



Delft University of Technology

Credibility and Social conflicts

Mining Institutions and Rural Community in China

Yang, Xiuyun

DOI

[10.4233/uuid:28ae13db-bc86-46fb-bf20-0652a3fa2281](https://doi.org/10.4233/uuid:28ae13db-bc86-46fb-bf20-0652a3fa2281)

Publication date

2018

Document Version

Final published version

Citation (APA)

Yang, X. (2018). *Credibility and Social conflicts: Mining Institutions and Rural Community in China*. [Dissertation (TU Delft), Delft University of Technology]. <https://doi.org/10.4233/uuid:28ae13db-bc86-46fb-bf20-0652a3fa2281>

Important note

To cite this publication, please use the final published version (if applicable).
Please check the document version above.

Copyright

Other than for strictly personal use, it is not permitted to download, forward or distribute the text or part of it, without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license such as Creative Commons.

Takedown policy

Please contact us and provide details if you believe this document breaches copyrights.
We will remove access to the work immediately and investigate your claim.

Credibility and Social Conflicts

Mining Institutions and Rural Community in China



XIUYUN YANG

Credibility and Social Conflicts

Mining Institutions and Rural Community in China

Xiuyun Yang

Credibility and Social conflicts: Mining Institutions and Rural Community in China

Proefschrift

ter verkrijging van de graad van doctor

aan de Technische Universiteit Delft,

op gezag van de Rector Magnificus Prof.dr. ir. T.H.J.J. van der Hagen,

voorzitter van het College voor Promoties,

in het openbaar te verdedigen op

maandag 26 maart 2018 om 12:30 uur

door

Xiuyun YANG

Ingenieur in Engineering & Policy Analysis

Technische Universiteit Delft

Geboren te Chongqing, China

Dit proefschrift is goedgekeurd door de promotoren:

Prof. dr. ir. drs. P.P.S. Ho

Prof. dr. M.P. van Dijk

Samenstelling promotiecommissie:

Rector Magnificus voorzitter

Prof. dr. ir. drs. P.P.S. Ho Technische Universiteit Delft, promotor

Prof. dr. M. P. van Dijk Erasmus Universiteit Rotterdam, promotor

Onafhankelijke leden:

Prof. dr. C. J. Bastmeijer Tilburg Universiteit

Dr. J. A. A. Swart Rijksuniversiteit Groningen

Prof. dr. ir. I. R. van de Poel Technische Universiteit Delft

Prof. dr. W. K. Korthals Altes Technische Universiteit Delft

Dr. A. F. Correljé Technische Universiteit Delft

ISBN: 978-94-6186-907-4

This research was funded by the European Research Council (ERC) and forms a part of the RECOLAND Project, www.recoland.eu.

Copyright © 2018 by X. Yang

Cover: By K. Krul

Printed in the Netherlands

Email: leo_yangxy@163.com

Table of Contents

List of Tables	i
List of Figures.....	ii
Abbreviations.....	III
Acknowledgement.....	IV
1 Introduction	1
1.1 Problem statement	1
1.2 Main concepts: Institutions, credibility, and conflict	7
1.3 Research questions.....	9
1.4 Methodological considerations	10
1.5 Outline of the thesis	17
2 Institutional credibility and conflict.....	20
2.1 Institutional credibility.....	20
2.2 Conflict as a measure of institutional credibility	24
2.3 Putting the theory in the context of mining in China	26
3 Social, environmental and economic impacts of mining on rural communities.....	30
3.1 Introduction	30
3.2 Pros and cons of mining: The global and Chinese experience	31
3.3 The analytical framework: Assessing four impacts	33
3.4 Results.....	35
3.5 Conclusions and discussion.....	43
4 Why do rural residents engage in environmental activism?.....	46
4.1 Introduction	46
4.2 Environmental activism in China	48
4.3 Analytical framework.....	50
4.4 Results.....	53

4.5 Conclusions and discussion.....	59
5 An analytical model based on mining disputes	62
5.1 Introduction	62
5.2 Literature review.....	63
5.3 Data.....	67
5.4 Land acquisition conflicts.....	69
5.5 Land subsidence and resettlement disputes	71
5.6 Conclusions	77
5.7 Discussion	79
6 Mining-induced displacement and resettlement.....	82
6.1 Introduction	82
6.2 Methodology and sources	84
6.3 Analyzing MIDR: The macro level	88
6.4 Survey results.....	95
6.5 Conclusions	101
6.6 Discussion	103
7 Concluding remarks	106
7.1 Findings	106
7.2 Credibility of China's mining institutions.....	108
7.3 Institutional credibility debates revisited	110
7.4 Research reflections.....	113
7.5 Policy recommendations	114
Bibliography	118
Summary.....	136
Samenvatting.....	140
Curriculum Vitae.....	144
Publications	145

List of Tables

Table 1 Characteristics of the sample	13
Table 2 Employment history in the mining industry (N=121).....	35
Table 3 Effect of perception of environmental pollution on perceived net benefits	41
Table 4 Definition and valuation of the variables in chapter 4.....	53
Table 5 Environmental activism by the control variables	56
Table 6 Regression results of EA.....	57
Table 7 Characteristics of the sample for Chapter 5.....	68
Table 8 Court case pertaining to land acquisition for mining (N= 25)	70
Table 9 Cases rejected, on who to sue (N=15)	72
Table 10 Administrative cases against the department of land and resources (N=8).....	73
Table 11 Administrative cases against township government (N=15).....	74
Table 12 Administrative cases pertaining to compensation standards (N=14)	76
Table 13 Summary of mining legal disputes.....	77
Table 14 Sample of regions and the 11 relocation villages.....	85
Table 15 Characteristics of the sample for Chapter 6.....	86
Table 16 Ownership and compensation for selected mining countries	102
Table 17 Credibility of China's mining institutions.....	108

List of Figures

Figure 1 A classification of minerals and sectors in which they are consumed.....	2
Figure 2 Production of main minerals in China (1949-2015)	2
Figure 3 Analytical scheme of institutional credibility	7
Figure 4 Map of fieldwork sites	15
Figure 5 The thesis structure	18
Figure 6 Structure of the empirical chapters	28
Figure 7 Analytical framework of Chapter 3	34
Figure 8 Perception of environmental degradation.....	37
Figure 9 Reactions to environmental degradation.....	38
Figure 10 Employment opportunities significantly influence the perceived net benefits...	41
Figure 11 Land expropriation does not influence the perceived net benefits.....	42
Figure 12 Land subsidence negatively affects the perceived net benefits	43
Figure 13 An analytical framework based on the theory of planned behavior	52
Figure 14 Statistical summary of the predicting variables	54
Figure 15 Frequencies of resident's environmental activism (N=352)	55
Figure 16 Degree of environmental activism	55
Figure 17 Path analysis results	58
Figure 18 Analytical framework of MIDR in China	87
Figure 19 Contribution of different types of enterprise to coal output through 1978 to 2010	94
Figure 20 Land subsidence in Laizibao village, Huayuan.....	96
Figure 21 A damaged house in Caizi village, Peixian	96
Figure 22 Additional floor on top of the original house in Nanzhang village, Yanzhou, Shandong	98
Figure 23 Satisfaction with the living environment in relocation villages	99
Figure 24 Who ought to be financially responsible for the relocation cost?.....	100

Abbreviations

ALP	annual land productivity
CSR	Corporate Social Responsibility
DIDR	Development-induced Displacement and Resettlement
EA	Environmental Activism
EITI	Extractive Industries Transparency Initiative
ENGOs	environmental non-governmental organizations
EPBs	environmental protection bureaus
FAT framework	Formal-Actual-Targeted framework
FPIC	Free, Prior, Informed Consent
GDP	Gross Domestic Product
GONGOs	Government-Organized NGOs
MIDR	Mining-induced Displacement and Resettlement
MEP	Ministry of Environmental Protection
MLR	Ministry of Land and Resources
MRL	Mineral Resources Law
NBS	National Bureau of Statistics
NDRC	National Development and Reform Commission
NGO	Non-Governmental Organization
NPC	National People's Congress
PPP	Polluter Pays Principle
PX	Paraxylene
SD	Standard Deviation
SOE	State Owned Enterprise
SPC	Supreme People's Court
SC	State Council
TPB	the theory of planned behavior
TVE	Township Village Enterprise
VIF	Variance inflation factor

Acknowledgement

Born in a remote rural village, the least profession I wanted to be when I was young is a farmer. Like many Chinese people being away from home, I also distanced myself from my home village, hundreds of kilometres away to pursue higher education, thousands of kilometres to work, and then ten thousands of kilometres abroad to experience the exotic world. After decades of straying far away from the routine of country life that seems familiar and strange, I end up being a researcher on the farmers and rural China. This Ph.D. project is a string that ties me, a flying kite in the sky at one end, and my memory of home and the childhood on land at the other end. This book is an end to the previous years' research, but also a beginning to my academic life. It could not finish without the help of many people. Here I would like to take this opportunity to express my gratitude.

First and foremost, I would like to thank my promotors, Peter and Meine Pieter. Thank you, Peter, for the motivation, challenges, and critical comments, and guiding me to grow as a good researcher. I am also particularly indebted to Meine Pieter, who patiently, promptly and meticulously read these shitty first drafts that sometimes I was not sure what I had written. Your warm care and emotional support during the pitfalls always cheer me up. I am more than thankful for everything I learned from you. I would like to thank Prof. Kees Basteijer, Dr. Jacobus Swart, Prof. Ibo van de Poel, Prof. Willem Korthals Altes, and Dr. Aad Correljé to be in my doctoral committee and for their insight and constructive comments on my dissertation. I am also thankful for Prof. Zhao for polishing the first published paper.

Second, my special gratitude goes to Prof. Shi Xinming at Shaanxi Normal University, who suggested several suitable sites in Shaanxi and Shanxi, and also introduced me to several students who helped with data collection. I also thank these undergraduates for valuable assistance to my fieldwork. I thank Sun Li for sharing her insight in the empirical research, advice on academic writing, and suggestion on career development. I am also indebted Kees Krul for the effective and productive collaboration. Thanks you for proofreading drafts of this book and challenging my thinking. Being the first foreign researcher in my home village, your presence helped my family know some of my own research and stop thinking my stay abroad as abstract and bizarre.

During my time in Delft, I have been fortunate to have the support of many colleagues and friends. Thank you, Changjie Zhan, Ying Zheng, Ning An, Xu Xie, Yuling Li, Haiyan Lu, Wei Yang, Bo Wang, Qasim, Orcun, and others. I am also grateful to these old friends from master studies, Yingyao Wang, Yi Yin, Yanxiu Fan, Quan Wen, Ning Pan, and Xiaoxiao Liu, for enriching my memories with many Chinese dinners and festive gatherings. Thanks also go to the co-tenants, Richard, Sjaak, and Natalie, you make me feel at home for the last four years.

My deepest gratitude is to the interviewees across the field sites, who devoted so much time and energy to share their experience with me, even when they felt this may be of little help to them. I hope that my accounts and analysis here do at least some justice to them, even if I cannot give them a voice as such or help to decrease their suffering.

Last but not least, my gratitude also goes to my sisters and brothers in law, who are always there and share some burdens of supporting my parents when I am away. I would dedicate this book to my parents. My parents have helped me to forge good quality of diligence, the endurance of hardship, optimism, honesty, and integrity through their actions. Although they may not read this book written in a different language, they are surely proud of me, as always.

Xiuyun
Delft, December, 2017

1 Introduction

1.1 Problem statement

1.1.1 China's booming mining industry

Mineral resources play a fundamental role in stimulating economic growth. Minerals – grouped into energy minerals, metals, and non-metallic minerals – are essential raw materials for a wide variety of uses, including electricity generation, transportation fuel, industrial and consumer goods, construction of housing and infrastructure, agricultural fertilizers and others (Figure 1). This is especially evident in China, one of the world's largest mineral-producing and mineral-consuming countries, where over 90 percent of primary energy, 80 percent of the industrial raw material, and over 70 percent of the agricultural means of production are produced from minerals (State Council 2003a; Tse 2015).

After the foundation of the People's Republic of China in 1949, the Chinese government made large efforts to strengthen the geological work and mineral exploitation. In 1949, it is estimated that the country only produced about 120,000 tons of crude oil, 32 million tons of coal, 160,000 tons of steel and 13,000 tons of nonferrous metal (State Council 2003a). Over the past 70 years and especially from the 1990s onwards, China has produced an increasing amount of energy and mineral products. As shown in Figure 2, the production of main minerals has gone through several stages: slow growth (1949-1978), medium growth (1978-1994), stagnant growth (1994-2003), and its present booming stage (2003 - present). In 2015, China produced 0.22 billion tons of crude oil, 3.75 billion tons of raw coal, and 6.91 billion tons of iron ore, ranking among the largest producers in the world (NBS 2016).

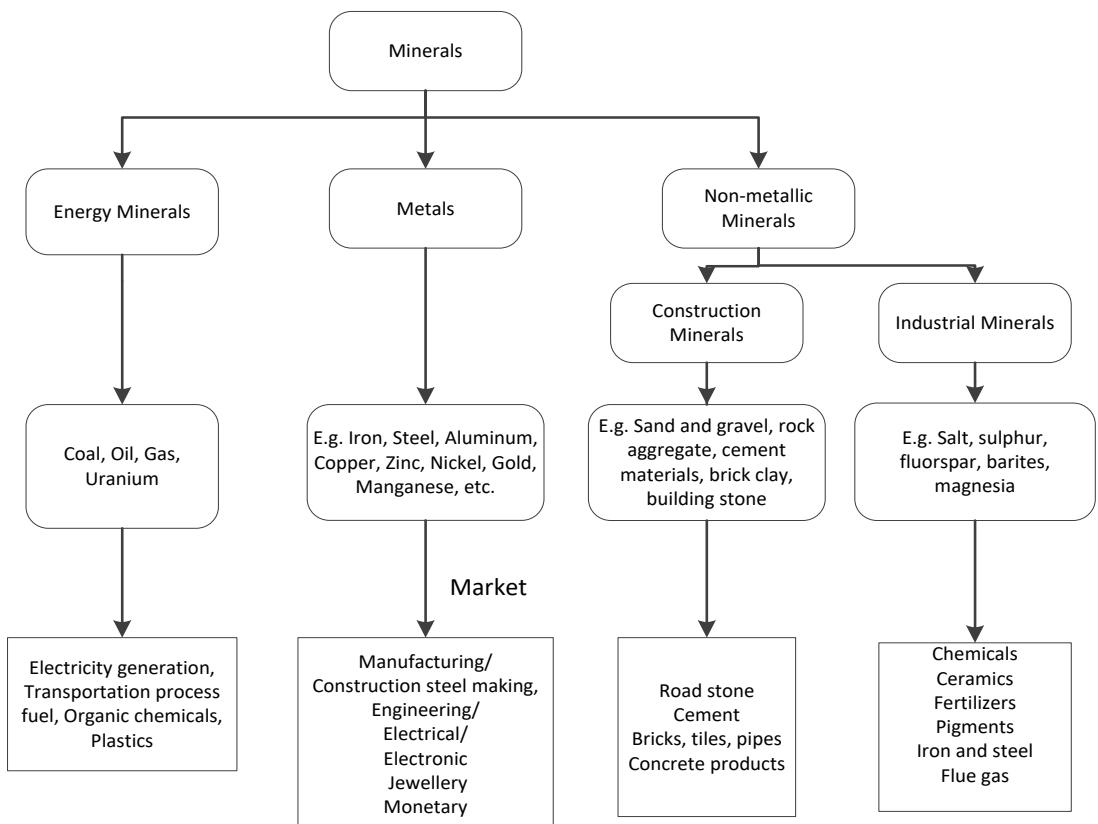


Figure 1 A classification of minerals and sectors in which they are consumed

Source: (Highley, Chapman, and Bonel 2004:6).

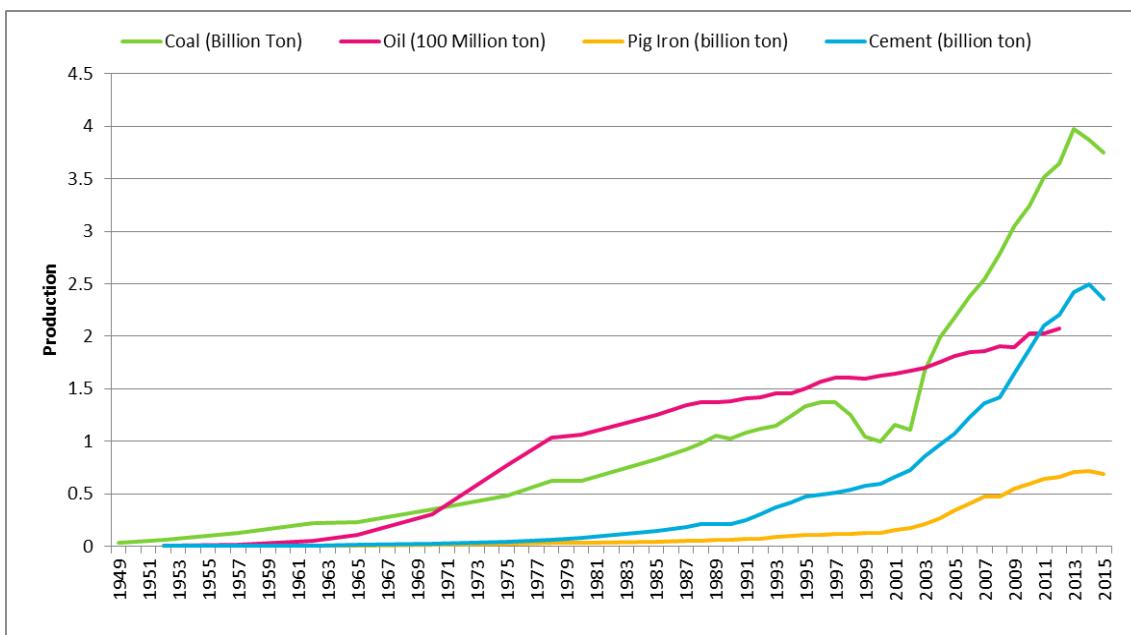


Figure 2 Production of main minerals in China (1949-2015)

Source: China Statistics Yearbook, various years.

China's mineral exploitation is traditionally carried out by state-owned enterprises. Since the mid-1980s, China has begun to issue mining permits to other types of enterprises, such as collective-owned township and village enterprises (TVEs), private enterprises, and even enterprises that are partly or wholly foreign-owned. The annual output of TVE mines increased to a substantial proportion of China's total coal output, reaching almost half in the mid-1990s (Rui 2005; Shen and Andrews-Speed 2001; Wright 2006). However, a relatively small number of state-owned mining enterprises are still largely responsible for China's mineral exploitation, and in particular for the mining of energy minerals. In 2015, while the number of state-owned enterprises only accounted for three percent of the number of mining enterprises, they were responsible for nearly 60 percent of raw coal, 89 percent of crude oil, and 20 percent of other mineral ores (NBS 2016).

It is predicted that the demand and production of raw resources will continue to increase. For example, several forecasting models suggest the demand and production of coal will continue to grow and will reach a peak between the late 2020s and the early 2030s (Lin and Liu 2010; J. Wang, Feng, and Tverberg 2013). Similarly, based on the steel consumption forecasting in eight industries – including construction, automobiles, and railways, a study also predicts that the total steel demand will peak around 2025 (Yin and Chen 2013:412). Given the future predictions of mineral exploitation, it is important to look at the impact of mining on the social and natural environment, which will be discussed in the next section.

1.1.2 The two-sided nature of mining

Growing demands have driven the growth of mineral exploitation in China, which also brings about serious implications for the natural and social environment. In the Chinese context, there is a broad coalition of interests in favor of mining. Mining has long been praised as a complementary livelihood to alleviate rural poverty (Ge and Lei 2013; Lei, Cui, and Pan 2013; Rui 2005; Shen and Gunson 2006). Especially local authorities have a strong interest in supporting the mining industry as it provides a source of revenues and economic growth. The presence of mining industries also provides rent-seeking opportunities for local government officials and village committee leaders. Even local residents are rarely coherent and homogeneous in their views on mining because some depend on the income derived from their employment in the mining industry.

Meanwhile, mining causes severe environmental degradation, including land subsidence, water pollution, air pollution, acid mine drainage, and disturbance of hydro-geology amongst others (Bian et al. 2010; Greenovation Hub 2014). Mining projects can disrupt the qualities of land and water, which in turn may reduce the viability of other industries dependent on those resources, such as agriculture, tourism, and fishing. The environmental degradation has led to public health issues, such as a higher incidence of cancer, mercury-related diseases, and elevated lead levels in the blood (Fernández-Navarro et al. 2012; Tschakert and Singha 2007). For example, high blood lead levels were found in communities located near older lead smelters (Li et al. 2014). Mining also induces the risk of large-scale

livelihood dispossession and resettlement. For example, in Shanxi Province, there are reportedly over 1,000 of ‘floating villages’, forcing farmers to be evacuated. It is estimated that the number of displaced farmers as a result of mining is more than 2.3 million, exceeding the number of people displaced by the Three Gorges Dam (VanderKlippe 2015; Xinhua 2015; Zhang 2013).

1.1.3 The institutions of mining

While mining is paired with numerous benefits, it also creates new challenges and risks. Therefore institutional arrangements are necessary to facilitate the multi-dimensional impacts of mining. This comprises a legal framework pertaining to mineral development and extraction, which covers the granting and the arrangement of the ‘bundle’ of mineral rights, mining taxation, but also mining land acquisition, safety and environmental regulations (E. Johnson 2010).

Various scholars (E. Johnson 2010; Naito et al. 1999; Otto and Cordes 2002) have identified a list of ‘ideal-type’ functions and objectives that mining institutions should intend to achieve: 1) to encourage and facilitate exploration and mining for mineral resources for the society; 2) to ensure an appropriate financial return to the owner; 3) to confer a secure title on mining right holders; 4) to resolve land use conflicts and provide just compensation to the owner or user of land; and 5) to protect the environment and provide benefit for local communities. In addition to these, mining institutions also have an important informative function, such as to provide certainty so that all parties are well aware of the ‘rules of the game’ in advance. How these ‘ideal-type’ functions and objectives are implemented in practice remains to be a point of discussion, as in different places, stages, scales, and types of mining, varying degrees of importance are attached to the prevailing institutions. As shown in the next section, China’s mining institutions are criticized for a number of deficiencies that have severely restricted its functioning in practice.

1.1.4 China’s mining institutions: deficiencies and limitations

Since the reforms in 1978, China has undertaken legislative efforts on mining governance. The most important laws and regulations that directly pertain to the mining industry are the Mineral Resources Law (1986, amended 1996) and the Coal Industry Law (1996). Given mining’s extensive impact on land and the environment, the Land Reclamation Law (1988, amended 2011) and the Environmental Protection Law (1989, amended 2015) are also considered important to China’s mining. In addition to the national environmental protection law, China has promulgated separate laws and regulations pertaining to different pollutants, such as air, water, dust, and wastes. Mining related environment protection instruments have been dispersed across these pre-existing laws and regulations. While these laws and regulations are put in place to reduce multiple risks of mining, observers have pointed to three main issues inherent in China’s mining institutions: 1) an outdated nature of the current legislation; 2) ambiguity in the regulations; and 3) administrative fragmentation of responsible authorities. Each is discussed in more detail below.

The first main issue is that the current legislation on mining is outdated (Jiang and Luo 2013; D. Li 2013; Xie and Dai 2011; Yu 2003). The last amendment to the Mineral Resources Law occurred over twenty years ago, where articles are outdated and have been breached by lower levels of regulations and local practice. Studies have pointed to some issues that have remained unresolved. For example, the absence of a classification management institution for mineral resources and mineral property rights are not included in the core of the law (Shen, Dai, and Gunson 2009). Other issues have occurred in the tax and fee system of the mineral resources so that the benefits are not distributed equally and properly (Li and Zhu 2011; Wen 2012; Xing 2013). Some issues are addressed by subordinate administrative measures; but according to China's hierarchical structure of lawmaking (Andrews-Speed et al. 2003; Chen 1999), the subordinate laws and regulations should be consistent with all of the above national laws. While initiatives to amend the Mineral Resources Law have officially begun since 2003 (Shen et al. 2009; Xie and Dai 2011), no new law has been introduced at the moment of writing.

A second identified issue is that the related laws and regulations including the 1996 Mineral Resources Law have left some important details and definitions undefined or ambiguous, and that the current legal framework only provides general provisions for dealing with the adverse impacts of mining. Generally, most laws state that an exploration right or mining right holder must comply with relevant laws, conform to unspecific international standards and guidelines, and conduct all operations in accordance with industry best practices using relevant technology and methods with a view to minimizing adverse environmental impacts. Such general requirements may have little practical value in providing guidance to mining companies and enforcement officials at the local level (Otto, Naito, and Pring 1999).

The procedure of mining land acquisition is an example. In the Chinese context, ownership of mineral resources and land is separated. While mineral resources belong to the state, the land above can be owned by either the state or the collective. In order to start mining, one needs to obtain the mining right as well as the land use right, which each require separate legal procedures. Mining rights fall under the jurisdiction of the Mineral Resources Law and Coal Industry Law, while land use rights acquisition is regulated by the Land Administrative Law. Rural collective land needs to be expropriated by the state prior to mining and commercial construction. In this process, land ownership is transferred from the collective to the state. The original land owner (i.e. the village) and users (i.e. the farmers) are compensated for the land loss by the acquiring authority, which in most cases is the county government. However, the legal procedures regarding the acquisition of rights are characterized by a number of deficiencies.

For one, the Land Administrative Law, and other relevant laws and regulations, do not stipulate what mining land comprises, which may or may not include the surface land for underground or open pit mining, mining offices, and processing complexes, and sites for overburden and tailings or mine waste (Li 2014; MLR 2013; Sun and Xiao 2011). This issue

was later addressed in a formal interpretation by the Workgroup on Mining Land Use Policy initiated by the Ministry of Land and Resources, which stipulated that mining land was to be understood as the operational areas for surface mining, as well as the area for mining waste and tailings (MLR 2013:1). In line with this, land acquisition, resettlement and compensation procedures apply to open-pit mining where the surface land is directly *occupied and used*. Yet, in the case of underground mining, where the surface land is *not directly occupied and used* by mining companies, there is no legal requirement for the expropriation of collectively-owned land. This becomes a problem when rules for compensation for underground mining are absent. As illustrated in other cases (Ho 2001b; Zhu 2002), the ambiguous nature of institutions and property rights is frequently witnessed in China.

A third issue is that the authoritative power of mining institutions is dispersed over various administrations, including: the Ministry of Land and Resources, the Ministry of Environmental Protection, the Ministry of Industry and Information Technology, the State Administration of Work Safety and State Administration of Coal Mine Safety, the State-owned Assets Supervision and Administration Commission, and the National Development and Reform Commission (Greenovation Hub 2014). For example, the Ministry of Land and Resources is responsible for reclamation of subsided lands, while the Ministry of Environmental Protection is responsible for air and water pollution (Cao 2007). Furthermore, the responsibility and rights among different departments in the central government and between the central and local administrative bodies are not clearly defined in China's law (Shen et al. 2009). As an outcome, different administrations have stipulated and put forward their own laws and regulations on mining, which have resulted in duplications, contradictions, inconsistencies and shirking responsibilities (Andrews-Speed et al. 2003; Cao 2007; Zhu and Cherni 2009:21). This issue is not exclusive to the mining industry, as similar issues have also been found in China's forestry sector (Ho, 2006) .

1.1.5 Implications

The issues described above point to the issue of the applicability and social acceptance of the institutions at the local level. In many instances it has led to a situation where state regulations were put aside as an 'empty institution': a functional compromise to show authorities that certain procedures are in place while leaving enough leeway at the local level, to carry out fast, unchecked, mineral exploitation. In other words, the intended function of the institution is undermined and overshadowed by the intentions of local actors.

To illustrate this, the practice of the TVE coal mines is a leading example. The development of TVE coal mines was encouraged by all levels of governments when China faced a crisis of energy supply in the 1980s. However, TVE coal mines have induced many problems: a larger number of illegal operations, irrational locations, poor safety record, and substantial environmental damage (Andrews-Speed et al. 2005; Wright 2000). In response to the negative impacts, Chinese central government has drafted a slew of strict laws and

regulations to cover safety and environmental protection (Andrews-Speed et al. 2003). However, generally, most of the laws and regulations on small-scale mines were ignored and flouted in the interest of economic growth (Andrews-Speed et al. 2005; Shen and Andrews-Speed 2001; Song and Mu 2013).

Given China's booming growth of the mining industry and the two-sided nature for local communities, as well as the profound impacts it has on the social and natural environment, it is important to have *functioning* institutions in place that reduce the risks and hazards of mining. Therefore, this study aims to explore the function and credibility of mining institutions and their ties with local communities. By doing so, this study will delve into the institutional credibility pertaining to mining land expropriation, environmental degradation, and mining-induced land subsidence and resettlement. The study combines two analytical perspectives: the study of institutional change at the macro-level and the operationalization of credibility at the micro-level.

1.2 Main concepts: Institutions, credibility, and conflict

This study adopts the theories and the conceptual framework on institutional function and credibility put forward by Ho (2005, 2014, 2016a), as illustrated in Figure 3. Only the main concepts will be discussed here, a complete discussion of this study's theory follows in the next chapter.

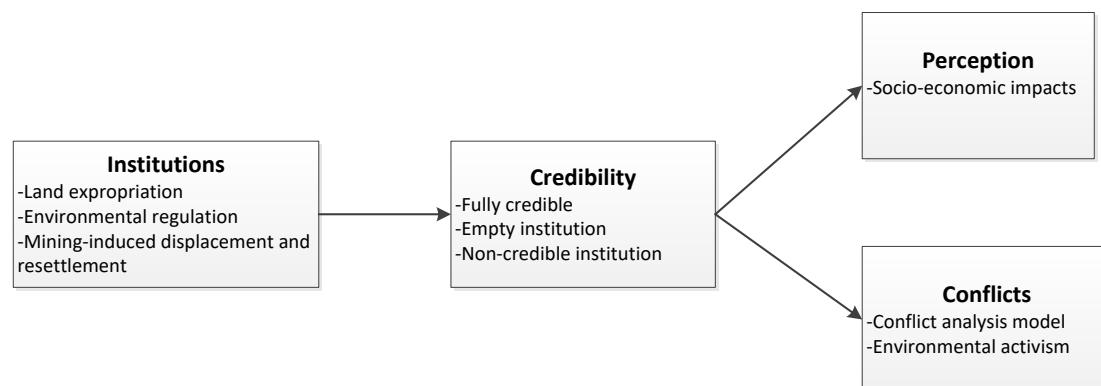


Figure 3 Analytical scheme of institutional credibility

Source: Adopted from (Figure 1, Ho 2016a).

The concept of institutions has been long debated and propounded by scholars in social sciences. While the term can be dated back at least to 1725, there is yet no unanimity in the definition of the concept (Hodgson 1988). Presently, one of the most popular definitions of institutions is provided by North (1990:3), who views institutions as the "*rules of the game in a society, or more formally, the humanly devised constraints that shaped human interaction*". Similarly, Knight (1992:2) defines institutions as "*a socially set of rules that structure social interaction in a particular way*". Meanwhile, the concept of institution has

also been viewed as a shared set of common knowledge at equilibrium as proposed by Aoki (2007:7): “*An institution is self-sustaining, salient patterns of social interactions, as represented by meaningful rules that every agent knows and are incorporated as ‘agents’ shared belief about how the game is played and to be played*”.

As epitomized by Ho (2013, 2016a), the different definitions of institutions reflect how scholars view the three main postulates of an institution: 1) cause and effect vs interaction; 2) intentional design vs endogeneity; 3) institutional forms vs institutional function. The theoretical discussion has been embodied as the institutional credibility thesis. The concept of credibility has an extended theoretical history dating back to the 1970s and is positioned and differently explained within various streams of thought. For now, credibility is defined as “*the perception of endogenously, autonomously shaped institutions as a common arrangement*” (Ho 2014:16), which is conceptualized as a theoretical continuum that varies between ‘fully’ or ‘partially credible’ to ‘non-credible’, or even empty institutions, which exist on government, non-governmental, or firm paper only (Ho 2014:16).

Accordingly, institutions are defined as “*a set of endogenously shaped context-determined social rules*” (Ho 2015:353). By adopting this perspective, an institution would only assume credibility when it is commonly perceived as achieving its intended effects, i.e. in terms of the function that it is accorded to by a community of users. In other words, establishing credible institutions implies that they are able to rally social and political support, and generate a lower level of social conflicts (Ho 2005, 2014, 2016a).

The credibility is built from a shared perception of jointly agreed upon rules, in other words, an expectation of behavior according to some common arrangement. In this way, credible institutions offer some assurance that other actors will behave in a certain way. Mining, as one of the most profitable and at the same time most hazardous industrial occupations, inevitably produces ambivalent attitudes and actions among local communities. Therefore, this study will investigate the perception of local communities on the mining’s economic, environmental and societal impacts, others’ environmental actions, and also on the procedure and outcome of land expropriation, and resettlement projects.

Besides the perceptions of actors, a second main determining factor of the credibility of institutions is conflicts. Wallensteen (2007) argues that a conflict consists of three main components: 1) incompatibility, 2) action, and 3) actors. Taking those three components into account, Wallensteen’s definition of conflict is “*a situation in which a minimum of two actors (parties) strive to acquire at the same moment in time an available set of scarce resources*” (Wallensteen 2007:15).

According to the definition of conflict, this study focuses more on the interpersonal conflict rather than intrapersonal conflict, where the individual is in conflict with himself due to conflict of two or more needs and values (Mack and Snyder 1957). Also, this study tries to

measure the manifest, rather than the latent, conflict, which becomes visible and conscious of it by the actors (Wehr 1998).

In this book, the conflicts are operationalized by two models. The first is the Theory of Planned Behavior (TPB) (Ajzen 1991; Ajzen and Fishbein 1977), which is used to measure the likelihood of environmental actions and one's influencing factors. The second is the conflict analysis model, which is expounded in the credibility thesis, consisting of a set of seven variables (Ho 2014, 2016a), namely the conflict's: 1) *source*, 2) *frequency*, 3) *timing*, 4) *intensity*, 5) *duration*, 6) *nature*, and 7) *outcome*. Both models will be explained in more detail in chapter 2 and applied in Chapter 4 and Chapter 5, respectively.

1.3 Research questions

As described above, China mining institutions are centered around a dilemma: while characterized by several deficiencies and vulnerabilities, China's mining industry has yet experienced an unprecedented growth in the past decades. This study aims to examine this phenomenon – and to some regarded as a paradox – by looking at multiple impacts of mining, guided by the theoretical framework on institutional function and credibility put forward by Ho (2005, 2014, 2016a). The main research question is formulated as follows:

How do mining institutions affect the local communities, and to what extent do the rural residents perceive these institutions as credible?

This question is divided into four sub-questions, each addressing a separate but related issue. As mentioned in the introduction, the impact of mining on local communities is complex, as it can fulfil a double role of a complement and threat to one's livelihood. To understand this in more detail, the first question centers on the perception of individual and is formulated as follows:

SQ1) How do mining activities affect local communities' livelihood and the residents' perceptions of mining?

Mining may bring about severe environmental pollution, with severe impacts to one's livelihood. Accordingly, this may result in changing attitudes and action towards mining, varying between complying – and taking part in – on one hand, and actively resisting the mining activities on the other hand. This issue is addressed in the second sub-question:

SQ2) What factors influence the attitude and actions of local communities towards the environmental impacts of mining?

While mining is often paired with conflicts, most studies are built on case studies that describe a particular conflict in more detail. However, a more systemic approach to gauge

the mining-related conflicts in China's context is found absent, while this is of importance of the credibility thesis. Therefore the following question is proposed:

SQ3) How can we measure the level and intensity of mining conflicts and what can be said about China's mining conflicts at the national level?

In order to understand the extent to which and how the content of legislation have influenced the local communities, a separate empirical analysis is made on mining-induced displacement and resettlement (in scholarly terms also known under its acronym of MIDR). For this, an empirical question is central:

SQ4) What are the institutional factors that influence Chinese mining-induced land subsidence and displacement, and what are the economic and social consequences for farmers of mining-induced resettlement in China?

1.4 Methodological considerations

1.4.1 Mixed-method

A determining factor that guides the research design is the methodological considerations. As outlined by Ho (2013:1096), “*To understand why institutions – as endogenous, spontaneously ordered ‘rules of the games’ – are socially accepted by those whom they govern, one must know their structure over time and space*”, followed that “*we need to chart to the minutest detail what rules exist longitudinally and geographically*”. Understanding the full nature of institutions and the operationalization of credibility requires both exploratory and explanatory research, and in this sense, the use of a mixed-method is necessary. Mixed-method research employs the combination of qualitative and quantitative approaches, and capitalizes on the strength of both (Creswell 2013:203). A mixed-methods study also provides more superior grounds for triangulation than a single method study would do (Creswell 2013). In this study, triangulation is performed through three instruments: 1) archival analysis, 2) comprehensive literature review, and 3) empirical fieldwork.

Archival research is a type of research which involves seeking and extracting evidence from original archival records (Bernard 2011). In this study, various archival documents have been analyzed to understand the law and policy-making process and content. These records include, but are not limited to, the different versions of relevant laws and regulations both at the central and local level, the interpretations of laws released by the National People's Congress (NPC), various departments, and the people's courts. In addition, a dataset on mining legal conflicts was constructed based on a searchable public database¹ published by China's Supreme People's Court. This was used as the data to measure the conflicts

¹ See zhongguo caipan wenshu wang, www.wenshu.court.gov.cn.

generated by mining land expropriation, land subsidence, and resettlement as discussed in Chapter 5. Meanwhile, local government guidelines, media and online coverage of mining conflicts, and petition letters were also collected.

Observers have pointed that archival study may be appropriate where the topic studied is “*too politically hot to study in any other way*” (Bernard 2011:448) or lapses over long periods of time (Bernard 2011:449). Given that mining is a highly sensitive topic, covering issues like large-scale resettlement and environmental degradation, archival research is found an appropriate instrument. However, a clear disadvantage is that available archival data may include certain errors or biases (Bernard 2011:450). Therefore, archival data should be complemented with a comprehensive literature review and empirical investigation in the field.

To locate the current study in a broad academic discussion, this thesis has accessed a large body of literature. The institutional credibility theory and social conflicts are extensively discussed in Chapter 2, which is the theoretical foundation of this book. The literature on sustainable resource management identifies the most important impacts mining has brought about to local communities and offers a starting point for measurement of the Chinese rural communities’ perceptions of the net benefits, as in Chapter 3. The literature on environmental activism and collective behavior are discussed in Chapter 4, which highlights a lack of systematic examination of individuals’ environmental activism. Therefore, the theory of planned behavior (Ajzen 1991; Ajzen and Fishbein 1977) is adopted to examine what drives individuals to engage in environmental activism against polluting mines. Similarly, the previous disciplinary approach to environmental conflict is reviewed in Chapter 5, highlighting the absence of a conceptual framework for the quantification of environmental conflict. In response to this, we adopt the conflict analysis model as expounded in credibility theory, which measures disputes through social actors’ aggregate perceptions of conflict. Moreover, the institutional arrangement relevant to MIDR is categorized in Chapter 6, as a benchmark for the institutional analysis and the survey. The above mentioned literature is applied and reflected in the main chapters.

Relying on archival data, we can only get one dimension of the institutions, and therefore it should be complemented with an empirical investigation in the field. This is the most fundamental part of this study’s data, consisting of unstructured and semi-structured interviews together with a large-scale survey. Informal interviews are suitable for establishing initial rapport with people, while it is also frequently used when talking to informants who would otherwise be reluctant to engage in a more formal interview (Bernard 2011:213). Unstructured or semi-structured interviewing can also be useful for studying sensitive issues, such as conflicts. Unraveling conflicts requires unstructured as well as informal interviewing with many stakeholders, as in many cases different actors have varying opinions about the conflict. The semi-structured interview has also been employed

at the beginning of the project to learn what questions should be included in the large-scale survey.

The survey was designed to enumerate the ‘what, how many’ question (Yin 2014:6), providing a quantitative description of trends and attitudes, and a possible statistical generalization to a population (Yin 2014:32). The respondents of the survey are farmers who live around the mines. The sample size, data validity and reliability, and the procedure of implementing the survey will be discussed in section 1.4.2 and 1.4.3.

1.4.2 Collection of primary data

The empirical data collection process proceeded in three rounds: 1) the pilot study, 2) the survey preparation, and 3) the survey.

The first round of fieldwork, the pilot study, was carried out between December 2013 and January 2014, before the official commencement of the Ph.D. The location for the pilot is the author’s hometown, Xiushan county, which together with two adjacent counties comprises the ‘Manganese Triangle’ in Southwest China.² Around one third of the national total manganese reserve is in this area (Wang 2007).

With the help of local contacts³, first interviews were held with officials in the county department of land and resources. At the office, there was the opportunity to observe the procedures on mining rights permit application and renewal, and conduct informal talks with persons from mining companies. Local contacts even arranged some guided trips accompanied by local township officials to mining sites. However, such generous introductions were not always welcomed at the mining sites. On the contrary, as Hansen (2006:82) described, the researcher is facing the risk of “*walking in the footsteps of the Communist Party*”, and the managers of the mining companies only talked with me out of a sense of duty, fearing that I was sent over in order to check on them. This was a severe limitation to obtain reliable information. Therefore, I went into the field to talk with many farmers who were living around different mines. This information paved the way for a deeper understanding and laid the foundation for drafting a research proposal, which was completed at the end of the first year of the Ph.D. research in February 2015.

The second round of fieldwork was conducted between April to May 2015. Eight counties were visited with the purpose to finalize the questionnaire and select the villages suitable for the survey, while initial interviews with farmers were also conducted. This helped to collect background information about the villages and facilitated the arrangement for the survey in the next step. In addition, meetings and interviews were arranged with local

² The two other counties are Huayuan Tujia and Miao Autonomous County in the Hunan Province and Songtao Miao Autonomous County in Guizhou Province. Manganese triangle belongs to the Wuling Mountains Region and is home to many ethnic groups, including Tujia and Miao.

³ Relying on contacts, or *guanxi*, to make arrangements for fieldwork is often a necessary prerequisite for doing research in China (Heimer and Thøgersen 2006).

researchers in Chongqing, Xi'an (Shaanxi Province), Taiyuan (Shanxi Province), and Nanjing (Jiangsu Province). After this round of fieldwork, in combination with a stay at the summer school on social science methodology at the National University of Singapore in June 2015, several important amendments were made which significantly improved the quality and applicability of the survey.

The third and final round of fieldwork was conducted between June to September 2015 by a team of specially trained local undergraduate students, supervised by the author. To prevent bias in answering the questionnaires, a household-to-household, non-probabilistic approach was utilized while group meetings or group discussions were intentionally avoided. Individuals, not necessarily the head of the family, were selected and interviewed. To minimize interviewer bias (Bernard 2011:266), the student interviewers were randomly spot-checked during the survey. Although the sample is not representative, a higher degree of validity and reliability was intended through the purposive selection of the research sites. Moreover, theoretical saturation was used to determine the sample size, up to the point where additional data provided no new insights into the research questions (Morse 2004; Small 2009).

The survey was conducted in 37 villages within eight counties, and 352 valid questionnaires were completed. The survey sample included 67.9% male respondents and 32.1% female respondents. The majority (58.3%) was older than 50 years, reflecting the growing left-behind elderly in rural China (Pang, de Brauw, and Rozelle 2004). The level of education was equally distributed between respondents, ranging from no education and a university degree. The average household size was 4.92 (see Table 1).

In addition, the student assistants were instructed to contact the author once they encountered a key stakeholder. Subsequently, in-depth interviews were conducted and first-hand materials were collected. The respondents were often farmer activists responsible for initiating protests and petitions against mining companies. They were well-informed about the struggles within and outside of the villages and often garnered rich materials. In total, semi-structured interviews were conducted with 29 key informants, including officials in the responsible mining and land administration departments at the county level, mining right holders, representatives from the mining association, cadres from the township government, and local farmers.

Table 1 Characteristics of the sample

Characteristics	Group	Number	Percentage (%)
Gender	Male	239	67.9
	Female	113	32.1
	18-30	38	10.8

Age	31-60	194	55.1
	>61	120	34.0
Education	Illiterate	69	19.6
	Primary school	99	28.1
	Middle school	125	35.6
	High school and above	61	16.7
Household size	≤3	104	29.5
	4-5	123	34.9
	≥6	125	35.6
	Mean	4.92	
Employment in Mines	Employed in mines	121	34.4
	Not employed in mines	231	65.6

Source: The survey.

1.4.2 Selection of research area

Research locations should be representative of the larger context that is studied, in this case, China. Therefore, the selection of research sites is a lengthy process and a number of considerations are made.

