decades, yet the damage has exceeded anything in living memory.



**Photograph 14: The Sand-Selling Sites on the Dam, and Big Dredgers on the River at Naxia Village**

(Source: The image on the left is from my field data in March 2017; the one on the right was taken by Ke Zhu in September 2018)

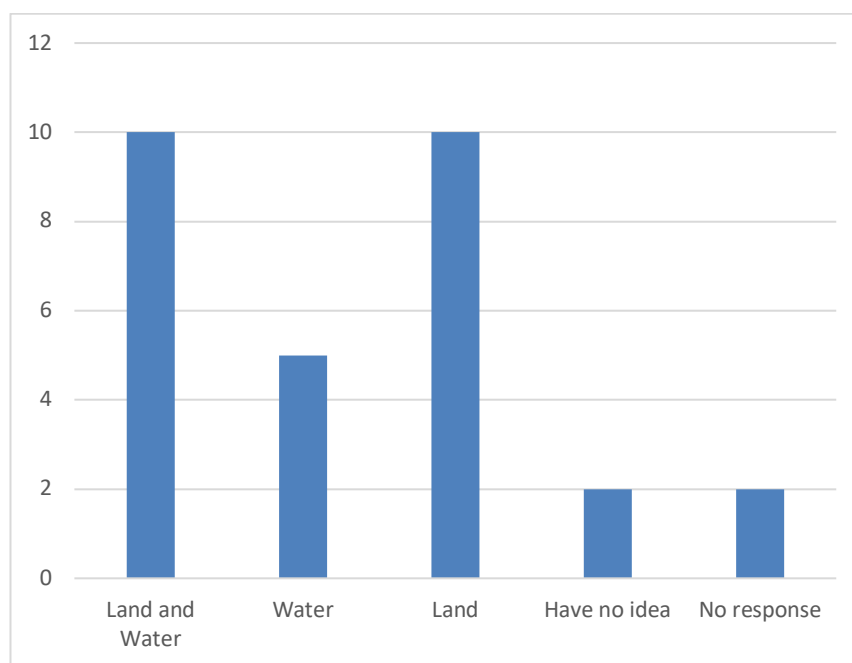
Mr. Hu was walking on the Dam (see Photograph 14 on the left). The Dams were constructed to hold back water and floods, and sand-selling sites were also built on them. Behind the dams, farmers were growing maize and rice. I asked my sister Ke Zhu to check the river in Nafa Village in September 2018. She found there was a big dredger in the middle of the river and the water of the river was still polluted. The river system failed despite appointing river chiefs to manage the river and sand mining. They did not protect the water resources but change the name and form in order to continue mining, due to the consistent demand for river sand.

#### **4.2.3 Destruction of Riverbanks and Adjacent Farmlands**

Farming along the river is one of the leading livelihood activities in Mei Village. Being a rural area, the farm plots that dot the riverbanks of Mei River are a source of life for many poor families.

On the question of ranking the most important resources, the peasants of Naxia Village ranked land and water as the most preferred assets for their livelihoods (see Figure 4). As already

discussed, the land they refer to here is the riparian area of the river, or rather the riverbanks. The popular foods grown here include vegetables, yams, bananas, maize, mulberry leaves, and herbs. The increasing sand mining has, however, led to the collapse of riverbanks, which then leads to erosion of the agricultural topsoils, which fall into the bottom of the river and leave farmers with little or no land to farm.



**Figure 4: Resource Ranking (N=29)**

(Source: field data 2017)

Traditional knowledges about agriculture and aquaculture is crucial for growing crops and for fish farming but does not fit the current environmental situation. The transformation of the river geography has negatively impacted the peasants' farming practices, which they have conducted for generations. They remembered the last huge flooding by pointing out which pieces of land or field had been submerged, and for how many days, and at which part of the dam some bodies of the dead had been found due to the flooding because their houses had been located at lower elevations. The rapid shifting of the river geography lowers the water level, resulting in the change of agricultural water use and flooding patterns.

Nonetheless, the collapse of riverbanks in the villages has been the leading cause of local-level collective action against illegal sand mining (Photograph 15). Ironically, however, this damage has also been encouraged by poor farmers themselves who have habitually sold the riverbanks to illegal sand-mining companies. Ownership of riverbanks is largely unofficial – riverbanks

are handed down from generation to generation (some were redistributed during the land reform between 1950s and 1980s). In almost all cases observed, individuals or families who farm on specific sections of the riverbanks have unofficially inherited this land, officially owned by the natural village, from their ancestors. This form of ownership is culturally accepted and defended. Rarely would one farm in a portion of land that was not his unless he had negotiated for access rights from the person to whom “ownership” rights to the said portion of land had been bestowed. Through time, such “landowners” have embraced the emerging market for riverbanks, which are believed to hold an untapped potential for sand.

These riverbank sales are not formal, and the prices are not fixed – an illegal sand miner or a broker may approach a poor farmer who claims ownership of a specific portion of a river that the former hopes to exploit. At first, the owners may brush them off, claiming the illegal mining companies are destroying the riverbanks. However, such denial may be short-lived, particularly following peer pressure from others who have sold off their claims, or family members who are interested in making quick cash. In most cases, however, the sale of riverbanks is quite secretive and may even happen under the cover of night. This situation often takes place when a seller does not want to be perceived by villagers as supporting the “dirty” business of sand mining. He may sell his portion of the riverbank only to wake up the following day complaining that some illegal sand miners had descended on his riverbanks at night.

Whichever way it occurs, the riverbanks eventually change hands, often for very little money as compared to the returns obtained from selling the sand. After the payment has been used up, the poor farmers continue to blame the illegal business without necessarily examining their own role in encouraging the vice.

The illegal sand miners, however, may have also forced the sale of riverbanks by poor farmers. Informants explained that illegal miners often descend on their riverbanks under the cover of night and harvest as much sand as possible before daybreak. They then sell off the sand quickly and quietly in the early hours of the day before villagers get wind of the matter.<sup>29</sup> In particular, some migrants who are working in urban areas and do not have the opportunity to look after their land find their sand gone when they come back to the village for the Lunar New Year

---

<sup>29</sup> The demand for river sand is very high, and sand will be sold very fast in local villages. In the case of Mei Village, the buyers of river sand were local households, and they knew very clearly where the sand came from. The river sand has become very rare in local areas, and each household wants to build their own house with river sand rather than ocean sand. Consequently, river sand is sold almost immediately after it has been extracted (almost immediately).

celebrations. Of course, they cannot blame anyone because the illegal sand miners are long gone. The ensuing frustrations often become chaotic, and farmers have begun to throw stones at the miners in the vicinity – this, however, has borne no fruit. Some farmers then started to sell off their riverbanks. Why would they not benefit from the quick cash before the nocturnal “thieves” struck once more? Because they lacked a proper mechanism to stop the illegal operators from “stealing” sand, they thought it wiser to sell it for money to reduce their losses.

In August 2015, an 80-year-old, Mr. Yaozu, who opposed the illegal sand harvesting, eventually sold his riverbanks land to a private company. During an interview, he complained:

*“For eight years, I have tried my best to protect my land against those illegal operators. I have thrown stones at them to stop them from invading my land. I have made complaints to the local government, but they did not help me to punish those illegal operators. Nowadays, more and more people are selling their land to these companies; so do I. I am powerless to protect my land” (Interview in Mei Village, August 26, 2017).*

Mr. Yaozu, a local farmer, added his voice, noting that he had become too old and powerless to protect the land – he had to sell it before it was too late.



**Photograph 15: The Collapse of Riverbanks**

(Source: field data in 2017)

Meanwhile, as I discussed above and will depict in the next chapters, water-control levees, dams, canals, and irrigation systems have been damaged by illegal sand extraction. The dam built in 1960 to protect fields and a village from the river has been damaged. There are imminent threats of flooding, especially following heavy downpours, because damaged dams can no longer hold water. During the interviews in various villages, the dam was referred to as the dragon vein (Long Mai) which they considered as a lifeline. The local villagers frequently highlighted the foremost role played by the dragon vein in protecting the village and the field.

“The flooding and the high tide will submerge our farmland and villages without the dam.” They further stated, in the “Report on the Request to Investigate and Deal with the Village Party Secretary about the Illegal Sale of the Village’s Flood Control Embankment”:

*“History has proved that Naqiu Administrative Village is the hardest-hit area and high-incidence area of flooding. In 1998, the farmland of the whole village was flooded for ten days and nine nights. In 2001, the houses of more than ten households in the village collapsed due to floods. The state has invested tens of thousands of dollars to strengthen the village levee and the reconstruction of water-damaged houses. Have the pain of and the tragedy of history that have not given us enough lessons to learn? Should we want to stage this tragic history again?”*

Repeated flooding throughout the area’s history has shaped the villagers’ behaviors and forced them to take action against illegal sand mining in their territory. This therefore is the reason why the people identify the levees, the “dragon vein”, as a security measure and lifeline. The over-extraction of river sand causes damage to the collapse of the “Ji Wei” and then the dragon vein, which has created conflicts between the village communities and the miners. Even though the villagers sold the river sand, they told the miners to keep at least 15 to 30 meters away from the dam otherwise they would be fined, for the reasons just stated. Of course, they did not believe that the sand miners would respect that rule – that is why they also went to the riverbank during the night after they had sold the sand to private miners. Based on my own observation, between 7 and 13 meters of the land surface (as measured back from the river’s edge) has collapsed into the river following massive sand harvesting in three villages in Huangwutun Town<sup>30</sup>.

#### **4.2.4 Damage to Infrastructure: Roads and Bridges**

In Nadong Administrative Village, the now severely damaged bridge once stood astride the river beside many big dredgers, but now villagers cannot cross the bridge anymore and have to pay to cross the river by ferry. The reader can easily note the brownish color of the river water in Photograph 16.

---

<sup>30</sup> In addition, the shift from dredging river sand to ocean sand has also severely negatively impacted the ocean environment, leading to the loss of sandy beaches, the disappearance of small islands, and the death of mangrove forests, and has also had negative influences on the dolphins in Maowei Ocean in the territory of Qinzhou region. Some of this environmental degradation is not visible within a short time frame, but the local people might have to suffer the consequences of these issues in the longer term. Furthermore, according to the Qinzhou Government’s report in July 2018, Qinzhou will export ocean sand to support the construction of the new Three-Runway System (3RS) at Hong Kong International Airport. “The construction entails reclamation of approximately 650 hectares of land, which will be completed in phases for the subsequent works such as the new runway, taxiway system as well as a Third Runway Passenger Building with 57 parking positions” (AirportWorld, 2016). The further impact of this ocean-sand extraction should continue to be explored in the future.



**Photograph 16: Collapsed Bridge following Heavy Sand Mining by Dredgers**

(Source: field data, 2017).

The director of Nadong Administrative Village, Mr. Zhou, asked me in April 2017, “Could you please help us to deal with the project of bridge? There are about 10,000 people that are being impacted by this broken bridge, including the people from Fangchenggang City. We have been cursed by the villagers since 2015 when the construction stopped.”

Other impacts of illegal sand harvesting include a collapse of public transportation systems, leading to traffic accidents as well as impacting human health due to the resulting water and noise pollution, and problematic traffic. In Mei Village, roads and footbridges have disappeared following the illegal trade in sand. Ironically, in Huangwutun Township, many damaged roads and bridges are being rebuilt with funds from the government without necessarily addressing the root cause of the problem.

Moreover, the trucks ferrying sand end up dirtying the roads with mud. Consequently, there is a new policy that such trucks must drive into shallow-water pools so that they can clean their tires before joining the main streets in Nanning City (see Photograph 17), but this policy only applies to this city. I counted 8 trucks that drove through these shallow pools within a ten-minute period in March 2017.



**Photograph 17: Trucks Drive through a Wash Pool to Clean Their Tires of Sand and Mud before Entering the City Streets**

(Source: field data, 2017)

### 4.3 Conclusion

The commodification of river sand and the gradual incorporation of the sand-extraction industry into a larger sand market, from village level to township level to prefectural level and up to nation and even the global level, contribute to river sand becoming one of the most in-demand resources in Guangxi Zhuang Autonomous Region. The description of the transformation of demand and supply of river sand has put the commodity chain of sand into an historical perspective. The role of capitalism and the forces of modernity, including development, have significantly impacted river-sand mining activities and exacerbated the environmental crisis in Southwest China. This situation relates to what Ho (2006, p. 6) asked: is it possible to reconcile economic development and environmental protection? This research suggests that there is no way to reconcile economic development and river-sand conservation or river protection during this period of project-based development, which will be presented in the next chapter.

This chapter has also discussed the ecological consequences of river sand's commodification. "River sand is gone" – this has been claimed by many villagers as well as sand miners. The scarcity of river sand has not only led to an increase in the price of river sand, but also led to the loss of fish species, the pollution of the water, and severe damage to the riverbank and dams. Crucially, the whole river's ecosystem has been reshaped due to the emptying of the riverbed, the collapse of the riverbank, seawater infusion, and other drastic changes to the geography of the river.

The severe ecological consequences urgently need to be explored and investigated in great detail, since the degradation of the river ecosystem is gradual, but ongoing, and may well

continue to worsen over the foreseeable future. Nonetheless, the impact of sand mining is already all too visible: “the rivers die,” “there are no fish”, “the water is unclear” – all these statements were heard repeatedly during my field research. Meanwhile, issues of damage to water infrastructure and related agricultural constructions have also emerged in the rural areas. This, inevitably, has impacted on the daily lives and normal agricultural and fishery production activities of the communities. Significantly, as I will discuss further in Chapter 7, the ecological consequences of river-sand mining are the same regardless of whether it is legal or illegal.

## Chapter 5: Drivers behind the Commodification of River Sand

What causes changes in the demand for river sand? Why has this natural resource been appropriated and turned into a commodity in the construction market? This chapter seeks to provide answers to these questions by discussing how government policies, government-based projects, and economic dynamics have impacted upon river sand's commodification and upon both legal and illegal mining operations. This chapter illustrates the reasons for the increased demand for sand by referring to government reports and other secondary documents. Data gathered through participant observation and second-hand documents indicate the relationships between urbanization, infrastructure development, private buildings, and sand consumption.

On the one hand, due to rapid urban infrastructure development in southwest China, the demand for river sand keeps increasing. There are multiple factors contributing to the over-mining of river sand, including high-speed urbanization, widespread project-based developments (project systems), and private housing developments. On the other hand, the negative consequences of the current project-based development schemes, initiated by the Chinese government at various levels, are a source of problems and ineffective outcomes.

Firstly, the project-based development scheme provides financial incentives for the local government to expand urban areas and to achieve rural modernization. However, this scheme also stimulates a problematic model in which local residents construct houses for demolition for the sake of compensation by the government as part of the ongoing modernization project. This practice has obviously resulted in a huge waste of resources, including river sand.

Secondly, the increasing mismanagement of government projects, including the practices of financial collection and distribution, the loss of trust between the government/village cadres and the rural residents, and the issue of corruption, have led to an unsustainable development of the project system. The government scheme “The Last One Mile” (最后一公里) is a good example of how local and regional governments are trying to deal with the issue of mismanagement, although without tackling it from the roots.

Thirdly, as a result of governmental investments into infrastructural development projects in China's rural and urban areas, the demand for specifically river sand – as one of the basic construction materials – has increased over the past years, resulting in the overexploitation of river-sand sources. This has led to rising prices, and river sand itself becoming rarer than in any

period in history. It is worth pointing out that the two towns referred to in this study are small compared to other cities in the province, yet these processes are very visible there and they therefore provide good examples to explain what drives the changes in demand for river sand.

## **5.1 Project-based Development and Its Role in Sand's Marketization**

As elsewhere<sup>31</sup>, China's economic stimulus policy – project-based development – plays a crucial role in the development of infrastructure and in processes of urbanization. The improvement of public infrastructure has been adopted as a key approach to achieving the national and regional development goals. On the one hand, Hammerschmid and Wegrich (2016, p. 31) state: “Without the financial, regulatory, and coordinative role of the state, infrastructure investment would not happen.” On the other hand, the enforcement of these government-based projects has become crucial to achieve the national goals. Michael Mann (1984) speaks in that context of “infrastructural power”. This is very true in the case of my research area, where such projects' power has become a strong force to distribute natural and social resources. Actually, it is rather clear that the drivers of increasing demand for river sand are rapid urbanization, infrastructure projects, and housing development based on state-oriented and market forces.

The government launched project-based development, or the project system, by investing a certain amount of funds to motivate social investment in specific target projects that would stimulate the engagement of social enterprises, reduce the government debt, and create more jobs, in order to maintain a GDP growth (Huang, et al., 2014; Li, 2016; Qu, 2012). Public–Private Partnerships (PPPs) have been proposed and applied by the Chinese government to implement these public projects. Notice of the National Development and Reform Commission on Issuing the Guiding Rules for Implementing Public–Private Partnership Projects in Traditional Infrastructure Fields is one of the crucial policies “for the purpose of further regulating the operation process of PPPs in the field of traditional infrastructure,” and “these Guiding Rules apply to projects under PPP models in the field of traditional infrastructure such

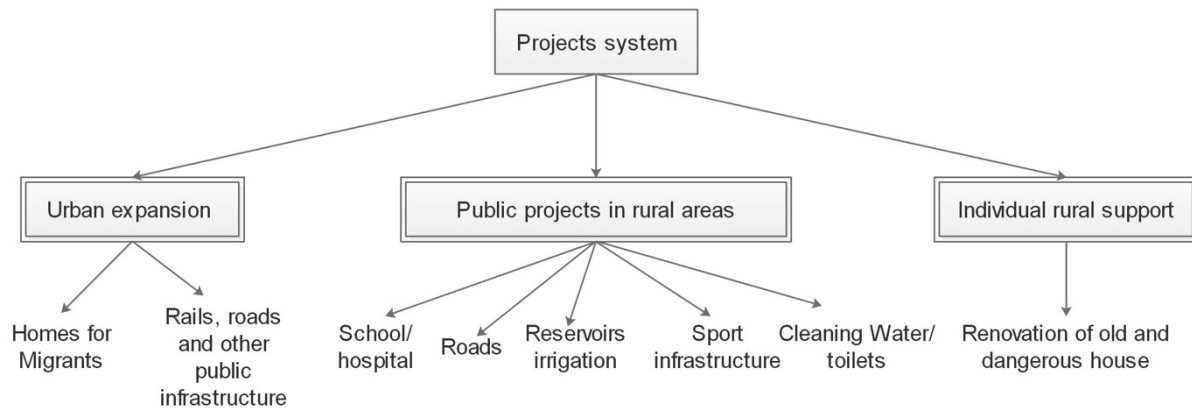
---

<sup>31</sup> The provision of public infrastructure is a critical government activity (Wegrich, et al., 2017). Infrastructure governance is present all over the world, for example, in Germany (Kostka & Fiedler, 2016), the UK (Gauke, 2016; Davis & Walsh, 2015), Spain (Bel, 2011), Sweden (Hammes, 2013), and China (Qu, 2012; Zhe & Chen, 2011). The expert commission in Germany has been established to form a legally independent body for planning and building roads, which has evolved into a serious initiative of the federal government (Experten kommission 2015). In the UK, the National Infrastructure Commission (NIC) was recently established as an advisory body to build effective and efficient infrastructure (Gauke, 2016). Infrastructure is closely related to nation-building, for instance in the regulation and financing of network transportation infrastructures in Spain from 1720 onwards (Bel, 2011). Infrastructure Australia (IA) was established as part of an initiative to boost investment in infrastructure in 2008 (Williams, 2016). The ministry of Housing and Urban-Rural Development of People's Republic of China has been a ministry responsible for construction administration in China since 2008.

as energy, transport, water conservation, environmental protection, agriculture, forestry and major municipal projects” (NDRC, 2016). Fundraising is a common problem for infrastructure development. According to the Directorate-General Regional Policy of the European Commission (2003), “Recent years have seen a marked increase in cooperation between the public and private sectors for the development and operation of infrastructure for a wide range of economic activities. Public–Private Partnerships (PPPs) arrangements were driven by limitations in public funds to cover investments needs but also by efforts to increase the quality and efficiency of public services” (Barnier, 2003) .

Huang et al. (2014) argue that the Chinese government, at all levels, focuses on speedy development and economic growth in China. The project system obeys the logic of combining political power and money, and is based on keeping costs low and pursuing profitable projects. But this system has led to some other side effects, such as the low quality of roads and irrigation canals. In their conclusion, Huang et al. (2014) therefore conclude that the project system should match other institutions and establish a high-value orientation in order to have a modernizing and rationalizing effect.

In China, the urbanization, modernization, and infrastructure governance have mainly been implemented by the government in the name of development projects. The so-called project system has been a crucial means to stimulate the road projects, high-speed rail projects, unitization projects (e.g. building new college towns and shopping malls), and the modernization of rural public infrastructure, villages, and houses since the late 1990s (see also Zhou, 2012; Qu, 2012). The causes and effects of the project system in rural areas have been discussed by some Chinese scholars (Qu, 2012; Chen, 2016; Zhou, 2012). For instance, Qu (2012) argues that the project system is a new state governance system which has profoundly impacted the state governance in China by using a special financial transfer payment. Wegrich et al. (2017) offer a similar argument: “Today, infrastructure governance involves more than the provision of brick and mortar assets. It includes the development of complex infrastructure systems relying on advanced and sometimes untested technologies” (Wegrich, et al., 2017, p. 1). The projects constitute a system for redistributing political and social resources – in particular, the taxes to promote better development.



**Figure 5: Overview of Project System and Its Major Items**

(Source: field data, 2017. Diagram drawn by the author)

Figure 5 shows my classification of types of projects within project system can be classified into three major categories based on their relevance to the river-sand value chain. It does not incorporate projects such as the construction of dams or army infrastructure because these have not been implemented in the research region. Here I focus on the general projects which have commonly been implemented in my chosen settings. The first category consists of individual support projects in rural areas, including the improvement of housing and comprehensive farming subsidies. The second category is formed by public projects in rural areas, encompassing the construction of roads, reservoirs, irrigation, sports infrastructure, schools and hospitals, water-cleaning projects, and public sanitation. The third category comprises projects meant to address rapid urbanization, because of rural migrants who settle down and buy apartments/houses in urban areas. This last category includes infrastructure projects and the construction of housing in suburban areas. Of these projects, the construction works on skyscrapers, shopping malls, subways/rails, roads, bridges, reservoirs, and irrigation canals make the most use of river sand.

According to the Report on the Work of the Government on March 14, 2009, huge infrastructure projects are aimed at tackling the international financial crisis and promoting stable and rapid economic development as their main objective (Wen, 2009). In particular, the government's large-scale investments and the implementation of a two-year investment plan totaling up to four trillion yuan (€ 506 billion) have resulted in multiple debates. For instance, China's 12<sup>th</sup> Five-Year Plan for the National Economic and Social Development of the PRC (FYP, 2011-2015) outlined that China's average annual GDP growth was 7% and that the urbanization rate would increase by 4% to reach 51.5% (expected), while non-fossil fuels were projected to

account for 11.4% of primary energy consumption, and that energy consumption per unit of GDP was to be reduced by 16% (binding) (Kostka & Mol, 2013). The 13<sup>th</sup> Five-Year Plan (2016-2020) was passed by the NPC in 2016; it claimed that the annual GDP growth was 7.8% and the urbanization rate was 56.1% in the last FYP. The level of infrastructure has risen overall (Xinhua News Agency, 2016). Wang (2013) describes the economic development as a hard target, meaning “targets with veto power” (Wang, 2013), which is of utmost importance. Indeed, the investment of four trillion yuan and the always increasing annual GDP growth led to a boom in the construction in both rural and urban areas, which has caused huge demand for raw materials. On top of that, the exploitation of river sand has facilitated a project-based economy.

Based on the research concerning river sand in China (Xu, et al., 2016), this chapter explores the role of the government in the development plans, and the issue of a flawed development program and one of its results – that river sand became a crucial and widely utilized raw resource in construction projects. Given this background, the rapid commodification of river sand has led to illegal sand mining in the research settings. The following section begins the analysis by discussing government-induced processes of urbanization.

## **5.2 Urbanization in Village Areas**

Urbanization is one of the major targets for achieving development and modernization in the context of China. According to Zhang (2013, p. 48), “[t]he new urbanization is a grand strategy and historic task for our country’s modernization and is the long-term driving force behind China’s expanding domestic demand. It is also the ‘locomotive’ for promoting sustained and healthy economic development in our country.” The rising rate of urbanization shows how much investment has been substantially improved by governments at all levels have invested, which is a direct and effective measure to expand domestic demand and provide employment (Lin, 2014). Therefore, rapid urbanization has consumed the large volumes of river sand.

The urbanization of Guangxi Zhuang Autonomous Region has progressed rapidly over the last three decades. The New Urbanization Plan of Guangxi Zhuang Autonomous Region (2014-2020) pointed out that the urbanization rate in Guangxi will reach 54% by 2020 (Zhang, 2015b). Yu Zilong (2014) used the technique of RS and GIS and extracted the urbanization spatial information in the GZAR from 1998 to 2010. It showed that the region’s urban area expanded from 928.00 km<sup>2</sup> (1998) to 5,120.76 km<sup>2</sup> (2010). The area of land for urban use expanded by

1,244.32 km<sup>2</sup> from 1998 to 2004, and increased again by 2,948.44 km<sup>2</sup> between 2004 and 2010. Among the 89 cities or counties, the capital city, Nanning City, had the largest urban expansion, reaching 885.20 km<sup>2</sup> (Yu , 2014, p. 1).

In Nanning City, countless skyscrapers, streets, and subways are being built as part of diverse projects. The infrastructural projects, such as the construction of a two-line subway from 2013 to 2017, and the building of large transport hubs, were rapidly increasing in the Province. Project-driven urbanization has frequently occurred in the region. For instance, China has strengthened its cooperation with other Asian counties (10+1) since the economic reform. Thus, the Nanning International Convention and Exhibition Center was built as the permanent venue for the China–ASEAN (Association of Southeast Asian Nations) Expo. The Center has a gross floor area of approximately 130,000 m<sup>2</sup> and was designed in co-operation with a German company (GMP) and Guangxi Institute of Architectural Design (GMP, 2005). These buildings became a landmark of Nanning City and the symbol of urbanization, development, and international cooperation. The land for constructing these buildings was mainly appropriated by transferring the rural collectively-owned land to the state.

This development model has been adopted in other government-invested projects, such as the Twelfth China International Garden EXPO. A friend of mine is an official of Liangqing District in Nanning City and she told me about another government-driven project stimulating urbanization, the Twelfth China International Garden EXPO. This exposition would be inaugurated in Nanning City in 2018 and was in that period frequently reported on by media. The reports celebrated the success of Nanning City in having obtained the significant chance to host this national event. The government believed that it was a good chance to promote Nanning City's global status and to attract more investment to speed up urbanization. "An area of 658 hectares of land, with a total investment of 3.957 billion yuan, has been sanctioned for the construction of parks, roads, bridges and buildings in Pumiao Town, Yongning District of Nanning City" (Yang, et al., 2016; Liang, 2018a). It needs to point out that most of land was previously rural and collectively owned land.

The dramatic expansion of the city has resulted in severe social problems, such as conflicts between the government and the dismantled villages. Here a case study of city expansion will be presented to address the reality of urbanization in Nanning City. I learned about this situation because many Mei villagers had been hired by the peasants whose land would be confiscated

and their houses demolished to establish a new Nanning Garden Expo Park for the above-mentioned “Twelfth China International Garden EXPO.” The tension between the local government and the peasants was rather high in terms of land confiscation and compensation. A sand wholesaler from Nanning City sent me a video about the peasants who were hurt by the armed forces during a mass confrontation against the confiscation and demolition of villages in the Yongning District. Interviewing the migrant workers from Mei Village who worked in Pumiao Town confirmed the existence of the conflict situation.

*“They [government and the villagers] are fighting [for houses and land] every day; the villagers did not sign the compensation contract [prepared by the government] and the policemen were sent in to make sure that projects continued in a smooth fashion” (Interview in Mei Village, March 20, 2017).*

Under this construction-driven development, this area would be integrated into the capital city just like many other villages and towns were. The change in land use would also mean the status of the peasants would shift to that of city residents after losing their individual houses and their rights to use the collective land. This has created some issues for some rural households.

On the one hand, the substantial compensation the rural households received was not enough to buy a house in Nanning City. The problem is that the price of buying a new apartment was much higher than the given compensation due to the rapid growth of the real estate market in the city. The prices of the majority of the apartments in the real estate market were between 6,000 yuan and 12,000 yuan (€ 759–1,519) per square meter between 2013 and 2017. As a result, buying a new plot or a house using the compensation alone was impossible.

On the other hand, novel solutions had been found by those peasants to reduce their losses. “Construction for dismantlement” was the solution most frequently applied. It meant building a new house simply to demolish it again in order to receive compensation since no one could go against the government’s project. The peasants gained more from compensation for a demolished house than they spent on building it. However, such solutions have led to the waste of resources such as river sand. This contributes to an ineffective outcome to project-based development regarding the unsustainable use of resources.

I was told by the workers of Mei Village that the compensation was the major factor that prompted the peasants to engage in “construction for dismantling.” The peasants were building houses rapidly in the anticipation of benefiting from the government compensation when those houses were demolished. The tables below show the amount compensated to a household, and

the corresponding cost of building a house in Xinshe Village.

**Table 9: Compensation to Households with Title Deed (House Property Certificate)**

Member	Compensated area	The price of per m <sup>2</sup>	In total
One person	80 square meters	1,980 yuan (€ 250)	158,400 yuan (€ 20,050)
Five persons of one family	80 square meters	1,980 yuan (€ 250)	792,000 yuan (€ 100,253)

(Source: field data, 2017)

**Table 10: Compensation to Household without Title Deed**

Member	Compensated area	The price of per m <sup>2</sup>	In total
One person	80 square meters	1,320 yuan (€ 167)	104,000 yuan (€ 13,165)
Five persons of one family	80 square meters	1,320 yuan (€ 167)	520,000 yuan (€ 65,823)

(Source: field data, 2017)

If a household possessed the title deed (House Property Certificate, 房产证), the compensation for each member regardless of his/her age and gender of the household would be 1,980 yuan (€ 250) per square meter. Without a title deed, it would be 1,320 yuan (€ 167) per square meter. Each individual would be compensated for up to 80 square meters and no more. If a household accepted the fixed compensation, the houses would be torn down and the ownership of the residence would be shifted to the government. They were resettled by being offered new apartments (安置房) or special houses (or only given financial compensation) in other places.

If a household disagreed with the compensation, or if the whole village considered that the compensations were too low, disputes, conflicts, and confrontation would be the consequences. Some conflicts between the government and the villagers took place in the new planned rural urbanization areas where the villagers united together against demolitions with insufficient compensation. Some of these conflicts were filmed by local residents. Furthermore, videos were uploaded on social media to show the police violently forcing people to move out of the houses, hurting the residents in the processes.

I did not have data as to what would take place if household members disagreed among themselves about what to do, and how such conflicts would be solved in those situations. An interview with two women whose houses were dismantled in 2015 showed that the government promised to build them new houses, but a year later they were still staying in a temporary apartment (临时安置房).

In Xinshe Village of Pumiao Town, the situation was that all households were hurrying to build more new houses so that on demolition they would obtain greater compensation. The village had more than 60 households, with the majority of these possessing more than two houses. While the government was busy tearing down the villagers' houses in order to support the "Twelfth China International Garden EXPO", the rural people hurried to hire more seasonal migrant workers to build houses to be demolished for compensation. Most of the houses in the villages were torn down by excavators hired by the district's government in 2017.

Seven villagers from Mei had spent the previous months working on building these kinds of houses. When I interviewed 24-year-old Mr. Jie, who worked with his brother and father in one of the villages that were eventually demolished at the end of 2016 and early 2017, he said:

*"There are so many households building their houses in this period, thus many are doing roof-cementing recently. We have to stay in the waiting line for the concrete mixer until next week" (Interview in Mei Village, March 20, 2017).*

His father was the head of the construction team, which consisted of seven villagers from Mei Village who together worked on building two new houses. I asked them about the cost of constructing one of their working houses, and the information is shown below.

**Table 11: The Cost of Building a House**

Number	The cost of one m <sup>2</sup>	The area of a house	In total
One house	540 yuan (€ 68)	50 m <sup>2</sup>	2,7000 yuan (€ 3,417)

(Source: field data in April 2017)

Table 11 shows that the cost to build each square meter, including labor costs, was only 540 yuan (€ 68)<sup>32</sup>. The huge potential benefits from compensation prompted the local peasants to build more houses. This case study illustrates the problematic impacts of project-based development on the natural and social environment of the research area; in particular, the waste of the construction material, including river sand and gravel, among others. Furthermore, it also reveals where some migrant workers of Mei Villages are working. Mr. Jie told me that houses that they built were demolished less than one month after their construction was completed.

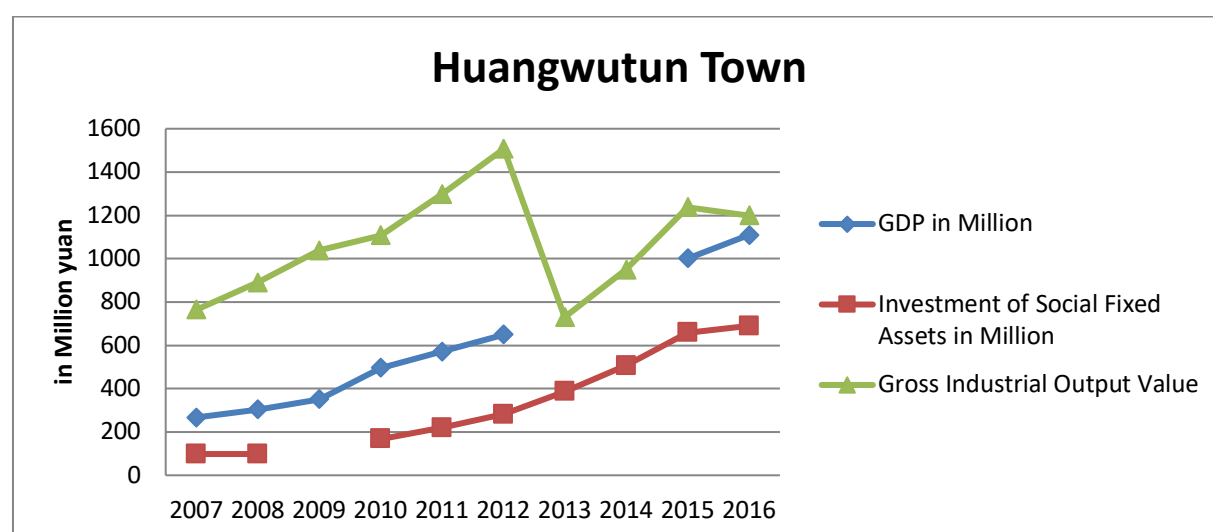
---

<sup>32</sup> This cost includes 90 yuan (€ 11) per square meter for workers' wages. The price of a brick was 0.6 yuan (€ 8 cents), and one floor of a house needs 6,000 bricks. The price for one cubic meter of sand was 100 yuan (€ 12), and around 12 cubic meters were required per floor; also required per floor were more than 60 bags of cement (a bag of cement is 50 kilograms) ( Interview the migrant workers of Mei in March 2017).

### 5.2.1 Rapidly Expanding Township Areas

The development of townships is a major part of the urbanization policy, including in Huangwutun Town and Xintang Town will be analyzed in this section. In this section I discuss government investments in public infrastructure and in public rental housing in these two towns.

Huangwutun Town has rapidly developed its township construction. The investments in what the government calls “social fixed assets” have been raised significantly since an industrial park was built in 2007.



**Figure 6: GDP, Fixed Assets, and Gross Industrial Output Value in Huangwutun Town**

(Source: Annual report for Huangwutun Town for the years 2007 to 2016)

Figure 6 shows the economic development of Huangwutun Town between 2007 and 2016. The data are not complete for all years, but it is clear that the township is expanding due to the constantly increasing investment, in correlation with the continuous increase of the town’s GDP.

Xintang Township’s built-up area covers 1.2 square kilometers, while the urban planning area covers a total of 2.8 square kilometers. The highway which connects Qin Zhou City and Nanning City cuts through the town area. Since 2009, the government has improved three streets and a bus station, and constructed three new residential neighborhoods. The township government contracted the Guangxi Hulan Design Institute to design and revise the planning of the town’s development (AGWRXT, 2013).

Between 2011 and 2013, the government made several other investments in the township. A second wave of development of real estate at a total cost of 10 million yuan (€ 1.27 million)

was started, and 80% of the new houses were bought by local rural residents at the beginning of 2012. The government also set up more than 50 street-parking spaces, the first official parking spaces in town. At the same time, the government raised 60,000 yuan (€ 7,595) to build public toilets in the town. Since 2013, the drainage system was rebuilt by improving the sewage system, with funds of 520,000 yuan (€ 65,822), while another 100,000 yuan (€ 12,000) was invested to re-lay 70 meters of the sewage drains around the market. Additionally, 50,000 yuan (€ 6,000) was raised to pave a street layout to maintain this drainage system (AGWRXT, 2013; AGWRXT, 2012).

The Xintang Township Government considered the development of such projects as its main achievement. The Working Report of Xintang Government over the year 2012 reveals that the township government had seven major construction projects, of which one was complete and five were under construction. Major projects had a total budget of nine million yuan (€ 1.14 millions), of which up to 8.06 million yuan (€ 1 million), or 89.6% of the budget, came from higher government levels. These projects were the construction of public rental housing for government workers; the construction of a training center for teaching planting techniques for Huaishan (Chinese yam); the construction of office buildings for two Village Committees; a land-improvement project in three villages; the construction of two residential areas; and the construction of a so-called three-bird (chicken, duck, and goose) market in Xintang Town (AGWRXT, 2013).

Moreover, the Xintang Government completed a fixed-asset investment project worth 313 million yuan (€ 39 million) in 2012. These projects included drinking-water projects, natural concrete village road-hardening projects, renovation of old and dilapidated rural houses, reservoir reinforcement projects, and the construction/maintenance of secondary roads to Nanning City. The majority of investments were a part of the huge central budgets (AGWRXT, 2013).

Xintang Township Government Work Report in 2017 shows that the township invested 430 million yuan (€ 54 million) in fixed assets in 2016. This reflects that the fixed assets investment has increased rapidly compared to the investments of 285 million yuan (€ 36 million) in 2015. There were eleven public infrastructures, including 3,416 km of roads and 3,432 m<sup>2</sup> of stages (for public dance and entertainment), with a total investment of 1.39 million yuan (€ 176 thousands) (AGWRXT, 2017).

Apart from investing in public infrastructure, the Chinese government on various levels also makes investments in rental apartments in townships in order to calm down the overheating real estate market and to support the urban low-income residents

*“New public housing is not developed and controlled by employers or work units but by the local government in partnership with commercial property developers (...). The successful expansion of the urban housing stock through the market has been accompanied by a rapid increase in house prices, making home purchase increasingly unaffordable for low- and middle-income households and, in particular, for migrants and young office workers” (Chen, et al., 2013, pp. 14, 21).*

The construction of Public Rental Housing (PRH, 公共租赁住房) is one of the government-driven projects which have been implemented to improve the housing conditions for urban low and moderate-income families. PRH have a lower rent than the market rent for houses in similar conditions (Jiang, 2012; Li, 2011b, p. 2). “China constructed 16.3 million units of public housing and finished 11 million units during its ‘11th Five-Year Plan’ period (2006–2010) (Ministry of Housing and Urban-Rural Development, MOHURD 2011) (...). The Chinese government is committed to building 36 million units of public housing during the ‘12th Five-Year Plan’ period (2011–2015)” (Chen, et al., 2013, p. 14).

The report of Qinbei District Housing and Urban Construction Bureau shows the Government of Qinbei District was given the target task by the above governments of constructing 1,042 apartments in public rental houses in 2015 (see Table 12). This task consisted of 33 smaller projects. These government-driven house-construction projects were all in an apartment style, which is different from the individual-household-driven house-building in the rural area.

**Table 12: Qinbei District Rental Housing Project Construction in 2015**

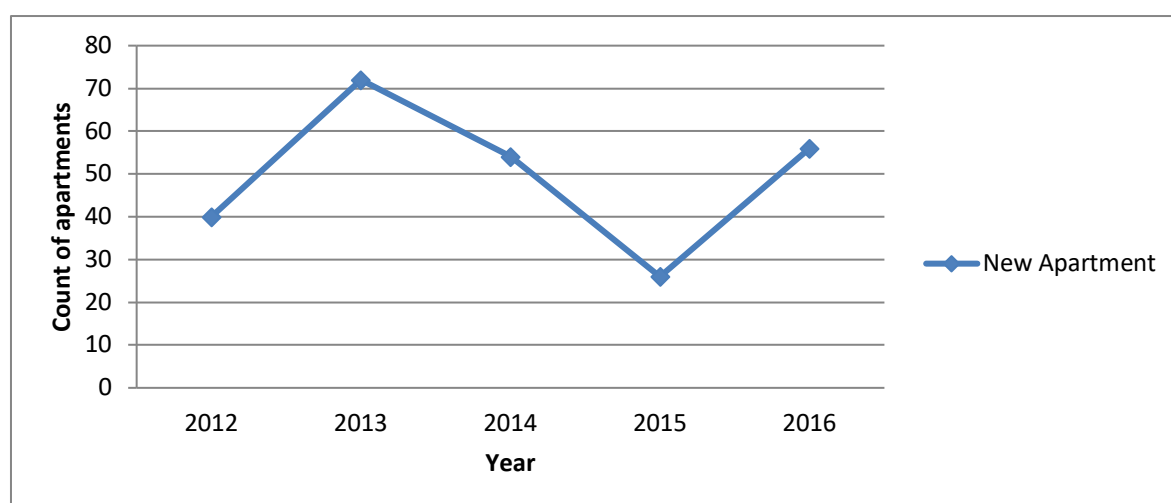
Items	The construction area	The investment (expected): yuan
16 township primary and secondary schools	16,774.66 m <sup>2</sup>	21. 0797 million (€ 2.7 million)
11 township hospitals	17,069 m <sup>2</sup>	20.37 million (€ 2.6 million)
three township governments	3,154.5 m <sup>2</sup>	4.704 million (€ 595,000)
two finance departments	1,198 m <sup>2</sup>	2.2 million (€ 278,000)
The Qinbei Distrit People’s Hospital	9,805.12 m <sup>2</sup>	18 million (€ 2 million)

(Source: the Qinbei District Housing and Urban Construction Bureau in December 2017)

These projects were primarily subsidized by a vertical payment scheme, in which each level of government invest a proportional amount of money and the remainder of the cost was to be

collected by the potential renters. These top-down payment transfers are an incentive to improve living conditions by “relieving the accommodation stress of local young staff and migrant workers who have relatively low income” (Li, 2011b, p. 6).

The town government, under the district government, has implemented similar projects to build apartments in township areas and administrative places. Figure 7 below shows the implementation of these projects in Xintang Town. I found that these public rental houses were mainly supplied as apartments to public servants, including government officials, teachers, and doctors.



**Figure 7: Public Rental Houses in Xintang Town**

(Source: Xintang Government annual reports from 2012 to 2016)

All these government investments in urbanization together have driven the increased demand for river sand. In the following, I will present as an example: the construction of the administrative committee’s offices in Qinzhou City, a significant consumer of sand.

### 5.2.2 Rebuilding the Administrative Committee’s Offices

In order to enhance the development of the CCP and its service capability, the Party invested 0.51 billion yuan (€ 65 million) directly from the central financial department, in order to build new offices for its administrative villages and communities in Qinzhou City. I interviewed a city officer, Mr. Liu, about the office-building project called “One Workstation and One Center” construction ( “一站一中心” 建设). He said:

*“There are 1,010 administrative villages and communities, of which 986 have already built new offices. The goal of the construction was to accommodate the party*

*membership, resident services, social security, and social stability and so on” (Interview in Qinzhou City, December 12, 2016).*

On January 7, 2016, Mr. Zhang, who is an officer in the Qinzhou Prefectural Party Committee, told me: “The Qinzhou government created a new model of the workstation, which entirely promoted the grassroots party construction on an advanced level.”

“One Workstation and One Center” is a project promoted by the central government. The project includes the construction of infrastructure and the use of new communication technology, for example, the internet and remote communication technology. The program in the end has financed the construction of 244 Party Construction Workstations and 1,019 Village (community) Party Service Centres in Qinzhou City. Construction was completed two years ahead of schedule. The term “infrastructural power” was used by Michael Mann (1984) to describe the capacity of the state to intervene in and penetrate society in order to enforce policy throughout its territory. The common building of “One Workstation and One Center” strengthens the power of the CCP’s branches by establishing infrastructure, including broadband internet access, modern office equipment, and stable cadres and services for villagers. Indeed, the construction of village offices has significantly improved the government propaganda and strengthened the implementation of the project system.

### 5.2.3 Private House Construction in Rural Areas

Field observations indicated that most of the township households had constructed their own houses, while a small number of rural households had not built their new homes by 2018. The government annual reports and my own interviews reveal that the construction of the houses peaked between 2010 and 2018.

**Table 13: Statistics on Completed Domestic Houses in Xintang in 2013**

Name of community or village	Number of completed houses	Area of the completed houses (in square meters)	Values of the completed houses (in million yuan)
Total	385	54,603	68.57
<b>Town community</b>	<b>80</b>	<b>11,314</b>	<b>14.21</b>
Nan ju	14	2,013	2.53

Tunlin	15	2,163	2.72
Ping kuang	32	4,549	5.71
Nagan	53	7,556	9.49
Tunlou	41	5,823	7.31
Tunwang	49	6,951	8.73
Nan zhong	57	8,095	10.17
Tuan zhong	43	6,138	7.71

(Source: Xintang Government's Annual Statistics for 2013)

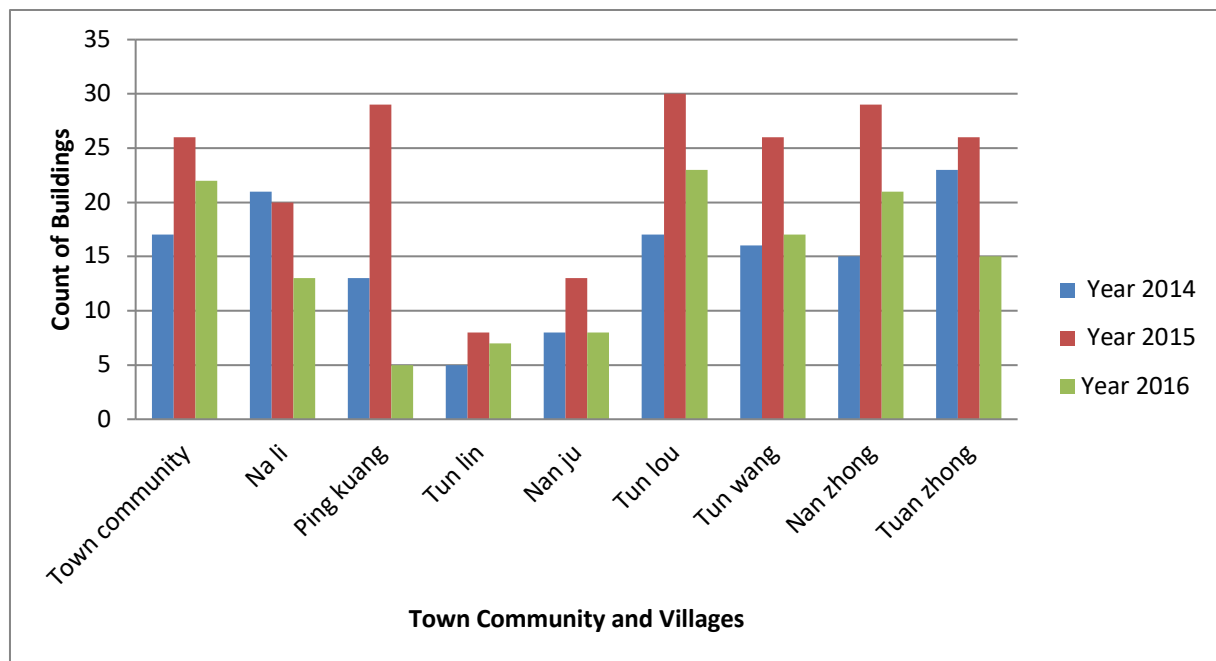
Construction continued. For instance, Table 13 shows that there were a total of 385 private houses built in 2013; 80 houses had been built in the urban community, which is higher than in any of the surrounding villages.

Yet, also in the villages a decreasing number of households resided in traditional housing, for instance, in Mei Village, 14 new houses were under way in 2017 and the remaining households had built their new homes by October 2018.

In my observation, the new houses have narrowed the quality-of-life gap among township and village households, despite the lack of employment opportunities in the villages. In fact, villagers are proud to claim that their living environments are much better than those of the city and township dwellers, since the countryside has less noise and air pollution. One real issue however is that rural areas do not have enough opportunities for employment.

### **5.2.3.1 The Renovation of Dangerous Buildings**

The “Renovation of Dangerous Buildings” project aims to help the poor households to build their new houses if they meet certain requirements, such as low-income households and households with a sick member. Statistics of Xintang Government from the year 2017 showed that there were 473 rural households in Xintang benefiting from this project between 2014 and 2016. The following figure shows the implementation split up according to administrative village.



**Figure 8: Renovation of Dangerous Buildings**

(Source: Government annual reports from March 2014 to March 2016)

In the GZAR as a whole, a total of 166,000 households obtained funds for dilapidated buildings in 2014, and the number increased to 210,000 households in 2015 (Central Government WebChinese site, 2015).

According to a document of the Qinbei District Government from the year 2015, a household could receive reconstruction subsidies granted by government at various levels, as follows:

- 1) Central subsidy funds: central subsidy for rural reconstruction for an average of 7,500 yuan (€ 949/household) per household.
- 2) Autonomous province matching funds: an average of 7,500 yuan (€ 949/household) per household.
- 3) City matching funds: 1,500 yuan (€ 190) per household.
- 4) District matching funds: 2,000 yuan (€ 253) per household.

To sum up, a chosen household could obtain a maximum of 18,000 yuan (€ 2,278) in total from the different governments<sup>33</sup>. Households themselves also need to raise money to build their own

<sup>33</sup> There are some requirements restricting the application, such as that a widow cannot have a house bigger than 60 square meters, and if there is a household with four people or fewer, the homestead should only be a maximum of 80 square meters. Each person may have 18 square meters maximum in households with more than five people.

houses. If an application is confirmed, an officer first visits and inspects the house, and photos are taken before it is dismantled; the local government pays 9,600 yuan (€ 1,215) to begin with, with the other half only paid after the new house has been completed and has passed the evaluation. Photos of the new house would be taken again as evidence.

Mr. Rui is a member of one of the poor households who obtained this fund in Mei Village in 2014. He got married to a mentally disabled woman and they had two sons and two daughters. All of them have a slight mental disability. The daughters got married at a young age, around 16 years old. However, his two sons were still single in 2016. His elder son was 34 years old in 2014, but they could not find an appropriate woman for him to marry. Because of their children's mental problems, they could not find their sons jobs at building construction sites, where other villagers work. No villager would want to work with them in construction jobs because they do not know how to build and cannot do the heavy work on construction sites. The local officials told me that the family was always supported by the local government. They even applied to the government for rice and oil at the end of the year when some families would have surplus rice to sell in the rice market. Even though they had no money, they still wanted to build their own new house because they hoped that their sons could get married in the near future, as others' sons had. Meanwhile, "Any household needs/is able to build a new house" is a slogan of the local government based on the target of socialist rural construction and so also this family was supported. Mr. Rui told me that he began to carry sand for his new house several years ago. With the government's support, by carrying river sand by his own, and by selling out a big piece of inherited land to another household for 40,000 yuan (€ 5,063, which Mr. Rui shared with brother, each receiving half of the money), he eventually successfully built his house in 2014. This example shows that governmental policies also enabled the private construction of housing in rural areas.

### **5.3 The Infrastructural Projects in Rural Areas**

As mentioned above, the project system has also invested in rural public infrastructure construction. Common constructions of water reservoirs and road improvement have also demanded sand in the region, as illustrated in the following section.

#### **5.3.1 Water Conservation**

From 1949 onwards, the government of Xintang Town built several reservoirs, irrigation

channels, and other agricultural infrastructure to improve the production of paddy and other crops. Most of these had been constructed between the 1950s and 1960s using free labor from local villagers (Li & Pang, 2000). After decades of use, those facilities have become damaged. The central government decided to repair these old facilities, and has invested a great deal of money in agricultural infrastructure nation-wide. In 2008, China invested about 160.41 billion yuan (€ 20 billion) in water conservation, which was an increase of 56.3% compared to the year before (Wen, 2009).

In 2008, the Xintang Government invested eight million yuan (€ 1 million) in improving eight reservoirs, primarily financed by the higher-level government, with the remaining part of the project funds being supplied by the Xintang Government. Two reservoirs were completed, reinforced, and repaired by 2015, because the Xintang Government was among the Fifth Batch of Central Finance and Small-scale Irrigation and Water Conservation Key Counties of Qinbei District. This also included support for the construction of an irrigation channel connected to the Fenghuang Reservoir (the reservoir mainly for Nagan Administrative Village). The construction scope included six administrative villages; the total funds were 20.35 million yuan (€ 2 million). The project would improve irrigation canals of paddy fields to 16,300 *mu* (10.87  $km^2$ ; the total area of paddy fields in Xintang Township is 17,100 *mu*, about 11.4  $km^2$ ). (Xintang Government annual reports from March 2010 to March 2016)

Meanwhile, the clean drinking-water works have also made progress. Three village committees completed their project aims of providing clean drinking water in 2011, while clean drinking-water projects of two other villages were still undergoing construction at that point.

In 2015, the Xintang Township's fixed investment target was 285 million yuan (€ 36 million). Five thousand *mu* (3.33  $km^2$ ) of paddy fields irrigation ditches and tractor-plowing roads were built, which were provincial field projects and were planned to cost 8 million yuan (€ 1 million), and 8 reservoirs and their drains were planned to be reinforced. Funds totaling 20.35 million yuan (€ 2 million) would be invested in Fenghuang reservoirs, which involved the Nagan Village Committee and five other village committees, and were subsidized by the central government. The reservoirs were meant to irrigate the paddy field over an area of 16,300 *mu* (Xintang Government annual reports in March 2016).