The first consideration concerns the minerals. This Ph.D. research project delved into coal mining and metal mining. Coal is an important source of energy, accounting for over 70% of energy production and consumption in 2010 in China (J. Wang et al. 2013:542). Regarding metal mining, three important metal minerals are selected: manganese, lead, and zinc. Manganese is a type of metal, mostly used in iron and steel production for its sulfur-fixing, deoxidizing and alloying properties. Manganese has played a key role in the development of various steelmaking processes and there are no satisfactory substitutes for manganese in steel. Lead is normally found in association with zinc in ores, either hosted within the lead sulfide mineral galena or with the zinc sulfide mineral sphalerite. China has the second largest lead/zinc deposits globally but ranks first for lead and zinc production and consumption (Zhang et al. 2011:2514). Examining not only coal but also the most important metal ores provides a representative picture of the mining industry in China.

The second choice concerned the counties. From an official list of mineral resource-based counties issued by the Chinese State Council (2013)⁴, a total number of eight were selected for my research (Figure 4). They were chosen for several reasons:

- 1) They represent different stages of mineral resource-exploitation: i) the developing stage (Shuzhou, Binxian); ii) maturing stage (Hancheng, Jining, Xiushan, Huayuan);

⁴ The State Council (2013) made the list of resource-based counties in 2013, but it did not provide the criteria when a county qualifies as resource-based. According to a report by the Academy of Macroeconomic Research under the influential National Development and Reform Commission (NDRC), a county is resource-based if 1) the annual output of mining industry at county level is more than 100 million Yuan and accounts for more than 10% of the whole industrial output; 2) the number of people employed in the mining industry exceeds 10,000 and accounts for more than 5% of the total employment (Academy of Macroeconomic Research 2002:37).

- iii) depletion stage (Tengzhou); and iv) mine reclamation or recovery stage (Peixian) (State Council 2013).
- 2) The counties reflect China's geo-ecological diversity and are situated in the east coast (Jiangsu and Shandong Province), Northwest (Shanxi and Shaanxi Province) and the Southwest (Hunan Province and Chongqing Municipality), representing the plains, arid steppe, and mountainous areas.
 - 3) The provinces in which the counties are situated also reflect significant economic variation. The eastern coastal provinces are relatively wealthy (i.e. GDP per capita in 2014 in Jiangsu and Shandong is respectively 81,874 and 60,879 Yuan); the inland provinces are relatively poor (GDP per capita in Shanxi, Hunan, Shaanxi, and Chongqing is 35,064, 40,287, 46,928, and 47,859 Yuan) (National Bureau of Statistics of China 2015).
 - 4) Different underground mineral resources are included in this research. Six counties are notable for coal mining, and two counties are predominantly involved in metal ore mining. The latter two are located in Chongqing Municipality and Hunan Province, which are ranked among the nation's largest producers of zinc, lead and manganese (Wang 2007; Zhang et al. 2011).

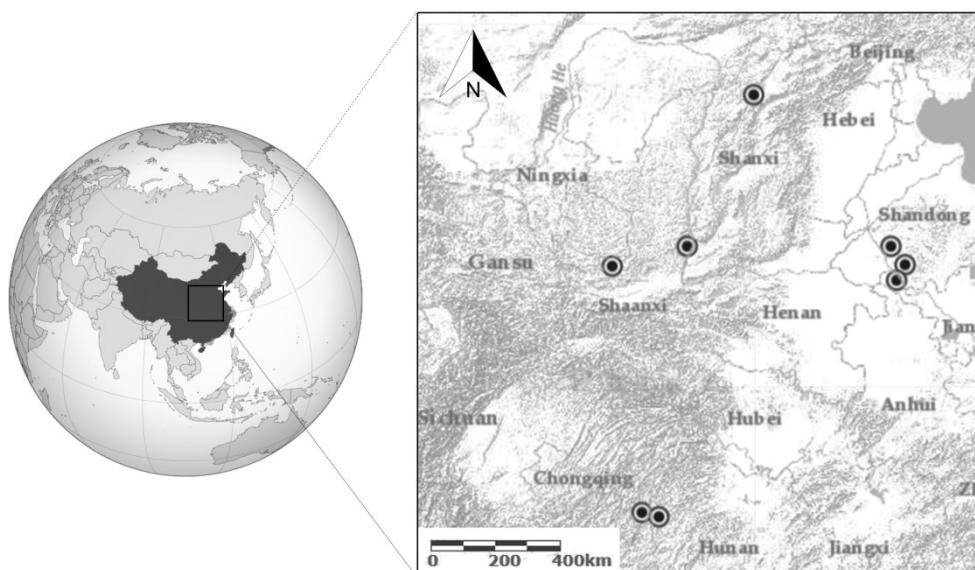


Figure 4 Map of fieldwork sites

Source: Drawn by Kees Krul

1.4.4 Practical and ethical dimensions of the study

Conducting research in remote places in rural China is a physically and mentally daunting task. It is physically difficult because usually mines are located in more remote areas, and the road to mining sites are often ragged. Different means of transport were needed to reach the research sites: public buses between towns, the motorcycle taxi, mineral lorry,

and when that was not available, on foot. Normally, when returning from the mine sites, I would ask the mineral lorry drivers for a ride and engage in informal talks. Unfortunately, trucks frequently broke down due to overloading, which forced me to walk back to the nearest town. Another point is that I always carried my own lunch and regularly drank the water from local wells, which is a common practice for rural residents. However, on several occasions, the wells had dried up due to the underground mining or I was reminded not to drink the well water as it might be contaminated. Fortunately, the farmers were often kind enough to offer me bottled water which they had stocked for everyday usage. I often politely rejected the offer and paid the price if it was not possible to reject.

The fieldwork was occasionally also mentally challenging because the research includes sensitive topics. As can be expected, studies on conflict are sensitive, not in the least, in the eyes of local authorities and mining companies. Raymond Lee (1993) defines a sensitive study as "*research which potentially poses a substantial threat to those who are or have been involved in it*" (1993:4). This definition excludes the societal impact a study might have, but emphasizes the consequences of undertaking sensitive research for both the researcher and the participants. There are several aspects to this.

First, some activists maintained keen vigilance and mentioned they were closely watched and constantly intimidated by local authorities. Therefore my entry to the field would also be closely monitored. However, my stay in the village was much less problematic than I initially feared, and I was never hindered or questioned by any officials. On the contrary, village committee leaders were occasionally willing to participate in this research. Mining-induced conflicts are sensitive, not in the least, in the eyes of local authorities and mining companies. To protect the rights and interests of the respondents, the survey and interviews did not record or store personal data. Furthermore, the research was overseen by the Ethics Officer of the European Research Council assigned to the RECOLAND Project of which this Ph.D. research was a part. In addition, an independent Human Research Ethics Committee of the Delft University of Technology also oversaw the project. No interview or survey was carried out without prior informed consent from the respondent.

Second, it often appeared that the affected farmers had high expectations of the research. This was evident in the warm reception of the researchers. Most people assumed me being a journalist and expressed hopes that my visit could help to resolve their issues. I had to remind them that I was a student and not a journalist, and ensure them of my very limited ability to change their situation. The villagers, however, argued that my research and interest in ordinary farmers would help them convey the grievance to a higher level of government, and eventually be beneficial to them in some way. From this perspective, it may be assumed that some respondents may not have been completely straightforward in their answers as they might exaggerate their grievance, criticize the local officials and mining companies, and/or praise the central government. I had to constantly and carefully reflect upon the implications of my presence in the field and local expectations of my

research. In my writing process, I tried my best to present the findings in the field completely and objectively, and take care not to be overwhelmed by an underlying desire to solely voice the farmers' concerns.

Giving the many challenges of carrying out empirical research, as illustrated above, on the local functioning of the mining institutions, it is no surprise that to date there has been little empirical work in this area. By partly overcoming the obstacles, I tried to collect a wide array of data: interviews, surveys, observations, and archive materials. This helped in triangulating the findings. The present work offers new data that expands and deepens the understanding of the implementation of the laws and regulations at local context, as well as the conflicts it may trigger. It is aimed that this will contribute to the concept of institutional credibility, sustainable development, and natural resource management, which benefits China as a whole as well as local people in place.

1.5 Outline of the thesis

This research is divided into seven chapters, as depicted in Figure 5. This chapter has provided an introduction, whereas the next chapter presents and discusses the theoretical aspect of the study. The following four individual chapters answer the four sub-questions presented in section 1.3, followed by Chapter 7 that concludes the study and discusses the theoretical and practical implications. A summary of the four chapters discussing the empirical findings is provided below.

Firstly, local communities are often affected by mining activities. For a better understanding of the costs and benefits of mining, examining local communities' perceptions is essential. Therefore, Chapter 3 answers the first sub-question: *How do mining activities affect local communities' livelihood and the residents' perceptions of mining?* Four changes that mining brings to local communities are examined: employment opportunities, environmental pollution, land use change, and land subsidence and resulting resettlement; and the possible influence on the perceived net benefits are examined. The relations between the four changes and the perceived net benefit are also investigated.

Secondly, facing the increasing environmental degradation, environmental activism (EA) has been growing. Therefore, Chapter 4 aims to answer the second sub-question: *What factors influence the attitude and actions of local communities towards the environmental impacts of mining?* It employs a well-established social-psychological model, the theory of planned behavior (TPB). TPB is used to look into the likelihood of collective action (activism), which is an indicator of desired changes (thus, also changes in the credibility of institutions). Moreover, it tests a model to identify factors influencing rural residents' environmental activism against polluting mining company in China.

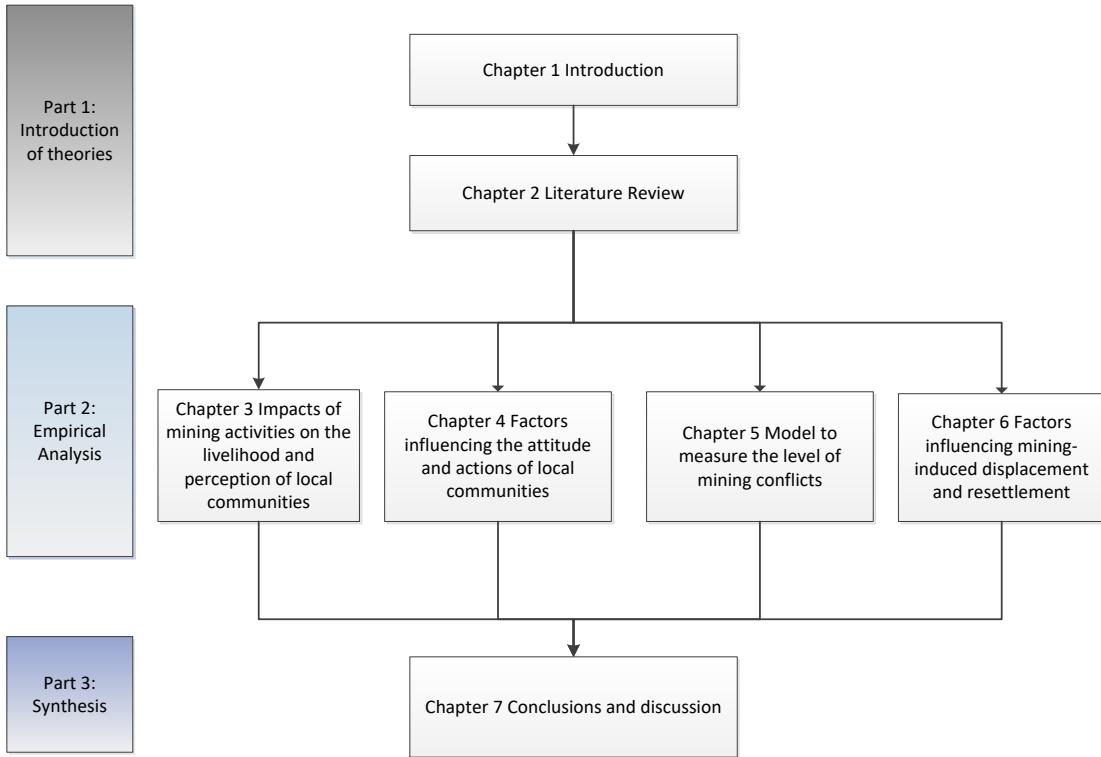


Figure 5 The thesis structure

Thirdly, in order to answer the third sub-question: *How can we measure the level and intensity of mining conflicts and what can be said about China's mining conflicts at the national level?* Chapter 5 develops a conflict analysis model to gauge the level of conflict by assessing the source, actor, frequency, nature, timing, duration, intensity, and outcome of the disputes. This model is illustrated in the context of mining conflicts in China, based on the dataset of 77 detailed mining-related conflicts, selecting from the Chinese Supreme People's Court. These are categorized into two types: 1) mining land acquisition, and 2) land subsidence and resulting displacement and resettlement. By applying the conflict analysis model, it points to the existence of convoluted and extreme relations between rural communities, enterprises, and the state, while it also points to the underlying roots of the conflict.

Fourthly, in the Chinese context, displacement and resettlement in most instances only occurs *after* mining-induced land subsidence has taken place. Against this background, Chapter 6 focuses on the research question: *What are the institutional factors that influence Chinese mining-induced land subsidence and displacement, and what are the economic and social consequence for farmers of mining-induced resettlement in China?* This question is examined at both the macro and micro level. First, the national laws and regulations are reviewed to get a clearer picture of the legal loopholes and deficiencies that affect the governance of MIDR. Second, a detailed view from the grassroots will be provided, based on quantitative surveys coupled with semi-structured interviews with relocated and non-relocated farmers.

2 Institutional credibility and conflict

2.1 Institutional credibility

One of the first uses of the concept of credibility appeared in studies looking at monetary policies in the 1970s and 1980s (Blinder 1999; Fellner 1979; Kydland and Prescott 1977). In these studies, credibility was mostly conceptualized to explain the difference between the objectives of the policymaker and its actual effect on the public. The smaller this difference, the higher the credibility of a given monetary policy or policymaker (Cukierman and Meltzer 1986).

Credibility should not be taken for granted, and Blackburn and Christensen (1989) have listed three factors that influence credibility. First are the technological constraints, including the reliability and accuracy of the data upon which policymakers base their decisions on. Second are administrative or political constraints that concern the ability of an incumbent government to carry their policies in time and deal with political pressure. The last factor is the strategic considerations, which boil down to a game between the policymakers and private economic agents, where the latter may anticipate (or sabotage) future policy changes.

The factors together point to ‘time inconsistencies’ (Kydland and Prescott 1977) that affect credibility, i.e. a temporal dimension that accounts for the differences between policy intentions and outcomes. In other words, a delay can always be witnessed between the initial design, implementation, and actual effect of a policy. In these different stages, it is determined *over time* whether a policy will reach its intended effect. In this regard, Cukierman and Meltzer (1986:1099) define credibility as “*the speed with which the public recognizes changes in the objectives of the policymaker*”. Some have further built on this realization by defining credibility as an “*expectation that an announced policy will be carried out*” (Drazen and Masson 1994:735). Hence, a policy that is credible is likely to reach its intended effect, and vice versa.

While credibility became a popular instrument used by economists as an explaining factor to describe the success or failure of policies, in particular, Western macroeconomic policies in the 1970s (Fellner 1979; Kydland and Prescott 1977), researchers have turned to the question of what accounts for credibility. This is not an easy task, as credibility is not easy to measure (Blinder 1999; Grabel 2000). In Blinder's (1999) study it was found that bankers believed they could receive credibility by building track records for honesty and inflation-aversion. Sobel (1985) found that an agent becomes 'credible' by acting *reliable* and providing accurate and valuable information. When certain policies are inconsistent or politically unsustainable, the announced policies may lack credibility (Schmiedling 1991). For example, if China's Communist Party decides today to immediately cease operations of all China's mines (politically unsustainable), but retracts the statement tomorrow (inconsistent), it may diminish its credibility of a reliable actor which may lower the effect of future policy measures at the same time. It is therefore also that the behaviour of present policymakers and the forthcoming policies may affect the credibility of future policymakers (Drazen and Masson 1994:752).

During the 1990s the notion of credibility became more widely used in other fields of the social sciences as well, in particular, the political sciences, each with different interpretations and definitions (Blackburn and Christensen 1989). For one, Keefer (2007:820) argues that "*the acquisition of political credibility is one compelling way to operationalize the broad concept of political institutionalization*". For instance, the 'credibility hypothesis' has been put forward by political scientists to examine whether political actors have delegated powers to independent experts in order to increase their credibility (Gilardi 2002; Majone 1997). Policymakers need credibility, as Majone (1997) argues, in particular when they cannot rely on coercion to implement their policies.

Observers have argued that economic growth and attracting investment is largely dependent on policymakers' capacity to make credible commitments (North and Weingast 1989; Stasavage 2002). When policymakers lack credibility, Keefer (2007) claims that it is likely to result in more clientelism, high rent seeking, high targeted spending, and corruption. More recently, the notion of credibility has become popular among neo-classical economists to explain the role of institutions for economic development, as Grabel (2000:2) notes: "*the new-classical notion of 'policy credibility' has come to cement the case for the desirability and indeed inevitability of economic reconstruction along neoliberal lines*". Along with this neo-classical interpretation, developing countries could 'gain' credibility by working closely with international organizations as the IMF and the World Bank and engaging in prescribed structural adjustment programs (Cottarelli and Giannini 1997). In this view, credibility is used as to explain economic growth (Ho 2014), and something that can be achieved or externally engineered, for instance through trade liberalization, privatization, and formalization of property rights.

The neo-liberal interpretation of the concept, i.e. credibility as a commitment to the neoliberal agenda, has received numerous criticism (Grabel 2000; Ho 2014). Grabel (2000) points to two issues. The first is that this notion of credibility is anti-pluristic or anti-democratic, as it naturally defies alternative economic views and denies the value of dissent. The second issue is that the understanding of credibility is guided by a “*naïve vision of society*” (Grabel 2000:13), as it is assumed that the society is largely homogenous and share the same interests. In reality, however, policies always serve some interests against others, and are shaped through negotiations that occur endogenously. Endogenous events such as political turmoil are far from exogenous and may influence the performance of institutions (Aron 2000). Aron finds that while ‘endogeneity problems’ occur frequently, they are not adequately accounted for in studies on institutions and economic development (Aron 2000). It appears that the neo-classical economic models merely treat credibility as an instrument to steer political decision making in the interests of a few, and it may well be that policies stamped as ‘credible’ do not serve its intended purpose and are not in the interest of the broader public.

To address the flawed neo-classical interpretation of credibility, Ho (2014) has put forward the ‘credibility thesis’. The credibility thesis has recently been adopted in empirical studies on China’s grassland degradation (Zhao and Rokpelnis 2016), housing evictions (Pils 2016), and artisanal mining in Ghana (Fold et al. 2017). In Ho’s thesis, the definition of credibility is formulated as “*the perception of endogenously, autonomously shaped institutions as a common arrangement*” (Ho 2014:16). Reading from this definition, the perception is measured through the lens of local actors, such as farmers or villagers. As explained by Ho (2014, 2016a), there are three important critical dimensions to this definition.

Firstly, credibility can be conceptualized as a continuum that ranges from ‘fully’ or ‘partially credible’ to ‘non-credible’, or even ‘empty institutions’ (Ho 2013, 2016a). It posits that the opposite extreme of a credible institution is non-credible while an empty institution is situated in the middle of the theoretical continuum. An empty institution emerges as a sort of symbolic compromise over sensitive social and political issues, but not enforced, therefore causing fewer disputes. Contrarily, a non-credible institution is not equal to a symbolic set of rules of the game. Non-credible institutions emerge when the symbolical rules are forcedly imposed, generating more conflicts and social divide.

Credibility thesis presumes that beyond a certain level of conflict, the old institution no longer is capable of absorbing it, new institutional arrangements are likely to emerge (Ho 2016b). An institution that generates more conflict would consequently become less credible, or empty. In this sense, notions of equilibrium are also rejected by the credibility thesis, and it is acknowledged that conflicts are inherent in any institutional arrangement.

Secondly, credibility as the perception of endogenously, autonomously shaped institutions as a common arrangement is related to the game that is played. Neo-liberal theorists

perceive the institutions as ‘the rules of the game’, and are prone to subscribe to a design view that institutions are “*susceptible to conscious design by legislators, political entrepreneurs, or mechanism design economists*” (Aoki 2001:9). It is such belief that an external actor can shape the institution that legitimizes state institutional intervention in order to design and guide societal development and economic growth in theory and in practice. Therefore, credibility thesis is a refusal that institutions can be intentionally formed by an external agency (Ho 2014). On the contrary, all actors – including policymakers, authorities, private actors, farmers – are all part of the ‘game’ and institutions emerge from endogenous interactions and negotiations between actors.

Finally, the credibility thesis focuses on the function of the institutions rather than their forms as desired through theory, ideology or political conviction. For example, Aron (2000:128) argues that “*the appropriate institutional variables to include in [...] regressions are those that capture the performance or quality of formal and informal institutions rather than merely describe the characteristics or attributes of institutions.*” By examining the institutional evolution history of now-developed countries in the nineteenth and the early twentieth century, Chang (2002) has shown that there is no unique correspondence between the functions that institutions perform and the form that such institutions take. Therefore, as Ho (2014:13) puts it, “*what ultimately determines the performance of institutions is not their form in terms of formality, privatization, or security, but their spatially and temporally defined function. In different wording, institutional function presides over form; the former can be expressed by its credibility, that is, the perceived social support at a given time and space.*”

Ho’s interpretation of credibility is important for this study in a number of ways. Firstly, the credibility thesis emphasizes temporal and spatial change, and by acknowledging this consideration, this study will gain more insight into the evolution and history of China’s mining institutions. Secondly, it allows for a careful examination of the mining institutions between multiple actors. The conventional model would place credibility between China’s policymakers and private economic agents, in this study the mining companies. With the ‘right’ and credible institutions in place, it is assumed that the mining industry will generate economic growth and attract investment. However, this leaves out how communities experience and perceive the mining institutions. Thirdly, by conceptualizing the credibility as a continuum and the inherent existence of conflict in any institutions, it provides a way to operationalize the institutional credibility by measuring the level of conflicts, as discussed in Section 2.2. The implications of these three points are demonstrated in the empirical chapters of this thesis, chapter 3 to 6.

2.2 Conflict as a measure of institutional credibility

There is no unanimity in the definition of conflict, but previous definitions by scholars from various disciplines share some common characteristics, as Wallensteen (2007) argues that a conflict consists of three main components: 1) incompatibility, 2) action, and 3) actors⁵. The incompatibility can be due to “*position scarcity*” and “*resource scarcity*” (Mack and Snyder 1957:218), a “*struggle over values and claims to scarce status, power and resources*” (Coser 1967:8)⁶, a “*divergent views about how to allocate and utilize land, air, water, and living resources*” (Glavovic, Dukes, and Lynott 1997:270), or environmental scarcity (Percival and Homer-Dixon 1998)⁷. Taking those three components into account, Wallensteen’s definition of conflict is “*a situation in which a minimum of two actors (parties) strive to acquire at the same moment in time an available set of scarce resources*” (Wallensteen 2007:15).

The issues of incompatibility, that stem either from resources scarcity or divergent and conflicting interests, are inevitable in any society or institutions. Therefore social conflicts are ubiquitous in any institutions (Dahrendorf 1958). Due to the regional differences in the social, political, economic and resource characteristics, different actions in response to the scarcity are taken. The concept of conflict encompasses a broad spectrum of empirical phenomena. At least two continua have been proposed to describe the intensity of the conflict. Keltner (1987) developed a struggle spectrum with six stages: (1) mild difference, (2) disagreement, (3) dispute, (4) campaign, (5) litigation, and ultimately a (6) fight or war. Another continuum of conflict management approaches proposed by Moore (1986) shows conflicts ranging from avoidance, to negotiation, to mediation, to arbitration, to adjudication, to nonviolent action, and to violence.

In explaining the role of conflict to an institution and institutional change, the scholarly discussions revolve around the chickens and eggs, namely, the cause and effect between conflict and institution.

On the one hand, conflict is viewed as the outcome of the inefficiency of institutions in distributing resources. For example, in the case of uncertainty or ambiguity in rules of

⁵ Mack and Snyder (1957:218) suggested a similar categorization, they suggested that two parties must be presented, along with “*position scarcity*” or “*resource scarcity*”, in addition to behaviors that “*destroy, injure, thwart, or otherwise control another party or parties,... one in which the parties can gain (relatively) only at each other's expense*”. Deutsch (1969) maintained that “*conflict exists whenever incompatible activities occur... an action which prevents, obstructs, interferes with, injures, or in some way makes it less likely or less effective*”(1969:7–8).

⁶ Coser (1967:8) asserts that conflict is “*a struggle over values and claims to scarce status, power and resources in which the aims of the opponents are to neutralize, injure or eliminate their rivals*”.

⁷ As concluded by Percival and Homer-dixon (1998:280), there are three types of environmental scarcity: (1) supply-induced scarcity, caused by the degradation and depletion of an environmental resource; (2) demand-induced scarcity, resulting from population growth within a region or increased per capita consumption of a resource; (3) structural scarcity, arising from an unequal social distribution of a resource that concentrates in the hands of relatively few people while the remaining population suffers from serious shortages.

interaction, i.e. the institution is inefficient, actors have to interpret rules based on their own perception, and hence it is likely social conflicts will occur (North 1990). In the context of developmental projects, inefficient distribution mechanisms, of either economic benefits or environmental impacts, do not correspond to people's aspirations, which could, in turn, result in more conflict (Baechler 1998; Downing and Downing 2006; Glavovic et al. 1997; Libiszewski 1991).

On the other hand, other scholars have focused on the function of social conflicts for prompting institutional change. Varying in the nature of issues, the relationship among players and the means used to address the conflict, conflict can be constructive or destructive to institutions (Deutsch 1969). Coser (1956, 1957, 1967) argues that conflict can actually serve as a positive role for the social relationship and social structure. For example, he argues that conflicts with other groups, including different class, ethnic groups, and political parties, could serve the functions of establishment and maintaining their own group identities against the surrounding groups. Also by the expression of hostility in conflict, conflict serves as an outlet for hostilities so that relationship between actors can be maintained. In this regard, 'nonrationalist' or 'unrealistic' conflicts, characterized by strategic behavior towards concrete goals or interests, are more likely to generate constructive outcomes (Coser 1956; Deutsch 1969).

However, 'nonrationalist' or 'unrealistic' social conflicts, characterized by a high degree of tension, frustration, and animosity, could contribute to a destructive outcome (Deutsch 1969). In flexible social structures, conflicts could be tolerated and even institutionalized so it can be used to minimize the discontent. In rigid social structures, which lack the institutional mechanism to contain or absorb the conflict, conflict may be suppressed, and therefore accumulates to an extent that it would tear the system apart (Sidaway 2005).

Combining these two reviews, conflict should be regarded as both a result and a source of change. A nexus between the institution and conflict is the level of conflict, therefore Ho (2006, 2013, 2014, 2016a) asserted that actors' perception of a conflict can be used in measuring institutional credibility. The credibility thesis presumes that beyond a certain level of conflict, the old institution no longer is capable of absorbing it, and new institutional arrangements are likely to emerge. In his view, an institution that generates more conflict would consequently become less credible, or empty.

Using the level of conflict as an indicator of institutional credibility requires the operationalization of the conflict. The above mentioned two continua proposed by Keltner (1987) and Moore (1986) mainly focus on the types of action, but not the intensity. In this book, the conflicts are operationalized by two models. The first is the Theory of Planned Behavior (TPB) (Ajzen 1991; Ajzen and Fishbein 1977). In this study, we operationalize the notion of environmental activism by constructing a scale of EA level, consisting of nine items of often-used EA activities by rural residents in Chapter 4. For every item a binary score is

assigned, where the sum of the nine items is used to estimate a respondent's degree of EA, prompting a total score between 0 and 9 for every respondent. TPB is then used to explore what makes individuals decide to engage in environmental activism against pollution.

The second is the conflict analysis model, which is expounded in the credibility thesis, consisting of a set of seven variables (Ho 2014, 2016a), namely the conflict's: 1) *source*, defined as the type of conflict; 2) *frequency*, defined as the number of times a type of conflict occurs during a given period; 3) *timing*, defined as the historical period or project stages of the most frequent conflict; 4) *intensity*, defined as the level of petition and litigation and the associated economic and social costs; 5) *duration*, time that a conflict lasts measured in days, weeks, months or years; 6) *nature*, i.e. violent or non-violent, which can be further divided into civil disobedience, such as roadblocks, demonstrations, or acts of open violence such as beatings, kidnappings; 7) *outcome* as the result of the conflict; the outcome can be measured as scale ranging from solved, partly solved, to unsolved, or satisfaction ranking from 'totally satisfied' to 'totally unsatisfied'.

2.3 Putting the theory in the context of mining in China

In the Chinese context, mining induced conflicts constitute one of the major grievances of Chinese farmers in rural communities. Therefore, China's mining industry is an important case to demonstrate how institutional performance stands in relation to four factors that may influence credibility: 1) distributional conflicts over economic revenues, 2) varying environmental impacts of mining, 3) the heterogeneous groups within society, and 4) characteristics of conflict and conflict resolution that are unique to the case of in China.

First, mining has generated distributional conflicts over economic revenues. Because of the loopholes in the mining tax and fee system, as well as the farmers' lack of ways to defend their property rights, both the scholarly discussion and empirical studies suggest that the windfall profits derived from mining activities are reaped by the government agencies, officials, and mining companies. In turn, local communities receive a smaller share of the rising resources rents (Li and Zhu 2011; Wen 2012; Xing 2013). Research has indicated that resource-based areas tend to have a low growth of GDP per capita, unbalanced industrial structure, low government revenue, and severe ecological and environmental conditions (Li, Long, and Chen 2013; Zhan, Duan, and Zeng 2015). Moreover, resource abundancies increase the possibility of corruption for state officials (Zhan 2015). Reports about the lavish style of coal magnates have reached media headlines (WeekinChina 2012). Inadequate compensation to account for resource loss and environmental damage is one of the main motives of mining resistance. The unfair distribution of interests among different social actors has significant implications for social stability, for instance, violent clashes in resource abundant cities are frequently reported by the media (Hui and Tan 2011; Wei 2008; Zhan 2013).

Second, besides conflicts over uneven economic revenues, conflicts that emerge from uneven environmental impacts is more severe. Mining activities have brought about severe environmental impacts that have an immediate impact on the livelihood of local communities, including the decreased quality of the ecosystem (Bian et al. 2010; Shi and He 2012; Zhang et al. 2011), higher incidence of cancer and mercury-related diseases (Zhuang et al. 2009), and displacement and resettlement (Zhang 2013). These negative impacts put people's livelihoods and daily lives at risk, leading to increased resistance of the mining industry.

Third, diverse and heterogeneous social groups are involved in the mining activities. On the one hand, there is a broad coalition in favor of mining. In many localities, the mining industry is the pillar industry and the government derives most of its income, economic growth, and employment from the industry (Li et al. 2013). Therefore, local governments have a strong interest in supporting the mining industry. In addition, the presence of mining provides rent-seeking opportunities for local officials, where bribery, corruption and the networks of patronage permeate the Chinese mining industry (Zhan 2015). As a result, county or township level cadres often tolerate the illegal operations of mines, with the cadres at the village level also involved. From the time of the establishment of the mines, village committee leaders play an important role in land taking, needed to establish the mining installations. In these ways, the interest of local and village officials is in aligned with the mine owners.

It should be noted that even the interests of the local residents are rarely coherent and homogeneous. Mining activities provide millions of rural workers with income opportunities considerably higher than they can earn from agriculture (Wright 2004). On the other hand, the communities in the mining areas are undergoing an accumulative dispossession of livelihood (Perreault 2013), and suffer from serious environmental degradation, public health issues, and displacement. Under the simultaneous condition of economic dependency and livelihood dispossession, it remains unknown how affected persons react to mining.

Fourth, in the Chinese context, conflicts tend to rise and be solved locally, and the conflict resolution pattern is different from other countries. In an authoritative state like China, some forms of mobilization are seldom practiced in China, including the referendum⁸, suing

⁸ Referendums emerged in the 2000s as a strategy used increasingly by communities in Latin America (Conde 2017; Urkidi 2011; Walter and Martinez-Alier 2010). Since then, until 2012 as many as 68 consultas (referendums) have been carried out in five different countries (Conde 2017:85). Some projects had been halted in Latin America by local referendums (Muradian, Martinez-Alier, and Correa 2003; Walter and Martinez-Alier 2010).

at international courts⁹, and connecting to global NGOs¹⁰. In contrast, ‘letters and visits’, or the Chinese petitioning system, is often practiced by Chinese citizens to attract the attention of higher authorities and officials to increase their bargaining power.

To examine in more detail how these factors may affect the institutional performance of mining institutions, this study adopts the theories and conceptual framework of institutional function and credibility. As institutions defined as a set of endogenously shaped *context-determined* social rules, this study aims to assess not only the arrangements of governmental legislations and policy both at the central and local levels, but also the implementation at various geographical and hierarchical levels. To make it more specific, the institutions investigated in this book include a set of rules on mining land expropriation, environmental management, and MIDR.

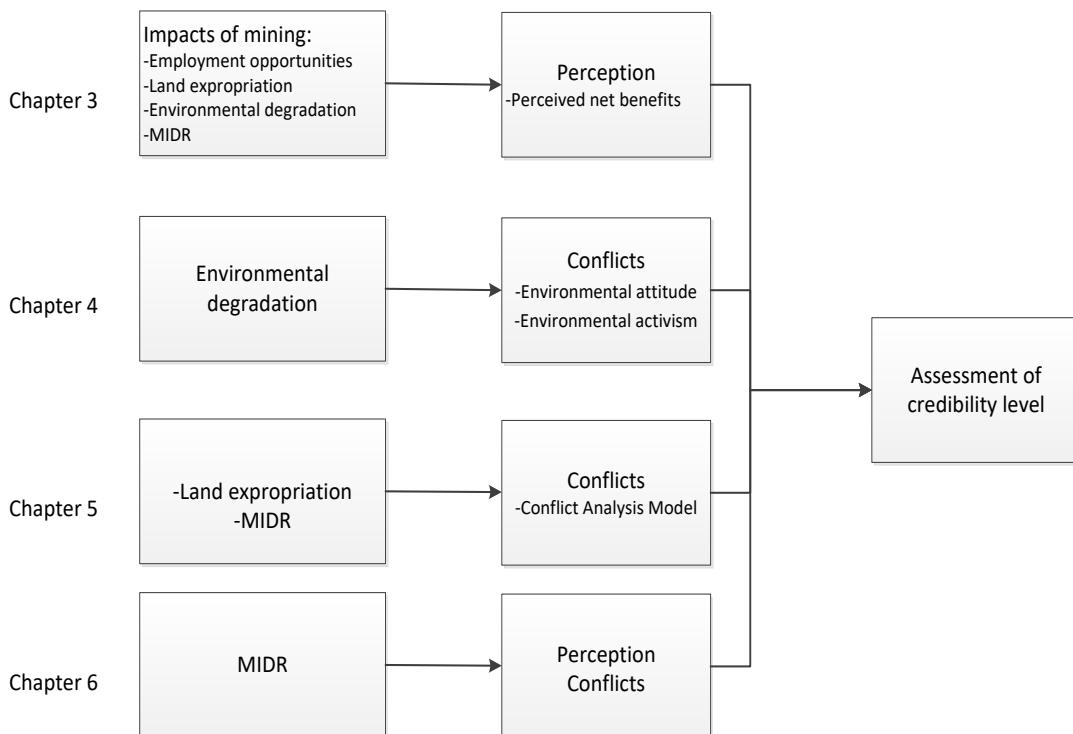


Figure 6 Structure of the empirical chapters

⁹ Legal action can start in the host country where the mining company is operating, or in the company’ home state (commonly in countries such as Australia and Canada), international courts (e.g. the International Court of Justice), or regional courts (such as the Inter-American Court of Human Rights) (Pigrau et al. 2012).

¹⁰ This concerns the ‘glocalization’ of mining conflicts (Haarstad and Fløysand 2007; Paredes 2016; Urkidi 2010). National or international NGOs often play an important role in bringing knowledge to the local level, making connections to movements elsewhere, mobilizing extra-local resources for local action, and turning local conflicts into glocal conflicts. In a study of the Pascua-Lama gold mining conflict in Chile, Urkidi (2010) shows how communities employed a jumping-scale strategy to broaden their stand on the preservation of local subsistence farming and the environment, and link it to the global problem of climate change.

Source: Drawn by the author.

As multiple institutions at different levels of analysis (micro-macro) are under investigation, this study makes some practical choices. First, as illustrated in the methodology section, the research sites were purposively selected, and different hierarchical levels were studied. Second, mixed-methods are employed and multiple sources of data were collected, providing more grounds for triangulation.

Therefore, as indicated in Figure 6, which is elaborated from the analytical scheme of institutional credibility (as illustrated in Figure 3 in section 1.2), institutions on mining land expropriation and MIDR will be thoroughly investigated using different sources of data. As numerous studies (e.g. He et al. 2014; Van Rooij 2006; Zhang et al. 2010) have focused on the law-making process and implementation of environmental regulations in China, this study chooses not directly investigate any specific environmental laws or regulations. Instead, this study focuses on the local communities' perception and reaction to environmental degradation (Chapter 4). Combining these previous studies and the current study, it is sufficient to assess the credibility of the environmental protection institutions.

3 Social, environmental and economic impacts of mining on rural communities

3.1 Introduction

The question “is mining good for development?” has rallied both those favoring, as well as those opposing mineral resource exploitation. On the one hand, mining has been actively promoted as a way to boost the economy and reduce poverty. Previous studies (Aroca 2001; Hajkowicz, Heyenga, and Moffat 2011; Lagos and Edgar 2010; Rolfe et al. 2011) have claimed a positive contribution by mining to the regional economy in terms of GDP growth and a rise in income. On the other hand, scholars proposed the ‘resource curse’ hypothesis, positing that countries most abundantly endowed with mineral resources fare least in terms of GDP growth (Auty 1993, 2007; Sachs and Warner 1995). Meanwhile, others have also reported on mining’s impact on the environment, resource use, and health. On the one hand, mining activities have significantly decreased the quality of the ecosystem (Vatalis and Kaliampakos 2006), disrupted land and water use (Hilson 2002a; Sonter et al. 2014), and induced a higher incidence of cancer, and heavy metal-related diseases (Fernández-Navarro et al. 2012; Tschakert and Singha 2007; Zhuang et al. 2009). On the other hand, mining companies helped to establish health infrastructure and services, and introduced health campaign, thus resulting in significant improvements in infant mortality and life expectancy in some remote areas (Kuir-Ayius 2016; Thomason and Hancock 2011).

In the context above, it is important to also include the view from those directly affected by mining: local communities. Their perceptions towards the sustainability of mining should be assessed comprehensively, thus, not only comprising economic impacts but also the environmental and social impact as well (Azapagic 2004). For this purpose, we have conducted a “view from below” from China, at this writing the world’s largest producer of

numerous mineral resources, including coal, iron ore, aluminum, tin, zinc, bismuth, and gold.¹¹ It needs to be mentioned that there are few studies that examine the social, economic and environmental impact of mining at the (rural) community level in China. This chapter aims to provide a critical contribution to the field in this regard.

This chapter aims to answer the SQ1:

How do mining activities affect local communities' livelihood and the residents' perceptions of mining?

It is disaggregated in three steps: 1) to identify the perceived economic, environmental and social impacts that mining brings to Chinese local communities; 2) to measure how local communities perceive the net benefits of mining; and, 3) examine how these impacts affect the perceptions of net benefits. The impacts that the chapter will assess are shifts in, respectively, employment opportunities, environmental pollution, land expropriation, land subsidence, and resettlement.

The chapter is structured as follows: Section 3.2 presents the literature review. Section 3.3 presents the analytical framework and concept used in this chapter, showing the four impacts that mining brings to local communities, and the concept of perceived net benefits. Section 3.4 presents the results on how the four impacts affect the local communities and influence the perceived net benefits. Section 3.5 provides a discussion and final conclusions.

3.2 Pros and cons of mining: The global and Chinese experience

The various impacts brought about by mining, either positive or negative, have been the subject of public and scientific debate for decades. Interestingly, by using different indicators, methods, and data, scholars have reached entirely different conclusions about the total net effect of mineral exploitation.

It is often ascertained that mining activities can provide opportunities for economic growth, poverty reduction, and increased integration with the global economy. For instance, in the case of Chile and Australia, increased mining investment has allegedly coincided with an upturn in domestic growth (Hajkowicz et al. 2011; Lagos and Edgar 2010). The positive economic impact of mining has also been found to extend from the macro level to the local level. In this regard, Rolfe et al. (2011) maintained that mining can make an important contribution in terms of employment and may provide opportunities to strengthen local (auxiliary) businesses. Specifically, artisanal mining has been found to provide new employment opportunities to resource-poor groups, yielding higher incomes and greater economic autonomy (Hilson 2002b; Labonne 1996; Shen and Gunson 2006).

¹¹ Based on the 2015 data of the United States Geological Survey.

In contrast, however, the resource curse hypothesis suggests and validates that resource-abundant countries may suffer lower rates of economic growth than those without such resources (Auty 1993, 2007; Sachs and Warner 1995). Furthermore, mining activities have been found to have adverse impacts on socially vulnerable groups, such as women, elderly, ethnic and indigenous minorities, and disabled. These groups are more easily prone to social marginalization, due to the lack of ownership of productive resources and a low(er) socioeconomic status (Ahmad and Lahiri-Dutt 2006; Lahiri-Dutt 2008).

The employment effects of mining, however, do not only influence the local people but may also attract migrants from other regions (Aroca 2001; Carrington and Pereira 2011; Rolfe et al. 2011). On the positive side, the inflow of migration often drives the demand for goods and services, leading to increases in production and consumption, yet, also in prices. On the negative side, however, those working in the agricultural and services sector, generally have lower wages than those employed in mining, and may not be able to afford the increased costs of living.

Mining projects greatly affect local communities with regard to ecosystems and land use. Emissions from mining and mineral processing, such as dust, noise, wastewater, and heavy metals, have significantly decreased the quality of the ecosystem (Dogaru et al. 2009; Vatalis and Kaliampakos 2006). The environmental degradation has led to public health issues, such as a higher incidence of cancer, mercury-related diseases, and elevated lead levels in the blood (Fernández-Navarro et al. 2012; Tschakert and Singha 2007). Mining also disrupts land and water use, reducing the viability of other industries, such as agriculture, aquaculture, and tourism (Hilson 2002a; Sonter et al. 2014). Mining-induced displacement is another way that endangers the livelihood. The displacement often couples with ill-implemented resettlement and uneven compensation (Ahmad and Lahiri-Dutt 2006; Downing 2002). Therefore, the communities in mining area are undergoing accumulative livelihood dispossession (Perreault 2013). However, mining industry also brings some positive effects on local communities. For example, mining firms are sometimes responsible for the establishment of health infrastructure and service in remote areas, leading to extremely significant improvements in infant mortality and life expectancy statistics in those areas (Banks et al. 2013; Kuir-Ayius 2016; Thomason and Hancock 2011).

Many of the issues above are not new. Yet, the sequence and timing in which social, economic and environmental changes are manifested influences how the society experiences these. For one, mining is perceived as providing employment and supplementary income to the local community (Badera and Kocoń 2014; Garvin et al. 2009), although the extent varies considerably from case to case. At the same time, however, longer-term perceptions of the negative environmental and social impacts are well documented (Garvin et al. 2009; Kitula 2006; Petkova-Timmer et al. 2009).

The international discussions on the impacts of mining are echoed in the academic literature on Chinese mining. The mining industry – with particular reference to coal mining – is regarded as a driving force of the Chinese economy, providing employment and alleviating rural poverty (Ge and Lei 2013; Lei et al. 2013; Rui 2005; Shen and Gunson 2006). Contrarily, others have pointed to the environmental problems, such as water and air pollution, hydrological disturbance, and acid mine drainage, i.e. the outflow of acidic water from metal or coal mines (Bian et al. 2010). Mining has also displaced millions of people in China (VanderKlippe 2015; Xinhua 2015; Zhang 2013) and has led to substantive tensions between mining industries and farmers (Wang and Yuan 2013; Zhang 2013; Zhao and Li 2013). It is generally believed that land expropriation is the dominant factor for displacement in mining areas (Abuya 2013; Ahmad and Lahiri-Dutt 2006; Madebwe, Madebwe, and Mavusa 2013). However, as Chapter 6 shows that land subsidence resulting from mining activities is also a dominant cause of displacement. Scholars have argued that the costs of mining in China in terms of displacement, pollution, and health have outweighed the short-term economic benefits (Andrews-Speed et al. 2002; Economy 2007; Mao, Sheng, and Yang 2008).

As mining activities directly affected local residents, examining local communities' perceptions is essential. Over the years, there has been a steady increase in studies on community's perceptions on the impacts of mining (Badera and Kocoń 2014; Garvin et al. 2009; Kitula 2006; Petkova-Timmer et al. 2009). In contrast, community-level studies on the comprehensive impact of mining in China are relatively few. Previous studies have generally focused on either the economic aspects (Rui 2005; Wright 2004) or the environmental impact (Shi 2014; Shi and He 2012). The current study, therefore, focuses on Chinese rural communities' perceptions of the net benefits of mining as operationalized through four indicators, elaborated on in the following section.

3.3 The analytical framework: Assessing four impacts

Based on the literature review in Section 3.2, four key impacts are identified that influence the perceptions of local communities, and which subsequently will be examined in this chapter (Figure 7). Before disaggregating the perceptions of mining impacts, respondents were first asked to rate the extent to which they perceived whether the benefits of mining outweigh the costs. This was done by the use of a five-point Likert scale.

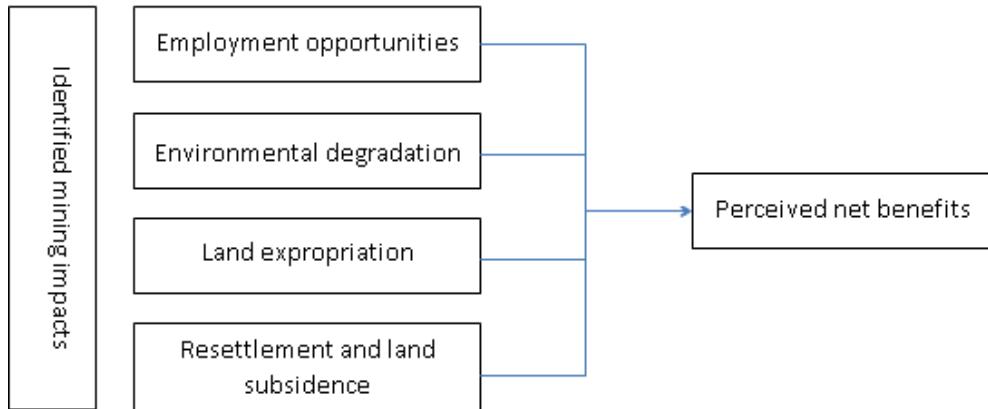


Figure 7 Analytical framework of Chapter 3

Source: illustrated by the author.

- a) *Employment opportunities*. Respondents were asked whether mining activities had benefited them through a series of questions with regard to work in the mining sector, mining-related transport, and related services.
- b) *Environmental degradation*. Participants were asked to evaluate the seriousness of the main forms of mining-induced environmental degradation, that is, air, noise, and water pollution, based on a scale from 1 (none) to 5 (very serious). They are also asked the reactions to the pollutions.
- c) *Land expropriation*. This indicator aims to assess the impact of land loss on the perceptions of the net benefit of mining. Respondents were asked whether their land was expropriated or not, and if yes, various questions about the procedure of land acquisition and their satisfaction with the compensation.
- d) *Resettlement and land subsidence*. Respondents were asked the situation of land subsidence, and if they were relocated, various questions regarding the resettlement were asked.

As indicated in Section 1.4.3, the survey was conducted in 37 villages within the eight counties, generating 352 valid questionnaires. The counties were selected on the basis of an official list of mineral resource-based counties issued by the Chinese State Council (2013), with the aim to represent and account for (i) various stages of mineral resource exploitation, (ii) geographical variety, (iii) varying levels of economic development, and iv) different mineral resources. Different statistical techniques, such as independent sample t-test or One-way analyses of variance, were performed to statistically test whether the means of the subsamples are significantly different from each other, at significance level $p<0.05$.¹²

¹² This study focuses on the four impacts that mining activities bring about, therefore does not consider the influence of demographic characteristics. The sample t-test shows that gender and educational level have no significant effect on the perception of net benefits. However, younger generations tend to show a more

3.4 Results

The empirical findings are structured according to the analytical framework presented above. It respectively discussed the perceived net benefits of employment opportunities, environmental degradation, land expropriation and resettlement and land subsidence. The section 3.4.5 will discuss the comprehensive perception of net benefits.

3.4.1 Employment opportunities

Mining is often regarded as a key to lifting rural people out of poverty through the creation of jobs which generate income for workers and their families (Rui 2005; Wright 2004). Indeed, employment opportunities are regarded as the most significant benefit by the respondents. A number of 121 respondents, or 34.4% of the sample, indicate that their immediate family members have worked, temporarily or long-term, for mining companies (Table 2). Mining activities also created other economic opportunities, such as for transportation (8.2%), the supply of groceries (2.6%), house rental (2.3%), and restaurant services (1.1%).

Table 2 Employment history in the mining industry (N=121)

Item		Number	Percentage
Employment duration distribution	0 to 3 years	28	23.1%
	3 to 5 years	27	22.3%
	5 to 10 years	33	27.3%
	10 to 20 years	23	19.0%
	over 20 years	10	8.3%
Employment duration Statistics	Mean=9.79 years; Min=0.25 years; Max=40 years; SD= 8.75 years		

Source: The survey.

Mining-related employment provides a relatively high salary.¹³ Compared to migrating to work in other provinces, 76% of investigated households prefer their family member to work in nearby mines. However, among those respondents who do not work in mining companies, 71.5% complain that they are rejected job opportunities because mining companies have become less willing to hire local residents.¹⁴ This is similar to studies in other regions that also found that communities residing in mining regions are often

neutral, or less negative, attitude towards mining activities than seniors, which is likely to link to the direct employment opportunities that is discussed in the empirical findings.

¹³ According to the statistics by National Bureau of Statistics of China, the average wage in the mining industry in 2015 is 59,404 yuan, which is higher than the construction sector (48,886 yuan) and manufacturing sector (55,324 yuan), in which most migrant workers are employed (National Bureau of Statistics of China 2015).

¹⁴ Other reasons for not working in mining companies include: did not try (12.9%), age (10.2%), health not suitable for mining job (4.3%), and low salary (1.2%).

excluded from the socio-economic benefits of adjacent mining operations (Carrington and Pereira 2011; Downing 2002; Horsley et al. 2015).¹⁵

In the Chinese context, there are three reasons for the reluctance to hire local residents. First, from the point of mines, it's difficult to manage local workers. Most local workers remain to be 'half farmer, half worker', and still have agricultural duties for which they occasionally leave their work. Contrarily, migrant workers from other provinces live and work within or near mining companies and work more consistent throughout the year. Second, local residents' dual roles as an employee and farmer could influence the company-community relation. While mining provides a complementary livelihood, however, mining also has detrimental impacts on the local environment that makes farming more difficult. Emerging issues such as air and water pollution, land productivity loss, and land subsidence, have heightened tensions between local farmers and mining companies. In one of the observed villages, after failing to reach an agreement about the compensation on land productivity loss, the villagers blocked the road for days to stop the outbound transport. After this instance, all local workers were fired by the company.

The third and most important reason is that in the case of a mining accident, it is easier to disguise it when only non-local workers are involved. The mining industry in China has a notoriously poor safety record and accidents occur frequently (Chan and Gao 2012; Feng and Chen 2013; Tu 2007; Wright 2004). The central government has imposed strict measures that if an accident in a mine causes fatalities exceeding the designated indicators,¹⁶ mining activities are suspended and safety measures have to be improved, and failing to do so will ultimately lead to revocation of the company's licenses. Avoiding such penalties, mine operators and local officials frequently try to silent accidents and casualties. Asides from bribing, mining companies pay families of victims to sign agreements to settle the matter immediately and promise not to speak to outsiders (China Labour Bulletin 2008:21). Disguising accidents would arguably be more difficult when local workers are involved.¹⁷

It seems that it is perceived, and understood in the current study, that mining allows for important employment opportunities. However, mining companies in China have become less willing to employ local residents. Therefore the job opportunities and other economic benefits have become smaller for local communities.

¹⁵ For example, only about 100 of 17,300 Freeport workers in the Grasberg mine in Indonesia are native to the mining area (Downing 2002:10).

¹⁶ Since 2004, The Work Safety Commission of the State Council (WSC) has established a set of national annual fatality indicators. There are two types of fatality indicators: absolute and relative indicator. The detailed description and effect of this system is seen in Chan and Gao (2012).

¹⁷ News has reported that dozens of instances across China of gangs killing vagrants and workers in the dark, isolated chambers far underground, and using the deaths to defraud mine owners (Buckley 2016; China Daily 2016; Wang 2016).

3.4.2 Environmental degradation

The second considered factor relates to environmental degradation. Mining is undoubtedly one of the most hazardous industrial occupations, competing for land and water and also producing health-threatening waste and pollutants. The majority of respondents think the environmental pollution, regardless of air, water and noise pollution, as serious, as in Figure 8. The mean values of the perception of air pollution (Mean=3.820, SD=1.377), water pollution (Mean=3.707, SD=1.95), and noise pollution (Mean=3.298, SD=1.517), are relatively high, indicating that local residents consider environmental pollution in the investigated mining areas as very serious.¹⁸

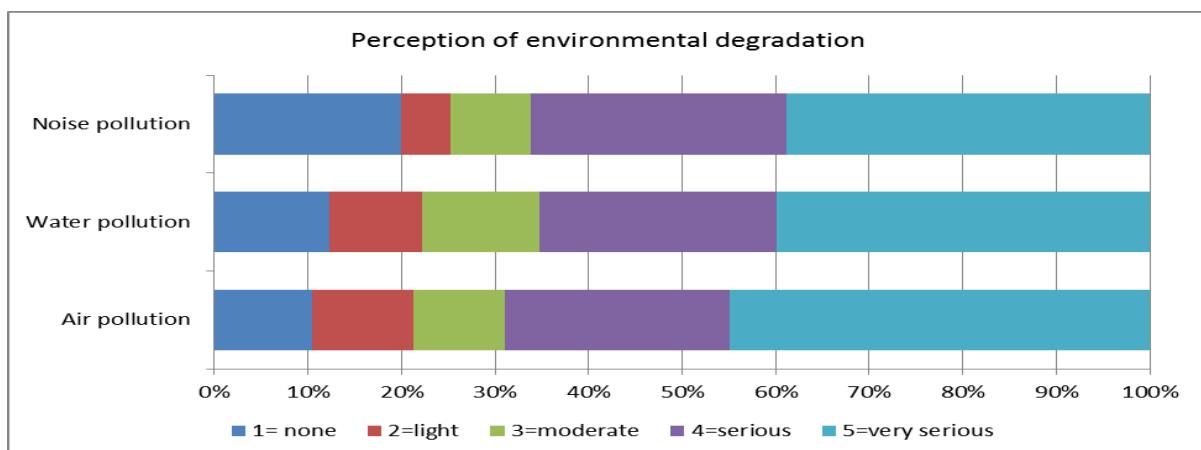


Figure 8 Perception of environmental degradation

Source: The survey.

Further questions on the local communities' reaction to the three types of pollution were also asked. As shown in Figure 9, the most common reactions are passive: by reducing the time for outdoor activities and locking the door and window when inside are chosen as adaptive responses to air pollution; by using water purifiers or buying purified water and finding other sources of water as a response to water pollution; by locking the door to avoid the noise pollution. Only a small proportion of respondents complained to government agencies or directly negotiated with mining companies as strategies to mitigate the risks of pollution.

¹⁸ This corroborated with other studies in coal mining area in Shaanxi and Shanxi (Shi 2014; Shi and He 2012).

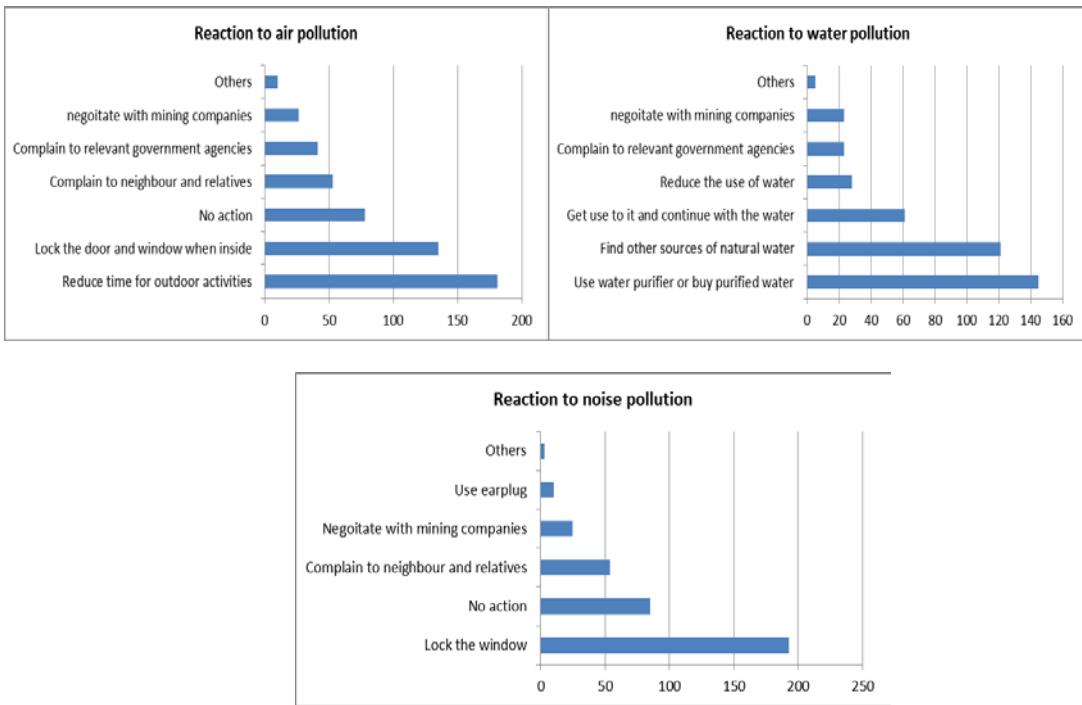


Figure 9 Reactions to environmental degradation

Source: the survey.

3.4.3.Land expropriation

This part examines the situation of land expropriation. There are two ways of land expropriation. The first is that the land is firstly expropriated by the local government, and then transferred to the new user, the mining company. The second is the direct land lease from farmers to the mining company. When the farmer's land is expropriated, they are compensated either by the national standard or by negotiated price. Here we do not distinguish the two different types of land expropriation (will be discussed in Chapter 5), but consider the general perception of land expropriation.

In the study area, 20.4% of respondents claim part of their land was expropriated. However, in terms of scale, land expropriation for mining is relatively limited. There are two reasons. First, agricultural land in China is highly fragmented, for instance, a previous nation-wide survey found that each household has on average around six plots of land scattered around the village (Tan, Qu, and Heerink 2005). Second, underground mining is predominantly in the study area, which is also true all over China.¹⁹ Land expropriation is concentrated around the mining operational sites, while land, where underground mining takes place underneath, is often not expropriated beforehand. Therefore, households in general only lose part of their land to expropriation.

¹⁹ In the case of coal, 95% is produced from underground mines (compared to 31% in the United States and 22% of in Australia; Bian et al. 2010, p.217). Underground mining is also prevalent for lead, zinc (Zhang et al. 2011), and manganese (Wang 2007).

Both groups, whether the land was expropriated or not, have complicated attitudes towards the land expropriation. For those whose land was expropriated, more than 80% of respondents are dissatisfied with compensation. For the remaining land, mining disrupts the land use and decreases the productivity. The overall majority of respondents (93.9%) claimed that land productivity had been negatively influenced by mining activities, in terms of decreased output or increased input, such as a much higher need for fertilizer. It is often hard to claim compensation from the mining companies for the loss. During the fieldwork, it is often heard that some respondents would rather have their land being expropriated and getting some compensation than keeping work on the contaminated land. How the ambivalent attitudes influence the perception of net benefit is further examined in section 3.5.5.

3.4.4 Resettlement and land subsidence

The last factor considered connects to the mining-induced land subsidence and resettlement. Respondents are divided into three groups: i) those that have been relocated (N=120), and ii) those affected by mining-induced land subsidence but who have not been resettled yet (N=110), and iii) those not affected by land subsidence (N=122). The third group did not encounter visible land subsidence and therefore was not resettled, and is left from further analysis in this section.

Respondents of the first group were relocated after visible and serious land subsidence. The need to resettle has both positive and negative effects on farmers' perception of net benefits. On the one hand, resettlement helped to mitigate the risks of land subsidence and provided a better living environment. The majority of respondents found basic infrastructure and utilities at the new living environment convenient, including improved transportation (satisfaction rate 87.6%), electricity (satisfaction rate 90.1%), and tap water supply (satisfaction rate 72.7%). However, more than half of the respondents are dissatisfied with the building quality of the new housing in the relocation village. Farmers complain that relocated houses are poorly built and badly maintained. Upon moving in, problems as water leakage and the peelings and cracks in walls were already apparent.

Meanwhile, resettled farmers received no new land and remained dependent on agricultural land in the original village. As the relocation village is usually located at some distance from the original village, farmers have to spend hours on foot to cultivate their land. Therefore some are forced to abandon their original land and instead rent farmland nearby the relocation village. Although formally not landless, those farmers often likened themselves to landless tenants in the "*jiu shehu*" (old, feudal society).²⁰ Finding an alternative non-farming job is also difficult. A final concern is about the increased cost of living. In the relocation village fees for water and gas were higher compared to the original

²⁰ This is a socio-politically sensitive image, as it refers to the resurfacing of the cleavages and inequity of pre-Communist times.

village, and 36.7% of the respondents indicated that their monthly living expenses had "significantly increased". Virtually none of the respondents stated that their living expenses decreased.

As the compensation is mostly spent on the purchase of new housing, agricultural productivity has been adversely affected, and off-farm employment opportunities are limited, most farmers are deeply concerned that their livelihood on the medium or long term could not be maintained.

For the second group that had not been scheduled for resettlement, mining-induced subsidence and house damage were regarded as a serious problem. It is difficult for them to predict whether or when they will be affected. They were aware or concerned about the mining until after the damage to land and housing started to occur. The majority (or, 68.7%, n=110) of the respondents hoped to be relocated. The remaining percentage of those who were not willing to be relocated showed concerns about inadequate compensation and expected their living costs to increase in the future. However, affected farmers even did not know when the relocation would take place, and were unaware where they would be relocated to. While awaiting relocation, most villagers had to find temporary accommodation themselves or stay in with relatives.

3.4.5 Perceived net benefits

After discussing the four impacts that mining brings about, this section will examine the local communities' perceptions of net benefits, and how these four impacts influence the perceived net benefits.

When asked to evaluate the extent to which the benefits of mining outweigh the costs to their families, a total of 61.3% disagree, amongst which 33.9% strongly disagreeing.²¹ The mean value of perceived net benefits is 2.256 (SD=1.230), indicating that the majority of respondents perceive that mining activities do *not* bring net benefits. Below, a quantitative analysis is applied to examine to which extent the various factors of our framework affect the perceptions of the net benefits of mining.

First, we consider employment opportunities. For those who once worked in the mining company, around a third agree that the benefits of mining outweigh the costs, generating a mean value of 2.661 (SD=1.330) on perceived net benefits. Contrarily, the majority (69.5%) of those who not worked for the companies agreed that mining does not bring net benefits, amongst which 37.8% strongly disagreeing (Figure 10). The mean value of the perceived net benefits for the latter group is 2.012 (SD=1.119). Independent samples t-test was performed to determine whether the means of the two subgroups are significantly different. The results ($T=4.488$, $p=0.000$) indicate that those two groups have significantly different

²¹ 12.3% 'neutral', 17.4% 'agree', 3.7% 'strongly agree', and 5.4% 'do not know'. When calculating the mean value, the answer 'do not know' was excluded.

perceptions. In other words, with working history in a mining company, respondents are more likely to report having received a net benefit than those whose family member never worked in the mining companies. In this sense, mining may create different segments of society with having and not having non-agricultural employment. Meanwhile, as analyzed above, the local participation in the mining workforce may be lower due to the reluctance to hire local residents. When losing ways to join in with the economic benefits of mining, the local communities may be more prone to resist the mining.

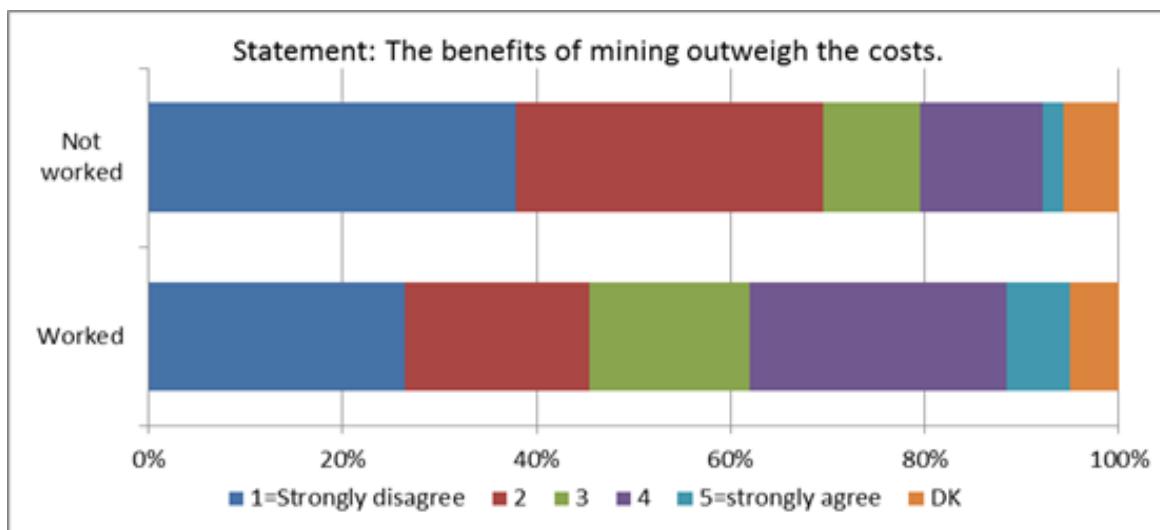


Figure 10 Employment opportunities significantly influence the perceived net benefits

Source: The survey.

Second, we analyze the effect of environmental degradation on the perceived net benefits. Linear regression was performed to test the perception of air, water, and noise pollution towards the perceived net benefits. The result of this regression is shown in Table 3. As can be seen, the overall result of the regression is significant, with the adjusted R-square value 0.025, indicating the perception of environmental pollution only contributes 2.5% to the perceived net benefits. The results of standardized coefficient revealed that the perception of water pollution was the most important variable that contributed to the dependent variables. Meanwhile, the perception of air pollution and noise pollution did not contribute significantly to the perceived net benefits. In this sense, the perception of the environmental pollution may not transfer to the perception of economic loss.

Table 3 Effect of perception of environmental pollution on perceived net benefits

Dependent variable: perceived net benefits

	Standardized coefficient (beta)	t-value	Significance
Constant	4.189	26.208	.000
Perception of air pollution	-0.012	-0.179	.858
Perception of water pollution	-0.138	-2.296	.022
Perception of noise pollution	-0.038	-0.725	.469
R Square= 0.034			F=3.804;
Adjusted R Square=0.025;			Significance=0.011

Source: The survey.

Third, we analyze the influencing factor of land expropriation. As shown in Figure 11, we can see that the majority of both groups (65.3% and 60.2%, respectively), who had their land expropriated and those who had not been expropriated, disagree that mining brings net benefits. The mean values of perceived net benefits for the two groups are 2.171 ($SD=1.274$), and 2.279 ($SD=1.220$), respectively. As illustrated in section 3.5.3, both groups have complicated attitudes towards the land expropriation. On the one hand, the vast majority of those whose land was expropriated were dissatisfied with the compensation. On the other hand, the contaminated land and decreased productivity made some prefer their land being expropriated and getting some compensation. These ambivalent attitudes were testified by the statistical analysis. The results of the t-test ($T=0.631$, $p=0.529$) shows that there is no significant difference in perceived net benefits between those two groups. That is to say that land expropriation neither positively nor negatively influence the perception of net benefit.

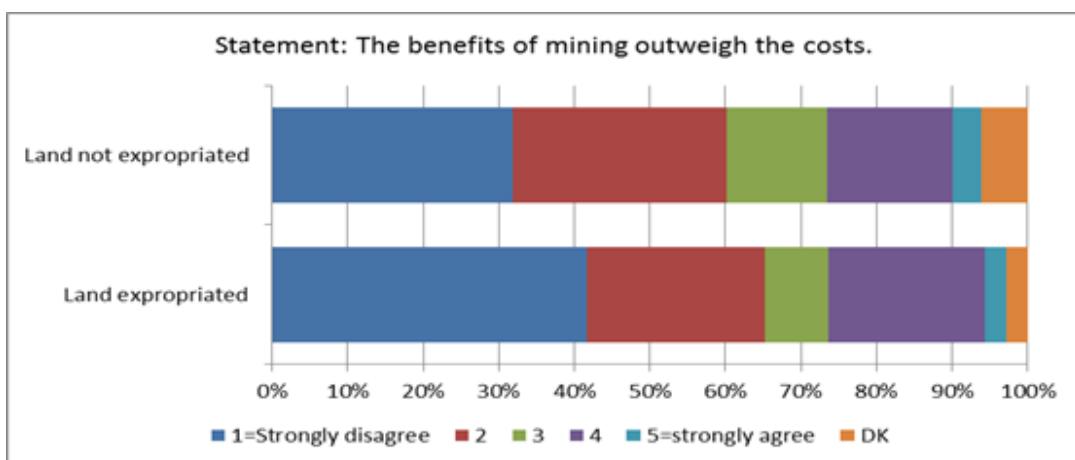


Figure 11 Land expropriation does not influence the perceived net benefits

Source: The survey.

Fourth, we analyze the influencing factor of resettlement and land subsidence. Among the three groups, it is clear that the second group of farmers, who are severely impacted by land subsidence but not yet been relocated, have the highest (75.9%) disagreement with

any perceived net benefit, among which 49.2% strongly disagreeing (Figure 12). The mean value of perceived net benefits is also the lowest (Mean=1.905, SD=1.179) among all subgroups. Comparably, 57.8% of the already resettled group and 49.1% of the non-affected group disagree that the benefits of mining outweigh the costs to their families, with mean values of 2.304 (SD=1.184) and 2.596 (SD=1.243), respectively.

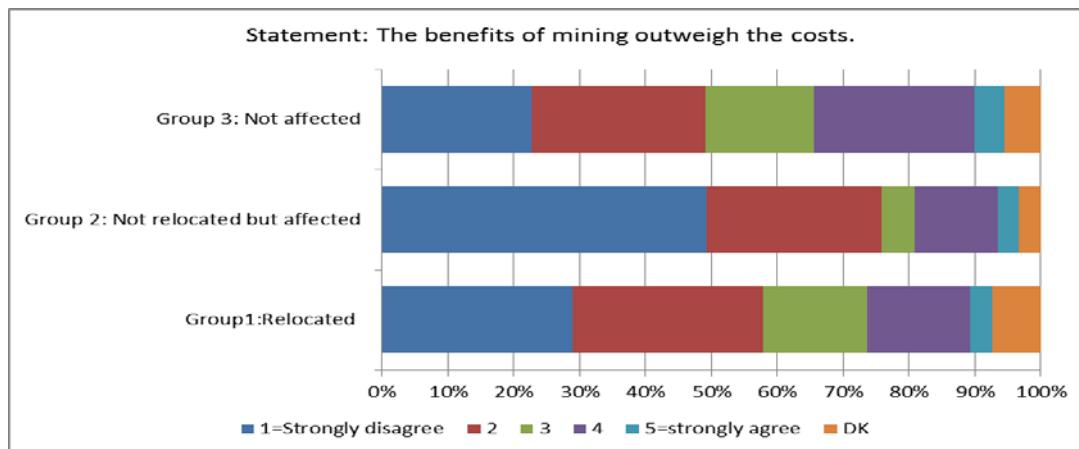


Figure 12 Land subsidence negatively affects the perceived net benefits

Source: The survey.

The results of ANOVA test ($F=9.206$, $p=0.000$) indicates that there is a significant difference among the three groups. Therefore we have further performed t-test between either two subgroups. For the respondents in group 2 who are affected but not yet relocated, they have a significantly lower mean value of perceived net benefit when compared to Group 3 those not affected ($T=4.230$, $p=0.000$), which means that land subsidence significantly and negatively affected the perception of net benefits. When comparing group 2 and group 1, the mean value of the perceived net benefit of group 1 is significantly higher than the group 2 ($T=2.545$, $p=0.012$), which means that relocation, as a remedy, did help the affected farmers minimize the risks and have an increased perception of net benefits. However, compared to group 3 who are not affected (and therefore not relocated), the relocated persons (group 1) do not have a significantly lower or higher perception of net benefits, which indicates that the relocation process just barely restores the situation.

3.5 Conclusions and discussion

Based on the survey on the local communities' perception of the impacts of the mining activities, this chapter revealed that only about 20% of residents living in mining areas consider mining as beneficial. Stated differently, it was widely perceived that mining activities do *not* bring net benefits. By disaggregating various impacts found in the literature, this chapter finds that mining did bring employment opportunities for local communities, which significantly and positively influence the perceived net benefits. However, the benefit

was offset by many other negative impacts, in particular, mining-induced land subsidence. As a remedy, relocation did alleviate the affected farmers out of a miserable situation. However, the protracted process of relocation, insufficient compensation, and the concern for long-term livelihood, as illustrated in Chapter 6, does not significantly improve the perceived benefits among the relocated farmers comparing to those who are not affected.

By disaggregating various impacts mining brings about and their influence on perceived net benefits, this chapter has some implications to the central themes of this book: the credibility of mining institutions in China.

First, mining provides important employment opportunities for some local residents, which creates different segments of society with having and not having non-agricultural employment. It has dual implications. One the one hand, for those mining workers, being a farmer and a mining worker, they have to strike a balance between his subsistence farming and the alternative livelihood. How would he adjust his own behavior when protesting for his own interest and against his boss require further research, but it indeed exhibits the complexity. On the other hand, the position of farmer-worker would definitely influence their interaction with their neighbors. The heterogeneous nature of the rural communities implies conflicting interests and potentially different perceptions of institutional credibility. However, as illustrated, the decreasing willingness to employ local residents, coupled with the deteriorated environmental degradation and dispossession of the livelihoods, would lead to a common interest group, and thus generate more conflicts and decrease the credibility of mining institutions.

Second, this chapter shows that farmers have ambivalent attitudes towards land expropriation. For one, the vast majority of those whose land was expropriated were dissatisfied with the compensation, which indicates that the official procedure of land expropriation is not welcomed at grassroots, therefore generating room for local practices that violate the law but are popular, which will be further examined in Chapter 5. For the other, only the land that is directly occupied by the mining company is expropriated, while the others, where underground mining activities take place, are not expropriated but contaminated. Thus these two points indicate the loophole and inapplicability of the institution on mining land expropriation.

Third, this chapter indicates that the perception of the environmental pollution may not transfer to the perception of economic loss. It is further confirmed by the fact of low environmental activism in Chapter 4. These points, coupled with other literature on the power politics in the revision of the environmental laws (Van Rooij 2006; Zhang et al. 2013) and the weak implementation of environmental regulations (He et al. 2014; Zhang et al. 2010) should be jointly read as indicators for the credibility of environmental regulations.

Fourth, it shows that mining-induced land subsidence has negatively and significantly affected the local communities. In addition, this chapter also found that resettlement does

not significantly improve the perceived benefits among the relocated farmers comparing to those who are not affected. Coupled with the institutional analysis at the macro-level and the process and outcome of resettlement at the micro-level in Chapter 6, this book would comprehensively assess the credibility of MIDR, and the conditions for decreasing credibility.

4 Why do rural residents engage in environmental activism?

4.1 Introduction

Environmental pollution in China has reached an alarming level and is threatening the public health of the country (Chen, Hong, and Kan 2004; Kan 2009; MEP 2016).²² Facing increasing environmental degradation, environmental activism (EA) has been growing, either in the form of environmental non-government organizations (ENGOs) driven activism or more localized grievance-driven social mobilization. Since the 1990s, China has witnessed a blossoming of ENGOs (Ho 2001a; Saich 2000; Yang 2005), while grievance-driven activism by the victims of pollution has also proliferated in recent years. For example, the number of environmental-related petition letters increased from 58,678 in 1995 to 701,073 in 2010 (Huang 2015:2). China's cities also witnessed the rise of protests over waste incineration and Paraxylene (PX) plants (Huang and Yip 2012; Lang and Xu 2013; Li, Liu, and Li 2012), accompanied by protests against industrial pollution in rural areas (Jing 2003; van Rooij 2010).

Previous studies on environmental activism in China have predominantly focused on ENGOs (for example, Ho 2001a; Ho and Vermeer 2006; Mol and Carter 2006; Saich 2000; Xie 2009; Yang 2005), explaining its emergence, organization, and capacity. Environmental activism initiated by grieved victims against polluting firms has also attracted academic attention. Scholars have illustrated how the economic dependency complicates the relationship between pollution and protest (Lora-Wainwright 2010; van Rooij 2010), and other studies have pointed to the difficulties redressing the pollution grievance via complaints (Dasgupta

²² The Chinese Academy for Environmental Planning (CAEP) estimated that the total economic losses due to the ecological degradation and environmental pollution is about 3.9% of China's GDP in 2008, which is likely to increase in the future (He et al. 2012:28).

and Wheeler 1997; Warwick and Ortolano 2007), legal routes (Joseph 2009; Moser and Yang 2011; van Rooij 2010; Stern 2011), and collective protests (Cai 2008a; Wang 2006).

Although there is a large amount of literature examining environmental activism in China, to date, a systematic examination of individual's attitude and exposure to environmental issues, and forthcoming activism, in China is scant. For example, it remains unclear what makes individuals decide to engage in environmental activism against pollution. Therefore, this Chapter aims to answer the SQ2:

What factors influence the attitude and actions of local communities towards the environmental impacts of mining?

This chapter employs a widely used social psychological model, the theory of planned behavior (TPB) (Ajzen 1991; Ajzen and Fishbein 1977). It connects with the institutional credibility theory by looking into the likelihood of collective activism, which indicates the level of credibility and the desired changes. This chapter is based on the previously introduced survey answered by 352 farmers living in the vicinity of mines in eight counties.

The disaggregated findings indicate that there is high awareness of the severity and risks of environmental pollution and health concerns. However, the level of environmental activism remains low and 44.3% of the respondents have never taken any action despite experiencing environmental harm. When local residents do take actions, they frequently opt for collective protests in addition to the traditional mediation via state authorities and village committee. The neighbors' participation plays an important role while the intention to engage in EA and the perception of pollution severity are also important for explaining the individual's engagement in EA.

Situated in the context of mining in rural China, this chapter's findings contribute to a deeper understanding of the participation in environmental activism. Mining, on the one hand, has long been suggested as a complementary livelihood to alleviate rural poverty (Ge and Lei 2013; Lei et al. 2013; Rui 2005; Shen and Gunson 2006), on the other hand, as mining competes with other uses of land, it exposes serious threats to the continuation of livelihoods such as dispossession and disruption of the ecosystem (Lu and Lora-Wainwright 2014; Perreault 2013). In light of this paradox, this chapter may provide important lessons for other emerging economies that rely on mining.

This chapter is structured as follows. Section 4.2 presents a literature review on environmental activism in China. Section 4.3 discusses the analytical framework. Section 4.4 presents the empirical findings and discussion. Section 4.5 concludes the chapter.

4.2 Environmental activism in China

Environmental activism can be distinguished between ENGO-driven activism and grievance-driven social mobilization (Wu 2013). While ENGOs are mostly motivated by a more general concern about national and global environmental grievances, the latter is usually the result of a ‘personal complaint’ (Hofrichter and Karlheinz 1990:119). These two types are often contrasting, as most ENGOs tend to organize their activities with long-term goals in mind and promote wider public and environmental interests. In contrast, ‘personal complaint’ environmental activists are more concerned about defending their personal interests against environmental threats and gain justice in compensation procedures (Cooper 2006; Hildebrandt 2011; Wu 2013; Yang and Calhoun 2007).

Since the 1990s, China has witnessed a sharp increase of ENGOs (Ho 2001a; Saich 2000; Yang 2005). This has been attributed to the ecological modernization and the greening of the state at the macro-level (Ho and Vermeer 2006; Mol and Carter 2006), but also social networks (*guanxi*) at the micro-level factors (Xie 2009). While the number of ENGOs is growing fast, they are limited in their capacities and resources (Ho 2001a; Ho and Edmonds 2008; Xie 2009). Within China’s authoritarian political context, ENGOs have adopted a more ‘embedded’ form of environmental activism, that is expressed in a focus on politically benign issues and foster *guanxi* with sympathetic Party-state officials (Ho 2001a; Ho and Edmonds 2008). In turn, ENGOs have relatively mild and compromised attitudes towards the government and refrain from too openly debating, criticizing, or confronting the state’s environmental policies, in order to avoid being labeled as ‘political’ organizations and forced to suspend activities.

More isolated environmental activism by grieved citizens have also proliferated in more recent years, for instance witnessed by the protests over waste incineration and Paraxylene plants in urban areas (Huang and Yip 2012; Lang and Xu 2013; Li et al. 2012) or protests against industrial pollution in rural China (Jing 2003; van Rooij 2010). It has become clear that local social, economic and political circumstances do strongly influence citizens’ responses to pollution, which is most clear by the varying strategies adopted in China’s urban and rural areas. First, while mining and other industries bring about severe pollution, they often also bring important employment opportunities for rural residents. Several studies (Lora-Wainwright 2013; Lora-Wainwright et al. 2012; Van Rooij et al. 2012) have pointed to instances where rural dwellers have become financially dependent on compensation payments from local polluters, reducing their willingness to resist against environmental degradation. Meanwhile, incinerators could bring multiple benefits for urban dwellers, for example, efficiently reduce waste using fewer land resources, and generate energy by burning waste. However, these benefits are often indiscernible and therefore less possible to influence urban citizens’ actions (Johnson 2013). Second, the different degrees of economic dependency of rural and urban residents on polluting industries result in varying outcomes. Whereas existing studies address rural residents’

responses to actual pollution (Jing 2003; van Rooij 2010; Yang, Zhao, and Ho 2017), much resistance to incineration and Paraxylene plants in urban areas is pre-emptive as it occurs before the plants have been constructed (Johnson 2013; Lang and Xu 2013). Thirdly, the available resources between the rural and urban victims also differ. Due to the urban-rural gap, the ‘digital divide’ regarding internet usage (Harwit 2004) and limited media coverage in rural areas, urban residents are more likely to initiate online mobilization and obtain intermediary aid from NGOs and lawyers (Huang and Sun 2013; Johnson 2013). Contrarily, pollution victims in rural areas are usually more isolated and without the support of third parties (van Rooij 2010).

The dependency on local polluters has an impact on how the victims frame their grievances and claim compensation. For example, Jing (2003) illustrates how rural residents initiated protests in order to protect the ecological basis of human existence, instead of framing their grievances in health or environmental terms. This is also evident in how some pollution victims actively seek financial redress (Deng and Yang 2013; Lora-Wainwright 2013; Tilt 2013), and in some cases even stage protests to extract concessions from polluters and local officials (Jing 2003; Ma 2008). In other cases, farmers became so economically dependent on pollution that they took no actions even though they were acutely aware of the negative health impacts (Lora-Wainwright 2009).

Difficulties, fears, and previous experiences also explain why some citizens are not willing to take actions against polluting activities. Litigations against polluters are paired with formidable obstacles within and beyond the court (Joseph 2009; Moser and Yang 2011; van Rooij 2010; Stern 2011). Procedural obstacles, such as evidence of the damages and causation, and sometimes the high case acceptance fees, defer citizens from taking further action (van Rooij 2010; Stern 2011). Furthermore, collective protests sometimes invite resistance and retaliation from local governments (Cai 2008a). Activists often have trouble framing their actions as rightful, especially when local authorities have a lawful basis for imposing punishment.

In addition, the perceived chance of succeeding also influences the motivation to engage in environmental activism. Research has found that filing complaints to environmental protection bureaus are often in vain, as they focus on nuisance complaints that are most visible and with most direct effect, while steering away from the most important violations and regular enforcement duties (Dasgupta and Wheeler 1997; Warwick and Ortolano 2007). Moreover, it is difficult to win a case in court where local protectionism is pervasive (Fu 2003; He 2009; Stern 2010). Lastly, protests often invite suppression from local governments, where participants – and especially the leaders – are often charged with the crimes of racketeering and inciting a mob (Wang 2006).

There is a limited number of studies that measure the modes of actions in China on grievances in general (Cai 2008b; Michelson 2007) or specifically environmental grievances

(Feng 2007; Liu et al. 2010; Munro 2014). From these studies, we can draw some general conclusions. First, there is a prevailing group of the ‘silent majority’, a group of residents that do not take any actions even when exposed to grievances.²³ Second, seeking mediation of acquaintances and village and state authorities are the most commonly used ways to deal with environmental grievances. Resorting to the legal system is less favored, and engaging in a protest is rarely opted for in China.²⁴ Some studies (Feng 2007; Munro 2014) have also examined the influence of demographic and socio-economic characteristics on the self-identification of pollution victims and their actions. Their key finding is that the well-educated, and those with a relatively high income and social capital, are more likely to participate in environmental protection activities.

While these studies help to understand the patterns of social conflicts and modes of actions, a systematic examination of individuals’ environmental activism – and especially in rural China – is scant. Therefore it remains unknown what drives individuals whether to engage in environmental activism towards pollution. This chapter aims to answer this question by adopting the theory of planned behavior (TPB) to examine what drives individuals to engage in environmental activism against polluting mines (Ajzen 1991; Ajzen and Fishbein 1977). This, and the chapter’s methodological considerations, are further discussed in the next section.

4.3 Analytical framework

Many models have been developed to explain environmental behavior (Ajzen 1991; Fishbein and Ajzen 1975; Lubell 2002; Seguin, Pelletier, and Hunsley 1998). The underlying assumption for most models is that individuals make rational choices and make conscious decisions with the highest benefits and the lowest costs. One of the most influential frameworks is the Theory of Planned Behavior (Ajzen 1991; Fishbein and Ajzen 1975), which suggests that the most relevant determinant of an individual’s behavior is his or her intention. In turn, this intention is predicted by three main components: the attitude, subjective norm, and perceived behavior control. According to the theory, individuals who hold pro-active attitudes, believe that there is normative support for their action, and perceive that they can easily perform their action, are most likely to have an intention that eventually drives them to accomplish their behavior.

²³ For example, in the 2003 Chinese General Social Survey, among the 3,878 self-identified pollution victims who has suffered harm due to environmental pollution, more than 61% did not take any actions (Feng 2007:122). For general grievances, there are also significantly large portion of the surveyed people who did not take any action and simply tolerated (Cai 2008b:95; Michelson 2007:466).

²⁴ The participation in protests is extremely low, for example, 0.65% of all the surveyed respondents (Feng 2007:123), while in some studies (Cai 2008b; Michelson 2007), protest is even not separately listed in the survey results.

In the field of environmental activism, the TPB has both theoretical and practical implications. By testing theoretically based hypotheses about the determinants of a certain environmental behavior, it contributes to gain a better understanding of environmental behavior and to formulate policy recommendations. TPB has been applied in and supported by studies on many environmental behaviors, for example, the antinuclear activism and participation in environmental groups (Fox-Cardamone, Hinkle, and Hogue 2000; Kelly and Breinlinger 1995; Tindall, Davies, and Mauboulès 2003). For some behaviors and contexts, the inclusion of other variables may increase the predictability of the model. For example, self-identity, the perception of health risks, and information have been added in previous studies and successfully helped to increase the explanatory power of the model (Fielding, McDonald, and Louis 2008; Liu et al. 2010; Seguin et al. 1998). For this chapter, the initial TPB model is adopted and based on existing literature adapted to the needs of the study. An analytical framework in this chapter is depicted in Figure 13.

Environmental activism (EA): As mentioned above, environmental activism is often distinguished between ENGO-driven activism and individual, grievance-driven activism. Previous studies often treat environmental activism as a function of behaviors and interactions with an environmental organization (Seguin et al. 1998; Tindall et al. 2003).²⁵ As this chapter focuses on individual activism towards polluting mines, we operationalize the notion of activism by constructing nine items of EA activities, based on previous studies on protests against China's mining (Feng 2007; Liu et al. 2010; Munro 2014). The set consists of: approaching the village committee (EA1), approaching the local township government (EA2), approaching environmental protection bureaus (EPB) by letter (EA3) or by visit (EA4), directly negotiating with the polluting mines (EA5), resorting to media (EA6) or the judicial system (EA7), participating in a protest against the polluting mines (EA8), and abstaining from applying for a job in the polluting mines (EA9). Respondents were asked whether they have engaged in any of these pre-defined items. For every item a binary score is assigned, where the sum of the nine items is used to estimate a respondent's degree of EA, prompting a total score between 0 and 9 for every respondent.