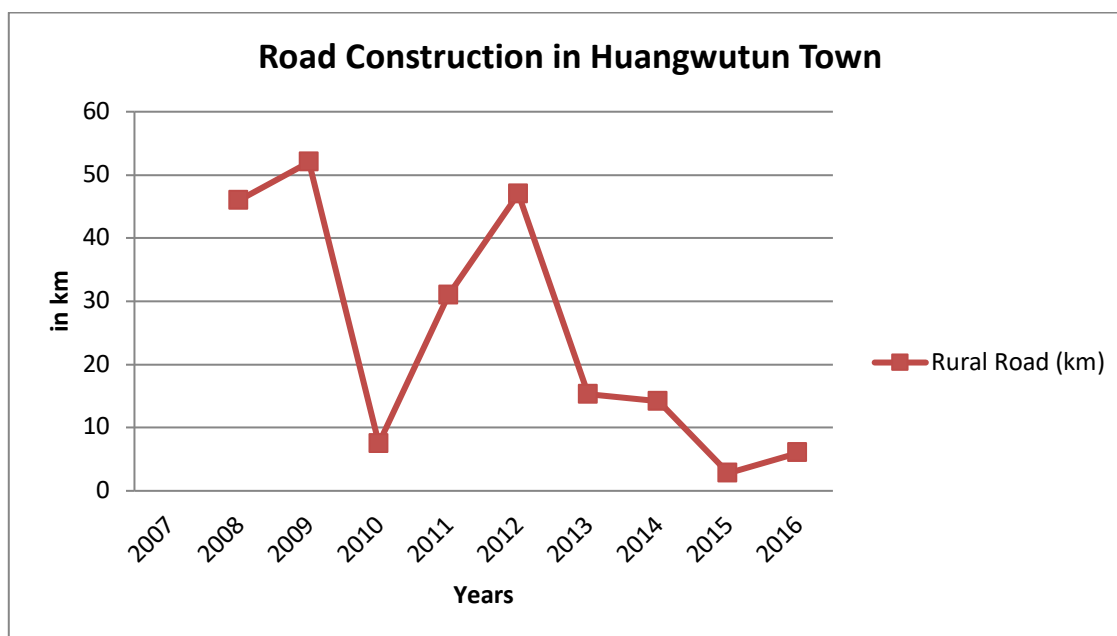
### 5.3.2 Two Case Studies of “One Project, One Discussion System”

The “One Project, One Discussion System” (一事一议制) was originally created in the Chaohu area in Anhui Province in the 2000s. The Chaohu rural residents created this “One Project, One Discussion” approach to raise funds and recruit labor to develop their village. Specifically, the villagers discussed one project at a time with a democratic approach, and decision-making had to be passed by half majority of the villagers older than 18 or by two-third of all households. Later on, the provincial government adopted this approach and implemented it in the whole. Subsequently, the Ministry of Agriculture also adopted the approach as a new method to develop rural areas. The State Council was forwarding the Notice of the Ministry of Agriculture on “Measures of the Administration to Raise Funds among Villagers” (January 16, 2007). The Notice defined the scope and participants required, and suggested the procedure and management method. This “One Project, One Discussion System” has been implemented in the Guangxi Zhuang Autonomous Region since then.

According to the mechanism of “One Project, One Discussion”, the village has to collect the required contribution to fit the government project’s system. That is, 75% of the funds of a project are provided by the government, while 25% of the projects should be paid for by the village in question. Moreover, all the land needed for implementing a project must be made available by the villagers. The system works according to the principle that those who benefit, should contribute. Villages’ contributions include not only monetary contributions, but also free labor, land, and organizational resources, which are used to execute the rural development projects on the ground (Interview the township officials in Xintang Town, March 2015). It seems like a cooperative pattern for building the infrastructure in rural communities. However, the reality of infrastructure governance and project implementation has is more complex.

In Huangwutun Town, road construction projects have been consistently implemented for several years. The investment in roads has recently been decreasing, as most of the roads were cemented between 2012 and 2018 (see Figure 9). Nonetheless, roads and bridges have been adversely affected by sand transportation in the township. Tens of thousands of trucks have entered the town to load and transport sand day and night. When I did my fieldwork, on the way to my research villages I frequently encountered traffic jams; in particular, the damaged bridges and the large trucks made the road situation worse. Rural residents told me how horrible it was to face these circumstances day after day and even year after year. Their public roads and

other infrastructures are damaged by sand mining and transportation. Even the governments have paid attention to the severe damage caused by trucks and dredgers. At the same time, road construction has continued, and more roads and bridges are being built, even though their maintenance is problematic.



**Figure 9: Road Construction in Huangwutun Town**

(Source: Government annual reports from 2007 to 2016)

The government of Xintang Township had completed 35 kilometers of village cement road (fourth-level highway) and 380 kilometers of tractor road by 2010, and thereby locally achieved the project goal of “extending cement roads to each village” (村村通). This is a national project system, launched in early 2000. All administrative villages were planned to be connected to towns through this project. The rest of the roads was also to be upgraded – for example, the rural roads in the villages. This is more difficult than the construction of a road outside of a village because it also involves private properties, cultural factors and urban land.

According to the Annual Work Report of Xintang Government, 22.6 kilometers of cement roads in the 13 natural villages were completed in 2012. This had cost 280,000 yuan (€ 35,000) per kilometer of cement road. The Xintang government thus used 7.5 million (€ 1 million) of investment in fixed assets, i.e. road projects. All these rural road projects used the measure of “One Project, One Discussion System”, and were thus partly financed by the villagers. According to Wegrich et al. (2017, p. 2), “The governance of infrastructure (the planning,

financing, contracting, and building of the public physical infrastructure essential for economic and social activities) is facing a somewhat paradoxical situation: while governments have become more reliant on private agents, their role remains critical (...). And while governments may have become less visible in infrastructure provision, the job of infrastructure governance has grown more complex and ambitious.” Indeed, the government at all levels plays a big role in the project system. However, the role of village heads and rural individuals has been highly neglected. Two case studies on Mei Village will be presented to illustrate the circumstances surrounding infrastructure governance and implementation in Mei Village.

#### **5.3.2.1 Case Study 1: A 390-meters of Cement Roads Project in Mei Village in 2012**

The elected village head, an unpaid volunteer<sup>34</sup>, plays an important role in the project system in Mei Village. He might represent the village as a whole to cooperate with the government and to deal with diverse issues pertaining to the projects. The major part of his job is to make sure that there is land available for road building and public infrastructure construction. The new village head in Mei Village in 2012 was the person responsible for organizing the villagers to sell their river sand to a private sand company. This meant that Mei Village obtained public money from a common resource, river sand. This collective income would qualify to cooperate with a road project of the “One Project, One Discussion System” (it asks for 25% of the project fund from the village). With the permission of the mayor of Xintang Town<sup>35</sup>, Mei Village was chosen as the recipient of a cement road project totaling 390 meters in length.

According to the village head, he made a great effort to convince households to contribute their land for the road and for other public infrastructure, but in vain. People wanted to benefit from the state compensation for the occupation of their land. However, the government did not have these funds to spare, even though the village needed land for public use. Even though the conflict was not well resolved, construction project still went ahead. In the end, the construction project was completed successfully – at least from the Government’s perspective.

In 2013, an officer was sent by the Township Government to help the village to build their new

---

<sup>34</sup>There are three villages in Nali Administrative Village without a village head. The village head is an unpaid volunteer. Therefore, few villagers like to take this job. Two village heads claimed in interviews that they would like to quit their roles, including the village head of Mei Village.

<sup>35</sup> A mayor has a stable salary from the financial department and he/she is first nominated by the communist party and then will be elected by the respective local People’s Congresses. This is an indirect election based on the hierarchical electoral system in China.

Socialism Village and to execute a new plan, called “the Beautiful Countryside.” After the new road was successfully paved in Mei Village, the government considered that village a good place to implement the new policy. They wanted to create a good example of the new government policies “Socialism Village” (社会主义新农村建设) and “the Beautiful Countryside” (美丽乡村建设). Mr. Shen was a township official who was known to be good at organizing this kind of rural collective action. He was sent to Mei Village in early 2013. He explained as follows:

*“It was my job to make sure all the projects could move on successfully because it was government policy. However, normally, it was the village head who visited the related households and tried to convince them. I rarely talked to the villagers directly. When I was there [in the village], I organized the documents to apply for new projects. When we did something, we would invite some leaders to visit the village and we also tried to be reported on by the TV station or city newspaper, which would help us to get more projects. What I did was quite successful; the leadership was satisfied with my achievements. Mei Village could implement more projects. We had built a public toilet and a public biogas plant, a road, drain, a dance stage, a basketball court, and a pavilion” (March 6, 2015, interview in his office in Xintang Town).*

During the survey, the village head pointed out that it was easy to obtain land from his relatives and other households, but two households were difficult to convince – even the mayor could not convince them to contribute their land for public use. A head of one household was a former cadre who could not obtain his pension after retiring. He claimed that the government had to give him his pension since he had worked for the township government from 1958 to 1994. However, the township government did not approve his application, since he had lost his original documentation, and the policy governing the former workers had changed. Another household wanted to obtain compensation for contributing their land but this is not part of the “One Project, One Discussion System.” Eventually, these two households were “forced” by the village head and the government as well as the village public to contribute their land for a basketball court.

Although the village head and his relatives had also provided their land for public use, some cases of unfair distributions in the later projects led to a crisis of trust. For example, the village head gave the benefits from a biogas project which was linked to the public toilet to most of his relatives, but not to others who had also contributed their land to this project. This unfair distribution resulted in public discussion and complaints. But the new construction projects were executed as scheduled. The project funds were to be collected. And I played an important role in the project’s fund raising and implementation, which I will present in the next section.

### 5.3.2.2 Case Study 2: A 220-meter Cement Road Project in Mei Village in 2015

Another 220 meter of cement road were planned to be constructed in Mei Village in 2015. The Xintang Township government had been only allocated funds for 14 kilometers of cement road project by its upper government – the Qinbei District government in 2015. Why did the township government then still plan another 220 meters of road project to Mei Village, in addition to the 390-meter road of 2012?

I was told that it was because of “The Last One Mile” of the projects in Mei Village (Interview Mr. Shen in Xintang Town, March 9, 2015). In the government narrative, “The Last One Mile” stands for a planned project which could not be completely finished because of financial or management issues, usually related to corruption. This, of course, raises the issues of social and management problems in the future implementation of the project system.

The phrase “The Last One Mile” is also regularly brought up by the government itself, because it also tests the consistency of government policies in the long term, since the main leaders of a regional government are regularly shifted to other places. In other words, it reflects what Wegrich et al. (2017, p. 2) argue: “the delivery of infrastructure has become characterized by the ‘iron law’ (Flyvbjerg forthcoming) of cost overruns and delays.” Meanwhile, “The Last One Mile” is also used to eliminate corruption by the leadership in the area. Fazekas and Tóth (2017) have found that “corruption steers infrastructure spending towards high value investment projects and inflates prices by 30-50 per cent on average, with the largest excesses in high corruption risk regions,” and “Central and Eastern European and Mediterranean countries engage in public infrastructure procurement at a higher corruption risk than Western European countries” (Wegrich, et al., 2017). This problem is not unique for China. Time delays and cost overruns are commonly seen in Germany and other European countries (see Kostka & Anzinger, 2016; Fazekas & Tóth, 2017), “The Last One Mile” therefore is a Chinese response to a crucial and persistent issue within public infrastructure projects. The frequent change of leadership or government means that other important projects, which belong to the tasks of the higher-level government, are prioritized, so that some already ongoing projects may be delayed and may not even be completed. As a result, such projects may languish with only “The Last One Mile” to go before they are completed, hence the term.

The Mei Village project, unfortunately, exemplifies the phenomenon of the “Last One Mile.” The village head had already told me about the allocation of the 220-meter road in early 2015.

There was a lack of trust between him and his fellow villagers. In March that year, the village head asked me whether I could do him a favor in Mei Village, which was to collect the contribution from each household for the new road. He said that the government wanted to complete the “Last Mile of Road” inside the village. According to his calculation, he had to gather at least 3,200 yuan (€ 405) to fix the project. He had tried twice to inform the villagers about the road project and attempted to collect the money, but he had failed. I tried to figure out why an elected village head could not collect money for a small road project, and I conducted several in-depth interviews and group discussions in Mei Village. At that time, a villager stated that he would not pay even a single penny for the new project; the same opinion was voiced by others.

I organized a discussion between three elders and other villagers, which showed that both the village head and Village Finance Governing Group had lost trust among many villagers during the former road project. The major outcome was that people believed that if the 390-meter road had cost all of the profit earned from selling public sand, there must be something wrong. Nevertheless, both the village head and the villagers wanted the next stretch of road to be built. The villagers pointed out that they needed a good road, but they also needed to know the details of the finances.

I organized a focus group to discuss the 220-meter road project and the possible solutions to the issue. The people questioned the project system and its financial opacity. During many discussions that went back and forth, I personally interviewed the township officials and invited them to answer the questions about the road projects. I did so in order to gain detailed information about the road project, and I also wanted to help villagers to build the new road. The people agreed to contribute money to the new project, but only if I collected the money. This issue is one that, as is sometimes the case, made it difficult for me to distinguish my position as a community member from my position or as a researcher. Nonetheless, more communication and interaction were needed between the township government and villagers in general, which would help them to build trust and further cooperation.



**Photograph 18: The 220-meter Road Project in Mei Village in 2015**

(Source: field data, 2015)

In the end, the 220-meter cement road was allocated and constructed in the form of four sections inside the village (see Photograph 18). Of these 220 meters of road, 60 meters were to connect to the main road to the basketball court (by compulsory order of the Xintang Township Government), which was the first target of this project. The second part was a further 20-meter stretch opposite the village head's house. The village head pointed out that whenever it rained, the mud would damage the main road and the muddy water would flow towards his house. The third part extended 120 meters from the village center to the east part where I was living. The last 20 meters would stretch from the basketball court to the former cadre's home (the former cadre who could not obtain his pension in previous section) to compensate his loss and his contribution of his land for the basketball court based on my suggestion. Thus, the 220-meter cement road was allocated in the form of four sections inside the village. Apart from the 60 meters to connect the basketball court, the locations of the other parts were decided by the village head, officials, some of the villagers, and me. It means that there was no mass meeting or elders' meeting for distribute the road.

#### **5.4 The Counterproductive Aspects of the Project System in the Villages**

It is worth mentioning that not all of the natural villages have their own cement roads; for instance, Naxia Village has none by 2017. Not every village has a running water project either, Naxia and some villages in Naqiu Administrative Village did not benefit at all from these projects during my research stay. And even though projects for water conservation and an

agricultural channel were implemented in Nachun Village and Naxia Villages, the villagers were angry about the problems associated with these projects.

The lack of local people's participation is one outstanding character of this project system: apart from "One Project, One Discussion System", most of the other projects are entirely unknown to the local villagers. In a group discussion in Naxia Village, villagers expressed their disappointment with the social entertainment facilities for the villagers. They gave me this example by asking if I saw the one isolated building and a basketball court when I was driving toward the village. Then they told me that one so-called benefit project was the construction of new social entertainment facilities in the administrative village, several kilometers from the residential area. Not one villager had agreed to the idea of building these facilities there, since it was too far away from all of the villages, and the facilities have indeed in general benefited none of the villagers. "We heard the project cost 2 million yuan (€ 253.000) in 2016. The Secretary of CCP in Naqiu Administrative Village himself insisted on building there without giving a reason. People argued that the place for this building should be close to our village, but our voice does not matter. Until now, there is a ghost building and an empty basketball court" (Mr. Hu and his wife; the same statement was heard in the group discussion in Naxia Village, March 29, 2017).

Apart from the social entertainment facilities, water conservation projects and bridge projects are also making people even angrier about the government-funded projects. The interviews reveal that some of these projects had destroyed the original facilities, but did not complete the new ones. For instance, the project for improving the roads to the farmland was funded by the government. The company that obtained this project would receive part of the funds. They first removed the previous roads and irrigation channel and tried to build a cement one. However, the project stopped in the middle due to it running out of funding, or to corruption, resulting in the stagnation of the projects. The results of the halted project badly disturbed the peasants' daily activities: the incomplete new roads and channel could not be used, while the old ones had been destroyed. There are many examples of these kinds of cases (ibid.).

Another example is the Nadong Bridge project in Nadong Administrative Village. The original Nadong Bridge was damaged by the sand dredgers and trucks in the last three decades. A project of building a new bridge was started in 2015. In order to build a new one, the previous bridge was destroyed. However, by October 2018, the project was still incomplete, with only three

bridge pillars having been built (see Photograph 19), which greatly impacts the daily travel of more than 10,000 people. This causes a lot of trouble for people wanting to cross the river, and villagers and the local cadres complained a lot about this project. The “Last One Mile” to these projects was missing.



**Photograph 19: The Broken Road and the Old Mud Irrigation Channel in 2017**

(Source: field data, March 2017)

Irrigation channels and the agricultural water supply are other projects under debate. The informants in Nachun Village told me that the agricultural channels were only built in places close to the major roads, to let the leaders or outsiders easily see the outcome of the project. This is a so-called vanity project (面子工程) which is a big problem in government projects (interview Zengpei, in Nachun Village, March 30, 2017). However, the government does not care about the agricultural channels in most of the paddy fields. “We do not have water that reaches to reach my paddy field. The only working one was built a long time ago and most of the households are struggling with getting enough water to farm in Nachun Village” (a woman in Nachun Village, March 30, 2017). I saw one peasant was pumping water from the river in order to farm in Mei Village. “The channel has not worked for years. The irrigation work is very bad. Furthermore, the water conservation was rented out to a private person for fishing. They save the water for the fish farming rather than for rice growing” (two villagers in Mei Village, April 8, 2017).

The “Renovation of Rural Dangerous Buildings” (农村危房改造) project aims to help the poor households, as discussed above, but several circumstances have made it problematic. First of all, the village cadres benefited from the application of the fund. “The secretary must obtain

around 3,000–5,000 yuan (€ 380–633) from the total fund. Otherwise, he will not sign and seal the application document. He has the power to confirm whether a household fits the requirement. Mr. Hu said in a group discussion in Nafa Village on March 29, 2017. One elder said in the discussion that the secretary did not accept 3,000 yuan (€ 380) to sign the documents: “3,000 yuan (€ 380) was too little for him. He asks for more”. Another example was a very poor family with an old traditional house and an ill family member. All villagers agreed that this household should benefit from the “Renovation of Rural Dangerous Building” project. Nonetheless, refused to sign the application document, apparently because, “The head of this household had contradicted him three decades ago” (group discussion in Naxia Village, March 29, 2017). The issues of corruption, personal affairs, and management capacity during the implementation of the projects have been reported upon many times in the prefectural media; however, the officials still kept the majority of the benefits for themselves by embezzling the project fund. Corruption has hindered the implementation of the project system and resulted in low-quality projects and distrust between villagers and the government in rural areas.

## **5.5 Conclusion**

This chapter answers the questions: what causes the huge demand for river sand in China? And why has this natural resource been appropriated and turned into a commodity in the construction market? Based on this chapter’s analysis, I argue that the Chinese government’s project system contributes to development and urbanization, and is therefore crucial to support the demand for river sand and further contributes to development and urbanization. Rapid urbanization, increasing construction of public housing, and vast road and infrastructure construction projects are driven by governments at all levels.

The chapter also identifies counterproductive outcomes of the project-based development model (project system) and its counterproductive outcomes. It furthermore illustrates the relationship between numerous development projects, and the interactions between the natural and social environment. By describing the ongoing resource crisis, it shows the unsustainable aspects of the era of project-based development. Instead of benefiting the local people, some projects damage the existing infrastructures and the people’s trust in the projects’ implementation. Incomplete projects reveal the problems and counterproductiveness of some aspects of the government project system. Indeed, the weaknesses of the project system reveal the issues involved in project completion, fund transparency, and participation of local residents.

Importantly, thousands of projects are undergoing construction. These projects create a growth in the building material market, causing the demand for thousands of tons of river sand. The rapid urbanization has sometimes consumed most of the river sand and also led to a huge waste of river sand in the dismantled villages – in particular, in the building of new houses solely for immediate demolition to gain more compensation. Uneven development inside the province surfaces as an important topic for analysis when considering the migrant workers and the translocal sand demand and market. Through the project system and river-sand marketization, the rural Zhuang communities are highly engaged in the process of rural modernization and labor–material mobility in the region.

In sum, the contribution of this chapter is to illustrate that China’s developmental experience teaches a valuable lesson: development demand has exceeded the raw resource supply. Furthermore, the model of rapid urbanization and project-based development has led to the mismanagement of projects (e.g. the “Last One Mile”) and to the wasteful use of sand resources due to house construction solely for the sake of demolition in order to receive compensation. Against this background, a detailed exploration of the government’s sand governance is significant to illustrate the sand crisis in China. The government’s institution and policies for controlling river-sand mining will be explored in the following chapter.

## **Chapter 6: Ownership and Extraction Management of River Sand**

It is not difficult to figure out what drives the changes in the demand for river sand, as discussed in the previous chapter. However, the questions of who and by what processes river sand extraction is managed, which I address in this chapter, are critical aspects, and thus the fundamental issues to explore. By looking at the river-sand management at various levels, and at the new establishment of institutions and laws, my intention is to provide a better understanding of the existing arguments relating to the environmental crisis and resource scarcity in the rapid transformation of China in the field of political ecology, and to contribute to the debates about China's government structure with regard to natural resource management.

By presenting the relevant laws first, this chapter focuses on the shortcomings of China's formal politics, both horizontal (agencies at the same level) and vertical (from the central government to administrative villages). In particular, political reforms and the recently enacted regional laws will be discussed in detail regarding the license system (采砂许可制度) and River Chief System (河长制). The findings reveal that China has furthered its political reform to control illegal sand mining by shifting its governance structure from the sand-mining license (down to the county level) to the River Chief System (down to the administrative level). The new political reform in terms of river-sand management has recentralized the power in the hands of the major leaders and distributed the responsibility down to administrative villages. Indeed, this governmental reform has overwhelmed the law-based sand management. This chapter explores the role of politics and the crucial part the government at various levels plays in resource management in rural China.

### **6.1 The Related Laws of River-Sand Mining: River Sand belongs to the State**

Laws and regulations have shaped and reshaped societies and the relationship between the human and non-human in many ways. Political ecologists have studied how laws provide legitimacy of access, control, rights, and conflicts over resources and what role they play in resource conflicts. Laws have expressed power structures and have shaped our relationships and actions (Goodale, 2017). The constitution, related laws, and ownership rights have been discussed in the introduction. The following section will describe in detail the related issues at various scales of formal institutions and laws.

**Table 14: The Relevant Laws Regarding with Sand Management**

	Item	Issuing Year	Adopted Unit	Article(s)	Main Relevant Content
1	Criminal Law of the People's Republic of China	1979 (revised 1997)	The Second Session of the Fifth National People's Congress	Article 343, Article 408	Article 343: Whoever, in violation of the provisions of the Mineral Resources Law, mines without a mining license. (...) if they refuse to stop mining after being ordered to do so, thus damaging the mineral resources, shall be sentenced to fixed-term imprisonment of not more than three years, criminal detention, or public surveillance and shall also, or only, be fined; if severe damage is caused to mineral resources, they shall be sentenced to fixed-term imprisonment of not less than three years but no more than seven years and shall also be fined. (CLPRC79, 1979)
2	Water Law of the People's Republic of China	1988 (revised 2016)	The 24th Meeting of the Standing Committee of the Sixth National People's Congress	Article 24, 39	Article 39: The state applies a licensing system for sand mining in river courses. (NPCPRC88, 1988)
3	Mineral Resources Law of the People's Republic of China	1986 (amended 1996)	The 15th Meeting of the Standing Committee of the Sixth National People's Congress	Most articles of the law	Article 3: Mineral resources belong to the state. The right of state ownership concerning mineral resources is exercised by the State Council. The state permits individuals to mine scattered and dispersed mineral resources, as well as sand, stone, and clay that can only be used as ordinary building materials, and small amounts of minerals for their own use in daily life. (NPCPRC86, 1986)
4	Rules for the Implementation of the Mineral Resources Law of the People's Republic of China	1994	The state council	Item 3 of the Mineral Resources Classification	Non-metallic minerals: Natural quartz sand (glass sand, mold sand, building sand, cement ingredients with sand, cement standard sand, brick sand). (SCPRC94, 1994)
5	Flood Control Law of the People's Republic of China	1997 (revised 2007; amended 2016)	The 27th Meeting of the Standing Committee of the Eighth National People's Congress	Article 35	In the scope of the protection of flood control facilities, it is forbidden to carry out activities such as blasting, drilling, quarrying, and so on. (NPCPRC97, 1997)

Based on the laws, river sand belongs to the state. The Water Law is the law that relates most directly to river-sand mining. Article 39 of the Water Law, it stipulates that:

*“Where sand quarrying in areas under rivers course control may adversely affect the stability of the river condition or endanger safety of the dykes, the administrative departments for water resources, under the relevant people’s governments at or above county level, shall delimit no-mining areas or set no-mining periods, which they shall make known to the general public.”*

However, across the entirety of the Water Law, this is the only article relating to sand issues, which deals with the state's application of a licensing system for sand mining in rivers. Nonetheless, there are also many other relevant laws impacting sand management (see Table 14). In addition, the Environmental Protection Law of the People's Republic of China (1989, revised in 2014), the regulations of the People's Republic of China on the Administration of the Channels of the People's Republic of China (1987), Regulations of the People's Republic of China on River Administration (1988), and the Fees Management Method of River Sand Mining (1990), which are the main laws and regulations to govern river sand in China.

Indeed, river sand set the rules for the implementation of the Mineral Resources Law, which relates to the Classification of Mineral Resources. In terms of item 3 of this law, sand belongs to the category of non-metallic minerals. Therefore, article 343 of the Criminal Law applies when it comes to river sand. It thus seems that sand is subject to a clear system of laws managing it as a non-metallic mineral. In reality, though, China's environmental law and its implementation is highly problematic. As far as China's environmental law and its implementation is concerned,

*“Over the years, China has introduced about 30 laws on environmental protection, about 90 administrative laws and regulations, and a large number of environmental standards. It can be said that China's environmental problems are not due to the lack of rules, but because some of the rules have lagged behind practice. [These laws] are inoperable” (Xin Chunying, the deputy director the Legislative Affairs Commission of the Standing Committee of NPC. Quoted from Peng and Mao, 2014).*

This is why the Environmental Law was overhauled in April 2014, for the first time in 25 years. Van Rooij (2006a, p. 57) argues that although “China has made great strides in establishing environmental laws and enforcing environmental regulation, problems of non-compliance and weak and slow enforcement remain.” Indeed, the situation is the same regarding the overlapping laws that prevent and control illegal river-sand mining. In January 2015, the Supreme People's Court and the Ministry of Water Resources conducted a field survey on the Yangtze River and Huaihe River Basin. On March 9, 2015, the Supreme People's Court proposed an “Interpretation of the Supreme People's Court on Several Issues Concerning the Application of Law in the Trial of Illegal Mining and Destructive Mining Criminal Cases” (Draft for soliciting opinions) and solicited the opinions of the Supreme People's Procuratorate, the Ministry of Public Security, and the Ministry of Land and Resources and other departments. The draft for soliciting opinions brought to light serious instances of illegal sand mining within the scope of

criminal illegal mining and destructive mining. In this regard, precise and effective laws on sand mining are still, currently, being drafted. This process of lawmaking shows that there is still a long way to go towards implementing laws governing river sand in China.

Until today, existing laws regarding sand management have only rarely been effectuated, as the dominant factors in dealing with this resource are different. Meanwhile, there is no standard or unity in the investigation of the criminal responsibility of illegal sand miners in China. The “Regulations on Sand Mining Management of the Yangtze River” were the first precise instructions directly related to sand-mining governance in China, and were adopted by the 45th executive meeting of the State Council on October 10, 2001 and implemented on January 1, 2002. This is the origin of Decree No. 320 of the State Council of the People’s Republic of China (subsequently referred to as Decree No. 320) (Zhu, 2001). According to Decree No. 320, the Department of Water Administration of the local people’s government at or above county level can manage river sand and issue sand-mining licenses. Specifically, the township government and the administrative village as well as natural village do not have authority to govern river sand. However, apart from the Department of Water Administration, the Department of Land and Resources and the Department of Transport, the relevant authorities are the Department of Environmental Protection as well as the Department of Agriculture, also have authority over sand-mining related issues.<sup>36</sup>

## **6.2 Horizontal Politics in Governing of River-Sand Mining**

Horizontal governance refers to the interactions between different departments at the same level of government, which can cause serious problems affecting river sand management. The complex and overlapping nature of horizontal politics can cause serious management problems, including the management of river sand.

Indeed, over the years many departments within the government have attended to the matter of illegal sand mining. Each relevant authority established their own policies on mining sand, whilst the basic idea of these policies was to collect a fee from approved sand mining. Thus, these departments utilized their power to benefit from sand governance. “Multiple management,

---

<sup>36</sup> Among the various government reports on combating illegal river sand governance in China, there are more authorities involved than are shown in the above table, including the Power Supply Bureau, Maritime Bureau, and China Sea Prison in local areas. Indeed, the specific authorities involved vary due to the different places and governing systems, which are highly flexible and diverse.

indiscriminate digging and mining” (Wu, 2008, pp. 1-5) was the “method” used by some government authorities.

In order to clarify the legal situation with regard to river sand mining, the Department of Water Administration under the State Council and the affiliated Yangtze River Water Conservancy Commission were directed by the central government to strengthen the unified management, supervision, and inspection of sand mining along the Yangtze River, as well as organize, coordinate, and direct the work of sand management. Based on the Decree No. 320, the “Measures for the Implementation of the Regulations for Sand Mining in the Yangtze River” was issued on June 2, 2003 (revised on May 14, 2010) by the Ministry of Water Resources. The state council implemented a unified planning system for sand mining in the Yangtze River. In March 2012, the Yangtze River Water Conservancy Commission established the country’s first specialized functional river-sand mining management department, the Yangtze River Sand Excavation Management Authority (长江河道采砂管理局). However, the newly established authority has not even succeeded in controlling illegal sand mining, whilst many other powerful authorities desire to get involved in sand governance.

The Yangtze River Sand Excavation Management Authority organized its cadres and published a book – titled “Yangtze River Sand Mining Management” – in 2008 to point out this situation:

*“[D]espite the implementation of the Decree No. 320, which clarifies the management system for river-sand mining and explains the division of responsibilities between the water administrative department, traffic department, and police, in real management practice, some departments do not fulfil their duties in actual practice. They do not want to give up pursuing their interests. They use their own industrial authority, trying to issue some permits for sand-mining operators. In so doing, they pursue economic interests regardless of the overall management of sand mining. Thus, they are increasing the costs of sand-mining operations and sand-mining management, as well as the difficulty of on-site supervision of sand mining” (Wu, 2008: 61. Translated by the author).*

Article 18 of the Decree No. 320 declares that any institution or individual who, “in violation of the provisions of these regulations, fails to comply with river sand mining permits and arbitrarily picks sand at the Yangtze River, shall be compelled by the Department of Water Administration of the local people’s government at or above county level or the Yangtze River Water Conservancy Commission to cease the illegal acts, and their illegal instruments will be confiscated.” However, “If a certain river has a navigation channel, before issuing the approval, the water administrative shall solicit the opinions of the Yangtze River Water Conservancy Commission and the Yangtze River Ship Authority Maritime Agency” (Article 9). This article

shows that certain other authorities are relevant for the management of river sand.

Based on the diverse government reports on combating illegal river-sand governance, there are many other authorities involved in the issue, including the Ministry of Water Resources, the Ministry of Land and Resources, the Ministry of Transport, and the Ministry of Environmental Protections, as well as the Ministry of Finance, the Ministry of Forestry Administration, the Power Supply Bureau, Maritime Bureau, and China Sea Prison. Indeed, the involved authorities vary depending on specific locations and governing systems, which are highly flexible and diverse (see also Wu, 2008, pp. 51- 61). The establishment of joint campaigns or joint law enforcement activities has frequently involved various government departments at different scales to form a stronger team and united action against the continuing illegal sand mining, attributes which have been reported as being one advantage of formal governance. Liu et al. (2010) argue that ecological issues straddle administrative boundaries (e.g. central, provincial, and prefectural) and formal governance can therefore benefit from such cooperation. Figure 10 shows the way river-sand mining is managed in Qinzhou City where a joint law-enforcement activity was instigated to destroy the illegal sand-mining sites and machines around the Maoling River. The title of the news clipping is: “A Big Occasion: The District of Qinnan dispatched 20 Units to Rectify Illegal Sand-selling Sites.” The report pointed out that:

*“From November 9 to 10, 2017, for two consecutive days, Qinnan District organized some 900 officials from 23 departments including the City Supervision Bureau, the Land and Resources Bureau, the Water Resources Bureau, the Marine Bureau, and the Environmental Protection Bureau in Qinnan Government District to comprehensively manage illegal sand mining and illegal operations of sand fields on the banks of the Maoling River. [The joint campaign] combats heavily against illegal sand extraction and illegal operations of the sand field to maintain the ecological environment.*

*In recent years, with the rapid economic and social development of the city, the market demand for river sand and sea sand is increasing over time, providing huge profit margins for illegal miners. In addition, the legal awareness of some people is weak, and they consider extracting river and sea sand normal. The illegal operation of sand-mining and -selling sites is relatively common and has caused great damage to the ecological environment. In order to protect the ecological environment and to ban illegal and random extraction of river sand and sea sand and the operation of the sand-selling sites, the Qinnan District has repeatedly organized law enforcement officers to crack down on illegal sand mining in the areas of Jianshan Town, Nali Town, and Kangxiling Town” (Qinzhou360, 2017a).*



**Figure 10: The Reports of a Joint Campaign in Qinnan District in 2017**

(Online Source: Qinzhou360, 2017a)

The number of departments and officers involved not only shows how rampant illegal river-sand mining is but also shows the problem of overlapping responsibilities and of fragmented sand management for the government at the horizontal level. The overlapping authorities have a problem managing river sand in an effective way. Consequently, the local government has been blamed for unfaithfully implementing the well-decided central environmental policies in China (Van Rooij, 2006a; Mol & Carter, 2006; Kostka & Hobbs, 2013). However, the centrally-planned changes regarding which authorities are actually responsible for the issue are an important root of the sand governance problems.

From 1970 to 1990, the Ministry of Land and Resources was considered the most important authority when it came to sand management. The responsible departments at the state level have changed over time, from the Department of Land and Minerals, to a joint-management situation, and then to the Department of Water Resources at the state level (Wu, 2008). The transformation shows how the formal authority treats river sand, the original perspective being that river sand was an unlimited mineral resource that could be appropriated at local authorities' as well as individuals' discretion. The most recent perspective considers river sand as an inherent part of the river environment, which plays an important role in the ecology of the river system and aquatic environment and the sustainable development of rivers (Wu, 2008, p. 44). This explains why the Ministry of Water Resources took over control of the sand-mining system

from the Ministry of Land Resources.

In effect, the Water Department has difficulties governing sand mining without the help of other authorities. On the one hand, the benefit-oriented and power-related management has led to department protectionism, the various interests of related authorities impeding the implementation of policies and laws (Wu, 2008, pp. 4-5). Wu (2008, pp. 51, 61) pointed out that department protectionism, fragmented approval systems, and blind spots in laws and regulations are the major issues in river-sand governance.

On the other hand, the boom in river-sand mining has put tremendous pressure on the river ecosystem and on flood prevention (see Wu, 2008, p. 4). The lack of law enforcement inspectors and law enforcement tools faced by the government at various levels has been reported.

A further issue is simply that there are so many rivers, and sand mining is taking place in so many of them. Serang Yeshe, an official with the government of Baiyu County on the Jinshajiang River, a major tributary of the Yangtze, told the Xinhua Daily on August 8, 2017: “There are 230 rivers in Baiyu, and there were many illegal mines along the rivers (...). We only had five law enforcement inspectors. We increased the number to 15 and trained 30 people to assist with inspections” (Meng, 2017). He further pointed out that, “If we allow the illegal mines to continue, there may be a great risk of man-made disasters in the flood season” (ibid., 2017). The lack of law enforcement facilities led to a failure to meet the goal of effectively managing the sand-mining activities, such as effectively measuring the time of mining, supervising the permitted extraction of a certain amount of river sand per day, or ascertaining the specific skills of the staff and the technology requirements of the dredgers. This led to a failure to require the sand miners to improve environmental protection facilities sufficiently to meet sewage standards and the legal requirements for mining installations. In 2018, according to Luo Guosan, who was the director of the commission’s fundamental industry department, said, “new technologies such as drones, cloud platforms and big data, will be used to reinforce supervision of ports and docks to prevent illegal activities” (Cheng, 2018). This reveals that more trained employees and the latest technologies should be introduced to control the illegal river-sand mining.

An additional problem is that the “devolution of fiscal responsibilities made horizontal government relationships stronger than vertical ones, such that a county government has greater control over a county environmental protection bureau (EPB) than does the provincial

environmental protection office” (Yeh, 2015, p. 625; see for a similar argument Jahiel, 1998; Lieberthal, 1997). The issue of vertical geopolitics will be elaborated in the following sections.

### **6.3 The Vertical Politics in Governing River-Sand Mining**

This chapter is foremost based on scale theorization (Neumann, 2015), scale debates which are highly connected to power and governance in the field of political ecology (Marston, 2000; Neumann 2015; Smith, 2000; Sheppard & McMaster, 2004). Neumann states that “attention to power asymmetries is critical for understanding networked relations within and between scales” (Neumann, 2015, p. 476). A political ecology view of river-sand management provides a better understanding of the dynamics in which sand, as a resource, integrates with human desires, appropriation, control, benefits, and conflicts to shift resource regimes and social relations. The diverse levels reflect “differences of power, perception and of geographical distribution” (Kull & Rangan, 2015, p. 487). The findings show that “in these struggles actors struggle to reshape the spatiality of authority and power” (Leitner 1997, Swygedouw, 2004, cited from Walter 2014, p. 48).

Natural resource management is a crucial part of the Chinese governmental structure. The government has used “hierarchical management” (a top-down government structure), “territorial management” (based on spatially-limited administrative boundaries) and “classification management” (differentiated according to various elements or features of the landscape, such as water management, land management, and forest management) (see also Wu, 2008; Han, 2012; Jing Wu & I-Shin Chang, 2020, p. 217; Yonghuan Ma et al. 2018, p. 53) as well as a series of other institutionalized administrative systems and actual operational mechanisms to achieve environmental and resource management. Nonetheless, river sand has become a cause for concern, triggering the profound transformation of related policies and institutions. The central–local framework must feature as a major dimension in any attempt to analyze China’s complex governance structure.

Regarding river-sand management, the Decree No. 320 (Zhu, 2001) is a special institution for the Yangtze River issued by the state council in 2001, and relevant to others mentioned provinces and prefectures. Other governments at the provincial level and below, based on their specific situations, must adopt and establish their own sand-mining regulations in their respective political territories.

According to Decree No. 320, the Department of Water Administration at or above county level can manage river sand and issue sand-mining licenses<sup>37</sup>. The licensing system for sand mining was put into effect in this formal government structure, which is described as a form of vertical management. Thus, township and village-level administrations are excluded from formal sand-governance structure according to Decree No. 320 and the provincial regulation. This is very different from the government's usual top-down structure, which extends down to the administrative village level.

Due to the ineffective governance aimed at controlling illegal river-sand mining via the license system, the central government furthered the political reform of river health, as well as river-sand governance, on December 10, 2016. This meeting reviewed and approved the Opinions on the Full Implementation of the River Chief System(河长制) (Liao, et al., 2018) by the central government's comprehensive reform leadership group, and the Opinion was issued by the General Office of the CPC Central Committee and the State Council in the end of 2016.

The River Chief System is a political reform based on the principle the top governmental leaders, from provincial level to township level, are the “chiefs of the river”, who are in charge of and responsible for the river (see also Liu et al., 2019; Huang & Xu, 2019). The government planned to build an administrative system as well as an assessment system to evaluate the effectiveness of river management of these river chiefs. In all likelihood, a top official who is accountable as a river chief would now face a risk in his or her political career if he or she failed to manage a river effectively and sustainably. The aim of the central government in implementing the River Chief System across the county is to solve the environmental crises of rivers and to realize the sustainable use of water, sand, and fish species in the rivers (see also Liu et al., 2019; Huang & Xu, 2019). One of the major targets of this system is to “[r]esolutely crack down on illegal activities involving rivers and lakes and to resolutely clean up illegal sand mining activities” (OCCCCPC & OSC, 2017).<sup>38</sup>

---

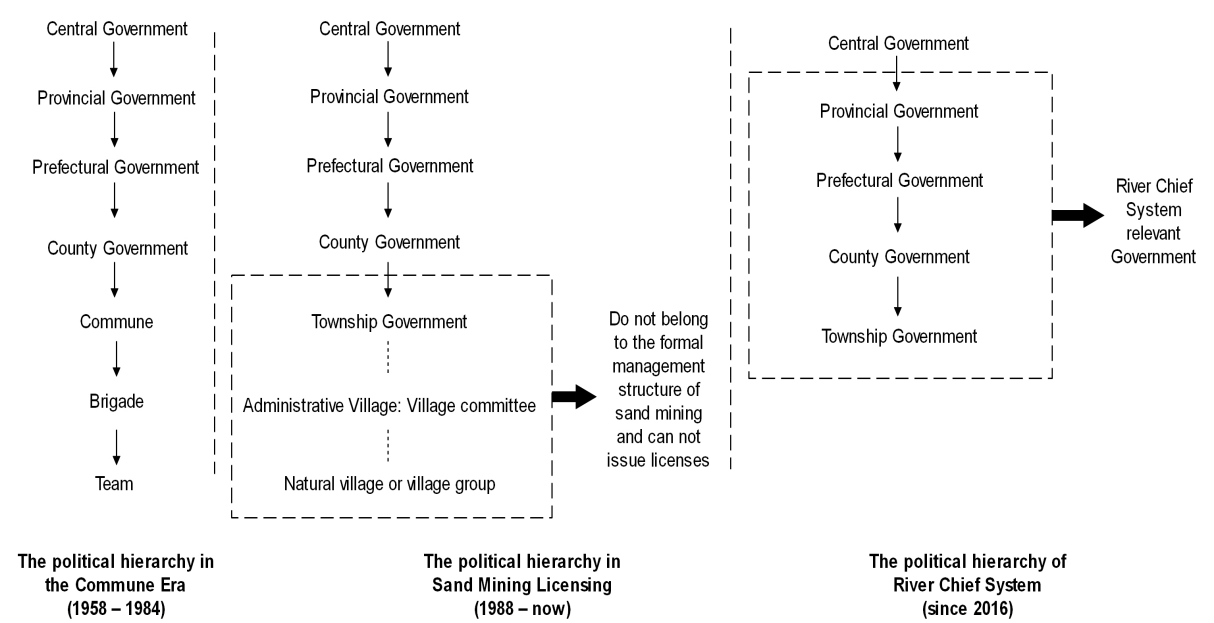
<sup>37</sup> According to Article 39 of the Water Law of the People's Republic of China, the state implements a license system for river-sand mining. According to Article 4 and 5 of the People's Republic of China River Management Regulations, the water conservancy administrative departments are the competent authorities regarding rivers in the administrative region. Article 3 of the River Sand Mining Management Regulation of Guangxi Zhuang Autonomous Region stipulates that the water administrative department at or above the county level is responsible for the unified planning, administrative licensing and supervision, and management of river-sand mining.

<sup>38</sup> “More than 300,000 river chiefs in a four-tier system from provincial to township levels have been appointed in the 31 provincial regions in the Chinese mainland, which means the River Chief System had been established across the country half a year earlier than planned, said E Jingping, minister of water resources, in a news conference on Tuesday. He also said 402 of the river chiefs are provincial-level officials and 59 of them are heads of their provinces. All but two of the provincial regions

This reform re-emphasized the significance of river health, water management, and river-sand governance for social development and to further the national strategy. Indeed, President Xi has recently given attention to the issue of governing the environment. But there are scalar limitations to the River Chief System. According to Chien and Hong,

*“Even though the river leader policy is effective in the single dimension of pollution improvement over the short term, we also notice that the CCP has not introduced the policy to all rivers within China. While the central government in Beijing requires provincial governments to establish river leader systems for regional rivers and lakes that across prefecture-level and county-level administrations within their provincial jurisdictions, there are no river leader systems for major rivers that run across multiple provinces such as the Yangtze River or the Yellow River (...). China has not applied the river leader policy to local rivers [within the same county].”* (Chien & Hong, 2017, pp. 65-66).

The River Chief System is more flexible between regions/cities, as is evidenced in the case of Guangxi and Qinzhou. But there is river leader policy for local rivers within the same county and town as well as administrative village. The provincial and prefectural governments strengthen their executive power at all levels down to the bottom administrative village level.



**Figure 11: The Three Periods of Resource Governance**

(Source: drawn by the author, based on Luo, 2014; Decree No. 320, 2001; GOSCPRC, 2016 respectively)

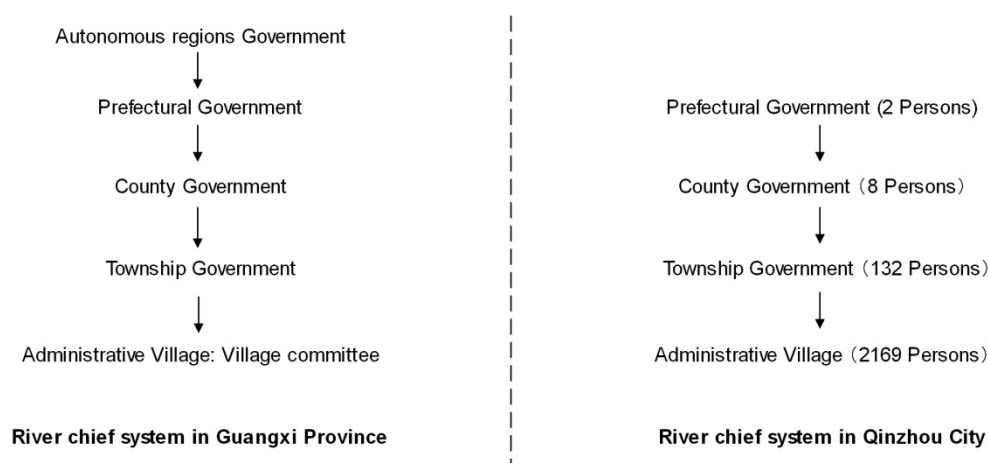
Government structures have considerably changed in the last decades, as illustrated in Figure

have also appointed 760,000 river chiefs at the village level” (Hou, Liqiang, 17 JULY 2018. Government implements river chief system across the country).

11. During the communist era, the first structure was the general political hierarchy started to use under the leadership of Mao Zedong until 1984. The second part of the figure displays the government structure of sand mining licensing since the Water Law was enacted in 1988. The third one is the political hierarchy of the River Chief System since 2016, which was established nationwide in 2018. This figure reveals that the normal government power structure was re-established regarding river-sand mining and water management according to the River Chief System in 2016, including autonomous-region, prefectural/municipal, county, township, and village-level government. Whilst the sand-mining license system is not included at the level of the township and below, it shows that the government has strengthened its executive power for all levels right down to that of the village. This shows the power dynamics and policy transformation of river-sand management over the last three decades.

Meanwhile, the central government also sends out the work team of the Central Environmental Inspector to each province and prefecture to check the implementation of the work is according to the spirit of the 19th National Congress of the Communist Party of China and General Secretary Xi's thoughts about ecological civilization (生态文明建设). According to Van Rooij (2006a, p. 59), "lax enforcement is rooted in conflicts of interest between national regulations and local stakeholders. As a result, the law lacks local legitimacy and local actors resist enforcement. (...) political campaigns have gained a short-term victory over such resistance, but until a balance of interests is found, and local actors have alternative sources of income, sustained compliance will remain difficult."

To implement the political reform, Qinzhou City established its River Chief System on July 27, 2017 (Qinzhou Water Conservancy Bureau office, 2017). "The Working Plan about the Comprehensive Implementation of the River Chief System in Guangxi Zhuang Autonomous Region" was issued on May 30, 2017. The city set up a comprehensive approach to implementing the River Chief System (Xia, 2018). The city assigned leaders of government at prefectural government and below. There are two river chiefs at the prefectural level and 2,169 river chiefs at the administrative village level (see Figure 12). Maoling River is not governed by the prefectural level but by the regional level since it is the biggest river of the city, and passes through two cities (Qinzhou City and Fangchenggang City).



**Figure 12: The River Chief System in GZAR and Qinzhou City**

(Source: drawn by the author, based on GOGZARG( 2017), RCOQ (2017), and Xia (2018))

Investigations and surveys, symposiums, and visits to the scene of the river are the major methods to inspect the river situation. The frequency of the implementation is diverse; the river chiefs of the prefecture execute their duty at least once each year, while the village-level river chief must inspect the river at least every week (see Table 15). Under these circumstances, river-sand mining has largely been prohibited in Qinzhou City, which impacts the supply of sand for construction markets. Dredging from the ocean was commonly seen in the city during my fieldwork until April 2017, but recently, crushed sand and ocean sand have been used to replace river sand for concrete production, as well as for road and house construction.

**Table 15: The Frequency of River Inspection**

River Chief at Government Level	Frequency
Municipal/ Prefectural Government	Yearly
County Government	Quarterly
Township Government	Monthly
Village Government	Weekly

(Source: the Document of Qinzhou City Government, 2017)

This reform shows that China's government realizes there is a crisis in river-sand mining, water pollution, and degradation of the ecosystem of rivers and lakes by highlighting the responsibility of local leaders, who are also the officials in charge of river management. This reform seems to be a response to the arguments between central government and local government which arise at higher levels.

The tension between the central and local governments in China has been well-researched (Kostka & Nahm, 2017; Edin, 2003a; Edin, 2003b). Many of these authors argue that either the central government or the local government should be blamed for the failure of environmental governance. Qi and Zhang (2014) argue that local environmental enforcement is constrained by central–local relations in China. Ran (2013) points out that “formal constraints imposed by the central government are blamed for shortcomings in environmental policy implementation” (quoted from Kostka & Mol, 2013, p. 4). Even though the state sets the overarching environmental blueprint, these goals are “diluted as they pass through China’s fragmented vertical and horizontal governance structure” (Lieberthal & Oksenberg, 1988, quoted from Kostka & Mol, 2013, p. 4). Ran (2013) assesses the origin of the environmental implementation gap and points out that instead of local governments, the central government should be blamed for environmental degradation due to its lack of provision of sufficient incentives to local officials to enforce policies to achieve the overall conservation targets. The “perversely structured incentive system” is in this view that problems are continuing in local environmental politics (Kostka & Mol, 2013). Kostka (2013) highlights two gaps, namely, the “policy implementation gap” and the “participation gap.” Her research is aimed at clarifying the multitude of initiatives and experiments within China at the provincial level and below. Kostka and Mol (2013, p. 3) evaluate that “at the sub-national level, economic, political, and social interests continue to dictate the political agenda, and the participation of non-state actors remains limited.” These arguments are the opposite of the views in China, for particularly when the national environmental targets conflict with the local officials’ interests, “the local leaders tend to place greater emphasis on economic development than on environmental concerns” (Kostka & Mol, 2013, p. 4). Eaton and Kostka (2018) in their turn call for attention to local–local relations.

The political reality in China is that the local government has been blamed for unfaithfully implementing the well-decided central environmental policies in China. The Chinese official, Mr. Wu, the Director of the Yangtze River Sand Excavation Authority points out:

*“[O]ther main issues include the failure to curb local protectionism, even though the Yangtze River’s Sand Management Regulations implemented a local chief executive responsibility system and asked Hubei Province, Jiangxi Province, Anhui Province, and Jiangsu Province to sign a sand-mining management responsibility agreement (责任状) to subordinate governments. However, due to the high profits from river-sand mining, some provinces, cities, counties, and villages take sand mining as a major economic industry and even the pillar industry for development. Local protectionism includes the high-volume auctioning of sand-mining management rights, a multifaceted collection of taxes and fees,*

*relaxation of sand mining supervision, weak enforcement of sand institutions, and a one-sided pursuit of maximum benefits. The central government has not established a system of accountability which makes it difficult to really establish the responsibility of the local administrative heads. Therefore, the responsibility system by which local people act as executive heads is ineffective” (Wu, 2008, pp. 60-61).*

Most rivers are located in rural areas where river sand has been excavated for the local government’s profit, providing opportunities for such local protectionism.<sup>39</sup> The complexity of the river-sand interests has led to a general failure of protectionism to prevent illegal sand mining in China. The research findings show that the existing resource governance structure, such as top-down or central–local frameworks, are too narrow to deeply understand the problem of sand over-exploitation, since the vertical axis is dynamic, and the local communities and villagers have been ignored by this formal structure. This is so in the case of the Maoling River: the river sand of Huangwutun Town has been sold to only one company after the implementation of the River Chief System in 2018 and after the prefectural and county governments jointly strengthened their governance and monitoring down to the administrative village level. In August 2018, almost all the illegal sand-mining sites had been suppressed in Huangwutun Town. For many illegal sand miners and the village communities, the central government’s policy was once again used to clear a path for local government to make more profits. Notably, there were still illegal river-sand-mining and sand-selling sites near the Maoling River in 2019, as I was told by the Secretary of the Political and Legal Committee of Qinnan District (10 August 2019, through WeChat). I asked him why there are still illegal miners after the implementation of the River Chief System. He replied: “Does the chief of the river have power? No.” It is just a small part of their work. This means that the chiefs of the river do not have real power to control the illegal sand mining. Meanwhile, until March 2019, the government report on Qinzhou City still highlighted the significance of controlling and combating illegal sand mining in its territory. The next chapter will describe the illegal river-sand miners.

The following section will further outline the research regarding the various actors at diverse levels where the dilemma of sand management is still ongoing.