Behavior intention: The premise of the TPB is that the most proximal determinant of an individual's behavior is his or her intention, i.e. there is a high correlation between intention and behavior (Ajzen and Fishbein 1977). When it is not possible to measure the actual behavior, many studies have looked at the respondents' intention to engage in the behavior (Bang et al. 2000; Liu, Wang, and Mol 2013; Park and Yang 2012).²⁶ However, in the present

²⁵ For example, Tindall et. al (2003:910) explicitly define environmental activism as 'specific movement-supporting activities that are promoted by environmental organization', such as participation in events organized by ecological groups, financial support of an environmental group, participation in protests, and voting for a government proposing environmentally conscious policies.

²⁶ For example, in the marketing science, in order to find out the consumers' acceptance of renewable energy or food labeling, which have not been deployed and thus no actual behaviors are possible to measure, the intention to engage in the behavior of paying extra monies to consume (willingness to pay) is evaluated (Bang et al. 2000; Liu et al. 2013).

chapter, we examine both the actual behavior and the intention to engage in the EA, so as to find out the difference between these two variables.

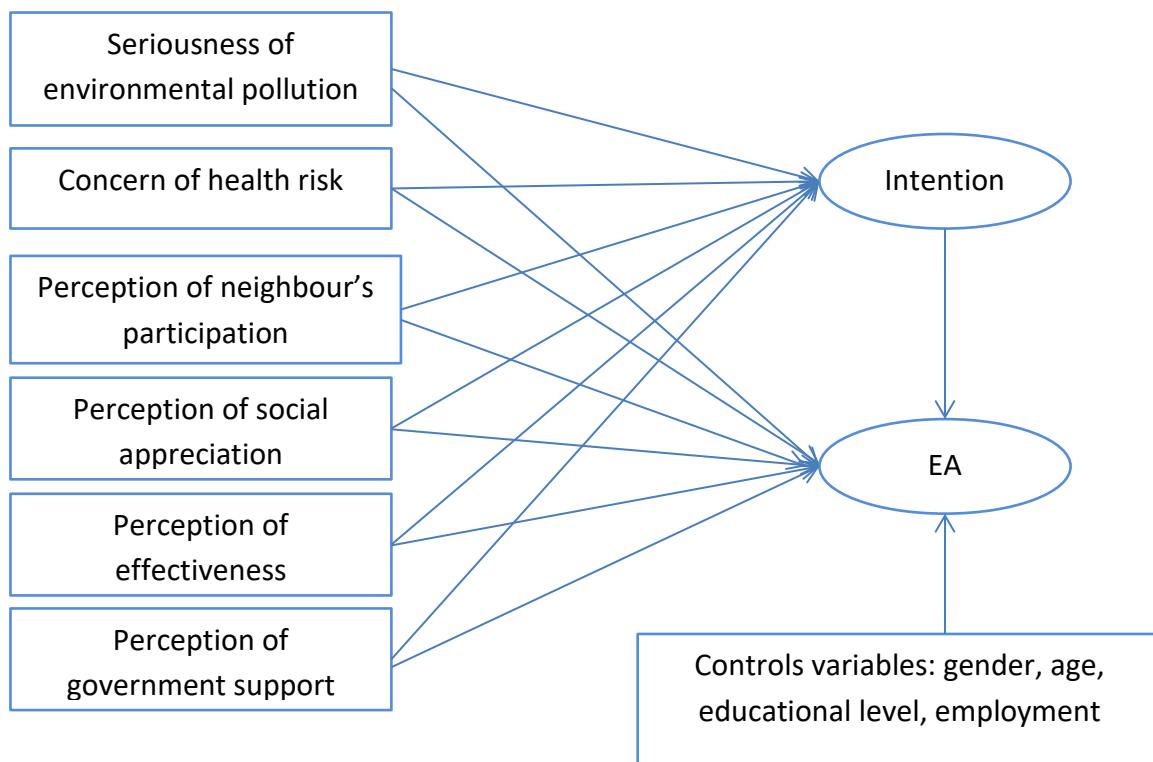


Figure 13 An analytical framework based on the theory of planned behavior

The key variables measured associated with attitude toward behavior are the perception of pollution seriousness and concern of health risk, as a measurement of the severity of environmental threats. Two other variables, the perception of neighbor's participation and social appreciation of EA are constructed as representative of the subjective norm. Perceived behavior control is represented by the individual's perception of the difficulty to perform the behavior or internal and external efficacies. Internal efficacy refers to beliefs that individual participation can help prevent an environmental problem, while external efficacy means beliefs of the government's support to resident's environmental activism (Finkel, Muller, and Opp 1989; Mohai 1985). Following this, two variables are constructed in the model: self-reported effectiveness of EA, and government support to EA. A five-point Likert scale was designed to measure the strength or the agreement degree of each factor with 1=lowest, and 5=highest. The control variables are the demographic variables, consisting of gender, educational level, age, and economic dependency on mining operationalized as employment.

As indicated in Section 1.4.3, the survey was conducted in 37 villages within the eight counties across five provinces and one provincial-level municipality, generating 352 valid questionnaires. A number of 121 respondents, or 34.4% of the sample, indicate that their immediate family members have worked for mining companies. The data were recorded in SPSS, and different statistical techniques were performed, at significance level $p<0.05$.

Table 4 Definition and valuation of the variables in chapter 4

Variable	Description of the item	Valuation
Environmental activism level	Sum of (EA1-EA9)	0-9
SERIOUSNESS	Perception of the pollution seriousness	1=Lowest; 5=highest
HEALTH	Perception of the risks of pollution to health	
NEIGHBOR	Perception of neighbor's participation in EA	
APPRECIATION	Social appreciation of EA	
EFFECTIVENESS	Effectiveness of EA efforts	
SUPPORT	Degree of government support to EA	
INTENTION	Willingness of EA against polluters	

4.4 Results

4.4.1 Descriptive statistics of the predicting variables

Figure 14 presents the key variables defined in the analytical model. Mining is a severe hazardous industry, affecting land and water supplies while producing health-threatening waste and pollutants. The majority of respondents (77.3%) believe that environmental pollution is serious (Mean=4.03). Similarly, a far majority (85.4%) is concerned with the risks of pollution to their health (Mean=4.17). The high scores indicate that local residents consider environmental pollution in the investigated mining areas as very serious.²⁷

²⁷ This corroborated with other studies in coal mining area in Shaanxi and Shanxi (Shi 2014; Shi and He 2012).

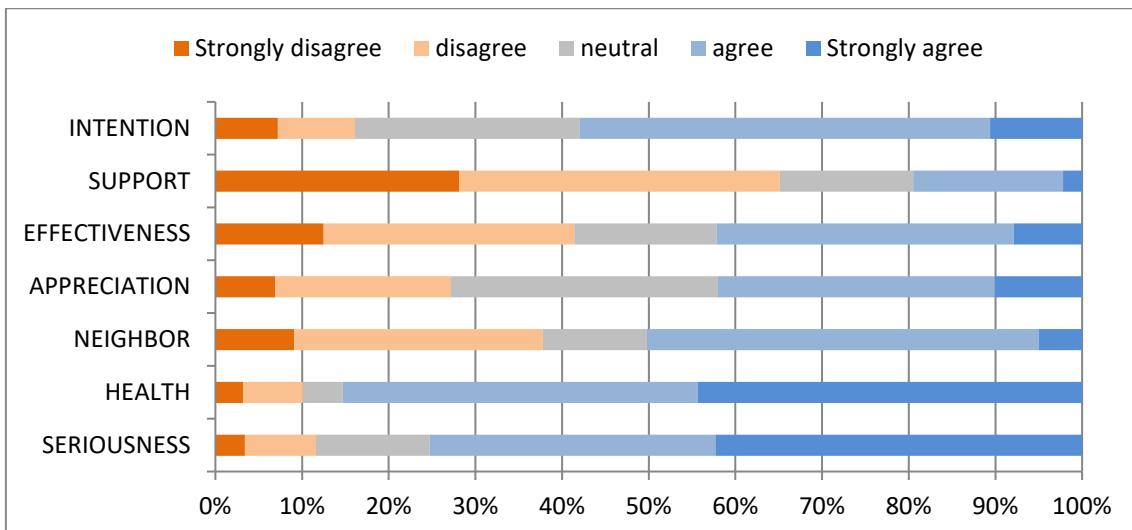


Figure 14 Statistical summary of the predicting variables

Source: The survey.

Facing environmental pollution, the respondents show a relatively high intention to engage in EA, with a mean of 3.45. Similarly, a mean of 3.08 suggests a moderate extent of neighbor's participation, about half of the respondents believe that their neighbors participate in EA. The farmers believe that their efforts would be moderately appreciated by other people, as suggested by the mean average of 3.18. Nevertheless, the EA outcome is not promising in terms of the environment as 41.4% believes that the EA action could not help to improve the environment. Moreover, only 19.5% think the government and environmental agencies support the residents' EA practices, with a low score of 2.28.

4.4.2 Overall level of resident's environmental activism

Figure 15 provides the frequency of individual EA items. The dominant strategies are to complain to the township government (42.0%) or the village committee (41.2%). 21.4% of respondents chose to directly negotiate with the mining company. Less favored ways are complaints to environmental protection bureaus by letters or phone call (20.6%) or direct visit (12.8%). Contrarily, to use external agencies as the media (7.1%) and courts (2.6%) are much less opted for. Only a few people (1.4%) have considered not applying for a job at the mining company as a way of EA. However, 17.3% of respondents reported they once participated in the protest against polluting mining company.

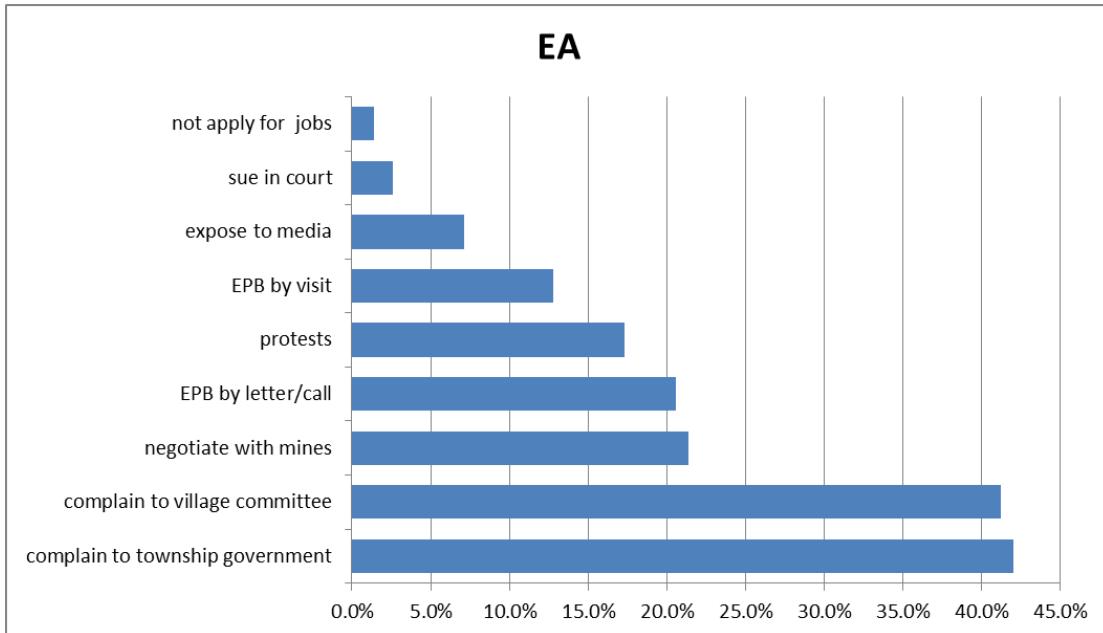


Figure 15 Frequencies of resident's environmental activism (N=352)

Source: The survey.

The sum of the nine items was calculated to estimate a respondent's degree of EA, illustrated in Figure 16. The largest group, 44.3% of respondents claim they never engaged in any forms of environmental activism. Only 9.4% of the respondents have been involved in more than five of the nine EA items. Overall, it is found that the overall level of EA is low. A mean of 1.64 of EA level implies that the respondents have participated in fewer than 2 items of EA on average.

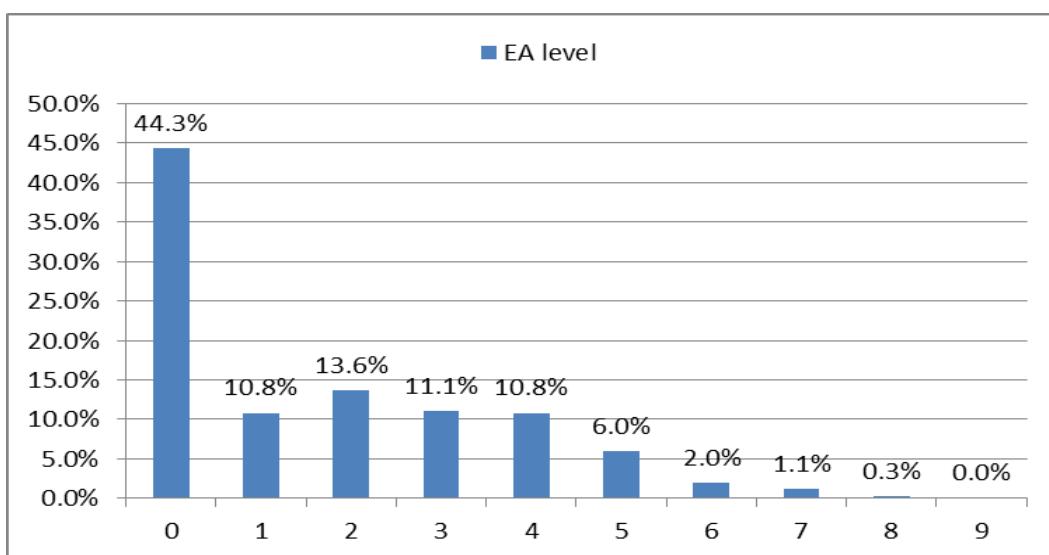


Figure 16 Degree of environmental activism

Source: The survey.

This survey corroborated with previous studies on two points: first, it confirms the existence of the ‘silent majority’ as found in other studies (Cai 2008b; Feng 2007; Michelson 2007; Munro 2014). Second, the most commonly used ways to address grievance are mediation via state authorities and village authority. However, in contrast to low participation in protests found in previous studies, this survey found that there is a relatively high occurrence of collective protests against polluting mines in the mining areas. This can be explained by the fact that mining has induced some common issues, such as land subsidence, that affect the entire village, as illustrated in Chapter 6. When villagers are faced with similar grievances it stimulates the collective organization of protests.

4.4.3 Variances of environmental activism by the control variables

In order to understand the variance of the EA by demographic variables, the independent sample t-test or ANOVA test was conducted to analyze the differences of EA level between different subgroups (Table 5). The t-test shows that there is a significant difference between gender in EA level, as the average times that men engage in the EA is 1.88, significantly higher compared to women (1.12).

Table 5 Environmental activism by the control variables

Subgroup		Mean	Significance (T-test/ANOVA)	Finding
Gender	Male	1.88	t=3.613; p=0.000	Significant
	Female	1.12		
Age	<30	1.63	F=0.180; p=0.835	Not significant
	30-60	1.59		
	>60	1.72		
Education level	Illiterate	1.67	F=0.093; p=0.964	Not significant
	Primary school	1.66		
	Middle school	1.57		
	High school and above	1.71		
Employment	Employed in mines	1.36	F=2.101;p=0.037	Significant
	Not employed in mines	1.78		

Source: The survey.

Statistical analysis also shows that there is a significant difference between those employed in mines and those not employed in mines. In other words, with working history in a mining company, respondents are less likely to participate in the EA. This corroborates with other qualitative studies in rural China, where economic dependency undermines the farmers’ motivation to protest against polluting industries (Lora-Wainwright 2010; van Rooij 2010).

As for the age range, the middle-aged respondents reported an average of 1.59 times of EA participation, slightly lower than the young (mean=1.63) and the elderly (mean=1.71), which may be explained by the fact that the middle-aged respondents were the main labor force and more likely to work in the mines. However, the difference is not statistically

different. For those who have enrolled in a high school and above, the average times of the EA is 1.71, while those who have a middle school education has the lowest EA level. However, there is no significant difference between different levels of education.

4.4.4 Result of the path analysis

The predictive model of EA was statistically tested by means of recursive path analysis using stepwise regression. Multicollinearity was first checked to make sure there are no highly correlated predicting variables. A variance inflation factor (VIF) of 10 or even as low as 4 have been most commonly used as rules of thumb to indicate excessive or serious multicollinearity (O'Brien 2007:674). In this chapter, VIF for all independent variables ranges from 1.26 to 2.07, which means multicollinearity should not be a serious concern in the regression. In the first multiple regression analysis, all predictors were entered to identify which variables would predict EA. If the coefficients are not significant at the 0.05 level, the paths are excluded in the final model. The path coefficients are depicted in Table 6 and Figure 17. The weight given by the path coefficient indicates the relative changes of a dependent variable for any change of the independent variable.

The explanatory variables are significant and account only for 10.2% ($R^2=0.102$) of the variance of the overall EA at 1% significance level. The EA level is explained by three predictors: the perception of neighbor's participation, the intention to engage in EA, and the perception of pollution seriousness. The perception of neighbors' participation plays the most important role in explaining the EA, with a direct path coefficient of 0.219. This means that farmers would like to act collectively against the polluting mines in the Chinese context, in line with the relatively high occurrence of protests as shown in section 4.4.2. The intention to engage in EA also plays an important role, which is in line with the theory of planned behavior. Lastly, the perception of the seriousness of environmental pollution also could trigger farmers' actions.

Table 6 Regression results of EA

Dependent variable	Predictors	Unstandardized coefficients		Standardized coefficients	t	Sig.
		B	Std.error			
EA Level (N=352; $R^2=.102$, $F=8.504$, $p<0.01$)	Constant	-1.338	.688		-1.944	.053
	NEIGHBOR	.367	.105	.219	3.484	.001
	INTENT	.276	.120	.142	2.299	.022
	SERIOUSNESS	.241	.113	.130	2.113 2	.034
INTENTION (N=352; $R^2=.196$, $F=20.764$, $p<0.01$)	Constant	1.722	.286		6.026	.000
	APPRECIATION	.270	.067	.294	4.053	.000
	HEALTH	.147	.058	.145	2.553	.011

Source: The survey.

Three variables in the original model – concern of health risk, social appreciation of EA, and government's support to EA – have no direct influence on EA level. Among those, the concern of health risk and social appreciation of EA, have significant linkages with EA intention, accounting for nearly 20% ($R^2=.196$) of the variance. This implies that health concerns and social appreciation of EA would aggravate the grievances and transmit a sense of urgency against the impending threat.

The regression result indicates that the TPB is a useful theoretical model. First, it confirms the important role of subjective norms, i.e. perception of neighbors' participation, and social appreciation of EA, in explaining the intentions and actual behaviors. This is understandable in collectivist societies (Hofstede 2001), such as China, where social influences or social pressure can be an important influencing factor. This may be especially true when the pollution harm is imposed upon the rural community, where the residents feel strongly attached to their family and neighbors. Second, the findings confirm that perceived salience of environmental threats is positively associated with individual's involvement in environmental activities (Dong et al. 2011; Seguin et al. 1998). If the pervasive environmental problems in China are not tackled well, they may eventually trigger conflicts on a larger and more intense scale.

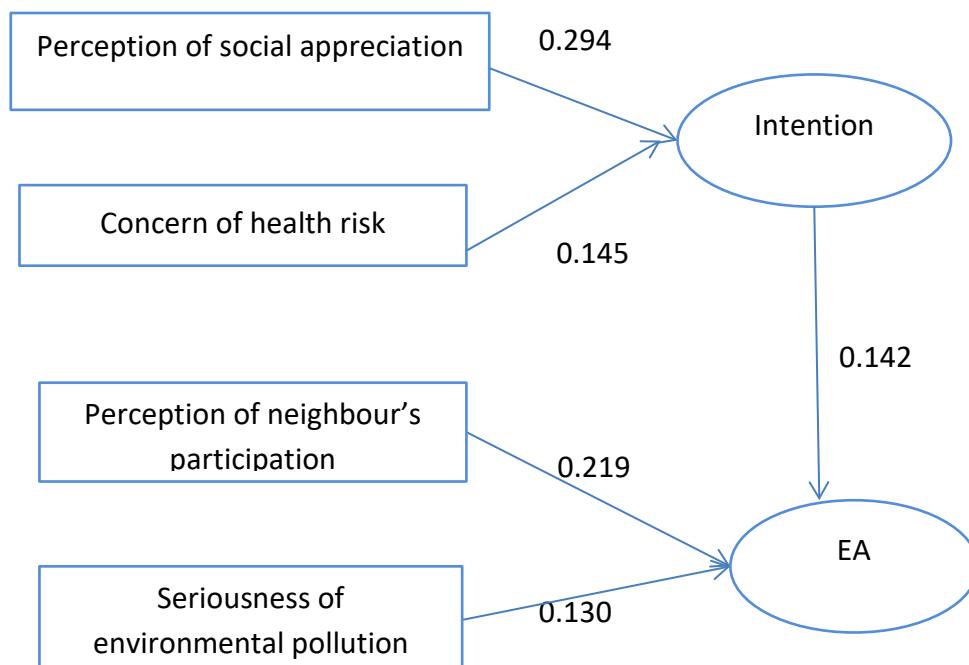


Figure 17 Path analysis results

Nevertheless, neither the perception of the effectiveness of EA efforts nor the degree of government support does have a significant association with either the intention or the

behavior of EA. This has two-fold implications. On the one hand, it shows that rural residents lack confidence in their own ability and distrust the government's capability in negotiating pollution. Rural industrial factories are the major driver of local economic development, and therefore local authorities, local cadres, and even some local communities form a coalition in favor of the polluting plants. This explains why despite severe environmental risks, factories are allowed to continue their activities (He et al. 2014). On the other hand, although knowing that their actions might be in vain, some rural residents still opt for actions. This could for instance also be observed in the case of petitioning, i.e. send letters or bring visits to higher authorities to gain the support of high-level officials, but which rarely yield results for petitioners (Minzner 2006:106). Moreover, in some cases protests are initiated as a strategy to extract concessions from polluters and local officials (Jing 2003; Ma 2008).

4.5 Conclusions and discussion

This chapter assessed the rural residents' participation in environmental activism in China's mineral-based counties, through the identification and quantification of factors that influenced their behavior. The chapter found that the level of the EA in rural mining area is low, as 44.3% of the respondents have never taken any action against polluting mines, but there is also a relatively high occurrence of collective protests. Economic dependency complicates the relationship between environmental pollution and EA. The study shows that rural citizens who have been employed in the mining industry are less likely to participate in the EA. Regression analysis shows that the EA level is best explained by three predictors: the neighbor's participation, the intention to engage in EA, and the perception of pollution seriousness. Perception of the neighbor's participation plays the most important role in explaining the EA level, which is line with the relatively high occurrence of collective protests against polluting mines.

By applying the TPB model to the mining communities in China, this chapter contributes to the credibility thesis in several ways. First, from a methodological perspective, it adds a means to operationalize the credibility thesis. By applying TPB, this chapter not only gauges the likelihood of environmental activism but also identify the influencing factors. For one, this survey confirms the existence of the 'silent majority' as found in other studies (Cai 2008b; Feng 2007; Michelson 2007; Munro 2014). For the other, it is confirmed by the regression model that the environmental activism largely depends on the collective choice level perception, i.e. perception of neighbors' participation, and social appreciation of EA.

The latter finding corroborates the credibility thesis in that institutional change is driven by a shared, rather than individual perception (Ho 2014). The low participation in environmental activism provides evidence that environmental protection and claim for environmental justice has not yet a commonly shared rule. While some actors might take

actions, others may use their resources to maintain the status quo or choose to do nothing. It's only till a shared perception formed that the collective organization of protests and the effective implementation of environmental measures are possible. This was demonstrated in areas where mining has induced some common issues to entire villagers, such as land subsidence, that affect the entire village, as illustrated in Chapter 6. When villagers are faced with similar grievances it stimulates the collective organization of protests.

The findings of this chapter provide valuable information for decision-making. First, the study indicates that environmental pollution in mining areas is perceived as severe by local residents, raising deep concerns and calling for prompt measures for environmental protection. Second, policymakers should take imperative measures to tackle the impending issues. Otherwise, it is likely to raise violent confrontations and pose substantial pressure to China's social stability.

5 An analytical model based on mining disputes

5.1 Introduction

Along with China's unprecedented levels of economic growth, conflicts have simultaneously emerged. In recent years a sharp increase in mass protests or incidents has been witnessed in China, which has their nature in the form of labor disputes, land acquisitions, forced demolitions, and environmental problems. While in 1993 an annual number of 8,700 mass incidents were recorded by the Chinese government, this figure steadily rose to 87,000 in 2005 (Ma and Schmitt 2008:97), and further increased to 180,000 in the year 2011, or nearly 500 incidents per day (Zheng 2012:30). Of those conflicts, Ma and Schmitt (2008:97) estimate that 53 to 60 percent of the mass incidents between 2003 and 2005 can be linked to environmental problems, and especially in recent years China has witnessed some dramatic instances of protests on environmental issues (Deng and Yang 2013; Huang and Yip 2012; Ma 2008). At the same time, the number of complaints by letters or visits to local environmental authorities has also drastically increased (Brettell 2008; Dong et al. 2011).

Yet, despite the increasing number of environment conflicts within and beyond China, a clear framework on the quantification of environmental conflict is still absent. The majority of the available empirical studies are drawn from emblematic cases of either successful, large-scale mobilization, or cases that discuss severe confrontations (Deng and Yang 2013; Huang and Yip 2012; Lang and Xu 2013; Li et al. 2012). Although these cases allow for an in-depth examination of the conflicts, a more general framework for the representation and quantification of environmental conflicts is still lacking. Such a framework is desired as the concept of environmental conflict is not mono-dimensional, but instead more complicated and situated on a continuum with a broad range of social actions (Libiszewski 1991). It is crucial to assess the full range of conflicts and their intensity, which can help prioritize areas for policy intervention.

Therefore, this chapter aims to answer the SQ3:

How can we measure the level and intensity of mining conflicts and what can be said about China's mining conflicts at the national level?

By doing so, the conflict analysis model as expounded by the credibility thesis is adopted as a framework for the quantification of environmental conflicts (Ho 2014, 2016a). In this model, disputes are measured through social actors' aggregate perceptions of conflict, which is further operationalized through a set of eight indicators: the source, actor, frequency, nature, timing, duration, intensity, and outcome of the disputes. This model is further applied on one of the most severe sources of environmental conflicts in China, namely mining conflicts. China's mining industry has spawned some of the most contentious rural conflicts (Zhan 2013; Zhang 2013) due to the incompatibilities of land: competition over land as well as environmental degradation have resulted in land subsidence and forced displacement in and nearby mining areas.

By applying an adapted version of the conflict analysis model on 77 court decisions from the Chinese Supreme People's Court, we arrive at a better and more quantitative understanding of the current state of mining conflicts in China. It is found that conflicts pertaining to land acquisition are mostly between farmers and mining companies, and involve disagreement over land rent with low intensity. The conflicts over mining-induced land subsidence, displacement, and resettlement feature a high degree of government involvement. Meanwhile, the chapter demonstrates that the conflict analysis model, in this study indexed by court decisions, can be successfully employed for quantitative insights on environmental conflicts. Those insights help to understand the underlying root and the magnitude of conflicts, and it is suggested that the model can be applied to other conflicts as well.

This chapter is structured as follows. Section 5.2 proposes a conflict analysis model, based on the literature review on environmental conflicts in China. Section 5.3 describes the data. Section 5.4 and 5.5 applies the model to analyze the mining land conflict, and mining-induced displacement and resettlement conflicts, respectively. Section 5.6 concludes and 5.7 discusses the implications.

5.2 Literature review

5.2.1 Environmental conflicts

Environmental conflict is a frequently used but often confusing term. Some studies regard environmental conflicts as various political, social, economic, ethnic, religious, ideological or territorial conflicts induced by *environmental degradation* (Baechler 1998; Libiszewski 1991), while others view that environmental conflicts stem from "divergent views about

how to allocate and utilize land, air, water, and living resources" (Glavovic et al. 1997:270). Percival and Homer-Dixon (1998:280) put forward a more comprehensive definition: environmental conflict is induced by the *environmental scarcity*.²⁸ The issue of scarcity relates to incompatibilities as Wallensteen (2007) defined and is a crucial component of understanding environmental conflicts.

The issues of scarcity produce several common social effects, including decreased agricultural production, displacement from zones of environmental scarcity, weakened institutions, and disruption of social relations (Homer-Dixon 1991:91), all of which may incite one party to take action at the expense of another party's interests. Because of the regional differences in the social, political, economic and resource characteristics, different actions in response to the environmental scarcity and effects are taken. Therefore the concept of environmental conflict encompasses a broad spectrum of empirical phenomena ranging from disputes between individuals to intrastate conflicts (Libiszewski 1991).

Due to the variety and complexity, different types of actions are often addressed separately in literature, including peace and conflict studies, contentious politics, and legal studies. Armed conflicts over scarce resources, such as mineral, fish, and water, is one of the traditional fields. Most studies are trying to identify and verify the mechanism relating the resource scarcity and the possibility of war (Le Billon 2001, 2008, 2010; Collier and Hoeffer 2004; Cooley 1984; Dube and Vargas 2006; Gleditsch 1998; Lujala 2010; Magnus Theisen 2008; Patey 2007; Starr 1991). However, as Le Billon (2010:65) commented on the research of resources war, it is challengeable to assess the trend and explanatory factor of the armed conflicts due to the inconsistency of the record of the form of conflicts. On the one hand, detailed case studies use a broad-ranging definition that attempts to account for the various physical, environmental, and cultural forms of violence; on the contrary, most of the quantitative literature adopted a narrow definition of violence as armed conflict.

Similarly, most academic work on environmental protests is situated in the field of contentious politics through case studies, using a processing-tracing methodology (Eisenhardt 1989). In general, emblematic cases of successful or large-scale mobilization are selected (For example, Baechler 1999; Huang and Yip 2012; Kitschelt 1986; Lang and Xu 2013; Li et al. 2012; Raleigh and Urdal 2007). The literature has been most interested in the process how grievances emerge and transform to action, how citizens mobilize resources and get effective remedies, and what constraints and opportunities they face (Felstiner, Abel, and Sarat 1980).

²⁸ As concluded by Percival and Homer-Dixon (1998:280), there are three types of environmental scarcity: (1) supply-induced scarcity, caused by the degradation and depletion of an environmental resource; (2) demand-induced scarcity, resulting from population growth within a region or increased per capita consumption of a resource; (3) structural scarcity, arising from an unequal social distribution of a resource that concentrates in the hands of relatively few people while the remaining population suffers from serious shortages.

Similar approaches are also adopted in the environmental conflict studies in China. Restrained by the social status and knowledge, only a small fraction of citizens with grievances take actions (Feng 2007). For example, on the one hand, rural residents may not take any actions even when they perceived the real water pollution and impact on health (Lora-Wainwright 2010); on the contrary, urban citizens began to worry about the potentially harmful influence of waste incinerators that have not been built (Huang and Yip 2012).

For those who do take action against polluters, various strategies are employed. Citizens can lodge complaints regarding environmental pollution. However, complaints are more likely arise from wealthier and more educated regions (Dong et al. 2011), and are dominated by nuisance issues that are either trivial or without significance to environmental quality (Warwick and Ortolano 2007); therefore it diverts resources away from the most important violations and regular enforcement duties to those that are most visible and with the most direct effect (Dasgupta and Wheeler 1997; Warwick and Ortolano 2007).

Although Chinese farmers have a litigation aversion due to a lack of legal and rights awareness, and lawyer support, legal action is increasing as a way to pursue pollution compensation (J. Li 2013b; Stern 2011). In general, it's easy for the environmental victims to get access to lower-level local courts. However, they have met with formidable obstacles in and outside of court, both before, during and after trial (Joseph 2009; Moser and Yang 2011; Stern 2011). In China, dependency on local governments for budgetary support and local protectionism have compromised courts' inclination and ability to accept cases and make rulings that might threaten local state interests (Fu 2003; He 2009; Stern 2010). Therefore, civil environmental litigation remains a weak instrument to claim for environmental damage (Stern 2011).

In recent years, demonstrations and protests have proliferated as citizens gain awareness of the health threats, especially notable in urban cities over waste incineration plants (Huang and Yip 2012; Lang and Xu 2013; Li et al. 2012). In response to the mass incidents, suppression is often opted for when popular resistance poses a threat to local government's pivotal goals (Cai 2008a). Therefore, protests are more likely to succeed when people organize together toward common goals, and when they echo the policies and rhetoric of the state itself (Cai 2010; O'Brien and Li 2006). However, protesters are concerned with "not in my backyard" problems and not China's overall industrial pollution problems, which leads to isolated instances of contention and not a widespread movement (T. Johnson 2010).

Recent years also witness an increasing number of environmental non-government organizations (ENGOs) (Saich 2000; Yang 2005). As noticed, many Chinese NGOs are best described as GONGOs--Government-Organized NGOs, which were established by governmental agencies or received funding from the government, or managed by governmental officials and those with a strong link with the government (Ho 2001a;

Schwartz 2004). Therefore, NGOs have been cautious and made conscious decisions not to use the strategy of mobilizing collective resistance, and they have been missing, in some cases, in the process of community mobilization and campaign organizing (Stern, 2011). Therefore the environmental activisms are generally fragmentary, highly localized and non-confrontational (Ho and Edmonds 2008).

In response to the growing environmental conflicts, the Chinese government has increasingly placed a high priority on sustainable development and environmental protection, and environmental managing authorities are gradually upgraded and become more powerful (He et al. 2012; Jahiel 1998; Zhang and Wen 2008). However, the priority on economic gain, fragmented authority, and reactive approaches are generally regarded as obstacles to addressing the future challenges China faces (He et al. 2012).

5.2.2 Conflict analysis model

The disciplinary approach helps to improve our understanding of conflicts because they focus on the role of selected aspects in great depth. However, they are not sufficient to provide a comprehensive approach to conflict analysis, and hard to generate a comparative and generalized pattern. For example, the degree of involvement of each actor varies, and is yet unknown. Or what is the level of environmental conflicts in China? It is partially due to a low number of studies, but more importantly, to the absence of a conceptual framework for the quantification of environmental conflict.

In response to this, we adopt the conflict analysis model as expounded in credibility theory, which measures disputes through social actors' aggregate perceptions of conflict (Ho 2014, 2016a), operationalized through 7 manageable constituent indicators: (1) *source*; (2) *frequency*; (3) *timing*; (4) *intensity*; (5) *duration*; (6) *nature*; and (7) *outcome*. In addition to the seven proxies, we propose to add *actor* to the conflict analysis model. Examining the actor will help us to investigate the involved players' interaction, and how the players' role facilitate or frustrate the solution of the conflict.

In this chapter, we apply conflict analysis model to study the legal mining conflicts by 5 indicators: source, actor, timing, intensity, and outcome. Three indicators, i.e. frequency, duration, and nature, which tell something about how serious a conflict is, are not included due to the data availability. It means we will have a less complete understanding of conflict, but we can still get the seriousness of the conflict through the intensity assessed through the level of litigation and appeal rate.

This chapter aims to highlight two fundamental *sources*, or incompatibilities, of mining conflict: mining land acquisition, and mining-induced land subsidence and resulting displacement and resettlement. By examining the litigation *causes*, we can trace the underlying root of the conflict. As to the *actor*, we consider the plaintiffs and defendants in courts. As for the *timing*, it is represented by the mining operation stages: exploration, site design and planning, construction, production, and closure and reclamation. By examining

this indicator, we could get an idea of which stage of mine development is most prone to conflicts.

As for the *intensity* of conflict, we examine the level of courts and appeal rate of the cases. China's court system is characterized by "four levels and two instances of trials" (van Rhee and Fu 2017). ²⁹ Important cases (*zhongda anjian*) may bypass the basic court and go straight to the intermediate or higher court (Stern 2011). Starting with the intermediate court and appealing to a higher court if necessary is seen as one way to lessen the obligation that basic level courts' reliance on local government. Thus, to examine at which levels of courts of the first instance is an indication of the importance of the cases. ³⁰ A high appeal rate indicates that the legal procedure does not provide a satisfactory solution and end the disputes. However, as the cases are ongoing, the appeal rate shall be higher than the figure in this article and should be read as a reference.

As to the *outcome* of conflicts, we look at the judgments at the first instance trial and also those appealed to a higher level of court. This helps us to understand the consistency of judgments and the preference towards certain parties. More importantly, it also indicates whether these conflicts could be solved in court or not. Sometimes the insolvable cases in court reflect the institutional loopholes.

5.3 Data

In an effort to improve the transparency of the judicial process, China's Supreme People's Court in 2013 ordered that all levels of courts shall publish their finished cases online from January 2014 in a searchable public database. Previous empirical research shows that published adjudications are able to reveal the inner logic of court decisions and provide a neutral lens to observe how societal and political forces penetrate into the courts (He and Su 2013; Stern 2010).

To build our dataset, we first searched the published adjudication decisions (*caipan wenshu*), using keywords including 'mining', 'land acquisition', 'land expropriation', 'subsidence', and 'relocation'. This article mainly focuses on the conflicts involved with local communities,

²⁹ The four level of courts, namely, basic people's court, intermediate people's courts and higher people's courts, and the Supreme People's Court, exercise increasing judicial power. Two instances of trials means, first, litigants to a case who challenge the judgments made by a local court in the trial of first instance have the right to appeal the case to the next higher level court only once. Second, judgement of the first instance become legally effective if, within the prescribed period for appeal, no party makes an appeal. Third, judgement of the court of the second instance shall be seen as final decisions of the case and cannot be appealed.

³⁰ The level and location of the court sometimes is crucial to win a case. For example, when pollution crosses borders, pollution lawyers tend to find a court insulated from the polluter's political influence, but also have jurisdiction (Stern 2011).

mostly farmers.³¹ Therefore, after carefully reading the text, we exclude non-relevant conflicts, such as these within mining company and between mining companies.

For the convenience of analysis, we count a bundle of decisions of an identical issue as one case. An identical issue means the exact parties, factual, and legal questions. One case may produce two forms of a bundle of decisions. First, a collective lawsuit (*quantixing anjian*)³² of one issue may be broken up into individual cases in order to maximize per case court fees, boost statistics on the number of cases handled or disarm collective action (Stern 2011). This is especially notable in the case of mining-induced land subsidence and resettlement, where government authorities are sued by tens of farmers. Second, one issue may go through several trials at different levels of court, thus generating several verdicts. Information on appeals was available for 52 cases. After identifying an issue, repeated searches using the particular keyword of the issue at different time were conducted so as to track the recent progress. In the end, we built our dataset with 77 pieces of conflicts (Table 7)³³. Relying on the officially documented court cases there is no doubt that we might overlook the vast, unnoticed conflicts that are not included. However, the primary aim of this chapter is the demonstration of the conflict analysis model, which could be replicated when more data are available. Despite all that, our dataset still reflects some representativeness on geo-ecological diversity and types of minerals.³⁴

The cases are categorized as land acquisition (25 cases), and land subsidence and relocation (52 cases). As noted that there is a high level of involvement of government in the land subsidence and relocation conflicts. Government authorities have multiple roles: arbitrator (mostly land and resource bureau) to identify the polluter, implementer (township government) for relocation project, and regulator (county and above) for setting the compensation standard. Therefore, there are a number of administrative cases against government agencies, but also a dozen of cases which were swung between two ends: who to sue, government authorities or mining company?

Table 7 Characteristics of the sample for Chapter 5

Type	No. of conflicts	Appeal to a higher court	Appeal rate	No. of collective cases
Land acquisition	25	11	44.0%	0
Land subsidence				

³¹ It therefore also excludes the court cases between non-mining industrial enterprises and mining enterprises.

³² All-China Lawyers Association published a guideline placing restrictions on lawyers' involvement in 'collective cases', which defines the 'collective cases' as cases with more than ten plaintiffs (All-China Lawyers Association 2006).

³³ All cases are available in the SPC dataset and on file with the author.

³⁴ My dataset includes cases in 22 provincial level regions. The provinces not included in my dataset are: Beijing, Shanghai, Tianjin, Heilongjiang, Ningxia, Xinjiang, Tibet, Taiwan, Hong Kong and Macau. The cases are not only related to coal mining, but also manganese, silver, and stone mining.

Who to sue	15	14	93.3%	6
Government as arbitrator	8	6	75.0%	3
Government as implementer	15	11	73.3%	0
Government as regulator	14	10	71.4%	4
Total	77	52	67.5%	13

Source: The dataset.

5.4 Land acquisition conflicts

China has put strict regulations on the acquisition procedure of land for construction purposes, which includes mining. Rural collective land needs to be expropriated by the state prior to mining and commercial construction, and it is forbidden to directly lease or transfer of land use rights to collective land for non-collective *construction* purposes (Lichtenberg and Ding 2008). Therefore, one would expect that conflicts would occur when land is expropriated by the local state authorities. However, as consistent with other studies and reports (Dang 2010; Kang 2009; Ma and Zhang 2001; State Council 2006b; Wu and Hu 2007), court cases relate to direct land lease conflicts between farmers and mining companies (Table 8).

By looking at the causes of litigation, almost all of the conflicts pertaining to land acquisition for mining are about the rent (22 out of 25 cases). Litigations were lodged when new agreement could not be reached during contract renewal (8 cases), the mining companies did not pay the rent in due time (6 cases), or there was disagreement with the redistribution of land rent among village group members (5 cases). Government intervention only was evident in three cases, where the mining activities were terminated due to missing mining or land use permits. After the operation consequently ceased, the mining companies filed a lawsuit to demand the village committee to reimburse the rent already paid (3 cases).

The concentration of conflicts between farmers and mining companies is also illustrated by the parties involved. In our dataset, the majority of litigants (15 out of 25 cases) are farmers against mining companies. Village committees also act as litigants against mining companies. A small number of cases are economic distribution conflicts between farmers and village committees, with the mining company as the third party.

The conflicts between farmers and mining companies on land acquisition are characterized by low magnitude, evident by the *timing* and *intensity* of the conflicts. First, conflicts only start to occur at mining production stage, instead of construction stage. In general, at the beginning of the mining activities, the contract and compensation are mutually negotiated and agreed by farmers and mining companies. The conflicts only occur when one party does no longer comply or agree with the contract, such as rent payment delay or contract

renewal. Second, all of the cases are sued first at local basic people's court, and less than half cases appealed for a second trial at the intermediate court.

Table 8 Court case pertaining to land acquisition for mining (N= 25)

Indicator	Number	
Source	Rent disagreement at contract renewal (8) Rent payment delay (6) Rent distribution (5) Rent disagreement due to government intervention (3) Not clear (3)	
Actor	Farmer vs mines (15) Collective vs mines (8) farmer vs collective (2)	
Timing	Planning and construction stage (3) Production stage (21) Closure (1)	
Intensity	First-instance: Basic court (25)	Appeal to: Intermediate court (11)
Outcome	Not accept (3) Valid Contract (12) Invalid contract (10)	10 upheld, 1 partial change

Source: Compiled by the author.

The Land Administrative Law forbids the direct lease or transfer of land use rights to collective land for non-collective *construction* purposes³⁵. Therefore, the land lease contracts signed between farmers and mining companies violates the law and hence are invalidated. Two further issues may invalidate the contract. Firstly, the term of the contract sometimes exceeds that was legally allowed. China has issued the '*30 Years No-Change-Policy for Rural Land Lease*' in 1998. Farmers can contract (*chengbao*) the land from the collective until 2028. If a farmer transfers (*liuzhuan*) his land to other parties, the term shall not exceed the remaining time of the original terms (article 33 of Rural Contracting Law, 2002). If the term exceeds its legal limit, the contract becomes void. Secondly, when contracting land to parties outside the village collective, such transfers are subject to a two-thirds majority vote by the villagers' representatives meeting (article 18 of Rural Contracting Law, 2002).

When such cases are brought forward, the court has to determine the validity of the contract. Here, the first instance courts reach inconsistent verdicts: dismiss the case (3 cases), deem the contract as valid (12 cases) or void (10 cases). It appears from these inconsistent verdicts that court decisions are arbitrary. However, the final outcomes of the

³⁵ Construction includes mining as well, Article 63 of Land Administration Law.

court judgment are the same. For these contracts deemed as valid, the fact of land acquisition was reinforced and the delinquent party was ruled to continue to perform his duty, namely, to pay the rent. For these contracts deemed as void, as the occupied land for construction purpose is irreversible, the adjudications did not change the land use status. It is still up to the involving parties to solve the disputes on economic compensation.

From the analysis above, it could be argued that institutions (and its workings) on mining land acquisition are an outcome of conflicting interests between the central government and local actors. On the one hand, the strict regulations on land acquisition by the central government are to protect farmland in light of its food security goals (Lichtenberg and Ding 2008). On the other hand, such strict regulations are often against the interest of local authorities and miners to obtain the land and exploit it accordingly, while it also goes against the interest of local farmers to reap benefits from land added value. In some instances mining companies directly rent land from village committee and farmers, thereby bypassing land acquisition regulations. This ‘rule-in-use’ is conducive to mineral exploitation, and rally social support from all three *local* actors: the authorities, miners, and farmers. As for the social conflicts induced by land lease, this chapter has demonstrated that the conflicts concentrate between farmers and mining companies due to the disagreement of compensation with a low intensity.

5.5 Land subsidence and resettlement disputes

Mining-induced land subsidence is one of the most dominant causes of displacement in China’s mining areas. As Chapter 6 suggested that the current institutional framework is the main reason for the tensions and conflict over land subsidence and forced displacement in the mining areas. First, although the Polluter Pays Principle (PPP) has been included in certain mining laws and regulations, the distribution of the liability between central, local state, and mining companies still need further readjustment. The resulting blurred responsibilities are reflected in court cases, where prosecutors have to decide on to sue either the government authorities or mining companies. Second, government authorities have multiple roles: arbitrator (mostly land and resource bureau) to identify the polluter, implementer (township government) for relocation project, and regulator (county and above) for setting the compensation standard. Despite the difficulty to sue the government authorities, a number of administrative cases against government agencies were successfully brought in courts. In below sub-sections, we will examine the court cases using the conflict analysis model.

5.5.1 Who to sue, government or mining company?

As mining activities are paired with economic and socio-psychological damage to the local villagers, affected villagers should be able to file a lawsuit against the responsible mining

company. However, blurred liabilities between mining companies and local government have left significant room for the court discretion whether to accept or reject cases.³⁶

Here, 15 cases are collected (Table 9).³⁷ The affected farmers first filed lawsuits against the mining company (12 cases). The courts immediately dismissed the cases by claiming that they did not fall within the scope of the civil litigations accepted by People's Courts. The courts claim that mining companies are not entitled to act as a legal entity as a defendant in relocation cases, as such a role belongs to the government.³⁸ Instead, it should be dealt with as an administrative case against a government's misdeed. It is arguably even harder to persuade the court to accept an administrative case. For example, in 2015 a group of 32 villagers in Yuncheng County, Shandong, filed a collective litigation against the village relocation office under the Shandong Provincial Government.³⁹ They pleaded to have the relocation office's decision on putting their village on the list of relocation, annulled, which was an administrative act rather than policy. However, the court of the first instance did not accept the case, claiming that the official address of the defendant does not fall under its jurisdiction. The villagers made an appeal to a higher intermediate court, requesting that the trial court should transfer the case to the court that has jurisdiction over the case. Yet, the intermediate court again rejected on the grounds that the trial court has no responsibility to transfer the case, as it did *not* accept the case.⁴⁰

Table 9 Cases rejected, on who to sue (N=15)

Indicator	Number	
Source	Whose liability for mining-induced land subsidence and relocation	
Actors	Farmer vs mining company (12) Farmer vs government agency (3)	
Timing	Operation stage (15)	
Intensity	First instance: Local court (13) Intermediate court (2)	Appeal to: Intermediate court (12) Provincial higher court(2)

³⁶ In the court system, there is also disagreement on whether to take the disputes on housing demolition compensation as civil litigation (He 2007).

³⁷ In the SPC database, we got 89 pieces of decisions that were not accepted. We categorized the decisions on identical issue as one issue, therefore generating 15 different cases, which are filed as NA01-NA15 (Not-Accepted).

³⁸ This principle was stipulated in local regulations. For example, In Shandong, the provincial government promulgated an *interim regulation on relocating buildings above coal reserve* in 1989 (Shandong Provincial Government 1989). Article 5 of this local regulation states that: "*relocation bureaus at county level organize and coordinate the relocation of buildings above coal reserve,..., and deal with the relations between the mining industry and farmers*".

³⁹ Case number NA03 with two decisions No. (2015) Li Li Xing Chu Zi Di 22, and No. (2015) Ji Xing Zong Zi Di 138.

⁴⁰ The ruling (No. (2015) Ji Xing Zong Zi Di 138) was accompanied by a citation of Article 21 of the Administrative Law: 'Where a people's court finds that a case *it has accepted* (emphasis added) is not under its jurisdiction, it shall transfer the case to the people's court that has jurisdiction over the case'.

Outcome	15/15 dismissed	14/14 dismissed
----------------	-----------------	-----------------

Source: Compiled by the author.

Two findings can be derived from the cases that are dismissed. First, in contrast to decisions on land acquisition, *consistent* decisions are made here. Although in China a precedent does not have binding force, and courts generally do not cite previous court decisions in their judgments (Ahl 2014), the consistent decisions indicate that a precedent has a guiding role. Second, as the distribution of the liability between the government authorities and mining companies is blurred, it provides the court room with a certain level of discretion.

5.5.2 Land and resource bureaus challenged as arbitrator

While it may seem obvious to infer that land subsidence and house damage are caused by mining, it is hard – and in particular for lower-educated farmers – to deliver sufficient robust and legal evidence of what precisely caused the damage. This is further complicated when several mining companies operate in the same area. In order to deal with this issue, Land and Resources Bureaus at the county level were designated to support farmers in identifying the polluter (Art. 35, State Council 2003b).

When either farmers or mining companies are not satisfied with the administrative rulings by the local land and resources bureau, they may apply for an administrative review and even file administrative lawsuits. In our dataset, we collected eight administrative cases against the local land and resources bureau (Table 10). Among the eight cases, farmers and mining companies lodged three and five cases respectively.

Table 10 Administrative cases against the department of land and resources (N=8)

Indicator	Number	
Source	Government as arbitrator to identify the responsible party (8)	
Actors	Farmers vs land and resources bureau (3) Mining company vs land and resources bureau (5)	
Timing	Operation stage (4); Operation & Closure stage (4) [in case of several mines around]	
Intensity	First instance: Basic court (8)	Appeal: Intermediate court (6)
Outcome	Withdrawal (1) Bureau of land and resource: -win (6) -lose(1)	Bureau of land and resource: -win (4) -lose(2)

Source: Compiled by the author.

As previous studies on administrative litigation in China (J. Li 2013a; Pei 1997) found, local courts are often in a difficult position. On the one hand, local protectionism persists and the courts have a tendency to protect the interests of state agencies. On the contrary, they have to maintain their own institutional legitimacy, so as not to make persistent bias in favor of the government. However, it is difficult for the courts to examine government agencies' concrete administrative acts. They can only make decisions based on the legality of the administrative procedures. In other words, the courts cannot assist in determining the liable parties for land subsidence. The Land and Resource Bureau only lost one case (out of eight cases) during the first instance, and twice out of six appealed cases, but only because of the inappropriate procedure. In these three cases, the administrative rulings were turned over, and the cases went back to the Land and Resources Bureaus again. Here, it is clear that the legal system does not deliver a remedy for farmers.

5.5.3 Township government challenged as implementer

Local governments, in most instance the township, have been assigned the responsibility of the relocation projects.⁴¹ They are, therefore, as an implementer in the relocation process, challenged in court when villagers are unsatisfied with the relocation. A number of 15 court cases have been collected on cases where local governments are challenged, of which two sources of conflict are distinguished: the eligibility for compensation (8 cases), and disagreement with the amount of compensation (7 cases) (Table 11).

Table 11 Administrative cases against township government (N=15)

Indicator	Number	
Source	Eligibility for compensation (8 cases)	Disagreement with the amount of compensation (7 cases)
Actor	Farmers against township government (15)	
Timing	Production stage (15)	
Intensity	First-instance: Basic court (8) Appeal to Intermediate court (8)	First-instance: Basic court (7) Appeal to Intermediate court (3)
Outcome	First instance decisions: Township government: -Win (6),Lose(2) Appeal: Township government: -Win (2),Lose(6)	First instance decisions: Township government: -Win (7) Appeal: Township government: -Win (3)

⁴¹ This was regulated since the early 1980s, for example, the State Council administrative *measure on Coal Extraction under Buildings and Villages* in 1980 and 1983 (State Council 1980, 1983), and some local regulations (Shandong Provincial Government 1989).

Source: Compiled by the author.

Starting with the eligibility for compensation, groups that are often excluded from compensation schemes include married-out women⁴², senior farmers, and those without formal household registration (*hukou*) or agricultural land. For example, many married-out women still have their *hukou* registered at the home village, and therefore not regarded as village members and not entitled to compensation. Excluded from but considering themselves eligible for the compensation, these groups have sought various courses of action for remedy, and filing a lawsuit against the implementation agency is sometimes opted for. In general, at the local basic court, township government are more likely to win. The losing parties, both the farmers and government, are likely to appeal to a higher court. But the decisions made at intermediate court are in favor of the vulnerable groups (6/8), as long as they could prove their eligibility. However, to win in court is just a pyrrhic victory. It is likely that the township government would resist and refuse to implement the court's judgments. The farmers, even when they won, had to apply the court again to compel the enforcement after not receiving any remedies as required in previous court decisions.⁴³

The second set of cases is about the compensation fee. Farmers were unsettled and lodge cases against the local township government because certain parts of their property (such as house or land) was not adequately measured and compensated for. The primary task of the courts is to review the evidence presented by the litigation parties. However, it was difficult to provide solid evidence, as farmers often did not know how much they could be compensated until their houses and attachments were destroyed and paid. Therefore, their cases (7/7 cases) always failed in court.

5.5.4 Administrative litigation against compensation standard

Unlike resettlement due to urban construction and hydropower development, the national law provides no compensation standards for resettlement induced by mining (Liu, Meng, and Tang 2006; Lu 2002). As a result, the compensation to property (house and land) damaged by mining is estimated according to local standards, which are usually low. In Jiangsu for example, compensation for land affected by mining-induced subsidence is only 12 times the annual land productivity (ALP), a number significantly lower than land expropriated for urban construction (30 times of ALP) and hydropower development (16 times of ALP) (Jiangsu Provincial Government 2004). Also, the annual land productivity is set as the value of agricultural products, which are much lower than otherwise.

Such gaps have triggered unfairness among farmers. However, according to administrative litigation procedures, only government *specific misdeeds* can be sued. The standard for

⁴² Married-out women are peasant women who are married outside their home villages but do not or cannot transfer their *hukou* (household registration) to the destination village from their home villages.

⁴³ This is demonstrated in two cases (out of six cases that were won) that are available by repeat search in SPC database.

compensation is regarded as an *abstract* administrative decision, not an individuated administrative act (O'Brien and Li 2004). Therefore an administrative litigation against the compensation standard cannot be filed.

Table 12 Administrative cases pertaining to compensation standards (N=14)

Indicator	Number	
Source	Disagree with the compensation standard (14)	
Actor	Farmers against township government (11) Farmers against county and prefecture government (3)	
Timing	Production stage (14)	
Intensity	First-instance: Basic court (10) Intermediate (4)	Appeal to: Intermediate court (6) Provincial higher court (4)
Outcome	Not accepted (14)	Not accepted (10)

Source: Compiled by the author.

In our dataset, however, 14 cases were collected where farmers challenged the local standards on mining-induced land subsidence and resettlement (Table 12). The farmers thought they should be compensated against the standard on construction land. Unlike the above cases on eligibility for compensation that often only involved single household, the cases here often rally a group of farmers and collective litigation bypassed the basic court and was lodged in intermediate court. However, the cases were mostly not accepted (Table 12). For example, in Huabei, Anhui, a group of affected farmers first filed litigation against township government at county basic court, to ask for the township government to make up the deficiency between the amount they received and the standard on construction land.⁴⁴ The court did not accept the case on the ground that 'the township government was delegated by the county government to implement the relocation, therefore the delegated authority (the township government) was not the proper defendant', which suggested the county government would be the proper defendant. Later, a group of more than 100 farmers filed collective litigation against county and prefecture governments to intermediate court at the prefecture level for not updating the compensation standard for mining-induced land subsidence and village relocation on time. The intermediate court rejected the case on the ground that the county and prefecture governments were not the responsible entity, and had not done any administrative action towards the plaintiffs. This case was appealed to the provincial higher court and also rejected. It did not stop here, and a dozen of cases (by the same farmer/group, and farmers within this county) against different levels of government (township, county, and prefecture level), in the name of land

⁴⁴ The court document numbers cited here are: (2015) Sui Xing Chu Zi Di 00027, (2015) Huan Xing Chu Zi Di 00027, (2015) Wan Xing Zong Zi Di 00145.

or housing compensation disputes, were lodged to various levels of courts collectively or separately. However, almost all were not accepted.

5.6 Conclusions

In China, the amount of environmental conflicts had increased tremendously along with rapid economic development and urban growth. Therefore the phenomenon of conflicts has attracted considerable attention of researchers. However, previous studies are mostly based on case studies. In result, much remains unknown about the scale and extent of the conflict. By highlighting the necessity for the quantification of the conflict, this chapter adopts a conflict analysis model to structurally analyze and gauge the environmental conflicts. The conflict analysis model is applied in the cases of the mining legal disputes in China, which helped to identify several important characteristics of conflicts (Table 13).

Firstly, this model is useful to identify the causes of conflict. On the one hand, conflicts pertaining to land acquisition revolve around the disagreement over land rent between farmers and mining companies. The direct land lease is contradictory to the state regulation on land expropriation, but is conducive to mineral exploitation and rally social supports from local government, miners, and farmers as well. This ‘rule-in-use’ hints at the inapplicability of national institutional arrangements regarding the acquisition of mining land. On the other hand, a legal requirement for the expropriation of land where underground mining takes place is also lacking (Yang et al. 2017). Therefore, the rights and interests of farmers are not well protected, which allows mine owners to get away when not paying the full costs of dealing with mining-induced damage to the land surface and resettlement.

Table 13 Summary of mining legal disputes

Indicator	Mining land acquisition	Mining land subsidence induced conflicts
Source	Rent disagreement on expropriated land	Whose responsibility? Low compensation
Actor	Mostly farmer against the mining company	Mostly farmer against government agencies
Timing	Mostly operation stage	Mostly operation stage
Intensity	Mostly basic court, Medium appeal rate	Collective litigation, intermediate court, High appeal rate
Outcome	Court judgment inconsistent	Most cases rejected; Farmer at disadvantage position

Source: By the author.

Secondly, this model contributes to the understanding of the roles and interactions of involved players. In contrast to previous environmental litigation studies (van Rooij 2010;

Stern 2010, 2011), where most cases were civil and against polluting firms, there is a high degree of government involvement in mining-induced land subsidence cases. Government agencies were challenged in court due to their role as an arbitrator for determining the responsible mines for land subsidence, as an implementer for relocation, but also as a regulator for setting the compensation standards. Examining the actors will help us to understand how the government's role facilitate or frustrate the solution of the conflict. In the case of mining land, in order to facilitate the mineral production, the local government may opt for a hands-off approach, even when it is against the interest of the central government. In the land subsidence cases, mining companies should be responsible for the damages, but the risks and responsibilities have been shifted to the state. In other words, the conflicts indicate the existence of convoluted and extremely complex relations between rural communities, mining companies, and the state. Only when mine companies are required to meet the full costs of dealing with mining-induced damage to the land surface and resettlement, they will pursue means of minimizing impact to reduce costs. It is imperative to formulate coherent and stringent legislation to enforce actors to assume the liability.

Thirdly, examining the *timing* helps to gain a knowledge on which stage of mine development is most prone to conflicts. Comparing the *timing* of conflicts between land acquisition and land subsidence, it presents an interesting distortion. Perceivably, the land acquisition and relocation conflicts shall happen at the construction stage before mining begins. However, conflicts, in reality, tend to concentrate at the operation stage. The land subsidence that made farmers become aware and concerned about the mining only started after the damage to land and house began to occur.

Fourthly, by assessing the level of litigation and appeal rate, we can have an idea of the seriousness of the conflict. This chapter has demonstrated that the conflicts on land acquisition are with a low intensity, but the mining-induced land subsidence and resettlement features a high intensity in terms of collective litigation and high appeal rate.

Finally, inconsistent decisions were made by courts and most cases were not solved in courts. These two points indicate that the legal procedure does not provide a satisfactory solution, channel the grievance, and end the disputes. The root for the persistence of conflicts in courts is caused by lawmakers who designed the rules in such a way that are not compatible with local circumstances. However, it is the judiciary that assumes the blame for inconsistent outcomes.

For policymakers, it is necessary to reassess the laws that govern mining land acquisition and mining-induced resettlement and the applicability at local context. Moreover, it is necessary to improve the litigation system. Judicial independence remains dubious and the courts often refuse to tackle conflicts in China. Last but not least, effective measures must be taken to alleviate mining-induced conflicts, which may jeopardize the stability of society.

As this chapter demonstrates, the conflict analysis model provides a way to gauge the level of conflict by disaggregating the source, actor, frequency, nature, timing, duration, intensity, and outcome of the disputes. In future studies, this analytical model could be applied as a basis to build a conflict database, with which more information on social conflicts could be collected and compiled in a structured way, not only for academic research but also policy analysis.

5.7 Discussion

By gauging the intensity of the conflicts induced by mining land expropriation, displacement, and resettlement, it indicates the level of institutional credibility.

The institutional arrangement on mining land expropriation is ‘empty institution’, as Ho (2016b:1147) maintains that “*the empty institution is, by and large, ineffective and ignored, yet simultaneously socially accepted, little contested and, in effect, to a certain degree credible.*” This is exhibited in several ways. Firstly, the regulations on mining land expropriation by the central government are not followed in some instances. Mining companies directly rent land from village committee and farmers. Local communities could benefit from the informal conversion of rural land to mining land. Therefore, this ‘rule-in-use’ is not only conducive to mineral exploitation, but also rally social support from all three *local* actors: the authorities, miners, and farmers. Secondly, as for the social conflicts induced by land lease, this chapter has demonstrated that the conflicts concentrate between farmers and mining companies due to the disagreement of compensation with a low intensity.

The direct lease, albeit in violation of the official procedures, facilitates the mineral exploitation. The mining companies sometimes encroach on famers’ land without the permission, but in other cases, they operate under the mutual agreement in the first place. Despite some conflicts over land rent arise, relative operational stability is achieved over several years. It indicates that the informal land acquisition that emerged from below has evolved into functional practices that are broadly accepted by farmers and mining companies, but also silently accepted by local authorities. In other words, the official mining land expropriation procedure put forward by the central government is left as ‘empty institution’, while the institutions emerged and consolidated from below become functional.

Contrarily, the conflicts over mining-induced land subsidence, displacement, and resettlement feature a high degree of government involvement and high intensity. Local government agencies were challenged at courts due to their multifaceted role as arbitrator, implementer, and regulator. The farmers are undergoing accumulative livelihood dispossession: landlessness, joblessness, homelessness, involuntary and forced

resettlement, and so on.⁴⁵ They have initiated litigations, and overtly confrontational action, or built an extension on top of their original house, as illustrated in Chapter 6, which indicates that non-credible, socially contested institutions have emerged.

⁴⁵ As Cernea (1997) summarizes that the key impoverishment risks in displacement include landlessness, joblessness, homelessness, marginalization, food insecurity, loss of access to common property resources, increased morbidity, community disarticulation.

6 Mining-induced displacement and resettlement

Note: This chapter has been published (with H. Zhao and P. Ho) in *Resources Policy* Vol. 53, pp. 408-418 (SSCI/IF: 2.618)

6.1 Introduction

China boasts a substantive amount of mineral resources. It has, for instance, the world's second-largest reserve in lead and zinc, third largest reserves in coal, and the sixth largest in manganese (Lin and Liu 2010; Zhang et al. 2011). An important proportion of these minerals is excavated through underground mining rather than surface or open-pit mining (State Council 2003a). In the case of coal, 95% is produced from underground mines (compared to 31% in the United States and 22% of in Australia; Bian et al. 2010, p.217). Underground mining is also prevalent for lead, zinc (Zhang et al. 2011), and manganese (Wang 2007).

The alleged "blessing" of China's mineral resources has come with a clear downside, as underground mining has led to severe land subsidence (Bian et al. 2010). Reports about 'floating villages' (*xuankong cun* in Chinese) have made media headlines. The term describes villages located on land hollowed out due to underground mining. Problems had become painfully visible: cracks appeared in houses, wells dried up, while growing crops was a challenge due to sinkholes and receding farming land. In Shanxi Province, one of China's foremost coal mining area, there are reportedly over 1,000 of such 'floating villages', forcing farmers to be moved out (Xinhua 2015:1).

It is estimated that the number of displaced farmers is more than 2.3 million, a figure that exceeds the amount of people displaced by the Three Gorges Dam (VanderKlippe 2015; Xinhua 2015; Zhang 2013). In addition to land subsidence induced by coal mining,

subsidence induced by exploitation of metal ores, such as lead, zinc, and manganese, have also been reported (Diao, Yuan, and Zhang 2006; Wu et al. 2009). In result, underground mining has led to substantive tension and conflicts between the mining industries and farmers (Wang and Yuan 2013; Zhang 2013; Zhao and Li 2013). The large-scale acquisition of land is a significant driver for displacement in mining areas (Abuya 2013; Ahmad and Lahiri-Dutt 2006; Madebwe et al. 2013). However, in the Chinese context, displacement and resettlement, by and large, occurs *after* mining-induced land subsidence has taken place. Markedly, the displacement and relocation of entire villages appears to be more frequent in China as compared to other countries (World Bank, China Coal Information Institute, and Energy Sector Management Assistance Program(ESMAP) 2008:94).

In this context, the chapter focuses on the SQ4:

What are the institutional factors that influence Chinese mining-induced land subsidence and displacement, and what are the economic and social consequences for farmers affected by it?

This chapter zooms in on what is scholarly known as ‘mining-induced displacement and resettlement’ (hereafter: MIDR). In so doing, it is situated in the larger body of research on ‘development-induced displacement and resettlement’ (or DIDR). DIDR is often regarded as an activity that can be planned because the “*cause of the displacement is a predictable, intentional, scheduled and largely regulated event*” (Owen and Kemp 2016:1228). In this context, researchers have developed the Impoverishment Risks and Reconstruction (IRR) model (Cernea 1997), as well as various international guidelines (ADB 1998; IFC 2002; World Bank 2001,2013). The premise of such models and guidelines is that the nature, timing, and intensity of the displacement can be forecasted and managed.

However, Nor-Hisham and Ho (2016) ascertained that many of such models and guidelines actually serve the legitimization of resettlement schemes that should never have occurred. In this regard, they identified three basic pre-conditions that constitute a ‘no-go-area’ for any development project, particularly, when land-dependent and resource-poor communities are involved. Similarly, Owen and Kemp (2015, 2016) challenged the belief that planning could serve as a protective mechanism for development-affected people, with particular reference to those affected by mining projects, as a large proportion of resettlement events take place during the operational phase. Moreover, the uncertainty of land use requirements and the volatility in commodity markets reduces the ability to plan for resettlement. In this context, ex-ante social impact assessment and environmental impact assessments provide little guidance on how to evaluate the dynamics in socio-economic and ecological effects that result from mining (Banks 2013). Owen and Kemp (2016) therefore suggest that MIDR must account for the *unplanned* elements of mining.

The studies cited here have made a significant contribution to the understanding of the social and economic impacts of development projects, and the potential measures to

mitigate the effects of displacement and resettlement. Whereas a large portion of these studies focused at the project-level, this chapter would like to zoom in on the macro-level institutions that underlie MIDR, while examining how these affect land users at the micro-level. Institutions are here defined in a broad sense, as a set of rules that comprises land rights, policies, and regulations (Ho 2016a:1129). Previous studies on DIDR in China have mostly focused on the impacts of infrastructural and environmental projects, such as for ecological migration (*shengtai yimin*, Nakawo, Konagaya, and Chimedyn 2010) and the Three Gorges Dam (Heggelund 2006; Jackson and Sleigh 2000; P. Wang et al. 2013). Contrarily, the impact of China's mining-induced displacement and resettlement has to date received much less attention in the international literature.⁴⁶ It is why this study might make an important contribution to understanding the dynamics of MIDR in one of the world's largest emerging and resource-rich economies.

The chapter is structured as follows. Section 6.2 presents the methodology, research sites, sample features, and a framework for institutional analysis on MIDR in China. Section 6.3 describes the national institutional structure described along the various aspects of our MIDR framework. Section 6.4 presents the results of the survey and interviews in the relocation and non-relocation villages. The chapter ends with a discussion and conclusion.

6.2 Methodology and sources

6.2.1 Research sites

As indicated in Section 1.4.3, the survey was conducted within the eight counties across five provinces and one provincial-level municipality. The county was selected as a basic research site due to its importance as an administrative node, where many tasks and responsibilities of the Chinese local state converge.⁴⁷ The counties were selected on the basis of an official list of mineral resource-based counties issued by the Chinese State Council (2013), with the aim to represent and account for (i) various stages of mineral resource exploitation, (ii) geographical variety, (iii) varying levels of economic development, and iv) different mineral resources. As shown in Table 14, different underground mineral resources are included in this research. Six counties are notable for coal mining, and two counties are predominantly involved in metal ore mining. The latter two are located in Chongqing Municipality and Hunan Province, which are ranked among the nation's largest producers of zinc, lead and manganese (Wang 2007; Zhang et al. 2011).

⁴⁶ It is not to say that other effects of Chinese mining have not been studies, see for instance, the seminal study by (Lu and Lora-Wainwright 2014). Yet, for reasons of space, we only report on the findings that relate to MIDR. Other findings in relation to employment, livelihood and environment are not included here.

⁴⁷ There are five levels of local government in China: the province (equivalent to the autonomous region, municipality under the State Council, and special administrative region), prefecture, county, township, and village.

Within the eight counties, a total of 37 villages were selected. Among them, 10 villages are not affected by land subsidence yet. Therefore, in this chapter, the 27 villages that have been affected are examined. Of these, 11 relocation villages (Table 14) were chosen based on a literature review of government and internet reports, which preceded the fieldwork. The relocation village is not a ‘traditional’ rural village, where each household has a one or two-story house irregularly scattered in space, but consists of newly built and spatially-planned condominium complexes. The relocation villages are in general located on the outskirts of the township government seat. Relocated farmers did not receive any new agricultural land in the relocation village, but were still dependent on land in the original village. Most of the studied villages were relocated 1 to 2 years when the fieldwork was done, while in others the relocation occurred approximately ten years ago. The time span of mining operation varied from 10 to 50 years, while the size of the mines ranged from small to large (as measured by annual production capacity).⁴⁸ In addition to the 11 relocation villages, the survey was also conducted at 16 non-relocated villages situated nearby the original sites of the villages that had been relocated (yet, were still prone to mining-induced land subsidence).⁴⁹

Table 14 Sample of regions and the 11 relocation villages

Province	County	Relocation Villages				
		Type of mineral	Mining Since year	Size of mine	Relocated Persons/ households	Year relocated
Shaanxi	Binxian	Coal	2006	Large	Ca. 1000 persons	2013
	Hancheng	Coal	1980	Medium, & multiple small	923 persons	1984/ 2004*
Shanxi	Shuzhou	Coal	1995	Medium, & multiple small	Ca. 50 households	2015
Shandong	Yanzhou	Coal	1981	Large	4 villages, 1120 households	2006
	Tengzhou	Coal	1960s	Large	421households	2014
			1960s	Large	19 villages	2014
Jiangsu	Peixian	Coal	1976	Large	1248 individuals	2014
			1986	Large	986 households	1989/ 2008*

⁴⁸ By scale, coal mines in China are divided into 3 types: large, medium-sized, and small, whose annual production capacity is larger than 0.9, 0.3-0.9, and below 0.3 million ton per year, respectively (Shen and Gunson 2006:429). This classification roughly applies to other minerals as well.

⁴⁹ The 16 non-relocated villages are distributed as follows: Binxian 4, Hancheng 1, Shuzhou 3, Yanzhou 3, Tengzhou 1, Peixian 2, Xiushan 1, and Huayuan 1.

Chongqing	Xiushan	Manga nese	1960s	3 medium	98households, 440 individuals	2014
			1998	Multiple small	Ca.200 individuals	2014
Hunan	Huayuan	Zinc / Lead	1980s	Multiple small	Ca. 40 households	2008

Source: The survey.

Note: * indicates the village has been relocated twice.

6.2.2 Survey and interviews

The fieldwork comprised a survey and semi-structured interviews. In total, 230 valid questionnaires were collected, consisting of 120 relocated households and 110 non-relocated households. The survey sample included 70% male respondents and 30% female respondents. The majority (56.5%) was older than 50 years, reflecting the increasing left-behind elderly in rural China (Pang et al. 2004). The level of education was equally distributed between respondents, ranging from no education and a university degree. The average household size was 4.84. The Chi-square analysis using SPSS found no significant differences in gender, age, household size, and educational level between relocated and non-relocated respondents (see Table 15).

Table 15 Characteristics of the sample for Chapter 6

Category		Relocated sample(n=120)	Non-relocated (n=110)	Subtotal (n=230)	χ^2 Value
Gender	Male	67.5%	72.7%	70.0%	0.385 ^{ns} , P=0.535
	Female	32.5%	27.3%	30.0%	
Age	18-30	12.5%	10.0%	11.3%	8.332 ^{ns} , P=0.080
	31-50	32.5%	31.8%	32.2%	
	>50	55.0%	58.2%	56.5%	
Level of education	Illiterate	21.7%	22.7%	22.2%	0.671 ^{ns} , P=0.955
	Primary	25.8%	27.3%	26.5%	
	Middle	36.7%	37.3%	37.0%	
	High school	11.7%	9.1%	10.4%	
	University	4.1%	3.6%	3.9%	
Household size	≤3	34.2%	24.5%	29.6%	5.544 ^{ns} , P=0.063
	4-5	38.3%	32.7%	35.7%	
	≥6	27.5%	42.7%	34.8%	
	Mean	4.45	5.26	4.84	

Source: The survey.

^{ns}= Non-significant at P>0.05.

The survey is coupled with semi-structured interviews with 29 key informants, including officials in the county mining and land administration departments, mining right holders, interviewees from the mining association, cadres from the township government, and a dozen local farmers. lastly, participatory observation was conducted with regard to the

assessment of mining land reclamation reports, for which a mining expert review meeting was attended.

6.2.3 A MIDR framework

For the purpose of our research, we developed a framework for the institutional analysis of MIDR in the Chinese context. The institutional arrangements that are deemed relevant have been categorized along four dimensions as depicted in Figure 18.

The first institutional dimension of the framework involves examining the land use and the existing rules for expropriation. In many countries, land acquisition laws stipulate that the government can acquire land for public use, providing a legal basis for the acquisition of land for mining, and consequently, the displacement of residents. Yet, in many instances, (indigenous) communities that use land on the basis of customary rights are not at all expropriated on the basis of legal procedures, leading to significant conflict (Mathur 2006; Nor-Hisham and Ho 2016).

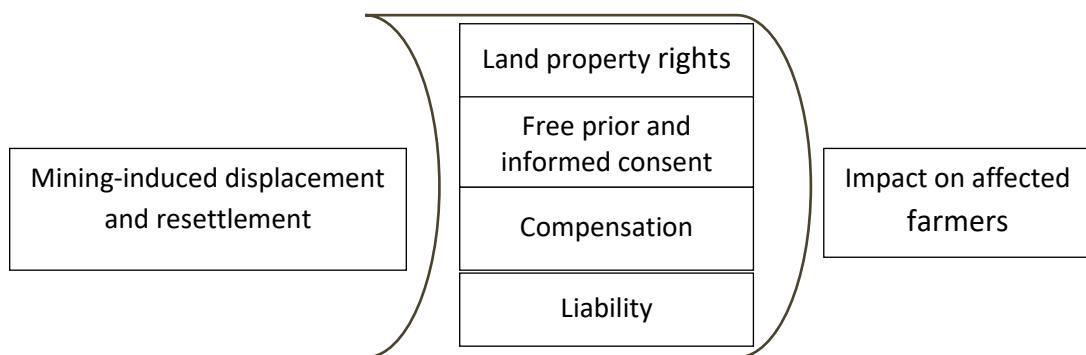


Figure 18 Analytical framework of MIDR in China

Source: Illustrated by the author.

The second dimension that needs consideration involves the principles of voluntarism and self-determination. Over the past decades, development projects predicated upon *involuntary*, forced displacement has been quite pervasive. In this context, the concept of 'Free, Prior, and Informed Consent' or FPIC is increasingly being promoted as a means to ensure the right of self-determination for affected peoples (Hanna and Vanclay 2013; Owen and Kemp 2014).

The third dimension concerns compensation. An often disregarded truth is that land and housing in a developing context plays a critical role in the provision of social security and welfare (Guhan 1994; Ho 2014). It is why the amount of compensation is usually inadequate (Abuya 2013; Mathur 2006). Cash compensation is insufficiently translated into new productive assets, due to issues such as local capacities, alternative employment, and access to (vocational) training (Bainton and Macintyre 2013; Szablowski 2002). For this

reason, scholars have suggested that compensation schemes should be integrated into resettlement legislation and practice (Cernea 2008; Cernea and Mathur 2008).

The fourth and final dimension concerns the liability among parties. Developers are regarded as the central actors for planned resettlement (Owen and Kemp 2016). However, developers often have no compelling reason to do more than the legally required minimum, even more so, in a developing context. As a result, evicted peoples and governments need to bear the costs of the unacknowledged liability left by developers (Downing 2002).

In the following section, the MIDR framework is applied to the macro level, as well as the micro level. To assess the legal loopholes and deficiencies that affect the governance of MIDR, we will start by reviewing national laws and regulations. The institutional analysis includes the legal provisions that can be found scattered over the 2004 Land Administration Law, the 1996 Mineral Resources Law, the 1996 Law on Coal, and various governmental notices and decrees. Subsequently, a micro-level view will be provided, based on the survey and semi-structured interviews with relocated and non-relocated farmers.

6.3 Analyzing MIDR: The macro level

6.3. 1 Land-based property rights

As duly noted by Mathur (2006) laws that specifically deal with resettlement are by and large lacking. What often exists are laws that stipulate the acquisition of land, and provide a legal basis for government acquisition of private land for the public interest (Abuya 2013; Ahmad and Lahiri-Dutt 2006; Mathur 2006). The same is true in the case of MIDR in China, as there is no law that addresses mining-induced resettlement. Instead, resettlement as a result of land loss is regulated under the 2004 Land Administration Law.

In the Chinese context, ownership of mineral resources and land is separated. While mineral resources belong to the state, the land above can be owned by either the state or the collective (the situation is a bit comparable to Australia, where mineral resources are owned by the Crown, while land are owned by the Crown or private persons). In order to start mining, one needs to obtain the mining right, as well as the land use right. There are separate procedures to acquire these two rights.

In accordance with the 1996 Mineral Resources Law (NPC 1996a) or the 1996 Law on Coal (NPC 1996b), government at the county level and above (depending on the scale of mining) can allocate mining rights to users. These rights can be accorded to: 1) central and local state-owned companies; 2) collective-owned companies also known as Township and Village Enterprises (or TVEs, enterprises set up by rural collectives, originally in support of agricultural production); and 3) enterprises that are partly or wholly foreign-owned.⁵⁰ In the

⁵⁰ However, official figures have not recorded any output from such foreign enterprises (Wright 2006:168).

1990s, the central government strongly stimulated the development of coal-mines owned by TVEs, and their annual output accounted for a substantial proportion of coal output, reaching almost half of the total national output in the mid-1990s (Rui 2005; Shen and Andrews-Speed 2001; Wright 2006).⁵¹

Land acquisition is regulated under the Land Administrative Law (NPC 2004). Rural collective land needs to be expropriated by the state prior to mining and commercial construction, with the exception of a limited area designated as ‘construction land’ for use by the collective (Chan 2003).⁵² In the process, land ownership is transferred from the collective to the state. The original landowner (i.e. the village) and users (i.e. the farmers) are compensated for the land loss by the acquiring authority, which in most cases is the county government. The maximum amount for the costs of resettlement and compensation for land loss is capped at 30 times the annual land productivity (Art. 47, Land Administration Law, NPC 2004). Subsequently, the use rights to converted state-owned land can be assigned to new users in a commercial (against a premium, e.g. for companies or industries) or non-commercial way (against a below-market fee or for free, e.g. for public bodies, schools, and hospitals).⁵³

However, there are legal loopholes. For one, the Land Administrative Law, and other relevant laws and regulations, do not stipulate what mining land comprises, as that relates to different areas, including the surface for open pit mining; for office and processing complexes; and for overburden and tailings or mine waste (Li 2014; MLR 2013; Sun and Xiao 2011). This issue was later addressed in a formal interpretation by the Workgroup on Mining Land Use Policy initiated by the Ministry of Land and Resources, which defined that mining land was to be understood as the operational areas for surface mining, as well as the area for mining waste and tailings (MLR 2013:1).

In line with this, land acquisition, resettlement and compensation procedures apply to open-pit mining where the surface land is directly *occupied and used*.⁵⁴ In contrast, in the

⁵¹ In the pre-reform era, the coal production in China was largely monopolised by state-owned coal mines. The output of small scale mines, that were mainly owned by people’s communes, only accounted for less than ten percent. Then in the early 1980s, collectives and individuals were encouraged to use their own funds to engage in mining projects. During the early 1990s, TVE coalmines accounted for a substantial proportion of coal output. Recognising the serious environmental impacts and squeeze of SOE margins by the rapid development of small scale mines, China initiated an systematic crackdown on small mines in the late 1990s and early 2000s. Consequently, the share of TVE out of the national output dropped from nearly half to 26.9% in 2000 within five years (Shen and Andrews-Speed 2001:250). However, its share gradually increased again to around 38% in the 2000s.

⁵² As is the case for the TVEs and for public buildings of the village, such as for office use, schools and infirmaries.

⁵³ For more information on the exact structure of the rural and urban land markets, see (Ho 2013).

⁵⁴ The principle is also applicable to the acquisition of land to build large or medium-size water conservancy or hydroelectric projects. There are specialized laws and regulations on the compensation and resettlement for land acquisition in the case of large or medium-size water conservancy or hydroelectric projects in general (State Council 2006a), and the Three Gorges Dam in particular (State Council 1993, amended in 2001). These

case of underground mining, where the surface land is *not directly occupied and used* by mining companies, there is no legal requirement for the expropriation of collectively-owned land. This becomes a problem when rules for compensation and FPIC for underground mining are absent. As will be ascertained below, these are precisely the areas where other legal loopholes are lurking.

6.3.2 Free, prior and informed consent

The Chinese legal framework is practically undefined with regard to the second dimension of MIDR, i.e. the principle of FPIC, defined as:

- Free, implying that there is no manipulation or coercion;
- Prior, meaning that agreement is sought in advance of the mining;
- Informed, requiring sufficient information on the mining, including its nature, impact, reversibility, rationale, and duration;
- Consent, referring to a negotiation between the government, mining company, and farmers in which participation and consultation are safeguarded.

In its first administrative measure in 1980, the State Council required mining companies to inform affected communities. Yet, markedly, in the same measure, it is stipulated that:

“[C]ommunities are not allowed to build residences and factories within the mining area without permission; if not, the coal mining company cannot be held accountable for relocation and compensation” (Article 6 State Council 1980).

It thus appears that communities need to inform and ask permission from the mining companies, rather than vice versa.⁵⁵ Moreover, when housing construction and land use occurs *after* mining has taken place, relocation and compensation is no longer the responsibility of the mining company (unless it was explicitly allowed by the company).

These regulations might perhaps make some sense from the perspective of open-pit mining (which, as we have seen above, requires the ex-ante acquisition and compensation of rural collective land). Contrarily, they become instantaneously problematic when underground mining is involved, because the consequences of underground mining: 1) might only become apparent many years after mining has already commenced; 2) might occur in a completely different geographical location where the above-ground administrative, processing and waste facilities are situated.

Following the same logic for open-pit mining, and pressured by the nation’s growing demand for coal, the State Council ordained in its 1983 measure:

regulations clearly state the procedure and compensation standards for resettlement and land (for construction use, and the inundated land).

⁵⁵ This was stipulated again in the 1996 Law on Coal (Article 60 NPC 1996b).

“Villages with coal underneath shall move within the prescribed time limit. If they do not abide by this, the coal mine can extract coal *at will*. Any loss and damage shall be borne by the local government and the household(s) that are unwilling to move, and will fall *outside* the responsibility of the coal mining company” (Article 2, State Council 1983, italics added).

In this measure, the State Council ruled out the consent of the landowner, thereby enabling the mining company to extract without consent or without prior notification. Also, in later years, the principle of FPIC has not been included in laws and regulations.

It should be noted that our research found no evidence that Environmental Impact Assessment (EIA) plays a significant role in preventing or mitigating MIDR. For one, EIA focuses on air, water, solid waste, and noise pollution and is the jurisdiction of the Ministry of Environmental Protection. In contrast, land subsidence and reclamation are the authority of the Ministry of Land and Resources and its subordinate departments (Cao 2007:478), which as referee and player, are contradictorily also charged with the exploitation of mineral resources.⁵⁶

6.3.3 Compensation standards

Under the current institutional framework, villages and farmers have no legal basis to protect their interests until damage on the surface has occurred. Moreover, when evidence is lacking during the mine’s construction or early operation phase, villages and farmers have no formal rights to claim compensation. There have been many discussions about the need for revision of the long outdated 1996 Mineral Resources Law, and the 1996 Law on Coal. However, at the time of this writing, mining laws adopt the possibility for compensation only in a passive and *ex-post* manner. For instance, aforementioned laws merely stipulate that:

“[A]nyone who, during the mining of mineral resources, causes losses to the production and well-being of other persons shall be liable for compensation and shall adopt the necessary remedial measures” (Art. 32, Mineral Resources Law, NPC 1996a, Law on Coal, 1996b).

Unlike resettlement due to urban construction and hydropower development, national law (NPC 1996a; State Council 1980) provides no standards for compensation induced by mining (Liu et al. 2006; Lu 2002). As a result, the compensation to property damaged by mining is estimated according to local standards.

⁵⁶ There are also no indications that Resettlement Action Plan (RAPs) as part of the EIA are systematically formulated. As Owen and Kemp (Owen and Kemp 2015:280) mention: “*The practice of making RAPs publicly available is rare, and where RAPs are released for public consumption, it is often to satisfy lender requirement, rather than to build or support knowledge in this area.*” In the database on RAPs worldwide by Kemp, only 1 case was found in China, prepared to satisfy the requirements for an Asian Development Bank loan. Amongst the 27 visited villages, my fieldwork only identified one case in Gaolou Village, Xushan County.

Paradoxically, few local governments have set rules on the compensation for land affected by mining-induced subsidence, while the standards are low. For instance, in standards set by Jiangsu Province, collective land subject to subsidence of over 1.5 meters (and no longer usable for agriculture) shall be requisitioned and compensated at a maximum of 14,400 Yuan per mu (1/15th hectare), or 12 times the annual land productivity (ALP) (1,200 Yuan/year/mu) (Jiangsu Provincial Government 2004). ⁵⁷ This is well below the compensation for land expropriated for urban construction (30 times of ALP) and hydropower development (16 times of ALP). Moreover, according to calculations by Deng et al. (2010, p.26), the actual reclamation costs have already increased from 2,500-4,500 Yuan/mu to 5,000-10,000 Yuan/mu, and can be even as high as 30,000 Yuan/mu. At the time of writing, most other mineral resource-rich provinces do not have such regulations, and compensation is based on piece-meal negotiations between the mining companies and affected farmers.

Regarding the compensation for housing, three methods at the local level can be distinguished. The first is household-based compensation. According to this method, each household, regardless of the number of individuals, is entitled to a fixed amount (as is the case, for instance, in Xiushan County, Chongqing) or a payment in Kind (e.g. Binxian County, Shaanxi).⁵⁸ The second method is floor area-based and calculated by the total area of the house multiplied with a pre-set standard. The building material is at times considered in the compensation. Shandong Province, for example, compensates a house constructed with earth and timber against 150 Yuan/m², compared to 250 Yuan/m² for a house built with brick and concrete (Shandong Provincial Government 1989, 1999). The measurement and calculation for each individual house entails considerable transaction costs. To simplify procedures, a mix of the first two methods has been developed. According to the third method, each member of the household is entitled to a specified area size multiplied with a fixed compensation. By illustration, Jiangsu Province entitles each household member to 25 m² of the housing against a compensation fee of 180 Yuan/m², which amounts to 4,500 Yuan per person (Deng et al. 2010; Jiangsu Provincial Government 2004:1). As we will see in the empirical section 6.4.3, the compensation for housing is often insufficient to allow resettled farmers to purchase new housing in the relocation village.

6.3.4 Legal liability

In this section, we examine the final dimension of Chinese MIDR, the issue of legal liability. The principle that whoever causes damage shall be liable, in other words, the Polluter Pays

⁵⁷ For subsidence between 0.5 and 1.5 meters, the mining company shall pay 2,500-4,500 Yuan per mu to the collective for reclamation (i.e. restoration of the land to its original state, a responsibility normally charged to the mining company and not the collective). For land subsided less than 0.5 meter, mining companies shall pay the farmers compensation for agricultural loss capped at 750 Yuan/year/mu.