---

<sup>39</sup> According to Van Roojit (2006b, p. 4), “Local protectionism meant that local governments let their own local interests prevail over national concerns. Local governments were able to exercise such protectionism through their control over the budgets and personnel management of their local bureaucracies – including courts, procurates, police and administrative departments such as land bureaus, industrial bureaus and environmental protection bureaus.”

## **6.4 Sand-Management Policies at the Provincial Level: Power Decentralization and Autonomy**

The principles of power decentralization and territorial management by local government allow the provincial government to enact its own laws and policies and enables local officials to be able to choose which, and to what extent, national policies will be implemented or ignored (Economy, 2004; O' Brien & Li, 1999).

The Guangxi Zhuang Autonomous Region (GZAR) is a good example of the transformation of river-sand mining management. In 1992, the GZAR's government issued two government policies, specifically, Several Provisions of the People's Government of the Autonomous Region on Strengthening Management of Sand Mining in Rivers, and the Rules for the Implementation of the Measures for the Administration of Sand Excavation Charges in the GZAR.

According to the law and administration regarding autonomous customs, the governments of provinces seem to have great freedom when it comes to issuing their policies and regional laws with regard to river sand. After the implementation of the Regulation of Yangtze River Sand Mining, provincial governments first adhered to the regulations of sand-mining management on the Yangtze River and then enacted their new regulations (i.e. the regional law which is issued by the People's Congress) or decrees (i.e. government policies). For instance, the Guangdong provincial government first adhered to national regulations on sand-mining in the Yangtze River but in 2005 enacted its own provincial law. This supports some scholars' observations that a local government has great authority over its political territory's environmental management (Landry, 2008; Mei & Pearson, 2014).

It seems that the state passed the power to regulate sand mining on to the provincial government. Importantly, the most characteristic of the provincial regulations is to claim and admit the sand-use rights of rural residents and ensure that they do not have to acquire a sand-mining license. The River Sand Mining Management Regulations of the GZAR (2016, article 35) state that rural residents, who only harvest a small amount of sand outside the prohibited areas, are exempted from both having to get a mineral sand license and from paying sand-mining fees<sup>40</sup>

---

<sup>40</sup> A similar item can also be found in some other provincial sand-mining regulations in China. Guangdong Province's River Sand Mining Management Regulations were the first regional law on river sand management (It was adopted on January 19, 2005, and revised on July 26, 2012). It pointed out that the households who need to extract sand for personal use could harvest

(SCPCGZAR, 2016). Yet, this law causes many disputes and has brought about many struggles relating to sand governance in the villages.

In 2011, the government of the GZAR revised its river-sand management approach and implemented a new policy. This was the Measure for the Management of Sand Excavation in River Courses in the GZAR. In addition, on June 25, 2015, the Zhuang Autonomous Government Legal Affairs Office announced a proclamation for Soliciting Opinions on the Administration of Sand Excavation in the GZAR (Draft for Soliciting Opinions). Nonetheless, those governmental policies have failed to effectively manage river sand, and illegal sand harvests have been frequently reported by the media. Importantly, the illegal river-sand mining took place in many cities and towns of the province which “have been seriously dealt with” by various authorities. Nonetheless, the problems of bureaucratic management have led the provincial government to enact the regional law. However, the disappointing outcome shows that the provincial government is still unsure of whether regional laws or political reform best suit the sand management. The above analysis reflects the weak role of bureaucratic management in modifying illegal sand mining. The GZAR shifts its sand governance to regional laws, either to achieve the sustainable development of river sand or to obtain higher fines from punishing the illegal miners.

Eventually, the regional government realized there was a need for regional law on sand-mining management. On November 30, 2016, eleven years after the Guangdong Province, the twelfth People’s Congress Standing Committee of the GZAR adopted its first Regulation (regional law) on river-sand management. The regulations were implemented on January 1, 2017 (Huang, 2016). The Autonomous Regional People’s Congress explained in press conferences on December 1, 2016, that the aim of the introduction of the law was to improve the effectiveness of sand management and combat illegal sand-mining activities.

If you compare the latest enacted regional laws with the latest central political reform, the River Chief System, the provincial system has similar targets to the announced central policy, namely, the so-called “major chairman responsibility system” (River Chief System). However, a closer look reveals differences between two. The party-state policy highlights the leaders’ political responsibility for river health to achieve the desired goal of President Xi – “implement the

---

fewer than 50 cubic meters of sand in harvest zones, and that they did not need to apply for a sand-mining license to do so. However, selling this sand is forbidden (article 9).

strictest possible systems for environmental protection and develop eco-friendly growth models and ways of life” (Xi, 2017). The provincial government considers the weakening of bureaucratic river-sand management as the foremost problem in relation to river health in this era and tries to enact new laws to increase the fines so as to receive more income.

Thereby, unlike the political reform by the central government (see above, the River Chief System in 2016), the provincial government took action to establish its regional law to manage river sand. Nonetheless, the central government overwhelmed the regional law-based effort, as discussed when describing the River Chief System reform in previous sections. This situation reflects that both reforms are intended to govern river sand for sustainable use to eliminate illegal sand extraction.

## **6.5 River-Sand Auctions at Prefectural Level: Mining Licensing in Practice**

Like in other cities, the Qinzhou prefectural government is facing rapid increases in demand for sand for construction, and therefore also increases in sand-mining activities in various rivers and ocean areas in its territory. River-sand mining and ocean-sand mining are two major sand-mining activities which the government has to deal with.

In the following sections, I will first present two cases of river-sand auctions<sup>41</sup> to illustrate the sand-mining license system in Qinzhou City. Auctions are, like the licenses, part of the sand excavation policy that was in place until the introduction of the River Chief System. The two cases relate to one of my research settings, Huangwutun Town<sup>42</sup>. In particular, one auction was successful in 2008, while another failed in 2014. Other weaknesses of the sand-mining licensing system on prefectural level are related to mismanagement and corruption, which I discuss in more detail in the second sub-section.

### **6.5.1 The Problem of Auctions and its Governance**

On February 3, 2008, the government office of Qinzhou City issued an official announcement addressed to the People’s Government of Qinnan District, Qinbei District, and other direct units

---

<sup>41</sup> River-sand auctions are a part of the sand license system (the sand excavation policy). They have been conducted by the governments at or above county level to sell certain parts of a river to the auctioneers for the mining of sand. This is a way to increase the government’s revenue.

<sup>42</sup> In Xintang Town, the prefectural government and the district government have never been involved in the management of river sand because the river there is rather small. Hence, there was no auction in that town.

that fall under the Qinzhou Government. It was titled “The Sand Mining Rights Transfer Program of River Sections of Qin River, Maoling River, and Dafeng River” (Qinzhou office (2008) 21st) and had been approved by the Qinzhou prefectural government, and it was now printed and issued to the relevant authorities, which were then consulted in detail about the organization’s implementation. Later on, this document was published in the Qinzhou Daily. This means that sand auctions were conducted in the city, and the announcement focused on how to put out information about these auctions on the ground. There are therefore several implications of this official announcement.

Firstly, the auctions yielded a huge profit for the government. There were five sections of the rivers that had been sold by the prefectural government through auctions.

Secondly, the objectives of the government shifted to the companies, because the latter were responsible for hiring people to protect their sand, and excluding other unlicensed sand businesses, dredger owners, or local village individuals. By so doing, the management costs for the government became lower than when they directly combated illegal sand mining, and therefore the government obtained bigger revenues. Basically, the cost of the mining management is always paid by the sand companies in the city; some companies hire gangs<sup>43</sup> to reduce this cost since the government’s fee is higher than that of a gang, but the outcome is the same.

Unfortunately, rapidly escalating conflicts emerged between the auction winners and non-licensed, often small, companies owned by locals. The illegal operators did not have enough money to attend the auctions (the minimum registered capital of 0.5 million yuan or more, approximately equal to approximately € 63,000). However, they had invested money to buy dredgers and other machinery. Meanwhile, they had made considerable profits from sand mining before the auction. The government auctions harmed their profitable business. For instance, when I interviewed an owner of local sand-selling site, he told me that

*“[t]here were fights every single day (after the auction). The government sent armed policemen to help the auction winner and try to stop us from mining. The government hired excavators to destroy our sand-selling site and confiscated our belongings in 2008. For self-protection, we organized our relatives and fellows to go up against them [i.e., the*

---

<sup>43</sup> Gangs in this situation refer to groups of local people who have been hired by the sand miners and have then used illegal ways to protect the interests of sand miners, such as threat, intimidation, violence, and bribery.

*government and the company that won the auction]” (Interview at his sand-selling sites in Huangwutun Town, April 10, 2017).*

But soon, both sides realized that the conflicts did not help either party to make profits, so they decided to shift to collaboration. Local small companies could buy permits from the bidders and pay for the right to extract sand. “Seven yuan for a cubic meter (€ 0.89/m<sup>3</sup>)”, one informant told me.

The local officials and sand-business people call the auction winners “Lau lao” (not-locals), which means people who speak Mandarin, but not the local dialect or Cantonese. The officials of Huangwutun government still called the winners “Lau lao” when I interviewed them in 2017. The “Lau lao” became the “big bosses” of the whole river section in Huangwutun Town. The “Lao lao” were originally from Zhejiang Province and Hubei Province, and they brought big new dredgers to the Maoling River to mine sand. The mining efficiency had significantly improved, and the price of sand increased, as has already been mentioned in the previous chapter.

Thirdly, residents of villages located closest to the river also wanted to extract sand for private use. However, the “Lau lao” claimed that sand belonged to their company. The villagers had no right to extract sand anymore, except when they paid for it. Nonetheless, according to the regulations of the Guangxi Zhuang Autonomous Region, the village’s households have the right to harvest sand for personal use. According to a former teacher of the middle school of Nameng Town in January 2015: “The riverfront residents went up against a businessman who wanted to start his sand exploitation in Nameng Town in 2014, even though he possessed a sand-mining license from the government. The businessman had already had the license for a year and could not start extracting sands. The tension between the company and the village was high; the disputes were increasing between these diverse actors, and the government did not know how to deal with the conflicts”.

Indeed, legitimacy became a big problem. From the perspective of the prefectural government, the one who pays the fee and thus obtains the sand-mining license is the legal operator. By contrast, the village goes up against these “legal operators,” because sand-mining activities have damaged their land. Villagers highlight that “the state protects the farmland” and use the land-protection policy of the central state to go against the government’s licensed mining activities. Furthermore, the villagers claim that the sand belongs to them and that appropriating sand for personal use is legal due to the Mineral Resources Law and several regional regulations (see

sand-mining governance at the village level in Chapter 8). However, the sand-mining companies insist that individual sand miners (whether they are households, villages, or small sand dredgers) are illegal, because the companies are the only legal subjects when it comes to sand mining, according to the sand-mining contracts with the government agency. The government, which has to support the legal mining company based on the sand-mining system, is in collusion with the illegal sand-mining operators, while it has no way to deal with villagers' appeals. The contradictions between the related sand policies, institutions, and laws have been revealed due to these sand-governance disputes (see also Wu, 2008, p. 51). They reveal that these laws, institutions, and policies have not contributed to solving the disputes involved in river-sand mining, but rather have caused more conflicts. Meanwhile, the easily accessible sand was extracted with dredgers, so that villagers could not access sand without machinery after 2008. Villages and households are excluded by the government from taking part in its sand auctions, and could not access the river sand anymore.

Finally, some operators without sand licenses or permits from the companies also dredged in the very river that had been sold to the contracted company. Legal and illegal companies were thus harvesting sand in the same river section. Thus, over the last two decades the local government and legal sand miners have still not completely eliminated illegal ones.

Concerning the sand auctions, one officer of Qinbei District, Mr. Lu, told me that it is mainly the villagers who feel the environmental consequences of legal sand mining.

*“First, the more sand the companies dig out, the deeper and wider the river becomes. Riverbank land collapse, damage to houses, and water pollution are the major negative aspects of sand mining. These effects have resulted in the crusade of local villagers against sand extraction. Second, the sand extraction upstream has polluted the river water. Hence, the downstream village cannot use it as drinking water or for agriculture purposes. Third, the overloading of the big trucks transporting sand has damaged the main roads in the villages, counties, and cities. All in all, the major disputes revolve around the issue that the over-extraction of sand has harmed rural villagers. Some people said that no matter how much the sand companies paid the government; sand mining was still forbidden in their river. Even if the government officials went to mediate the conflict, local people stuck to their arguments and protected their rights” (Interview on June 8, 2016 through WeChat).*

When I interviewed the officers, some of them still remembered that they were always sent to the villages where sand was harvested to deal with different types of disputes, mostly to protect the auction winner's profits and let the dredgers continue extracting sand. The prefectural government also organized many campaigns to govern sand issues. In 2008, the government established the “Qin Zhou Prefectural People's Government on the Strengthening of River Sand

Mining (mine) Management Notice” (the number of the official documents is Qin Zheng Tong [2008] 2). One year later, on August 21, 2009, the Work Program for Consolidating the Results of Special Rectification in Qinzhou’s River Sand Mine was presented to each related department, to clarify the responsibilities and their main purposes.

First: The scope of the work program.

For the rivers in Qinnan District, Qinbei District, and Qinzhou Port, the key points are the river sections and branches auctioned, in which sand (i.e. mineral) mining rights have been transferred.

Second: The regulatory object.

- 1) Sand mining and transport vessels;
- 2) Quarry and selling sites along the rivers;

Third: Sand transport vehicles in roads.

Fourth: The main tasks of this work program are the following:

- 1) Strengthen river-sand mine management, taking drastic measures against illegal sand mining and against unlicensed sand-mining activities.
- 2) Standardize the sand-mining activities of purchasers (i.e. the auction-winning companies), and supervise the mining companies in enforcing environmental protection measures. Oversee whether the provisions of the contracts are stuck to on-site.
- 3) Strengthen supervision to ensure the reasonable development and utilization of river sand resources and promote the improvement of the ecological environment of the river, protect the water resources, and ensure drinking water safety.

This program was aimed at governing illegal sand extraction and regulating the sand-mining activities of the auction-winning enterprises as well as highlighting the duties of related departments, such as the Qinzhou Power Supply Bureau, which was responsible for supervising and inspecting the electricity of river-sand quarries and for stopping the supply of electricity to illegal sand quarries. The police would act against the “Sand Head Fee” or “Gang Fee”, which was collected by local villagers and other “gangsters.” The District Governments and the Prefectural Land and Resource Department were supposed to create a detailed documentation of the sand-selling sites, for instance by videotaping the riverbanks and recording the bank line

situation, and they were also responsible for the routine supervision of the area as well as its inspection and management. The Traffic Department was supposed to prosecute illegal sand transportation on main roads at the end of the program. In this notice, the government welcomed the people's participation in sand-mining governance and established a hotline for river-sand mining and a reward system for people who contributed to sand governance by reporting any illegal sand-mining occurrences.

As a lot of research on pollution exploring the development of China's environmental conservation institutions and policies demonstrates that although rather strict laws and regulations have been enacted in modern China, the visible severe environmental crisis persists, even with compliance and enforcement (e.g. Jahiel, 1998; Van Rooij, 2006a; Wang, 2013). The same holds true for sand policies and regulations on sand-resource management. The reality is that these policies have not stopped illegal sand mining. As the media reports show, the boom in sand mining has resulted in the serious corruption of government officials.

Nonetheless, the first auction after the implementation of the Sand Licensing System in Qinzhou City in 2008 demonstrates that the implementation of a licensing system is not the end of conflicts and mismanagement, but rather another cause of dispute when it comes to the ownership of sand and other river-based resources. These disputes are due to the failure of the license institution to motivate the local officials to implement the institution (See also Ran, 2013; Kostka, 2013). The high cost of monitoring systems and the overlapping interests in sand mining among diverse actors due to weakened administrative monitoring systems also cause disputes. Furthermore, the government failed to monitor the companies that obtained sand-mining licenses. Those companies had paid a high fee to the government to purchase the licenses by auction. In order to recoup the costs and make profit as soon as possible, they disobeyed the contracts, which clearly regulated the time period, number of dredgers, and mining area along the river where sand extraction is allowed. Meanwhile, the service and governance of the government frequently did not satisfy the demands of the companies which held the sand-mining licenses. The major issue was that the government could not stop other illegal sand miners from harvesting sand in the very river sections that were sold to certain companies. The example of Qinzhou City, where many private dredger owners still extracted sand when it was actually prohibited, indicating the insufficient measures that were taken to punish those "thieves." The informants point out that there is no significant progress in improving the lawful governance of sand in the long term. The sand miners and sellers have

special social networks through which they effectively deconstruct the formal institutions. The fact that “they have special backgrounds” and “they have money” were two points my informants used to demonstrate the illegal issues (Naxia Village, March 29, 2017).

In short, instead of bringing peace and lawful sand governance to local areas, the license system brought complaints, petitions, and disputes. Consequently, sand-mining companies took little interest in subsequent auctions. In December 2014, the Qinnan District Government planned to auction two sections of Maoling River and Dafeng River in the district (Project Number: KLQZG20141064). The Qinzhou Finance Bureau reported that fewer than three bidders (three bidders are the minimum number required for a governmental auction due to the rule of the government auction) seriously responded to the notice, which did not meet the basic requirements for the auctions. The auction could not take place.

Nonetheless, the strong market demand for river sand encourages the government to involve itself with this profitable resource. The government at many levels and in various places remains actively involved in the marketization of river sand. In October 2018, the Maoling River and Qin River in Qinbei District were once again auctioned to the government-owned company Qinzhou Huangma Resources Development Investment. This company obtained the sand-mining management rights to several sections of river sand mining and is now attempting to sublet the mining of the river to other companies by posting a sand-mining partner recruitment announcement on social media and in the news media. This company is trying to sell its mining rights to thirteen sections of the two rivers with a total length of 35.669 km, with a total area of 1,670,000 m<sup>3</sup> and for at least 0.835 billion yuan in total (€ 105.6 million) (Interview an official of Qinbei District Government, January, 2019, see also Huangma Assets, 2019).

The sand-mining process in Qinzhou City and its districts is always accompanied by disputes and conflicts. In sum, this has led to the failure of the sand-mining system in these areas. Strong evidence for this includes the failure to attract any company to join the sand tender which was organized by the prefectural government in 2014, and the long-term existence of 91 illegal sand-selling sites around the river.

### **6.5.2 Corruption in and Mismanagement of the Sand-Mining License System**

The role of local authority is crucial in sand governance, as mentioned above. “Does policy

interpretation balance local expectations with official views? Are officials subject to pressure from local elites, corporations or peasant organizations? What role does corruption play in policy implementation?” These are, for instance, some questions that Bryant (1992, p.19) asked. Due to a lack of law-based sand mining governance, illegal sand mining is an administrative issue in many areas in China, and the most severe penalties are fines and a seizure of illegal sand-mining equipment. A large number of departments involved in sand management collect fees and fines. “They come for money, no other purposes” is how miners talked about the goals of governmental sand management in Huangwutun Town in 2017.

There are 19 different kinds of fees for a single sand-mining site in some places. This is so-called departmental protectionism, or special interest-oriented sand-mining management by various departments (Wu, 2008, pp. 5, 61). Lieberthal (1997, p. 6) addresses the fact that fines imposed by local authorities on companies are often passed by the local government, which “then provides a tax break to the enterprise roughly in proportion to the amount of the fine that had been levied”.

The maximum fine for illegal sand-mining defined in the 2011 Measures for the Management of Sand Excavation in River Courses in the GZAR was only 20,000 yuan (€ 2,532). This was a low amount compared to the high profits to be made in selling sand and it is no wonder that such fines did not prevent illegal operators from mining sand. The deputy mayor said that in his experience with fining illegal harvesters in the Qinbei District, “The fine bill of each illegal miner could be between 10,000 yuan and 20,000 yuan (€ 1,266 – 2,532) if we collected the confirmed evidence, such as by making video or taking pictures for illegal dredging sand” (In Qinzhou City in August 2015). When illegal sand-mining governance has not achieved the management goals, the major reason is that the fine is too low to scare the illegal sand miners.

The fine was increased to a maximum of 500,000 yuan (€ 2,532 - 63,291) in the GZAR. The Guangxi Zhuang Autonomous Region River Sand Mining Management Regulations in 2017 claim that the maximum fine for illegal sand appropriation is 500,000 yuan (€ 63,291), which is 25 times the old penalty. Furthermore, these regulations focus on the seizure of illegal sand-mining equipment and other necessary administrative coercive measures. The provincial media called it a “heavy fist” intended to stop illegal sand mining (Li, 2016a).

Some authorities fight for fines in order to enhance the income of their departments, sometimes resulting in disputes between two levels of government concerning illegal sand management.

Lu (2017) reports on a fight between different levels of the police force in the Shaanxi Province on December 31, 2016. The Law Enforcement Brigade and Public Security Bureau of Xingping City detained illegal vehicles and machinery of illegal sand miners in Hu County and were in the process of escorting these illegal vehicles and machinery from the river and riverbanks. However, the Hu County policemen and county officials of related departments of the county blocked the road in front of the prefectural police and disturbed the Law Enforcement Brigade of Xingping City. The Hu County government was said to be protecting sand-mining sites, while the city government was attempting to punish the illegal sand miners. The witnesses said that a dozen police officers pushed and confronted one another, and three gunshots were heard on the scene (Lu, 2017). A similar situation reportedly took place at the Yangtze (see Wu 2008).

This is also the experience of Mr. Huang, who was “stealing” sand in the Maowei Ocean with his team, but he was found out and his dredger confiscated by the joint law-enforcement teams of the Water Resource Bureau, the Maritime Bureau, and the Marine Supervision Bureau. He was told that each of the bureaus would fine him 20,000 yuan (€ 2,532) if he wanted his dredger back from the Qinzhou Port. He then went to the office of the Maritime Bureau and was told, “You need to pay in total 110,000 yuan (€ 13,924); the Land Bureau also asks for the fine. There are five bureaus, not just four.” Mr. Huang thought that the fine was too high, and he left the office without paying in October 2018. Two months later, he paid 990,000 yuan (€ 125,316) to take back his dredger (see Photograph 20). He regretted that he had not paid the initial bribe of 3,000 yuan (€ 380) that was originally asked for when the team found him in the Ocean. If he had paid then, they would not have expropriated his dredger. The 3,000 yuan (€ 380) is used to bribe officials to get information about when the joint law-enforcement team is likely to arrive, so as to know when to stop mining to avoid being caught. In other words, this amount of 3,000-yuan (€ 380) fuels corruption.



to further business in the sector. According to the report by Nanfang Daily on October 17, 2014, the sand company planned to bribe thousands of Chinese key officials by offering them free villas, SUVs, huge amounts of money, and entertainment activities. Eventually, there were several key officials who accepted the “benefits” from the illegal sand-mining company (see Table 16). Consequently, the officials gave a “green light” for illegal sand mining and acted as “a protection umbrella.” The laws and authority effectively became puppets (Zhao, 2014). For instance, the supervisors (the supervision unit) should be responsible for supervising and inspecting the statistical sand-mining conditions and signed the “Guangdong Province River Sand Mining Management Form” (广东省河道采砂采运管理单) with three other units (the local water administrative department, the sand miner, and the sand transporter). This was the so-called “four-unit document” system (四联单制度) (ibid.). However, this management form was held by the sand transporters and buyers. According to the criminals, the officials of the relevant government departments had delegated the power to the teams of the illegal miners and transporters. With this form, all the sand buyers could enter and exit the West River. The failure of the “four-unit document” institution reveals the crisis of the river-sand license system, because the purpose of the “four-unit document” system was to prevent the over-exploitation of river sand. But with the corruption, the supervision system was ineffective (Zhao, 2014).

**Table 16: Four Example of Corruption in Guangdong Province**

Name	Scale	Position	Money Corruption	Cases
Lu Yingming	Provincial	The deputy director of the Department of Water Resources	20 million yuan (€ 2.5 million)	Acted as a “protective umbrella” for the illegal sand miners in the West River after obtaining the shares of river-sand company.  Repeatedly abused his powers and had successively extended the use period of river sand mining licenses for bidders in five sections including Zhuwei, Yumei, Letousha, Dali, Qiangtang (Lin, 2013).
Liang Rongjiang	Prefectural	The director of Yunfu City Water Resources Bureau	350,000 yuan (€ 44,000)	Did not perform his duties according to law, causing illegal sand miners to mine beyond their official range, wield excessive control, and work for longer than they should have, after accepting bribes,  Severely disrupting normal sand management in Yunfu City (Liu, 2014).
Chen Naizhong	Prefectural	The deputy director of Yunfu City Water Resources Bureau	12.88 million yuan (€ 1.6 million)	Deliberately failed to perform supervision and law enforcement duties.  His performance resulted in million cubic meters construction-sand being illegally mined.

Du Hengrong	County	The director of County Water Resources Bureau in Zhaoqing City	Bribed 1,260,000 yuan (€ 159,000)  Corrupted 750,000 yuan (€ 95,000)  8 million yuan (€ 1 million) unknown source	Acted as a “protective umbrella” for the sand miners who were rampantly mining river-sand in the West River.  From December 1, 2011 to March 5, 2012, the miners illegally mined more than 5.5 million cubic meters, far exceeding the licensed limit for sand mining, and the sales amount was more than 200 million yuan (€ 25 million) (According to the press conference hold by Guangdong Provincial Procuratorate, On June 28, 2012,).
-------------	--------	--	---	--

(Source: Zhao, Nan Fang Daily, 2014-10-17; Xi and Suo, 2013)

Table 16 shows that the government officials who were supposed to monitor and govern river-sand mining had been corrupted by those illegal sand miners. In particular, the illegal sand miners bribed senior leaders in the bidding process for river-sand mining rights, to secure their complete acceptance of river-sand mining, and also to subvert the approval process for mining extension. The corrupted officials came from five counties and two prefectures, and some held power up to the provincial level. The People’s Procuratorate of Guangdong Province has filed investigations into the role of 30 government officials after destroying the illegal sand company. Under the protection of those officials, the joint company obtained more than 5 million yuan (€ 633,000) each day for illegal sand mining and selling. As a result, they illegally scooped out 24.18 million cubic meters of river sand and made a profit of 0.58 billion yuan (€73 million) in a period of 11 months (The News center of Sina, 2014).

The case reveals the loopholes in formal sand-mining management institutions in the Guangdong Province. The director of the Department of Water Resources of Guangdong Province, Huang Boqing, who was sentenced to 15 years in prison for accepting bribes and fined 5 million yuan (€ 632,911) in 2018, pointed out that:

*“[P]ractice has proven that the application of licensing methods cannot objectively reflect the value of river sand as a scarce resource. The sand-mining field may become a hotbed of corruption in particular areas. Therefore, now we will implement a fair and equitable bidding method. The implementation should be called a ‘permit under the sun’ (阳光许可, meaning a transparent permit)” (Suo, 2012).*

However, still in the West River in Zhaoqing City section, the Water Authority issued a huge fine of 300,000 yuan (€ 38,000) for the “king of illegal sand harvests” who had stolen river sand from the West River, but still failed to stop the crazy momentum of sand mining in 2015.

*“In 2016, 700 officials instigated another campaign against illegal sand miners and illegal selling sites around the river. Driven by huge profits, more illegal sand miners and more officials have become involved in sand mining in the West River. According to incomplete*

*statistics, there were over 90 illegal river-sand storage yards found along the West River in Zhaoqing City in May 2016. Forty-five people who joined the illegal sand-mining business were arrested by 150 police officers on March 27, 2016” (Xiao & Tang, 2016).*

Jia Shihao, a member of the Prefectural Security as well as the responsible official said:

*“An ordinary illegal sand-mining ship can harvest 1,000 cubic meters of river sand in 20 minutes. In one night of normal operation, it pumps between 1–1.5 million cubic meters of river sand. According to the current market price ranging from 60 yuan (€ 7.6) to 120 yuan (€ 15) per cubic meter of sand, it will make a profit of 600,000 yuan to 800,000 yuan (€ 76,000 – 101,000) each night, and even without the cost, it still can earn three to four hundred thousand yuan (€ 38,000 – 50,600)” (Xiao & Tang, 2016).*

It is common sense that the government officials are in collusion with sand companies and illegal operators to make profit from harvesting sand. During my field observations in 2017, a prefectural government official told me that if I went out for a beer with him, he would call his “friend” to meet me. This friend, who originally came from the Hubei Province, was the major businessperson in the sand business in the Qinzhou City. The official said: “Only if I call him and tell him to talk to you, then you might have a chance to talk to him. Otherwise, he would definitely not talk to you or even look at you” (April 6, 2017, Qinzhou City). I was shocked by the words of this high-ranked official. In particular, this close friendship with major businessmen could not just be an accident. He also often told me that sand mining was always linked with gang activities.

Cases of corruption in Qinzhou City were also reported upon in media, such as a case took place after an auction took place in the Qinbei District of Qinzhou City in autumn 2011 (Jiang, 2015). One mining company received a license for two different river sections, one comprising the area from the electric pumping station in Nameng Township to the Niupi power station in Dasi on the Maoling River, and the other the area from Nalu in Qingtang Town to the Dingmeng Section in the Jiulong Township. However, the businessman, Mr. Shi, began mining before he had actually obtained the sand-mining license. Mr. Shi said that the license was only valid for one year. In his two bid sections, the entire fee for the first section had been paid, while a part of the fee of the second section had not yet been paid. The Department of Water Resources had not issued Mr. Shi the sand-mining license within the predefined time period. In order to begin his sand harvesting as soon as possible, Mr. Shi repeatedly went to the Department of Water Resources to ask for the relevant documents and certification, but he failed and decided to start mining without the license (Interview Mr. Liu, February 2015).

More serious were the many illegal sand-mining activities occurring in his two river segments. In this regard, Mr. Shi repeatedly reported the chaotic situation to the Department of Water Resources of the Qinbei District, asking the authority to strengthen efforts against illegal sand excavation and to protect their profits. However, the director of the department said that the department was out of funds with which to speed up the accreditation process and move in on illegal sand operators. In order to acquire the sand-mining license and combat illegal sand-mining companies, Mr. Shi gave 200,000 yuan (€ 25,000) to the director, Mr. Lao, and requested him to take action against illegal sand mining (ibid.). Mr. Lao accepted the money. The corruption was found out by the Commission for Discipline Inspection in 2015 (PCQD, 2014).

The District Procuratorate prosecuted Mr. Shi for bribing Mr. Lao. Mr. Shi was sentenced to one year's imprisonment, which was suspended for two years. Later on, Mr. Lao, the former director as well as party secretary of the Department of Qinbei Water Resources, was found guilty of accepting bribes, and he was sentenced to eight years in prison (ibid.). From 2013 to 2014, all directors of the Water Resource Departments of two districts and two counties were arrested in Qinzhou City on charges of corruption. These directors and about 40 other officials were particularly notorious in Qinzhou City for corruption and the mismanagement of water conservancy project and other problems (Wang & Xiong, 2015). According to Van Rooij (2006b, p. 9), "the problem of corruption is in most studies named as a dominant obstacle towards successful enforcement."

A perspective on formal sand management in China is therefore that it is based on a "collusion between power and money" (Zhou & Ouyang, 2011, p. 59) and corruption will still be an important issue in formal sand management in the future. This collusion hampers the effectiveness of the national laws and regional institutions, damages the state resources, and harms the national and public interests. The various "collusions" have different forms in reality. However, most of the time, the inner officials know clearly which boats, sand-mining sites, or selling sites have a special "background," or a hidden political power sustaining them. This kind of informal relation has weakened the formal authority and institutions in many areas.

## **6.6 The Lack of Authority Governing River Sand at Township Level**

The group interview with the township offices in Huangwutun Government reveals that the officials need authority to govern river-sand mining. In the following, the case of sand-mining

management in Huangwutun Town will be presented.

There are several questions that I raised in the focus-group discussion: What was the effect of the implementation of sand-mining institutions and other related laws at the township level? Do they help the local government to be more effective in sand governance? What were the situations in reality regarding sand management?

The discussion revealed that the officials generally lacked the authority to govern river-sand mining effectively. The officials discussed the useless laws, fragmented institutions, and rare presence of a superior government in the effective governance of sand-mining issues at the township level. The Vice Secretary of the CCP of the Huangwutun government stated:

*“We did not get any help from laws (in managing sand issues); what we have are duties and responsibilities. According to the principle of territorial management of the Chinese government,<sup>44</sup> we have the direct duties of sustaining stability, guaranteeing safe production, and supervising and managing our administrative territory. The institutions have an impact on the monitoring system; the township government does not have much administrative power or lacks the relevant management power to fulfil the duties that we have. Consequently, we have to try very hard to prevent and avoid accidents and troubles, and any kind of social unrest. Sustaining social stability has become a major target in terms of illegal river sand mining” (Focus group, statements of the Vice Secretary of Huangwutun Town, April 7, 2017).*

Without the help of laws relating to river-sand mining on the township level as well as the problematic management on the level of the prefectural government sketched in the previous section, the illegal river-sand mining is common at the township level. The Director of the Construction Bureau, so-called Sange, pointed out that there are 91 sand-selling sites in Huangwutun (see Map 4). None of them possessed a license, and they did not pay any fees or due to the township government. Furthermore, one deputy mayor pointed out that no other authority (neither the county nor city government) had gathered revenue from the 91 illegal sand miners or businessmen since 2010. The local officials were aware that they lacked the authority to obtain fees and revenue. On the other hand, the officials were criticized by the villagers when they pointed at this lack of authority as a reason for not intervening in sand-mining. Mr. Yaozu repeated what a township government official told him: “Sand-mining governance is not our business, and we do not have authority in governing sand mining” (Mei

---

<sup>44</sup> According to another government power distribution in China – the territoriality principle – it is claimed that the township government definitely has a responsibility to deal with conflicts caused by river-sand mining.

Village, December 20, 2014).

Sange recalled that there were big government campaigns between 2008 and 2010. At the time, many authorities from city to county government level cooperated with the township government in order to perform remediation measures in the aftermath of illegal sand mining. The township government engaged in the two government campaigns as an assistance unit but not as a power unit. “They (illegal sand miners) stopped for several days,” Sange said. Yet,

*“Significantly, the lack of follow-up management measures of the government damaged the previous governance efforts, simply because the campaigns were just short-term or one-time actions. The rare presence of the county authority and the rare conduct of joint campaigns contribute to the insufficient river-sand management. This means that there is no long-term effective approach (for monitoring illegal miners). In my view, the government cannot establish long-term governance mechanisms and an improved management situation” (Focus group, April 7, 2017).*

The long-standing existence of many violators, the presence of overloaded trucks, an illegal transfer system for transporting river sand, and rising social conflicts should together provide sufficient evidence to demonstrate the problems of either the implementations of the sand-mining system and related laws, or the inherent weaknesses of the institutions. Indeed, a deputy mayor made a clear statement: “Before 2009, there were nine departments engaged in issuing sand-mining licenses at the local level. After 2009, there is not even a single department that dared to issue any sand-mining license.”

It seems that no local sand miners can obtain a license, and they are therefore considered illegal. They cannot afford to participate in the auctions at prefectural level because they cannot fulfil the basic management requirements. In addition, a deputy mayor addressed the different township authorities that possess power in the sand-licensing system and have the authority to implement the so-called standardized regulations.

The Vice Secretary addressed the issue:

*“Sand-mining management has become a common management field of various departments; owing to problematic management circumstances, the common management means no management. This has led to a confusing bureaucracy, in that each department has its own responsibility. However, no one really has full responsibility. As a result, no department wants to govern sand mining” (Focus group, April 7, 2017).*

According to the deputy secretary, the reasons why the issuing of sand-mining licenses has failed are manifold:

- 1) Not a single sand company fulfilled the basic management requirements;
- 2) The sand companies did not determine the scope of their operations;
- 3) The difficulty of applying for a license: to get a license, one had to obtain permission from each of the nine departments. Each department, in turn, needed a month to obtain permission, “to affix a stamp;”
- 4) Sand-mining harvesters have special social relations with high-level officials. These relations are built in different ways, but power–money dealing is the common one, as discussed above.)
- 5) The authority could not respond in a timely manner to illegal sand mining when the villagers made a complaint, nor could it go against actions which were effectively taken by various authorities (e.g. the local government, the department of water resources) (Focus group discussion and interviews, April 7, 2017).

From the perspective of the Vice Secretary, empowering township government is the key solution to eliminate illegal sand miners in the current top-down government structure. Concerning the best solution to river-sand mining issues, he argued that:

*“It is a local power which might be able to govern sand-mining activities. If we had the authority to govern sand, that would be another situation (much better). We would build up a standardized management system, for instance, to establish a sand cooperative company; all sand businessmen would have to join the cooperative company, and the organization would democratically elect their leadership. In this regard, some of the biggest sand-business people would be chosen to be the leaders. A self-governance structure of sand miners and businessmen would be formed. In so doing, they would establish an inner governance structure among all the sand dredgers or dealers. The committee can, for example, collect a garbage fee or even revenue. This approach can benefit the government by raising our income and reducing some trouble. Unfortunately, the government is losing state resources and facing many cases of social unrest due to illegal sand mining, rather than benefiting from it” (Focus Group, April 7, 2017).*

During the discussion, the Vice Secretary highly recommended that the township government should be responsible for sand management, and that sand management only works through a dependence on local power. He explained that “local power” not only includes the local government, but also the sand-business people and sand miners, and it thus implies the power to govern sand-mining issues as well. Following this logic, he therefore proposed co-management between the township government and the committee of sand companies (excluding the villages and villagers) as the best solution. The Vice Secretary admitted that this was his own opinion on sand-mining management at the town level. He clarified that the failure

of illegal sand-mining governance was already showing that the governments above township levels could not handle the issues.

In 2016, the new reform of the River Chief System by the Central Political Reform Commission highlights that the first chairman of the party and the mayor of the city at various levels of government should be the chiefs in charge of and fully responsible for the river-governance system. The government would build an administrative system as well as an assessment system to evaluate the effectiveness of river management. After the implementation of the River Chief System in Qinzhou City started in August 2017 (four months after my group interviews in Huangwutun Town), the prefectural and county governments strengthened their governance and monitoring down to the administrative village level. As mentioned previously, in January 2018 all the illegal sand-mining sites were suppressed in Huangwutun Town. In addition, Huangwutun Town's section of the Maoling River was once more auctioned to Sanxin company, which is run by four businessmen: this company paid 26 million (€ 3 million) for this mining right. The government did not issue a sand-mining license but issued permits for "dredging engineering in navigable waters" rather than in the name of sand-mining License systems. There are about 40 individual miners dredging in the name of the company (Interview with Mr. Huang, July 2018).

Meanwhile, other sand miners without permits have been forced to stop their mining activities. "Dredgers cannot drive to harvest sand; trucks cannot drive to load sand", stated the sand miners. Mr. Huang confirmed that the government's "comprehensive banning of pumping activities" has forced him to shift to another remote town to continue his sand-mining activities in March 2018.

## **6.7 Discussion and Conclusion**

In this chapter I have described river-sand management in China by various levels of government and I have explored the establishment of new institutions and laws, such as the sand-mining license system and the River Chief System. My intention with this chapter is to provide a better understanding of the environmental crisis and resource scarcity due to China's rapid economic transformation. I aim to contribute to debates within the field of political ecology about China's government structure with regard to natural resource management (Xie, 2015; Yeh, 2015). By providing a case study of river-sand management, I highlight the interactions between formal institutions on various scales within China's top-down government

structure.

Moreover, the power of issuing of sand-mining licenses by an “on-site supervision” of sand mining, namely, the Department of Water Resources, has become a way for making private profit for both illegal mining companies and the officials of the department at or above county level where corruption occurs. The failure of a sustainable management of river sand in Qinzhou City in the last two decades reflects the ineffectiveness of the river-sand license system that was introduced in 2002.

The central government therefore in 2016 initiated a political reform, the River Chief System, to deal with the issue of fragmented authority and the inability of holding government officials responsible for effective river resources management. The reform has forced the governments at various levels to put great efforts into eliminating illicit river-sand mining by taking a close look at the levels of power involved in river-sand governance. Within the power structure of authoritarian China, the leaders of the government at all levels have the strongest power of execution in their respective political territories. They, as “River Chiefs”, have therefore been made responsible for the coordination of resource management activities in their jurisdictions.

The River Chief System is based on the centralization of power and represents a big ambition on the part of the current central government. However, the effectiveness of this reform can be questioned on the basis of my research findings.

Firstly, this reform is top-down, reaching from the central government to the provincial and then the county level (and down to the administrative level in the GZAR). The role of the CCP has been strengthened, as the heads of the party and government on each respective level are the ones responsible for river and lake management and water conservation (Liu, et al., 2019). This reform involves the recentralization of authority (see also Kostka & Nahm, 2017) of the highest regional leadership by highlighting the leader’s duty as well as the political assessment of the effectiveness of regional officials. The central government emphasized that the political reform would be the paramount management subject with regard to sand governance, which increases the significant roles of the party-state. Chien and Hong (2017, p. 58) argue that river leadership is assigned to certain prefecture-level cadres, whose career advancement depends on achieving specific goals related to the quality of rivers for which they are made accountable. They describe this new system as “hierarchization through partification”.

Secondly, there is controversy between laws and executive management. It seems that, despite facing a series of failures in sand mining, the government still prefers to prioritize the bureaucratic section rather than laws. Laws still are largely ignored by the latest political reform in terms of river conservation and sand management, even though there is some law-based management at the provincial level. Bureaucratic policies are more important than laws in resource conservation and environmental protection. In the system of river-sand mining, frequently, the regulations of sand-mining management state that “sand belongs to the state,” and that “the local government up to county level, on behalf of the state, exercises the rights concerning ownership of sand resources.” However, it is the fact of the general failure of river-sand mining by governments at these levels that most drives the political reform, rather than law implementations. Indeed, the recently enacted regional laws and the new political reform reveal that the issue of river sand has become a force by which the entire river health-management system may shape politics in modern China.

Thirdly, the new reform excludes the indigenous people from participating in environmental decision-making which, however, relates directly to their land, resources, environment, and culture. The formal institution is currently transforming, but villages and villagers – the direct stakeholders – are excluded, marginalized or undermined by decision-makers. In particular, the governance system has excluded the local villagers who have played a vital role in rural common-pool resource management. Thus, indigenous resistance at the village level against the state-driven sand mining and market-driven sand mining has been reported. This has resulted in a rising tension among river miners, the local riparian minority communities, and the government agencies (see Chapter 8).

I argued that it is too simple to perceive the Chinese government structure as a dichotomy (top-down, central vs. local). China’s crisis in river-sand management is not because of the central government’s top - down approach but because it does not recognize the various levels of government and numerous horizontal departments involved. The national environmental policies are diluted as they gloss over overlapping laws, ambiguous ownership, fragmented authorities, and lack of public participation in the boom of the sand industry.

Importantly, the individual officials and their power must be taken into account. The power relations among the diverse actors have influenced the sand-mining activities in various approaches. Furthermore, law-based or administrative-based reform is an ongoing debate, as

the central government prefers political reform, highlighting the role of the party-government in controlling sustainable resource use and environmental management.

Indeed, river-sand mining management does not act alone, but is embedded in China's political, economic, institutional, and cultural context, in which illegal sand mining occurs. The ambiguous ownership of river sand, the contradictory laws, and the problem of fragmented authorities in both vertical and horizontal dimensions have all led to a diversity of discourses, multiple interests, varying perspectives, and different stakeholders. Apart from government perspectives on river-sand ownership and management, various other debates on the property rights of river sand came up during the analysis of discourses on its ownership. The different discourses about ownership of river sand have played a crucial role in the commercial appropriation of river sand, as well as the relevant management practices and conflicts, which I will illustrate in the following chapters. Indeed, the property rights issue greatly impacts sand management, which has shaped the sand-mining reality on the ground; however, who should hold these property rights, and what form an effective river-sand management system might take, remains debatable, as illustrated in the next chapter, in which the varying perspectives on property rights of river sand in the Zhuang villages will be described.

## **Chapter 7: The Illegal Miners along the Maoling River**

Recently, “land grabbing” and “green grabbing” (Bumpus & Liverman, 2008; Corson & MacDonald, 2012; Sullivan, 2013; White, et al., 2012) have become terms associated with resource exploitation and environmental degradation. The exploration of natural resources has become an accumulation strategy for some people (Smith, 2007). Smith (2007, p. 26) argues, “Capitalism is more voracious than ever in vacuuming a supposedly external nature in search of commodifiable use values.” Related but more importantly, the industry of river-sand mining in southwest China shows that besides environmental influences, the commodification of river sand is consistently embedded in the moral issues relating to the extractive industry with regard to ecological, social, and political justice. Illegal river-sand mining has been on the rise in southwest China for at least two decades. This has involved moral economic perspectives with various stakeholders on river-sand extraction. “As a kind of inquiry, ‘moral economy’ is the study of how economic activities of all kinds are influenced and structured by moral dispositions and norms, and how in turn those norms may be compromised, overridden or reinforced by economic pressures” (Sayer, 2000; quoted from Sayer 2004, p. 2). Mandondo made a similar argument: “Land and issues of access to natural resources. (...) raise the emotions and passions of people who feel either that there is no justice or that what they own is being unfairly confiscated” (Mandondo, 2001, p. 90). Therefore, the issue of the moral economy becomes critical in the river-sand mining industry in southeast China.

Scholars define moral economics as the principles of economic responsibilities of a company to others, as well as the company’s return to society (Sayer, 2000; Banks, 2006). “The modern determination to conquer a disenchanted nature and subject the commons – natural resources such as water, air, and forests necessary to all life – and, indeed, all beings – to resource mobilization has also advanced in these Asian societies, leading to an unsustainable and dystopian future” (Duara, 2015, p. 8). The crisis of river sand in southwest China reflects the rational and moral aspects of modernity. This morality of the “illegal” river-sand industry has become a lens to examine one of the latest means to accumulating capital or becoming rich in the Zhuang region. This chapter focuses on the illegal sand miners along the Maoling River beside which the Zhuang settled.

## 7.1 Legitimacy and Illegality: “Sand Belongs to Nobody”?

A high level of dredging activity along the Maoling River has been taking place for a long time, regardless of its legitimacy and illegality. Thus, the exploration on the legitimacy and illegality of mining river-sand contributes to the natural resource management in rural China. In particular, the perspectives of the sand miners as well as other perspectives on the sand resource reflect how the sand miners form their arguments in order to benefit from mining sand. Ownership of river sand has been defined and claimed by diverse stakeholders in rural China. The state insists that it owns the river sand; the Zhuang villages claim that the sand in the local river is theirs; but the illegal sand miners state that the river sand belongs to nobody. These various perspectives show that in reality the river-sand mining industry in rural areas involves conflicting interests as diverse actors attempt to maximize their interests.

Thus, the following questions become critical. Who has the power to define the ownership of river sand? Who has the authority to identify who is “illegal” in the chaotic era of the booming sand market in southwest China? How clear is the definition of legal sand miners as those who obtain the mining license from the water administrative department at or above the county level? In order to answer these questions, my analysis will take the growth of illegal mining into account, particularly considering that this illegal mining is now taking place at a large regional scale in China.

During my field work, I found no sand miners who believed that they were stealing property from either the government or the village, even though they have risked government fines and villagers’ anger. These sand miners pointed out that they were just doing business in order to make a livelihood, and they preferred to keep silent on the problem of ownership. Thus, sometimes they simply stated that river sand belongs to nobody. Furthermore, these sand miners have ignored other actors’ interests from the very beginning and have shifted their mining strategies over time.

Meanwhile, I did not meet any miner who owned a license during my fieldwork, although a license could be bought through one of the government’s sand-license auctions. The officials that I interviewed in the two towns confirmed that no one there holds a government sand-mining license. In that case, the miners are illegal according to the government. From the perspective of the government, both the small-scale and middle-scale mining sand miners without licenses are illegal, and the village communities which “sell” the river section to the illegal sand miners are

themselves illegal sand miners or sellers, because they have violated the laws and government policies. In contrast, the villagers hold an opposing point of view, which I will illustrate in detail in Chapter 9.

Illegal sand mining also brought about social problems in local communities. Many illegal sand extractions emerged between 2010 and 2016. During this period of time, more violence and criminal activity occurred, thus imposing pressure on public security, and policies for governance in the city areas were changed as well. This change echoes Smith's argument about the influences of capitalism on local economics.

*“It is capitalism which ardently defies the inherited separation of nature and society, and with pride rather than shame. In its constant drive to accumulate larger and larger quantities of social wealth (...) capital transforms the shape of the entire world. No God-given stone is left unturned, no original relation with nature unaltered, no living thing unaffected”* (Smith, 1984, pp. 7-8).

Although new policies and enforcement actions to crack down illegal sand mining were strengthened, illegal sand appropriators were still the main suppliers in the local sand market.

However, river sand had a new competitor in the market because it was gradually replaced by ocean sand. Under this circumstance, sand mining was not a sustainable business anymore. As a result, local government did not pay sufficient attention to the governance of illegal sand mining. It shows the failure of at least part of the 12th Five-Year Plan's environmental and resource blueprint, “ecological civilization”, and the targets for the “greenest” possible sustainable development in China (Fulton, 2011). The failure of government control intensified the issues such as “who is right”, “what is good”, and “for whom”? Indeed, the morality of “illegal activities” must be taken into account when analyzing the economic development of the sand-mining industry and the ethnic tensions involved in it. I will explore this issue by analyzing the illegal sand-mining in the Maoling River in details in the following part.

## **7.2 Illegal Sand-Selling Sites Upstream of the Maoling River**

There were about ten sand-selling sites along the Maoling River in Xintang Town in 2014, and also five dredgers working three kilometers upstream of the Xintang river section between 2013 and 2016. All were smaller dredgers, which could only load from 20 to 23 cubic meters of sand at a time. The cost to buy these dredgers was between 20,000 yuan (€ 2,532) and 50,000 yuan (€ 6,329). The villages that were close to the river had one or two villagers who illegally mined sand for markets in various ways and during different periods (see Table 17).

Both dredgers and selling sites were strategically located beside the main road and the river, in order to transport river sand to consumers' construction sites. This location implies that illegal sand mining was a public secret in this region. Nonetheless, the miners and business people extracted as much sand as possible to make as much profit as possible. As a result of the potential for economic benefit and the lack of licensed miners, this enterprise has consistently attracted illegal operators. An interview with the officials of the Xintang township government shows that no company has been licensed to dredge river sand in Xintang Town. Without legally licensed sand mining, the demand has consequently been filled with the sand exploited illegally under the eyes of the village and township government for two decades.

For instance, households that needed river sand for construction ordered the sand in advance and were waiting for it. The river-sand harvesters could not fulfill the huge demand. While the sand was still in the river, the businesspeople had already obtained the money from the households who wanted to purchase sand in the Nagan Administrative Village.

**Table 17: The Illegal Sand Miners in Nagan Administrative Village**

Name	Age	Occupation	Selling site location	Dredgers	Other equipment	Employees	Sales targets
Mr. Fugeng	48	Farmer	Beside the main county road	1	One excavator and one bulldozer	Brothers	Local rural households
Pan Jiu	40	Farmer	Beside the village road	2	One excavator and one truck	Relatives	Local rural households
Lei Wu	50	Farmer	Beside the county road	1	One excavator and One truck	Family members	Local rural households
Zhu Kaixin	52	Farmer	Beside the village road	1	One excavator and one truck	Family members	Local rural households
Lu Chongba	43	Farmer	Beside the village road	1	One excavator and one truck	Friends	Local rural households

(Source: field data, 2014)

Since the 2000s, the river-sand business has become part of the residents' daily lives, and an important resource for some people's livelihoods. These illegal sand operators have not paid any taxes to the government, nor have they paid any fee to the villages in the region. "Stealing" is the way they make a profit. Sand is in practice free of charge and open-access, which has led to free-riders marketing sand. Furthermore, sand transport and marketing also did not cost the operators any money, because others bought the sand directly from the wholesalers at the river and had their own trucks or hired a truck owner to transport it.

According to several interviews, the sand miners did not believe that they were stealing property from either the government or the village. At first, they did their sand dredging far away from the villages. Over time, river sand became scarcer, and then they frequently began to mine sand closer to people's land and villages. A wholesaler describes the sand-mining activities: "A good miner understands where the sand is; he automatically searches for sand in the river regardless of where the sand is located" (Interview Mr. Xie in Qinzhou City, April 6, 2017). However, when the sand-mining operation occurred in the territory of the village, disputes and conflicts took place, and then some miners had to deal with the opposition and moral discussion in the village when mining river sand in that village's territory. However, the solutions that have been implemented by the illegal operators are not positive ones: for example, actions such as hiring gangs to threaten those opposing their operations, and humiliating the villagers have been reported in the field research.

These illegal sand quarries were established in 2007 or 2008 in the Xintang Town. However, many were closed by 2015, once the river sand was largely gone from Xintang Town. "There is no sand to mine in the river," stated the wife of a miner, so-called Mr. Fugeng, in Mei Village. Mr. Fugeng completely stopped his sand business in August 2015, while Pan Jiu's sand quarry was still running by April 2017. Pan Jiu had to shift his sand mining from common sand to private sand, which means he would basically buy private riverbank land in order to appropriate sand. For example, he paid a Mei villager, Mr. Yaozu, for 35 yuan (€ 4.4) per cubic meter mined from his plot of land and would sell it for 120 yuan (€ 15) per cubic meter in 2016.

Because of this over-mining of sand near villages and towns, there is not enough river sand in the locality to supply all the households' building needs. Some households still need sand to build their houses. Importing sand from towns downstream is the only option. The sand miners in Huangwutun Town shifted their dredging places from rivers to the sea. Sea sand has come to replace river sand and has been supplying the local sand market. In this regard, Xintang Town imports sea sand from Huangwutun Town, which is downstream from the Maoling River and is located at the entrance of the Maowei Sea.

### **7.3 Illegal Sand Miners Downstream from the Maoling River**

As mentioned in Chapter 6, there were about 91 illegal sand-selling sites in the Huangwutun section of the Maoling River in 2015. According to Huangwutun government's list of illegal sand miners, this number had decreased to 41 by April of 2017. Moreover, the local miners

pointed out that there were 60 miners who had been forced to stop mining by the government by the end of 2018. This shows that river-sand mining often takes place out of desperation, and in dangerous conditions, since the miners are working in most weather conditions regardless of rain and flooding. An employee who was hired to work on one dredger died because while dredging in the rain he touched a live electric cable by accident. In 2014, a woman, Mrs. Tang, fell into the Huangwutun River because a sand-mining ship crashed directly into a boat which she and her husband were tying up at the shore. This caused Mrs. Tang to fall into the river and the crew of the ship neglected to help at that time. Mrs. Tang's body was found four days later. A boy was drowned in the river section between Mei and Na Village, because of the holes in the riverbed due to dredging by the miners. "The river is not the same, as well as the river water. It is rather dangerous for our children who get used to swimming in the river during the hot summer" (Interview Township officials in Huangwutun Town, April 12, 2017). Indeed, some people are risking their lives for an income due to the relatively high wage that can be earned by sand mining. However, illegal mining is a criminal activity which steals national resources based on the laws we discussed in Chapter 6. River-sand mining has also created a more dangerous river environment for the local villagers and fishermen.

### **7.3.1 Case Study: The Family-Owned Company**

An interview with one of the first generation of miners shows that there was no formal sand-mining governance in Huangwutun Town in the 1980s and 1990s. The original sand harvesters were local villagers who used simple technology to mine sand directly from the river in the late 1980s. At that time, they did not pay to mine sand and did not apply for any licenses. The sand was sold to customers in bigger cities where new buildings were being constructed. Due to the increased demand for sand the miners invested in new ships to mining more of it. Meanwhile trucks and other machines were bought in order to effectively improve the mining output and transport capacity. At the same time, more laborers were needed for the production chain as well as other sections of the sand business. In this regard, family members, relatives, and friends of the miners began to join in with the sand-mining, transporting, and selling processes. A story needs to be presented in what bellow to illustrate the river-sand mining transformation through a historical lens. I would like to present a twenty-one-year-old family-owned sand-mining and -selling business.

Mr. Chang was part of the first generation of river-sand miners in Huangwutun Town. He

owned a big sand-selling site, which was located one kilometer away from the township's major bridge. Mr. Chang began his river-sand mining in 1986. "It was the year my son was born that I began my sand mining and sand quarrying. Now my son is twenty-one years of age" (March 30, 2017). At that time, Mr. Chang built his sand quarry with his wife on his own riverbank land. In the beginning, he only had a simple pump to directly scoop sand out from the river. Due to the rapid growth of the sand business and the benefits that he obtained; more laborers were needed. Over time, his brother and then his son joined him in sand mining. Mr. Chang's wife was in charge of account management. The family's sand enterprise was extended by purchasing a new dredger, which was also brought to other locations along the river in order to harvest more sand. After about ten years, Mr. Chang and his brother were able to build new houses and to buy new cars with their substantial profits from sand mining and sand selling. Their visible success made that more people were attracted to the high-profit, low-cost sand-mining activities. Also, some outsiders began to participate in the sand-mining industry. Mr. Chang always had ways to look for new, big construction projects, and has never stopped his business: this successful enterprise helped him to collect enough money to buy a bigger dredger to mine ocean sand.

In 2016, he and his brother bought a new dredger. They then went to Guangzhou City to buy a second-hand motor for the dredger, which had more than 600 horsepower and was imported from Japan. Mr. Chang's son said even though it was a second-hand and expensive, costing 500,000 yuan (€ 63,000), it also was much better/more powerful than the motors made in China. The family had to borrow money to pay for the new dredger and it would take three years to cover the costs. But their dredger was the most up-to-date of all the sand miners' dredgers in Huangwutun Town. More practically, the new dredger could load 450 cubic meters of sand each time, while the others' dredgers only could load about 260 or 350 cubic meters per load.



**Photograph 21: The Chang Family's New Sand Dredger**

(Source: field data, 2017)

The family was very satisfied with their new sand dredger (see Photograph 21). The brother introduced the new ship to me. It is 40 meters long and has three floors. The third floor is a small control room where there is a lighting system to illuminate the dredger for night sailing. The second floor of the stern contains four large oil tanks to supply oil for sand extraction, a kitchen area, and a washing area. Some eggs, pickles, and vegetables are prepared in the kitchen. The first floor is a big storage chamber that holds the sand. They often have to clean the cabin up. Mr. Chang explained that each boat is equipped with one captain, one mate, two sailors, and one boatman. All members of the family have all-round skills and can deal with most situations on the big dredger. Mr. Chang's son said:

*"Each of us earns 200 yuan (€ 25) for one sand-extraction trip in the sea, which is paid by my mother. Currently, we mine sea sand around 20 times each month, and the company can earn around 11,000 yuan (€ 1,392) each time. Basically, the salary for a member is 7,000 yuan (€ 886). Normally, we are three or four people working together on a mining trip. The ship travels three hours to a sea area, then it takes two hours to mine, and the sand is extracted from the sea bottom and goes into the shipyard through the filter. During this process, water must also be pumped out with the sand to make the distribution inside the ship balanced. This process is crucial for the return trip in order to avoid an accident. It also takes three hours back to the riverbank sand-selling site, and one hour to transfer sand from the dredger to the quarry. In total, that is ten hours.*

*Sometimes, we will put the sea sand into the empty river, to let the fresh water clean the salt off the sea sand. Clearly, it is a long process and costs more oil, time and work, so people do not rinse their sand that way anymore. Yet, in this river section, when we transport sand from the shipyard, we also need river water to transport the sea sand, and that means that we wash the sea sand to reduce the saltiness" (Interview with Mr. Chang's son, April 10, 2017).*

After years of mining, river sand has become scarce, and sea sand has been mined to supply the sand market. In terms of the cost, Mr. Chang's son said:

*“There are four large fuel tanks on the ship. Each sailing will deplete around three thousand yuan (€ 384.60) of fuel. The price of sea sand is 28 yuan (€ 3.50) per cubic meter. We earn around 10,000 yuan (€ 1,282) each time as net profit, and then they must cover the cost of labor, fuel, and so forth. Yet the business is not doing as well as before. The buyers do not pay us immediately. They pay after months or even longer. And sometimes, we can only earn 1,000 yuan (€ 127) each time” (Interview with Mr. Chang's son, April 10, 2017).*

Regarding the issue of licensing, Mr. Chang told me that they do not have a license for their business. The only required document is a sailing license from the Maritime Bureau. His brother is responsible for preparing and submitting the new ship's documents to the Maritime Bureau; their new ship's documents are not yet complete. Drawings of the current structure of the ship have not been completed yet, and the ship still does not have a name. They mentioned that the Maritime Bureau examines the ships in May each year. However, until now, they have only checked whether the ship has a sailing license, not a sea-sand mining license. Not a single dredger or ship in the town has any sea-sand mining license. The long-term existence of unlicensed river-sand mining has benefited these miners, who believe that sand mining is a personal business issue, rather than a common, natural-resource-related problem. “There was no one against our river-sand mining activities before. During these years of mining, we have not had big conflicts with others. Sometimes, small disputes took place, and a little money could settle them. The problem is the scarcity of river sand. That is why we bought the new dredger to mine ocean sand.” Mr. Chang's son pointed out that when and how much to mine is dependent on how much the market demands and their storage capacity. He said, “If we mine too much, there is no space to store the sand.” He was envious of the sand-selling site where so many trucks were waiting to load sand. Altogether, Mr. Chang's son showed he was satisfied with his job and family sand business, saying:

*“I prefer to work in our new ship, you know, it is my family business and I can gain a salary from it. My wife and our son have also been taken good care of due to the well-run sand business. The women in the family do not need to work outside, but just take good care of domestic matters – for instance, the children. They do not need to do any agricultural work at all, since we can purchase grain. Nonetheless, my mother still insists on growing one-season rice by selecting good seeds of rice in order to eat healthier food.”*

### 7.3.2 The Outsiders and the Insiders: The Boom in Illegal Sand Mining

It is a reality that sand mining in Huangwutun Town has become problematic. “Once these resources are discovered by outsiders, their commodification may result in overharvesting for urban markets and concomitant inaccessibility for those who have long relied upon them” (Horowitz, 2015, p. 238). Nazhong Village’s river section is about 700–1,000 meters long. This village has a relatively long history of sand “transfer stations” and sand extraction (see Photograph 22 and 23). Compared to the illegal sand extraction in Mei Village and Na Village, where extraction was basically performed by local villagers, the “insiders,” the illegal sand operators around Nazhong Village are from other townships and even other provinces, and considered “outsiders.”



**Photograph 22: Two Big Dredgers in Nazhong Village’s River Section and an Advertised Sign saying: Supplying Three Sizes of River Sand with Phone numbers**

(Sources: field data, April 2017)



**Photograph 23: Sand-Selling Sites**

(Sources: field data, April 2017)

Based on a field survey, there were a total of eleven sand-selling sites around Nazhong Village.

**Table 18: Sand Miners in the Territory of Nazhong Village**

Nr	Name	Originally from	History of sand quarry	Dredgers	Other machine	Employees
1	Mr. Li	Guigang town	6 years	Rents 3 dredgers	One extractor	4
2	Mrs.Huang	Jianshan town	7 years	One dredger	One extractor	Family members
3	Mr.Huang	opposite village	17 years	One dredger	One extractor	4
4	Mr. Lin	Dafanpo town	4 years	One dredgers	One extractor	3
5	Mr.Li	Guitai Town	8 years	Two dredgers	One extractor	7
6	Mr.Hu	Hubei Province	9 years	Two dredgers	One extractor	5
7	Hu Wu	Nearby village	10 years	One dredger	One extractor	2 and family member
8	Mr. Zeng	Kangxiling Town	5 years	One dredger	One extractor	4
9	Mr.Tong	Nearby village	6 years	One dredger	One extractor	Family member
10	Mr.Xing	Nearby village	8 years	One dredger	One extractor	2
11	Mr. Liu	Huangwutun Town	7 years	One dredger	One extractor	Friends

(Source: field data, in 2017)

The dredgers mentioned in the table above were mid-sized dredgers, which could carry from 260 to 450 cubic meters of sand (the biggest can carry more than 2,000 cubic meters). Some sand operators on this table owned not only the dredger and extractor, but also a sand quarry, a truck, and construction sites at where they sold the sand.

There is a big population of people with the family name Huang, many of them engaging with river-sand mining in the surrounding area. Table 18 shows Mr. Huang, who spent a long period of time (17 years) in river-sand mining and was one of my key informants regarding illegal sand quarrying. He originally came from Nadong Administrative Village, on the opposite side of the river, but had migrated to Fangchenggang City for years. When I asked about his minority status, he said that he had no idea, but took out his identity card and showed it to me: it gave his status as Zhuang. He said that none of the local people paid too much attention to their minority status since they were all of the same nationality in the village. Nonetheless, they would definitely join in with the “Lingtou Festival” and attend the worship system as village members even though some of them had since moved to urban areas. Mr. Huang’s sand-selling site was the oldest among the eleven sites listed in Table 18. He began his business in 2005. However, his sand quarry was dismantled in 2008, when the Qinzhou Government sold that section of the Maoling River to a private corporation through the sand-license auction. As a result, unlicensed or illegal miners (so-called illegal sand miners) were forced to stop river-sand mining because of threats of being arrested by armed police acting as part of a joint campaign. Machines were used to tear down the sand quarries and to remove the dredgers. Mr. Huang lost his sand-selling site as a result. Downstream along the Maoling River, many other sand-dredger

owners started to work with this company that now owned the license. They still extracted sand but were now selling it in the name of the company when the government checked. The company would charge from seven to ten yuan (€ 1 – 1.20) for each cubic meter of sand. This charge greatly increased the price of sand in the construction materials market.

A local sand miner in Huangwutun Town told me in April 2017:

*“We local businessmen hate these big companies. They earn the majority of the profit from our sand. Their new dredger had replaced our small dredger and also the method of loading sand. The production and transportation of sand has become mechanized. I knew that they earned a lot of money from the sand business, even though they also paid a great deal to the government.”*

He said that several conflicts had occurred at that time between the licensed company and local non-licensed companies. Violence erupted very frequently.

Mr. Huang re-established his sand business in 2010 after the contract between the government and the licensed company ended. He first bought an old dredger at that time and rebuilt his sand-selling site near the bridge in Nazhong Village. After he had made enough money, he bought another second-hand dredger for 700,000 yuan (€ 88,000) with two friends in March 2017. This dredger could load 260 cubic meters of sand at one time. He hired four villagers from his own village to work for him.

Like other local miners, the day before he first used the dredger to mine the river sand, he asked a priest for a good day and performed worship by burning incense, offering food and fruit, burning spirit money (paper money) and firecrackers, and collectively praying with all the workers to the “god of ships” (Chuan tou Goog). This god is considered to be responsible for looking after ships and other transport machinery, and is worshiped by those people who engage with dredgers, ships, and trucks (see Photograph 24). They worship the “god of ships” mostly before they launch boats or ships into the rivers or oceans. The illegal miners are afraid of the blame from both local villagers and the traditional gods, but the money is more important than the norms and values of the locals. In their view, illegal sand mining is one of the activities that relate to the river and water, which is governed by the “god of ships.” But they ignore the norms that allow for other villagers/ village groups to demand sand, and their duty to protect the village’s territory and common resources. On the other hand, some people believe that God will punish the illegal miners in future.



**Photograph 24: Mr. Huang Performing a Rite for the Second-hand Dredger, and Mining Activities after Worship**

(Source: Fields data, March 1, 2017. Pictures taken by Mr. Huang)

In 2017, Mr. Huang mainly extracted sand from the Maoling River and its tributaries – for instance, the Nadong River, the major branch of the Maoling River which is close to Nazhong Village and Naxia Village. He bought the river sand from the local villages, and paid 8 yuan per cubic meter (€ 1/m<sup>3</sup>); he did not pay for the ocean sand. Interestingly, the local miners would also take part in the collective worship activities and also donate some money for the god's blessings.

After the implementation of the River Chief System in 2017, when the management of river-sand mining became more rigorous, Mr. Huang shifted upstream along the Maoling River, to another township section, with his two business partners, and the three-person company bought a section of the river from a local village there. He explained the cost of his business:

*“Two friends and I run this sand company together. We hired seven local people, four of them working in the dredger, one person for loading, two working in the selling site to organize the stuff. The salary is 4,500 yuan (€ 570) per person per month; we spent more than 40,000 yuan (€ 5,063) just to hire the workers. We, the bosses, do not get paid. But ten of us work together each day. We also need to pay the rent for the site, 40,000 yuan (€ 5,063) for one year. We invested 120,000 yuan (€ 15,190) to construct the sand-selling site. Now we have signed the contract with the village for the three-year mining permit. We paid 900,000 yuan (€ 114,000) for permission from the village, 300,000 yuan (€ 37,975) each year. Now it is the third year of the contract. Nowadays, we buy river sand from the villages and the money gets distributed among the households and for public use” (August 2018).*

For sand-selling sites or dredgers to hire two to four local workers, with family members and friends working together, is a common phenomenon. The salary of a worker has been increasing over the last several years, and many workers also share a proportion of commissions when

they have good skills in mining or driving. Even though the costs of operation have been increasing, there is still profit for the miners. “We will make enough profit if the government allows us to mine. My uncle is in charge of the construction of a highway which demands a huge amount of river sand. We have supplied my uncle’s road constructions.”

It is clear that some sand miners have not been paid for mining, while some of them, such as Mr. Huang, has to buy the sand, as property, from the villages. Compared with either sand-mining contracts or government licenses or auctions, the cost of buying river sand from a village is relatively low. Therefore, many of the miners have made deals with the local villagers for mining permission.

**Table 19: A Selection of Dredger Owners in Huangwutun Town in 2016**

Family Name	Age	Origin	Starting time	Break time	Number of dredgers	Is the dredger new, and how big is it?	The cost of buying a dredger	Hired workers
Zhong	52	Nanfu Village	2007.2	New year	One	New, 230 m3	1.63 million	4
Huang	41	Shengjiliao Village	2009.4	New year	One	New	1.63 million	4
Huang	45	Shengjiliao Village	2003.5	New year	One	New, 230 m3	1.65 million	4
Huang	40	Huangwutun Town	2013.7	New year	One	New, 250 m3	1.5 million	3
Wen	43	Tangxiling Town	2009.3	New year	One	Second hand, 160 m3	1.35 million	3
Li	45	Huangwutun Town	2007.6	New year	One	Second hand, 180 m3	0.7 million	3
Yuan	43	Qinbei District	2015	Evening	One	New, 206 tons	1.8 million	10
Huang	55	Qinnan District	2003	9 o'clock PM to 4 o'clock AM	One	New ship but second hand motor	3 million	6
Dang	52	Nanning City	2006	Day time	Two	New, 320 tons	6 million	8

Table 19 reveals parts of the government list in Huangwutun Town. Two businessmen from the local township have appropriated river sand since early 2003. All the dredger owners were male and between 35 and 55 years of age. Each owned at least one dredger and had hired at least three local workers for sand-mining operations. They continued to extract sand for the whole year round, except during the lunar New Year. Mr. Huang, who was 55 years of age, said he had since 2003 taken a daily break only from 9 o'clock at night to 4 o'clock in the morning, and had harvested sand the rest of the time. His daily working hours are common time schedule for other miners too due to the tidal problem, as the dredgers can only sail at high tide. Dredgers move along the river, as shown in a recent satellite image. The dredgers follow the sand and

search for it. Meanwhile, the dredgers must avoid being caught by either a joint law campaign or village groups when they are mining in the rivers. But during the day, the dredgers are moored in the river while the staffs are resting, as can be seen in Map 5.



**Map 5: Dredgers near the Entrance of the Maoling River in Qinzhou**

(Google Map, Lat.: 21.926314°, Lon.: 108.477118°, August 20, 2019)

Some miners said they could make 1.5- to 2-yuan (€ 0.19 – 0.25) pro one cubic meter in 2017. Another Mr. Huang, who was 40 years old, said that he had trouble with sand mining because he had to pay the “Sand Head Fee” (沙头费, also called the “Snake Head Fee”; the discourses of these gangs are highly diverse) to a gang, which cost him 2,500 yuan (€ 316) per month. A Sand Head Fee or Snake Head Fee can be collected by four different groups. The first group is the officials of local government from prefectural to township level who require a “protection fee.” This fee is gathered based on the claim of law enforcement, but the money will be

distributed among some given officials. Secondly, local villages collect the “Sand Head Fee” under the pretext of river-sand mining taking place in their territory, for instance the village-owned beach, river section, and road. Third, some local people, including drug users, gamblers, and people who have criminal records, have illegally and criminally collected money from the miners and sand sellers by force. Finally, a fee is paid the owners of land beside the river or the road who rent this out to the sand miners and sellers. The sand miners used diverse terms to label these groups, e.g. “gang” to refer the first and the third group. In what follows, I use the word “gang” to refer to the third group of people even though the four groups all collect the fee in an informal way and obtain this income either illegally or criminally. The phenomenon of the “Sand Head Fee” shows the unequal power relations between the diverse stakeholders in accessing and controlling the river sand.

The “Sand Head Fee” was famous in both rural areas and with the governments. Qinzhou official government documents stipulate that action should be taken against this kind of illegal fee, but it has not yet succeeded in eliminating this, since gangs have extensive networks, both inside the government and within the local communities.

Some of the dredgers belonged to indigenous people, whereas the rest were owned by outsiders who came from Zhejiang Province, Fujian Province, and Guangdong Province. These outsiders, as mentioned before, were called “Lau lao” (those who do not speak the local languages) by the local people. The boundaries between insiders and outsiders are clear. Among the local people, sand operators would then partner with two or more individuals, because the cost of the dredgers was high for the local people. Therefore, more than two or three indigenous individuals joined forces to build a sand company together. All of these sand companies were busy appropriating sand from the river and transporting it to the construction sites in various parts of the cities and villages (see Photograph 25). The following case outlines some basic information about the local dredger owners.

An owner of a sand company, yet another Mr. Huang, in Huangwutun Town, accepted my request for an interview. He was around 50 years old and had been running his sand-mining enterprise since 2010. At first, he had worked in a Zhejiang sand-mining company. Later on, Mr. Huang said that when the Zhejiang businessman earned enough money (making a great deal of profit), that company sold their dredgers to him. The dredgers, which were originally bought for 2.5 million yuan (€ 316,000), were sold for 800,000 yuan (€ 101,000) to Mr. Huang.

He not only took over the dredgers, forklifts, and lorries, but also the clients of the Zhejiang businessman. He began to reap benefits after a year.

In 2016, Mr. Huang had one second-hand dredger, two forklifts, and six lorries (one lorry could hold 22 cubic meters at one time). He hired two workers, in addition to his son-in-law, who was also helping him. According to his son-in-law, six trucks were not enough for all the deliveries. Therefore, they had to hire some other trucks. In December 2016, he would send 30 trucks each night to a project and several mixing stations for cement, sand, and gravel in Nanning City, as well as retail to some township sand-selling sites. Mr. Huang claimed that he had a sand license, but he failed to show it. He has rented around 1,000 square meters of land located close to the river and to the city roads.

His son-in-law helps him organize the deliveries of sand and to record the employees' working times. His son-in-law said that they did not pay taxes to the government but paid the regular taxes as to the "Snake Head Fee." These local gangs had a strong relationship with various authorities. The "Snake Head Fee" was the only fee that they needed to pay. "If you paid the fee, everything would be fine. They would help you to construct all the relationships and eliminate all the troubles." He said that the sand business has been deteriorating since 2013. There are fewer outsiders from other provinces who would go after sand resources. Moreover, the government's policies have become tighter than before, yet they can still earn money from the sand-mining business. These sand miners, as well as sand wholesalers, have contributed to illegal sand mining and have strong relationships with both legal and illegal authorities.



**Photograph 25: Illegal Sand-Selling Sites in Huangwutun Town**

(Source: field data, April 12, 2017)

Not all of the miners can buy new dredgers; some of them will buy a second-hand dredger in order to reduce the cost. The old dredgers always need to be repaired, and also cost some money.

Nonetheless, the profitable sand business still contributes to an increase in income for the miners, a fact revealed by the questionnaires filled in in Naxia Village. Indeed, the interviews with local peasants in Nazhong Village and Naxia Village reveal that most of the sand miners are rather well-off. At the entrance of the road toward the bridge, Mr. Hu pointed to one building under construction and said, “The owner of this five-story building is a sand miner, Mr. Huang, who comes from the village across the river; he bought the land and now he is building a big house. And he owns other houses in his village and the city as well” (March 29, 2017). Furthermore, the interview in Nazhong Village shows that one woman, Mrs. Huang, who was originally from the village and now married in another town, had returned to mine the river sand. The secretary of Nadong Village told me, “Mrs. Huang makes a lot of profit. She has built two big houses with five stories in her husband’s town.” I went to the sand-selling site of Mrs. Huang beside the bridge at Nazhong Village, where I found her talking to the owner of a big truck. This truck owner was from the Heng County of Nanning City and he was speaking in Mandarin with Mrs. Huang. She sometimes answered in Mandarin and sometimes in Cantonese.

*The truck owner: Hi, boss, I want to load the sand, can I drive my truck to your site?*

*Mrs. Huang: Your truck is too big to load.*

*The truck owner: What are you afraid of? It is not you who is going to load the sand but it is the forklift. I will pay you the money. I have five empty trucks today, if you agree with us to load, then I will tell others to drive here.*

*Mrs. Huang: No, I really do not want to load any sand to your truck. As I said, your truck is too big. Last time, it took a long time to fill up your truck. Most importantly, your truck has two parts and has a problem turning around, and in the end you will damage my road badly.*

*The truck owner: 1,900 yuan (€ 240) each truck, and I will buy five trucks’ worth. Just clarify if you will sell or not? You want to do sand business but you do not want to load. That is incredible.*

*Mrs. Huang: I will load your truck only if you pay 100 yuan extra to load one truck, and that means in total 2,000 yuan (€ 253) for a truck. Otherwise, I will not sell any sand to you.*

*The truck owner: Incredible, what are you afraid of? What you need to do is to just help me with your forklift by pushing my truck a bit like last time, and then it will be fine. If you do not sell me at the same price, I will not buy any sand from you; I will not come back for sure.*

*Mrs. Huang: It does not matter. As I mentioned, your truck is just too long and too big to load and it does not drive back to the road as other trucks do.*

Then the truck owner left with an empty truck. Mrs. Huang really seemed fine with the loss of

five trucks' worth of sand trade. And she gave the same reason to me to explain why she rejected the truck owner. She told to me that she does most of the work at the sand-selling site herself, including mining, so the loading would eat a lot of her time. But the real reason was that river sand was in high demand and she did not have any problem selling all of the sand she had available in a single day: the trucks kept coming and she could get her work done regardless.

#### **7.4 The Sand Production Methods Have Transformed from Mining to Crushing**

Qinzhou City has not established a prefectural institution for sand government, but it basically follows state laws and provincial policies to govern sand mining. An interview with the deputy Head of the Qinbei District government shows that he had sometimes governed illegal sand mining with his colleagues when he was still the Secretary of Nameng County in 2005. "However, illegal sand mining frequently resurges after government anti-illegal campaigns." The situation regarding sand mining before, during, and after the first prefectural auction in 2008 was chaotic. As for the case of Mr. Huang, he stated that there was no strong formal management of the biggest river in Qinzhou City. There had been inhabitants who mined sand for individual profits and with no punishment. In these circumstances, when Qinzhou City paid more attention to sand licensing in the early 2000s, they first needed to clear out those diverse sand selling-sites and various dredgers with a joint-forces campaign, and then with the use of armed police, as discussed in Chapter 6.

Facing rigorous government management, some miners shifted to beginning to produce crushed sand, having purchased a crusher, in 2016. Mr. Huang pointed out that,

*"Sand includes three types, namely small, middle, and big sizes. There is no distinction between crushed sand and river sand. For the constructor, there is no good sand or bad sand because what they are looking for is the suitable sand for their building purposes. I invested 350,000 yuan (€ 44,300) to buy the crusher to crush stones to make sand. It is the first such company so far in Qinzhou City. We sell around 200–300 cubic meters each day. However, the production does not satisfy the market's needs. There is a limitation to the machine. If production can increase, we can make back the cost and start to make a profit in five months. The problem is the water pollution caused by this crusher when crushing; I am digging two bigger pools to hold the dirty water, otherwise the people who live around here may complain to the government." (Interview Mr. Huang through WeChat, October 14, 2016)*

#### **7.5 Discussion and Conclusion**

The analysis of illegal sand miners around the Maoling River shows the complex relationships among the stakeholders including illegal sand miners, local governments, and the Zhuang

villages. This Chapter also explores a difficult socio-economic climate surrounding the limited but hugely demanded resource. There is a big gap between the goal of effective river-sand governance by the government and the long-term phenomenon of rampant illegal sand mining. As discussed in Chapter 6, the dilemma of river-sand governance has contributed to the failure of the river-sand license system because it does not protect the rights and interests of license owners and it encounters difficulties in trying to eliminate the illegal sand miners. More precisely, the goal of the sand-mining license system fails to scientifically measure or assess the mining situation in the rivers. The government's river-sand auction does stipulate how much sand it is permitted to mine every day and how many dredgers are allowed to mine during a certain period of time. The government's river-sand auction also fails to set limits on the size and horsepower of dredgers permitted in mining operations. However, the government cannot inspect the quantities of sand extracted, the time spent mining, or the dredgers and various technological tools involved, due to poor law-enforcement equipment and a lack of officials. Furthermore, local colleges and universities are unable to conduct sufficient research or training on river-sand mining, thus they cannot help the government to carry out precise or scientific river-sand management.

At present, only some major rivers in China, such as the Yangtze River and the Yellow River, have long-term precise scientific governance. Thus, the mining plans and policies of these rivers have been implemented accordingly. However, there is no law-enforcement agency and no sufficient research on the Maoling River. Therefore, the laws necessary to punish illegal activities have yet to be implemented, but no illegal miner has been brought to the court over questions of their legitimacy. Therefore, the reputation of the laws and government policies become very poor in rural villages when villagers seek economic and environmental justice. Meanwhile, even though the government has the most powerful authority to identify who is legitimate and who is illegal in these operations, the long-term existence of illegal sand miners has damaged the government's authority to define "who is illegal" in rural villages.

Furthermore, the moral dimension of river-sand extraction has not been given enough attention among the government, local community, illegal sand miners, and individuals in rural areas; nor indeed at the national level. The profit-seeking logic is lumped together with the logic of "economy first" based on the governmental Five -Year Plan up until 2018. As mentioned at the beginning of the chapter, river sand has become a means for some people to make a livelihood, and a path towards and along which many rushes in order to get rich. The illegal sand miners

solely focus on mining river sand to supply the sand market, even if that means bribing officials, hiring gangs, and threatening villagers who are against their mining activities. Consequently, moral tension and discussions of environmental justice issues have frequently arisen around illegal sand mining. Violent conflicts inside the lineage-based village; distrust of village cadres or the government due to sand mismanagement; severe damage of river's geography, ecosystem and public infrastructure; as well as the negative impact of sand-mining on spiritual beliefs – these issues will be explored in the following chapters.

Indeed, the illegal sand miners are not vulnerable in any sense. They have rather strong political, financial, and social networks to support their unlicensed mining businesses. On the contrary, the illegal sand miners have become more strongly capitalistic in their exploitation of a profitable natural resource, which has led to the boom in river-sand mining. Under the ineffective river-sand governance, river sand has been grabbed openly to supply to the local sand market in the two towns/cities in my research area for decades. The profitable nature of the sand business has attracted both indigenous villagers and outsiders to engage in the sand trade as part of the industry chain. Unlicensed river-sand mining has been going on for decades in rural areas where the local communities have had free access to the natural resources for generations. It is not surprising that the illegal operators have intentionally dealt with many different agencies, including the government, local village officials, local elders, and the general public. It is interesting to explore the relationships among the diverse stakeholders.

Even though some miners had claimed that river sand belonged to nobody and even threatened some villagers by hiring local gangs, when the riverfront villages united together in order to protect their river-sand property the illegal sand miners were forced to admit that the sand was owned by the local communities. Viewed through the lens of illegal sand-mining history, the crisis of river sand has reflected the transformation of river-sand demand, supply, and marketing.

Some local miners performed religious rites with the intention of being able to operate their sand-mining business smoothly. This shows that they are obeying the customs of the Zhuang communities; under this logic, they also admit that the river sand is owned by the villages or individual households. That is why they have made sand-trading deals with the villages in order to mine in the territory of those villages. Indeed, this kind of sand trade avoids the government's interference and both parties involved (illegal sand miners and local villages) have benefited. Nonetheless, there are those companies (government-owned, or owned by investors from other

provinces) which can offer the auction fees to the government to obtain the mining license and then invest huge amounts of funds to buy better machines in order to mine the sand more effectively. On the one hand, the monopolization of river sand by bigger sand companies is a strategy that has emerged in some towns. On the other hand, a member of a small-scale river-sand mining company would have great difficulty paying the rather high fees of hundreds of millions of yuan (€ 13 millions) each company has to pay, so would rather “steal,” illegally mining sand in the same river, which has caused more tension.

Due to over-mining, river sand becomes scarce. Ocean sand and crushed sand become alternative options in the region. The rigorous sand governance in both river and ocean force some miners to stop their sand businesses. In particular, the government’s crackdown actions are occurring more frequently due to the establishment of the central environmental supervision and its survey in the Guangxi Zhuang Autonomous Region. Qinzhou City’s Work Plan to Combat Illegal Activities in Illegal Sand Mining was passed, and the crackdown actions have made it difficult for the illegal sand miners. The decrease in numbers of illegal sand miners has resulted in a reduction of job opportunities for the local workers and decreasing wages for truck owners, since now there is not enough sand to transport in Huangwutun Town. As a result, Mr. Huang and other miners have shifted their businesses to other places where the government has not yet paid much attention to river-sand or ocean-sand mining, while some miners still “steal” sand in the Maoling River. In this sense, the crisis of river-sand mining will likely still be ongoing in a different part of the region due to the diversity of policies and law enforcement, and the presence there of as-yet unmined river sand. River sand from the perspective of local communities will be presented in the next chapter.

## **Chapter 8: Zhuang Villages' Perspectives on Property Rights: "This is Our Sand"**

As I have shown in the previous chapters there are several formal institutions, such as laws, government agencies, and administrative village committees, that impact river-sand mining activities. I have also explained the governance roles of lineage organizations and worshipping customs at the level of natural villages in Chapter 3. In this chapter, I take a closer look at how sand mining is negotiated at the level of the natural village. In doing so, this chapter shows how river-sand mining is negotiated between different actors and levels of rural village governance, and between being a "common" and becoming commercialized.

This chapter focuses on river-sand mining from the perspective of the Zhuang villages. The ownership debate and the crisis around river-sand mining is explored through the use of case studies from the six Zhuang villages that were selected for this study. Significantly, there is no single viewpoint on river-sand mining in any given Zhuang village. The perspectives are rather diverse and contradictory among various actors. However, it is rather clear that the majority of the villages have conducted a sand deal with the illegal miners to commercialize the river sand in the name of the village or production team rather than that of the administrative village/government.

This chapter addresses the circumstances of river-sand governance from the perspective of the villages by asking: what sand are the villagers actually talking about? Who is involved in making sand-related decisions and in management? What solutions do the villagers end up with? And what institution or law is applied in the rural sand mining context and invoked by the different villagers?

In China's system of property rights, communities have usufruct rights to those parts of land that are not part of a homestead and are not under individual cultivation, and they can use them as pastures or harvesting useful products (Li & Pang, 2000; Ho, 2015). The findings of this research reveal that the belief that "river sand belongs to us" exists in various forms within these communities, and was expressed not only by the leaders of natural villages and cadres of the administrative village, but also by the local government and its officials as well as through related laws. It is necessary to point out that this belief is also related to the clearly bounded territory of the community of local Zhuang in rural Guangxi.

This chapter begins by first discussing those who take the sand from the villages' territories without local permission, who are considered thieves (贼, in the local terminology). It proceeds then to demonstrate the “blame game” and the complexity of rights in commons within this context. By further exploring the river-sand selling practices and struggles, this chapter pays more attention to the ownership of river sand and its changing management in rural areas.

## 8.1 The Emergence of Sand “Thieves” and Ownership Problems

“Thief” is a negative term used by local villagers and officials to refer to a person who steals public sand from the river to sell. The so-called thieves are those insiders and outsiders who dredge the river sand for the market and benefit themselves, simply because the price of river sand is increasing in the building-material market. Sand thieves in Mei Village first emerged in the early 2000s. In 2007, Pan Jiu, who was then 40 years of age and a villager of Nayang Village, was the first such “thief” in Mei Village’s river. He first brought dredgers and appropriated sand from streambeds of the Maoling River. Soon after, Pan Jiu began dredging in the river section near the Mei, Yang and Na Villages, which resulted in rising villager opposition: “The Nayang thief is stealing our sand!”

When the outsiders (e.g. Pan Jiu) could not be kept away since the government did not stop unlicensed sand mining, the insiders of Mei Village began to mine sand for selling. The new village head, Mr. Fufang, who was elected in 2011 after the old village head died in 2010, stated as follows:

*“In 2008, there were three young men (average age of 29) in our village, belonging to three different lineage branches out of six lineages in the village who began the sand business. They were Mr. Fuben, Mr. Fubao, and Mr. Fuhan. Soon, Mr. Fugeng joined them. Those men had previously gone to the cities to find jobs. However, they did not like the menial work or the low wages, such as on construction sites or in factories. Then they realized there was a huge demand for river sand for building houses and roads. Meanwhile, they had seen how villagers from other villages did sand excavation in rivers and how they profited. They believed that a sand business would be a good choice for making money, as it offers a big return with little initial investment. At that time, they were afraid that the other villagers would oppose their business. Therefore, Mr. Fuben and Zhu Kaihao enlisted the grandson of the old village head, so-called Mr. Fuhan. It was hoped that since the three of them came from diverse lineage branches, it would reduce the opposition against them” (Interview in Mei Village, October 24, 2014).*

In terms of common-pool resources management in general, Ostrom (1990, p. 36) argued that: “In every group there will be individuals who will ignore norms and act opportunistically when given a chance. There are also situations in which the potential benefits will be so high that

even strongly committed individuals will break norms.” This was the case in Mei Village when the three village residents launched their sand mining business. I was told later that the news of the three young men pumping sand from the river was disseminated quickly throughout the village. Discussions about this topic were tense, especially because several elders emphasized that river sand is communal property and outsiders have no claim to it. This point of view was highlighted repeatedly by some elders and some local residents: “Sand extraction for personal use or for house construction is permitted, while selling sand for personal profit is prohibited because it will lead to sand over-exploitation and damage to the riverbank, land, and environment” (Mr. Yaozu, October 30, 2014).

In contrast, the three young men argued that if they did not harvest the sand for business, outsiders from other villages would definitely pump out the sand regardless, since the elders had not found a working solution for the protection and prevention of outsider harvesting in Mei Village. “Sand will come again with the season floods”, one of the younger men claimed. The elders responded: “An empty river without sand, riverbanks, land, crops, trees will collapse when the flood comes. These things are happening. Our land is disappearing”. Some women complained the deeper river was causing trouble when they intended to farm on the other side of the river. “It is too dangerous to cross the river by bamboo raft. I have not grown any crop on my field for three years,” One female elder stated (December 20, 2014). Different generations have a different ecological ontology on sand mining in Mei Village. This statement indicates the existence of “different ecological ontologies” (Horowitz, 2015, p. 241). The debate reflects the ambiguity of ownership and institutions (e.g. use rights of natural resources) regarding river sand for the villagers. There was talk of “throwing stones at the thief” when the elders organized people to stop the “thief” who was dredging the riverbed. Thieves being stoned by villagers has frequently occurred (see more detail in Chapter 9)

Pan Jiu’s dredger was once confiscated by the people of Na Village because he was stealing river sand in their village’s territory in early 2010. “Pan Jiu must pay 6,000 yuan (€ 760) if he wants his dredger back,” the villagers of Na Village demanded. Pan Jiu did not want to pay any money. He therefore called the police of Xintang Police Station, who came and investigated the situation. Pan Jiu asked the police for help to force the people of Na Village to return his dredger without him paying. On their side, the village residents argued that the police must stop the illegal mining which had damaged their land and left them stolen of their river sand. They also said that the police should punish the “thieves” illegally mining the river. The police could not

handle the situation, but only reported the situation to the higher-authority agency (the Water Resources Bureau at district level). During this period, the people continued to hold Pan Jiu's dredger. Eventually, in order to continue mining sand to supply the market demand, Pan Jiu had to pay the unofficial fine to get his dredger back. Na Village was successful in this case because it is a big village with more than a 1,000 residents), and many villagers united under the organization of their elders to ask for protection for their resource.

## **8.2 The “Blame Game” and the Complexity of Rights on the Commons**

Sand-extraction practices have accounted for much confusion and led to many “blame games” in the villages that have access to the river. Confusion begins with the very definition of sand as a communal (or common) resource, and the ambiguity that comes with the rights of exclusion and inclusion in the appropriation of the sand. Moreover, the plots of land adjacent to the river as well as the riverbanks are held in the form of “lineage” property or “private” property, which gain legitimacy in the Zhuang villages; these rights are handed down from generation to generation to the point that they become almost formal. Just as in many other contexts around the world, these rights are rarely written down or formalized, and they only gain legitimacy at the local level.

The failure of the local and national governments to clarify the ownership status of the sand and water resources also compounds to the confusion around access to and use of sand, as well as the extraction of the resource for commercial purposes. The common scenario has been that of finger-pointing, where villagers blame to people (both insiders and outsiders) for harvesting sand, without necessarily defining what constitutes the legality or illegality of the activities.

To elicit responses to questions around ownership on the local level, I conducted a focus-group discussion was conducted on April 10, 2017 with ten respondents. We addressed some of the questions which I asked in the introductory chapter, including: who is monitoring the public river sand? Who is sanctioning the offenders? To whom are such cases reported and what action should be taken against the disobeying persons? How do social-economic disparities play out in sand management? The participants began the discussion by talking about the newly built bridge, which was a great achievement due to the great efforts of many people in Nayang Village in 2012 (see Photograph 26).

The discussion showed that local villagers and illegal miners are somewhat overlapping groups.

In Nayang Village, the above-mentioned miner, Pan Jiu has been on bad terms with the other villagers, because they see him as an illegal sand miner and a thief. They blame him for the lack of regard given to the only bridge that connected both sides of the upstream part of the Maoling River, which was built in the 1960s. The bridge was crucial infrastructure that connected the village to the outside world, yet it collapsed following the heavy extraction of sand and related problems such as flooding.

Even though the name Pan Jiu resonated widely in other villages, such as Mei Village and Na Village, it was seldom formally mentioned by the participants during the focus group and survey in his own village of Nayang. The participants did not directly mention the name of Pan Jiu, yet every person knew whom they were referring to during the discussion. They only say “he” or “they” instead of the name of Pan Jiu and his sand-mining group, because none of them wanted to cause any trouble, since Pan Jiu was reputed to be unafraid of any opposition, suggesting he could be violent. According to villagers, “he” began the illegal activities in 2007. Immediately, villagers organized a meeting to discuss imposing a possible sanction against his actions. However, being members of the same lineage as Pan Jiu, they hardly reached a consensus; instead, intra-group conflicts and dispute occurred. The problem was that the villagers lacked the ability to enforce their rules or punishment on each other because they were from the same lineage. This indicates a conflict between how they value their resources, such as their bridge, river sand, and environment, versus how they value the members of their community. For generations brotherhood<sup>45</sup> has been very important for this village, since it has helped them to achieve their collective goals, such as building a big bridge and a village road. Due to the lack of effective sand control by the village and the government, Pan Jiu continued extracting sand, eventually damaging not only the old bridge (built in the 1960s), but also the new bridge (built in 2012), a considerable part of which was raised by Nayang Village and surrounding villages. The cost was about 500,000 yuan<sup>46</sup> (€ 63,291) and was paid when the

---

<sup>45</sup> All the male villagers have the same family name meaning that they come from the same ancestors. Brotherhood is a crucial part of the kinship system in the village to connect the villagers together to deal with collective affairs.

<sup>46</sup> Due to its importance, this form of collective action saw the participation of all the villages in the area. Members of Nayang Village donated 33,760 yuan (€ 4,273), while the neighboring Yang Village donated 2,200 yuan (€ 278), Yueshan Village donated 4,570 yuan (€ 578), and Nawei Village donated 4,110 yuan (€ 520). These villages would henceforth use the bridge. Other sources of funds came from the Xintang government, four schools, Xintang Police Station, and state officials, such as the Secretary of the CCP, the mayor, and others, who jointly donated 12,940 yuan (€ 1,638). Furthermore, some roads were built connecting to the bridge: The local finance office contributed 120,445 yuan (€15,246) for the cement roads while villagers contributed 44,780 yuan (€5,668). Villagers who had access to the bridge then provided labor during construction in 2012.

bridge was first established in 2012 (part of which was donated by the national government).



**Photograph 26: Pan Jiu's Dredgers in Front of the Old and the New Bridge**

(Source: field data in 2017)

With the increasing number of sand dredgers near the bridge and the potential for its collapse following the erosion of the riverbanks, villagers stepped up their concerns and called for a meeting with all sand harvesters who operated their machines near the bridge. The information was disseminated through posters – no one was courageous enough to inform Pan Jiu or the other sand extractors in person (There was fear that these illegal operators might cause harm to anyone disturbing their business, according to one informant).

Significantly, the absence of formal sand governance and the lack of protection for public infrastructure and private riverbank land were highlighted by the participants in the focus group. When I asked the villagers about the cadres' sand-governing activities, the only answer I received was, "We don't know; one cadre of the Administrative Village is living in our village, but he did nothing about sand mining." The elders hoped the cadres would do their duty and take action to stop the illegal sand mining. If the elders would take action instead of the cadres, their actions might result in a loss of harmony inside the lineage (which is the case in Mei Village, in Chapter 9). The villagers greatly value harmony in their community, as expressed through conducting collective worship, festivals, and honoring the land of the god. In their view, the village had developed solidarity in order to deal with environmental crises, such as drought and flooding, and to construct the public infrastructure during its long history, including dams, canals, flooding-prevention levees, a road, the bridge, and schools. The villagers of Nayang Village are very proud of their solidarity and harmony in the overarching Nagan Administrative Village. Whereas discussions occurred in the neighboring Mei Village about whether a household should contribute their land for public use, the households in Nayang Village contributed their land, money, and labor. These stories were also told by other villages'

residents and the cadres of the village committee. This has led to Nayang Village obtaining a very good reputation among the other villagers. In addition, the good reputation may help the village obtain more government projects and explains the reluctance to act against illegal miners from inside the village. An elder said:

*“People here are quite afraid of them [illegal sand miners]. (...) But one day I could no longer bear their selfish behavior. I went to the sand-selling sites and warned them that they would have to rebuild the bridge if their activities were to eventually lead to its collapse. However, this did not concern them. He has run his sand business for more than ten years without any license from the government or permission from his fellow villagers” (Focus group, April 10, 2017).*

Does one become an illegal miner if one's share of a resource surpasses that of other members of the commons, or when one's activities are deemed to bring about serious consequences? The argument here is that Pan Jiu and some of the other insatiable “illegal” sand miners are members of the commons. They are blamed for the possible collapse of the bridge and for commercial exploitation of sand only because their actions are linked to what villagers consider selfish extraction, impinging upon the needs of others. In the actual sense, therefore, the term “illegal” is only used in the contexts where actors seem to pursue selfish gains by exploiting the commons or others' private land. What clearly emerges in the description above is an indication of the complexity of rights. Rural villagers can mine certain amounts of river sand for free for personal use, for constructing a house, or for growing Chinese yams, while the village can mine river sand for public construction, such as building a new road, a channel or a temple. The description also highlights the complex (social-economic) power relations involved in allocating rights over common resources. The point is that other villagers, who would otherwise have access to free sand, then have to buy sand from Pan Jiu. This case shows that both elders and village cadres failed to sanction the violators and ended up with long-term illegal sand extraction in the local community. Furthermore, it reveals how social norms and values such as communal harmony and peace influence issues of law and order. This is shown by the fact that the villagers failed to take direct, proactive, collective action and make complaints to government against a few wrongdoers in their community because they did not want to disturb the village harmony. There also seems to be high regard for communality versus individuality. This circumstance could be understood by exploring the Zhuang people's customs, beliefs, and social-cultural system (see Chapter 9).

In the following, I present a case in which the township officials engaged in sand-mining

operations in two other villages in same administrative village, Nagan.

### **8.3 Selling Sand as Instructed by Government Officials**

In Xintang Town, the situation of river-sand management is complicated. Apart from disputes and conflicts inside villages and lineage groups, the intervention by the township government officials made the management crisis worse.

While the conflicts over river sand in Mei Village and Na Village were reported to the local government in 2008, the government officials did not show up to solve the disputes and sand issues. It was not until 2011, when the development project system was implemented in Xintang Town, that the government figured out a method known as “killing three birds with one stone,” to deal with these problems. What the township officers did was:

- 1) Encouraging the village elders and village head in both Mei Village and Na Village to sell the common sand, benefiting a collective fund.
- 2) Encouraging the villages to use this fund from selling sand to cooperate with the government’s project systems in improving the public infrastructure inside the villages as part of the project system.
- 3) In order to benefit themselves as well, arranging things so that they or their relatives could buy the sand themselves. The mayor, the director of the justice bureau, and a vice-director of the traffic bureau of Xintang government all were involved in the signing of the sand-mining agreement, and thus managed to buy sand at a relatively low price and derive a huge benefit from it.

In implementing these methods, on the one hand, the sand conflicts would be solved, since illegal miners were excluded from the sand-mining bid, even if they could pay a higher price per cubic meter of sand; and on the other hand, the village could have public money to develop its infrastructure within the project system. However, the main objective seemed to be huge benefits from this sand deal for the officers themselves (the reduced price for buying, and high price for selling back to the road projects).

While the elders and the villagers were hesitant, the sand businessman, who were the nephews of the mentioned officers, and the officers themselves visited the village heads of both Mei Village and its neighbor, Na Village, and asked the cadres of the Nagan Village Committees to help them convince the village heads to sell sand to them. The government officers told the two

villages that they could divide the income from selling sand equally into two portions, rather than separate the river sand according to the physical boundaries. In other words, both of the villages could obtain half the cost price from selling each cubic meter of sand. This was exactly what they did. The price to extract of a cubic meter of sand was 23 yuan (€ 3) so each village could earn 11.5 yuan (€ 1.50) per cubic meter extracted<sup>47</sup>. Meanwhile, on the local market the cost to purchase the same amount was 85 yuan (€ 10.80) for each cubic meter in 2012. This means the miners earned 62 yuan (€ 7.9) as their profit.



**Photograph 27: Receipts Recording the Village Sale of Sand in 2012**

(Source: field data, April 2017)

According to the original bills and receipts in Mei (see Photograph 27), there was a sand-selling record on July 1, 2012, when two dredgers extracted 2,077 cubic meters of sand. The Number One dredger extracted 59 full loads, totaling 1,357 cubic meters, and the Number Two dredger had appropriated 36 full loads, for a total of 720 cubic meters. The income for the villages for June was 23,885.50 yuan (€ 3,023). In 2012, the total income from sand was around 112,927 yuan (€ 14, 294) in Mei Village, while the income of Na Village was 290,000 yuan (€ 36,000), since Na Village sold another section (Interview the Director of Nagan Administrative Committee, on April 10, 2017). During the selling season, both villages sent someone to calculate the number of loads of each dredger. The person (the specific person has changed many times, there were more than 20 villagers involved in this task) who worked at calculating could earn 50 yuan (€ 6) each day.

The receipts have been kept by the village head of Mei Village for potential financial inspection. According to the Director of Nagan’s Administrative Committee in March 2017, who was in

<sup>47</sup> I interviewed the village heads of Na and Mei villages, and also the son of the village head of Mei Village, in April 2017.

charge of the selling process in Na Village and who cooperated with the government officials, the common sand-selling period was from May 2012 to March 2013. The receipts of the village head of Mei Village confirm what the village cadre said.

The village head of Mei Village claimed that the government officials and the cadres and the party secretary of the village committee knew very well how to convince the elders in both villages. They argued that the villages needed the construction of new cement roads since more and more households had purchased cars. Furthermore, the improved infrastructure would reflect the solidarity in the village and its modernity, which might enhance the chances of the village's bachelors to find a wife (about 20 single men including the second son of the village head had been seeking for a wife in vain for several years at this stage). In addition, the authorities were aware of the powerlessness of the elders to stop illegal miners, as were the elders themselves. Therefore, combining the customs of a rural village with the government's projects could work well in this regard.

*“They [the officials: Mr. Ma and Mr. Lu] gave me an agreement and let me collect signatures and fingerprints from each household. I was agreeing with them because they promised to help us to construct a communist new village for the Mei Village, including a new ring road one kilometer long, a basketball court, a public toilet, and a pavilion. After the sand agreement was signed, a township official was sent to our village in charge of implementing the projects. I then have been working on these projects with him and even the mayor who invited the TV station and trucks to our village when we [the villagers] were asked to clean the rubbish in the village. “The Construction of a Beautiful Village” (GB/T 32000-2015, 2015) was the name of this event. Then the event was reported on by the TV Station of Qinzhou City” (Interview with the village head in Mei Village, on January 20, 2015).*

As mentioned at the start of this section, the introduction of the projects system provided the township officials with this opportunity. As discussed in Chapter 5, the “One Project, One Discussion” system requires that only the leaders of villages whose inhabitants were able to gather adequate funding might secure government assistance for the building of new infrastructure. Much of this funding comes from the sale of river sand, which has divided the village residents due to differing views on the advantages and disadvantages of large-scale sand extraction. For many villagers, this collection of money and the sale of river sand have not produced the outcomes they had expected, leading to a growing mistrust of the leadership body and a breakdown of relationships within the village.

Furthermore, a key observation here is that the local resources were gradually becoming embedded in a larger capitalist market system due to the boom in construction market and the

actions of local officials (Chatterjee, 1983). The local villagers had no option but to cooperate with the market; more similar cases will be discussed in the following section. The sale and management of sand in another three villages will be illustrated based on data from 2017.

#### **8.4 Villages Sold Sand, Thereby Defending Their Common Resources**

Nazhong Village and Naxia Village of Huangwutun Town also sold sand from certain river sections to gain an income from their common property. According to an interview with village officials, the popularity of “stealing” sand has led to this phenomenon in their villages, eventually forcing them to sell the river sand to secure their benefits and to exercise some level of control.

In early March 2017, cadres of Nazhong Village organized a meeting with the village’s three production teams<sup>48</sup> to discuss the sand crisis. During the mass meeting, the first and second production teams believed that the only solution to reduce their losses was marketing the sand, while the third production team pointed out that selling sand would damage the levees which were built in Mao’s era, in the 1960s to protect the fields from rising tides and seasonal flooding. The village production captain and the Party Secretary of the Village Committee adopted the selling option<sup>49</sup>. The practical method was for the village to sell the sand for eight yuan per cubic meter (€ 1/m<sup>3</sup>). From this 8 yuan (€ 1), six yuan (€ 0.75) were submitted to the village as common fund, while the remaining 2 yuan (€ 0.25) were distributed to any villager who helped to count the quantity of sand which had been extracted that night.<sup>50</sup>

I arrived in the village on March 27, 2017, the seventh day on which the village was selling river sand. The production captain first thought I was a businesswoman who also wanted to do commercial sand extraction because I asked so many questions about the sand and the river. He therefore told me:

*“We still have a section of river sand which has not been sold yet. We decided to change the sale of this section, selling it as a whole for 400,000 yuan (€ 50,000). You must know that this section of the river has a great quantity of sand. The section that we are selling is*

---

<sup>48</sup> A production team was formerly the basic accounting and farm production unit in the people’s commune system in the People’s Republic of China from 1958 to 1984; the term is still used in some rural areas. In these villages, people use “production team” to refer the collective land and resources, such as forest, mountain, and river.

<sup>49</sup> A villager told me that most of the households signed an agreement to sell the river sand during the meeting, but I did not see this document.

<sup>50</sup> The dredgers can mine during the night when the high tide arrives.