⁵⁸ In Xiushan County the affected persons are treated similar to those affected by earthquakes, rainstorms, and hail, providing each household with 50, 000 Yuan. In Binxian the compensation consisted of housing in the relocation village.

Principle (PPP) or in our case, “Miner Pays Principle”, for that matter, has to some extent been incorporated in certain laws and regulations since the early 1980s. In its first administrative measure on Coal Extraction under Buildings and Villages, the State Council(1980) stipulated that the mining company is responsible for the costs of relocation (article 4). The principle was reiterated in ensuing laws and regulations.⁵⁹

In the course of time, however, rising mining-induced land subsidence displaced millions of farmers and triggered major conflicts (Zhang 2013). Local authorities and representatives of the National People’s Congress (NPC, China’s parliament) have submitted several proposals requesting funds from the central government to resettle people (Liu 2015).⁶⁰ To deal with these problems, the central state pushed forward a more pragmatic approach since 2003.

In the notice on ‘Speeding up dealing with coal mining subsidence’ (NDRC 2004), the powerful National Development and Reform Commission regulated to address land subsidence – but only related to coal – by differentiating the timing and ownership of the mining project. First, compensation for land subsidence caused after the 2003 notice, would have to be dealt in line with the Polluter Pays Principle. Second, compensation for *existing* land subsidence (i.e. prior to 2003) caused by *key state-owned* coal mines, would be partly paid by the central government (varying between 20-50 percent),⁶¹ while provincial and lower authorities, mining companies and individuals would have to contribute the remainder. Third, for *existing* land subsidence induced by *local* state-owned and collective *TVE-operated* coal mines, no funds would be provided by the central government, and the costs would have to be borne by the governments at and below the provincial level, mining companies, and individuals.

Throughout the reform period to the mid-1990s, SOEs have contributed to a decreasing share of output. In the mid-1990s, the share of TVE coal mines peaked, accounting for almost half of the national coal output. In the late 1990s, the Chinese government initiated a systematic crackdown on small mines. Correspondently, the share of TVE out of the national output dropped from half to 23.9% in 2001. However, the crackdown of TVE is

⁵⁹ For example, article 32 of the *Law on Coal*(NPC 1996b), article 32 of the *Mineral Resources Law* (NPC 1996a), and article 5 of *The Regulation on the Prevention and Control of Geologic Disasters* (State Council 2003b).

⁶⁰ For example, in Shanxi there are about 1.6 million persons displaced by local state and non-state coal mines (Zhang 2013).Dealing with the externalities of land subsidence and resettlement, it was estimated that a sum of 26.3 billion yuan was needed, of which the Shanxi NPC representatives asked for 10.5 billion (40%) from the central government (Liu 2015). The central government has stressed the severity of mining-induced land subsidence. Since August 2014, multiple state agencies including the National Development and Reform Committee, State Energy Administration, Ministry of Land and Resources, and Ministry of Environment Protection have jointly established a research group. A specific field survey on mining-induced land subsidence was conducted in Shanxi, Shaanxi, Anhui, and Shandong Provinces. While the research group submitted a jointed report to the State Council in March 2015, a comprehensive guideline is however not yet available (State Energy Administration 2015a, 2015b).

⁶¹ The proportion is set at 50% for the western and northeastern provinces, 40% for the central provinces, and 20% for the eastern coastal provinces.

ineffective (Andrews-Speed et al. 2003, 2005), its share gradually increased to around 38% in the 2000s (Figure 19). Meanwhile, TVEs are small scale and their number once reached more than 100,000 in 1991. Even after the closure policy, there are still 21,759 registered TVE mines in 2002, in contrast, there are 656 central SOEs, and 2,014 local SOEs in 2002 (Wang 2004:88).

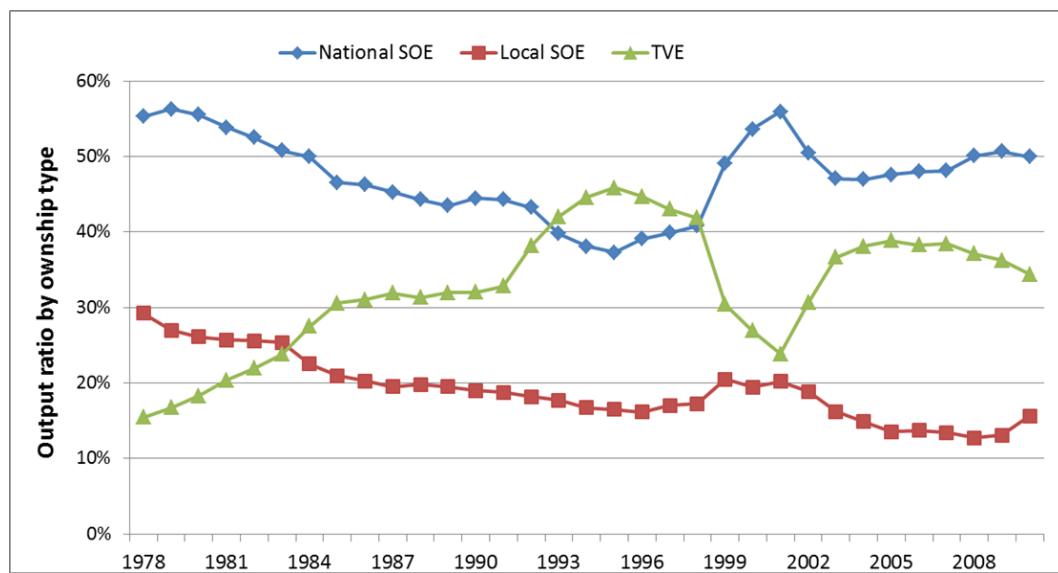


Figure 19 Contribution of different types of enterprise to coal output through 1978 to 2010

Source: Zhongguo meitan gongye nianjian (Chinese coal industry yearbook), various years.

To get a sense of the magnitude and proportion of the caused damage between key state-owned versus local state and collective-owned (or TVE-operated) coal mines, we might turn to Shanxi Province, one of China's foremost coal mining regions. The number of people affected by land subsidence induced by local state and collective-owned coal mines was almost 2.7 times higher than those affected by key state-owned mines (or 1.6 million persons as compared to 0.6 million) (Zhang 2013:94). Although perhaps logical from a "Miner Pays" perspective, as the local state and collective mines are held liable for the bulk of the costs for their caused damage, the current manner of compensation might be inadequate in light of the skewed proportion of damage caused by local state/collective versus key state mines. In other words, the sheer extent of the damage raises questions whether the local state, and more importantly, the (smaller and fragmented) collectives, will be able to foot the bill. Furthermore, one may also question why the central government is only partially liable for damage caused by key state-owned mines, while local government and collectives are fully liable for damage caused by the mines under their operation.

Based on the previous review, the institutional framework on MIDR in China can be summed up as follows. One, laws and regulations are primarily focusing on externalities caused by above-ground, rather than underground mining activities. Two, the principle of Free, Prior

and Informed Consent for people affected by mining is not recognized in national law. Three, there are no national regulations and standards for compensation for mining-induced damage and resettlement, while local standards are few and set too low. Four, although the Polluter Pays Principle has been included in certain mining laws and regulations, this is only partially so (mainly related to coal), while the distribution of the liability between central and local state/collectives might still need readjustment.

We believe the current institutional framework described above to be at the root of the tensions and conflict over land subsidence and forced displacement in the mining areas. The four institutional dimensions discussed here will be applied as a benchmark for further comparison with the empirical results in the next section.

6.4 Survey results

6.4.1 Land rights: subsidence displaces, not land expropriation

During the fieldwork, it became clear that mining-induced land subsidence is the major cause of farmers' displacement and resettlement, instead of land expropriation. In the 27 investigated villages spread over the country, the latter occurs on a small scale: 12.5% of the respondents in the relocation villages and 31.2% of the respondents in the non-relocation villages state that part of their land was expropriated for mining. It should be noted that agricultural land in China is highly fragmented, for instance, previous surveys found that each household has on average around six plots of land scattered around the village (Ho 2005; Tan et al. 2005). As expropriation is concentrated around the mining operational sites, households in general only lose part of their land to expropriation (and are thus also only partially compensated).

However, land subsidence did cause large-scale displacement and often entire villages had to be resettled. Among the 11 relocation villages, 83.6% of the respondents ($n=120$) considered land subsidence in their original villages as 'very severe' and 'severe'⁶², indicating that they were relocated after visible and serious land subsidence. Two of the investigated villages were even relocated for a second time after their first relocation village also became prone to mining damage. Also in the villages that had not been scheduled for resettlement, mining-induced subsidence was regarded as a serious problem. Among the 16 non-relocation villages we studied, 78.8% of the respondents ($n=110$) considered land subsidence 'very severe' and 'severe' (see Figure 20 and Figure 21).

⁶² A five-point Likert scale was used to measure the severity of land subsidence and house damage with 1=negligible, 2=alight, 3=moderate, 4=severe, and 5=very severe.



Figure 20 Land subsidence in Laizibao village, Huayuan

Source: Taken by the author.



Figure 21 A damaged house in Caizi village, Peixian

Source: Taken by the author.

6.4.2 FPIC: Involuntary or voluntary resettlement

This chapter found that villages residing at some distance, compared to those located nearest to mining companies, would be more likely to suffer from land subsidence. Mining companies would presumably withhold from extracting resources under their own buildings. Therefore, communities in the direct proximity of the mining companies' work environment would (temporarily) not be affected by land subsidence. However, it is more difficult for farmers living at some distance to the mines to predict whether or when they will be affected. They were aware or concerned about the mining until after the damage to land and housing started to occur.

To gauge whether respondents felt involved in the displacement and resettlement schemes, we asked them about their willingness to be relocated. The majority (or, 68.7%, n=110) of the respondents in the 16 non-relocated villages, actually hoped to be relocated. The remaining percentage of those who were not willing to be relocated showed concerns about inadequate compensation and expected their living costs to increase in the future. Over half (or, 54.2%, n=120) of the respondents in the relocation villages were voluntarily relocated.

Amongst the 16 non-relocated villages that are currently subject to mining-induced land subsidence, only five were notified of a possible relocation, which had been postponed for two to three years due to delays in the construction of the new relocation villages. While awaiting relocation, most villagers had to find temporary accommodation themselves or stay in with relatives. In the remaining 11 villages that had not been relocated yet, affected farmers did not know when the relocation would take place, and were unaware where they would be relocated to.

Visible damage and a high willingness to be relocated were no guarantee that farmers could be relocated in a short term. This chapter found that in the 11 relocated villages the average time to be reallocated was 6.3 years ($SD=3.6$) after the first signs of damage. The lag in relocation has triggered significant social tension. In 19 out of 27 surveyed villages, collective complaints had been lodged through “letters and visits” (*xinfang*) or the Chinese petitioning system (Li and O’Brien 1996; Michelson 2007; Minzner 2006). Of these, nine villages had resorted to the highest and final means of petitioning, and had lodged their complaint with the central authorities in Beijing.⁶³ Nine villages (among them, four lodged their complaint in Beijing) also reported (violent) confrontations with mining companies, such as sit-ins, strikes, demonstrations and even destroying facilities and mining equipment. In one case the protestation with the use of roadblocks proved successful, and led to a prioritized relocation of the village after the provincial governor had paid an inspection visit (Han 2014; Zhou 2013).⁶⁴

6.4.3 Compensation: Too low, too little

Affected farmers were compensated in two steps: first, they received compensation for the original house. Second, they were entitled to purchase a new house at the relocation village. The farmers could choose how to spend their compensation fee, for example, by buying a house in the urban areas or by using the fee to construct their own property. In practice, buying a house in the city was constrained by household income, the rapid increase in urban housing prices, and employment opportunities. As a result, most households chose to be resettled at the relocation villages built by the local government. In these cases, the compensation was not paid to the household, but instead kept by the authorities.

Even when farmers were resettled in the relocation village, there was a substantial difference between the compensation for the original house and the purchasing price for the new property. For example, in the surveyed villages in Shandong and Jiangsu Province, each household member was entitled to 30 m² floor area, regardless of the actual household size, which was compensated against 150 Yuan/m². In contrast, the price for new housing in the relocation village was more than 5 times higher, namely 760 Yuan/m². In Chongqing Municipality, each household received a flat compensation of 50,000 Yuan,

⁶³ One of the relocation villages was directly influenced by letter petition to the then Premier, Zhu Rongji. According to a farmer who initiated a group letter petition (Uncle G, Interview, 24-July-2015), a petition letter co-signed by more than 20 villagers was directed to the premier, Zhu Rongji. Accidentally, this letter was noticed by the General Office of the State Council, which transmitted it on 3rd June 1999 to the corresponding provincial government with the order to investigate it. The local government promptly set up an investigation group, and facilitated the relocation process. A copy of the official reply by the General Office of the State Council, and assessment report by local investigation group was provided by Uncle G, and is on file with author.

⁶⁴ Since 2011, large scale land subsidence began to occur in Xingyuancun village in Shuzhou, Shanxi. When villager became aware that the then provincial governor planned an inspection visit to the nearby coal mine, villagers blocked the road (Zhou 2013). In November 2014, the local district government drafted a plan to relocate the affected persons. Among the 47 affected villages (including 11,500 households and 32,744 persons) officially identified by local government, Xingyuancun (50 households) was selected as pilot project for relocation (Han 2014).

regardless of household size, while the price for the new house at the relocation village was almost three times as high, namely 148,000 Yuan. Thus, in order to buy new housing, households had to use the entire compensation fee in addition to their own funds.

We also observed other sources of conflict about the locally determined compensation standards. Under the household based compensation scheme, elderly parents were not counted as a separate household, but as a single household with one of their sons (while daughters were not entitled to separate household status). This was the case, even if elderly parents lived independently from their son(s). Not entitled to compensation, elderly parents were forced to live with their male offspring. However, we discovered several instances, in Xiushan(Chongqing), and Binxian (Shaanxi), in which uncompensated elders were not welcomed by any of their sons. As a result, they were left behind, staying alone in oft dangerously damaged houses, while the rest of the village had been moved out.

Pressured by the low compensation, some households had built an additional floor on top of their original house in order to receive more (Figure 22). It is a phenomenon that has also been reported elsewhere (Song, Tao, and Xu 2009; Zong 2012).⁶⁵ As a result, in certain areas in Shandong and Jiangsu, farmers were denied compensation in full for the newly built annexes. In response, local government also changed the criterion for compensation from an area-based to a flat-rate based on household size (the third method of calculation, as described in Section 6.3.3).



Figure 22 Additional floor on top of the original house in Nanzhang village, Yanzhou, Shandong

Source: Taken by the author.

⁶⁵ The same phenomenon has also been reported for urban development (Lora-Wainwright 2014; Zhao and Webster 2011).

With regard to the new housing in the relocation village, less than half of the respondents (43.8%) expressed satisfaction with the building quality. From the interviews, it was found that relocated farmers often complained that relocated houses had been poorly built and badly maintained, as various problems, such as water leakage, wall peeling and crack, were identified upon moving in. On a slightly positive note, the majority of respondents found basic infrastructure and utilities at the new living environment convenient, including improved transportation (satisfaction rate 87.6%), electricity (satisfaction rate 90.1%), and tap water supply (satisfaction rate 72.7%) (Figure 23). This can be explained by the fact that the relocation villages are mostly located on the outskirts of the township government seat.

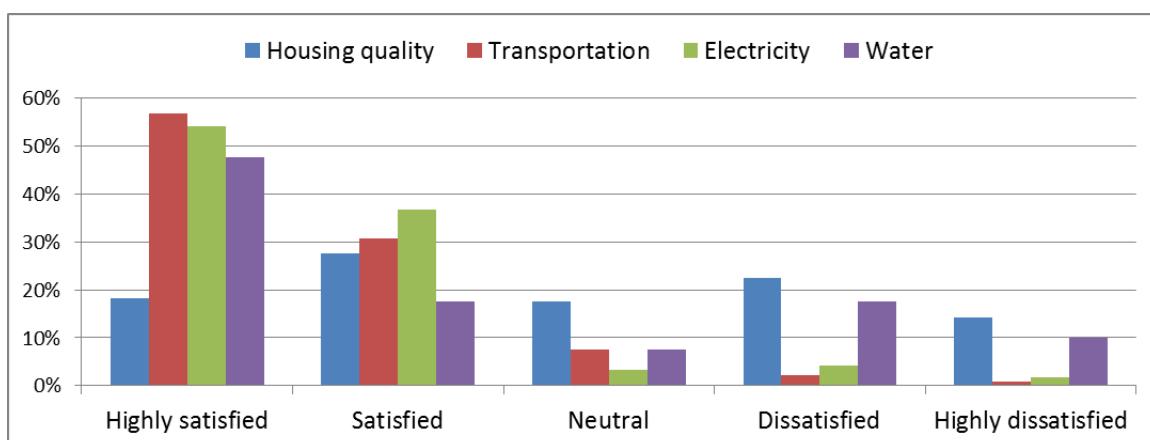


Figure 23 Satisfaction with the living environment in relocation villages

Source: The survey.

Resettlement also had a negative effect on farmers' farming operation. The overall majority of respondents (93.9%) maintained that mining had adversely influenced the land productivity in the original village. Compensation for agricultural productivity loss was problematic. For instance, in Jiangsu Province, the compensation standard for land productivity loss was capped at a maximum level insufficient for the farmer (i.e. 750 yuan/mu/year, Jiangsu Provincial Government 2004, p.1). In other places, such as a village in Xiushan, Chongqing, it was negotiated between the mining company and local farmers according to the degree of land productivity loss. The compensation was paid annually, but was at times delayed. At other places, such as a village in Shuzhou, Shanxi, the loss was not recognized by mining companies and farmers were granted no compensation.

Resettled farmers received no new land, but remained dependent on agricultural land in the original village. As the relocation villages were located at some distance from the original villages, farming had become more difficult, while many had difficulty in securing off-farm jobs. Farmers complained that they had to spend hours on foot to cultivate farmland in the original village. In consequence, some were forced to abandon the land, and instead rented farmland nearby the relocation village. Although not being landless

farmers in the strict sense of the word, as respondents were still entitled to land, they often likened themselves to landless tenants in the “old, feudal society”; a socio-politically sensitive image, as it refers to the resurfacing of the cleavages and inequity of pre-Communist times.

Finally, there was also concern amongst the relocated respondents about the increased cost of living. Only 31.7% of the respondents stated that their household income had increased. In the relocation village, fees for water and gas were higher than what farmers paid in the original village, and virtually none of the respondents stated that the living expenses decreased. For 36.7% of the respondents monthly living expenses had “significantly increased”. As the compensation was mostly spent on the purchase of new housing, while agricultural productivity had been adversely affected and off-farm employment was limited, most farmers were deeply concerned that their livelihood on the medium or long term could not be maintained. Tellingly, a 60% of surveyed farmers expressed regret at having been relocated.

6.4.4 Liability: ‘Miner pays’ is ineffective

As discussed in Section 6.3, the formal regulations in China stipulate that MIDR should be managed by the state, whilst being financed by the mining companies. We asked respondents who they thought should be financially responsible for relocation. Only 5.2% of respondents themselves were willing to contribute to the relocation costs (Figure 24). Yet, in reality, the displaced farmers had to make up for a large share of the resettlement costs.

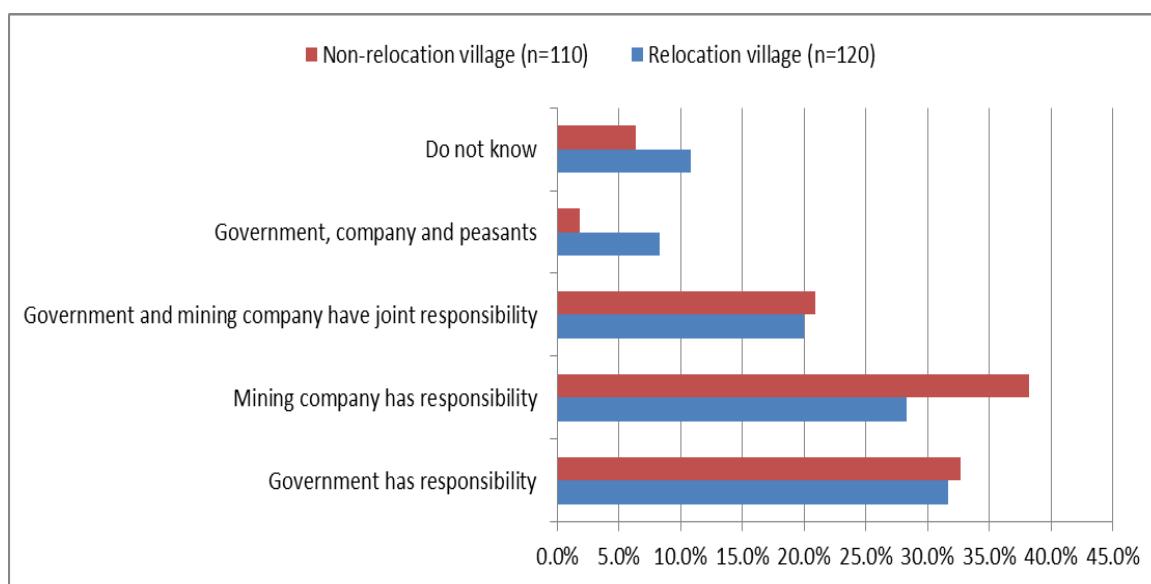


Figure 24 Who ought to be financially responsible for the relocation cost?

Source: The survey.

Many farmers feel that it is the government that attracts and introduces mining companies, while the mining companies have handed the funds for relocation to the government. It is

probably why approximately one-third of respondents believe that the government should be liable for the cost of resettlement, while a similar amount of respondents believe that mining companies should take full responsibility (see Figure 24).

The respondents were not aware of the source of relocation funding. In Xiushan, Chongqing, a government report on the source of funding was unexpectedly obtained. In this particular case, relocation funding was obtained through from various departments, and through different sources: the Department of Land and Resources secured 2 million Yuan from the Golden Land Project (a national geological disaster prevention and relocation project) and 3.25 million from environmental recovery bonds; the County Development and Reform Council used 3.5 million from an ecological migrant fund; the Poverty Relief Office used 3.5 million from their poverty relief and relocation fund; and the county government was responsible for the remaining 3.5 million. Note that in this case, none of the compensation was provided by the mining companies involved.

6.5 Conclusions

Mining has displaced millions of farmers and has incited great tensions in Chinese rural society. This chapter ascertained that the reasons for the large-scale mining-induced displacement and resettlement or MIDR are rooted in China's current institutional framework.

First, the present laws and regulations cater to open-pit mining, rather than dealing with underground mining. This creates serious problems, as land subsidence due to underground mining is a major cause of MIDR in China. Land subsidence leads to damaged housing and cropland, and has had great influence on farmers' daily life and livelihood. From our fieldwork and surveys conducted in different parts of the country, we found that land subsidence was perceived as a major issue by most respondents.

Second, the national law on mining does not acknowledge the principles of Free, Prior and Informed Consent, not in the case of the mining itself or in the case of mining-induced resettlement. This was also supported by our empirical data. We found that a majority of the farmers were ill-informed about resettlement, whether, and if so, when it would take place. Uncertainty about the details of resettlement coupled with the ongoing and increasing mining-induced damage, led to significant disputes. In the 27 surveyed villages, it was found that 19 villages had lodged formal complaints to the local and central authorities, while nine had witnessed, at times violent, confrontations between farmers, mining companies, and local government.

Third, to date, there are no national standards that address compensation for mining-induced damage and resettlement, while local standards are either lacking or set too low to compensate for actually incurred costs. The lack of national and local standards is reflected

in our data. Relocation is often only used as a measure of first, and in fact, also *ultimate* resort by the local government and mining companies. In other words, little is done to compensate farmers unless damage has reached serious levels. What can be done at that stage is little more than relocate the village. This is problematic on several accounts: i) resettled farmers have to purchase new housing in the relocation villages, and albeit subsidized, the price is significantly higher than the compensation they receive for their old house; ii) farmers are often not allocated new farmland in the relocated villages, but are dependent on their original land, which increases costs as farmers have to return to the original village for farming; iii) farmers have expressed great concerns about the rise in living costs, which apart from the aforementioned two factors, is also exacerbated by the scant opportunities for alternative and additional off-farm employment.

Four, there are insufficient stipulations on the liability of the state in the form of the Polluter Pays Principle. In the case of land subsidence by coal-mining, the company is responsible for the costs of relocation, while the (local) government is charged with the logistics of relocation. However, we believe that primarily holding the mining company liable might be insufficient to deal with the problem at hand, because of a triple reason:

- i) The magnitude of the problem, it was estimated that in Shanxi Province alone over 2 million people have been affected by mining-induced land subsidence (Zhang, 2013, p.94). With many more (and some densely populated) coal-producing provinces, such as Shaanxi, Shandong, and Sichuan, this figure can be expected to be significantly higher, let alone, when accounting for other minerals mined under-ground (e.g. lead, zinc and manganese);
- ii) The long-term neglect of the problem, as only until 2003, was the liability for coal-mining more clearly stipulated in national rules. This has not only led to the magnitude of the problem, it has also created a pervasive culture of ‘mining first, cleaning up later’;
- iii) Damage by mining is not only caused by state-owned companies, but to a significant extent also by small mines owned and operated by villages and townships. Such mines lack the financial resources, technology, and capability to deal with the consequences of large-scale MIDR.

Due to the externalities caused by mining, the property rights debate regularly flares up, with opposing camps pleading to either privatize or nationalize mineral resources (Dobra and Newman 2014; Leistritz and Voelker 1975). China is oft seen as an outlier, with its state and collective land ownership, separated state-owned mineral resources, and lack of private land ownership. Therefore, there would presumably be all the more reason for a fundamental reform of the Chinese property rights structure.

Table 16 Ownership and compensation for selected mining countries

Country	Land ownership	Mineral ownership	Subsidence compensation (for coal only)
China	Central state and collective	State	Ad hoc negotiated with company
Australia	Crown and private	Crown	State Mine Subsidence Compensation Fund
United States	(Federal) state and private	Landowner (except for e.g. coal, phosphate, ^{nitrates})	State Sponsored Mine Subsidence Insurance
United Kingdom	Crown and private	Landowner (except for e.g. gold and silver)	Coal Authority or individual company

Source: Drawn by Peter Ho based on (Hunt 2001; Leistritz and Voelker 1975; World Bank 2011)

Yet, when compared to other selected countries, China is actually not such an exceptional case in its land and mineral ownership. In effect, what becomes apparent with one glance at Table 16 is that what China lacks, is not so much a particular ownership structure of mineral resources, but a sufficiently effective, state-coordinated effort to compensate people affected by MIDR. It is against this backdrop that we argue for a greater involvement from China's central authorities, not just in the distribution of liability between the central versus the local state, but also in a proactive role in the establishment and administration of state compensation schemes and insurances. The intervention by the central state ensured that resettled would get the compensation to which they were entitled, thus reducing conflict.

6.6 Discussion

In line with the findings in Chapter 5, this chapter also found that the level of conflicts over mining-induced displacement and resettlement is high. The underlying reason is that the farmers are suffering from an unprecedented subsistence crisis: homelessness, landlessness, joblessness, and involuntary resettlement. Farmers are heavily land-dependent, and the land fulfills a decisive role in social security. Mining-induced subsidence had disrupted the land use as a subsistence, while the resettlement process exacerbated the function of having access to land. When urban residents have access to urban social insurance schemes, relocation has detached the farmers from land, and possible mining jobs, to ensure a subsistence.

In addition to the discontent with the levels of compensation for resettlement, as illustrated in Chapter 5, this chapter also finds that the protracted process of relocation and lack of participation are other reasons for intensified conflicts. In the case of the informal conversion of rural land to mining land, a functional institution at the grassroots have been emerged and consolidated as a result of the bargaining and interaction between actors. But in the MIDR process orchestrated by the local authorities, forced resettlement leaves very

few opportunities for affected farmers to become involved and have an influence in the process.

Based on the macro- and micro-level analysis, it is safe to conclude that MIDR in China is a non-credible institution with significant conflict and cleavage. Ho (2016b) explained that institutions that lack credibility can trigger institutional change as a potential outcome, however, this has not yet occurred in the case of MIDR, despite the affected farmers resort to violent confrontation or the petitioning to a higher level. According to the Credibility Scales and Intervention (CSI) checklist (Ho 2016a:1139)⁶⁶, the lower the credibility level, the more the institutional intervention should be. That's why we call for a greater involvement of China's central government. As the credibility of MIDR is low, the central government shall ordain or command what must be done: to distribute the liability between the central versus the local state and to establish state compensation schemes and insurances. The intervention by the central state ensured that resettled would get the compensation to which they were entitled, thus reducing conflict.

⁶⁶ There are five types of intervention, namely, condoning, co-opting, facilitating, prohibiting and ordaining (Ho 2016a:1139).

7 Concluding remarks

7.1 Findings

China's economy strongly relies on manufacturing and other heavy industries, with its production of mineral resources currently falling short of the amount needed to maintain economic growth. This limited resource supply raises questions about China's long-term economic trajectory. Under these circumstances, China has made resource production a high priority. Given China's booming growth of the mining industry, the two-sided impacts it has on local communities, as well as the profound impacts it has on the natural environment, it is important to have *functioning* institutions in place that can reduce the risks and hazards of mining. Therefore, this study aims to explore the function and credibility of mining institutions and their ties with local communities.

Accordingly, the central research question that the book proposed is: ***How do mining institutions affect the local communities, and to what extent do the rural residents perceive these institutions as credible?***

This question is divided into four sub-questions, each addressing a separate but related issue. The first question is formulated as follows: "*How do mining activities affect local communities' livelihood and the residents' perceptions of mining?*" To answer this sub-question, Chapter 3 started with disaggregating four major impacts that mining brings about. It found that mining did bring employment opportunities for local communities and thereby positively affected the perceived net benefits. However, this was undermined by numerous negative impacts, especially mining-induced land subsidence and resettlement. As a remedy, relocation did help the affected farmers out of their deteriorated situation. However, the protracted process of relocation, insufficient compensation, and the concern for long-term livelihood (also illustrated in Chapter 6) does not significantly raise the perceived benefits among the relocated farmers comparing to those who are not affected. This study revealed

that only about 20% of residents living in mining areas consider mining as beneficial. In sum, the majority of respondents find that mining activities do not bring net benefits.

The second sub-question “*What factors influence the attitude and actions of local communities towards the environmental impacts of mining?*” was addressed in Chapter 4. This chapter examined the rural residents’ involvement in environmental activism (EA) in mineral-based counties. Factors influencing the respondents’ participation in EA were also identified. The survey found that the level of the EA in rural mining areas is surprisingly low. Of the respondents, 44.3% had never taken any action against the polluting mines. Markedly, economic dependency on mining complicates the relationship between pollution and EA. In this sense, it is important to note that this study found that residents once employed in mines are *less likely* to participate in EA. Regression analysis indicated that the EA level is best explained by three predictors: the neighbors’ participation, the intention to engage in EA, and the seriousness of pollution. Perception of the neighbor’s participation plays the most important role in the explanation of the EA level, which is line with the relatively high percentage (17.3%) participation in the collective protests against polluting mines.

While in scholarship mining is often paired with conflicts, most studies are built on case studies that describe a particular conflict in more detail. However, a more systemic approach to gauge the mining-related conflicts in China’s context is found absent. Therefore, the third sub-question is formulated as: “*How can we measure the level and intensity of mining conflicts and what can be said about China’s mining conflicts at the national level?*”. This question was addressed in Chapter 5, where a conflict analysis model is developed in order to more structurally and systematically analyze environmental conflicts in terms of the source, actor, frequency, nature, timing, duration, intensity, and outcome of the disputes. The conflict analysis model is applied in the case of the Chinese mining disputes and helps to identify several important characteristics of conflicts.

Firstly, we identified the causes of two major types of conflict: 1) Conflicts pertaining to land acquisition that revolve around the disagreement over land rent between farmers and mining companies; 2) Conflicts induced by land subsidence and resettlement that centre on the protracted process to relocate, low compensation, and lacking long-term livelihoods. Secondly, there is a high degree of government involvement in mining-induced land subsidence cases. Government agencies were challenged in court due to their role as an arbitrator for determining the responsible mines for land subsidence, as an implementer for relocation, but also as a regulator for setting the compensation standards. Thirdly, perceivably, the land acquisition and relocation conflicts shall occur at the construction stage before mining begins. However, conflicts, in reality, tend to concentrate at the operation stage. Fourthly, by assessing the level of litigation and appeal rate, we may have an idea of the seriousness of the conflict. This study has demonstrated that the conflicts on land acquisition feature a low intensity, but the mining-induced land subsidence and

resettlement display a high intensity in terms of collective litigation and high appeal rate. Finally, inconsistent decisions were made by courts and in most cases were not solved in courts. These two points indicate that the legal procedure does not provide a satisfactory solution, channel the grievance, and end the disputes. The root for the persistence of conflicts in courts is caused by lawmakers who designed the rules in such a way that are not compatible with local circumstances. However, it is the judiciary that assumes the blame for inconsistent outcomes.

In order to understand the extent to which and how legislation has influenced the local communities, a separate empirical analysis was made on mining-induced displacement and resettlement. The final research sub-question was proposed to this end: *What are the institutional factors that influence Chinese mining-induced land subsidence and displacement, and what are the economic and social consequences for farmers affected by it?*

In this regard, Chapter 6 found that displaced farmers were insufficiently compensated for the mining-induced damage. Respondents expressed concerns over higher living costs in the relocation villages, and were ill-informed about resettlement schemes. We also found a widespread conflict between farmers, mining companies, and local government, this being the case in over two-thirds of the surveyed villages. Through additional institutional analysis, it is ascertained that existing policies and laws predominantly focus on the surface rather than underground mining. Compensation is rarely provided unless damage to land and housing has grown to unmanageable proportions. In result, displacement and resettlement is generally chosen as a sole, yet, final solution.

7.2 Credibility of China's mining institutions

To answer the central research question, we synthesize the findings of the four empirical chapters into three categories of mining institutions and their credibility, as in Table 17. When mining activities contribute to communities as a complimentary livelihood opportunity and environmental degradation and land loss does not threaten the livelihood of the local community to a great extent, most farmers take an accepting attitude towards mining. However, when the function of access to land as their subsistence farming is disrupted by land subsidence and ineffective resettlement schemes, the resistance to mining increased. Meanwhile, the institutional arrangements did not provide sufficient protection and sustainable livelihood, the credibility would definitely decrease. Each category will be explained in more detail below.

Table 17 Credibility of China's mining institutions

Institution	Formal prescription	Effect	Social support	Contestation	Credibility
Mining land expropriation	Land conversion should be through the local government	Largely ignored and replaced by direct land lease	Replacing institution is supported	Little contested	Empty institution
Environmental protection	Sustainable development	Severe environmental pollution	Silent majority	Low environmental activism	Empty institution
MIDR	-Cater to open-pit mining, rather than underground mining -No national laws on mining resettlement	-Forced resettlement -Insufficient compensation -'Miner Pays' ineffective	- low support	-High level of (violent) conflicts -Litigations against local authorities	Non-credible

Source: By the author.

The institutions of mining land expropriation in China have emerged as an 'empty institution', of what Ho (2016b, 1147) describes as an institution that is largely ineffective and ignored, but simultaneously socially accepted and little contested. It is found that regulations on mining land expropriation – which stipulate that land conversion should always go through the local government first – are largely ignored. Instead, mining companies directly rent land from village committee and farmers, where local communities could negotiate the price and reap benefits from land added value, the mining companies could start the exploitation from bypassing the formal regulations of land conversion, and the local government could generate revenue from mineral production. Therefore, this 'rule-in-use' is not only conducive to mineral exploitation, but also rallies social support from all three actors at the local level: the authorities, mining companies, and farmers.

Furthermore, conflicts induced by non-formal practices of land lease, as examined in Chapter 5, are mostly between farmers and mining companies due to the disagreement over compensation. The conflicts tend to concentrate at the operation stage, instead of at the construction stage before mining begins. In this sense, relative operational stability is obtained over prolonged periods of several years. Moreover, the conflicts on land acquisition are with a low intensity, as demonstrated in Chapter 5, where most litigation cases are initiated at local basic courts.

In sum, formal regulations on land expropriation are replaced by direct lease, and albeit in violation with official procedures, it facilitates the mineral exploitation at the local level. While the official institutions that regulate mining land expropriation are left as 'empty institution', more functional and informal institutions are created and consolidated at the local level.

The second category pertains to the institutions on environmental protection. China has developed a comprehensive system of environmental protection,⁶⁷ with a trend towards stricter and more specific legislations (Van Rooij 2006). However, numerous studies have pointed to the issues of the weak implementation of environmental regulations in China (He et al. 2014; Van Rooij 2006; Zhang et al. 2010), and the huge costs of pollution (He et al. 2012; World Bank 2007). This study did not delve into any specific environmental laws or regulations, instead looked into the local communities' attitude and reaction to mining induced environmental pollution. This study found that there is a low participation in environmental activism, even in the case of when environmental degradation is perceived as severe. This indicates that environmental protection and claims for environmental justice has not yet a commonly shared rule. The findings in this research, therefore, jointly with other studies, indicate that environmental regulations are very likely to become 'empty institutions'.

The third institution examined in this study is the MIDR, which has become a non-credible institution. The non-credibility of MIDR exhibits at the macro and micro level. At the macro level, Chapter 6 has demonstrated that 1) existing policies and laws predominantly focus on the surface rather than underground mining; 2) the principle of Free, Prior and Informed Consent for people affected by mining is not recognized in national law; 3) there are no national regulations and standards for compensation for mining-induced damage and resettlement, while local standards are few and set too low; and 4) the distribution of the liability between central and local state/collectives are not clear.

Therefore, the institutional loopholes have led to the tensions and conflict over land subsidence and forced displacement in the mining areas. The farmers are undergoing accumulative livelihood dispossession: landlessness, joblessness, homelessness, involuntary and forced resettlement, and so on. Compensation is rarely provided unless damage to land and housing has grown to unmanageable proportions. The protracted process of relocation and lack of participation have also intensified the conflicts. They have initiated litigations and overtly confrontations against mining companies, township and county governments, or built an extension on top of their original house.

7.3 Institutional credibility debates revisited

As this study demonstrated, the Credibility thesis proves to a useful theoretical framework for understanding how institutions came about and evolve. Firstly, it provides an approach, namely, *an Archaeology of Institutions* (Ho 2016a), to study and interpret the institutional changes. Secondly, it offers ways to operationalize the institutional credibility. More

⁶⁷ For example, till 2013 China has issued 10 environmental protection laws, 20 resources conservation laws, and 69 pieces of environmental administrative regulation by environmental protection bureaus, and over 700 regulations by local governments (CCICED 2013:7; Zhang and Wen 2008).

thoughts about the applicability and usefulness of the Credibility thesis is elaborated as below.

7.3.1 Function and credibility

As presented in the introduction, various scholars (E. Johnson 2010; Naito et al. 1999; Otto and Cordes 2002) have identified a list of ‘ideal-type’ functions and objectives that mining institutions should facilitate mining exploitation for the benefit of the society, ensure appropriate economic distribution among actors, and protect the environment.

This study applied the credibility thesis in the context of mining in China and particularly examined how these ‘ideal-type’ functions and objectives are implemented in practice. As concluded in the previous section, the exploitation of mineral resources has outweighed the environmental and land use rights protection. There is a broad coalition in favor of mining in the Chinese context of development and transition. At the national level, an expanding economy and growing population drive the demand for mineral resources; at the local level, mineral exploitation has always been an important way to develop the economy in terms of government revenue, employment opportunity, and poverty alleviation. As for the farmers in mineral resource-rich areas, mining activities provide a chance for rural surplus labor and improve living standards. That is to say, within the overall functions that mining and its institutions intend to achieve, the exploitation of mineral resources is regarded as primary importance by most actors. Therefore, regulations on mining land expropriation and environmental regulations are of secondary importance and frequently left as ‘empty institutions’.

However, it would be a mistake to conclude that ‘empty institutions’ carry no function at all or would impede economic growth. Contrarily, it is exactly the non-enforcement of mining land expropriation and environmental regulations that are conducive to economic development. From the perspective of mineral exploitation, the ‘empty institutions’ have positive outcomes. Fast and unchecked land leasing directly from farmers, the low enforcement of environmental regulations, and the passive and ex-post relocation are conducive to the exploitation of mineral resources, which in turn has fuelled local and national economic growth. On a negative side, mining has brought about devastating issues for the mining workers in terms of large-scale mining accidents, for local communities in terms of severe environmental impacts, but also numerous problems for all society.

Meanwhile, there are inherent risks in the empty institution that has a tendency to evolve into a non-credible institution. Via the analysis of the conflict at different mining stages and the types of conflicts, we could argue that as the function is shifting and credibility is changing, one institution that functions at one time and space may not work well in another time and location. This is best illustrated in the case of mining land expropriation. In order to achieve the primary function of facilitating exploitation of mineral resources, a legal stipulation for the expropriation of land where underground mining takes place is lacking.

This makes it possible for mining companies to extract without consent or prior notification to the local communities. Then, after a certain time period in the exploitation process, underground mining starts generating large-scale land subsidence. In effect, it is displacing millions of farmers who are then forcedly relocated. The protracted process of relocation, insufficient compensation, and the concern for long-term livelihood has triggered a significant social confrontation. Therefore, the credibility of mining institutions weakens in the context of mining-induced land subsidence and resettlement. In sum, while some institutions appear ‘empty’ in a given mining stage, it could become non-credible when mining operations move to the next phase.

In view of the factors discussed in this book, we maintain that it is crucial to strike a balance between the competing functions of mining institutions. At the macro level, more importance should be attached to sustainable environmental and societal development. At the micro level, when projects affect the livelihood of communities who consider the land as a means of social welfare, it is needed to guarantee that measures are in place to ensure social welfare and alternative employment of the targeted community. If projects are imposed without these, a dual outcome is certain: a lack of credibility of the intervention and the prevalence of social conflicts.

7.3.2 Conflict as a measure of credibility

As argued in this study, the level of conflict can be used as a proxy for measuring institutional credibility. When applied in the case of environmental activism (EA), it is found that the level of the EA is low in rural mining areas. There is a prevailing ‘silent majority’ who have never taken any action against the polluting mines, where the ones once employed in mines are also less likely to participate in EA. Similarly, conflicts pertaining to land acquisition is of low intensity, even when the direct land lease goes against national state regulations on land expropriation. Contrarily, the mining-induced land subsidence and resettlement feature a high intensity in terms of collective litigation and high appeal rate.

Under the situations of different levels of credibility and conflicts, varying degrees of state intervention are also observed. Under the Chinese promotion tournament system for officials (Zhou 2007), where a governor with higher GDP growth within his jurisdiction has a higher chance to be promoted, local officials have the incentive to push for fast exploitation. In the case of mining land expropriation and environmental degradation, where fewer conflicts occur, the local governments opt for a hands-off approach, even when it is against the interest of the central government. However, in the conflicts induced by land subsidence and resettlement, local government agencies are deeply involved as arbitrator (in most instances the local Land and Resources bureau) to identify the polluter, implementer for the relocation project (township government), and regulator (county-level and above) for setting the compensation standard. These agencies were also challenged in courts, petitioning, and confrontations.

The credibility thesis presumes that beyond a certain level of conflict, the existing institution no longer is capable of absorbing it, and new institutional arrangements are likely to emerge (Ho 2016a, 2016b). However, in this study, we have not witnessed any major institutional changes in the regulations on land expropriation and resettlement. Only more passive responses have been observed, for example, in the case of prioritizing some villages that have petitioned to Beijing and staged violent conflicts, on a faster track for relocation. The failure of a new arrangement that is in favour of the local communities may lie in the limited resources and political leverage of the local communities, and the power divergence between the farmers and the Chinese state.

There are also more positive notes. Taking the relocation and demolition (*chaiqian*) for urban development, the core components, including the state's absolute right to transfer rural collective land to urban state-owned land, has not changed. However, studies have found that the room for compensation bargaining has widened and the evictees have more voices in the demolition and relocation process (Wu 2004; Zhu 2004). Similar changes are also observed in the compensation policy for displacement induced by dam construction in China (P. Wang et al. 2013). In this regard, the institutions on mining-induced land subsidence and resettlement are most challenged, and it is also here where we may witness the emergence of new institutions. However, the change direction of the credibility of the new institutions is also context-determined, which may shift into even more non-credible or switch towards the credible side.

7.4 Research reflections

In order to understand the mining institutions and its credibility, this study draws on multiple data collection methods that aim to assess mining's impact on local communities. However, the methodology and empirical findings remain bound by several important limitations which are important to point out for future research.