*only around three hundred meters from the [Nadong] Bridge. Previously we wanted to sell the three-hundred-meter length as a whole for 50,000 yuan (€ 6,329). However, the dredger owners and other sand businesses said that the sand is not worth that much. Nonetheless, up until now, we have already obtained more than 70,000 yuan (€ 8,861) in the last few days. Indeed, four hundred meters further along there will be much more sand than in this section” (Nazhong Village, March 28, 2017).*

The Party Secretary of the Administrative Village told me that sand selling was a common situation in riparian villages and that there were more than a hundred villagers joining the sand-selling activities in Nazhong Village, from older inhabitants to children. They went to the riverbank in the evening when the dredgers began to extract sand. The villagers could clearly hear the noise of the motors of the dredger. When I talked to the Party Secretary in his yard at around 7:30 PM (Nazhong Village, March 28, 2017), he pointed in the direction from which the engine sounds came and said: “These are the sounds of the mining activities. We can hear them every night recently. It must be very crowded there since many villagers have all gathered together in order to share the income.” Thus, each night, there were at least three dredgers pumping out sand from the river close to Nazhong Village. Each night the village sold at least 780 cubic meters, which was valued at 6,240 yuan (€ 790), and would distribute 1,560 yuan (€ 197) among the 100 villagers present that night, with each villager obtaining about 15.6 yuan (€ 1.90), while the village fund would receive 4,680 yuan (€ 592).

The Party Secretary explained to me how villagers’ participation in the selling activities was recorded and how the money was distributed. He said: “Two leaders of each production team would show up earlier in the evening and record who from his production team joined the activity during that night”. Actually, the leaders were chosen during the meeting, and they knew very well the people of their team and were able to calculate the number of participants of their production team who showed up in the place called ‘Qiao Tou’ (桥头, which literally means Bridgehead – located on the side of the bridge where the sand-selling sites are located).” The management groups (team leaders and village head) of the three production teams also jointly calculated the quantity of sand which was quarried by the miners. The maximum number of dredgers the village’s river section could hold was six. Most of the nights, there were between two and six dredgers each night. Notably, when the Party Secretary brought me to the river bank, I observed that the general villagers present did not really do anything. The villagers were not directly mining any sand at all, since they were not even close to the dredgers or ships which were busy scooping out sand in the middle of the river. “The villagers intend to protect the levees by jointly checking the dredgers do not extract the sand within the 15-meter prohibition

line,” an elder said (March 28, 2017). They were standing there, talking to each other, watching the quarrying processes to see if the dredgers filled with sand, and waiting to obtain their money when dredging was over. This was not an easy job because they needed to wait for several hours each night in order to get their money from the management groups.

The cadres, such as the secretary and the village head, did not receive a share of the profits. The village head told me the reason: “We dare not participate in the distribution of money, and generally do not appear at the sand-pumping site. We have been blamed for the loss of the river sand and cannot effectively govern the sand resource owned by the villagers. They (the villagers) are sensitive about whether we are corrupted or colluding with the illegal sand miners” (Nazhong Village, March 28, 2017). However, the family members of these village cadres openly joined in with the sand mining during the night and took their share of the money. Even the parents of the Party Secretary were preparing to go to the riverbank on the evening I was interviewing their son.

Interestingly, I met one elder who had just come back from visiting his son’s family in Fangchenggang City. He was in a hurry to go to the Qiao Tou since he had missed some days on which the money was distributed. The wife of the retired primary school teacher also went to the Qiao Tou with her friends. In Qiao Tou, people could see clearly the dredgers since the probe light of each dredger was so bright. The secretary and I saw the young people arrive in a new car, and they soon greeted the secretary and talked to him in the Zhuang language. I listened to them and answered one young man’s question about who I was. He was astonished when I spoke their language. It was obvious that they thought I was an official of the government. Members of the third production team also joined at the riverbank for a share since the decision was made.

Facing the same sand issue, Naxia Village, a village near to Nazhong Village, had to deal with the loss of river sand. Yet Naxia Village had not had a village head for three years. On March 27, 2017, one of the village elders, Mr. Hu, organized a meeting on the sand issues. I joined their meeting and conducted a focus-group discussion in order to explore the decision-making process for selling river sand. There were four elders with an average age of 75. Mr. Hu was the youngest at 70 years of age. He told me that a villager from Naxia Village had secretly sold the village’s sand to sand businessmen. To reduce the loss of common resources, they decided to auction sand-mining rights to a 400-meter-long section of the river, with a starting price of

70,000 yuan (€ 8,861). They would invite all the dredger owners and owners of sand quarries to attend the bid, which was very similar to the government's auction.

In the meeting, I asked the elders who the sand belonged to. "Sand belongs to our village", three of them told me. In terms of the local management, I asked why they had not invited the village cadres to join the meeting. They replied, "It is our sand, not the village administrations or the cadres'. The cadres have never visited our river and managed illegal sand extraction. It is really none of their business." This means that from their point of view sand belongs to the village and can only be govern by the villagers.

Mr. Hu added:

*"Actually, river sand belongs to the state, but the state does not govern the sand either. Only in 2008 did they sell it[sand-mining rights] to the big companies, In order to protect the companies' benefits, the government sent the extractors to destroy the illegal private sand-selling sites and banned the dredgers from appropriating sand from our river. After that, the government has not shown up, nor did the cadres of the administrative village, who sold the sand before 2018 for 50,000 yuan (€ 6,329) before 2008. They only gave us 10,000 yuan (€ 1,266) for a water-conservation project. Now, we have to protect our sand and our dam. Firstly, we will sell it and earn some common income, which is better than nothing. Secondly, we must protect our dam, since the sand extraction is only allowed beyond 15 meters' distance from the river bank" (Naxia Village, March 28, 2017).*

Based on this group discussion, it was clear that the four elders of Naxia Village who decided on the sale of the village sand, including the price of sand and the way to distribute/ use the profit at the end.



**Photograph 28: A Shed beside the River at Naxia Village to Monitor the Sand Mining**

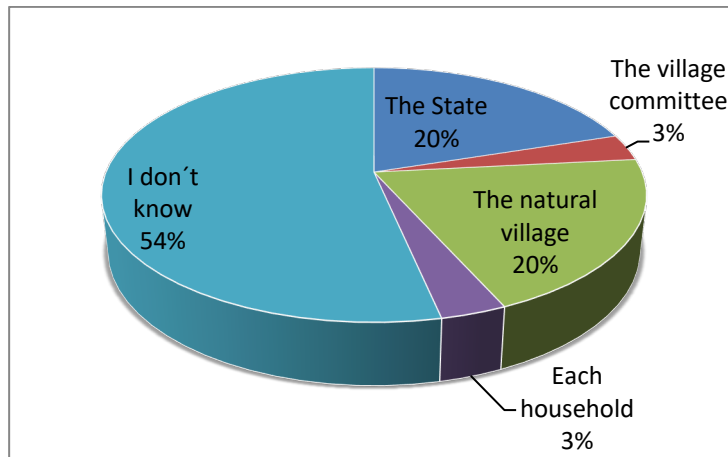
(Source: field data, April 2, 2017)

On April 2, 2017, Mr. Hu told me that Naxia Village ended up copying the selling style that Nazhong Village had established, which is selling by cubic meter (8 yuan for one cubic meter, € 1/m<sup>3</sup>). It thus had obtained 40,000 yuan (€ 5,063) in five days. Notably, I only saw few elders and adult men involved in sand extraction in Naxia Village, while Nazhong Village's mining process included women, the elderly, and children.

During the sand-selling period in Naxia Village in April 2017, I conducted a survey among 29 villagers (also those not engaged in sand mining) on the ownership, benefit distribution, and governance of river sand mining in rural village and related disputes. The information collected is displayed below.

**Table 20: The Age of the Respondents**

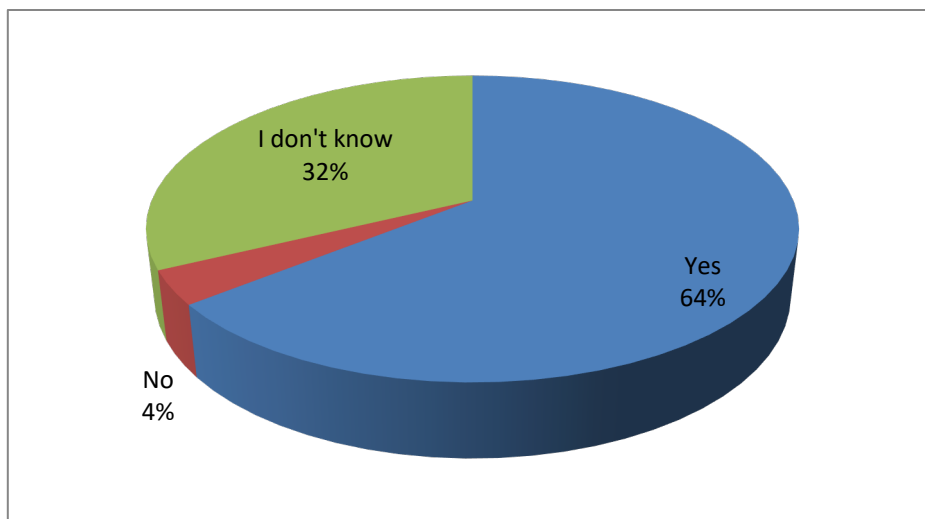
16-21	21-35	36-49	50-70	71+
5	9	7	6	2



**Figure 13: The Various Perspectives on the Ownership of River Sand**

Figure 13 shows that it was unclear to the villagers who owns the river sand, even though the sand was being sold publicly by the natural village. It seems that from the perspective of the local interviewees it is unclear who owns the river sand. This reflects the ambiguous ownership of the natural resource, as discussed above. In response to the question, “What do you think about protecting sand in your daily life?” six respondents chose “Very important,” 15 respondents chose “Important”, one chose “Not important”, and four chose “I do not know.” Some respondents did not answer the question.

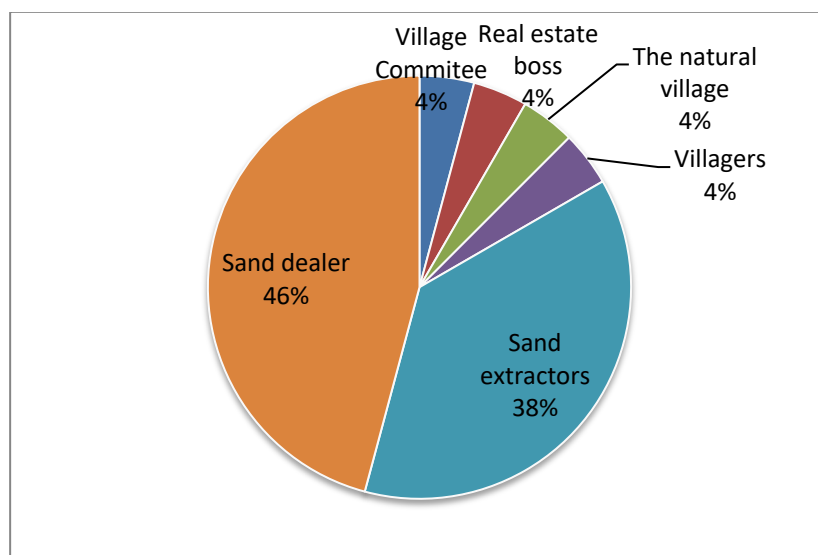
When asked whether they had heard about any disputes over sand-mining, about two third of the respondent said yes (see Figure 14). Only one respondent said no, while the other remarkably did not answer the question. Most respondents had heard about some disputes about extracting sand, while 32% claimed that they did not know about it. It is clear that disputes were taking place during the ongoing river-sand mining. Regarding the disputes on sand mining and management, the villagers had diverse opinions. To the following question, “Has your village had disputes about sand mining?” ten respondents said “Yes”, five respondents answered “No”, while “I do not know” was chosen by thirteen respondents.



**Figure 14: The Response to Disputes over the Extraction of Sand**

In responding to the question, “What do you think about the disputes over river-sand mining?” 42% of respondents pointed out that they had no idea about it, while the same proportion believed that disputes were caused by the uneven distribution of income (from selling river sand). Eight percent of respondents thought that ending sand extraction would solve the disputes. Four percent claimed that they were victims without any benefit.

Who the respondents thought benefited from selling sand had been a constant topic in the village. Therefore, I designed a question about this topic.



**Figure 15: Who are the Beneficiaries of Sand Mining?**

Most respondents thought the sand dealers (and then the sand extarctors) were the (main) beneficiaries (see Figure 15). Other actors such as the village committee, the natural village,

and the individual villagers, as well as real estate bosses, shared the rest.

The Mineral Resources Law (1996) claims: “Mineral resources belong to the state. The rights of state ownership in mineral resources are exercised by the state council” (Article 3). However, as the questionnaire in Naxia Village and the interviews with other villagers show, the issue of the ownership of river sand is rather ambiguous. Furthermore, in the same Article 3 of this law, it is pointed out that,

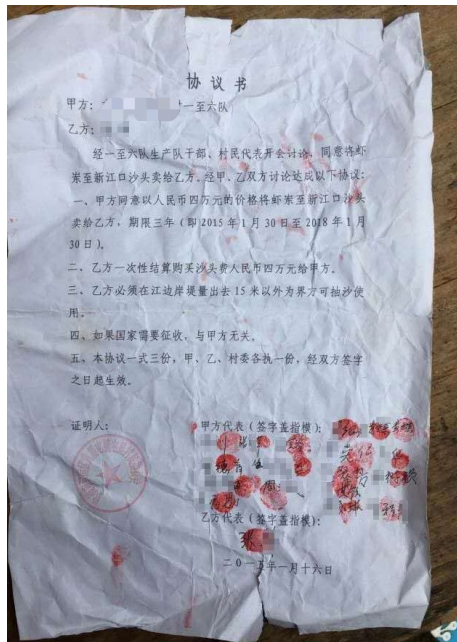
*“The state permits individuals to mine scattered and dispersed mineral resources, as well as sand, stone, and clay that can only be used as ordinary building materials and small amounts of minerals for their own use in daily life” (NPCPRC86, 1986).*

Indeed, the Guangxi Zhuang Autonomous Region River Sand Mining Management Regulations (2016, article 35) state that “rural residents, who only harvest a small amount of sand outside the prohibited areas, are exempted from both having to get a mineral sand license and paying sand-mining fees.” Consequently, the institutional framework for sand governance causes more disputes instead of delivering clear-cut solutions. This has created many struggles with regard to sand governance at the village level. The ownership of sand is vague, as the government has not yet taken consistent action to govern it. Moreover, the villagers would prefer to believe that they obtain not the use rights to but the ownership of the resource, due to the reluctance of the local and national governments to clarify the ownership status of the sand.

It seems that the river sand is rather a “common-pool resource” (Ostrom, 1990) or “common-access resource” (Gordon, 1954) from the viewpoints of local elders and the majority of villagers.

## **8.5 An Illegal Sand Agreement and Its Implications**

This section mainly illustrates an agreement which was signed by some cadres, party members, and village representatives, with a local unlicensed sand miner in Naqiu Administrative Village in Huangwutun in 2015. By presenting a long-standing struggle which was caused by an illegal sand agreement, this section further explores villagers’ perspectives on ownership rights and rights to the income of river sand mining.



### Agreement

Party A: The Six (Production) Teams of Nachun Village, The Committee of Naqiu Administrative Village

Party B: Mr. Zhang

After the discussion by cadres and village representatives from production team one to six, it is agreed that river sand (sha tou) between Xiadong and Xin Jiangkou is sold to Party B. After the discussion between Party A and Party B, the following agreement was reached.

1. Party A agrees to sell the river sand (sha tou) at a price of RMB 40,000 for a period of three years (from January 30, 2015 to January 30, 2018).
2. Party B pays (sha tou fee) RMB 40,000 at once to Party A.
3. Party B is not allowed to mine closer 15 meters from the riverside embankment.
4. If the state needs to levy, it has nothing to do with Party A.
5. This agreement is made in triplicate. Party A, Party B, and the village committee each hold one copy. Effective from the date of signature by both parties.

January 16, 2015

### Photograph 29: The Illegal Sand Agreement

(Source: field date, 2017)

According to this agreement (see Photograph 29), the village production teams were the owner of the river sand from Xiadong to Xin Jiangkou because these production teams constitute Party A of the agreement. On January 16, 2015, 18 cadres of these production teams and the village representatives signed the Agreement with Party B, Mr. Zhang.

My informants explained that the so-called 18 cadres (the director of the village committee, and six captains of production teams) and villagers who are also the members of the CCP Branch of Naqiu Administrative Village were organized by the Party Secretary, Mr. Nong. It was Mr. Nong, who organized the meeting with Mr. Zhang, a local villager and a former cadre of the village committee. Together they drew up a three-year agreement giving sand-extraction rights to Mr. Zhang which ran from January 30, 2015, to January 30, 2018, in exchange for 40,000 yuan (€ 5,063). Each of the 18 participants obtained 50 yuan (€ 6.25) from the Secretary for signing the agreement. In actual fact, the Secretary obtained the money, but the production teams did not (Interview Zeng Pei, a previous captain of the production team, and an elder of Daxian Village, In March 2017).

This agreement did not sit well with the other villagers. The agreement was signed without informing the majority of the villagers and the cadres knew very well that the village would not agree to sell the river sand, as I discuss below. Thus, when the villagers found out about the so-called secretary signed agreement, they began to organize protests to prevent the investors from operating in their river. Such disputes led to a conflict in which some of Mr. Zhang's workers were injured. One villager who opposed the agreement was Zeng Pei, a local peasant who owns land beside the river, and who has been farming special fish – He Chong (禾虫, *Tylorrhynchus heterochaetus*) – for years. He said the price for He Chong, which is 80 yuan (€ 10.1) each 500g, is good. In addition, his father was taking care of the 20 cattle on their field beside the river. Because of this, his father was the first person to discover the illegal sand mining, and he called Zeng Pei and other villagers to the riverbank to try and stop the dredging on January 22, 2015. Mr. Zhang and his workers did not stop, however, telling Zeng Pei and the villagers that they had the right to mine since they held a contract with the village committee. The arguments of both sides were clear but were diametrically opposed to one another. Violence then erupted. Zeng Pei called the police to try to stop the ongoing sand mining and the violence. Ironically the police did not stop the sand mining but arrested one of Zeng Pei's uncles, who was accused of hurting the miners. Since then, many petitions had been organized by Zeng Pei and his fellow villagers, applying for help from the government. One of the original documents of these petitions is a request to Qinzhou Prefectural People's Government (February 2015), entitled "Requesting Qinzhou Prefectural People's Government to Stop Mr. Zhang from Illegally Mining River Sand", which I have translated as follows:

- 1) *River sand [sha tou, a local language, means the location of river sand, river sand beach and river sand itself] is the collective property of the production teams.*
- 2) *The "Agreement" is illegal. The 18 team cadres and villagers did not convene a discussion of the village team meeting (voting) before the signing of the "Agreement" with Mr. Zhang, and the village committee did not convene a party branch meeting to discuss the decision. No written notice was made to the villagers. All the villagers (more than a 1,000 people) were unaware of the "Agreement." Thus, the vast majority of the villagers did not agree to the signing of the "Agreement." Therefore, this "Agreement" was not signed in accordance with legal procedures.*
- 3) *The money is too little. The value of the river sand between Xiadong and Xin Jiangkou is not less than 200,000 yuan (€ 25,316). However, the signing of the "Agreement" confirmed a sale of the river sand to Mr. Zhang at a price of 40,000 yuan (€ 5,063), and the price was low, resulting in a loss of collective property of the production team.*
- 4) *The river sand is a national resource. It was illegal for the 18 cadres and villagers and Mr. Zhang to sign the "Agreement" to sell the river sand without the approval of relevant government departments.*

- 5) *The river sand mining area borders a flood-control levee of more than 1,000 meters long between Xiadong and Xin Jiangkou. The flood-control levee plays an important role in flood control and disaster prevention for more than 1,000 mu of basic farmland and is also the guarantee for the safety of the villagers' lives and property. However, there is no provision in the "Agreement" for protecting the levees and basic farmland when mining river sand, resulting in damage being done to the levees and basic farmland to varying degrees.*
- 6) *Article 3 of the "Agreement" stipulates: "Party B is not allowed to mine closer than 15 meters from the riverside embankment." In fact, Mr. Zhang's pumping of sand has collapsed about 13 meters' length of the flood-control embankment, which has seriously jeopardized the safety of flood levees. Consequently, Mr. Zhang has violated the provisions of Article 3 of the Agreement.*
- 7) *Article 4 of the "Agreement" stipulates: "If the state needs to levy, it has nothing to do with Party A." [the production teams]. The River sand from Xiadong and Xin Jiangkou is the collective property of the production teams. If the state confiscates the river sand, the control and the right to income right belong to the production teams. How is it irrelevant to the production teams? As a result, all obligations under the terms of the "Agreement are illegal, and they must be terminated.*

The villagers recommended that,

*"In order to maintain the credibility of the law, protect the collective interests of the production team, ensure the safety of the villagers' production, livelihood, life, and property, and protect the ecological balance, we recommend that the Qinzhou Prefectural People's Government terminate the illegal 'Agreement'. We also recommended that the Qinzhou Prefectural People's Government stops Mr. Zhang's illegal sand-mining behavior between Xiadong and Xin Jiangkou, and suggested that the Qinzhou Prefectural People's Government instruct Mr. Zhang to reinforce the damaged flood levee and restore the basic farmland to its their original state".*

The villagers also intended to take further action themselves:

*"We will organize all villagers [a thousand] to petition according to the law in accordance with the procedure, let the media expose [the event], and use legal weapons to protect our rights if necessary, until the problem is solved".*

The arguments of the villagers were very clear, stating that the production team has collective ownership rights to the river sand. The villagers pointed out that the Agreement had been signed by the 18 members without convening a public meeting or all-party-members' meeting. Therefore, it was illegal since it did not represent the majority's view and was violating the Organic Law of the Village Committees of the People's Republic of China and the Party's rule. Nonetheless, the outcome of these petitions had disappointed the organizers and the majority of villagers.

In addition, the villagers pointed out that river sand is a state resource in order to force the government to take action to stop illegal sand mining. According to Point 7 of the Request, they

once again claimed that even if the state levies the river sand, the ownership rights belong to the production teams.

What the prefectural government did after these petitions was to send an official of the township government to ask the Party Secretary to return the money to Mr. Zhang, and to indicate that Mr. Zhang should stop mining. This occurred only because the villagers called the Mayor's hotline several times. However, by then Mr. Zhang had been mining for an extended period of time (a month) and had made a great profit from the mining. Where did the money go, and how did they deal with the illegal miner? These questions were not clarified by any authority. No one has been punished, even though the law was violated, and the villagers' land and flood-protection levee damaged. The villagers did not continue with the petition, nor did they appeal to the court. Instead they turned their attention to the Party Secretary of the Administrative Village and asked for his status to be revoked, which will be illustrated in detail in the next chapter.

## **8.6 Discussion and Conclusion**

The case studies in the six Zhuang villages illustrate the perspectives of the villagers on sand governance which contribute to answering the questions that I asked at the beginning of the chapter. It reflects that both formal and informal institutions have impacted the river-sand mining activities and consequences.

According to laws in China, neither the village nor any individual household owns river sand because river sand is a state-owned natural resource. Therefore, the river sand is not a village's common-pool resource. However, the villagers still claimed sand belongs to their villages: sand is considered a common resource, with each individual household in a village having a claim to it. Because of these beliefs, and when faced with free-riding and illicit operators, it was the villagers rather than the government that took action to protect the river sand for years. The township officials offered a contract to the village head and asked him to collect the signatures of two-thirds of the households in Mei and Na villages in order to make the sand selling legal. This means other illegal miners (e.g. Pan Jiu and Mr. Fugeng) were forbidden to mine in the river without the agreement of the villagers. It shows rural collective power in river-sand mining activities. The villagers were able to sell the river sand and to gain public financial income. In this sense, it seemed that the village could decide on the future of the sand, including management and sale. How come? A possible answer lies in the cultural-environmental

relations in the riverfront Zhuang communities. As I discussed in Chapter 3, the villagers believe that the village collectively owns the river sand around their river in the local area. However, each village has to deal with their own sand crisis both inside and outside their territory. Yet illegal sand miners, both “insiders” and “outsiders”, have put the formal and informal institutions to the test. The study shows that the commoditization of sand has attracted illegal operators, who have begun to extract the resource for sale in the local market.

During the field research, some villages did not want to sell their river sand due to concerns over the ecosystem, flood protection levees, and land protection. However, the failure of government-based sand control and management has placed the rural sand mining in a chaotic state of affairs. The illegal sand agreement of Nachun Village shows the issue of mismanagement by the village committee and the party branch at the administrative level. The sand deal between Mei and Na Villages reveals how the township officials used their power to benefit from the sand crisis and government project system.

However, river sand is considered to be part of the collectively owned land, not individual property. This could be one reason to why the people claim that the ownership of the river sand belongs to the production team.

Secondly, as mentioned above, the Zhuang people prefer to settle down beside the rivers rather than in the urban areas. Rivers, water, fish, sand, and land are basic resources for their daily life. Foremost, in these agricultural regimes, the linkage between land and sand is intensive and demanding for farming purposes. Sand also relates to the clean water, food, and living environment of a village. Meanwhile, water infrastructures, such as flood-protection levee, dams, and irrigation, are key elements for agriculture in rural areas.

Thirdly, many villagers also consider river sand to be part of a village’s territory and it is therefore important to them. This also reflects that the territory is “the setting for the battles of resistance that impede the implementation of the models of modernity or development” (Toledo as cited in Ulloa, 2015, p. 325). Ulloa (2015, p. 322) points out, referring to a case study in Latin America, that “[the] recognition of rights over their territories has been a basic claim in their political demands and protest.” In rural southwest China, the identification of the territory reveals the issue of kinship and social organization as well as the gods of the land (Liu Zhiwei, 1995; Siu, 2016). For instance, a single clan or lineage prefers to gather in one village even though there are some mixed lineages with diverse family names in the rural area in the GZAR

due to the political-social issues (e.g. the weakening of the power of strong lineages by disbanding the members). But the same members of one lineage would prefer living together. Interestingly, people started to identify riparian villages by the surname of a lineage during the transformation of land reform in the 1950s and again in the 1980s (see also Siu, 2016). River sand has been clarified as a common property through an engagement in the Zhuang customs and belief practices rather than a private property or state-owned resource in southwest rural China. As with other natural resources, such as the forest, villagers argue: “*sand belongs to us.*”

## **Chapter 9: Socio-Cultural Consequences of Illegal Sand Dredging**

In this chapter, I zoom in on the socio-cultural impact of sand-resource marketization. Indeed, there is a conflict that exists between how the Zhuang villages value their resources, such as their bridge and river sand, and how they value the harmony between the members of their community during the sand-mining crisis. This chapter seeks to answer the questions: how do the Zhuang villages solve disputes and rebuild peace inside their communities? And how do the villagers look for justice within the political-cultural structure of their society?

Social impacts of the sand-mining industry have been observed around the world, such as in Bangladesh (Khan & Sugie, 2015), India (Viju, 2009; Sekhar & Jayadev, 2003; Safi, 2017), Vietnam (Anh, 2018), and China (Wu, 2008). As discussed previously, the boom in river sand extraction has received little attention from anthropologists and political ecologists. The political ecological perspective on the consequences of public sand extraction has received less attention in China (see also Zhu, 2018, 2019). Carrying out a Social Impact Assessment is a much-needed tool for the mining industry to achieve to a goal of sustainable development and to be able to consider locally defined goals and the values of the parties (Franks, 2012; Vanclay, et al., 2015; Becker & Vanclay, 2003). “[T]he expansion of democracy and global communications have provided isolated, politically powerless communities and peoples a ‘voice’ in the process, the ability to express a different and at times dissenting, viewpoint” (Joyce & MacFarlane, 2001, p. 4). Yet the socio-cultural perspective of sand extraction has received less attention in China. I focus on the five major socio-cultural impacts caused by sand extraction in the study areas in what follow:

- 1) Agricultural livelihoods
- 2) Social disputes and conflicts
- 3) The Tension between the Party Secretary and the Villagers
- 4) Social Media Petition
- 5) Belief systems

### **9.1 Agricultural Livelihoods**

Livelihoods are a fundamental aspect to study in political-ecological analysis. Livelihood research focuses on how people make their living or achieve well-being by mobilizing their

environmental, economic, and social resources (Carr, 2015; Hussein, 2002; Valdés-Rodríguez & Pérez-Vázquez, 2011). One of these resources is river sand. I observed in the Zhuang villages that the river sand, which accumulates on the riverbanks in all seasons, supports a wide range of food crops. In particular, due to the scarcity of arable land throughout the region's history, river sand is considered an alternative option for land resources through the beach and wetland reclamation. River sand is one crucial resource related to land, water, and fish for these lineage-based villages, and it has played an important role in the way they make a living (i.e. dams was built for an agricultural purpose).

Moreover, the majority of farmers rely on the waters from the river for irrigated cultivation. A household survey targeting 94 people in Mei Village indicates that the majority of farmers (52%) depend on farming for their main livelihood, while the rest of the sampled group mainly engage in off-farm activities (such as wage labor in urban environments).

Farmers usually plant yam seeds in the river sand, without which the yam's growth and production are highly compromised. The size and physical appearance of yams determine their market value and returns. Mr. Lei, a local farmer from the study area, was adding sand on his yam field beside the main road when I met him in April 2017 (Photograph 30). He was carrying a bucket full of sand from a sand heap that was covered with a plastic tent. After I enquired about what he was doing, Lei narrated how the purchase of sand has become the only option for the successful growth of yams:

*"I use this sand to grow my yams. These two mu (1,333m<sup>2</sup>) of field require about four cubic meters of sand. The market price of yams was 8 yuan (€ 1) per kilogram. Each one of my yams normally weighs between 2.5 and 6 kilograms. In 2016, I earned around 7,000 yuan (€ 875) from selling yams. The price of yams is better than that of rice.*

*Before 2008, I carried sand from the river onto my plot to grow yams, but this is not possible anymore. In 2009, I began to purchase sand from local vendors at the township sand market. The disappearance of sand from the rivers is caused by the massive extraction for the market and the lack of sufficient runoff and floods to carry sand from upstream. We have no option but to buy sand if we want more yields. Yams that are not grown in the sand are of lower quality and are worthless in the market. In the village, at least 30 percent of the 200 households plant yams as a major income-earner. The majority of these households have to buy sand. There are reports that some villagers are stealing sand from fields belonging to others" (In Nagan Village, April 10, 2017).*



**Photograph 30: Farmer Storing and Transporting Sand to Grow Yams**

(Source: field data, April 2017)

River sand plays a crucial role in the local cultivation of yams, but it is nowadays river sand is mainly only available by importing it from other places, thus increasing the cost of agricultural products. Therefore, it is risky for the poor farmers to invest in yams, since yam farming depends on extra-local sand markets. Interestingly, the absence of sand from the rivers has also encouraged theft of sand from farm plots, which in turn has made growing garden vegetables more difficult. The farmers' difficulties show that the multiple uses of river sand are ever-changing and are shaped by economic and cultural transformations. Specifically, sand-use patterns have shifted from mostly agricultural purposes to industrial purposes. Carr (2015, p. 337) linked the relationship between livelihoods and political ecology and pointed out:

*“This framing of livelihoods opens up the analytic consideration of how networks of policy, economy, and power that might result in major livelihoods shifts in particular rural communities are intimately linked to, and productive of, the lives and livelihoods of those we might commonly think of as ‘powerful’”.*

The over-mining of river sand to supply the regional and national construction industry has influenced local farms' agricultural processes. In addition, a related factor which has

contributed to low yields in Naxia Village and Nazhong Village is that of decreasing levels of river water, which complicates the irrigation process. Due to the rapid drop in water levels, irrigation channels can no longer provide a sufficient amount of water. According to Jia et al. (2007, p. 201), the total volume of sand mined in the lower reaches and the delta of the Dongjiang River in Guangdong Province from 1980 to 2002 was about 332 million m<sup>3</sup>. This caused the lowering of the average riverbed elevation, a rise of the water depth, and the flattening of the longitudinal riverbed gradient (Jia et al., 2007, p. 210).

Furthermore, wells and lakes have been impacted and dried up due to the decreasing water levels of major rivers (see also Mitchell, 2006). Interviews with farmers revealed that some are already turning to rainfed agriculture and water pumped up from the ground to overcome these issues. Moreover, the water is heavily polluted due to sand mining, rendering irrigation untenable for many farmers. To remedy the lack of sufficient water, some farmers use engine-run water pumps, but the majority of farmers are poor and greatly disadvantaged by the state of affairs. The over-mining of river sand has had negative affecting the villagers' agricultural livelihoods. These consequences of sand mining have caused tensions on the local level, as I discuss in the following section.

## **9.2 Social Disputes and Conflicts**

The links between natural resources and conflicts have been extensively studied by social scientists (for instance, Homer-Dixon, 1994a, 1994b, 1999; Robbins, 2004, 2012; Billon, 2015; Bollig, 1990b, 1993, 2006; Kioko, 2016). In the case of sand mining the conflicts between the industrial and agricultural uses of river sand and the conflicts between winners and losers are the main causes for social tensions in the affected areas. The links between the extractive industries and indigenous peoples have been studied by scholars (Gilberthorpe & Hilson, 2014; Lertzman & Vredenburg, 2005; Whitmore, et al., 2012).

Victoria Tauli-Corpuz (2012, p. XIII) states:

*“Up to now, at the international arena, when indigenous peoples make their interventions, there are always cases of how extractive industries displaced indigenous peoples from their territories or destroyed their communities. What is more disheartening are the ceaseless reports of continuing violence and grave human rights violations against indigenous peoples in communities where oil, gas or mineral extraction is taking place.” (Whitmore, et al., 2012)*

This section reflects how sand mining influences the local social relations and how local

resistance against illegal river sand mining has taken form. The unregulated overexploitation of sand in the study area has fueled disputes and conflicts with potentially violent scenarios across the local, regional, and national levels. In the following, I will describe the actors and scenarios that exemplify these disputes and conflicts.

### **9.2.1 Sand Conflicts: Hurling Stones at the Thieves**

By 2013, “about two-thirds of political ecology studies use the term ‘conflict’ in their analyses” (Billon, 2015, p. 598). Lipietz argues that “the outcome of these conflicts is not predetermined” (Lipietz, 1997, p. 675). However, by discussing social conflicts dealing with ecological issues, Lipietz “focuses rather on the consumption than on the production sphere”, as pointed out by Becker & Raza (2000, p. 3). In contrast to this approach, this chapter focuses on the production sphere, or the location of sand extraction, rather than on the consumption side, because the former reflects the source of social-economic conflict, which took place in the rural areas where sand is being mined. Nonetheless, conflicts have been increasing with regard to sand mining in rural Zhuang areas of Qinzhou City.

Facing persistent sand extraction, members of Mei, Yang and Na Villages began to take actions aimed at evicting illegal sand miners from their localities. On November 3, 2008, a group of people (young and old, women and men) from the three villages assembled close to Mr. Fugeng’s dredger and hurled stones at him and his colleagues in the hope that they would flee the area.

The idea of hurling stones at illegal sand harvesters originated in Mei Village, and Mr. Fugeng was the first victim. Following his refusal to vacate the area, people in this village organized with their neighbors to gather in greater numbers for a serious attack on November 3, 2008. This action of uniting the villages against the people stealing river sand is significant in terms of conflict escalation and the use of common-pool resources.

The main point of contention was the fact that a few individuals were making profits from a common resource while the majority of the people did not have the economic power or resources (capital) to also venture into the same business. These three villages have long co-existed and shared both water and sand, and they would not sit back and watch a few individuals selfishly benefit from the shared property whilst most members of the community toiled in the urban environment to make “genuine” wages. Whenever they heard the roaring of a sand

dredger, volunteers from these three villages quickly assembled and dashed to the scene to hurl stones at the operators in 2008. This form of action was not spontaneous – elders, whom villagers saw as the custodians of their resources, pre-planned and organized them. It is difficult to calculate the exact times at which the volunteers attacked the operators, but the biggest attack was frequently discussed by the villagers in 2008.

A woman explained the attack:

*“People from the three villages including women and children stood on both sides of the river and began hurling stones at Mr. Fugeng (an insider). Had he not used a barrel to protect his head, he could have died from the stoning. They all yelled (...) Hit him! Kill him!” (Interview in Mei Village, February 9, 2015).*

Mr. Fugeng noticed an old man, Mr. Fulai, who injured him in the attack, and he began to orchestrate revenge on the same day. He assembled his younger brothers to engage in a revenge attack against Mr. Fulai, who represented the village elders and had acted against illegal sand miners. As the head of Mei Village recalled, Mr. Fugeng succeeded in organizing a larger team – about 20 men from Xintang Town, most of whom were believed to be drug addicts. Tensions in the village mounted as an imminent attack beckoned. A grocery attendant narrated the incident:

*“Mr. Fugeng’s brothers and those affiliated with them armed themselves with knives and sticks to besiege Mr. Fulai’s house. Villagers heard them warning anyone who dared to help Mr. Fulai. We were all afraid and did not attempt to intervene” (Interview on December 3, 2014).*

Mr. Fulai himself echoed these sentiments in an interview:

*“As for planning, we organized people to stone illegal sand miners, who were Mr. Fugeng and his partners. The riverbanks were dotted with opponents of illegal sand mining, mainly from Na Village. Soon, I saw Mr. Fugeng was being stoned by many people, including our villagers. I joined the stone-hurling team while some of our villagers already began to block access to the river using long bamboo sticks.*

*When I noticed that they wanted to charge at me, I shouted for help and ran towards my cousin’s house, where I hid for several days until there was relative calm. Later on, I was informed that Mr. Fugeng and his team had planned to kill all males above 12 years of age in Mei Village in order to prevent similar situations in the future” (Interview in Mr. Yiji’s home in Mei Village, August 28, 2015).*

Despite the resistance and violence, the villagers hardly solved the problem of illegal sand harvesting. In addition, the elders may have also lost significant power and influence over their

villagers – hence the illegal sand miners’ lack of respect towards or fear of Mr. Fulai<sup>51</sup>. According to the village traditions and in the minds of the local people, and also in the law – i.e. de jure rights – the people all have equal rights to the use of sand, the de facto rights are clearly unequal, because those possessing money/technology/ability to intimidate etc. do in fact have much greater access to the sand than others. Following the failure to stop the illegal sand miners, the elders turned to formal institutions to seek help regarding the governance of sand as a communal resource.

The result of the illegal sand-mining operation was a fracture in the community which caused disharmony and conflicts within the affected villages. Sand extraction and related conflicts have affected a once essentially harmonious and unified people. Their long history of social-economic cooperation is increasingly compromised.

### **9.2.2 Struggles among the Natural Villages**

In early 2017, fearing that the illegal miners would continue to benefit from mining sand while the village would lose out on the benefits of the common resource, members of Naxia Village decided to start selling their sand. However, commercial sand mining by Naxia Village does not proceed without resistance from nearby villages. Indeed, members of other villagers of the Naqiu Administrative Village began to raise the alarm, warning that the people from Naxia had no right to sell the sand resource around the dam.

A complaint letter was submitted to the Tuanxian Administrative Village on March 31, 2017, by the villagers (Mr. Nong, the Party Secretary, April 12, 2017). This was three days after Naxia a Village has started the village-based sand sale. The Party Secretary, Mr. Nong, called an official of Huangwutun Government in order to report Naxia Village’s sand-mining situation on. On April 7, 2017, with this call bearing no fruit, Mr. Nong rewrote the weekly report to the township government. Two days later, Mr. Zeng, a villager of the sixth production team of Nachun Village, made another complaint about Naxia Village obtaining several thousand yuan from selling the river sand. He threatened that if the Village Committee could not stop this illegal behavior, he would also organize a group of people to sell river sand. Mr. Nong, reported again on April 14, 2017, illustrating that he had told Naxia Village to stop selling the river sand

---

<sup>51</sup> Indeed, the powers of the elders have weakened due to the building of the communist state, for the state has been against clan authority (elders) in rural areas since the Cultural Revolution in the 1960s. Consequently, the elders have less power regarding the monitoring of disputes and stopping illegal sand mining.

but the organizers had not listened to him. Thus, he had consistently reported the illegal sand-mining situation to the township government for clear instructions. However, he had still not obtained any response from the government to deal with the event when I was there. In his written report, Mr. Nong reminded the government not to delay action any longer, otherwise there would be a disaster occurring due to the other angry villagers in Naqiu Administrative Village.

On the one hand, this was not an effect of the formal sand management since Mr. Nong had repeat reported the illegal sand mining of Naxia Village for two weeks without any feedback. Mr. Nong said,

*“A system of weekly reporting to higher government officials had been established to collect the latest information in the rural area. One official of the township government had called the Water Bureau of the District Government and reported the illegal sand deals between Naxia Village and sand miners, but after two weeks, neither the township government nor the administrative village obtained any positive feedback or instructions from the above government” (April 12, 2017, at the office of Naqiu Village Committee).*

On the other hand, the village elders realized that the government had not taken any action with regard to the sand-selling activities. They then continued with their own sand-selling activities in order to not lost out.

*“If you don’t sell the river sand, the sand miners might steal it anyway, or the nearby village [Nazhong Village] will take our sand with their sand-selling. We had no alternative option but to sell the river sand ourselves. The Party Secretary himself conducted sand-selling activities many times previously. We do not listen to him anymore because this is our sand” (Interview with Mr. Hu and his wife in Naxia a Village, April 13, 2017).*

The lack of response to the Village Committee’s weekly written and oral reports reveals that the government has not dealt with the river-sand mining in a timely manner through the means of any formal institutional system. The rural residents, in particular, the elders, noted the lack of governmental oversight when it comes to sand mining. Thus, they actively participated in the monitoring of illegal sand mining and took action to reduce the loss of this common good based on their customs.

In addition, there were similar disputes occurring among the production teams in the nearby Nadong Administrative Village. Interestingly, Nazhong Village has never been reported to the township government for selling sand. What the cadres of Nadong Administrative Village were intending to report to the Huangwutun government was another type of dispute, specifically that there were disputes between three production teams of a village where potential conflicts

would take place without the township government's intervention. The cadres of the Nadong Administrative Village were involved in the disputed processes because Mr. Zhou, the director of Nadong Administrative Committee, was also a member of the contested production team. He claimed that,

*“Currently, there are three production teams struggling with sand mining. The situation is that three of the four production teams – the second (200 members), the third (200 members) and the fourth production team (250 members) – have clarified their boundaries, sold several hundred meters of the river to the sand miners and obtained several thousand yuan (One thousand yuan is about € 127) from selling sand. The second and the fourth had sold out their river sand already. The disputes are mainly between the first (300 members) and the third production team. The third production team is going to sell another section of the river to the sand miners. However, the third production team has denied the ownership right of the first production team by saying that the first production team is located far away from the river and owns no land near the river. In contrast, the first production team argues that three production teams (the first to the third) share the same temple of land gods, which is located beside the river. The villagers of these three teams are brothers and sisters. Furthermore, the first production team previously obtained ownership of land from the administrative team during the land reform in 1954, but gave the management rights over the land to the second team due to the distance between the land and their place of residence. Therefore, the first production team definitely has the same right to benefit as the others. Significantly, the elders of the first team have organized mass meetings several times; 60% of the total of 70 households have signed a report arguing that the first production should be made a claimant to the river sand. Actually, the first production team only asks to share some benefit from the income, and does not demand that the profits are equally distributed between the two teams. In other words, they argue that the third production team could not take all the money.*

*Nonetheless, there is no agreement among these production teams while the tension is increasing. The cadres of the village committee, including the party secretary and I, have met to discuss the situation. We think that the disputes have to be reported to the township government to avoid further conflict. As far as I am concerned, I am a member of the first production team and believe that we have the right to share the profit from selling the river sand. Anyway, we have a headache about the inevitable conflict if the Village Committee and the township government do not deal with the disputes well” (Interview the director of the Nadong Administrative Village on April 12, 2017).*

Mr. Zhou pointed out that the sand belongs to the production team; the Village Committee has not obtained any money from sand mining. Mr. Zhou faced controversy since he was not only the director of the village committee but also a member of the first production team.

### **9.3 The Tension between the Party Secretary and the Villagers: Revoking the Party Secretary's Official Status**

As we discussed in the previous chapter, the trust between the cadres and the villagers has been

diminished during the sand-mining crisis and the implementation of projects. This is the case in Naqiu Administrative Village, where the villagers wrote a report to the leaders of the CCP and the government at the prefectural level with the title: “Report on the Request to Investigate and Deal with the Village Party Secretary about the Illegal Sale of the Village’s Flood Control Embankment” (February 3, 2015) due to the illegal sand agreement in 2015. After the conflict in which some villagers were injured and one villager was arrested by the police on January 22, 2015, the villagers had gathered together to figure out who exactly had made the decision to sell the river sand around the village’s flood-control embankment. They concluded it was the Party Secretary, Mr. Nong who had “colluded” with the sand miners and organized an illegal meeting to sell the river sand. The villagers became very angry about Mr. Nong’s role in making the illegal sand agreement. The villagers discovered that the 18 cadres and village representatives had been forced by Mr. Nong during the meeting to sign the agreement. Other villagers added that if anyone disagreed with Mr. Nong, there would be a negative consequence for them or their household. One example was that a former cadre had had to resign after he had said the Village Committee should not have banquets so frequently but instead should use the same money to repair the irrigation canals. In short, many villagers believe that Mr. Nong had signed a bad deal on behalf of the village and had not served the common interests. He had profited himself and his own production team, but he had ignored others’ interests, which had violated party rule. The villagers asked the government to force Mr. Nong to resign his job as the Party Secretary based on the following three reasons.

Firstly, the villagers argued that Mr. Nong had violated Article 3 of the “Land Administration Law of the PRC” which stipulates that “no units or individuals may misappropriate, buy, or sell land.” Mr. Nong had illegally sold the sand to a villager: Mr. Zhang. Meanwhile, according to the “Water Law”, it is the state that implements the river-sand mining license system. Mr. Zhang and his group had mined the river sand without a mining license. As a result, their behavior constituted a criminal offense.

Secondly, Mr. Nong had violated the rules of the Party, specifically the rule stating that no major decisions of the village could be taken without organizing a party meeting with more than two-thirds party member present. Yet, Mr. Nong had decided to sell the river sand without holding any party meeting. In addition, as the Party Secretary, Mr. Nong was supposed to consider the production and livelihoods of the villagers as his first priority. However, he had ignored the opposition of thousands of villagers in order to conduct an illegal deal. A verbal

slogan: “Focus on people’s livelihood, improve people’s livelihood, and promote the healthy development of a well-off life in our town” was posted by the Huangwutun Town Government. However, there were so many complaints and so much anger in Naqiu Administrative Village due to the illegal agreement because of the Secretary’s disregard of the importance of the livelihoods, lives, or even deaths of thousands of villagers. Once the sand from the village flood-control levee was removed, the flood control would collapse, more than 3,000 *mu* of paddy field would be inundated, and thousands of houses would be flooded. The villagers would then suffer from hunger and homelessness. “Concerning people’s livelihood and improving people’s livelihood”: what the villagers want is not the slogan of the town government, but that the town government should come up with practical actions to assuage public grievances, and bring the culprits who had stirred up public anger, provoked conflicts among the masses, and ignored the villagers’ death, to justice.

For these three reasons, the villagers petitioned the government to revoke the position of the Party Secretary, and choose another person, one who would wholeheartedly seek to improve the welfare of the villagers. The job of the village Party Secretary was to put the people in his heart and protect the welfare of the entire village. However, what Mr. Nong had done was put the villages, people, and land in danger by selling the river sand and damaging the flood-control embankment (the document highlights this part regarding the rules of the CCP and Government).

Thirdly, the Prefectural Party Committee and the Prefectural Government were requested to ensure that the relevant departments seriously investigate and deal with the case of the illegal sale of the flood-control embankment, and to stop the sand pumping from the flood-control dikes, bring the culprits to justice, to assuage the public’s anger and to reassure the people. Again, Mr. Nong’s official status must be revoked based on the law of the country, according to the local villagers. Meanwhile, the illegal sand collectors were ordered to stop the sand pumping from the flood-control dikes, and the criminal responsibility of Mr. Nong, Mr. Zhang, and others was investigated for the damage caused to the flood control levees and further safety hazards (the document highlights this part regarding the laws).

Crucially, the people have never given up asking for justice. When I interviewed the organizers of the petition—specifically, Zeng Pei and his mother and uncles (one of whom was arrested by the police during the conflict), they gave me their notes written during the process of petitioning.

“The government department treats us like a ball, kicking us back and forth,” Zeng Pei said. The original documents show that the villagers first of all called the Party Secretary, Mr. Nong, but the Secretary said that he was busy and could not come to the river bank (to deal with the conflict). The villagers then called the Land Resources Institute at the township level: “The Land Resources Institute first asked who was mining and said they would immediately enforce the law enforcement. When the official heard that it was Mr. Zhang, he changed his mind and told the villagers that this was the responsibility of the Water Law Enforcement Brigade, and that the villagers should call them to go to law enforcement. The Water Law Enforcement Brigade pointed out that the township government was in charge of illegal river-sand mining and advised the villagers to report to the government. The government official said that it was the Land Resources Institutes’ responsibility to control illegal sand mining” (from a report dated February 3, 2015). In short, the fragmented authorities failed to respond to the villagers’ complaint.

Zeng Pei recounted his experience with approaching the governmental agencies.

*“The competent authorities have treated this big event, which is closely related to the villagers’ lives and the property of the whole village, just like a ball to kick around. Each authority kicked the ball to another agency, and they used various excuses to refer to each other. The villagers had to send representatives to petition to the town government. After three petitions to the town government, the town government eventually sent a deputy mayor and two cadres to the flood-control levees who took a brief look for several minutes. However, they said nothing. The villagers had not received any response from the township government after a few days of this visit. Meanwhile, the sand-suckers still smashed the farmland and the flood control levees. The villagers had to send representatives to the town government to petition again. Another official, Mr. Huang, who was the official cooperating with our administrative village, told the villagers that he would call Mr. Nong to give us an answer. The Villagers believed that the problem would be solved, based on Mr. Huang’s promise. However, there was no feedback. Mr. Huang, as sent by the township government to be in charge of Naqiu Administrative Village on behalf of the township government, is not only the first leader of the village, but also the insider and the controller of the matter [the sand agreement]. If he had not been partial to Mr. Nong, there would have been no bloody fighting; however, the bloodshed [the scuffle and throwing of stones] was inevitable [due to the mismanagement of Mr. Huang]. Therefore, Mr. Huang must take full responsibility for this bloody fighting” (Interview Zeng Pei on March 29, 2017, Nachun Village).*

The villagers were very angry and greatly disappointed that the petitions did not stop the illegal river-sand mining. “You can make any petition to any government, even to the prefectural level,” Zeng Pei repeated what the miner Mr. Zhang had told him and other villagers during the fight.

Zeng Pei said:

*“I spent so much time making various petitions to the different government bureaus at various levels. But it is pointless. There is no justice at all. The officials are wearing the same pants and they are in collusion. These original documents that we wrote and signed have not been sent to any government bureau because we know that the government does not protect our rights, but only their own interests. What Mr. Zhang said was correct. He and his team had bought the officials up to the prefectural level”*

During the focus-group discussion in Naxia Village, the four elders similarly pointed out that the conflict in sand mining there had not elicited any feedback from the government. This has resulted in similar illegal sand mining in other villages. One elder, who is also a member of the CCP said that the party’s members meeting in the village had discussed a new national policy on environmental protection and poverty alleviation, but another elder responded that,

*“Serving the people [the slogan of the government] was only something they said at the party members’ meeting. After the meeting, when they walked out of the meeting room, what they had said in the meeting was abandoned. The party members are mainly thinking about their own pockets. They are thinking about money. They have not contributed to building a better community” (March 27, 2017. In Naxia Village).*

The villagers believe that there would have been no conflict if the village administrative authority and the township government had dealt with the disputes in a timely and appropriate manner. However, the problem is that the formal institution has failed to respond to the villagers and solve the conflicts due to the delayed management. Facing this problem of river-sand government, the riverfront communities have shifted their focus to social media to seek justice. Case studies will be presented below to show how rural villagers use social media to fight for their own benefit.

#### **9.4 Social Media Petition**

Social media petitions are a frequently used by people to make their views on illegal sand mining known and to get the attention of the government and the larger society. I argue that the social media petition was used mainly because the villagers expected to obtain timely responses and justice from the government and the law. Social media mainly refers to unofficial websites (Regional online platforms, Youku, and Weibo) and chat apps such as WeChat and QQ. Nowadays, more and more governments at diverse levels have also established social media pages that people can use to access governmental information and communicate their views and opinions, by registering the users’ true names. The Western social media platforms like Facebook, YouTube, and Twitter are blocked in China. The villagers preferred to utilize social media as a means to make their grievances known to the public in order to obtain positive

support.

The most well-known local social website in Qinzhou City is the “360”, which has been used for reporting illegal sand mining. Indeed, a search of this website using “illegal sand mining” (非法采砂) as the search term resulted in 26,238 entries on December 23, 2017. The articles contain evidence, such as photos to show the sand-mining situation, and complaint letters with fingerprints, which reveal the severe consequences of the illegal sand-mining crisis, as well as the anger of the affected rural residents. Moreover, the posts on social media news shows that the ongoing sand extraction is taking place all over the main rivers and seas, causing severe ecological consequences and socio-cultural disputes in this region. For instance, there was an article written by some fishermen on the 360 Website in 2015, in which the fishermen complained that Qinnan District Government and the Water Conservation Bureau had sold a section of Dafeng River to a company for mining sand without informing the local fishermen who were raising oysters in the same watershed, while many households have also dealt with the loss of their riverbank land. The sand company had destroyed the fishermen’s oyster rows and bases in order to extract sand. Later on, the pollution of the water after pumping sea sand had caused the mass death of the oysters (360 Website, 2015). Neither the government nor the company had compensated the people’s loss by the end of 2015. Furthermore, half of Sandun Island, where a leprosy treatment hospital is located, has been gone due to the ocean-sand mining (360 Website, 2015). Nonetheless, social media petitions display the people’s concern with the government’s position with regard to sand and the issue of the laws’ implementation.

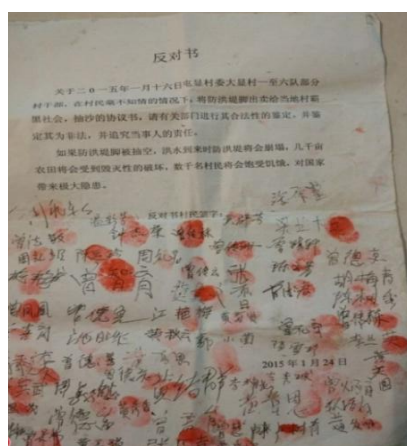
Besides the 360 Website, the government website and the mayor’s hotline are alternative options for raising public awareness and general participation regarding illegal sand-mining issues. In particular, the investigations of the CCP’S central Environmental Protection Supervision Committee have forced the local government to eliminate the illegal river/ocean-sand mining and environmental degradation since 2016. This also has been brought about by the complaints of the local villagers. In addition, the Qinzhou TV station documented several cases showing the negative consequence of river-sand mining in several rivers and the ocean in the territory of Qinzhou City. However, the justice the villagers are looking for was not achieved easily, even after the report by the TV Station.

This is the case related to the illegal sand mining agreement in Naqiu Administrative Village in 2015. Zeng Pei and his arrested uncle said: “Mr. Zhang had quarried sand for a long time even

after the conflict and petitions.” Zeng Pei became one of the major protesters and asked the villagers to write and sign some petitions to diverse departments. About 60 villagers signed a complaint letter, giving their claim considerable weight for the first round of petitions. Zeng Pei then uploaded the complaint letter on a social media page with a large following. The letter was meant to start a conversation on such illegal activities and another way to petition the government to take action. Zeng Pei noted:

*“We had made many petitions to the township and district governments, but to no avail. Instead, police arrested our people (his uncle) for showing aggression, which to us meant that the police supported the “illegal” extraction of sand. Taking our petition to social media was the only option left” (Naxia Village, March 29, 2017).*

The complaint letter is shown in Photograph 31.



This is about some village cadres (signing the contract) which, without informing any major villager, sold the foundations of dams made of sand to local village tyrants on 16 January 2015. We asked related authorities to check the sand-mining contracts and deem these practices illegal. On top of that, we reminded them to be legally liable for the major operators' actions. By removing the foundation of the flood dike, several thousand *mu* of farmland can be severely damaged in case of flooding. This would result in thousands of people starving which in turn represents a serious risk to the county.

**Photograph 31: Villagers' Signatures on the Complaint Letter (left) and its Translation (right)**

(Source: field data, 2017)

Notably, the Nachun villagers were split over issue of the illegal sand mining agreement. A good number of them supported the contract, even though the majority were opposed it. Eventually, the contract was labeled as “sand misgovernance and illegal cooperation” by the administration. Nonetheless, the opposing villagers still struggle for resource-use rights, the health of the river, and environmental justice. Chinese people are increasingly aware of their legal rights in relation to local environmental issues, especially whenever they are affected themselves (Xie, 2015, p. 249). This in-depth study reveals that villagers have shifted their means of resistance, from Scott's (1990) “hidden” style to a “more open” style to protect their common resources. The use of social media is increasing popular in people's attempts to grapple with the common-resource problem. It is interesting to know how the government

responds to the complaints posted on social media. The government, however, has its own channels for environmental complaints and petitions. Mostly, officials only take the complaints and petitions seriously if they are made via the Mayoral Hotline, government complaint system, or message board to local leaders. Thus, the government has either taken action by directly responding to a social media post/ article, or they practically address the complaints outside of social media. The government sometimes responds to specific issues in the related governmental websites and WeChat.

Formal institutions do not incorporate local villages or the villagers, who have a weak voice in decision-making and final benefit distribution. When the villagers ask for help from the government, government officials even reluctance to take responsibility. Scott's (1990)'s term "infrapolitics" is used to illustrate the way that the peasants are utilizing strategies of resistance which have gone unnoticed by superordinate governments. During my fieldwork, on the one hand, the informants kept pointing out that the sand-mining agreement was made without involving the people. They also had no idea about the real situation of the ongoing project constructions, who was responsible, or how they were implemented. On the other hand, some people had doubts about the income from selling out the collectively-owned sand, renting out mountains and reservoirs, and so on.

Zeng Pei and his fellow villagers attempted to petition the villagers through formal channels, but his actions did not bear any fruit. Therefore, he and his family claimed that they won't watch CCTV News anymore, since all the reports on government media are fake and thus unjust (April 2017). "Around the world, indigenous peoples are fighting for recognition of their right to own, manage and develop their traditional lands, territories and resources" (United Nation Permanent Forum on Indigenous Issues, 2007). Xie (2015, p. 252) argues: "the combination of habitual official intransigence and worsening environmental problems means that public opposition to state policies and practices often bypasses state-sanctioned channels in favor of more direct political action". Therefore, social media gives those that are weak and voiceless a platform to share their opinions and grievances.

## **9.5 Sand Exploitation and Its Impact on Indigenous Belief Systems**

"People's assets are not merely means through which they make a living: they also give meaning to the person's worlds" (Bebbington, 1999, p. 2022). L'vovich points out that the long historical interaction between society and rivers is also evident in river's mystical and religious

significance (quoted from Sreebha S, 2008, p. 1).

There is little research paying attention to how the change of the environment and ecosystem is impacting villages' river-based belief practices or on how the villages deal with a tension that exists between how they value their resources such as their bridge and river sand versus how they value harmony within their community. My field research reveals that the six riverfront Zhuang villages in this study have been deeply embedded in their river environment. The villagers have based their beliefs, food culture, and livelihood in river resources. The customs of festivals, fixed worship activities, and collective fund collections have profoundly informed the consensus of common-resource management and collective property distribution. This embedded situation forms what Scott (1976) termed a moral economy, which includes customs, property rights, and ideas on belonging, as well as informal institution (North, 1993) .

Anthropologists have demonstrated the importance of the lineages in the formation of socio-cultural, socio-political spheres in societies, (e.g. Freedman, 1958; Jing, 1996; Siu, 1989b; Yang, 1993). Freedman (1958) has highlighted how lineage organizations (or clan organizations) have influenced political, social, and economic control in Southwestern China. As Liu (1995) has said, the villagers believe that those areas which their gods have protected are their land and property. Liu (1995) has also studied lineages in terms of sand in Shawan Town in the Guangdong Province. The author found out that the biggest lineage became powerful in Shawan with control of large parts of the land, because the lineage reclaimed a huge amount of land from the delta and built up their wealth on it. The number of ancestral halls was a symbol of lineage wealth on the land resource.

I found during fieldwork that these ideas on territory and the Zhuang moral economy generally finds consensus among various villagers, illegal sand miners, village cadres, and even township government officials. The riverfront natural village is considered to own river sand located within their territory. This, of course, has shaped the people's sense of common-resource management up until the present. Significantly, the river-sand crisis raises a problem: how do the villages deal with the loss of their common resource and the controversy inside the village? How to punish the insider violators, and how to bring peace and harmony back to the village?

However, research on the links between commercial sand harvesting and indigenous belief systems, particularly in relation to rural Guangxi, has received less attention. Crucially, I found that one key means of governing the common resource and keeping the peace is keeping the

collective worship practices and praying for steady work, wealth, and happy life. The informants clearly knew the usage patterns of the common fund of their village, practicing collective worship during various festivals or seasons, constructing the water conservation and roads and other infrastructures. “The village rents out the mountain to a private company and obtains 70,000 yuan (€ 8,860) each year. Therefore, we can hire a better Lingtou team in the festival of Tiaolingtou” (a sand miner in Nadong Administrative Village, September 2018). Even the director of Nadong Administrative Village described the sand conflicts in his own village by pointing out:

*“We are worshiping the same god of land and practice the ‘Zuo She’ (worshipping the gods of land) together. But the second and the third production team of the village have not distributed the income from selling sand to the first production team (...) If our first production team can also share the income of the common sand, then we have some funds for ‘Zuo She’” (April 2, 2017).*

Nonetheless, the practice of the belief system is the major purpose of making a collective fund and governing the fund in one village. For the villagers, the belief system and the customary festivals are performed to maintain the village solidarity and internal peace among the villagers. Collective identity has been formed during these collective activities and community social relationship institutions. This can be proven by looking at the funeral labor system, the fund contribution system, and free-labor organization (Zhu Q. & Qin Y. J., 2016). As mentioned in Chapter 3, the donation of money and material as well as the engagement in volunteer labor has played a big role in many aspects of rural residents’ lives. Labor reciprocity is also the major practice in the funeral system in Mei and Na Village. Furthermore, each household has the responsibility to work for the “Zuo She” for free when it is their turn. Some rich villagers donate extra money for collective worship, activities and the “Tiaoling tou” festival, in addition to their obligatory contributions. Indeed, the collective fund is crucial to maintaining the belief system. Interestingly, the illegal sand miners from the villages would also contribute money for the public fund collection: miner Mr. Fugeng name was written on the fund donation list in Mei Village. Through his donating more money and asking for forgiveness from the others, the families of Mr. Fugeng and his brothers have been forgiven by the villagers. Although the villagers forgive the illegal sand miners, they believe that supernatural powers respond to the overexploitation of sand. During my field research, the residents from Mei Village associated the extractive exploitation of sand with increasing incidents of unnatural deaths, as well as sickness and related misfortunes. According to them, overexploitation of sand not only ruins sites of sacrifice but also angers the gods. As a result, the villagers consider these misfortunes

as a form of supernatural punishment. Two cases exemplify these beliefs.

### **9.5.1 Case One: The Supernatural Punishment of Violators**

Supernatural punishment has not only been encountered by an elder who seem to support the illegal operations that have plagued the sand business; community members, too, believe that such supernatural punishment has affected the illegal sand operators. In 2010, for instance, while Mr. Fugeng new house was still under construction, it caved in, which caused huge losses in terms of both materials and labor. Indeed, the victim had invested in so much paid labor because his fellow villagers had refused to assist, as they would have done for other villagers. While Mr. Fugeng was blamed for the illegal extraction of sand, people have not been willing to assist in the construction of his house.

Mr. Fugeng's neighbor commented on the collapse of the house:

*"This strange thing never happened in our village before. How is it possible that the roof of the first floor of a house collapses? It is true that a good dog deserves a good bone, while every ill man has his ill day" (Interview in Mei Village, September 20, 2015).*

Other villagers shared these his sentiments, acknowledging the role of supernatural powers in Mr. Fugeng's misfortunes. Soon afterwards, an elder, Kaige's father died under mysterious circumstances. His death, therefore, was conceived of as an indication of supernatural punishment. Mr. Fulai, whose responsibility was to organize the funerals in the study area, declined to assist in this case. It was evident that villagers were angry with Mr. Fugeng's family for their involvement in the selfish extraction of sand for commercial purposes.

### **9.5.2 Case Two: Insects Infest Gods' Trees**

In the Zhuang transdition, each village has to have a temple for their gods of land. These temples are guarded by a circle of trees, which are considered a form of deity. Coincidentally, these temples are often located on riverbanks from which sand is extracted. In December 2015, some villagers found that insects had feasted on the leaves of some of the trees that surrond the temples in Mei Village. This was previously unheard of in the village. Elders interpreted the phenomenon as a form of communication from the gods showing that they were angry. Soon, there were rumors that associated this and other events, such as the loss of elders, with some of the villagers that had become notorious for commercialized sand harvesting.

Commercial sand mining began to invade the local holy spaces, and conflicts emerged in the

research villages. Such conflicts stopped the Mei villagers from performing the land god worship at the temple in Mei in 2008. It was evident that the disharmony and disunity that illegal sand harvesting had occasioned, and the related violent conflicts, had created deep mistrust between villagers and enlarged previously manageable divisions in day-to-day relationships.



**Photograph 32: Worshipping and Having a Banquet Together under the God Trees beside the River**

(Source: field data, 2014)

Apart from the religious significance of temples and spaces of worship, these places are essential for social interactions. These spaces are considered neutral ground where people share meals and discuss matters of concern relating to the community. “The head of a household attends the collective worship for the land god” had been a tradition inside most of the villages. Labor migration of each household has impacted this collective worship in the sense that “a representative must attend the collective worship” has become a more practical norm to perform this worship system. As Photograph 32 shows, women, young men, and children also participated in the worship in 2014.

During my fieldwork, the deaths of several male village leaders were often associated with the angering of supernatural powers through the villagers seeming reluctance to protect holy spaces. The villagers were very afraid of punishment from the spiritual gods. The damage had to be repaired and the gods had to be worshipped. I had the opportunity to attend the funerals of four of the nine victims, during which the presiding priest linked the deaths to the destruction of the

temples through a relentless pursuit of selfish gains in commercial sand harvesting. Zhu and Qin (2016) pointed out that the traditional funeral has been an informal institution to maintain social integration and a means of conflict/ dispute resolution because the funeral asks the villagers for labor reciprocity. Any individual who violates the community norms and customs risks losing out on labor reciprocity at their future funeral.



**Photograph 33: The Traditional Funeral and Labor Reciprocity**

(Source: field data, 2015 and 2014)

Photograph 33 shows the funeral traditions and labor reciprocity. The Shigong master team was invited to organize the ritual for the funeral depicted on the left picture. In addition, the way people deal with death is that other households send at least one person to help the host to deal with the ritual. The photo on the right, taken in 2014, illustrates that at the end of the funeral, the host performs a ritual, demonstrating that the family of the deceased appreciates the helpers by kneeling to offer them money that is supposed to bring fortune. The ritual the host conducts reveals the core norms of the rural Zhuang community. Each individual is part of a household, and all households constitute the community. It is not only the lineage group that helps during a funeral or wedding, but most of the households in the village community will participate in the ceremony. These social institutions and the belief system have a strong influence on the individuals in the Zhuang village society. This answers the question of how they value their resources versus how they value members of their community, and how they make peace again after the sand crisis. The existing social norms and values, including communal harmony and peace-making, are performed during funerals, wedding, and collective worship thus reinforcing social relationships and a community order. The villagers did not directly act against a few wrongdoers in their community because the value of the village harmony is crucial for the

society. Instead, they expected the gods to punish the culprits.

The relationship between commonality and individuality is crucial in the Zhuang villages. To further illustrate their high regard for commonality versus individuality, I present a conversation I witnessed when I was asked by the village head to collect the communal contributions for building the 220-meter stretch of road in Mei Village. I went to the house of a Mr. Bin on the 31st of March 2015, together with the village head and the owner of the village grocery.

*The grocery owner: Mr. Bin, how are you and how was your dinner? We are here to collect contributions for a new road project. Each person should contribute 15 yuan (€ 1.90). How many members does your family have?*

*Mr. Bin (on an aggressive tone): Ten people including my mother. But I want to know whether the road passes in front of our houses. Otherwise, I will not contribute.*

*The grocery owner: Okay, you need to pay 150 yuan [€ 19]. However, what do you mean by saying you'll pay only if the new road reaches your house? Is your household part of the village? If not, you can move out of our village and build your house on Yueshan Mountain [the biggest mountain in the region].*

*Mr. Bin (very angrily): Why did you say that? Why is my family moving out of the village? Here is our home! You are so rude!*

*The grocery owner (also angry and speaking loudly now): Am I rude? No, because I said to you that every member must contribute 15 yuan [€ 1.90] for the new road. In addition, the road does not pass my house at all. But I still come here to collect money and pay the contribution. How about the others who moved out of the village but contributed several thousand yuan? [His cousin had contributed 2,000 yuan (€ 253) for the new project that afternoon.]*

*Mr. Bin (speaking in a low voice): I did not mean that. (Toward to the village head) I did not say I will not pay. I just asked for more information. That is it.*

*The village head: We only obtained project for a short distance of road and could not cover all the households so far. The group of households in the southwest must wait until we get another road project. We built the main road, public toilet, and a basketball court. Now, we are lucky enough to have another road, if we can collect enough money to suit the requirements of the government project. And yes, this new road will reach here [pointing to the mud road in front of Mr. Bin's house, which is at the far east of the village]*

*Mr. Bin: I will pay now, please wait for a second. I will also have to call my young brother and ask him if he needs me to pay in advance. As you know, his family is not at home. They are growing vegetables for the market in Qinzhou City.*

*The grocery owner: That is fine. We, of course, can wait. We cannot finish visiting all the houses today. We still need to continue tomorrow.*

There are many different arguments within the village regarding various collective projects.

These are not only about the public roads, river sand, and plumbing, but also about how to conduct public worship, and how to renew the public kitchenware and tableware. This is how the community gathers together to deal with public issues. It also reflects how the people value the common resources, private property, and the individual. Like Mr. Bin, each household wants to benefit from the public common resources. But as the owner of the store said: “Your family should contribute first in order to have a public road project.” Interestingly, Mr. Bin was not the only villager who demanded that he should directly benefit when the contribution was demanded. I heard many similar statements, such as “It will be great if we have a basketball court”, “Other villagers built an entertainment building for the elder people,” or “We must organize a basketball team to attend the New Year’s basketball competition. It seems that each village is looking for chances to build more roads and obtain more investment in their own infrastructures. This, of course, demands individual contributions, and so more donations are required. Behind these projects lies the question of whether the community can maintain their brotherhood and solidarity and build a more harmonious society.

## **9.6 Discussion and Conclusion**

This chapter has explored the socio-cultural consequences of illegal sand mining in the rural Zhuang Communities. On the one hand, facing illegal sand mining, the villages have their own ways of handling related problems. However, the research findings reveal that the village community has difficulty in successfully resolving the disputes and conflict, since many actors have engaged in river-sand mining, including “insiders”, local leaders, officials, and “outsiders.” In particular, the elders were either forced to sell river sand to illegal sand miners to reduce the loss of their collective natural resources, or else accept the exploitation of this resource in silence. This chapter has indicated that conflicts took place not only in one single village, but in many riverfront communities in various villages. The findings illustrate how the villagers practice their customs, such as mass meetings, mass action, and elders’ decisions, and consult the village head to decide upon the fate of their public resources and to take certain actions.

It is clear that the villagers believe that river sand belongs to the village or production team. Thus, the chapter discusses villagers from three villages have taken action, even to the point of throwing stones at the thieves. The various collective punishments reflect how the people value their natural resource in this regard, which is in marked contrast to what Nayang Village did, only putting up posters. The stoning, petitions, and complaints against the party secretary reveal

the complexity of the sand-mining crisis at the village level in terms of livelihood, ownership, management, benefits, damage, and environmental impact. River-sand management has had a special social-cultural consequence in the six Zhuang Villages. Despite the tensions related to sand mining, the villages have tried very hard to maintain harmony in their community by consistently practicing funeral labor reciprocity and collective worship. Evidently, economic rewards from the sale of sand and the elimination of the loss of the river sand as a common resource are increasingly replacing the ecological concerns. At least, the majority of the village in Mei, Nazhong and Naxia villages agreed to sell the river sand in return for a collective income. In Naxia Village, for instance, elders decided to allow the harvesting of sand in areas that are further away from the main infrastructure (levees, dams, bridges, roads etc.). The decision would create some economic returns from the sale of sand, while minimizing the extent of damage to these infrastructures.

As discussed above, it is through such communal organizations, actions, and belief systems that members shape their socio-cultural lifeways. Meanwhile, they depend upon the resources of various ecosystem services for their livelihoods, as avenues for spiritual nourishment and for group formation and belonging. Certainly, the links between the resources in their environment and the cultural belief patterns have greatly impacted the sand-mining management methods within these Zhuang villages. Thus, the villagers have utilized the customary patterns to deal with this common resource problem. This is rather different from the decisions that are made by cadres and government officials. In reaction to the misbehaviors of powerful leaders, unjust treatments, and negative environmental consequences, villagers have filed petitions through formal government channels and social media.

However, the government's "kicking a ball" approach in dealing with the petitions in Nachun Village has profoundly disappointed the villagers and made the formal sand-management system less effective. Such lack of taking on responsibility has resulted in more disputes and violence within rural communities and harmed community-government relations. Consequently, the villagers have to choose a practical strategy such as selling the river sand to illegal sand miners to reduce the potential losses they would suffer if the river sand was depleted as a resource without compensation. During these processes, the villagers have to fight not only with illegal sand miners but also with some cadres.

Nevertheless, the region-wide sand-extraction industry was still going strong after the various

petitions and complaints were made and submitted by the local villagers. That was the case when the leaders misused their power in deciding on the sand deal in Nachun Village, the villagers responded against the decision by pointing out how the agreement violated the law, how bad the leaders are, and how bad the consequences are, in order to catch the attention of the higher-level government and bring justice to the community. When their petitions were submitted to the government but bore no fruit, they shifted their attention to social media and the TV stations; however, they have still not obtained effective and fair sand management, as they had hoped. This reveals a gap between the expectations of rural communities and the response rate and response time and the quality of response by the government.

To sum up, this research shows that many villagers have engaged collectively and individually in protests against illegal sand mining and have taken action to seek environmental justice, but the local government have not responded in a positive way, or else have completely ignored them. The subordinate groups' daily resistance has been observed as they struggle for resource use rights, the well-being of the river, and environmental justice. using what Scott (1985; 1990: 1998) termed "weapons of the weak". River-sand management has had specific social-cultural and economic consequences in the six studied Zhuang Villages. The throwing of stones, petitions, and complaints against the Party Secretary reveal the complexity of the sand-mining crisis at the village level in terms of livelihood, ownership, management, benefits, damage, and environmental impact. Particularly, this resource refers to the residents' "lawful rights" (O'Brien & Li, 1999). In rural river areas, after the implementation of the river-sand mining licensing system, many of the river sections were sold by the prefectural or county governments as a way to offer sand resources on the market and to govern sand without benefits or inclusion of any villages or villagers.

## Chapter 10: Conclusion

This thesis focuses on the political ecology of illegal river-sand mining and its management in rural southwest China. Anthropological fieldwork focused on the social-economic, cultural, political and ecological implications of river-sand harvesting in six purposively sampled Chinese Zhuang villages. Rapid economic growth, industrialization, and urbanization have accelerated the demand for building materials, and sand in particular, in China since the early 2000s. The high demand for river sand has heralded increasing scarcity of the shared resource, but the market-oriented extraction continues unabated, with serious implications at the local level.

What drives the commodification of river sand as a common or shared resource? What is the ownership and governance structure of river sand? How does the commodification of river sand drive its illegal extraction? What is the role of agency (that is, the Zhuang communities and their ecological knowledge) in the river-sand crisis? Fieldwork set out to answer these questions in a bid to understand processes of commodification of shared resources (common pool resources), scarcity, and the crime associated with illegal extraction as well as the linked social-economic, cultural, political and ecological implications.

The study applied a political ecological approach to explore the multiple stakeholders and their interests in the sand business. Fieldwork in Qinzhou city where the study was located adopted a multi-sited approach, employing qualitative and quantitative methods including participant observation, household survey, focus-group discussions, key informant interviews, and expert interviews with relevant government officials. Participant observations required me to live in the study areas for a year in order to experience the day-to-day lifeways of all actors in the sand-extraction scenes. Chapter 2 provides detailed information on methodology and data analysis.

Chapter 3 sketches out a brief history of and offers background information on the Zhuang nationality in the research setting. The Zhuang belief system, language, education, and political-economic situation are explored, based on empirical data and secondary documents. Clarifying this background helps to elucidate the local discourses, conflicts, cultural circumstances, and management of river-sand mining in the local areas. The role of history is crucial in creating common-property consciousness and discourses in the emergence of river-sand mining crises in the Zhuang villages in Southwest China. Crucially, the belief systems and collective customs

have shaped people's understanding of the value of life and resources, and are also a means to build peace and solve disputes and conflict both within the villages and also between the villages and outsiders (government as well as sand miners).

Chapter 4 illustrates the commodification of river sand, which cuts across local, regional, national, and global levels with emergent commodity chains based upon a rather disputed and contested common asset in China. By analyzing the processes of the commercialization of river sand by diverse actors, this chapter finds that the economic development targets are the strongest forces in the process of sand extraction, commodification, and transaction. The chapter furthermore described the ecological consequences of this extractive industry at the local level: loss of fish species, loss of land, water pollution, and riverbank and land destruction. The communities around the Maoling River have suffered due to these ecological crises and the damage caused. In this regard, the local people are the losers in the process of the commodification of river sand. During my field research, they were worried about the quality of the water, the seasonal flooding, the broken dam, and the unusable bridge.

Chapter 5 gives an overview of local, regional, and national policies that promote construction work in rural and urban areas. As a result of governmental investments into infrastructural development projects in China's rural areas, the demand for river sand is increasing. China has established numerous policies in order to maintain economically sustainable development. These policies have mainly been implemented under the project system, as discussed in this chapter. This project system constitutes substantial construction projects which have driven the great demand for river sand in order to supply the construction market over the last two decades. Therefore, the governmental development programs are one of the major factors that promote the commodification of river sand. Eventually, river sand has been extensively mined in various rivers and lakes.

Chapter 6 demonstrates how river sand is owned and controlled by the government at various levels, and how emerging policies and laws concerning river sand are implemented and exploited at the same time. The over-exploitation of river sand has been reported in many regions as unsustainable and dangerous to the social-cultural, ecological, and economic lifeways of rural Chinese. The growing appetite for river sand is blamed on the aforementioned crises. The lack of effective and efficient policies and laws, and/or their poor implementation, has encouraged an illegal trade in river sand, thereby contributing to severe consequences, as

discussed in this thesis.

Chapter 7 focuses on the issue of legitimacy and illegality in order to explore the illegal mining activities in this region. Who are these illegal sand miners? How are they organized? What are their motivations? And how do they manoeuvre local and government restrictions? This chapter argued that the illegal sand miners are not vulnerable in any sense. They have rather strong political, financial, and social networks to support their unlicensed mining businesses. On the contrary, river sand as a profitable natural resource makes illegal sand miners rich. This profitability led to more illegal miners and truck owners engaging with the sand-mining industry, which has resulted in the boom in and development of the river-sand mining industry.

On the one hand, the case studies on illegal sand mining show that the profitable nature of the sand business has attracted both indigenous villagers and outsiders to engage in the sand trade as part of the industry chain. On the other hand, local miners perform religious rites with the intention of being able to operate their sand-mining business smoothly, and they have even donated money to the collective religious rites. It seems that the customs of the Zhuang have a special force among these insiders.

Chapter 8 illustrates the perspective of the riverfront Zhuang communities, who argue that river sand belongs to them. The case studies reveal that these Zhuang communities consider sand in the river sections within their territory to belong to the community. This reflects a rather more general consciousness that the villagers consider river sand as a common resource due to their settlement pattern, land, daily interaction with the river, and historical knowledge of the environment. On the one hand, many villagers came together to jointly protect the river, stoning thieves, making petitions, and convening mass meetings to discuss illegal sand mining, but eventually they are forced to sell the river sand in order to reduce their losses due to the exploitation of this common resource. On the other hand, many of the local government officials and cadres of the village committee, local party secretaries, and illegal sand miners disagree with the statement that the local communities own river sand, while some of them agree with this position. This has led to rather vague *de facto* ownership.

Chapter 9 discusses the socio-cultural and economic consequences of river-sand mining: social dispute, conflicts, tension, trust, impact on agricultural livelihood, and influence on belief. This chapter also reflects how the villagers respond to the government's mismanagement and the rapid marketization of the river sand. To this end, this dissertation has provided new insights

into sand mining and the crises involved in the exploitation of a disputed resource, and into the ambiguous ownership rights and entitlements claimed by different actors. Furthermore, it has also reflected upon the power relations, institutions, conflicts and environment concerns in the context of rural Zhuang communities in southwest China.

Due to the general dearth of publications on river-sand mining and its impacts on Chinese rivers as approached through political ecology, the complexity and dynamics of the river-sand mining industry in modern China are understudied. The existing rather scanty literature on this subject fails to reflect on the political dimensions of human and environment interaction as Moore (Moore, 1996, p. 125) discusses, and particularly with respect to China's party-nation power regime. Moreover, studies on the Zhuang minority's culture and indigenous ecological knowledge in the studied rural areas are rather scanty.

The chapter has noted the existing contestation between individuals and institutions over the use and management of river sand. The study finds that the many actors who are involved in the sand-mining processes have diverse perceptions about the ownership of river sand, and therefore hold various discourses and beliefs about strategies. The case studies reveal that there are three major actors – one state actor and two non-state actors – the latter comprising villages on the one hand, and legal and illegal individual miners on the other.

The government holds that river sand is a national resource, and implements laws and policies governing it. The central government and its sand-rights auction aim to maintain the state control of river sand and execute sand's privatization and marketization under the sand-mining license system<sup>52</sup>. The fact that individuals and companies can obtain sand-harvesting licenses from the government could be thought of as reflecting the privatization approach. Unfortunately, sand-mining companies are found to have little or no concern for environmental conservation, but rather the scramble for profits outpaces any efforts that are aimed at protecting natural resources.

Apart from the government, the local communities, which in this case are composed of a collection of Zhuang villages, also claim rights to sand. They claim that "it is our sand", stemming from the Zhuang villages' settlement pattern and communal resource customs and traditions. For communities in rural Guangxi Zhuang Autonomous Region, the management of

---

<sup>52</sup> Hardin (1968) states that administration and /or privatization are the only ways to deal with the common resource crisis.

river sand then becomes an issue of Common-Pool Resource Management (CPRM)<sup>53</sup>.

Furthermore, “illegal” sand miners also claim rights to land. Their illegality relates to their lack of sand-mining licenses and the fact that they often ply their trade in the dead of the night. These “sand poachers” do not obtain permission from villagers. For such actors, sand becomes an open-access resource. It is this multiplicity of actors and institutions which makes sand extraction and management a complex as well as a dangerous affair.

A sound sand-management solution does not seem to be forthcoming. The empirical phenomenon of rural sand mining could be described as a strange combination of state socialism and neoliberal approaches to commodity resources. This special type of state socialism imposes its top-down power structure on sand-mining management. However, it does not work out as an effective approach to governing the river sand in riverfront Zhuang areas since neoliberal approaches and overwhelming marketization have been widely applied in sand extraction.

Sand mining is complex since the riverfront Zhuang villagers and multiple actors involved in sand-mining activities all engage with the market to maximize their profits. The findings show that China is trapped in the dilemma of the common or private – conservation or commodification triad (Prudham, 2015, p. 437) in terms of river-sand mining. This dissertation points out that both government and community may have failed to secure the sustainable extraction and use of sand in China. The government has overlapping laws and institutions and fragmented authority, while the village elders do not receive support from the state and therefore hold a continually shifting and ever-weakening power to fight against outsiders or insiders who “steal” the river sand.

Fieldwork in rural China revealed the need to take into account the riverfront local Zhuang communities and the socio-cultural shift in terms of the weakening of the authority of village elders and common marketization of the river sand as well as the revival of the concern and rights of the common resources at the village level. Haller (2010, p. 414) argues that “not all traditional institutions are eroded by state management of common pool resources.” Likewise, Agrawal (2003, p. 245) argues, “[t]he increase in the stakes of communities has meant a

---

<sup>53</sup> Ostrom (1990) points out that the common-pool resource management only succeeds under certain circumstances (the design principles). The issue in this case is that the illegal miners (both insiders and outsiders) cannot be excluded. Instead of empowering the local community to fully govern the river sand, the state has heavily intervened in the community’s common resource governance because the governments basically consider the locals as the illegal actors. Furthermore, the market and the illegal miners contribute to the failure of the CPR management, as discussed in Chapter 3.

resurgence of interest in the community and communal management and contributed to the growth of what might be called the new commons.”

In the case of rural Zhuang villages, the dilemmas of public sand mining management and the increasing conflict under a marketization economy show the villagers have realized the difficulties in managing common pool resources. Examples are the loss of their river sand, the mismanagement of the government, and the environmental consequences of the sand mining. In order to protect the village’s collective benefit, they must work together. As described in this dissertation, they attempt to do so by convening mass meetings, by uploading related materials to social media, by making a complaint to the authorities, by calling the hotline of the mayor, by appropriating the state laws, by using the traditional elders’ power and moral discourses, and even by stoning the illegal miners. In order to achieve an agreement inside the group and to build a united leadership to fight against the ones who “steal” their sand, or to sell the sand in a collective way, they need to establish an institution to govern their common resources, even though there is not a united pattern of village-based sand management as discussed previously.

Even though the community solution for river-sand mining in different sections of the Maoling River is complicated and varied, the local resource ideology and knowledge system still play a role in informal sand management, as the case studies in Naxia, Mei, and Nayang Villages reveal. The villagers have paid substantial attention to the river water, dams, irrigation canals, riverbanks, land, water levels, and the ecological system of the river. They have frequently mentioned historical droughts, floods, and their consequences, and they are afraid of the potential damage to their livelihoods and the environment due to the exploitation of this problematic resource. The findings show that on the one hand, the river and the surrounding environment have been shaped by riverfront Zhuang communities’ activities. On the other hand, the river landscape has also shaped the riverine society in turn. Therefore, river-sand mining is not only an economic activity; it has also engaged with, and both affected and been influenced by, a political, cultural, and environmental context.

In order to protect the dam, the land, and their village, the peasants of Nachun Village opposed an illegal agreement organized by the Party Secretary and made many petitions to the government at various levels. A mass meeting was organized by the village cadres to cooperate with illegal sand miners in Nazhong Village, and the elders in Naxia Village made the decision to sell their river sand in order to reduce their losses due to the seemingly unstoppable depletion

of this communal resource, while the township official “convinced” both Mei and Na Villages to sell their sand to the official’s company.

Therefore, the power structure is dynamic, apart from the party-state’s formal structure, by which other informal institutions and powerful actors have significantly influenced sand-mining activities. Sand marketization and formal sand government combined with economic development have resulted in the locals being unable to sustainably use the sand at their disposal in the way they used to. The field data show that some riparian Zhuang villages and village cadres have been motivated or persuaded to cooperate with the illegal sand miners, such as in Nazhong, Mei, and Na Villages, while others, such as the villagers in Nachun Village may worry about the consequences of the over-mining of sand.

In sum, both formal (sand-license system and government-managed river-sand mining) and informal institutions (lineage customs and traditional communal resource governance) have engaged in river-sand mining mainly through the “sale” of rights. It is worth pointing out that there are many struggles between formal and informal institutions in terms of ownership, authority, and interests in resource management in modern China.

As for the sand governance reality in many riverfront villages, the absence of the state power contributes to the over-harvesting of sand, to the destruction of the riverine environment and to the development of related conflicts while the mismanagement by local officials fails to build up trust between township government and local communities. Social media have been used by the villagers in order to push for social-environmental justice and effective sand management. The findings show that if village elders or village cadres inform their villagers about the sand crisis and organize either mass meetings or elders’ meetings, as well as distribute the sand income equally, then the conflicts or disputes at the village level would be reduced.

Varying power and unequal resource rights shape the entangled patterns and impact upon various discourses: tragic narratives, development narratives, and sustainable narratives, as well as varied strategies. Indeed, spiritual punishment and beliefs have been applied in an attempt to solve conflicts and disputes. The revival of ritual is a way to reconstruct the social harmony in rural Zhuang communities.

In the mining era, the environmental and socio-cultural consequences are not fully understood by the government or the sand miners, nor indeed by some villagers. Since there is insufficient

environmental evaluation by any authority or third-party environment agency, the sand miners claim there are no environmental consequences from instream sand mining. However, the findings of this research reveal that there are multiple environmental effects – for example, the ecological degradation of the river system and the decline in water level – attributable to river-sand over-exploitation in the Maoling River. Significantly, the ecological consequences – hazards, vulnerability, and risk in the riparian communities – still need further exploration. Nonetheless, sand's economic function has been underlined by an economically-oriented government and market, while its environmental and socio-cultural status have been undermined. Nonetheless, the socio-cultural and environmental impacts of the ongoing commercialization of river sand are highly problematic.

The field research shows that there are “winners” who have obtained big profits from river-sand mining, but the majority of people involved are “losers”, and have access only to limited shares, if any, of these profits. In particular, the local communities and farmers have to live beside rivers without sand and suffer from the multiple consequences of sand over-mining. In this sense, the local communities and the people who live in riverine communities are the clear victims of river sand over-extraction.

In addition, the government as a crucial actor is far from a unified agent. The diverse government departments and governments at all levels have different degrees of authority, and different powers and interests in mining instream sand. As a result, it is too simplistic to say one government policy for sand mining in China is best, or to only look at either central government or local government action. This kind of dichotomy does not help to further understand the dynamics and complexities of sand's commercialization in the local socio-cultural situations. However, in the post-mining era (I use the term *post-mining era* since the river sand is now almost gone) the severe ecological crises of the river system and the over-exploitation of river sand have forced the governments at various levels to establish new policies or laws.

The institutions and politics of resource management were transformed in the region in September 2017 to avoid a “tragedy of the commons” (Hardin, 1968) and ecosystem degradation. The River Chief System was established by the central government in order to protect the rivers and lakes, and it has been implemented in the Maoling River. Indeed, the most effective political transformation is not and has never been the regional laws on river-sand

management, but rather the central government's latest political reform – the River Chief System.

This system adds an environmental conservation target to the government at all levels. Political responsibility for river protection has become part of this target in order to build an “ecological civilization” and a sustainable development in China. In 2018, sand mining was banned in an increasing number of rivers due to severe environmental degradation and social unrest. Nonetheless, economic targets and the boom in construction have put much pressure on resource mining, despite strict environmental conservation policies. On the one hand, illegal sand mining still exists and has become a headache for the government. On the other hand, ocean sand is now increasingly being mined to replace the river sand, but its suitability for construction is questioned, as discussed in the introduction.

If we bring these points together, we gain a bigger and clearer picture of illegal sand mining in rural Zhuang villages in Southwest China. The threat of sand over-extraction, the loss of fish species, the ongoing river degradation, the rise of social-cultural struggles and conflicts, and the transformation of state policies together all lead to a rather sobering conclusion. This is why this kind of research is needed to reflect the dilemma of river-sand mining government in the era of resource and environmental crises in China. As Urmi Engineer, in her review of Marks' book *China: Its Environment and History* (2014, p. 2) discussed in Chapter 3, states,

*“It assesses problems that arise when studying ‘Chinese ideas about nature’ in antiquity, as the meanings and interpretations of various terms that could be translated as ‘nature’ transformed over time. While some Western interpretations have emphasized China’s ‘harmonious relationship with nature,’ Marks shows how as early as the Zhou dynasty, state policies were designed to exploit natural resources for political and military purposes”.*

Minority peoples' relationship with nature has also been changed over time, even though the indigenous ecological knowledge has long highlighted the crucial importance of building a harmonious relationship with the environment. But the current development patterns and state policies have profoundly impacted the Zhuang people to shift their strategies to adapt to the latest environmental, political, and economic situation.

The findings of this research show the development of the commodity chain of river sand in the region due to the boom in construction in rural and urban areas which are promoted by governmental and social investment. As a result of the mismanagement of river-sand mining by the government, legal and illegal sand miners have heavily overexploited this common

resource. Eventually, the commodity chain has led to negative environmental consequences. Therefore, there is a demand for protection of the river, river sand, and water, and for an improvement of the law and policy system to effectively manage rivers. This dissertation argues that the local community and the people should also be part of these decision-making processes. Ulloa (2015, p. 321) points out that,

*“[I]n fact, when the dynamics of environmental disputes are analyzed, the claims and resistances, as well as proposed development alternatives, involve other views about nature and spatiality, since they are not only about access, control and effects, but about other ways of being and living in a specific territory.”*

Indeed, the findings reveal that territory is important for the rural villages in terms of identifying ownership of land, establishing a right to use land and other resources, claiming membership and belonging, providing security through social relations, and simply for determining their ways of being and living. The villagers highlight the boundaries between diverse villages, using sentences like: “Our land until the bridge; the same with our sand.” The unclear boundary can cause conflict between villages. In each village, there are gods of the land, public land, the river, pools, and mountains, which constitute a territory. A territory is not only a physical phenomenon but is shaped by the memory of the community members and is related to the issue of “our land”, the boundary between outsider and insider. The members have the right and responsibility to protect their land, houses, and forests, as well as other properties. River-sand mining in the territory of the rural Zhuang village is influenced by these concepts of ownership, governance, justice, and environmental awareness.

The survey showed that river sand forms part of a village’s territory from the perspective of many villagers. River sand relates to the river, water, drought, flooding, dams, fish species, and the enjoyment of children in their territory. Furthermore, the environment of the territory has shaped the people’s memories. “When I was a kid, the water in our river was so clear that I could directly see the fish,” Zeng Pei told me in April 2017. Mr. Hu told me when he showed me the pollution of the water in the river: “When we were grazing on the riverside, we drank directly from the water in the river.” The villagers in Mei Village said: “We washed vegetables and we washed clothes in the river.” The high quality of the water in Maoling River has been changed as a result of various mining activities, which have been driven by the boom in the sand market. This sand market has emerged mainly due to the government investments into infrastructural development projects in China’s rural and urban areas. The demand for river sand – as one of the basic building materials – has increased over recent years, resulting in the

overexploitation of local river sand sources. There are new roads, new bridges, new infrastructure, and new channels, among many others. The boom in the construction industry has demanded natural resources, including river sand, water, forest, and land to support the rapid development pattern. The natural resources within the territory of the Zhuang villages have been increasingly exploited by diverse actors. Economic benefits have encouraged individual people to engage in river-sand management. In the ensuing processes of negotiation, compromise, dispute, and conflict, the territory has been changed physically and discursively. The riverfront Zhuang villagers who inherited indigenous ecological knowledge has proven to be less powerful than government policy, economic forces, and development trends. Furthermore, indigenous ecological knowledge is of limited relevance in a context of great power disparities. This raises important questions about the sustainability of sand-mining practices in China in the future.

## References

- Acheson, J., 1989. Where have all the exploitings gone? Co-management of the Maine lobster industry. In: F. Berkes, ed. *Common Property Resources*. London: Belhaven, pp. 199-217.
- Acheson, J. M., 1989b. Economic anthropology and the management of common property. In: S. Plattner, ed. *Economic Anthropology*. Stanford: Stanford University Press, pp. 351-378.
- Acheson, J. M., 2006. Institutional Failure in Resource Management. *Annual Review of Anthropology*, 21 September, Volume 35, pp. 117-134.
- Acosta, A., 2008. El buen vivir, una oportunidad por construir. *Revista Ecuador Debate*, Volume 75, p. 33-48.
- Agrawal, A., 2001. Common property institutions and sustainable governance of resources. *World Development*, Volume 29, pp. 1649-72.
- Agrawal, A., 2003. Sustainable Governance of Common-Pool Resources: Context, Methods, and Politics. *Annual Review of Anthropology*, October, Volume 32, pp. 243-262.
- Agrawal, A. & Goyal, S., 1997. *Group Size And Collective Action*. Bloomington, Indonesia, Workshop in Political Theory and Policy Analysis.
- AGWRHT, 2007. *Annual Government Work Report of Huangwutun Town [黄屋屯镇人民政府工作报告]*, Huangwutun Town: The People's Government of Huangwutun Town.
- AGWRHT, 2008. *Annual Government Work Report of Huangwutun Town [黄屋屯镇人民政府工作报告]*, Huangwutun Town: The People's Government of Huangwutun Town.
- AGWRHT, 2009. *Annual Government Work Report of Huangwutun Town [黄屋屯镇人民政府工作报告]*, Huangwutun Town: The People's Government of Huangwutun Town.
- AGWRHT, 2010. *Annual Government Work Report of Huangwutun Town [黄屋屯镇人民政府工作报告]*, Huangwutun Town: The People's Government of Huangwutun Town.
- AGWRHT, 2011. *Annual Government Work Report of Huangwutun Town [黄屋屯镇人民政府工作报告]*, Huangwutun Town: The People's Government of Huangwutun Town.
- AGWRHT, 2012. *Annual Government Work Report of Huangwutun Town [黄屋屯镇人民政府工作报告]*, Huangwutun Town: The People's Government of Huangwutun Town.
- AGWRHT, 2013. *Annual Government Work Report of Huangwutun Town [黄屋屯镇人民政府工作报告]*, Huangwutun Town: The People's Government of Huangwutun Town.
- AGWRHT, 2014. *Annual Government Work Report of Huangwutun Town [黄屋屯镇人民政府工作报告]*, Huangwutun Town: The People's Government of Huangwutun Town.
- AGWRHT, 2015. *Annual Government Work Report of Huangwutun Town [黄屋屯镇人民政府工作报告]*, Huangwutun Town: The People's Government of Huangwutun Town.
- AGWRHT, 2016. *Annual Government Work Report of Huangwutun Town [黄屋屯镇人民政府工作报告]*, Huangwutun Town: The People's Government of Huangwutun Town.
- AGWRHT, 2017. *Annual Government Work Report of Huangwutun Town [黄屋屯镇人民政府工作报告]*, Huangwutun Town: The People's Government of Huangwutun Town.
- AGWRXT, 2012. *Annual Government Work Report of Xintang Town [新棠镇人民政府工作报告]*, Xintang Town: The People's Government of XinTang Town.
- AGWRXT, 2013. *Annual Government Work Report of Xintang Town [新棠镇人民政府工作报告]*

- 报告], Xintang Town: The People's Government of XinTang Town.
- AGWRXT, 2014. *Annual Government Work Report of Xintang Town* [新棠镇人民政府工作报告], Xintang Town: The People's Government of XinTang Town.
- AGWRXT, 2015. *Annual Government Work Report of Xintang Town* [新棠镇人民政府工作报告], Xintang Town: The People's Government of XinTang Town.
- AGWRXT, 2016. *Annual Government Work Report of Xintang Town* [新棠镇人民政府工作报告], Xintang Town: The People's Government of XinTang Town.
- AGWRXT, 2017. *Annual Government Work Report of Xintang Town* [新棠镇人民政府工作报告], Xintang Town: The People's Government of XinTang Town.
- AirportWorld, 2016. *Hong Kong's new three runway system*. [Online] Available at: <http://www.airport-world.com/news/general-news/5753-construction-work-begins-on-hong-kong-s-third-runway-system.html> [Accessed 11 November 2018].
- Anderies, J. M., Janssen, M. A. & Ostrom, E., 2004. *A Framework to Analyze the Robustness of Social-ecological Systems from an Institutional Perspective*. [Online] Available at: <https://www.ecologyandsociety.org/vol9/iss1/art18> [Accessed 26 11 2017].
- Anh, N., 2018. *Vietnam Express*. [Online] Available at: <https://e.vnexpress.net/news/business/illegal-sand-mining-digs-away-at-vietnam-s-rice-basket-3724777.html> [Accessed 15 April 2018].
- Appadurai, A., 1990. Disjuncture and Difference in the Global Cultural Economy. *Public Culture*, 2(2), pp. 1-24.
- Assets, H., 2019. *The first public announcement of the environmental impact assessment of the project of sand mining rights in some river sections of Qin River and Maoling Rivers in Qinbei District*. [Online] Available at: <http://huangmazichan.com/news-datail.php?id=291> [Accessed 2 January 2020].
- Aswani, S., Lemahieu, A. & Sauer, W., 2018. Global trends of local ecological knowledge and future implications. *PLoS ONE*, 13(4), p. e0195440.
- Atkinson, A., 1991. *Principles of Political Ecology*. London: Belhaven Press.
- Axinn, W. G. & Pearce, L. D., 2006. *Mixed Method Data Collection Strategies*. New York: Cambridge University Press.
- Bagchi, D. et al., 1998. Conceptual and methodological challenges in the study of livelihood trajectories: Case-studies in Eastern India and Western Nepal. *Journal of Interntional Development*, 10(4), pp. 453-468.
- Bagnold, R., 1954. *The Physics of Blown Sand and Desert Dunes*. London: Methuen.
- Bailey, S. & Bryant, R., 2005. *Third world political ecology: an introduction*. London: Routledge.
- Bai, Z. & Liu, J., 2020. China's governance model and system in transition. *Journal of Contemporary East Asia Studies*, 9(1), pp. 65-82.
- Baker, H. D., 1979. *Chinese Family and Kinship*. s.l.:MacMillan.
- Baland, J.-P. & Platteau, J.-M., 1996. *Halting Degradation of Natural Resources: Is There a*

- Role for Rural Communities?*. New York: Food and Agriculture Organization of the United Nations and Oxford University Press.
- Banks, M., 2006. Moral Economy and Cultural Work. *Sociology*, 40(3), pp. 455-472.
- Barnes, J., 1951. Marriage in a changing society, Occasional papers of the Rhodes-Livingstone Institute. *Occasional papers of the Rhodes-Livingstone Institute*, Volume 20.
- Barnier, M., 2003. *Guidelines for Successful Public - Private Partnerships*. [Online] Available at: [https://ec.europa.eu/regional\\_policy/sources/docgener/guides/ppp\\_en.pdf](https://ec.europa.eu/regional_policy/sources/docgener/guides/ppp_en.pdf) [Accessed 20 March 2019].
- Barry, J. & Yang, Z., 2009. Marxism and Ecology: From Political Economy to Political Ecology. *Marxism & Reality*, Volume 2, pp. 104-111.
- Bassett, T. J., 1988. The Political Ecology of peasant-herder conflicts in the northern Ivory Coast. *Annals of the Association of American Geographers* 78, pp. 453-472.
- Bebbington, A., 1999. Capitals and capabilities: A framework for analyzing peasant viability, rural livelihoods and property. *World Development*, 27(12), pp. 2021-2044.
- Becker, H. & Vanclay, F., 2003. *The International Handbook of Social Impact Assessment*. Cheltenham: Edward Elgar.
- Becker, J. & Raza, W. G., 2000. Theory of Regulation and Political Ecology: An inevitable separation?. *Économies et Sociétés, Série "Théorie de la Régulation"*, Volume 11, pp. 55-70.
- Bel, G., 2011. Infrastructure and Nation Building: The Regulation and Financing of Network Transportation Infrastructures in Spain (1720–2010). *Business History*, 53(5), p. 688–705.
- Berkers, F., Folke, C. & Colding, J., April 13, 2000. *Linking Social and Ecological Systems: Management Practices and Social Mechanisms for Building Resilience*. Cambridge: Cambridge University Press. .
- Berkes, F., George, P. & Preston, R., 1991. Co-management: the evolution of. *Alternatives* , 18(2), pp. 12-18.
- Bernard, H. R., 2006. *Research Methods in Anthropology: qualitative and Quantitative Approaches*. Lanham, Md.: Altamira Press.
- Bestor, T. C., 2001. Supply-side sushi: commodity, market and the global city. *American Anthropologist*, Mar., 103(1), pp. 76-95.
- Bian, X., 2010. [ 卞晓伟]. *Research on the Diversification Mechanism of Rural Dispute in New Period in China* [新时期我国农村纠纷的多元化机制解决研究]. s.l.:Huazhong Agricultural University.
- Billon, P. L., 2015. Environmental Conflict. In: T. Perreault, G. Bridge & J. McCarthy, eds. *The Routledge Handbook of Political Ecology*. London & New York: Routledge Taylor & Francis Group, pp. 598-608.
- Blaikie, P., 1985. *The Political Economy of Soil Erosion in Developing Countries*. London: Longman.
- Blaikie, P., 1995. Changing environments or changing views? A political ecology for developing countries. *Geography*, 80(348), pp. 203-233.
- Blaikie, P. & Brookfield, ., 1987. *Land Degradation and Society*. London: Methuen.
- Bollig, M., 1990b. Ethnic conflicts in North-West Kenya: Pokot-Turkana Raiding 1969—1984. *Zeitschrift für Ethnologie*, Volume 115, pp. 73-90.

- Bollig, M., 1990. Der Kampf um Federn und Farben – Promotion von Altersgruppen bei den Pokot. Westkenias. In: G. Völger & K. von Welck, eds. *Männerbände, Männerbünde: Zur Rolle des Mannes im Kulturvergleich*. Koeln: Stadt Koeln: Rautenstrauch-Joest-Museum, p. 259–266.
- Bollig, M., 1993. Intra-and Interethnic Conflict in Northwest Kenya: A Multicausal Analysis of Conflict Behaviour. *Antropos Institut*, Volume 88, pp. 176-184.
- Bollig, M., 2002. Problems of resource management in Namibia's rural communities: Transformations of land tenure between state and local community. *Die Erde: Zeitschrift der Gesellschaft für Erdkunde zu Berlin*. , Volume 133, pp. 115-230.
- Bollig, M., 2006. *Risk Management in a Hazardous Environment: A Comparative Study of two Pastoral Societies*. New York: Springer.
- Bollig, M., 2009. Capturing a hydrological revolution: Resource management and political process in north-western Namibia. In: C. Greiner & W. kokot, eds. *Networks, Resources and Economic Action. (Kulturanalysen Bd 9)*. Berlin: Reimer, pp. 151-170.
- Bollig, M. & Schwieger, D., 2014. *Fragmentation, cooperation and power: Institutional dynamics in natural resource governance in North-Western Namibia*. s.l.:Springer.
- Brandstädter, S. & Santos, G. D., 2009. *Chinese Kinship: Contemporary Anthropological Perspectives*. London & New York: Routledge.
- Brannstrom, C., 2017. *Oxford Bibliographies*. [Online] Available at: <http://www.oxfordbibliographies.com/view/document/obo-9780199874002/obo-9780199874002-0002.xml> [Accessed 24 12 2017].
- Bresnihan, P., 2016. *Transforming the Fisheries: Neoliberalism, Nature, and the Commons*. Lincoln and London: University of Nebraska Press.
- Brown, J. & Purcell, M., 2005. There's nothing inherent about scale: political ecology, the local trap, and the politics of development in the Brazilian Amazon. *Geoforum*, Volume 36, pp. 607-24.
- Bryant, R. & Bailey, S., 1997. *Third World Political Ecology*. London: Routledge.
- Bryant, R., Nov.1992. *Political Ecology: An Emerging research agenda in Third-World studies*. s.l.:Political Geography.
- Bryceson, D. F., 1996. Deagrarianization and rural employment in sub-Saharan Africa: A sectoral perspective. *World Development*, 24(1), p. 97–111.
- Bumpus, A. & Liverman, D., 2008. Accumulation by decarbonization and the governance of carbon offsets. *Economic Geography*, 84(2), pp. 127-155.
- Cai, K. G., 1999. Outward Foreign Direct Investment: A Novel Dimension of China's Integration into the Regional and Global Economy. *The China Quarterly*, Volume 160, pp. 856-880.
- Callicott, J., 1994. *Earth's Insights: A survey of Enological Ethics from the Mediterranean Basin to the Australian Outlook*. Berkeley: University of California Press.
- Campbell, B., Mandondo, A., Nemarundwe, N. & Sithole, B., 2001. Challenges to proponents of common property resource systems: Despairing voices from the social forests of Zimbabwe. *World Dev.*, 29(4), p. 589–600.
- Cao, L. [, 2011. *Exploration of constitutional justice of villager autonomy [村民自治的宪政正义探寻]*. Wuhan: Wuhan University.