First, due to limitations concerning the scale and time of conducting fieldwork, this study has mainly centred on the local communities as a unit of analysis. While this provided valuable insights, more research on the mining property rights arrangement from the perspective of the mining company is needed. The fundamental principle of mining institutions in China is that the state is the absolute owner of mineral resources. The mining company can obtain the use rights of minerals, however, they are bound by several restrictions, such as the relatively short term of the mining license, overlapping mining rights within the same area, and limitations on the transfer of mining rights between companies. There are many debates on formality versus informality, tenure security versus insecurity of mining rights aboard (Bastida 2001; Brasselle, Gaspart, and Platteau 2002; Dale 1996; Ubink, Hoekema, and Assies 2009), however few studies have devoted to the security

of mineral tenure in China and how it affects the behaviour of mining companies and local communities.

Second, this study found that economic dependency and environmental degradation have simultaneously affected the local communities' perception and attitude towards the mining industry, thereby influencing the function and credibility of mining institutions at the same time. There remain other important institutional factors, such as work safety, which are not included in this study but may be an important focus for further research. As Wright (2004:643) aptly described, employment in coal mines often means "*rice bowl*", where peasant workers are attracted by the high payments despite working in a dangerous environment. The safety campaigns and closure of small-scale coal mines initiated by the central state have sparked resistance from the powerful coalition of local cadres, mine bosses, workers and farmers (Andrews-Speed et al. 2005; Wright 2007).

Thirdly, this study employed multiple methods across varying sites to generate a comprehensive understanding of what is taking place in China's mining areas. Due to this decision, more in-depth and site-specific knowledge was not obtained. Such knowledge is desired to understand how the functions of institutions shift and how conflicts evolve at a specific place. For example, a longitudinal approach assessing the relationship between mining and development can help us understand how credibility and function lapse over time. In a detailed study on a mining village in Hunan (Lu and Lora-Wainwright 2014), it is found that as change occurs in the role of lead mining as a livelihood resource, the attitude to mining and its resistance shifts, and therefore also its credibility.

Finally, this study mainly delves into the interpersonal, manifest conflict, thus excluding the intrapersonal conflict and the latent conflict. Intrapersonal conflict occurs when an individual is in conflict with himself, struggling with two or more needs and values (Mack and Snyder 1957). As other numerous studies (e.g. Sheeran 2002) and also Chapter 4 have demonstrated, there is a gap between intention and actual behavior. Similarly, latent conflict may exist, but not become visible and observed in this study. How would these points affect the assessment of institutional credibility remains unknown. Therefore, future research is needed to investigate these underlying conflicts from the psychological and cultural perspectives.

7.5 Policy recommendations

This study has demonstrated that the determining factors of successful institutional intervention and development projects lie at the function and credibility of a specific context. The lessons obtained from this study are of use for policy makers. According to the Credibility Scales and Intervention (CSI) checklist (Ho 2016a:1139), there are five major types of institutional intervention associated with various credibility levels. In general, the higher the credibility level, the more minimal the institutional intervention should be.

However, the state's institutional intervention does not consistently take the credibility level into account. For instance, the central government has issued a series of regulations to regulate the small-scale mines (Shen and Andrews-Speed 2001; Song and Mu 2013). However, as the small-scale mines contribute significantly to the local economy, the local state, miners, and farmers are actively resisting this policy. The approach of ordaining, i.e. commanding what must be done, largely neglects the enhanced credibility level of small-scale mines over decades, and hence, intervention faces considerable challenges. In turn, some policy prescriptions fail at the grassroots (Andrews-Speed et al. 2005; Wright 2007).

Mining is a destructive, risky business. Mining conflicts persist not only because the relevant technology remains inherently destructive, but also because institutional arrangements fail to protect the human and natural environment. The resolution of mining conflict is an enduring challenge for authorities in China. Some general recommendations are outlined, where the state should constantly determine how much intervention is desirable according to the credibility.

First, current laws and regulations are primarily based on externalities found on the surface level, rather than underground mining activities underneath. A legal requirement for the expropriation of land where underground mining takes place is lacking, and mining companies are able to extract without consent or prior notification. This distinction between surface and subsurface rights creates inevitable tension. It not only leads to forced displacement of residents but also lacks participation and self-determination. Thus it is imperative for the Chinese government to formulate a sustainable framework to mitigate the risks of displacement and resettlement.

Second, when projects involve the resettlement of communities, it is crucial to consider the land as a means of social welfare, as land plays an important function in protecting farmers from adversities and external shocks. However, the social function of land is often not acknowledged. In the case of MIDR, even though the land of farmers was deteriorated, the relocated farmers were not allocated new land. Meanwhile, the compensation for the damaged house is insufficient for a new house in relocation village. As this study has demonstrated, the relocated farmers were deeply concerned with their changed livelihood. Therefore, measures are needed to ensure social welfare and alternative employment of the affected farmers.

Third, local communities often bear a disproportionate share of the costs of mineral development without adequate compensation and receive an inappropriately small share of the economic and societal benefits. Therefore it is imperative to diversify the sources of incomes and establish long-term benefit sharing schemes.

Fourth, because risk remains inherent in mining, communities need more access to information about the environmental risks. Communities require an accurate assessment of the probability and severity of potential damage and should be well-informed. In the

case of land subsidence, the relevant time horizon is long. Assessment of such complex risk is not a task that rural communities can accomplish on their own. Environmental agencies must have the funding and political independence to regulate risks to community health, and a commitment to public participation that respects the value, tradition and scientific knowledge of local residents. In order to have a sustainable mining development and to avoid or minimize potential conflicts, the local communities should be able to participate effectively in the decision-making processes.

Bibliography

- Abuya, Willice O. 2013. "What Is in a Coconut? An Ethnoecological Analysis of Mining, Social Displacement, Vulnerability, and Development in Rural Kenya." *African Studies Quarterly* 14(1&2):1–21.
- Academy of Macroeconomic Research. 2002. "Woguo Ziyuanxing Chengshi de Jieding Yu fenlei[Definition and Classification of Resource Based Cities in China]." *Macroeconomics* 11:37–39.
- ADB. 1998. *ADB Handbook on Resettlement: a Guide to Good Practice*. Manila. Retrieved (http://adb.org/sites/default/files/pub/1998/Handbook_on_Resettlement.pdf).
- Ahl, Björn. 2014. "Retaining Judicial Professionalism: The New Guiding Cases Mechanism of the Supreme People's Court." *The China Quarterly* 217:121–39.
- Ahmad, Nesar and Kuntala Lahiri-Dutt. 2006. "Engendering Mining Communities: Examining the Missing Gender Concerns in Coal Mining Displacement and Rehabilitation in India." *Gender, Technology and Development* 10(3):313–39.
- Ajzen, Icek. 1991. "The Theory of Planned Behavior." *Organizational Behavior and Human Decision Processes* 50:179–211.
- Ajzen, Icek and Martin Fishbein. 1977. "Attitude- Behavior Relations: A Theoretical Analysis and Review of Empirical Research." *Psychological Bulletin* 84(5):888–918.
- All-China Lawyers Association. 2006. "Zhong Hua Quan Guo Lv Shi Xie Hui Guan Yu Lv Shi Ban Li Qun Ti Xing An Jian Zhi Dao Yi Jian[All-China Lawyers Association Guiding Opinion Regarding Lawyers Handling Collective Cases]." Retrieved May 13, 2016 (<http://ds.eywedu.com/law/ssf/200606/20060620110110.htm>).
- Andrews-Speed, Philip et al. 2002. "A Framework for Policy Formulation for Small Scale Mines: The Case of Coal in China." *Natural Resources Forum* 26(1):45–54.
- Andrews-Speed, Philip, Guo Ma, Bingjia Shao, and Chenglin Liao. 2005. "Economic Responses to the Closure of Small-Scale Coal Mines in Chongqing, China." *Resources Policy* 30(1):39–54.
- Andrews-Speed, Philip, Minying Yang, Lei Shen, and Shelley Cao. 2003. "The Regulation of China's Township and Village Coal Mines: A Study of Complexity and Ineffectiveness." *Journal of cleaner production* 11(2):185–96.
- Aoki, Masahiko. 2001. *Toward a Comparative Institutional Analysis*. MIT press.
- Aoki, Masahiko. 2007. "Endogenizing Institutions and Institutional Changes." *Journal of Institutional Economics* 3(1):1.
- Aroca, Patricio. 2001. "Impacts and Development in Local Economies Based on Mining: The Case of the Chilean II Region." *Resources Policy* 27:119–34.
- Aron, Janine. 2000. "Growth and Institutions : A Review of the Evidence." *The World Bank Research Observer* 15(1):99–135.
- Auty, Richard M. 1993. *Sustaining Development in Mineral Economies: The Resource Curse*

- Thesis*. London: Routledge.
- Auty, Richard M. 2007. "Natural Resources, Capital Accumulation and the Resource Curse." *Ecological Economics* 61(4):627–34.
- Azapagic, Adisa. 2004. "Developing a Framework for Sustainable Development Indicators for the Mining and Minerals Industry." *Journal of Cleaner Production* 12(6):639–62.
- Badera, Jarosław and Paweł Kocoń. 2014. "Local Community Opinions Regarding the Socio-Environmental Aspects of Lignite Surface Mining: Experiences from Central Poland." *Energy Policy* 66:507–16.
- Baechler, Günther. 1998. "Why Environmental Transformation Causes Violence: A Synthesis." *Environmental change and security project report* 4:24–44.
- Baechler, Günther. 1999. "Environmental Degradation in the South as a Cause of Armed Conflict." Pp. 107–29 in *Environmental Change and Security: A European Perspective*, edited by A. Carius and K. M. Lietzmann. Springer.
- Bainton, Nicholas A. and Martha Macintyre. 2013. "*My Land, My Work*": *Business Development and Large-Scale Mining in Papua New Guinea*. Emerald Group Publishing Limited.
- Bang, Hae-kyong, Alexander E. Ellinger, John Hadjimarcou, and Patrick a Traichal. 2000. "Consumer Concern, Knowledge, Belief, and Attitude toward Renewable Energy: An Application of the Reasoned Action Theory." *Psychology & Marketing* 17(6):449–68.
- Banks, Glenn. 2013. "Little by Little, Inch by Inch: Project Expansion Assessments in the Papua New Guinea Mining Industry." *Resources Policy* 38(4):688–95.
- Banks, Glenn, Dora Kuir-Ayius, David Kombako, and Bill Sagir. 2013. "Conceptualizing Mining Impacts, Livelihoods and Corporate Community Development in Melanesia." *Community Development Journal* 48(3):484–500.
- Bastida, Elizabeth. 2001. "A Review of the Concept of Security of Mineral Tenure: Issues and Challenges." *Journal of Energy & Natural Resources Law* 19:31–43.
- Bernard, H.Russell. 2011. *Research Methods in Anthropology*. Rowman Altamira.
- Bian, Zhengfu, Hilary I. Inyang, John L. Daniels, Frank Otto, and Sue Struthers. 2010. "Environmental Issues from Coal Mining and Their Solutions." *Mining Science and Technology (China)* 20(2):215–23.
- Le Billon, Philippe. 2001. "The Political Ecology of War: Natural Resources and Armed Conflicts." *Political geography* 20(5):561–84.
- Le Billon, Philippe. 2008. "Diamond Wars? Conflict Diamonds and Geographies of Resource Wars." *Annals of the Association of American Geographers* 98(2):345–72.
- Le Billon, Philippe. 2010. "Oil and Armed Conflicts in Africa." *African Geographical Review* 29(1):63–90.
- Blackburn, Keith and Michael Christensen. 1989. "Monetary Policy and Policy Credibility: Theories and Evidence." *Journal of Economic literature* 27(1):1–45.
- Blinder, Alan S. 1999. *Central Bank Credibility: Why Do We Care? How Do We Build It?* Cambridge, MA.
- Brasselle, Anne-Sophie, Frédéric Gaspart, and Jean-Philippe Platteau. 2002. "Land Tenure Security and Investment Incentives: Puzzling Evidence from Burkina Faso." *Journal of Development Economics* 67(2):373–418.
- Brettell, Anna. 2008. "Channeling Dissent: The Institutionalization of Environmental Complaint Resolution." in *China's Embedded Activism: Opportunities and Constraints of a Social Movement*, edited by P. Ho and R. Edmonds. New York: Routledge.
- Buckley, Chiris. 2016. "Echoing a Film Plot, Chinese Gangs Kill Drifters in an Elaborate

- Mining Ruse." *The New York Times Magazine*, August 10. Retrieved (<http://www.nytimes.com/2016/08/11/world/asia/china-mining-deaths-plot.html>).
- Cai, Yongshun. 2008a. "Local Governments and the Suppression of Popular Resistance in China." *The China Quarterly* 193(2008):24–42.
- Cai, Yongshun. 2008b. "Social Conflicts and Modes of Action in China." *The China Journal* 59:89–109.
- Cai, Yongshun. 2010. *Collective Resistance in China: Why Popular Protests Succeed or Fail*. Stanford University Press.
- Cao, Xia. 2007. "Regulating Mine Land Reclamation in Developing Countries: The Case of China." *Land Use Policy* 24(2):472–83.
- Carrington, Kerry and Margaret Pereira. 2011. "Assessing the Social Impacts of the Resources Boom on Rural Communities." *Rural Society* 21(1):2–20.
- CCICED. 2013. *China Council for International Cooperation on Environment and Development (CCICED) on China's Environmental Protection and Social Development*. Beijing. Retrieved (<http://www.cciced.net/ztbd/nh/2013nnh/hyfy/201311/P020131105347153366847.pdf>).
- Cernea, Michael M. 1997. "The Risks and Reconstruction Model for Resettling Displaced Populations." *World Development* 25(10):1569–87.
- Cernea, Michael M. 2008. "Compensation and Benefit Sharing: Why Resettlement Policies and Practices Must Be Reformed." *Water Science and Engineering* 1(1):89–120.
- Cernea, Michael M. and Hari Mohan Mathur. 2008. *Can Compensation Prevent Impoverishment?* Oxford University Press.
- Chan, Hon S. and Jie Gao. 2012. "Death versus GDP! Decoding the Fatality Indicators on Work Safety Regulation in Post-Deng China." *The China Quarterly* 210:355–77.
- Chan, Nelson. 2003. "Land Acquisition Compensation in China—problems and Answers." *International Real Estate Review* 6(1):136–52.
- Chang, Ha-joon. 2002. *Kicking Away the Ladder: Development Strategy in Historical Perspective*. Anthem Press.
- Chen, Bingheng, Chuanjie Hong, and Haidong Kan. 2004. "Exposures and Health Outcomes from Outdoor Air Pollutants in China." *Toxicology* 198(1–3):291–300.
- Chen, Jianfu. 1999. *Chinese Law: Towards an Understanding of Chinese Law, Its Nature and Developments*. Martinus Nijhoff Publishers.
- China Daily. 2016. "74 Accused of Murder, Fraud in Fake Mine Accidents." *China Daily*. Retrieved January 1, 2016 (http://usa.chinadaily.com.cn/epaper/2016-06/07/content_25638407.htm).
- China Labour Bulletin. 2008. *Bone and Blood: The Price of Coal in China*. HongKong. Retrieved (http://www.clb.org.hk/en/files/File/bone_and_blood.pdf).
- Collier, Paul and Anke Hoeffler. 2004. "Greed and Grievance in Civil War." *Oxford economic papers* 56(4):563–95.
- Conde, Marta. 2017. "Resistance to Mining: A Review." *Ecological Economics* 132:80–90.
- Cooley, John K. 1984. "The War over Water." *Foreign Policy* 54(Spring):3–26.
- Cooper, Caroline M. 2006. "'This Is Our Way in': The Civil Society of Environmental NGOs in South-West China." *Government and Opposition* 41(1):109–36.
- Coser, Lewis A. 1956. *The Functions of Social Conflict*. Routledge.
- Coser, Lewis A. 1957. "Social Conflict and the Theory of Social Change." *The British Journal of Sociology* 8(3):197–207. Retrieved (<http://web.ics.purdue.edu/~hoganc/SOC>

- 602/Spring 2014/Coser 1957.pdf).
- Coser, Lewis A. 1967. *Continuities in the Study of Social Conflict*. New York: Free Press.
- Cottarelli, Carlo and Curzio Giannini. 1997. *Credibility without Rules?: Monetary Frameworks in the Post-Bretton Woods Era*. International monetary fund.
- Creswell, John W. 2013. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. Sage.
- Cukierman, Alex and Allan H. Meltzer. 1986. "A Theory of Ambiguity, Credibility, and Inflation under Discretion and Asymmetric Information." *Econometrica* 54(5):1099–1128. Retrieved (<http://www.jstor.org/stable/1912324>).
- Dahrendorf, Ralf. 1958. "Toward a Theory of Social Conflict." *Journal of Conflict Resolution* 2(2):170–83.
- Dale, Michael O. 1996. "Security of Tenure as a Key Issue Facing the International Mining Company: A South African Perspective." *J. Energy & Nat. Resources L.* 14:298.
- Dang, Xinpeng. 2010. "Competing Relation between Land and Mining- Thought on the Mining Land Management [Di Yu Kuang de Enenyuanyuan--Dui Dangqian Kuangye Yongdi Guanli de Sikao]." *Zhongguo Tudi* 10:18.
- Dasgupta, Susmrita and David Wheeler. 1997. "Citizen Complaints as Environmental Indicators: Evidence from China." *Policy, Research working paper* WPS 1704.
- Deng, Xiaoling, Shaoliang Zhang, Lu Hu, and Gang Wu. 2010. "Xuzhoushi Caimeng Taxiandi Zhili Guochengzhong Ruogan Wenti de xikao[Thought on Processing of Mining Subsided Land Treatment in Xuzhou]." *Coal Economic Research[meitan jingjin yanjiu]* 30(7):25–28.
- Deng, Yanhua and Guobin Yang. 2013. "Pollution and Protest in China: Environmental Mobilization in Context." *China Quarterly* (214):321–36.
- Deutsch, Morton. 1969. "Conflicts: Productive and Destructive." *Journal of Social Issues* 24(1).
- Diao, Xinhong, Yang Yuan, and Chuanxin Zhang. 2006. "Jinshu Kuangshan Dizhi Zaihai Yanjiu Fazhan qushi[Geological Disasters of Metal Mines and Trend in Their Research]." *Metal Mine* (6):1–4.
- Dobra, John and David Newman. 2014. "The Case for Private Ownership of Mineral Rights." *Miningfacts.org*. Retrieved August 8, 2017 (<http://www.miningfacts.org/Blog/Mining-News/TheCase-for-Private-Ownership-of-Mineral-Rights/>).
- Dogaru, Diana et al. 2009. "Community Perception of Water Quality in a Mining-Affected Area: A Case Study for the Certej Catchment in the Apuseni Mountains in Romania." *Environmental Management* 43(6):1131–45.
- Dong, Yanli, Masanobu Ishikawa, Xianbing Liu, and Shigeyuki Hamori. 2011. "The Determinants of Citizen Complaints on Environmental Pollution: An Empirical Study from China." *Journal of Cleaner Production* 19(12):1306–14.
- Downing, Theodore E. 2002. "Avoiding New Poverty: Mining-Induced Displacement and Resettlement." *Mining, Minerals and Sustainable Development* (58):1–29.
- Downing, Theodore E. and Carmen Garcia Downing. 2006. "Development That Impoverishes Is Not Development." *Frontiers: A Journal of Women Studies* 1:1–5.
- Drazen, Allan and Paul PR Masson. 1994. "Credibility of Policies Versus Credibility of Policymakers." *The Quarterly Journal of Economics* 109(3):735–54. Retrieved September 12, 2014 (<http://www.nber.org/papers/w4448>).
- Dube, Oeindrila and JF Vargas. 2006. *Are All Resources Cursed?: Coffee, Oil and Armed*

- Conflict in Columbia*. Center for International Development at Harvard University.
- Economy, Elizabeth. 2007. "The Great Leap Backward? The Costs of China's Environmental Crisis." *Foreign Affairs* 86(5):38–59.
- Eisenhardt, Kathleen M. 1989. "Building Theories from Case Study Research." *Academy of Management Review* 14(4):532–50.
- Fellner, William. 1979. "The Credibility Effect and Rational Expectations: Implications of the Gramlich Study." *Brookings Papers on Economic Activity* 1(79):167–78.
- Felstiner, William, Richard Abel, and Austin Sarat. 1980. "The Emergence and Transformation of Disputes: Naming, Blaming, Claiming . . ." *Law & Society Review* 15(3):631–54.
- Feng, Qun and Hong Chen. 2013. "The Safety-Level Gap between China and the US in View of the Interaction between Coal Production and Safety Management." *Safety Science* 54:80–86.
- Feng, Shizheng. 2007. "The Silent Majority: Chaxu Geju and Environmental Action in Urban China." *Journal of Renmin University of China* 1:21.
- Fernández-Navarro, Pablo, Javier García-Pérez, Rebeca Ramis, Elena Boldo, and Gonzalo López-Abente. 2012. "Proximity to Mining Industry and Cancer Mortality." *Science of the Total Environment* 435–436:66–73.
- Fielding, Kelly S., Rachel McDonald, and Winnifred R. Louis. 2008. "Theory of Planned Behaviour, Identity and Intentions to Engage in Environmental Activism." *Journal of Environmental Psychology* 28(4):318–26.
- Finkel, Steven E., Edward N. Muller, and Karl-Dieter Opp. 1989. "Personal Influence, Collective Rationality, and Mass Political Action." *The American Political Science Review* 83(3):885–903.
- Fishbein, Martin and Icek Ajzen. 1975. *Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research*. Boston: Addison Wesley.
- Fold, Niels, Albert N. M. Allotey, Per Kalvig, and Lasse Moeller-Jensen. 2017. "Grounding Institutions through Informal Practice: Credibility in Artisanal Mining of Aggregates, Ghana." *Land Use Policy*.
- Fox-Cardamone, Lee, Steve Hinkle, and Mary Hogue. 2000. "The Correlates of Antinuclear Activism: Attitudes, Subjective Norms, and Efficacy." *Journal of Applied Social Psychology* 30(3):484–98.
- Fu, Hualing. 2003. "Putting China's Judiciary into Perspective: Is It Independent, Competent, and Fair?" *Beyond Common Knowledge: Empirical Approaches to the Rule of Law* 193–219.
- Garvin, Theresa, Tara K. McGee, Karen E. Smoyer-Tomic, and Emmanuel Ato Aubynn. 2009. "Community-Company Relations in Gold Mining in Ghana." *Journal of Environmental Management* 90(1):571–86.
- Ge, Jianping and Yalin Lei. 2013. "Mining Development, Income Growth and Poverty Alleviation: A Multiplier Decomposition Technique Applied to China." *Resources Policy* 38(3):278–87.
- Gilardi, Fabrizio. 2002. "Policy Credibility and Delegation to Independent Regulatory Agencies: A Comparative Empirical Analysis." *Journal of European Public Policy* 9(6):873–93.
- Glavovic, Bruce C., E.Franklin Dukes, and Jana M. Lynott. 1997. "Training and Educating Environmental Mediators: Lessons from Experience in the United States." *Mediation Quarterly* 14(4):269–92.

- Gleditsch, Nils Petter. 1998. "Armed Conflict and the Environment: A Critique of the Literature." *Journal of Peace Research* 35(3):381–400.
- Grabel, Ilene. 2000. "The Political Economy of 'policy Credibility': The New-Classical Macroeconomics and the Remaking of Emerging Economies." *Cambridge Journal of Economics* 24:1–19.
- Greenovation Hub. 2014. *China's Mining Industry at Home and Overseas: Development, Impacts and Regulation*. Retrieved (http://www.ghub.org/cfc_en/wp-content/uploads/sites/2/2014/11/China-Mining-at-Home-and-Overseas_Main-report2_EN.pdf).
- Guhan, Sanjivi. 1994. "Social Security Options for Developing Countries." *International Labour Review* 133(1):35.
- Haarstad, Håvard and Arnt Fløysand. 2007. "Globalization and the Power of Rescaled Narratives: A Case of Opposition to Mining in Tambogrande, Peru." *Political Geography* 26(3):289–308.
- Hajkowicz, Stefan a., Sonja Heyenga, and Kieren Moffat. 2011. "The Relationship between Mining and Socio-Economic Well Being in Australia's Regions." *Resources Policy* 36(1):30–38.
- Han, Xiaofei. 2014. "Go Ahead with the Coal Mining Land Subsidence Treatment [Pinluqu: Zhashi Tuijing Caimei Chenxianqu Zhili Gongzuo]." *Shanxi Jingji Ribao*. Retrieved (<http://jjsx.china.com.cn/lm642/2014/281371.htm>).
- Hanna, Philippe and Frank Vanclay. 2013. "Human Rights, Indigenous Peoples and the Concept of Free, Prior and Informed Consent." *Impact Assessment and Project Appraisal* 31(2):146–57.
- Hansen, Mette Halskov. 2006. "In the Footsteps of the Communist Party: Dilemmas and Strategies." Pp. 81–95 in *Doing fieldwork in China*, edited by M. Heimer and S. Thøgersen. University of Hawaii Press.
- Harwit, Eric. 2004. "Spreading Telecommunications to Developing Areas in China: Telephones, the Internet and the Digital Divide." *China Quarterly* (180):1010–30.
- He, Guizhen, Yonglong Lu, Arthur P. J. Mol, and Theo Beckers. 2012. "Changes and Challenges: China's Environmental Management in Transition." *Environmental Development* 3:25–38.
- He, Guizhen, Lei Zhang, Arthur P. J. Mol, Tieyu Wang, and Yonglong Lu. 2014. "Why Small and Medium Chemical Companies Continue to Pose Severe Environmental Risks in Rural China." *Environmental Pollution* 185:158–67.
- He, Xin. 2007. "Why Did They Not Take on the Disputes? Law, Power and Politics in the Decision-Making of Chinese Courts." *International Journal of Law in Context* 3(April 2006):203–25.
- He, Xin. 2009. "Court Finance and Court Responses to Judicial Reforms: A Tale of Two Chinese Courts." *Law & Policy* 31(4):463–86.
- He, Xin and Yang Su. 2013. "Do The 'haves' come out Ahead in Shanghai Courts?" *Journal of Empirical Legal Studies* 10(1):120–45.
- Heggelund, Gørild. 2006. "Resettlement Programmes and Environmental Capacity in the Three Gorges Dam Project." *Development and Change* 37(1):179–99.
- Heimer, Maria and Stig Thøgersen. 2006. *Doing Fieldwork in China*. University of Hawaii Press.
- Highley, D. E., G. R. Chapman, and K. A. Bonel. 2004. *The Economic Importance of Mineral to the UK*.

- Hildebrandt, Timothy. 2011. "The Political Economy of Social Organization Registration in China." *The China Quarterly* 208:970–89.
- Hilson, Gavin. 2002a. "An Overview of Land Use Conflicts in Mining Communities." *Land Use Policy* 19(2):65–73.
- Hilson, Gavin. 2002b. "The Socio-Economic Impacts of Artisanal and Small-Scale Mining in Developing Countries." *Natural Resources Forum* 26:3–13.
- Ho, Peter. 2001a. "Greening Without Conflict? Environmentalism, NGOs and Civil Society in China." *Development and Change* 32(5):893–921.
- Ho, Peter. 2001b. "Who Owns China's Land? Policies, Property Rights and Deliberate Institutional Ambiguity." *The China Quarterly* 166:394–421.
- Ho, Peter. 2005. *Institutions in Transition: Land Ownership, Property Rights, and Social Conflict in China*. Oxford University Press.
- Ho, Peter. 2006. "Credibility of Institutions: Forestry, Social Conflict and Titling in China." *Land Use Policy* 23(4):588–603.
- Ho, Peter. 2013. "In Defense of Endogenous, Spontaneously Ordered Development: Institutional Functionalism and Chinese Property Rights." *Journal of Peasant Studies* 40(6):1087–1118.
- Ho, Peter. 2014. "The 'Credibility Thesis' and Its Application to Property Rights: (In)secure Land Tenure and Social Welfare in China." *Land Use Policy* 39(3).
- Ho, Peter. 2015. "Myths of Tenure Security and Titling: Endogenous, Institutional Change in China's Development." *Land Use Policy* 47:352–64.
- Ho, Peter. 2016a. "An Endogenous Theory of Property Rights: Opening the Black Box of Institutions." *Journal of Peasant Studies* 43(6):1121–44.
- Ho, Peter. 2016b. "Empty Institutions, Non-Credibility and Pastoralism: China's Grazing Ban, Mining and Ethnicity." *Journal of Peasant Studies* 43(6):1145–76.
- Ho, Peter and Richard L. Edmonds. 2008. *China's Embedded Activism: Limitations and Constraints of a Social Movement*. Routledge, London, UK.
- Ho, Peter and Eduard B. Vermeer. 2006. *China's Limits to Growth: Greening State and Society*. Blackwell.
- Hodgson, Geoffrey M. 1988. "Economics and Institutions." *Journal of Economic Issues*.
- Hofrichter, Jürgen and Reif Karlheinz. 1990. "Evolution of Environmental Attitudes in the European Community." *Scandinavian Political Studies* 13(2):119–46.
- Hofstede, G. 2001. *Culture's Consequences: Comparing Values, Behaviors, Institutions, and Organizations Across Nations*. Sage Publications: Thousand Oaks, CA.
- Homer-Dixon, Thomas. 1991. "On the Threshold : Environmental Changes as Causes of Acute Conflict." *International Security* 16(2):76–116.
- Horsley, Julia, Sarah Prout, Matthew Tonts, and Saleem H. Ali. 2015. "Sustainable Livelihoods and Indicators for Regional Development in Mining Economies." *Extractive Industries and Society* 2(2):368–80.
- Huang, Ronggui and Xiaoyi Sun. 2013. "Weibo Network, Information Diffusion and Implications for Collective Action in China." *Information, Communication & Society* 17(1):1–19.
- Huang, Ronggui and Ngai-ming Yip. 2012. "Internet and Activism in Urban China: A Case Study of Protests in Xiamen and Panyu." *Journal of Comparative Asian Development* 11(2):201–23.
- Huang, Yanzhong. 2015. "Tackling China's Environmental Health Crisis." *Council on Foreign Relations*. Retrieved October 4, 2016 (<http://www.cfr.org/china/tackling-chinas->

- environmental-health-crisis/p36538).
- Hui, Jinguo and Jian Tan. 2011. "Heise de Caijue[the Dark Extraction]." *Liaowang*. Retrieved September 23, 2016 (<http://www.lwgcw.com/NewsShow.aspx?newsId=19044>).
- Hunt, Michael W. 2001. *Mining Law in Western Australia*. Leichhardt: The Federation Press.
- IFC. 2002. *Handbook for Preparing Resettlement Action Plan*. Washington, D.C.
- Jackson, Sukhan and Adrian Sleigh. 2000. "Resettlement for China's Three Gorges Dam: Socio-Economic Impact and Institutional Tensions." *Communist and Post-Communist Studies* 33(2):223–41.
- Jahiel, Abigail R. 1998. "The Organization of Environmental Protection in China." *The China Quarterly* 156(156):757.
- Jiang, Li and Shegnli Luo. 2013. "Inefficiency Analysis and Suggested Solutions for the Management System of Mineral Resources in China[woguo Kuangchanziyuan Guanli Tizhi Cunzai de Buzu Jiqi Duicai]." *Safety and Environmental Engineering (Anquan yu Huanjing Gongcheng)* 20(2):29–34.
- Jiangsu Provincial Government. 2004. *Guanyu Diaozheng Meikuang Caimei Taxiandi Zhengqian Buchang Biao zhun de Tongzhi [Notice on Adjusting Compensation on Requisition of Mining-Subsided Land]* 2004/6 (30-1-2004). Nanjing, Jiangsu.
- Jing, Jun. 2003. "Environmental Protests in Rural China." *Chinese society: change, conflict and resistance* 143–60.
- Johnson, Eva. 2010. "Mineral Rights: Legal Systems Governing Exploration and Exploitation." KTH. Retrieved ([https://www.kth.se/polopoly_fs/1.352394!/Menu/general/column-content/attachment/FULLTEXT01\(2\).pdf](https://www.kth.se/polopoly_fs/1.352394!/Menu/general/column-content/attachment/FULLTEXT01(2).pdf)).
- Johnson, Thomas. 2010. "Environmentalism and NIMBYism in China: Promoting a Rules-Based Approach to Public Participation." *Environmental Politics* 19(3):430–48.
- Johnson, Thomas. 2013. "The Health Factor in Anti-Waste Incinerator Campaigns in Beijing and Guangzhou." *The China Quarterly* 214(2013):356–75.
- Joseph, McMullin. 2009. "Do Chinese Environmental Laws Work? A Study of Litigation as a Response to the Problem of Fishery Pollution in China?" *Pacific Basin Law Journal*.
- Kan, Haidong. 2009. "Environment and Health in China: Challenges and Opportunities." *Environmental Health Perspectives* 117(12):901615.
- Kang, Jitian. 2009. "Questioning the Land Leasing System as the First Choice for Mining Development in the Countryside[dui Nongcun Kuangyeyongdi Shouxuan Zulinzhi de Ziyi]." *China Coal* 35(11):32–35.
- Keefer, Philip. 2007. "Clientelism, Credibility, and the Policy Choices of Young Democracies." *The American Journal of Political Science* 51(4):804–21.
- Kelly, Caroline and Sara Breinlinger. 1995. "Attitudes, Intentions, and Behavior: A Study of Women's Participation in Collective Action." *Journal of Applied Social Psychology* 26(16):1430–45.
- Keltner, John W.Sam. 1987. *Mediation: Toward a Civilized System of Dispute Resolution*. ERIC.
- Kitschelt, Herbert P. 1986. "Political Opportunity Structures and Political Protest : Anti-Nuclear Movements in Four Democracies." *British Journal of Political Science* 16(1):57–85.
- Kitula, A. G. N. 2006. "The Environmental and Socio-Economic Impacts of Mining on Local

- Livelihoods in Tanzania: A Case Study of Geita District." *Journal of Cleaner Production* 14(3–4):405–14.
- Knight, Jack. 1992. *Institutions and Social Conflict*. Cambridge University Press.
- Kuir-Ayius, Dora Dau. 2016. "Building Community Resilience in Mine Impacted Communities: A Study on Delivery of Health Services in Papua New Guinea." Massey University.
- Kydland, Finn E. and Edward C. Prescott. 1977. "Rules rather than Discretion: The Inconsistency of Optimal Plans." *The Journal of Political Economy* 473–91.
- Labonne, B. 1996. "Artisanal Mining: An Economic Stepping Stone for Women." *Natural Resources Forum* 20(2 SPEC. ISS.):117–22.
- Lagos, Gustavo and Blanco Edgar. 2010. "Mining and Development in the Region of Antofagasta." *Resources Policy* 35(4):265–75.
- Lahiri-Dutt, Kuntala. 2008. "Digging to Survive: Women's Livelihoods in South Asia's Small Mines and Quarries." *South Asian Survey* 15(2):217–44.
- Lang, Graeme and Ying Xu. 2013. "Anti-Incinerator Campaigns and the Evolution of Protest Politics in China." *Environmental Politics* 22(5):832–48.
- Lee, Raymond M. 1993. *Doing Research on Sensitive Topics*. Sage.
- Lei, Yalin, Na Cui, and Dongyang Pan. 2013. "Economic and Social Effects Analysis of Mineral Development in China and Policy Implications." *Resources Policy* 38(4):448–57.
- Leistritz, F. Larry and Stanley W. Voelker. 1975. "Coal Resources Ownership: Patterns, Problems, and Suggested Solutions." *Natural Resources Journal* 15:643–62.
- Li, Dejing. 2013. "Analysis of Mineral Resources Legal System of Situation and defection[Shilun Woguo Kuangchanziyuan Falv Zidu de Xiankuang He Quexian]." *China Mining Maganize* 22(7):15–17.
- Li, Huijuan, Ruyin Long, and Hong Chen. 2013. "Economic Transition Policies in Chinese Resource-Based Cities: An Overview of Government Efforts." *Energy Policy* 55:251–60.
- Li, Ji. 2013a. "Dare You Sue the Tax Collector? An Empirical Study of Administrative Lawsuits Against Tax Agencies in China." *Pacific Rim Law & Policy Journal* 1–54.
- Li, Ji. 2013b. "Suing the Leviathan-An Empirical Analysis of the Changing Rate of Administrative Litigation in China." *Journal of Empirical Legal Studies* 10(4):815–46.
- Li, Lianjiang and Kevin O'Brien. 1996. "Villagers and Popular Resistance in Contemporary China." *Modern China* 22(1):28–61.
- Li, Ping. 2014. "Kuangye Yongdi Zhuanzhang Rufa Husheng zaiqi[Call for Regulating Land Used for Mining]." *Zhongguo Kuangyebao*, June 26. Retrieved (http://www.mlr.gov.cn/xwdt/jrxw/201406/t20140626_1321853.htm).
- Li, Wanxin, Jieyan Liu, and Duoduo Li. 2012. "Getting Their Voices Heard: Three Cases of Public Participation in Environmental Protection in China." *Journal of environmental management* 98:65–72.
- Li, Xiangju and Yukun Zhu. 2011. "Mineral Property Rights and Interest Distribution Mechanisms in Western Region [Xibu Diqu Kuangchanziyuan Chanquan Yu Liyi Fenge Jizhi Yanjiu]." *Finance & Trade Economics* (8):28–34.
- Li, Zhiyuan, Zongwei Ma, Tsering Jan van der Kuijp, Zengwei Yuan, and Lei Huang. 2014. "A Review of Soil Heavy Metal Pollution from Mines in China: Pollution and Health Risk Assessment." *Science of the Total Environment* 468–469:843–53.
- Libiszewski, Stephan. 1991. "What Is an Environmental Conflict?" *Journal of peace*

- research* 28(4):407–22.
- Lichtenberg, Erik and Chengri Ding. 2008. "Assessing Farmland Protection Policy in China." *Land Use Policy* 25:59–68.
- Lin, Boqiang and Jianghua Liu. 2010. "Estimating Coal Production Peak and Trends of Coal Imports in China." *Energy Policy* 38(1):512–19.
- Liu, Wenling, Can Wang, and Arthur P. J. Mol. 2013. "Rural Public Acceptance of Renewable Energy Deployment: The Case of Shandong in China." *Applied Energy* 102:1187–96.
- Liu, Xianbing, Can Wang, Tomohiro Shishime, and Tetsuro Fujitsuka. 2010. "Environmental Activisms of Firm's Neighboring Residents: An Empirical Study in China." *Journal of Cleaner Production* 18(10–11):1001–8.
- Liu, Xianshui, Qiang Meng, and Meng Tang. 2006. "Guanyu Wanshan Taxiandi Zhengyong Zhidu de Sikao He Jianyi [Thought and Suggestion on Improving Institutions of Subsidized Land Acquisition]." *Shandong Guotu Ziyuan* 22(3):30–31.
- Liu, Yu. 2015. "Supporting Shanxi Coal Mining Subsidied Land Treatment[zhichi Shanxi Kaizhan Caimei Chenxianqu Zhili]." *Shanxi ribao*. Retrieved January 5, 2017 (http://www.npc.gov.cn/npc/dbdhhy/12_3/2015-03/08/content_1914941.htm).
- Lora-Wainwright, Anna. 2009. "Of Farming Chemicals and Cancer Deaths: The Politics of Health in Contemporary Rural China." *Social Anthropology* 17(1):56–73.
- Lora-Wainwright, Anna. 2010. "An Anthropology of 'cancer Villages': Villagers' Perspectives and the Politics of Responsibility." *Journal of Contemporary China* 19(63):79–99.
- Lora-Wainwright, Anna. 2013. "The Inadequate Life: Rural Industrial Pollution and Lay Epidemiology in China." *The China Quarterly* 214(2013):302–20.
- Lora-Wainwright, Anna. 2014. "Grassroots Perspectives on Relocation: Threats and Opportunities." *positions* 22(3):661–89.
- Lora-Wainwright, Anna, Yiyun Zhang, Yunmei Wu, and Benjamin Van Rooij. 2012. "Learning to Live with Pollution: The Making of Environmental Subjects in a Chinese Industrialized Village." *China Journal* 68(68):106–24.
- Lu, Jixia and Anna Lora-Wainwright. 2014. "Historicizing Sustainable Livelihoods: A Pathways Approach to Lead Mining in Rural Central China." *World Development* 62:189–200.
- Lu, Shiming. 2002. "Caimen Taxiandi Zhengyong Wenti Tantao [Discussion on Mining Subsidized Land Acquisition]." *Turang* 34(2):109–10.
- Lubell, M. 2002. "Environmental Activism as Collective Action." *Environment and Behavior* 34(4):431–54.
- Lujala, Päivi. 2010. "The Spoils of Nature: Armed Civil Conflict and Rebel Access to Natural Resources." *Journal of Peace Research* 47(1):15–28.
- Ma, Kewei and Qiaoling Zhang. 2001. "Getting a Clear Understanding of the Situation of Land Resource in China and Treasure the Limited Land Resource[Renqing Tudi Guoqing Zhenxi Youxian Tudi]." *Journal of China Agricultural Resource and Regional Planning* 22(3):20–24.
- Ma, Li and François G. Schmitt. 2008. "Development and Environmental Conflicts in China." *China Perspectives* (2):94.
- Ma, Tianjie. 2008. "Environmental Mass Incidents in Rural China: Examining Large-Scale Unrest in Dongyang, Zhejiang." *China Environment Series* 33.
- Mack, Raymond W. and Richard C. Snyder. 1957. "The Analysis of Social Conflict--Toward

- an Overview and Synthesis." *Conflict Resolution* 1(2):212–48.
- Madebwe, Crescentia, Victor Madebwe, and Sophia Mavusa. 2013. "Involuntary Displacement and Resettlement to Make Way for Diamond Mining: The Case of Chiadzwa Villagers in Zimbabwe." *Journal of Research in Peace, Gender, and Development* 1(10):292–301.
- Magnus Theisen, O. 2008. "Blood and Soil? Resource Scarcity and Internal Armed Conflict Revisited." *Journal of Peace Research* 45(6):801–18.
- Majone, Giandomenico. 1997. "Independent Agencies and the Delegation Problem: Theoretical and Normative Dimensions." *Political Institutions and Public Policy*, Dordrecht, Kluwer Academic Publishers 139–56.
- Mao, Yushi, Hong Sheng, and Fuqiang Yang. 2008. *True Cost of Coal*. Greenpeace.
- Mathur, Hari Mohan. 2006. "Resettling People Displaced by Development Projects: Some Critical Management Issues." *Social Change* 36(1):36–86.
- MEP. 2016. *2015 Report on the State of Environment in China*. Beijing.
- Michelson, E. 2007. "Climbing the Dispute Pagoda: Grievances and Appeals to the Official Justice System in Rural China." *American Sociological Review* 72(3):459–85.
- Minzner, Carl F. 2006. "Xinfang: An Alternative to Formal Chinese Legal Institutions." *Stan. J. Int'l. L.* 42:103.
- MLR. 2013. "Kuangye Yongdi Zhengce Quanjing Jiexie [Panorama View of Land Use for Mining Policy in China]." *Zhongguo Kuangyebao*.
- Mohai, Paul. 1985. "Public Concern and Elite Involvement in Environmental- Conservation Issues." *Social Science Quarterly (University of Texas Press)* 66(4):820–38.
- Mol, Arthur P. J. and Neil T. Carter. 2006. "China's Environmental Governance in Transition." *Environmental Politics* 15(2):149–70.
- Moore, Christopher W. 1986. *The Mediation Process: Practical Strategies for Resolving Conflict*. John Wiley & Sons.
- Morse, Janice M. 2004. "Theoretical Saturation." *Encyclopedia of social science research methods* 1:3.
- Moser, Adam and Tseming Yang. 2011. "Environmental Tort Litigation in China." *Environmental Law Reporter* 281(2002):10895–901.
- Munro, Neil. 2014. "Profiling the Victims: Public Awareness of Pollution-Related Harm in China." *Journal of Contemporary China* 23(86):314–29.
- Muradian, Roldan, Joan Martinez-Alier, and Humberto Correa. 2003. "International Capital Versus Local Population: The Environmental Conflict of the Tambogrande Mining Project, Peru." *Society & Natural Resources* 16(9):775–92.
- Naito, Koh, James M. Otto, DN David N. Smith, and Hajime Myoi. 1999. "Legal Aspects of Exploration and Mining: A Comparative Table of Mining Law in Asia." *J. Energy & Nat. Resources L.* 17:1.
- Nakawo, Masayoshi, Yuki Konagaya, and Shinjilt Chimedyn. 2010. *Ecological Migration: Environmental Policy in China*. Peter Lang.
- National Bureau of Statistics of China. 2015. *China Statistics Yearbook*. Beijing: China Statistics Press.
- NBS. 2016. *China Statistics Yearbook 2016*. Beijing.
- NDRC. 2004. *Guojia Gazhangraigewei Guanyu Jiakuai Kaizhan Caimen Chenxianqu Zhili Gongzuo de Tongzhi [Accelerating to Deal with Coal Mining Subsidence]*, Document No. Fagaitouzi 2004/1126. China.
- Nor-Hisham, Bin Md Saman and Peter Ho. 2016. "A Conditional Trinity as 'no-Go'against

- Non-Credible Development? Resettlement, Customary Rights and Malaysia's Kelau Dam." *Journal of Peasant Studies* 43(6):1177–1205.
- North, Douglass C. 1990. *Institutions, Institutional Change and Economic Performance*. Cambridge: Cambridge University Press.
- North, Douglass C. and Barry R. Weingast. 1989. "Constitutions and Commitment: The Evolution of Institutions Governing Public Choice in Seventeenth-Century England." *The journal of economic history* 49(4):803–32.
- NPC. 1996a. *Zhonghua Renmen Gongheguo Kuanchaziyuan fa*[Mineral Resources Law of PRC]. dizi chubanshe.
- NPC. 1996b. *Zhonghua Renmen Gongheguo Meitan Fa*[Law on Coal]. falv chubanshe.
- NPC. 2004. *Tudi Guanli Fa*[Land Administration Law of PRC]. Beijing, China: falv chubanshe.
- O'Brien, Kevin J. and Lianjiang Li. 2004. "Suing the Local State: Administrative Litigation in Rural China." *The China Journal* 51(51):75–96.
- O'Brien, Kevin J. and Lianjiang Li. 2006. *Rightful Resistance in Rural China*. Cambridge: Cambridge University Press.
- O'Brien, Robert M. 2007. "A Caution Regarding Rules of Thumb for Variance Inflation Factors." *Quality and Quantity* 41(5):673–90.
- Otto, James M. and John Cordes. 2002. *The Regulation of Mineral Enterprises: A Global Perspective on Economics, Law and Policy*. Rocky Mountain Mineral Law Foundation Westminster, Colorado.
- Otto, James M., Koh Naito, and GR Pring. 1999. "Environmental Regulation of Exploration and Mining Operations in Asian Countries." *Natural resources forum* 23(1 999):323–34.
- Owen, John R. and Deanna Kemp. 2014. "'Free Prior and Informed Consent', Social Complexity and the Mining Industry: Establishing a Knowledge Base." *Resources Policy* 41:91–100.
- Owen, John R. and Deanna Kemp. 2015. "Mining-Induced Displacement and Resettlement: A Critical Appraisal." *Journal of Cleaner Production* 87:478–88.
- Owen, John R. and Deanna Kemp. 2016. "Can Planning Safeguard against Mining and Resettlement Risks?" *Journal of Cleaner Production* 133:1227–34.
- Pang, Lihua, Alan de Brauw, and Scott Rozelle. 2004. "Working Until You Drop: Rural Elderly in China." *The China Journal* 52(52):73–94.
- Paredes, Maritza. 2016. "The Glocalization of Mining Conflict: Cases from Peru." *Extractive Industries and Society* 3(4):1046–57.
- Park, Namkee and Aimei Yang. 2012. "Online Environmental Community Members' Intention to Participate in Environmental Activities: An Application of the Theory of Planned Behavior in the Chinese Context." *Computers in Human Behavior* 28(4):1298–1306.
- Patey, Luke Anthony. 2007. "State Rules: Oil Companies and Armed Conflict in Sudan." *Third World Quarterly* 28(5):997–1016.
- Pei, Minxin. 1997. "Citizens v . Mandarins: Administrative Litigation in China." *The China Quarterly* 152(152):832–62.
- Percival, V. A. L. and Thomas Homer-Dixon. 1998. "Environmental Scarcity and Violent Conflict : The Case of South Africa." *Journal of Peace Research* 35(3):279–98.
- Perreault, Tom. 2013. "Dispossession by Accumulation? Mining, Water and the Nature of Enclosure on the Bolivian Altiplano." *Antipode* 45(5):1050–69.