- Carlsson, L. & Berkes, F., 2005. Co-management: concepts and methodological implications. *Journal of Environmental Management*, Volume 75, p. 65–76.
- Carr, E. R., 2015. Political ecology and livelihoods. In: T. Perreault, G. Bridge & J. McCarthy, eds. *The Routledge Handbook of Political Ecology*. s.l.:Routledge, pp. 332-342.
- Carter, N. T. & Mol, A. P., 2007. *Environmental Governance in China*. London: Routledge.
- Castree, N., 2015. Capitalism and the Marxist Critique of Political Ecology. In: T. Perreault, G. Bridge & J. McCarthy, eds. *The Routledge Handbook of Political Ecology*. s.l.:Routledge, pp. 279-292.
- Central Government WebChinese site, ., 2015. *Guangxi will promote the renovation of 260,000 rural dilapidated houses this year* [广西今年将推进 26 万户农村危房改造 户均补助 1.5 万 元 ]. [Online] Available at: [http://www.gov.cn/xinwen/2015-07/11/content\\_2895483.htm](http://www.gov.cn/xinwen/2015-07/11/content_2895483.htm) [Accessed 04 January 2018].
- Chambers, R. & Conway, G., 1992. *Sustainable Rural Livelihoods: Practical Concepts for the 21st Century*. Sussex: Institute of Development Studies.
- Chan, A., Madsen, R. & Unger, J., 1992. *Chen Village Under Mao and Deng*. Berkeley: University of California Press.
- Chatterjee, P., 1983. More on modes of power and the peasantry. *Subaltern Studies*, Volume 2, pp. 311-49.
- Chen, B., 2010. [陈柏峰]. *Village Corner: Hubei-Hunan Plain "Village Hunhun" Research* [乡村平原“混混”研究]. s.l.:China University of Political Science and Law Press.
- Chen, B., 2011. [陈柏峰]. The settlement of Village Disputes: the subject and the right to govern: a survey of the village of gudun in Anhui Village [[村庄纠纷解决：主体与治权——皖村葛塘村调查]]. *Contemporary Law Review*, Volume 5, pp. 22-31.
- Cheng, S., 2018. *Illegal berths, sand-mining targeted along Yangtze River*. [Online] Available at: <http://www.chinadaily.com.cn/a/201809/28/WS5bad7f52a310eff30327feb0.html> [Accessed 06 November 2018].
- Chen, H.-m. & Xu, Y.-b., 2017. *Research on the Mechanism of Ecological Resources Impoverishment*. Changsha, China, DEStech Publications, Inc., pp. 31-35.
- Chen, J., Stephens, M. & Man, Y.-Y., 2013. *The Future of Public Housing: Ongoing Trends in the East and the West*. Berlin & Heidelberg: Springer-Verlag.
- Chen, L., 2004. *Speech at the Awards Ceremony of Sand Mining Management in the Yangtze River* [陈雷在长江河道采砂管理表彰会上的讲话]. [Online] Available at: [http://www.mwr.gov.cn/slzx/slyw/200412/t20041221\\_147441.html](http://www.mwr.gov.cn/slzx/slyw/200412/t20041221_147441.html) [Accessed 07 December 2017].
- Chen, L., 2011b. On the Ecological Features of Pile Dwelling of Zhuangzu in Black Costumes. *Journal of Guangxi Teachers Education University( Social Science Edition)*, 32(3), pp. 7-11.
- Chen, X., 2016. [陈欣]. *The Operation of the Research about One Project One Discussion Financial Premium and Subsidy System - Based on the Survey of Neijiang Downtown District* [一事一议财政奖补制度运行研究]. Sichuan, China: Sichuan Agriculture University.

- Chien, S.-S. & Hong, D.-L., 2017. River leaders in China: Party-state hierarchy and transboundary governance. *Political Geography*, Volume 62, pp. 58-67.
- China Sand-Stone Association, ., 2018. *River sand prices soared nearly 6 times in Hunan Province, ex-factory price broke through 180 yuan / ton level*. [Online] Available at: <http://www.zgss.org.cn/zixun/hangye/5233.html> [Accessed 27 December 2018].
- China Sand-Stone Association, ., CementRen & ChinaConcretes, 2018. *Urgent! Many provinces have no sand to buy*. [Online] Available at: <http://mini.eastday.com/mobile/180822201800888.html> [Accessed 27 December 2018].
- Cinner, J. et al., 2012. Comanagement of coral reef social-ecological systems. *Proceedings of the National Academy of Sciences*, 109(14), pp. 5219-5222.
- Ciriancy-Wantrup & Bishop, 1975. 'Common Property Resources' as a concept in Natural Resources Policy. *Nat. Res. Journ.*, Volume 15, pp. 713-27.
- CJW, n.d. *Changjiang Water Resources Commission of the Ministry of Water Resources*. [Online] Available at: <http://www.cjw.gov.cn/zwzc/cjwj/jgyg/> [Accessed 18 Januar 2017].
- Clark, A., 1996. Economic, social and cultural issues in mineral development in Vietnam. *Asia Pacific Management Review*, Volume 4, pp. 177-191.
- Cluckman, M., 1995. *Custom and Conviction in African*. Oxford: Blackwell.
- CNS, 2013. *GB 50901-2013 Code for construction of steel-concrete composite structures*., Peking: China Architecture & Building Press.
- CNS, 2016. *GB/T 51025-2016 Technical code for jointless construction of super-large area slabs-on-ground*., Peking: China Planning Press.
- Cohen, J. A., 2016. *A Looming Crisis for China's Legal System*. [Online] Available at: <http://foreignpolicy.com/2016/02/22/a-looming-crisis-for-chinas-legal-system/> [Accessed 05 February 2018].
- Collett, D., 1987. A contribution to the study of migration in the archaeological record: the Ngoni and Kololo as a case study. In: I. Hodder, ed. *Archaeology as long-term history*. Cambridge: Cambridge University Press, pp. 105-116.
- Collins, B., 1991. *River geomorphology and gravel mining in the Pilchuck river*, Snohomish County, Washington: Report prepared for the Pilchuck river Coalition.
- Collins, B. D. & Dunne, T., 1987. *Assessing the effects of gravel harvesting on river morphology and sediment transport: A guide for planners*, Department of Ecology, Olympia: Report to State of Washington.
- Collins, B. & Dunne, T., 1986. *Gravel transport and gravel harvesting in the Humptulips, Wynoochee and Satsop rivers*, Grays Harbor County, Washington: Report to Grays Harbor County Planning and Building Department, Montesano.
- Corson, C. & MacDonald, K., 2012. Enclosing the global commons: The convention on biological diversity and green grabbing. *Journal of Peasant Studies*, 39(2), pp. 263-283.
- COSC, (. O. o. t. S. C. & DPES, (. o. P. a. E., 2012. *Tabulation on the 2010 Population Census of the People's Republic of China*. s.l.:China Statistics Press.

- Cox, K., 1998. Spaces of dependence, spaces of engagement and the politics of scale, or looking for local politics. *Political Geography*, Volume 17, pp. 1-23.
- CPRC04, 2004. *The Constitution of the People's Republic of China*. Beijing: The National People's Congress [全国人民代表大会].
- CPRC54, 1954. *The Constitution of the People's Republic of China*. Beijing: The National People's Congress [全国人民代表大会].
- CPRC82, 1982. *The Constitution of the People's Republic of China*. Beijing: The National People's Congress [全国人民代表大会].
- Creel, H., 1970. *The origins of Statecraft in China*. Chicago: University of Chicago Press.
- Csordas, T. J., 1988. Embodiment as a Paradigm for Anthropology. *Ethos*, 18(1), pp. 5-47.
- Csordas, T. J., 1993. Somatic Modes of Attention. *Cultural Anthropology*, May, 8(2), pp. 135-156.
- CSSGLW, 2018a. *Multi-site comprehensive prohibition of river sand mining! Can "one-size-fits-all" control illegal sand stealing? [多地全面禁止河道采砂! “一刀切”能管住非法偷砂吗?]*. [Online] Available at: [http://www.cssglw.com/News/news\\_content/id/927363678441818.html](http://www.cssglw.com/News/news_content/id/927363678441818.html) [Accessed 27 December 2018].
- CSSGLW, 2018b. *New sources of imported river sand: hundreds of millions of tons of river sand in East Timor are ready to export to China [进口河砂新货源: 东帝汶数亿吨河砂准备向中国出口]*. [Online] Available at: [http://www.cssglw.com/News/news\\_content/id/916774900165992.html](http://www.cssglw.com/News/news_content/id/916774900165992.html) [Accessed 05 December 2018].
- Cunningham, C. E., 1973. Order in the Atoni house. In: R. Needham, ed. *Right and left: Essays on Dual Symbolic Classifications*. Chicago: University of Chicago Press, pp. 204-238.
- D'Alessandro, S., 2007. Non-linear dynamics of population and natural resources: The emergence of different patterns of development. *Ecological Economics*, Volume 62, pp. 473-481.
- Davis, A. & Walsh, C., 2015. The Role of the State in the Financialisation of the UK Economy: The Financialisation of the UK Economy. *Political Studies*, 64(3), pp. 666-682.
- Day, K. A., 2005. *China's Environment and the Challenge of Sustainable Development*. Armonk, NY and London: M. E. Sharpe.
- Decker, S. & Van Winkle, B., 1996. *Life in the gang: Family, friends, and violence*. New York: Cambridge University Press.
- Deng, Y.-K., [邓艳葵] 2012. An Inquiry into the Value of Traditional Ecological Ethics of the Zhuang Ethnic Group [壮族传统生态伦理价值探究]. *Journal of Guangxi University for Nationalities(Philosophy and Social Science)*, 卷 2, pp. 102-104.
- Denzin, N. K., 1973. *The Research Act: A Theoretical Introduction to Sociological Methods*. New Brunswick and London: Transaction Publishers.
- Diamond, J., 2011. *"China, Lurching Giant." Collapse: How Societies Choose to Fail or Succeed*. New York: Penguin Books.
- Diamond, J., 2012. *The world until yesterday: What can we learn from traditional societies?*. New York: Penguin Group.
- Dicken, P., Kelly, P., Olds, K. & Yeung, H. W.-C., 2001. Chains and networks, territories and

- scales: towards a relational framework for analysing the global economy. *Global Networks*, 1(2), p. 89–112.
- Dong, L., 2006. [董磊明]. Research Paths of Village Dispute Adjustment [村庄纠纷调节的研究路径]. *Academic Exploration*, Volume 1, pp. 95-98.
- Dong, L., 2008. [董磊明]. *Song Village Mediation: Authority and Order in the Great Change Times* [宋村的调解: 巨变时代的权威与秩序]. Beijing: Law Press China.
- Dore, E., 1997. How sustainable were pre-Columbian civilizations?. In: H. Collinson, ed. *Green Guerrillas: Environmental Conflicts and Initiatives in Latin America and the Caribbean*. London: Latin America Bureau, pp. 47-51.
- Duan, C., Yang, X. & Zhang, W., 2000. The Impact of Ecological Environment on the Political Life in New China: From the Perspective of Political Ecology. *The Ideological Front (Yunnan University's Journal of Social Sciences)*, Volume 4, pp. 44-47.
- Duara, P., 1988. *Culture, power and the state rural: North China 1900-1942*. USA: Stanford University Press.
- Duara, P., 2015. *The Crisis of Global Modernity: Asian Traditions and a Sustainable Future*. Cambridge: Cambridge University Press.
- Duara, P., 2018. *Spiritual Ecologies: Sustainability and Transcendence in Contemporary Asia*, <https://china-global.uni-koeln.de/chinaglobalcologne/public-lecture-series/prasenjitu-duara-duke-university>: Public Lecture.
- Durkheim, E., 1897. *Suicide: A Study in Sociology*. New York: Free Press.
- Durkheim, E., 1964. *The Division of Labor in Society*. New York: Free Press.
- Eaton, S. & Kostka, G., 2014. Authoritarian environmentalism undermined? local leaders' time horizons and environmental policy implementation. *The China Quarterly*, Volume 218, pp. 359-380.
- Eaton, S. & Kostka, G., 2017. Central protectionism in China: the 'central SOE problem' in environmental governance. *The China Quarterly, special section "Central-local relations and environmental governance in China."*
- Eaton, S. & Kostka, G., 2018. What makes for good and bad neighbours? An emerging research agenda in the study of Chinese environmental politics. *Environmental Politics*, 27(5), pp. 782-803.
- Economy, E., 2004. *The River Runs Black*. Ithaca, NY: Cornell University Press.
- Economy, E. C., 2007. The Great Leap Backward? The Costs of China's Environmental Crisis. *Foreign Affairs*, Sep. - Oct., 86(5), pp. 38-59.
- Edin, M., 2003a. Remaking the Communist Party-State: The Cadre Responsibility System at the Local Level in China. *China: An International Journal*, Volume 1, pp. 1-15.
- Edin, M., 2003b. State Capacity and Local Agent Control in China: CCP Cadre Management from a Township Perspective. *China Quarterly*, Volume 173, pp. 35-52.
- Ehrlich, P., 1968. *The population Bomb*. New York: Ballantine Books.
- Emile, D., 1951. *Suicide: a study in sociology*. s.l.:Free Press.
- Emile, D., 1964. *The Division of Labor in Society*. New York: Free Press.
- Engineer, U., 2014. *The Middle Ground Journal Number 9, Fall 2014*. [Online] Available at: <http://resources.css.edu/academics/his/middleground/articles/engineerchinareviewsfall2014>

- Ensminger, J., 1990. Co-opting the Elders: The Political Economy of State Incorporation in Africa. *American Anthropologist*, 92(3), p. 662–675.
- Ensminger, J., 1992. *Making a market : the institutional transformation of an African society*. Cambridge, UK & New York: Cambridge University Press.
- EPLPRC04, 2004. *The Environmental Protection Law of the People's Republic of China*. Beijing: Standing Committee of the National People's Congress of the People's Republic of China [全国人民代表大会常务委员会].
- EPLPRC84, 1984. *The Environmental Protection Law of the People's Republic of China*. Beijing: Standing Committee of the National People's Congress of the People's Republic of China [全国人民代表大会常务委员会].
- Erskine, W., 1988. Environmental impacts of sand and gravel extraction on river systems. In: W. Erskine, ed. *The Brisbane river: A source-book for the future*. in association with the Queensland Museum, Brisbane: The Australian Littoral Society Inc., pp. 295-303.
- Escobar, A., 1996. Construction nature: Elements for a post-structuralist political ecology. *Futures*, 28(4), pp. 325-343.
- Escobar, A., 1999. *El final del salvaje: Naturaleza, cultura y política en la antropología contemporánea*. Bogotá: ICANH-Cerec.
- Fairbank, J. K. & Goldman, M., 2006. *China: A New History*. 2 ed. Cambridge Massachusetts and London: Belknap Press of Harvard University Press.
- Falzon, M.-A., 2009. *Multi-Sited Ethnography: Theory, Praxis and Locality in Contemporary Research*. London and New York: Routledge.
- FAO, 1999. *Status and Progress in the Implementation of National Forest Programmes: Outcomes of an FAO Worldwide Survey*. Mimeo, Rome: Food Agriculture Organization.
- Faure, D., 1986. *The structure of Chinese rural society: lineage and village in the eastern New Territories*. Oxford: Oxford University Press.
- Fazekas, M. & Tóth, B., 2017. *The effectiveness of the European Union in safeguarding competition in public procurement markets*. Budapest, Hungary: Government Transparency Institute.
- Fei, X., 1939. *Peasant life in China : a field study of country life in the Yangtze valley*. New York: E.P. Dutton.
- Fei, X., 1998. *Xiangtu zhongguo shengyu zhidu (rural China and system of child-bearing)*. China: Beijing University Press.
- Feng, L.-k., 2009. Critics on Villagers' Autonomy. *Law and Social Development*, 06.
- Feuchtwang, S., 2003. *Popular Religion in China: The Imperial Metaphor*. Now York: Routledge Uurzon Press.
- Fidjett, S., 2003. *River Mining: Planning guidelines for the management of river mining in developing countries with particular reference to Jamaica*. Birmingham: Alliance Environment and Planning Ltd.
- FMMRSM90, 1990. *The Fees Management Method of River Sand Mining [河道采砂收费管理办法]*. Beijing: Ministry of Water Resources of the People's Republic of China, Ministry of Finance of the People's Republic of China and Price Bureau of People's Republic of

- China [水利部,财政部,国家物价局].
- Forsage, A. & Carter, N., 1973. Effects of gravel dredging on the Brazos River. *Proceedings of the Annual Conference of the Southeastern Associations of Fish and Game Commissioners*, Volume 27, pp. 695-709.
- Forsyth, T., 2008. Political ecology and the epistemology of social justice. *Geoforum*, 39(2), pp. 756-764.
- Foster, R. J., 2005. Tracking globalization: Commodities and value in motion. In: C. Tilley, ed. *Handbook of material culture*. London: SAGE, pp. 285-302.
- Franks, D. M., 2012. *Social impact assessment of resource projects: International Mining for Development Centre, Mining for Development: Guide to Australian Practice*. University of Queensland and University of Western Australia: Australia Government.
- Freedman, M., 1958. *Lineage organization in southeastern China*. London: University of London, Athlone Press.
- Freedman, M., 1971. *Chinese Lineage and Society: Fukien and Kwantung*. London: Athlone Press.
- Freedman, M., 2007. *Chinese Lineage and Society: Fukien and Kwangtung*. University of London: The Athlone Press.
- Fu, G.-H., 2014. *Research on Ecological Civilization Construction in Zhuang Nationality: Based on the Perspective of Ethnic Ecology*. Guilin: Guangxi Normal University Press.
- Fukuyama, F., 2002. *Our Posthuman Future: Consequences of the Biotechnology Revolution*. New Yourk, NY: Farrar, Straus and Giroux.
- Fulton, M., 2011. *12th Five Year Plan – Chinese Leadership Towards A Low Carbon Economy*. Deutsche Bank Group DB Climate Change Advisors. [Online] Available at: [http://www.dbcca.com/dbcca/EN/media/China\\_12th\\_Five\\_Year\\_Plan.pdf](http://www.dbcca.com/dbcca/EN/media/China_12th_Five_Year_Plan.pdf) [Accessed 07 02 2018].
- Galay, V., 1983. Causes of river bed degradation. *Water Resources Research*, Volume 19, pp. 1057-1090.
- Galero, D., Pesci, H. & Depetris, P., 1998. Effects of quarry mining and of other environmental impacts in the mountainous Chicam-Toctino drainage basin (Cordoba, Argentina). *Environmental Geology*, Volume 34, pp. 159-166.
- Galinato, G., 2011. Endogenous property rights regimes, common-pool resources and trade. *Ecological Economics*, Volume 70, pp. 951-962.
- Gallagher, K., 2006. *China Shifts Gears*. Cambridge, MA: MIT Press.
- Gao, X., 2017. Promotion prospects and career paths of local party-government leaders in China. *Journal of Chinese Governance*, 2(2), pp. 223-234.
- Gauke, D., 2016. *HM Treasury Budget 2016*, London: The Williams Lea Group.
- GB/T 32000-2015, ., 2015. *Guidelines for the construction of beautiful villages*. s.l.:Chinese Standards(GB).
- GBSYC, 2011. *The Zhuang Minority*. [Online] Available at: <http://www.gxzf.gov.cn/mlgx/gxrw/ftq/20110402-285607.shtml> [Accessed 11 December 2018].
- GBSYC, 2015b. *Language [ 语 言 ]*. [Online] Available at: <http://www.gxzf.gov.cn/mlgx/gxrw/ftq/20150205-437672.shtml>

- [Accessed 24 March 2018].
- GBSYC, 2015. *Overview of Guangxi historical Residents [广西世居民族概述]*. [Online] Available at: <http://www.gxzf.gov.cn/mlgx/gxrw/ftq/20150204-437609.shtml> [Accessed 18 June 2018].
- Geertz, C., 1973. *The interpretation of Culture*. London: Hutchinson.
- Gereffi, G., 1994. The organization of buyer driven global commodity chains: how US retailers shape overseas production networks. In: G. Gereffi & M. Korzeniewicz, eds. *Commodity Chains and Global Capitalism*. London: Praeger, p. 95–122.
- Gereffi, G. & Korzeniewicz, M., 1994. *Commodity Chains and Global Capitalism*. London: Praeger.
- Giddens, A., 1984. *The constitution of society: outline of the theory of structuration*. Cambridge UK: Polity Press.
- Gilberthorpe, E. & Hilson, G., 2014. *Natural resource extraction and indigenous livelihoods: Development challenges in an era of globalization*. Ashgate: ROUTLEDGE .
- Gilmour, P. W., 2013. *Factors and processes affecting co-management of natural resources*. s.l.:Department of Zoology, The University of Melbourne.
- Gluckman, M., 1950. Kinship and marriage among the Lozi of Northern Rhodesia and the Zulu of Natal. In: A. Radcliffe-Brown & D. Forde, eds. *African Systems of Kinship and Marriage*. Oxford: Oxford University Press, pp. 166-206.
- Gluckman, M., 1958. *Analysis of a social situation in modern Zululand*. Manchester: Published on behalf of the Rhodes-Livingstone Institute by the Manchester University Press.
- GMP, 2005. *Nanning International Convention and Exhibition Center, China*. [Online] Available at: <https://www.gmp-architekten.com/projects/> [Accessed 23 December 2017].
- GOGZARG, 2017. *Fully Implement the River Chief System in Guangxi Zhuang Autonomous Region [广西壮族自治区全面推行河长制工作方案]*, Guangxi: General Office of the Guangxi Zhuang Autonomous Region Government.
- Golafshani , N., 2003 . Understanding Reliability and Validity in Qualitative Research. *The Qualitative Report* , 4 December, 8(4), pp. 597-607.
- Goodale, M., 2017. *Anthropology and Law. A Critical Introduction*. New York: New York University Press.
- Gordon, H., 1954. The economic theory of a common property resource: The fishery. *Journal of Political Economy*, Volume 62, pp. 124-142.
- GOSCPRC, 2007 No.4. *Notice of the management method of "One Project, One Discusses" about raising fund and labor in villagers*, The General Office of the State Council, Beijing: The General Office of the State Council.
- GOSCPRC, 2016. *Policy opinion regarding fully implementation of River Chief System [关于全面推行河长制的意见]*, Beijing: General Office of the State Council of the People's Republic of China [国务院办公厅].
- Greene, J. C., 2007. *Mixed Methods in Social Inquiry*. San Francisco, CA.: Jossey-Bass.
- Grimble, R. & Wellard, K., 1997. Stakeholder methodologies in natural resource management: a review of principles, contexts, experiences and opportunities. *Agricultural system*, 55(2), pp. 173-193.

- Guangxi Government, 2018. *Guangxi overview*. [Online] Available at: [http://en.gxzf.gov.cn/2018-08/17/c\\_263420.htm](http://en.gxzf.gov.cn/2018-08/17/c_263420.htm) [Accessed 14 September 2018].
- Gulliver, P., 1979. *Disputes and Negotiations: Across—Cultural Perspective*. New York: Academic Press.
- Guthman, J., 2011. 'Bodies and accumulation: revisiting labour in the "production of nature"'. *New Political Economy*, 16(2), pp. 233-238.
- GZARLRC, 2000. *Guangxi gazetteer minority language - Zhuang language*. Nanning: Guangxi People's Publishing House.
- Halbwachs, M., 1992. *On collective memory*. Chicago: The University of Chicago Press.
- Haller, T., 2010. Between open access, privatisation and collective action: A comparative analysis of institutional change governing use of common-pool resources in African floodplains. In: T. Haller, ed. *Disputing the floodplains: Institutional Change and the politics of resource management in African wetlands*. Leiden: The Netherlands: Koninklijke Brill NV., pp. 413-443.
- Hammerschmid, G. & Wegrich, K., 2016. Infrastructure Governance and Government Decision-making. In: Hertie school of Governance, ed. *The Governance Report 2016*. Oxford: Oxford University Press, pp. 31-54.
- Hammes, J. J., 2013. The Political Economy of Infrastructure Planning in Sweden. *Journal of Transport Economics and Policy*, 47(3), p. 437–52.
- Han Min, 2001. *Social Change and Continuity in a village in Northern Anhui, China: A Response to 16 Revolution and Reform*. s.l.:National Museum of Ethnology.
- Han, H., 2012. National Land Use Management in China: An Analytical Framework. *Journal of Urban Management 2012*, 1(1), p. 3 – 38.
- Han, L.-X., Li, W., Lu, Y.-J. & Mo, S.-P., 2005. [韩龙喜,李伟,陆永军,莫诗平] Impact of artificial sand excavation on hydrodynamics and water environment of Dongjiang River network[人工挖沙对东江水系水动力及环境影响分析]. *Journal of Hohai University: Natural Sciences*, Volume 33, pp. 123-126.
- Hardin, G., 1968. The tragedy of the Commons. *Science*, Volume 162, pp. 1243-1248.
- Hardin, G., 1978. Political Requirements for Preserving our Common Heritage. In: H. Bokaw, ed. *Wildlife and America*. Washington, D.C.: Council on Environmental Quality, pp. 310-17.
- Hargrove, E., 1986. *Religion and Environmental Crisis*. Athens: University of Georgia Press.
- Harrell, S., 1995. *Cultural Encounters on China's Ethnic Frontiers*. Seattle: University of Washington Press.
- Hartwick, E. R., 1998. Geographies of consumption: a commodity-chain Approach. *Environment and Planning D: Society and Space*, Volume 16, p. 423–37.
- Hartwick, E. R., 2001. Commodity chains. In: *International Encyclopedia of the Social and Behavioral Sciences IV*. New York: Elsevier, p. 2276–9.
- Harvey, M. & Smith, T., 1998. *Gravel mining impacts on San Benito river, California*. California, US, Water Resources Engineering '98, American Society of Civil Engineers, p. 304.
- Headland, T., 1997. Revisionism in ecological anthropology. *Current Anthropology*, 38(4), pp. 605-630.

- Hecht, S. B. & Cockburn, A., 1992. Realpolitik, reality and rhetoric in Rio. *Environment and Planning D: Society and Space* 10, 10, pp. 367-375.
- He, G., Mol, A. P., Zhang, L. & Lua, Y., 2013. Public participation and trust in nuclear power development in China. *Renewable and Sustainable Energy Reviews*, Volume 23, pp. 1-11.
- Heilbroner, R., 1974. *An Inquiry Into the Human Prospect*. New York: Norton.
- Hershkovitz, L., 1993. Political Ecology and Environmental Management in the Loess Plateau. *Human Ecology*, 21(4), p. 327-353.
- He, X. [., 2003. *Rural China in the 21 Century: Survey Notes of the Rural Society in the Transformation Period* [新乡土中国: 转型期乡村社会调查笔记]. s.l.:Guangxi Normal University Press.
- He, X., 2013. [贺雪峰]. *Rural China in the 21 Century* [新乡土中国 (修订版)]. 3 ed. Beijing: Beijing University Press.
- Holler, M. J., 1987. *The Logic of Multiparty Systems*. 17 ed. The Netherlands: Kluwer Academic Publishers.
- Homer-Dixon, T., 1994a. Environmental Scarcities and Violent Conflict: Evidence from Cases. *International Security*, 19(1), pp. 5-40.
- Homer-Dixon, T., 1994b. On the Threshold: Environmental Changes as Causes of Acute Conflict. *International Security*, 16(2), pp. 76-116.
- Homer-Dixon, T., 1999. *Environment, Scarcity, and Violence*. Princeton: Princeton University Press.
- Hong, N.-F., [洪乃丰] 2002. Sea sand corrosion to reinforcing concrete and countermeasure [海砂对钢筋混凝土的腐蚀与对策]. *CONCRETE*, Volume 8, pp. 12-14.
- Hong, N.-F., [洪乃丰] 2004. Chloride corrosion and rebar inhibitor admixture [氯盐腐蚀与钢筋阻锈剂]. *CONCRETE*, Volume 1, pp. 58-60.
- Ho, P., 2001. Who Owns China's Land? Policies, Property Rights and Deliberate Institutional Ambiguity. *The China Quarterly*, Volume 166, pp. 394-421.
- Ho, P., 2005. *Institutions in transition: land ownership, Property Rights, and Social Conflict in China*. Oxford: Oxford University Press.
- Ho, P., 2006. Trajectories for greening in China: Theory and Practice. *Development and Change*, Volume 37, pp. 3-28.
- Ho, P., 2015. Myths of Tenure Security and Titling: Endogenous, Institutional Change of China's Development. *Land Use Policy*, Volume 47, p. 352-364.
- Hopkins, T. & Wallerstein, I., 1986. Commodity chains in the world economy prior to 1800. *Review*, 10(1), p. 157-70.
- Hopkins, T. & Wallerstein, I., 1994. Commodity chains: construct and research. In: G. Gereffi & M. Korzeniewicz, eds. *Commodity Chains and Global Capitalism*. London: London: Praeger, p. 17-20.
- Horowitz, L. S., 2015. Local Environmental Knowledge. In: T. Perreault, G. Bridge & J. McCarthy, eds. *The Routledge Handbook of Political Ecology*. New York: Routledge, pp. 235-248.
- Hou, L., 2011. [侯良泽]. Existing Problems and their countermeasures while managing the River Sand Mining [河道采砂管理工作中存在的问题和对策]. *China Water Resources*, Volume 10, pp. 27-34.

- Howell, A., Gustafsson, B. & Ding, S., 2018. Investigating the Patterns and Determinants of Han and Ethnic Minority Household Migration in China. In: *Ethnicity and Inequality in China*. New York and Oxford: Routledge.
- Howell, A. J., 2017. Impacts of Migration and Remittances on Ethnic Income Inequality in Rural China. *World Development*, Volume 94, pp. 200-211.
- Huang, B.-S., 2003a. Zhuang cultural roots and environmental beauty [壮族文化根系与壮族文化生态美——壮族文化生态美研究之一]. *JOURNAL OF GUANGXI UNIVERSITY FOR NATIONALITIES(PHILOSOPHY AND SOCIAL SCIENCES EDITION)* [广西民族学院学报(哲学社会科学版)], 25(2), pp. 81-86, 103.
- Huang, B.-S., 2003b. Absorbent Root System and the Ecological Beauty of the Zhuang Nationality Culture--A Study on the Ecological Beauty of the Zhuang Nationality Culture (No.3) [广纳文化根系与壮族的文化生态美--壮族文化生态美研究之三]. *JOURNAL OF GUANGXI UNIVERSITY FOR NATIONALITIES(PHILOSOPHY AND SOCIAL SCIENCES EDITION)* [广西民族大学学报(哲学社会科学版)], 25(4), pp. 98-101.
- Huang, B.-S., 2003c. The Beauty of Rivalry in the Zhuang's Cultural Ecology: Series of Research into Ecological Beauty of the Zhuang's Culture (VI) [壮族文化生态的竞生之美——壮族文化生态美研究之六]. *JOURNAL OF GUANGXI UNIVERSITY FOR NATIONALITIES(PHILOSOPHY AND SOCIAL SCIENCE EDITION)* [广西民族大学学报(哲学社会科学版)], 25(5), pp. 92-96.
- Huang, M., 2016. *Guangxi promulgated river sand mining management regulations to crack down on illegal sand mining*. [Online] Available at: [http://www.gov.cn/xinwen/2016-12/01/content\\_5141449.htm](http://www.gov.cn/xinwen/2016-12/01/content_5141449.htm) [Accessed 12 03 2018].
- Huang, P. C., 1985. *The Peasant Economy and Social Change in North China*. Stanford, California: Stanford University Press.
- Huang, Q. & Xu, J., 2017. Scales of Power in Water Governance in China: Examples From the Yantze River Basin. *Society & Natural Resources*, 30(4), pp. 421-435.
- Huang, Q. & Xu, J., 2019. Rethinking environmental bureaucracies in River Chiefs System (RCS) in China: A critical literature study. *Sustainability*, 11(6), p. 1608.
- Huang, X.-F., 1962. It is a War of Justice of the Anti-Song of Nong Zhigao. *Guangxi Daily*, 02 04.
- Huang, X. & Zheng, Z., 2005. *The Space Order as Moral Order*. s.l.:Social studies.
- Huang, Z., Gong, W. & Gao, Y., 2014. [黄宗智, 龚为纲 & 高原]. Is the Operation mechanism and effect of "Project System" the "rationalization" ["项目制"的运作机制和效果是“合理化”吗?]. *Open Times*, 33(5), p. 143-159.
- Hu, C.-Z., 1998. *Tudi dengji lilun yu fangfa (Theory and Methods of Land Registration)*, Vol. 1. Beijing: China Agriculture Press.
- Hu, H.-c., 1944. *Chinese Concepts of "face"*. s.l.:American Anthropologist Association .
- Hussein, K., 2002. *Livelihoods Approaches Compared: A Multi-Agency Review of Current Practice*. London: Department for International Development.
- Jahiel, A., 1998. Organization of environmental protection in China. *The China Quarterly*, Volume 156, pp. 757-87.
- Jaspers, K., 1953. *The Origin and Goal of History*. New Haven, CT: Yale University Press.

- Jia, L.-W. et al., 2007. [贾良文, 罗章仁, 杨清书, 欧素英, 雷亚平], Impacts of the large amount of sand mining on riverbed morphology and tidal dynamics in lower reaches and delta of the Dongjiang River [大量采沙对东江下游及东江三角洲河床地形和潮汐动力的影响]. *Journal of Geographical Sciences*, 17(2), pp. 197-211.
- Jiang, W., 2009. Fuelling the Dragon: China's Rise and Its Energy and Resources Extraction in Africa. *The China Quarterly*, Volume 199, pp. 585-609.
- Jiang, W., 2012. *Measures for the Administration of Public Rental Houses*. [Online] Available at: [http://www.mohurd.gov.cn/fqjs/jsbgz/201206/t20120612\\_210227.html](http://www.mohurd.gov.cn/fqjs/jsbgz/201206/t20120612_210227.html) [Accessed 10 October 2016].
- Jiang, W., 2015. *The former director of Qinbei District Water Conservancy Bureau Lao Hongzhi took bribes of 1.77 million and took a bus to work (钦北区水利局原局长劳宏智受贿 177 万坐公交上班)*. [Online] Available at: <http://www.gxnews.com.cn/staticpages/20150403/newgx551dcbfe-12524621.shtml> [Accessed 20 March 2018].
- Jing, J., 1996. *The temple of memories: History, power, and morality in a Chinese village*. Stanford, CA: Stanford University Press.
- Jing, J., 2006. The social origin of AIDS panic in China. In: *AIDS and Public Policy in China*. s.l.: Asia Center Publications, pp. 152-169.
- Jing, J., 2010. "Drugs, HIV and Chinese youth". In: J. Jing & H. Worth, eds. *HIV in China: Understanding the Social Aspects of the Epidemic*. s.l.: University of New South Wales Press.
- Jing, J., 2013. *The Temple of Memories: History, Power and Morality in a Chinese Village*. s.l.: Fujian education Press.
- Johnson, O. E. G., 1972. Economic analysis, the legal framework and land tenure systems. *Journal of Law and Economics*, 15(1), pp. 259-276.
- Joyce, S. & MacFarlane, M., 2001. *Social impact assessment in the mining industry: current situation and future directions*. England, International Institute for Environment and Development (IIED)-Mining, Minerals and Sustainable Development, pp. 8-10.
- Kamboj, V., Kamboj, N., Sharma, S. & Author, C., 2017. Environmental Impact of River Bed Mining-A Review. *International Journal of Scientific Research and Reviews*, 7(1), p. 504-520.
- Kanehl, P. & Lyons, J., 1992. *Impacts of instream sand and gravel mining on stream habitat and fish communities including a survey on the Big Rib river*. Marathon County, Wisconsin: Wisconsin Department of Natural Resources Research Report 155.
- Kaup, K. P., 2000. *Creating the Zhuang: Ethnic Politics in China*. Boulder and London: Lynne Rienner Publishers.
- Khan, S. & Sugie, A., 2015. Sand Mining and Its Social Impacts on Local Society in Rural Bangladesh: A Case Study of a Village in Tangail District. *Journal of Urban and Regional Studies on Contemporary India*, 2(1), pp. 1-11.
- King, B., 2011. Spatialising livelihoods: Resource access and livelihood spaces in South Africa. *Transactions of the Institution of British Geographers*, 36(2), pp. 297-313.
- Kinsley, D., 1995. *Ecology and Religion: Ecological Spirituality in a cross-Cultural Perspective*. Englewood Cliffs: N.J. Prentice Hall.

- Kioko, E., 2016. *Turning conflict into coexistence: cross-cutting ties and institutions in the agro-pastoral borderlands of Lake Naivasha basin, Kenya*. [Online] Available at: <http://kups.ub.uni-koeln.de/7064/> [Accessed 21 10 2017].
- Kipnis, A. B., 1997. *Producing Guanxi: Sentiment, Self, and Subculture in a North China Village*. Durham and London: Duke University Press.
- Klingeman, P., Beschta, R., Komer, P. & Bradley, J., 1999. *Gravel-Bed Rivers in the Environment*. Highlands Ranch, Colo: Water Resources Publications, LLC.
- Kondolf, G., 1993. The reclamation concept in regulation of gravel mining in California. *Journal of Environmental Planning and Management*, Volume 36, pp. 397-409.
- Kondolf, G., 1994b. Environmental planning in regulation and management of instream gravel mining in California. *Landscape and Urban Planning*, Volume 29, pp. 185-199.
- Kondolf, G., 1995a. Five elements for effective evaluation of stream restoration. *Restoration Ecology*, Volume 3, pp. 133-136.
- Kondolf, G., 1995b. Geomorphological stream channel classification in aquatic habitat restoration: Uses and limitations. *Aquatic Conservation Marine and Freshwater Ecosystems*, Volume 5, pp. 127-141.
- Kondolf, G., 1997. Hungry Water: Effects of dams and gravel mining on river channels. *Environmental Management*, Volume 21, pp. 533-551.
- Kondolf, G., 1998a. Environmental effects of aggregate extraction from river channels and floodplains. In: P. Bobrowsky, ed. *Aggregate resources: a global perspective*. Brookfield: A.A. Balkema, pp. 113-129.
- Kondolf, G., 1998b. Large scale extraction of alluvial deposits from rivers in California: geomorphic effects and regulatory strategies. In: P. Klingeman, R. Beschta, P. Komar & J. Bradley, eds. *Gravel bed rivers in the environment*. Colorado: Water Resources Publications, pp. 455-470.
- Kondolf, G., 1994a. Geomorphic and environmental effects of instream gravel mining. *Landscape and Urban Planning*, Volume 28, pp. 225-243.
- Kondolf, G. M., 2006. River restoration and meanders. *Ecology and Society*, 11(2), p. 42.
- Kondolf, G., Smeltzer, M. & Kimball, L., 2002. Freshwater gravel mining and dredging issues. Report prepared for Washington department of fish and wildlife. *Washington department of ecology and Washington department of transportation*, p. 122.
- Kondolf, G., Vick, J. & Ramirez, T., 1996. Salmon spawning habitat rehabilitation on the Merced river, California: An evaluation of project planning and performance. *Transactions of the American Fisheries Society*, Volume 125, pp. 899-912.
- Kopytoff, I., 1986. The cultural biography of things: commoditization as process. In: A. Appadurai, ed. *The Social Life of Things: Commodities in Cultural Perspective*. Cambridge: Cambridge University Press, p. 64-91.
- Kostka, G., 2013. Environmental Protection Bureau Leadership at the Provincial Level in China: Examining Diverging Career Backgrounds and Appointment Patterns. *Journal of Environmental Policy and Planning*, 15(1), pp. 41-63.
- Kostka, G. & Anzinger, N., 2016. Large Infrastructure Projects in Germany: A Cross-sectoral Analysis. In: G. Kostka & J. Fiedler, eds. *Large Infrastructure Projects in Germany: Between Ambition and Realities*. Berlin: Hertie School of Governance, pp. 15-38.

- Kostka, G. & Eaton, S., 2018. What makes for good and bad neighbours? An emerging research agenda in the study of Chinese environmental politics. *Environmental Politics*, pp. 782-803.
- Kostka, G. & Fiedler, J., 2016. *Large Infrastructure Projects in Germany: Between Ambition and Realities*. 1 ed. Germany: Palgrave Macmillan.
- Kostka, G. & Hobbs, W., 2012. Local Energy Efficiency Policy Implementation in China: Bridging the Gap between National Priorities and Local Interests. *The China Quarterly*, Volume 211, pp. 765-785.
- Kostka, G. & Hobbs, W., 2013. Embedded Interests and the Managerial Local State: The Political Economy of Methanol Fuel-Switching in China. *Journal of Contemporary China*, 22(80), pp. 204-218.
- Kostka, G. & Mol, A. P., 2013. Implementation and Participation in China's Local Environmental Politics: Challenges and Innovations. *Journal of Environmental Policy & Planning*, 15(1), pp. 3-16.
- Kostka, G. & Nahm, J., 2017. Central-Local Relations: Recentralization and Environmental Governance in China. *The China Quarterly*, Volume 231, pp. 567-582.
- Krause, C., Diesing, M. & Arlt, G., 2010. The physical and biological impact of sand extraction: a case study of the western Baltic Sea. *Journal of Coastal Research*, Volume 51, pp. 215-226.
- Krausmann, F. et al., 2009. Growth in global materials use, GDP and population during the 20th century. *Ecological Economics*, Volume 68, pp. 2696-2705.
- Krishnakumar, A., 2002. *Environmental degradation of two river basins of southern Kerala. Ph.D Thesis (Unpublished)*. Thiruvananthapuram, India: University of Kerala.
- Kull, C. & Rangan, H., 2015. The political ecology of weeds: a scalar approach to landscape transformations. In: R. L. Bryant, ed. *The international handbook of political ecology*. King's College London, UK: Edward elgar, pp. 487-500.
- Kuper, A., 1980. Symbolic dimensions of the Southern Bantu homestead. *Symbolic dimensions of the Southern Bantu homestead, Africa*, 50(1), pp. 8-23.
- Kuper, A., 1982. *Wives for cattle*. London: Routledge and Kegan Paul.
- Ladson, A. & Judd, D., 2014. *A review of the effect of floodplain gravel mining on river stability*. Townsville, Queensland, River Basin Management Society, pp. 249-259.
- Landry, P. F., 2008. *Decentralized Authoritarianism in China*. New York: Cambridge University Press.
- Larson, C. & Berkes, F., 2005. Co-management: concepts and methodological implications. *Journal of Environmental Management*, Volume 75, p. 65-76.
- Lary, D., 1972. Communism and Ethnic Revolt: Some Notes on the Chuang (Zhuang) Peasant Movement in Kwangsi 1921-31. *China Quarterly*, 49(49), pp. 126-135.
- Latour, B., 2017. On Actor-Network Theory. A Few Clarifications, Plus More Than a Few Complications. *Philosophical Literary Journal Logos*, Volume 27, pp. 173-197.
- Lave, R., 2015. Reassembling The Structural: Political ecology and Actor-Network Theory. In: T. Perreault, G. Bridge & J. McCarthy, eds. *The Routledge Handbook of Political Ecology*. New York: Routledge, pp. 213-223.
- Lebar, F., Hickey, G. & Musgrave, J., 1964. *Ethnic Groups of Southeast Asia*. New Haven, Conn.: Shoe String Press.

- Lei, K. & Li, L., 2012. Discrimination against Rural-to-Urban Migrants: The Role of the Hukou System in China. *PLoS One*, 7(11).
- Leopold, A., 1968. *A Sand County Almanac and Sketches Here and There*. Oxford: Oxford University Press.
- Leopold, A., 1970. *A Sand County Almanac: With Other Essays on Conservation from Round River*. s.l.:Ballantine Books.
- Lertzman, D. A. & Vredenburg, H., 2005. Indigenous Peoples, Resource Extraction and Sustainable Development: An Ethical Approach. *Journal of Business Ethics*, 56(3), pp. 239-254.
- Lewis, J., 2015. *Green Innovation in China: China's Wind Power Industry and the Global Transition to a Low-Carbon Economy*. s.l.:Columbia University Press.
- LGCXT, 2010. *Local Government Chronicles of Xintang Town*[新棠镇地方志]. Xintang Town: Xintang Town People's Government.
- LGCXT, 2011. *Local Government Chronicles of Xintang Town*[新棠镇地方志]. Xintang Town: Xintang Town People's Government.
- LGCXT, 2012. *Local Government Chronicles of Xintang Town*[新棠镇地方志]. Xintang Town: Xintang Town People's Government.
- LGCXT, 2013. *Local Government Chronicles of Xintang Town*[新棠镇地方志]. Xintang Town: Xintang Town People's Government.
- LGCXT, 2014. *Local Government Chronicles of Xintang Town*[新棠镇地方志]. Xintang Town: Xintang Town People's Government.
- LGCXT, 2015. *Local Government Chronicles of Xintang Town*[新棠镇地方志]. Xintang Town: Xintang Town People's Government.
- Liang, J., 2018a. *China int'l garden expo opens in Nanning*. [Online] Available at: <http://en.people.cn/n3/2018/1207/c90000-9526151.html> [Accessed 11 March 2019].
- Liang, L., 2017. *Totem Worship - Zhuang Chong Frog Culture is deeply rooted in the hearts of the people*. [Online] [Accessed 12 December 2018].
- Liang, Y., 2018. *Xi congratulates Chinese farmers for first harvest festival*. [Online] Available at: [http://www.xinhuanet.com/english/2018-09/22/c\\_137486620.htm](http://www.xinhuanet.com/english/2018-09/22/c_137486620.htm) [Accessed 01 October 2018].
- Liao, M.-J., 1997. The stone worship culture of the Zhuang: Zhuang Nature Worship Culture Series II. *Guangxi Ethnic Studies*, pp. 81-86.
- Liao, M., 2004. *The Culture of Naturally Worship of Zhuang*. Nanning: Guangxi Renmin Publishing House.
- Liao, S.-G., Zhong, J.-Y. & Fu, X.-M., 2018. Research on River Chiefs System in China: Effect Evaluation, Defects and Future Prospects. *International Journal of Natural Resource Ecology and Management*, 3(2), pp. 24-31.
- Li, C., 2016a. *Guangxi promulgated the first River Sand Mining Management Regulations, Maximum fine of 500,000 yuan, Maximum fine of 500,000 yuan (广西出台首部河道采砂管理条例 盗采最高罚 50 万)*. [Online] Available at: <http://www.gxnews.com.cn/staticpages/20161201/newgx5840451a->

[15738872.shtml](#)

[Accessed 21 08 2018].

- Lieberthal, K., 1997. China's governing system and its impact on environmental policy implementation. *China Environment Series*, Volume 1, pp. 3-8.
- Lieberthal, K. & Oksenberg, M., 1988. *Policy-Making in China: Leaders, Structures, and Processes*. Princeton, N.J.: Princeton University Press.
- Li, H., 2006. [李恒昌]. Discussion on Standardized Management of Sand Mining in Guangxi River Channel [广西河道采砂规范化管理探讨]. *Pearl River*, 27(3), pp. 16-18.
- Li, K., 2017. *Report on the Work of the Government*. [Online] Available at: [http://www.xinhuanet.com/english/china/2017-03/16/c\\_136134017.htm](http://www.xinhuanet.com/english/china/2017-03/16/c_136134017.htm) [Accessed 15 October 2017].
- Lin, C., 2014. [林昌华]. Analysis on the Relation between Efficiency of Urbanization and Employment Structure in Regional Economic Development: Based on the Empirical Research of Fujian [区域发展中城镇化效率与就业结构动因--基于福建省的实证]. *Journal of Chongqing Institute of Technology*, 12 8, Volume 7, pp. 48-54.
- Lin, F., 2007. *Study on Scripture of Tiao Ling Tou of South in Guangxi*, Nanning: Guangxi Univeristy.
- Ling, C.-H., 2010. On the ecological ethnics of the Zhuang people as represented in "Mojing Buluoto". *Journal of Guangxi University for Nationalities Philosophy and social Sciences Edition*, May, 32(3), pp. 90-94.
- Lin, X., 2013. *The former deputy director of Guangdong Water Resources took 20 million bribes to serve as an protective umbrella for sand gangs*. [Online] Available at: <http://jiwei.nwpu.edu.cn/info/1027/4223.htm> [Accessed 26 August 2018].
- Lin, Y., 1948. *The golden wing: a sociological study of Chinese familism*. Kegan Pau: Routledge, Trench, Trubner and Co. Ltd.
- Li, P., 2004. [李培林]. *The End of Village: Stories of Yangcheng village [中国经济社会发展的问题和趋势]*. s.l.: The commercial Press.
- Lipietz, A., 1997. Nachhaltige Entwicklung: Geschichte und Herausforderungen. In: documenta und Museum Fridericianum GmbH, ed. *Politics-Poetics. Das Buch zur documenta X*. Ostfildern: Cantz-Verlag, pp. 671-784.
- Li, R. & Pang, Z., 2000. *Gazetteers of Qinzhou City*. Qinzhou City: Guangxi People's Publishing House.
- Li, T., 1996. Images of community: discourse and strategy in property relations. *Development and Change*, Volume 27, pp. 501-527.
- Li, T.-M., 2005. Beyond 'the State' and failed schemes. *American Anthropologist*, Volume 107, pp. 383-94.
- Little, W., 2018. Society and Modern Life. In: *Introduction to Sociology – 2nd Canadian Edition*. BCcampus: BCCampus, <https://opentextbc.ca/introductiontosociology2ndedition/>.
- Liu Sanjie.. 1960. [Film] Directed by Li Su. P.R. China: Changchun Film studio.
- Liu, F., 2010. [刘峰]. The Sources of Government Funds in Rural Social Security Construction [农村社会保障建设中的政府资金来源]. *Development Research*, Volume 1, pp. 94-102.

- Liu, H., Yongqin David, C., Liu, T. & Lin, L., 2019. The River Chief System and River Pollution Control in China: A Case Study of Foshan. *Water*, 11(8), p. 1606.
- Liu, J., 2007. *Ecological Theory of Politics: Ecological Investigation of Political Development*. Jinan: Shandong University Press.
- Liu, J.-M., 2018. *Refused to grow the eucalyptus, and return a pure land in Guangxi*. [Online] Available at: <http://fun.gxzf.gov.cn/php/index.php?c=mailbox&a=detail&id=2269> [Accessed 10 February 2019].
- Liu, J.-G. & Diamond, J., 2005. China's environment in a globalizing world. *Nature*, Volume 435, pp. 1179-1186.
- Liu, J. et al., 2010. Public participation in water resources management of Haihe River Basin, China: the analysis and evaluation of status quo. *Procedia Environmental Science*, Volume 2, p. 1750–1758.
- Liu, S., 2019. *The secrets of sand shortage [ 砂荒的秘密 ]*. [Online] Available at: <http://www.infzm.com/contents/163141> [Accessed 22 02 2020].
- Liu, W., 2014. *Last year, 68 officials at or above the county level in Guangdong were investigated for suspicion of harming the ecological environment*. [Online] Available at: <http://gd.people.com.cn/n/2014/0730/c123932-21828968-2.html> [Accessed 26 August 2018].
- Liu, X., 2000. *In One's Own Shadow: An Ethnographic Account of the Condition of Post-Reform China*. Berkeley: University of California Press.
- Liu, Z., 1995. Lineage on the Sands: The Case of Shawan. In: D. Fauer & H. F. Siu, eds. *Down to Earth: The Territorial Bond in South China*. Stanford, California: Stanford University Press.
- Li, X.-D., [李旭东] 2011. *Only one left behind of 18 evacuated villages in Yangqu Shanxi, 7,000 mu of abandoned land [ 山西阳曲 18 村庄搬空 仅一户留守 7000 亩抛荒土地 ]*. [Online] Available at: <http://www.people.com.cn/h/2011/0618/c25408-559308606.html> [Accessed 30 January 2018].
- Li, X., 2011b. *Public Rental Housing Development in China*, Stockholm: KTH.
- Li, Y., 2016. The status and new path of project system research. *Journal of Chongqing University(Social Science Edition)*, 22(5).
- Long, N. & Villareal, M., 2000. Small product, big issues: value contestations and cultural identities in cross-border commodity networks. *Development and Change*, Volume 29, p. 725–50.
- Lora-Wainwright, A., 2013. *Fighting for Breath: Living Morally and Dying of Cancer in a Chinese Village*. s.l.:University of Hawaii Press.
- Lu, C., 2005. How to Maintain Village Community against the Background of Migration: A study of the flow and reciprocal behavior of a sino-burmese border village. *Social studies*, Volume 1, pp. 166-189.
- Lu, N., 2017. *Two police forces in confrontation with a gun: what are you fighting for?*. [Online] Available at: [http://club.qingdaonews.com/showAnnounce\\_2\\_5830328\\_1\\_0.htm](http://club.qingdaonews.com/showAnnounce_2_5830328_1_0.htm) [Accessed 30 December 2017].
- Luo, T., 2014. *Village economic autonomy and authoritarian control over village elections in*

- China: evidence from rural Guangdong Province*. s.l.:PhD Dissertation. The London School of Economics and Political Science.
- Lu, Y., 2015. *Sparing no effort to protect "intangible cultural heritage"*. [Online] Available at: <http://www.gxqzrd.gov.cn/news/show-3313.aspx> [Accessed 13 Juli 2018].
- Lynn White, J., 1967. The Historical Roots of Our Ecologic Crisis. *Science*, Volume 155, p. 1204.
- Mahasenana, N., Smith, S. & Humphreys, K., 2003. The Cement Industry and Global Climate Change: Current and Potential Future Cement Industry CO<sub>2</sub> Emissions. In: J. Gale & Y. Kaya, eds. *Greenhouse Gas Control Technologies. Proceedings of the 6th International Conference on Greenhouse Gas Control Technologies 1-4 October, 2002*. 2 ed. Kyoto Japan: Elsevier Science, pp. 995-1000.
- Malthus, T., 1798. *An Essay on the Principle of Population*. 1st. ed. London: J. Johnson, in St. Paul's Church-yard.
- Mandondo, A., 2001. *Management and ecology of indigenous woodlands in Nyamaropa Communal lands, Nyanga District, Zimbabwe. PhD thesis*. Harare: University of Zimbabwe.
- Mann, M., 1984. The autonomous power of the state : its origins, mechanisms and results. *European Journal of Sociology / Archives* , 25(2), pp. 185-213.
- Manson, C., 2008. Does scale exist? An epistemological scale continuum for complex human-environment systems. *Geoforum*, Volume 39, pp. 776-88.
- Mao, D., 2000. *the change of a village community*. s.l.:Xuelin Press.
- Mao, Y. & Huang, C.-A., 2004. [毛野,黄才安] Experimental study on effect of sand mining on riverbed deformation [采沙对河床变形影响的研究]. *Journal of Hydraulic Engineering*, Volume 5, p. 64–69.
- Marcus, G. E., 1995. Ethnography IN/OF the world system: the emergence of multi-sited ethnography. *Annual Review of Anthropol*, Volume 24, pp. 95-117.
- Marks, R. B., 1996. Commercialization without capitalism. Processes of environmental change in south China, 1550-1850. *Environmental History*, 1(1), pp. 56-82.
- Marks, R. B., 2004. *Tigers, Rice, Silk, and Silt: Environment and economy in Late Imperial South China*. Cambridge, United Kingdom: the Press Syndicate of the University of Cambridge.
- Marks, R. B., 2012. *China: Its Environment and History*. Lanham, Md.: Rowman & Littlefield.
- Marshall, K., White, R. & Fischer, A., 2007. Conflicts between humans over wildlife management: on the diversity of stakeholder attitudes and implications for conflict management. *Biodiversity and Conservation*, October, 16(11), p. 3129–3146.
- Marston, S., 2000. The Social Construction of scale. *Progress in Human Geography*, Volume 24, pp. 2219-42.
- Marston, S., Jones III, J. & Woodward, K., 2005. Human geography without scale. *Transactions of the Institute of British Geographers*, Volume 30, pp. 416-432.
- Marwell, G. & Oliver, P., 1993. *The Critical Mass in Collective Action: a Micro-Social Theory*. Cambridge, UK: Cambridge University Press.
- Mawere, M., 2013. A critical review of environmental conservation in Zimbabwe. *Africa Spectrum*, 48(2), pp. 85-97.