- Petkova-Timmer, Vanessa, Stewart Lockie, John Rolfe, and Galina Ivanova. 2009. "Mining Developments and Social Impacts on Communities: Bowen Basin Case Studies." *Rural Society* 19(3):211–28.
- Pigrau, Antoni, Susana Borràs, J.Jaria Manzano, and Antonio Cardesa-Salzmann. 2012. *Legal Avenues for EJOS to Claim Environmental Liability*. EJOLT Report.
- Pils, Eva. 2016. "Assessing Evictions and Expropriations in China: Efficiency, Credibility and Rights." *Land Use Policy* 58:437–44. Retrieved (<http://dx.doi.org/10.1016/j.landusepol.2016.07.015>).
- Raleigh, Clionadh and Henrik Urdal. 2007. "Climate Change, Environmental Degradation and Armed Conflict." *Political Geography* 26(6):674–94.
- van Rhee, Cornelis Hendrik Remco and Yulin Fu. 2017. *Supreme Courts in Transition in China and the West: Adjudication at the Service of Public Goals*. Springer.
- Rolfe, John, Daniel Gregg, Galina Ivanova, Reuben Lawrence, and David Rynne. 2011. "The Economic Contribution of the Resources Sector by Regional Areas in Queensland." *Economic Analysis and Policy* 41(1):15–36.
- van Rooij, Benjamin. 2010. "The People vs. Pollution: Understanding Citizen Action against Pollution in China." *Journal of Contemporary China* 19(63):55–77.
- Van Rooij, Benjamin. 2006. *Regulating Land and Pollution in China: Lawmaking, Compliance, and Enforcement: Theory and Cases*. Amsterdam University Press.
- Van Rooij, Benjamin, Anna Lora-Wainwright, Yunmei Wu, and Yiyun Zhang. 2012. "The Compensation Trap: The Limits of Community-Based Pollution Regulation in China." *Pace Environmental Law Review* 29(3):701–45.
- Rui, Huachuan. 2005. "Development, Transition and Globalization in China's Coal Industry." *Development and Change* 36(4):691–710.
- Sachs, Jeffrey D. and Andrew M. Warner. 1995. *Natural Resource Abundance and Economic Growth*. National Bureau of Economic Research.
- Saich, Tony. 2000. "Negotiating the State: The Development of Social Organizations in China." *The China Quarterly* 161(161):124.
- Schmiedling, H. 1991. *Lending Stability to Europe's Emerging Market Economies: On the Potential Importance of the EC and the ECU for Central and Eastern Europe*. Kiel: Tuebingen (Germany) Mohr (Paul Siebeck).
- Schwartz, Jonathan. 2004. "Environmental NGOs Roles in China: And Limits." *Pacific Affairs* 77(1):28–49.
- Seguin, Chantal, Luc G. Pelletier, and John Hunsley. 1998. "Toward a Model of Environmental Activism." *Environment and Behavior* 30(5):628–52.
- Shandong Provincial Government. 1989. *Shandongsheng Banqian Yamei Jianzhuwu Zanxing Guiding [Interim Regulation on Relocating Coal-Buried Buildings by Shandong Province]* 1989/135 (08-Nov-1989). Jinan: Shandong.
- Sheeran, Paschal. 2002. "Intention—behavior Relations: A Conceptual and Empirical Review." *European review of social psychology* 12(1):1–36.
- Shen, Lei and Philip Andrews-Speed. 2001. "Economic Analysis of Reform Policies for Small Coal Mines in China." *Resources Policy* 27(4):247–54.
- Shen, Lei, Tao Dai, and Aaron James Gunson. 2009. "Small-Scale Mining in China: Assessing Recent Advances in the Policy and Regulatory Framework." *Resources Policy* 34(3):150–57.
- Shen, Lei and Aaron James Gunson. 2006. "The Role of Artisanal and Small-Scale Mining in China's Economy." *Journal of Cleaner Production* 14(3–4):427–35.

- Shi, Xingmin. 2014. "Factors Influencing the Environmental Satisfaction of Local Residents in the Coal Mining Area, China." *Social Indicators Research* 120(199):67–77.
- Shi, Xingmin and Fei He. 2012. "The Environmental Pollution Perception of Residents in Coal Mining Areas: A Case Study in the Hancheng Mine Area, Shaanxi Province, China." *Environmental Management* 50:505–13.
- Sidaway, Roger. 2005. *Resolving Environmental Disputes: From Conflict to Consensus*. Routledge.
- Small, M. L. 2009. "How Many Cases Do I Need?": On Science and the Logic of Case Selection in Field-Based Research." *Ethnography* 10(1):5–38.
- Sobel, Joel. 1985. "A Theory of Credibility." *Review of Economic Studies* 52(4):557–73.
- Song, Huanyu, Suren Tao, and Miao Xu. 2009. "The Study on Involuntary Resettlement of Mining Area[Kuangqu Feiziyuan Yimin Wenti Yanjiu]." *Journal of Liaoning Technical University (Social Science)* (3).
- Song, Xiaoqian and Xiaoyi Mu. 2013. "The Safety Regulation of Small-Scale Coal Mines in China: Analysing the Interests and Influences of Stakeholders." *Energy Policy* 52:472–81.
- Sonter, Laura J., Chris J. Moran, Damian J. Barrett, and Britaldo S. Soares-Filho. 2014. "Processes of Land Use Change in Mining Regions." *Journal of Cleaner Production* 84(1):494–501.
- Starr, Joyce R. 1991. "Water Wars." *Foreign Policy* 82:17–36.
- Stasavage, David. 2002. "Private Investment and Political Institutions." *Economics & politics* 14(1):41–63.
- State Council. 1980. *Guowuyuan Guanyu Jiejue Kuangqu Cunzhuang Yamei He Banqian Gongzuo de Tongzhi [Notice on Solving the Problem of Mining Coal beneath Villages and Village Relocation]*, 1980/174 (14-7-1980). Beijing: State Council.
- State Council. 1983. *Guowuyuan Guanyu Jiasu Jieju Kuagnqu Cunzhuanyamei He Qiancun Wenti de Tongzhi [Accelerating to Solve the Problem of Mining Coal under Villages and Village relocation]* 1983/10 (25-Jan-1983). China.
- State Council. 1993. *Changjiang Sanxia Gongchengjiashe Yimin tiaolie [The Regulations on Resettlement for the Construction of the Three Gorges Project on the Yangtze River]*. Beijing, China: zhongguo fazhi chubanshe.
- State Council. 2003a. "China's Policy on Mineral Resources." GOV.CN. Retrieved (<http://app.chinamining.com.cn/focus/Law/2007-07-19/1184829390d6255.html>).
- State Council. 2003b. *Dizhi Zaihai Fangzhi Tiaoli [Regulation on the Prevention and Control of Geologic Disasters]*. China: State Council.
- State Council. 2006a. *Dazhongxing Shuilishuidian Gongcheng Jianshe Zhegndibuchang He Yimin Anzhi tiaolie [Regulations on Land Acquisition Compensation and Resettlement of Migrants for Construction of Large and Medium Scale Water Conservancy and Hydropower Project]*. Beijing: zhongguo fazhi chubanshe.
- State Council. 2006b. "State Council Observation on Enforcing the Land Management Issues[Guowuyuan Guanyu Jiaqiang Tudi Tiaokong Youquan Wenti de Tongzhi], 2006-8-31." MLR.GOV.CN. Retrieved May 10, 2016 (http://www.mlr.gov.cn/pub/gtzyb/tuditiaokong/xgwj/t20060907_76154.htm).
- State Council. 2013. *Guowuyuan Guanyu Yinfa Quanguo Ziyuanxing Chengshi Kechixu Fazhan guihua [Notice of the State Council on Issuing the Sustainable Development Plan of Resource-Dependent Cities Nationwide (2013-2020)]*. China. Retrieved (http://www.gov.cn/zwgk/2013-12/03/content_2540070.htm).

- State Energy Administration. 2015a. "Guanyu Zhengxie Shierjie Quanguo Weiyuanhui Disanci Huiyi Di 2554hao Ti'an Dafu de han[Reply to 12th CPPCC No 2554 Proposal]." *National Energy Adminsitration*. Retrieved (http://zfxgk.nea.gov.cn/auto85/201512/t20151211_2002.htm).
- State Energy Administration. 2015b. "Guanyu Zhengxie Shierjie Quanguo Weiyuanhui Disanci Huiyi Di 2960 Hao Ti'an Dafu de han[Reply to 12th CPPCC No 2960 Proposal]." *National Energy Adminsitration*. Retrieved January 5, 2017 (http://zfxgk.nea.gov.cn/auto85/201512/t20151211_2009.htm).
- Stern, Rachel E. 2010. "On the Frontlines: Making Decisions in Chinese Civil Environmental Lawsuits." *Law and Policy* 32(1):79–103.
- Stern, Rachel E. 2011. "From Dispute to Decision: Suing Polluters in China." *The China Quarterly* 206(June 2011):294–312.
- Sun, Yinhui and Pan Xiao. 2011. "Wanshan Kuangyeyongdi Shiyognquan de Falu Shezhi[Improving Legal Institutions on Mining Land Use Rights]." *Lilun Yuekan* 6:170–72.
- Szablowski, David. 2002. "Mining, Displacement and the World Bank: A Case Analysis of Compania Minera Antamina's Operations in Peru." *Journal of Business Ethics* 39(3):247–73.
- Tan, Shuhao, Futian Qu, and Nico Heerink. 2005. "What Drives Land Fragmentation?: Theoretical Approaches and Empirical Analysis." Pp. 178–202 in *Developmental Dilemmas: Land Reform and Institutional Change in China*, edited by P. Ho. London and New York: Routledge.
- Thomason, Jane and Matthew Hancock. 2011. "PNG Mineral Boom : Harnessing the Extractive Sector to Deliver Better Health Outcomes." *Development Policy Centre Discussion Paper* (No. 2):1–33.
- Tilt, Bryan. 2013. "The Politics of Industrial Pollution in Rural China." *Journal of Peasant Studies* 40(6):1147–64.
- Tindall, D. B., Scott Davies, and Céline Mauboulès. 2003. "Activism and Conservation Behavior in an Environmental Movement: The Contradictory Effects of Gender." *Society & Natural Resources* 16(10):909–32.
- Tschakert, Petra and Kamini Singha. 2007. "Contaminated Identities: Mercury and Marginalization in Ghana's Artisanal Mining Sector." *Geoforum* 38(6):1304–21.
- Tse, Pui-Kwan. 2015. *The Mineral Industry of China*. Washington, D.C.
- Tu, Jianjun. 2007. "Coal Mining Safety: China's Achilles' Heel." *China Security* 3(2):36–53.
- Ubink, Janine M., Andre J. Hoekema, and Willem J. Assies. 2009. *Legalising Land Rights: Local Practices, State Responses and Tenure Security in Africa, Asia and Latin America*.
- Urkidi, Leire. 2010. "A Glocal Environmental Movement against Gold Mining: Pascua-Lama in Chile." *Ecological Economics* 70(2):219–27.
- Urkidi, Leire. 2011. "The Defence of Community in the Anti-Mining Movement of Guatemala." *Journal of Agrarian Change* 11(4):556–80.
- VanderKlippe, Nathan. 2015. "When a 'floating Village' Falls to Earth." *The Global and Mail*. Retrieved February 3, 2016 (http://www.theglobeandmail.com/news/world/when-a-floating-village-falls-to-earth/article25876178/).
- Vatalis, Konstantinos I. and Demetrios C. Kaliampakos. 2006. "An Overall Index of Environmental Quality in Coal Mining Areas and Energy Facilities." *Environmental Management* 38(6):1031–45.

- Wallensteen, Peter. 2007. *Understanding Conflict Resolution*. London: Sage.
- Walter, Mariana and Joan Martinez-Alier. 2010. "How to Be Heard When Nobody Wants to Listen : Community Action against Mining in Argentina." *Canadian journal of development studies* 30(1–2):281–301.
- Wang, Canfa. 2006. "Chinese Environmental Law Enforcement: Current Deficiencies and Suggested Reforms." *Vt. J. Envtl. L.* 8:159.
- Wang, Er-xian. 2007. "Zhongguo de Mengkuang ziyuan[The Resources of Chinese Manganese Ore]." *Dianchi Gongye [Chinese Battery Industry]* 3:10.
- Wang, Heyan. 2016. "Digging Up Death, Extortion in China's Mines." *Caixin*, June 24. Retrieved (<http://english.caixin.com/2016-06-24/100958230.html>).
- Wang, Jianliang, Lianyong Feng, and Gail E. Tverberg. 2013. "An Analysis of China's Coal Supply and Its Impact on China's Future Economic Growth." *Energy Policy* 57:542–51.
- Wang, Pu, Steven A. Wolf, James P. Lassoie, and Shikui Dong. 2013. "Compensation Policy for Displacement Caused by Dam Construction in China: An Institutional Analysis." *Geoforum* 48:1–9.
- Wang, Shaoguang. 2004. "Coal Mine Safety Production Management: Transition of China's Management Model[meikuang Anquan Shengchan Jianguan: Zhongguo Zhili Moshi de Zuanbian]." *Comparative Studies (bijiao)* 13:79–110.
- Wang, Xingguo and Wenhan Yuan. 2013. "Kuangnong Jufeng Jiqi Jiejue Jizhi de Fashehuixue fenxi[An Analysis of Disputes between the State-Owned Coal Enterprises and Farmers and Settlement Mechanisms in Legal Sociology]." *Jiangsu shehui kexue* (6).
- Warwick, Mara and Eonard Ortolano. 2007. "Benefits and Costs of Shanghai ' S Environmental Citizen Complaints." *China Information* 21:237–68.
- WeekinChina. 2012. "The Billionaire's Wedding-All China Is Talking of Xing Libin's Lavish Marriage Ceremony for Daughter." *Week in China*. Retrieved November 1, 2017 (<https://www.weekinchina.com/2012/03/the-billionaire's-wedding/>).
- Wehr, Paul. 1998. "Manifest and Latent Conflict." *Conflict Research Consortium*. Retrieved March 7, 2018 (<https://www.colorado.edu/conflict/peace/example/wehr7489.htm>).
- Wei, Yiping. 2008. "Weng'An Shijian Diaocha: Jingfang Yu Heibang Guanxi Miqie Cheng Gongkai de Mimi.(Investigation of the Weng'An Incident: Close Ties between Police and Gangs Are Open Secret)." *Sanlian Shenghuo Zhoukan (Sanlian Life Weekly)*. Retrieved September 23, 2016 (<http://news.sina.com.cn/c/2008-07-10/144915908486.shtml>).
- Wen, Zhengyi. 2012. "The Money Paid for Mineral Rights Is Just the Returns of Exploration Capital Equity Invested by the State--Thoughts on and Suggestion for the Expansion of Mining Right Price System[kuangyequan Jiakuan Zhishi Guojia Chuzi Kancha Ziben Quanyi de Huibao-Dui]." *Natural Resource Economics of China[zhongguo guotu ziyuan jingji]* 25(4):9–11.
- World Bank. 2001. *Involuntary Resettlement, OP 4.12*. Washington, D.C.
- World Bank. 2007. *Cost of Pollution in China: Economic Estimates of Physical Damages*.
- World Bank. 2011. *Overview of State Ownership in the Global Mineral Industry*.
- World Bank, China Coal Information Institute, and Energy Sector Management Assistance Program(ESMAP). 2008. *Economically, Socially and Environmentally Sustainable Coal Mining Sector in China*.
- Wright, Tim. 2000. "Competition and Complementarity Township and Village Mines and the State Sector in China's Coal Industry." *China Information* 14(1):113–30.

- Wright, Tim. 2004. "The Political Economy of Coal Mine Disasters in China: 'your Rice Bowl or Your Life.'" *The China Quarterly* 179:629–46.
- Wright, Tim. 2006. "The Performance of China's Industrial Enterprises: A Coal Industry Perspective." *China Information* 20:165–99.
- Wright, Tim. 2007. "State Capacity in Contemporary China: 'closing the Pits and Reducing Coal Production.'" *Journal of Contemporary China* 16(October 2012):173–94.
- Wu, Fengshi. 2013. "Environmental Activism in Provincial China." *Journal of Environmental Policy & Planning* 15(1):89–108.
- Wu, Fulong. 2004. "Residential Relocation under Market-Oriented Redevelopment: The Process and Outcomes in Urban China." *Geoforum* 35(4):453–70.
- Wu, Wenjie and Jian Hu. 2007. "The Conflict Between Two Property Rights: The Mineral Right of Oil and Gas and the Land Property Rights[liangzhong Caican Quanli de Chongtu: Youqi Ziuan Kuangquan Yu Tudi Chanquan]." *Xi'an Shiyou University Journal* 16(3):5–11.
- Wu, Xiong, Xian Wei Jiang, Yu Fu Chen, Hian Tian, and Neng Xiong Xu. 2009. "The Influences of Mining Subsidence on the Ecological Environment and Public Infrastructure: A Case Study at the Haolaigou Iron Ore Mine in Baotou, China." *Environmental Earth Sciences* 59(4):803–10.
- Xie, Lei. 2009. *Environmental Activism in China*. Routledge.
- Xie, Qingxia and Maohua Dai. 2011. "A Review of the Researches on the Mineral Resource Law(woguo Kuangchan Ziyuan Fa Yanjiu Zongshu)." *Ecological Economy(shengtai jingji)* (1):181–84.
- Xing, Xintian. 2013. "Theoretical Thinking of the Money Paid for Mineral Rights[guanyu Kuangyequan Jiakuan de Lilun Sikao]." *Natural Resource Economics of China[zhongguo guotu ziyuan jinjing]* 26(2):4–9.
- Xinhua. 2015. "Land Subsidence Caused by Coal Mining in Shanxi | Thousand 'Floating Village' Will Be Relocated." *goodchinabrand.com*. Retrieved January 12, 2016 (<http://www.goodchinabrand.com/20343700070en.html>).
- Yang, Guobin. 2005. "Environmental NGOs and Institutional Dynamics in China." *The China Quarterly* 181(March 2005):46–66.
- Yang, Guobin and Craig Calhoun. 2007. "Media, Civil Society, and the Rise of a Green Public Sphere in China." *China Information* (2):211–36.
- Yang, Xiuyun, Heng Zhao, and Peter Ho. 2017. "Mining-Induced Displacement and Resettlement in China: A Study Covering 27 Villages in 6 Provinces." *Resources Policy* (35):408–18.
- Yin, Robert. 2014. *Case Study Research: Design and Methods*. Sage publications.
- Yin, Xiang and Wenyi Chen. 2013. "Trends and Development of Steel Demand in China: A Bottom-up Analysis." *Resources Policy* 38(4):407–15.
- Yu, Leimin. 2003. "Defects and Improvement of Current Mineral Resources Legal System of China[dangqian Woguo Kuangchan Ziyuan Falv Zidu de Buzu Yu Wanshan]." *Energy Research and Information* 19(2):2003.
- Zhan, Jing Vivian. 2013. "Natural Resources, Local Governance and Social Instability: A Comparison of Two Counties in China." *The China Quarterly* 213(213):78–100.
- Zhan, Jing Vivian. 2015. "Do Natural Resources Breed Corruption? Evidence from China." *Environmental and Resource Economics* 1–23.
- Zhan, Jing Vivian, Haiyan Duan, and Ming Zeng. 2015. "Resource Dependence and Human Capital Investment in China." *The China Quarterly* 221(May):49–72.

- Zhang, KunMin and ZongGuo Wen. 2008. "Review and Challenges of Policies of Environmental Protection and Sustainable Development in China." *Journal of environmental management* 88(4):1249–61.
- Zhang, Lei, Guizhen He, Arthur P. J. Mol, and Xiao Zhu. 2013. "Power Politics in the Revision of China's Environmental Protection Law." *Environmental Politics* 22:1029–35.
- Zhang, Lei, Arthur P. J. Mol, Guizhen He, and Yonglong Lu. 2010. "An Implementation Assessment of China's Environmental Information Disclosure Decree." *Journal of Environmental Sciences* 22(10):1649–56.
- Zhang, XiuWu et al. 2011. "Estimation of Lead and Zinc Emissions from Mineral Exploitation Based on Characteristics of Lead/zinc Deposits in China." *Transactions of Nonferrous Metals Society of China (English Edition)* 21(11):2513–19.
- Zhang, Yulin. 2013. "Disaster Reproduction and the Crisis of Governance—The Shanxi Example in China's Experience." *Rural China* 10(1):83–100.
- Zhao, Heng and Karlis Rokpelnis. 2016. "Local Perceptions of Grassland Degradation in China: A Socio-Anthropological Reading of Endogenous Knowledge and Institutional Credibility." *Journal of Peasant Studies* 43(6):1206–23.
- Zhao, Xiaohua and Shuying Li. 2013. "Survey and Study of Restructuring Harmonious Regional Relations between Mining Industry and Agriculture[Hexiequyue Kuangnong Guanxi Chonggou Zhi Diaocha He Yanjiu]." *Journal of Beijing City University* 2:5.
- Zhao, Yanjing and Chris Webster. 2011. "Land Dispossession and Enrichment in China's Suburban Villages." *Urban Studies* 48(3):529–51.
- Zheng, Yongnian. 2012. "China in 2011: Anger, Political Consciousness, Anxiety, and Uncertainty." *Asian Survey* 52(1):28–41.
- Zhou, Jindou. 2013. "Anti-Official and Anti-Rich VS Anti-Civilian and Anti-Poor: When Civilians Can Stand up? [Chouguan Chouhu Yu Choumin Choupin: Laobaixing Heshi Caineng Zhanqilai?]." *ifeng blog*. Retrieved January 9, 2017 (<http://blog.ifeng.com/article/30373012.html>).
- Zhou, li'an. 2007. "Governing China's Local Officials: An Analysis of Promotion Tournament Model(zhongguo Difang Guanyuan de Jisheng Jingbiaosai Moshi Yanjiu)." *Economy Research(Jingji Yanjiu)* (7):36–50.
- Zhu, Jieming. 2002. "Urban Development under Ambiguous Property Rights: A Case of China's Transition Economy." *International Journal of Urban and Regional Research* 26(March):41–57.
- Zhu, Jieming. 2004. "From Land Use Right to Land Development Right: Institutional Change in China's Urban Development." *Urban Studies* 41(7):1249–67.
- Zhu, Songli and Judith A. Cherni. 2009. "Coal Mining in China: Policy and Environment under Market Reform." *International Journal of Energy Sector Management* 3(1):9–28.
- Zhuang, Ping, Murray B. McBride, Hanping Xia, Ningyu Li, and Zhian Li. 2009. "Health Risk from Heavy Metals via Consumption of Food Crops in the Vicinity of Dabaoshan Mine, South China." *Science of the Total Environment* 407(5):1551–61.
- Zong, Yunfeng. 2012. "Caimei Chenxianqu Yimin Anzhi Wenti Tantao[On Resettlement Problem in Coal Mining Subsidence Area]." *China Coal* 10:24–27.

Summary

The mining governance in China features a dilemma: on the one hand, there are various issues inherent in China's mining institutions: 1) an outdated nature of the current legislation, 2) ambiguity in the regulations, and 3) administrative fragmentation of responsible authorities. On the other hand, China has witnessed a fast growing mining industry. Therefore, this study aims to explain this phenomenon by adopting the theories and conceptual framework on institutional function and credibility put forward by Ho (2005, 2014, 2016a). The central question is as follows: ***How do China's mining institutions affect the local communities, and to what extent do the rural residents perceive these as credible?***

To answer the main question, several sub-questions are formulated as follows:

- 1) *How do mining activities affect local communities' livelihood and the residents' perceptions of mining?*
- 2) *What factors influence the attitude and actions of local communities towards the environmental impacts of mining?*
- 3) *How can we measure the level and intensity of mining conflicts and what can be said about China's mining conflicts at the national level?*
- 4) *What are the institutional factors that influence Chinese mining-induced land subsidence and displacement, and what are the economic and social consequences for farmers affected by it?*

In this study, mixed-method research is performed through three instruments: 1) archival analysis, 2) comprehensive literature review, and 3) empirical fieldwork. The empirical data included survey answered by 352 farmers living in the vicinity of mines in eight counties, and interviews with 29 key informants.

Chapter 3 started with disaggregating four impacts that mining brings about. It found that mining did bring employment opportunities for local communities and thereby significantly improving the perceived net benefits. However, this was undermined by numerous negative impacts, especially mining-induced land subsidence and resettlement. As a remedy, relocation did help the affected farmers out of their miserable situation. However, the protracted process of relocation, insufficient compensation, and the concern for long-term livelihood, as illustrated in Chapter 6, does not significantly improve the perceived benefits

among the relocated farmers comparing to those who are not affected. In sum, the majority of respondents find that mining activities do not bring net benefits.

Despite that local residents consider environmental pollution in the investigated mining areas as very serious, Chapter 4 finds that a large group of farmers are reluctant to act against the nearby mines, although a relatively high occurrence of collective protests is witnessed. Economic dependency on mining complicates the relationship between pollution and EA, and this study found that residents once employed in mines are less likely to participate in EA. The theory of planned behavior is adopted, and regression analysis indicated that the EA level is best explained by three predictors: the neighbors' participation, the intention to engage in EA, and the seriousness of pollution. Perception of the neighbor's participation plays the most important role in the explanation of the EA level, which is line with the relatively high percentage (17.3%) participation in the collective protests against polluting mines.

Chapter 5 adopts a conflict analysis model to structurally analyze and gauge the mining legal disputes in China, and to identify several important characteristics of conflicts. Firstly, conflicts pertaining to land acquisition revolve around the disagreement over land rent between farmers and mining companies. Conflicts induced by land subsidence and resettlement center on the protracted process to relocate, low compensation and lacking long-term livelihoods. Secondly, there is a high degree of government involvement in mining-induced land subsidence cases. Government agencies were challenged in court due to their role as an arbitrator for determining the responsible mines for land subsidence, as an implementer for relocation, but also as a regulator for setting the compensation standards. Thirdly, perceptively, the land acquisition and relocation conflicts shall happen at the construction stage before mining begins. However, conflicts, in reality, tend to concentrate at the operation stage. Fourthly, this study has demonstrated that the conflicts on land acquisition are with a low intensity, but the mining-induced land subsidence and resettlement features a high intensity in terms of collective litigation and high appeal rate. Finally, inconsistent decisions were made by courts and most cases were not solved in courts.

Chapter 6 delves into an empirical analysis on mining-induced displacement and resettlement (MIDR). It found that displaced farmers were insufficiently compensated for the mining-induced damage. Respondents expressed concerns over higher living costs in the relocation villages, and were ill-informed about resettlement schemes. We also found widespread conflict between farmers, mining companies and local government, this being the case in over two-thirds of the surveyed villages. Through additional institutional analysis, it is ascertained that existing policies and laws predominantly focus on the surface rather than underground mining. Compensation is rarely provided unless damage to land and housing has grown to unmanageable proportions. In result, displacement and resettlement is generally chosen as a sole, yet, final solution.

To summarize, this book concluded that the institutions of mining land expropriation and environmental protection in China have emerged as an ‘empty institution’, of what Ho (2016b, 1147) describes as an institution that is largely ineffective and ignored, but simultaneously socially accepted and little contested. But the MIDR has become non-credible institutions, which exhibits as lacking of focus on underground mining, national compensation standard, and unclear distribution of the liability at the macro level, and the forced resettlement, high tensions and conflicts, and concerns with future livelihood at the micro level.

The book argues that it is the non-enforcement of mining land expropriation and environmental regulations that are conducive to economic development. At the early operational mining stage, mining activities had contributed as a complimentary livelihood, therefore the farmers would tolerate some risks. When the environmental degradation and land loss does not threaten the livelihood of the local community to a great extent, only a mild reaction is expected. However, there are inherent risks in the empty institution that has a tendency to evolve into a non-credible institution. When the function of access to land as their subsistence was disrupted by land subsidence and ineffective resettlement schemes, the resistance to mining increased. Meanwhile, the institutional arrangements did not provide sufficient protection and sustainable livelihood, the perceived credibility would definitely decrease.

In view of the factors discussed in this book, we maintain that it is crucial to consider the function of institutions. When projects affect the livelihood of communities who consider the land as a means of social welfare, it is needed to guarantee that measures are in place to ensure social welfare and alternative employment of the targeted community. Some general commendations are outlined: 1) to formulate a sustainable framework to mitigate the risks of displacement and resettlement. 2) to ensure social welfare and alternative employment of the affected farmers. 3) to diversify the sources of incomes and establish long-term benefit sharing schemes. 4) to provide local communities ways to participate effectively in the decision-making processes.

Samenvatting

Het bestuur van China's mijnbouw is gekenmerkt door een dilemma. Aan de ene kant zijn er verschillende problemen die inherent zijn aan de Chinese instituties van mijnbouw, zoals 1) een verouderd karakter van de huidige wetgeving, 2) onduidelijkheid in de regelgeving, en 3) administratieve fragmentatie van de verantwoordelijke autoriteiten. Aan de andere kant is China getuige geweest van een snelgroeende mijnindustrie. Deze studie heeft daarom tot doel dit fenomeen te verklaren, gebruik makende van de theorieën en het conceptuele raamwerk voor institutionele functie en 'credibility' (Ho, 2005, 2014, 2016a). De hoofdvraag is als volgt: Hoe beïnvloeden de mijnbouw-instituties de lokale bevolking, en in welke mate beschouwen de boeren deze als 'credible'?

Om de hoofdvraag te beantwoorden, zijn verschillende deelvragen opgesteld:

1. Welke invloed hebben de mijnactiviteiten op het levensonderhoud van de lokale bevolking, alsmede hun perceptie op de mijnactiviteiten?
2. Welke factoren beïnvloeden de houding en acties van de lokale bevolking met betrekking tot de milieueffecten van mijnbouw?
3. Hoe kunnen we het niveau en de intensiteit van mijnconflicten meten, en wat kan worden gezegd over de mijnconflicten in China op nationaal niveau?
4. Wat zijn de institutionele factoren die van invloed zijn op de door mijnbouw veroorzaakte bodemdaling en ontheemding, en wat zijn de economische en sociale gevolgen voor de boeren die hierdoor worden getroffen?

In dit onderzoek wordt een mixed-method onderzoek uitgevoerd met behulp van drie instrumenten: 1) een archiefanalyse, 2) een uitgebreid literatuuronderzoek, en 3) empirisch veldwerk. De empirische gegevens werden gevraagd door 352 boeren die in de buurt van mijnen wonen, verspreid over acht verschillende districten in China. Daarnaast werden er 29 interviews gehouden met belangrijke informant(en).

Hoofdstuk 3 begon met het uiteenzetten van vier effecten die mijnbouw teweegbrengt. Hieruit bleek dat mijnbouw werkgelegenheidskansen voor de lokale bevolking bood wat de door boeren waargenomen netto voordelen aanzienlijk verbeterde. Dit werd echter ondermijnd door talrijke negatieve effecten, met name de door mijnbouw veroorzaakte bodemdaling en hervestiging. Als remedie heeft verhuizing de getroffen boeren geholpen om uit hun verslechterde situatie te komen. Echter heeft het langdurige proces van hervestiging, onvoldoende compensatie, en zorgen voor langdurig levensonderhoud (zoals

beschreven in hoofdstuk 6) de waargenomen voordelen niet significant verbeterd vergeleken met degenen die niet zijn getroffen. Kortom, de meerderheid van de respondenten vindt dat mijnactiviteiten geen netto voordelen opleveren.

Ondanks dat lokale bewoners milieuvervuiling in de onderzochte mijngebieden als zeer ernstig beschouwen, komt in hoofdstuk 4 naar voren dat een grote groep boeren terughoudend is om tegen de mijnbedrijven op te treden, hoewel er een relatief hoog aantal gezamenlijke protesten kan worden waargenomen. Economische afhankelijkheid van mijnbouw bemoeilijkt de relatie tussen vervuiling en milieu activisme (EA), en deze studie wees uit dat bewoners die ooit in mijnen hebben gewerkt, minder snel aan EA zullen deelnemen. De theorie van gepland gedrag is aangenomen en regressieanalyse gaf aan dat het EA-niveau het best kan worden verklaard door drie voorspellers: de deelname van de buren, de intentie om deel te nemen aan EA, en de ernst van vervuiling. De deelname van buren speelt de belangrijkste rol om het EA-niveau te verklaren, wat samenhangt met het relatief hoge percentage (17,3%) deelname aan gezamenlijke protesten tegen vervuilende mijnen.

Hoofdstuk 5 gebruikt een conflictanalysemodel om de juridische geschillen over mijnbouw in China structureel te analyseren en te peilen, en daarnaast om verschillende belangrijke kenmerken van conflicten te identificeren. Ten eerste, conflicten met betrekking tot de verwerving van grond komen voort uit onenigheid over de huur van grond tussen boeren en mijnbouwbedrijven. Conflicten veroorzaakt door bodemdaling en hervestiging richten zich op het langdurige proces om te verhuizen, lage compensatie en een gebrek aan levensonderhoud op de lange termijn. Ten tweede is er een hoge mate van overheidsbetrokkenheid bij de door mijnbouw veroorzaakte bodemdaling. Overheidsinstanties werden voor de rechbank uitgedaagd vanwege hun verschillende rollen als arbiter voor het bepalen van welke mijnen verantwoordelijk zijn voor bodemdaling, en de uitvoerder voor herplaatsing, maar ook als bemiddelaar voor het vaststellen van de compensatieregels. Ten derde zullen de conflicten over de verwerving van land en herplaatsing waarneembaar zijn in de constructie fase voordat de mijnbouw begint. Ten vierde heeft deze studie aangetoond dat de conflicten over grondverwerving van lage intensiteit zijn, maar dat de door mijnbouw veroorzaakte bodemdaling en hervestiging een hoge intensiteit kent in termen van gezamenlijke geschillen en hoge mate van gevallen die in beroep gaan. Ten slotte werden inconsistente beslissingen genomen door rechbanken en de meeste gevallen werden niet opgelost in rechbanken.

Hoofdstuk 6 beschrijft een empirische analyse van de door mijnbouw geïnduceerde verplaatsing en hervestiging (MIDR). Er werd vastgesteld dat ontheemde boeren onvoldoende werden gecompenseerd voor de door mijnbouw veroorzaakte schade. Respondenten uitten hun bezorgdheid over de hogere kosten van levensonderhoud in de vervangende dorpen, en waren slecht geïnformeerd over de regeling betreft hun hervestiging. Verder werden er in twee derde van de onderzochte dorpen conflicten

waargenomen tussen boeren, mijnbouwbedrijven en de lokale overheid. Door aanvullende institutionele analyse werd vastgesteld dat het bestaand beleid en bestaande wetgeving zich voornamelijk richt op de grondoppervlakte in plaats van ondergrondse mijnbouw. Compensatie wordt in het laatste zelden verstrekt, tenzij de schade aan grond en woningen tot ontoelaatbare proporties is gegroeid. Als resultaat wordt verplaatsing en hervestiging in het algemeen gekozen als de enige, maar definitieve oplossing.

Samenvattend concludeert dit boek dat de mijnbouw-instituties met betrekking tot onteigening en milieubescherming in China naar voren zijn gekomen als een ‘lege institutie’, iets wat Ho (2016b, 1147) omschrijft als een institutie die grotendeels ondoeltreffend en genegeerd is, maar tegelijkertijd sociaal geaccepteerd en weinig betwist wordt. De MIDR is echter een ‘non-credible’ institutie geworden, die op macroniveau blijk geeft van een gebrek aan focus op ondergrondse mijnbouw, nationale compensatieregels en onduidelijke verdeling van de aansprakelijkheid, en op microniveau blijk geeft aan gedwongen hervestiging, hoge spanningen en conflicten, en zorgen over toekomstig levensonderhoud.

Dit boek betoogt dat het niet-afdwingen van de instituties betreft onteigening van mijnbouwland en milieuregels, bevorderlijk is voor economische ontwikkeling. In de vroege fase van operationele mijnbouw hebben de mijnbouwactiviteiten bijgedragen als een vorm van extra levensonderhoud, en daarom accepteren boeren een zekere mate van risico. Zolang de aantasting van het milieu en het landverlies niet in grote mate het levensonderhoud van de lokale bevolking bedreigd, kan slechts een milde reactie worden verwacht. Er zijn echter inherente risico’s in de lege institutie die de neiging heeft om te evolueren naar een ‘non-credible’ institutie. Wanneer de functie van toegang tot land als levensonderhoud werd verstoord door bodemdaling en ineffektieve hervestigingsplannen, neemt de weerstand tegen mijnbouw toe. Ondertussen bieden de institutionele regelingen niet voldoende bescherming en levensonderhoud, iets wat de waargenomen ‘credibility’ zeker zal verminderen.

Gezien de factoren die in dit boek werden besproken, zijn wij van mening dat het van cruciaal belang is om de functie van instituties te overwegen. Wanneer projecten van invloed zijn op het levensonderhoud van de lokale bevolking die het land beschouwen als een belangrijk middel voor maatschappelijk welzijn, moet worden gegarandeerd dat er maatregelen zijn getroffen om de sociale welvaart en alternatieve werkgelegenheid voor de lokale bevolking te waarborgen. Enkele algemene aanbevelingen kunnen worden voorgesteld: 1) het opstellen van een duurzaam kader om de risico’s van verplaatsing en hervestiging te verminderen, 2) zorgen voor voldoende sociale welvaart en alternatieve werkgelegenheid voor de getroffen boeren, 3) diversificatie van de inkomensbronnen en het vaststellen van regelingen voor het delen van voordelen op de lange termijn, en 4) lokale bevolking manieren aanbieden om effectief deel te nemen aan de besluitvormingsprocessen.

Curriculum Vitae

Xiuyun Yang was born on the 13th July 1985 in Xiushan, Chongqing, China. He has a diversified education and experience in China's industries. He obtained a bachelor degree of engineering with the major of Medical Informatics Engineering at Sichuan University, Chengdu, China in 2008; and a master degree of science in the program of Engineering and Policy Analysis, at Faculty of Technology, Policy and Management, Delft University of Technology in 2012. For the bachelor and master studies, he was awarded full scholarships, covering all tuition fees and living expenses, from the Chinese government, and Faculty of Technology, Policy and Management, respectively. In between studies, he has worked as an industry analyst and quality engineer for three years in Shanghai.

In February 2014, he started his Ph.D. research as a member of the ERC project on land-based institutions in China (www.recoland.eu), supervised by Prof. Peter Ho and Prof Meine Pieter van Dijk. His dissertation revolves around mining institutions and social conflicts induced by mining land expropriation, land subsidence, and adverse environmental impacts. For his research, he has conducted extensive fieldwork in China, including in-depth interviews with officials and activists, as well as supervising a team of undergraduate students on a national survey, and collaborating with a Dutch colleague with fieldwork on forest tenure in rural China. He acquires his research skills via various graduate school courses and summer schools, including IPSA-NUS summer school for Social Science Research Methods at the National University of Singapore, and Chinese Political Sociology Workshops held by Beijing center of University of Chicago and Renmin University of China.

During the research, he attended plenty of international conferences, including European Association for Evolutionary Political Economy (EAEPE) conference 2016 in Manchester, UK; International Association for Impact Assessment (IAIA) 2017 Symposium Resettlement and Livelihood in Manila, Philippines; LANDac International Conference 2017 in Utrecht, Netherlands; International Conference on Agriculture and Rural Development in China (ICARDC) XIII Conference in Guangzhou, China; and NIAS 10th Conference on Environmental Asia in Oslo, Norway. Yang has published 1 article in Resources Policy, and has 3 more papers under review.

Publications

- Xiuyun Yang, Heng Zhao, Peter Ho (2017). Mining-induced displacement and resettlement in China: A study covering 27 villages in 6 provinces, *Resources Policy*. Vol. 53, pp. 408-418.

Credibility and Social Conflicts

Mining Institutions and Rural Community in China

Xiuyun Yang

Mining governance in China features a dilemma: on the one hand, there are various issues inherent in China's mining institutions: 1) an outdated nature of the current legislation, 2) ambiguity in the regulations, and 3) administrative fragmentation of responsible authorities. On the other hand, China has witnessed a fast growing mining industry. Therefore, this book aims to explain this phenomenon by adopting the theories and conceptual framework on institutional function and credibility.

It argues that the institutions of mining land expropriation and environmental protection in China have emerged as an 'empty institution', that is largely ineffective and ignored, but simultaneously socially accepted and little contested. But the MIDR has emerged as non-credible institutions, which exhibits as lacking of focus on underground mining and national compensation standard, and unclear distribution of the liability at the macro level, and the forced resettlement, high tensions and conflicts, and concerns with future livelihood at the micro level.

The book argues that it is the non-enforcement of mining land expropriation and environmental regulations that are conducive to economic development. At the early operational mining stage, mining activities had contributed as a complimentary livelihood, therefore the farmers would tolerate some risks. When the environmental degradation and land loss does not threaten the livelihood of the local community to a great extent, only a mild reaction is expected. However, there are inherent risks in the empty institution that has a tendency to evolve into a non-credible institution. When the function of access to land as their subsistence was disrupted by land subsidence and ineffective resettlement schemes, the resistance to mining increased.



RECOLAND
LAND-BASED INSTITUTIONS IN CHINA