- Maya, K., Santhosh, V., Padmalal, D. & Aneesh Kumar, S., 2012. Impact of Mining and Quarrying in Muvattupuzha River Basin, Kerala - An Overview on Its Environmental Effects. *Bonfring International Journal of Industrial Engineering and Management Science*, 2(1), pp. 36-40.
- Mayer, B. S., 2000. *The dynamics of conflict resolution: A practitioner's guide*. San Francisco: Jossey-Bass.
- Ma, Y. et al., 2018. Insights for Conservation and Utilization: Reconstruction of China's Natural Resources Management System. *International Journal of Science, Technology and Society*, 6(3), pp. 52-62.
- McCarthy, J., 2002. First World political ecology: lessons from the Wise Use movement. *Environment and Planning A*, Volume 34, pp. 1281-1302.
- MCPR, M. o. C. o. t. P. R., 2007. *GB/T 50145-2007 Standard for engineering classification of soil*. Beijing: China Planning Press.
- Meador, M. R. & Layher, A. O., 1998. Instream Sand and Gravel Mining: Environmental Issues and Regulatory Process in the United States. *Fisheries*, Volume 23, pp. 6-13.
- Mei, C.-Q. & Pearson, M. M., 2014. Killing a chicken to scare the monkeys? Deterrence failure and local defiance in China. *The China Journal*, Volume 72, p. 75-97.
- Meng, J., 2017. *Illegal sand mines closed along Yangtze*. [Online] Available at: [http://www.xinhuanet.com/english/2017-08/08/c\\_136508946.htm](http://www.xinhuanet.com/english/2017-08/08/c_136508946.htm) [Accessed 06 November 2018].
- MFAPRC, 2018. *The Zhuang ethnic minority*. [Online] Available at: [https://www.fmprc.gov.cn/mfa\\_eng/ljzg\\_665465/3584\\_665493/t17927.shtml](https://www.fmprc.gov.cn/mfa_eng/ljzg_665465/3584_665493/t17927.shtml) [Accessed 28 November 2018].
- MIIT, et al., 2019. *Some opinions on promoting the high-quality development of the artificial sand industry* [关于推进机制砂石行业高质量发展的若干意见], Beijing [北京]: Ministry of Industry and Information Technology [工信部联原(2019) 239 号].
- Miller, J., 2006. Daoism and Nature. In: S. Roger, ed. *The Oxford Handbook of Religion and Ecology: Religion, Religion and Society, Chinese Religions*. Oxford: Oxford University Press.
- Mitchell, G., 2006. *Can gravel mining and water supply wells coexist? Final report*, Mitchell Centre for Environmental and Watershed Research. Orono: University of Maine.
- MLRPRC, 2012. *2012 China Mineral Resources*, Beijing: Geological Publishing House.
- MOHURD, 2018. *Notice on Launching Special Actions for Governing Violations of Sea Sands were jointly Launched by the Eight Ministries(agencies)*. [Online] Available at: <http://www.greatchinaca.com/index.php/rule/info/325.html> [Accessed 03 January 2019].
- Mol, A. & Carter, N., 2006. China's environmental governance in transition. *Environmental Politics*, 15(2), pp. 149-170.
- Mol, A. P. J., 2006 . Environmental governance in the information age: The emergence of informational governance. *Environment and Planning C: Politics and Space*, 24(4), pp. 497-514.
- Moore, A., 2008. Rethinking scale as a geographical category: from analysis to practice. *Progress in Human Geography*, Volume 32, pp. 203-25.

- Moore, D., 1996. Marxism, Culture, and Political Ecology. In: R. Peet & R. Watts, eds. *Liberation Ecologies Routledge*. London and New York: Routledge, pp. 125-147.
- Moore, S., 2014. Modernisation, authoritarianism, and the environment: the politics of China's South-North Water Transfer Project. *Environmental Politics*, 23(6), pp. 947-964.
- Morgan, D., 1996. Focus Groups. *Annual Review*, Volume 22.
- Muldavin, J., 1996. The political ecology of agrarian reform in China. The case of Heilongjiang Province. In: R. Peet & M. Watt, eds. *Liberation Ecologies*. New York: Routledge, pp. 227-59.
- Müller, O. F., 1774. *Vermium terrestrium et fluviatilium, seu animalium infusoriorum, helminthicorum, et testaceorum, non marinorum, succincta historia*. 1 ed. Havniæ (Copenhagen) & Lipsiæ (Leipzig): Heineck & Faber.
- Munro, N., 2014. Profiling the victims: public awareness of pollution-related harm in China. *Journal of Contemporary China*, 23(86), pp. 314-329.
- Munukayumbwa, S., Simataa, L. & Kisco, M., 1997. Overgrazing near waterpoints in the Pro-Namib. In: D. Ward, ed. *Land degradation in the pro-Namib*. Windhoek: Report of the Summer Desertification Project (DRFN) 1996 funded by United States Agency for International Development and Swedish International Development Agency.
- Mwesigye, W. M., 2018. *Where our sand is taken*. [Online] Available at: <https://www.monitor.co.ug/SpecialReports/Where-our-sand-taken/688342-4330906-f5ig3lz/index.html> [Accessed 02 December 2018].
- MWR & MTPRC, 2016. *MWR and MT PRC jointly crack down on illegal sand mining to ensure the smooth implementation of the development strategy of the Yangtze River Economic Belt* [水利部交通运输部联合打击非法采砂保障长江经济带发展战略顺利实施]. [Online] Available at: [http://www.mwr.gov.cn/xw/slyw/201702/t20170212\\_844475.html](http://www.mwr.gov.cn/xw/slyw/201702/t20170212_844475.html) [Accessed 24 August 2016].
- MWR, MTPRC & MLR, 2015. *Further Strengthening of River Sand Management Notice* [关于进一步加强河道采砂管理工作的通知]. [Online] Available at: [http://jszl.mwr.gov.cn/tzgg/201508/t20150807\\_718128.html](http://jszl.mwr.gov.cn/tzgg/201508/t20150807_718128.html) [Accessed 12 September 2016].
- MWRPRC, 2018b. *Notice of the Ministry of Water Resources on Accelerating the Delimitation of the Management Scope of Rivers and Lakes*. [Online] Available at: [http://www.mwr.gov.cn/zw/tzgg/tzgs/201812/t20181220\\_1057631.html](http://www.mwr.gov.cn/zw/tzgg/tzgs/201812/t20181220_1057631.html) [Accessed 29 December 2018].
- MWRPRC, 2018. *Notice of the General Office of the Ministry of Water Resources on Launching the National River and Lake Sand Mining Special Remediation Action*. Beijing: Ministry of Water Resources of the People's Republic of China.
- Nagase, Y. & Uehara, T., 2011. Evolution of population-resource dynamics models. *Ecological Economics*, Volume 72, pp. 9-17.
- NDRC, (. D. a. R. C., 2016. *Notice of the National Development and Reform Commission on Issuing the Guiding Rules for Implementing Public-Private Partnership Projects in Traditional Infrastructure Fields*. [Online] Available at: <http://lawinfochina.com/display.aspx?id=22845&lib=law> [Accessed 20 March 2019].

- Netting, R., 1976. What Alpine Peasants have in Common: Observations on communal tenure in a Swiss Village. *Human Ecology*, Volume 4, pp. 135-146.
- Netting, R., 1981. *Balancing on an Alp: Ecological Change and Continuity in a Swiss Mountain Community*. Cambridge: Cambridge University Press.
- Neumann, R., 2009. Political ecology: theorizingscale. *Progress in Human Geography*, Volume 33, pp. 398-406.
- Neumann, R., 2015. Political ecology of scale. In: L.Bryant, ed. *The international handbook of political ecology*. s.l.:Uk: Edward Elgar Publishing Limited, pp. 475-486.
- Newland, S. A., 2016. Which Public? Whose Goods? What we know (and What We Don't) About Public Goods in Rural China. *The China Quarterly*, Volume 228, pp. 881-904.
- Nolan, P., 1988. *The Political Economy of Collective Farms: An Analysis of China's Post-Mao Rural Reforms*. Cambridge: Polity Press.
- Norman, D., Cederholm, C. & Lingley, W., 1998. Floodplains, salmon habitat and sand and gravel mining. *Washington Geol*, Volume 26, pp. 21-28.
- North, D., 1993. Five Propositions about Institutional Change. In: *Economic History 9309001*. Washington Univerasity, St. Louis: EconWPA.
- North, D. C., 1987. Institutions, Transaction Costs and Economic Growth. *Economic Inquiry*, July, 25(3), pp. 419-28.
- North, D. C., 1990. *Institution, Institutional Change and Economic Performance*. Cambridge: Cambridge University Press.
- NPCPRC07, 2007. *Property Law of the People's Republic of China*. Beijing: National People's Congress.
- NPCPRC79, 1979. *The Criminal Law of the People's Republic of China*. Beijing: the National People's Congress.
- NPCPRC86, 1986. *The Mineral Resources Law of the People's Republic of China*. Beijing: National People's Congress.
- NPCPRC88, 1988. *The Water Law of the People's Republic of China*. Beijing: the Sixth National People's Republic of China.
- NPCPRC96, 1996. *Mineral Resources Law of the People's Republic of China*. Beijing: National People's Congress.
- NPCPRC97, 1997. *The Flood Control Law of the People's Repub-lic of China*, Beijing: The National People's Congress of the People's Republic of China.
- O' Brien, K. J. & Li, L., 1999. Selective policy implementation in rural. *Comparative Politics*, 31 (2), pp. 167-186.
- OCCCCPC & OSC, 2017. *Office of the Central Committee of the Communist Party of China and Office of the State Council Issued the "Opinions on the Full Implementation of the River Chef System" [关于全面推行河长制的意见]*. [Online] Available at: [http://www.gov.cn/gongbao/content/2017/content\\_5156731.htm](http://www.gov.cn/gongbao/content/2017/content_5156731.htm) [Accessed 20 December 2017].
- Olson, M., 1965. *The Logic of Collective Action: Public Goods and the Theory of Groups*. Cambridge: Harvard University Press.
- Olson, M., 1980. *The Logic of Collective Action: Public Goods and the Theory of Groups*. Cambridge, Mass: Havard University Press.

- OLVCPRC10, 2010. *The Organic Law of the Village Committees of the People's Republic of China*. Beijing: the National People's Congress of China.
- OLVCPRC87, 1987. *The Organic Law of the Village Committees of the People's Republic of China*. Beijing: the National People's Congress of China.
- OLVCPRC98, 1998. *The Organic Law of the Village Committees of the People's Republic of China*. Beijing: the National People's Congress of China.
- Oslender, U., 2010. La búsqueda de un contra-espacio: ¿hacia territorialidades alternativas o cooptación por el poder dominante?. *Geopolítica(s): Revista de estudios sobre espacio y poder*, 1(1), pp. 95-114.
- Ostrom, E., 1990. *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge UK: Cambridge University Press.
- Ostrom, E., 1992. *Crafting Institutions for Self-Governing Irrigation Systems*. San Francisco: ICS Press.
- Ostrom, E., 1999. COPING WITH TRAGEDIES OF THE COMMONS. *Annu. Rev. Polit. Sci.*, Volume 2, pp. 493-535.
- Ostrom, E., 1999. *Self-governance and forest resources, OCCASIONAL PAPER NO. 20*. Jakarta, Indonesia, CIFOR, Bogor, Indonesia.
- Ostrom, E., 2000. Collective Action and the Evolution of Social Norms. *The Journal of Economic Perspectives*, 14(3), pp. 137-258.
- Ostrom, E., 2005. *Understanding Institutional Diversity*. Princeton, NJ.: Princeton.
- Ostrom, E., 2008. The challenge of common-pool resources. *Environment*, 50(4), p. 9–20.
- Ostrom, E., 2009. A General framework for analyzing the sustainability of social-ecological systems. *Science*, 325(5939), p. 419–422.
- Ostrom, E. et al., 2002. *The Drama of the Commons: Committee on the Human Dimensions of Global Change*. Washington: National Academy Press.
- Ostrom, E. & Hess, C., 2007. *Understanding knowledge as a commons: from theory to practice*. Cambridge, Massachusetts: MIT Press.
- Ostrom, E., March 2000. Reformulating the Commons. *swiss Political Science Review*, 6(1), pp. 29-52.
- Ostrom, E. & Schlager, E., 1996. The formation of property rights. In: S. Hanna, C. Folke & K. Mäler, eds. *Rights to Nature, Ecological, Economic, Cultural, and Political Principles of Institutions for the Environment*. Washington, DC.: Island Press, p. 127–156.
- Ostrom, E., Schroeder, L. & Wynne, S., 1993. *Institutional Incentives and Sustainable Development: Infrastructure Policies in Perspective*. Boulder: Westview Press.
- Ostrom, E., Walker, J. & Gardner, R., 1994. *Rules, games, and common-pool resources*. Ann Arbor: University of Michigan Press.
- Padmalal, D., Maya, K., Sreebha, S. & Arun, P., 2005. *Impacts of river sand mining: An overview of Kerala rivers*. Trivandrum, Dept. of Geology, University of Kerala.
- Padmalal, D., Maya, K., Sreebha, S. & Sreeja, R., 2008. Environmental effects of river sand mining: a case from the river catchments of Vembanad lake, Southwest coast of India. *Environmental Geology*, Volume 24, pp. 879-889.
- Paper, J., 2001. 'Daoism' and 'Deep Ecology' Fantasy and Potentiality. In: N. Girardot, J. Miller & X. Liu, eds. *Daoism and Ecology: Ways Within a Cosmic Landscape*. Cambridge,

- Massachusetts: Harvard University Press for the Center for the Study of World Religions  
Harvard Divinity School.
- Pasour, E. C., 1981. The Free Rider as a Basis for Government Intervention. *The Journal of Liberrorion Sludies*, Volume 4, pp. 453-464.
- Paukert, C. et al., 2008. Effect of Instream sand Dredging on Fish Communities in the Kansas River USA: Current and Historical Perspectives. *Journal of Freshwater Ecology*, 23(4), pp. 623-633.
- PCQD, 2014. *People's Court of Qinbei District, Qinzhou City. The Criminal Judgment of the First Trial of Mr. Lao.* [Online]  
Available at: <https://www.mingluji.com/caipanwenshu/guangxi/414809?amp=>  
[Accessed 12 October 2017].
- Peet, R., Robbins, P. & Watts, M., 2011. *Global Political Ecology*. London & New York: Routledge.
- Peet, R. & Watts, M., 1996. *Liberation Ecologies: Environment, Development, Social Movements*. London: Routledge.
- Pei, X., 2005. Collective landownership and its role in rural industrialization. In: P. Ho, ed. *Developmental Dilemmas : Land Reform and Institutional Change in China*. London: Routledge.
- Peng, B. & Mao, L., 2014. *The first major overhaul of the Environmental Protection Law in 25 years [ 环 保 法 25 年 首 次 大 修 ]*. [Online]  
Available at: <http://npc.people.com.cn/n/2014/0425/c14576-24940197.html>  
[Accessed 03 April 2016].
- Perdue, P. C., 2013. Reviewed Work(s): China: Its Environment and History by Robert B. Marks. *The Journal of Asian Studies*, 72(1), pp. 183-185.
- Perreault, T., Bridge, G. & McCarthy, J., 2015. *The Routledge Handbook of Political Ecology*. London & New York: Routledge.
- PGGZAR, 1992. *Regulations for the Administration of River Sand Collection Fees in Guangxi Zhuang Autonomous Region [广西壮族自治区河道采砂收费管理办法实施细则]*. Nanning: People's Government of Guangxi Zhuang Autonomous Region.
- Pinkerton, E. & Weinstein, M., 1995. *Fisheries that work: Sustainability through community-based management: a Report to the David Suzuki Foundation*. s.l.:David Suzuki Foundation.
- Prskawetz, A., Gragnani, A. & Feichtinger, G., 2003. Reconsidering the dynamic interaction of renewable resources and population growth: a focus on long-run sustainability. *Environmental Modeling & Assessment*, March, 8(1), p. 35-45.
- Prudham, S., 2015. Property and commodification. In: T. Perreault, G. Bridge & J. McCarthy, eds. *The Routledge Handbook of Political Ecology*. London & New York: Routledge, pp. 430-445.
- QCCC, (. C. C. C. O., 2012. *The overview of Counties and Towns of Qinzhou City*. 无出版地:Guangxi Fine Arts Publishing House.
- Qin, C., 1998. [覃彩銓]. *The Dry Column Cultural of the Zhuang [《壮族干栏文化》]*. Guangxi: Guangxi National Publishing House [广西民族出版社].
- Qin, C.-L., 1999. On the natural ecological environment of Zhuang culture. *Academic Forum*, Volume 6.

- Qin, H., 1999. *A large community and the traditional Chinese society*. s.l.:social studies, third, the forth period.
- Qin, N., 1997. *Rice Agricultural History of the Zhuang* [《壮族稻作农业史》]. Guangxi: Guangxi National Publishing House.
- Qinzhou Water Conservancy Bureau office , 2017. *Notice on the establishment of the leading group for the implementation of the river long system in Qinzhou City*. [Online] Available at: <http://www.qzwater.gov.cn/Article.aspx?sid=1&id=12565> [Accessed 12 October 2018].
- Qinzhou360, 2017a. *A Big Occasion: The District of Qinnan dispatched 20 Units to Rectify Illegal Sand-selling Sites*. [Online] [Accessed 11 November 2017].
- Qinzhou360, 2017. *Big bang! More than 20 departments in Qinnan District have rectified illegal sand fields*. [Online] Available at: <http://bbs.qinzhou360.com/thread-2415017-1-1.html> [Accessed 18 November 2017].
- Qi, Y. & Zhang, L., 2014. Local environmental enforcement constrained by central-local relations in China. *Environmental Policy and Governance*, 24(3), pp. 216-232.
- QLCCC, (. L. C. C. C.), 2014. *Chronicles of Qinzhou City* [钦州市地方志]. Qinzhou City: Qinzhou Government.
- QLCCC, (. L. C. C. C.), 2018. *Chronicles of Qinzhou City*. Qinzhou City: Guangxi People's Publishing House.
- Qu, J., 2012. The Project System: A New Form of State Governance. *Social Sciences in China*, 02 Nov., 33(4), pp. 28-47.
- QZGOV, 2017. *The Zhuang Minority*. [Online] Available at: [http://www.qinzhou.gov.cn/glqz\\_205/mz/](http://www.qinzhou.gov.cn/glqz_205/mz/) [Accessed 30 August 2018].
- RACPRC87, 1987. *Regulation of the People's Republic of China on the Administration of Navigable Waterways*, Beijing: the State Council of the People's Republic of China.
- Rangan, H. & Kull, C., 2008. What makes ecology “political”? Rethinking scale in political ecology. *Progress in Human Geography*, Volume 32, pp. 1-8.
- Ran, R., 2013. Perverse incentive structure and policy implementation gap in China's local environmental politics.. *Journal of Environmental Policy & Planning* , 15(1), pp. 17-39.
- Rappaport, R., 1967. Ritual Regulation of Environmental Relations among a New Guinea People. *Ethnology*, Volume 6, pp. 17-30.
- Rappaport, R., 1968. *Pigs for the Ancestors*. New Haven: Yale University Press.
- RCOQ, 2017. *Report on the rectification of the feedback on the implementation of the River Chief System in the autonomous region in Qinzhou City* [钦州市河长制办公室关于落实自治区督查钦州市全面推行河长制工作反馈意见整改情况的报告]. [Online] Available at: <http://www.qzwater.gov.cn/article.aspx?id=14769&cid=1065> [Accessed 28 October 2018].
- Read, M., 1956. *The Ngoni of Nyasaland*. s.l.:Oxford University Press.
- Robbins, P., 2004. *Political Ecology: A Critical Introduction*. Oxford: Blackwell.
- Robbins, P., 2012. *Political Ecology - A Critical Introduction*. 2nd ed. s.l.:Wiley-Blackwell.

- Robertson, R., 1992. *Globalization: Social Theory and Global Culture*. London: Sage.
- Robinson, N., 1999. The Use of Focus Group Methodology - with Selected Examples from Sexual Health Research. *Journal of Advanced Nursing*, 29(4), pp. 905-913.
- Rockefeller, S. & Elder, J., 1992. *Spirit and Nature: Why the Environment is a Religion Issue*, (ed.). Boston: Beacon Press.
- Russett, B. M., 1967. *International Regions and the International System: A study in Political Ecology*. Chicago: Rand McNally.
- Safi, M., 2017. *Villagers pay tragic price as Indian building boom drives demand for sand*. [Online]  
Available at: <https://www.theguardian.com/world/2017/dec/30/india-sand-mining-conflict-deaths-building-boom-environmental-damage>  
[Accessed 05 June 2018].
- Sayer, A., 2000. Moral Economy And Political Economy. *Political Economy*, Volume 61, pp. 79-104.
- Sayer, A., 2004. *Moral Economy*. Lancaster University: Department of Sociology.
- Sayre, N., 2005. Ecological and geograohical scale: parallels and potential for integration. *Progress in Human Gergraphy*, Volume 29, pp. 276-90.
- Schlager, E. & Ostrom, E., 1992. Property-Rights Regimes and Natural Resources: A Conceptual Analysis. *Land Economics*, 68(3), pp. 249-262.
- Schnegg, M. & Bollig, M., 2014. Institutions put to the test: Community-based water management in Namibia during a drought. *Journal of Arid Environments*, Volume 124, pp. 62-71.
- Schoppa, R. K., 1982. *Chinese Elites and Political Change: Zhejiang Province in the Early Twentieth Century*. Cambridge: Harvard University Press.
- Scoones, I., 2009. Livelihoods perspectives and rural development. *The Journal of Peasant Studies*, 36(1), pp. 171-196.
- Scott, J. C., 1976. *The Moral Economy of the Peasant: Rebellion and Subsistence in Southeast Asia*. New Haven: Yale University Press.
- Scott, J. C., 1985. *Weapons of the Weak: Everyday Forms of Peasant Resistance*. USA: Yale University Press.
- Scott, J. C., 1990. *Domination and the Arts of Resistance: Hidden Transcripts*. s.l.:Yale University Press.
- Scott, J. C., 1998. *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed*. New Haven: Yale University Press.
- Scott, J. C., 2009. *The Art of Not Being Governed: An Anarchist History of Upland Southeast Asia*. s.l.:Yale University Press.
- SCPCGZAR, 2016. *Guangxi Zhuang Autonomous Region River Sand Mining Management Regulations [广西壮族自治区河道采砂管理条例]*. [Online]  
Available at: <http://www.gxzf.gov.cn/zwgk/flfg/dfxfg/20161222-634500.shtml>  
[Accessed 11 Juli 2018].
- SCPRC02, 2002. *Regulations of the People's Republic of China on Administration of Traffic Safety in Inland Waters*, Beijing: the State Council of the People's Republic of China.
- SCPRC88, 1988. *Regulation of the People's Republic of China on the Administration of River*

- Courses*, Beijing: the State Council of People's Republic of China.
- SCPRC94, 1994. *The Rules for the Implementation of the Mineral Resources Law of the People's Republic of China* [中华人民共和国矿产资源法实施细则]. Beijing: The State Council of the People's Republic of China.
- Sekhar, L. K. & Jayadev, S. K., 2003. Karimanal, mineral beach - sand, mining in the Alappuzha coast of Kerala : a people's perspective. In: M. J. Bunch, V. Madha Suresh & T. Vasantha Kumara, eds. *Proceedings of the third international conference on environment and health (ICEH) : urban planning and environmental management for human health, Chennai, India, December 15-17 2003*. Chennai, India: Chennai, Department of Geography University of Madras, pp. 470-488.
- Senanayake, S., 2006. Indigenous knowledge as a key to sustainable development. *Journal of Agricultural Sciences – Sri Lanka*, 2(1), pp. 87-94.
- Shapiro, J., 2001. *Mao's War Against Nature: Politics and the Environment in Revolutionary China*. s.l.:Cambridge University Press.
- Shapiro, J., 2012. *China's Environmental Challenges*. Cambridge: Polity Press,.
- Sheppard, E. & McMaster, R., 2004. Introduction: scale and geographic inquiry. In: E. Sheppard & R. McMaster, eds. *Scale and Geographic Inquiry*. Oxford: Blackwell, pp. 1-22.
- Simpson, G., 1937. *Conflict and Community: a Study in Social Theory*. New York: T.S.Simpson.
- Sinn, H. W., 1984. Common Property Resources, Storage Facilities and Ownership Structures: A Cournot Model of the Oil Market. *Economica*, Volume 51, pp. 235-52.
- Siu, H. F., 1989. *Agents and Victims in South China: Accomplices in Rural Revolution*. USA: Yale University Press.
- Siu, H. F., 1989b. *Socialist Peddlers and Princes in a Chinese Market Town*. s.l.:American Ethnologist.
- Skinner, G. W., 1977. Cities and the Hierarchy of Local System. In: G. W. Skinner, ed. *The City in Late Imperial China*. Stanforn, Califomia: Stanfor University Press.
- Smil, V., 1993. *China's Environmental Crisis: An Enquiry Into the Limits of National Development*. s.l.:Routledge.
- Smil, V., 1997. China's Environment and Security: Simple Myths and Complex Realities. *SAIS Review*, 17(1), pp. 107-126.
- Smith, N., 1984. *Uneven Development: Nature, Capital, and the Production of Space*. 3 ed. Athens and London: The University of Georgia Press.
- Smith, N., 1992. Geography , difference and the politics of scale. In: J. Doherty, E. Graham & M. Malek, eds. *Postmodernism and the Social Sciences*. London: Macmillan, pp. 57-59.
- Smith, N., 1993. Homeless/global:scaling place. In: J. Bird, et al. eds. *Mapping the Futures*. London: Routledge, pp. 87-119.
- Smith, N., 2000. Scale. In: R. Johnston, D. Gregory, G. Pratt & M. Watts, eds. *The dictionary of Human Geography*. Malden, MA: Blackwell, pp. 724-7.
- Smith, N., 2007. 'Nature as an accumulation strategy'. In: L. Panitch & C. Leys, eds. *Socialist register*. Monmouth: The Merlin press, pp. 16-36.
- Soman, K. & Baji, K., 1999. Status of sand mining sites in Kallada river, Kollam district. *Centre for Earth Science Studies, Thiruvananthapuram*, p. 19.

- Sreebha, S., 2008. *Environmental Impact of Sand Mining: A Case Study in the River Catchments of Vembanad Lake, Southwest India*, India: PhD Thesis, Cochin University Of Science And Technology.
- Stafford, C., 2000. Chinese Patriline and the Cycles of yang and laiwan. In: *Cultures of Relatedness*. Cambridge: Cambridge University Press, p. 37–54.
- Stefaniszyn, B., 1964. *Social and Ritual Life of the Ambo of Northern Rhodesia*. s.l.:Oxford University Press.
- Steinmüller, H., 2013. *Communities of complicity: everyday ethics in rural China*. New York: Berghahn Books.
- Steinmüller, H., 2015. *Communities Of Complicity - Everyday Ethics in Rural China*. New York, Oxford: Berghahn.
- Stern, R. E., 2013. *Environmental Litigation in China: A Study in Political Ambivalence*. s.l.:Cambridge University Press.
- Steward, A. N., 1934. The burning of vegetation on mountain land, and slope cultivation in Ling Yuin Hsien, Kwangsi Province, China. *Lingnan Science Journal*, Volume 13, p. 1.
- Stott, P. & Sullivan, S., 2000. *Political ecology: science, myth and power*. London: Edward Arnold.
- Stronberg, J. B., 2016. *TRUE GRIT: THE SAND MINING DEBATE*. [Online] Available at: <https://www.linkedin.com/pulse/true-grit-sand-mining-debate-joel-b-stronberg> [Accessed 03 01 2018].
- Sud, M., 2017. *The political ecology of the Ridge: the establishment and contestation of Urban Forest Conservation in Delhi*. Stuttgart: Steiner Franz.
- Su, L., 2000. [苏力]. *Spread law to the countryside [送法下乡]*. Peking: China University of Political Science and Law Press.
- Sullivan, S., 2000. Gender, ethnographic myths and community-based conservation in a former Namibian 'homeland'. In: D. L. Hodgson, ed. *Rethinking pastoralism in Africa: gender, culture and the myth of the patriarchal pastoralist*. London: JameCurrey.
- Sullivan, S., 2013. Bankingnature? The spectacular financialization of environmental conservation. *Antipode*, 45(1), pp. 198-217.
- Suo, Y., 2012. *Guangdong introduced a new regulation to prevent river - and mining into a hotbed of corruption in individual areas*. [Online] Available at: <http://www.chinanews.com/df/201> [Accessed 20 10 2018].
- Swallow, B. M., 1990. Strategies and Tenure in African Livestock Development. *Land Tenure Center Paper*, Volume 140, p. 75.
- Swyngedouw, E., 2015. Depoliticized environments and the promises of the Anthropocene. In: R. L. Bryant, ed. *The international handbook of political ecology*. Cheltenham, UK and Northampton, MA: Edward Elgar, p. 131–146.
- Tan, T., 2010. *Qiao village has Its Road: The moral right and the social structure of the transformat village*. s.l.:SDX Joint Publishing Company.
- Taylor, L., 1987. *"The River Would Run Red with Blood": COMMUNITY AND COMMON PROPERTY IN AN IRISH FISHING SETTLEMENT*. s.l.:BONNIE J. McCAY JAMES M. ACHESON.

- Taylor, M., 1990. Cooperation and Rationality: Notes on the Collective Action Problem and its Solutions. In: *The Limits of Rationality*. Chicago: University of Chicago Press, pp. 222-240.
- The News center of Sina, ., 2014. *Original from Nan Fang Daily. 2014-10-17. Anti-dereliction to cut off illegal businesses "Pirates of the coalition."*. [Online] Available at: <http://news.sina.com.cn/c/2014-10-17/061931002489.shtml> [Accessed 30 12 2017].
- The Ojos Negros Research Group, 2008. *Sand-mining facts:*. [Online] Available at: [http://threeissues.sdsu.edu/three\\_issues\\_sandminingfacts01.html](http://threeissues.sdsu.edu/three_issues_sandminingfacts01.html) [Accessed 28 August 2017].
- Thone, F., 1935. "Nature Rambling: We Fight for Grass". *The Science Newsletter*, 5 January, 27(717), p. 14.
- Took, J., 2005. *A native chieftaincy in southwest China : franchising a Tai chieftaincy under the Tusi system of late imperial China*. Leiden [u.a.]: Brill .
- Ulloa, A., 2015. Environment and Development: reflections from Latin America. In: T. Perreault, G. Bridge & J. McCarthy, eds. *The Routledge Handbook of Political Ecology*. London: Routledge, pp. 320-331.
- UNEP, 2014. *Sand, rarer than one thinks - UNEP global environmental alert service: March, 2014*. [Online] Available at: [https://wedocs.unep.org/bitstream/handle/20.500.11822/8665/GEAS\\_Mar2014\\_Sand\\_Mining.pdf?sequence=3](https://wedocs.unep.org/bitstream/handle/20.500.11822/8665/GEAS_Mar2014_Sand_Mining.pdf?sequence=3) [Accessed 10 August 2017].
- USGS, 2013a. *Cement, statistics and information*, Reston, U.S.: U.S. Geological Survey, Mineral Commodity Summaries.
- USGS, 2013b. Sand and gravel (construction) statistics. In: T. Kelly & G. Matos, eds. *Historical statistics for mineral and material commodities in the United States*. Reston: U.S. Geological Survey Data Series 140.
- USGS, 2013c. *The 2011 Minerals Yearbook, Cement*, Reston: U.S. Geological Survey.
- Vaccaro, I., Beltran, O. & Paquet, P., 2013. Political ecology and con. *Journal of Political Ecology*, Volume 20, pp. 255-272.
- Valdés-Rodríguez, O. A. & Pérez-Vázquez, 2011. Sustainable livelihood: An analysis of the methodology. *Tropical and Subtropical Agroecosystems*, Volume 14, pp. 91-99.
- Van Der Sprenkel, O., 1964. Max Weber on China. *History and Theory*, Volume 3, pp. 348-370.
- Van Rooij, B., 2006a. Implementation of Chinese environmental law: regular enforcement and political campaigns. *Development and Change*, January, 37(1), p. 57-74.
- Van Rooij, B., 2006. *Regulating Land and Pollution in China, Lawmaking, Compliance, and Enforcement*. Leiden, Netherlands: Leiden University Press.
- Vanclay, F., Esteves, A., Aucamp, I. & Franks, D., 2015. *Social Impact Assessment: Guidance for assessing and managing the social impacts of projects, Fargo ND: International Association for Impact Assessment*. University of Groningen: IAIA (International Association for Impact Assessment).
- Vayda, A., 1983. Progressive Contextualization: Methods for research in human

- ecology. *Human Ecology*. *Human Ecology*, pp. 265-281.
- Vayda, A. P., 1976. *War in Ecological Perspective: Persistence, Change, and Adaptive Processes in Three Oceanian Societies*. New York: Plenum Press.
- Velzen, T. V. & van Wetering, W., 1960. Residence, power groups, and intra-societal aggression: An enquiry into the conditions leading to peacefulness within non-stratified societies. *International Archives of Ethnography*, Volume 49, pp. 169-200.
- Verschoor, G., 1992. Identity, networks and space. In: N. Long & A. Long, eds. *The Battlefields of Knowledge: The Interlocking of Theory and Practice in Social Research and Development*. s.l.:Routledge, pp. 171 - 188.
- Viju, B., 2009. Sand mining issue haunts Naik. *Times Of India*.
- von Glasenapp, M. & Thornton, T. F., 2011. Traditional Ecological Knowledge of Swiss Alpine Farmers and their Resilience to Socioecological Change. *Human Ecology*, Volume 39, p. 769–781.
- Wade, R., 1982. The system of administrative and political corruption: canal irrigation in South india. *The Journal of Development Studies*, Volume 18, pp. 287-328.
- Wade, R., 1994. *Village Republics: Economic Conditions for Collective Action in South India*. San Francisco, CA: Institute for Contemporary Studies Press.
- Wade, R., March 31, 1988. *Village Republics: Economic Conditions for Collective Action in South India*. Cambridge, UK: Cambridge University Press.
- Walker, P. A., 2005. Political ecology: where is the ecology?. *Progress in Human Geography*, 29(1), p. 73–82.
- Walter, M., 2014. *Political ecology of mining conflicts in Latin America: Analysis of environmental justice movements and struggles over scales*, Barcelona: PhD Thesis, Universitat Autònoma de Barcelona.
- Wang, A. L., 2013. The Search for Sustainable Legitimacy: Environmental Law and Bureaucracy in China. *Harvard Environmental Law Review*, Volume 37, p. 365–440.
- Wang, J. & Xiong, H., 2015. *Guangxi Qinzhou Water Conservancy Corruption. Government Official: I have no power, but the boss desperately sends money*. [Online] Available at: [https://www.guancha.cn/politics/2015\\_05\\_21\\_320384.shtml](https://www.guancha.cn/politics/2015_05_21_320384.shtml) [Accessed 12 October 2017].
- Wang, M., 2003. Investigation of the Buluotuo God Tree in the A'e Village, Maguan County, Yunnan Province. *Wenshan Teachers' College and College Journal*, 卷 3.
- Wang, N. & Li, B., 2014. [王娜,李斌] Cooperating ratio design and research of Sahara desert sand high-strength concrete [撒哈拉沙漠砂高强度混凝土配合比设计及研究]. *CONCRETE*, Volume 1, pp. 139-142.
- Wang, Z., 1988. *Historical data of rural cooperative economy in Guangxi (广西农村合作经济史料)*. II 编辑 Guangxi: Guangxi People's Publishing House.
- Ward, D., 1997. *Land degradation in the pro-Namib*. Windhoek: Report of the Summer Desertification Project (DRFN) 1996 funded by USAID and SIDA.
- Warner, M., 2000. *Conflict management in community-based natural resource projects: experiences from Fiji and Papua New Guinea*. London: Overseas Development Institute Working Paper 135.
- Watts, M., 1983. *Silent violence: Food, famine andpeasantry in northern Nigeria*. Berkeley:

- University of California Press.
- Watts, M., 1985. Social theory and environmental degradation: the case of Sudano-Sahelian West Africa. In: Y. Gradus, ed. *Desert Development: Man and Technology in Sparselands, Department of Geography*. University of California, Berkeley: Dordrecht: D. Reidel, pp. 14-32.
- Weber, M., 1968. *The Religion of China*. New York: Free Press.
- Wegrich, K., Kostka, G. & Hammerschmid, G., 2017. *The Governance of Infrastructure*. Oxford: Oxford University Press.
- Wen, J., 2009. *Report on the Work of the Government*, Beijing: Premier of the State Council.
- Wen, J., 2012. *Report on the Work of the Government*. [Online] Available at: <http://en.people.cn/90785/7759779.html> [Accessed 27 09 2017].
- White, B. et al., 2012. The new enclosures: Critical perspectives on corporate land deals. *Journal of Peasant Studies*, 39(3-4), pp. 619-647.
- Whitmore, A. et al., 2012. *Pitfalls and Pipelines: Indigenous Peoples and Extractive Industries*. Baguio City, Philippines: Tebtebba Foundation and IWGIA.
- Williams, D., 2016. *Depoliticized Infrastructure Governance and the Case of Infrastructure Australia*. Berlin: Hertie School of Governance.
- Wilson, J. A., 2002. Scientific Uncertainty, Complex Systems, and the Design of Common-pool Institutions. In: E. Ostrom, et al. eds. *The Drama of the Commons*. Washington, DC: National Research Council, pp. 327-59.
- Wisner, B., Blaikie, P., Cannon, T. & Davis, I., 2004. *At Risk: Natural Hazards, People's Vulnerability and Disasters*. London: Routledge.
- WJW, 2011. *Global Hardware*. [Online] Available at: <http://www.wjw.cn/product/mbr101228111641500160/pro110110112319218311.shtml> [Accessed 04 January 2017].
- Wolf, E., 1972. Ownership and Political Ecology. *Anthropological Quarterly*, 45(3), pp. 201-205.
- Wolf, E., 1999. *Envisioning Power: Ideologies of Dominance and Crisis*. California: University of California.
- Wong, E., 2013. Cost of Environmental Damage in China Growing Rapidly Amid Industrialization. *The New York Times*.
- Wu, J. & Chang, I.-S., 2020. *Environmental Management in China: Policies and Institutions*. 1 ed. Tianjin: Springer Singapore.
- Wu, Z., 2008. [吴志广] *Practice and Exploration of Sand Mining Management in Yangtze River [长江河道采砂管理实践与探索]*. Wuhan: Changjiang Press.
- Xiao, S. & Tang, Q., 2016. *Profiteering drives the illegal exploitation of river sand, According to law to punish illegal miners, and its "umbrella" is the key method*. [Online] Available at: <http://www.xjrb.com/2016/0503/301530.shtml> [Accessed 30 December 2017].
- Xia, W.-M. [., 2018. *Qinzhou set up a comprehensive system to implement the River Chief System [钦州建立配套制度全面推行河长制]*. [Online] Available at: <http://www.gxnews.com.cn/staticpages/20180104/newgx5a4da2cb->

[16811452.shtml](#)

[Accessed 10 January 2018].

- Xie, L., 2009. *Environmental Activism in China*. London: Routledge.
- Xie, L., 2011. China's environmental activism in the age of globalization. *Asian Politics and Policy*, Volume 3, pp. 207-24.
- Xie, L., 2011. Environmental justice in China's Urban decision making. *Taiwan in Comparative Perspective*, Volume 3, pp. 160-179.
- Xie, L., 2014. Social movements and political citizenship in China. In: H. v. d. Heijden, ed. *Political Citizenship and Social Movements*. Cheltenham, UK and Northampton, MA: Edward Elgar, pp. 547-71.
- Xie, L., 2015. Political participation and environmental movements in China. In: R. L. Bryant, ed. *The international handbook of political ecology*. Cheltenham, UK and Northampton, MA: Edward Elgar, pp. 246-259.
- Xi, J., 2016. *A Reader of Xi Jinping's Important Speeches (Chinese new Edition)*. Beijing: Learning Press.
- Xi, J., 2017. *Secure a Decisive Victory in Building a Moderately Prosperous Society in All Respects and Strive for the Great Success of Socialism with Chinese Characteristics for a New Era*. [Online] Available at: [http://www.xinhuanet.com/english/download/Xi\\_Jinping's\\_report\\_at\\_19th\\_CPC\\_National\\_Congress.pdf](http://www.xinhuanet.com/english/download/Xi_Jinping's_report_at_19th_CPC_National_Congress.pdf) [Accessed 12 March 2018].
- Xinhua News Agency, ., 2016. *The 13th Five-Year Plan for the National Economic and Social Development of the People's Republic of China*. [Online] Available at: [http://news.xinhuanet.com/politics/2016lh/2016-03/17/c\\_1118366322.htm](http://news.xinhuanet.com/politics/2016lh/2016-03/17/c_1118366322.htm) [Accessed 10 January 2018].
- Xi, W. & Suo, Y., 2013. *The former deputy director of the Guangdong Water Resources Department and other officials fell for acting as a protective umbrella*. [Online] Available at: <http://fanfu.people.com.cn/n/2013/0402/c64371-21005951.html> [Accessed 26 August 2018].
- XTGS, 2013. *Xintang Township Government Statistics [新棠镇乡镇农业总台账]*. Xintang Town: Xintang Town People's Government.
- XTGS, 2014. *Xintang Township Government Statistics [新棠镇乡镇农业总台账]*. Xintang Town: Xintang Town People's Government.
- XTGS, 2015. *Xintang Township Government Statistics [新棠镇乡镇农业总台账]*. Xintang Town: Xintang Town People's Government.
- XTPG, 2012. *Summary of work in 2012 and work plan in 2013, Xintang Town People's Government*. Xintang Town: Xintang Town People's Government.
- XTPG, 2013. *Summary of work in 2013 and work plan for 2014, Xintang Town People's Government*. Xintang Town: Xintang Town People's Government.
- XTPG, 2015. *Summary of the work in the first half of 2015 and the work plan of the second half of 2015, Xintang Town People's Government*. Xintang: Xintang Town People's Government.
- Xu, J.-H., Gao, Y.-J. & Li, X.-Y., 2016. Estimation Sand Dredging Quantity by Cement

- Production in the Upper and Middle Yellow River [用水泥产量估算黄河上中游河道采砂量]. *YELLOW RIVER*, 38(9).
- Xu, X., 2006. A Summary of the Research on the Folk Beliefs of the Zhuang Nationality in the Past Ten Years. *Journal of Guangxi University for Nationalities (Philosophy and Social Sciences Edition)*, Volume S1.
- Yang, C., 1959. *Chinese Communist Society: The Family and the village*. Cambridge Mass: MIT Press.
- Yang, C., Huang, J. & Wei, W., 2016. *The Construction of the Twelfth China International Garden EXPO starts and will Open in Winter 2018*. [Online] Available at: <http://www.gx.chinanews.com/news/2016/1228/8243.html> [Accessed 28 12 2016].
- Yang, F., 2006. [杨方泉]. *The Tang Village dispute: the land, clan and society of a Southern Village* [塘村纠纷: 一个南方村落的土地, 宗族与社会]. Peking: China Social Sciences Publishing House.
- Yang, M., 1993. *Tradition, Travelling Anthropology, and the Discourse of Modernity in China*. s.l., Oxford University.
- Yan, Y., 1992. The Impact of Rural Reform in economic and Social Stratification in a Chinese village. *Australian Journal of Chinese Affairs* 27, pp. 1-23.
- Yan, Y., 1996. *The Flow of Gifts: Reciprocity and Social Networks in a Chinese Village*. Stanford, California: Stanford University Press.
- Yan, Y., 2003. *Private Life under Socialism: Love, Intimacy, and Family Change in a 13.Chinese Village, 1949-1999*. Stanford, California: Stanford University Press.
- Yan, Y., 2009. *The Individualization of Chinese Society*. Oxford: Berg..
- Yan, Y., 2011. The Individualization of the Family in Rural China. *boundary* 2, 38(1), pp. 203-209.
- Yeh, E. T., 2015. Political ecology in and of China. In: R. L. Bryant, ed. *The International Handbook of Political Ecology*. King's College London, UK: Edward Elgar Publishing Ltd., p. 619-632.
- Ying, X., 2001. [应星]. *From "asking for a statement" To "balancing relations (baiping lishun)": A story of a hydroelectric station area in southwest in China* [大河移民的上访故事: 从“讨个说法”到“摆平理顺”]. Shanghai: SDX Joint Publishing Company.
- Yi, Z., 2008. The Reputation of a Village:A Non-Omissible Collective Symbol-Sociological Reflections on the Village H Phenomenon. *Society*, 05, 28(5), pp. 165-190.
- Yu , Z., 2014. [余子龙]. *Research of urban spatial expansion and driving mechanism based on DMSP/OLS data - a case study of Guangxi* [基于DMSP/OLS 夜景灯光数据的城市空间扩张特征与驱动机制研究]. Shanghai, China: Master Thesis, Fudan University.
- Yuan, J.-F. & Liu, Z.-S., 2000. [袁杰锋,刘震胜] Study on the policy, laws and regulations of sand dredging management of the Changjiang River[长江河道采沙管理政策法规研究]. *Yangtze River*, 31(11), pp. 22-24.
- Zeng, J.-L., [曾杰丽] 2008. On the Ethics of Harmonious Ecology in the Folk Beliefs of the Zhuang People, demonstrates that the folk beliefs of the Zhuang contain the ethics of a harmonious ecology [壮族民间信仰的和谐生态伦理意蕴]. *JOURNAL OF GUANGXI UNIVERSITY FOR NATIONALITIES (Philosophy and Social Science Edition)*, 30(6).

- Zhai, X., 2012. *Relationship and China Society*. s.l.:China social science Press.
- Zhang, C., 2004. *The Study of Problems of Hollowed Villages and its countermeasures*. s.l.:Weishi.
- Zhang, L., 2002. *Strangers in the City: Reconfigurations of Space, Power, and Social Networks Within China's Floating Population*. Stanford, Calif.: Stanford University Press.
- Zhang, Q., 2015b. International Experience of Political Ecology and China Practice. *Social Sciences Abroad*, Volume 3, pp. 23-29.
- Zhang, Q.-Z., 2015c. *An Introduction to Chinese History and Culture*. s.l.:Springer.
- Zhang, R.-H., Liu, Q.-J. & Huang, G.-J., 1996. [张瑞杭,刘启俊,黄广健] Problems caused by the fall of the riverbed in the lower reaches of the Dongjiang River [东江下游河床下降引发的问题和对策探讨]. *Yellow River*, 16(3), pp. 236-243.
- Zhang, S.-Z., 1997. *General History of the Zhuang [壮族通史]*. Beijing: Publishing House of Minority Nationalities.
- Zhang, Y., 2013. *The Authority of village and Continuance of the Commune System: A case study of star village [村庄权威与集体制度的延续: "明星村"个案研究]*. Beijing: China social science press.
- Zhang, Y., 2015. [张云兰]. Study on Sustainable Utilization of Cultivated Land in Nanning Urbanization Process - Based on Ecological Footprint Analysis Method [南宁城镇化进程中耕地可持续利用研究——基于生态足迹分析方法]. *Review of Economic Research*, Volume 53, pp. 91-93.
- Zhao, Y., 2014. *Anti-blasphemy attack cuts off the judge and business "pirate procurement alliance"*. [Online]  
Available at: <http://news.sina.com.cn/c/2014-10-17/061931002489.shtml>  
[Accessed 26 12 2017].
- Zhe, X. & Chen, Y., 2011. [折晓叶 & 陈婴婴]. The mechanism and governance logic of the hierarchical operation of the project system [项目制的分级运作机制和治理逻辑——对“项目进村”案例的社会学分析]. *Social Sciences in China*, Volume 4, pp. 126-148.
- Zhou, D., 1996. Out-migrant workers and the acquisition of modernity of peasants. *Journal of Sun Yat-sen University (Social Science Edition)*, Volume 5.
- Zhou, D., 2005. *Longing for Survival: Anthropological Investigation of the Mobility of Migrant Workers*. s.l.:Sun Yat-sen University Press.
- Zhou, D. & Gu, d., 1997. *Farewell to Peasant china: Rural urbanization and social Change in the late Twentieth Century*. New York: M.E.Sharpe.
- Zhou, D. & Ouyang, R., 2011. A history of China's Ownership Reform. In: D. Zhou & T. Li, eds. *Reforming China: Experiences and Lessons*. s.l.:Enrich Professional Publishing (S) Private Limited.
- Zhou, F., 2006. [周飞舟]. "from the absorption regime to the" suspension type "regime: the influence of the tax and fee reform on the relationship between the state and the peasants" [从吸取型政权到“悬浮型”政权: 税费改革对国家与农民关系的影响]. *Social Studies*, Volume 3.
- Zhou, F., 2012. [周飞舟]. The Problems of Fiscal Earmarked Funds: On “Governing the State through Programs” [财政资金的专项化及其问题兼论“项目治国”]. *Society*, Volume 1, pp. 1-37.

- Zhou, Y., 2008. The Reputation of a Village : A Non Omissible Collective Symbol Sociological Reflections on the Village H Phenomenon. *Journal Home*, pp. 165-190.
- Zhou, Z., Huang, S., Ouyang, R. & Qin, D., 1986. *History of Zhuang Literature*. I 编辑 Nanning: Guangxi Renmin Publishing House.
- Zhu Q. & Qin Y. J., 2016. Beyond "economic rationality" Funeral Ritual and Remodeling of Village Order in the Background of Labor Mobility: A case study of Mei Village. *Southwest Frontier Ethnic studies*, Volume 21, pp. 150-156.
- Zhu, K.-B., Yang, Y.-S., Liu, X.-S. & Yuan, L.-J., 2015. [朱凯斌,杨玉生,刘小生,袁林娟] Sand Naming and Comparative Analysis of the Corresponding Physical and Mechanical Parameters using Different Engineering Classification Methods [基于不同工程分类方法的砂土定名及相应物理力学参数对比分析]. *China Earthquake Engineering Journal*, 37(b07), pp. 17-21.
- Zhu, Q., 2018. The Dilemma of Public Resource Governance: the Struggle of Villages in the Process of Marketization of River Sand (公共资源治理困境: 试论广西村庄在河砂市场化中的角力). *Soil & Social Sciences in Guangdong*, Volume 5, pp. 210-220.
- Zhu, Q., 2019. The Dilemmas of Public Resource Management and Conflict Mediation under A Marketization Economy ( 市场化背景下的乡村公共资源管理困局及冲突调节). *Ecological Economic Review*, *In press*, Volume 9, pp. 47-57.
- Zhu, Q. & Qin, Y., 2016. Beyond Economic Rationality: Funeral Ceremony and Reconstruction of Village Order in the Background of Labor Flow (超越经济理性: 劳动力流动背景下的丧葬仪式和村落秩序重塑). *Agriculture, Ecosystems & Southwest Frontier Ethnic studies*, Volume 20, pp. 150-156.
- Zhu, R.-J., 2001. *The Regulations on Sand Mining Management of the Yangtze River*[长江河道采砂管理条例], Beijing: The State Council of the People's Republic of China [中国国务院].
- Zhu, Y., 2016. 中共中央办公厅国务院办公厅印发《关于全面推行河长制的意见》. [Online] Available at: [http://www.gov.cn/xinwen/2016-12/11/content\\_5146628.htm](http://www.gov.cn/xinwen/2016-12/11/content_5146628.htm) [Accessed 20 December 2016].
- Zimmerer, K. S. & Bassett, T. J., 2003. Approaching Political Ecology: Society, Nature, and Scale in Human–Environment Studies. In: K. Zimmerer & T. Bassett, eds. *Political Ecology: An Intergrative Approach to Geography and Environment-Development Studies*. New York: Guilford, pp. 1-25.