Changes in the livelihoods of people in protected areas in China in the past 40 years—based on Jiuzhaigou and Shennongjia Protected Areas

by

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Abstract

The use of Protected areas (PAs) is an effective approach for conservation worldwide. The support of local communities has significant influence on the success of conservation areas. This research provides further insights into the livelihoods of people living in PAs. It examines the perspectives of local villagers on the establishment of PAs and the development of associated tourism industries.

I used a case study approach to conduct an in-depth examination of two PAs in China. I conducted 100 semi-structured interviews with local elites, villagers, and government officials to identify changes experienced by the villagers, equity issues, and governance problems.

Broadly, I offer insights into the complex social-ecological changes being experienced by local communities in two PAs in China. Specifically, I demonstrate that at both locations, livelihoods have been limited to some extent by the establishment of the PAs. Alternative livelihood options were critical for local people, and needed to have strong connections with policies aimed at improving livelihoods, not only focusing on income, but also accounting for improvements in social, human, physical and natural aspects of their livelihoods. I also explore the perceptions of equity change over time and across development stages so that I can assess how the changes depend on local economic activities and policy implementation. I demonstrate that changes in distribution equity are more readily recognized than changes in participation equity or
recognition equity. In practice, the central government policy to promote equity in China is severely compromised when it is implemented by local governments.

I show that the addition of key events into the analysis provides important information on equity changes and, based on this, the equity analysis framework is modified. Finally, I demonstrate that the livelihoods of local peoples are closely related to local government structure and institutional arrangements. In the case of the Jiuzhaigou Biosphere Reserve (JBR), the government structure and institutional arrangements did not encourage livelihood improvements. A clear distribution of management authority and responsibility among different government departments is needed to solve the conflicts that have arisen.
Lay Summary

Protected areas (PAs) are generally established to protect the biodiversity of a region. The livelihoods of local people may be affected by the establishment of PAs due to the introduction of limitations to how they use the natural resources in the PA. Local perceptions of the changes in livelihoods resulting from the establishment of PAs may affect the overall acceptance of the PAs by local people. This research provides insights into the livelihoods of people living in PAs from their perspective. The provision of alternative livelihood options was critical for local people after their livelihoods had been limited by PAs. Distribution equity was the most important element for the participants. Compared with distribution equity, participation equity and recognition equity were harder to obtain and were sometimes ignored by different participants. The research showed that the livelihoods of local people could be affected adversely by unreasonable government structure and institutional arrangements.
Preface

Three original manuscripts are presented in this dissertation. Versions of Chapters 3 and Chapter 4 have been published (Weiye Wang, Jinlong Liu, Robert Kozak, Mengmeng Jin, John Innes. 2018 How do conservation and the tourism industry affect local livelihoods? A comparative study of two Nature Reserves in China, Sustainability, 10(6)1925, https://doi.org/10.3390/su10061925; Weiye Wang, Jinlong Liu, John Innes. 2019. Conservation equity for local communities in the process of tourism development in protected areas: A study of Jiuzhaigou Biosphere Reserve, China, World Development, 124 Available online 14 August 2019 https://doi.org/10.1016/j.worlddev.2019.104637). Chapter 5 has been prepared for publication in a scientific journal. They were all written by Weiye Wang in collaboration with her supervisor and committee members.

Weiye Wang identified the research problem and methodologies, and developed the research design under the guidance of Dr. Innes. Weiye Wang collected the data and conducted the data analyses for the three manuscripts. She also prepared all manuscripts. Dr. Liu made the field contacts and identified collaborating organizations. Dr. Kozak suggested the use of the Sustainable Livelihoods Framework early in the research. Dr. Hagerman provided suggestions for the design of the methodology. Miss Mengmeng Jin worked as a fieldwork assistant. Miss Li Guo provided suggestions for Chapter 5. The study was approved by the Behavioral Research Ethics Board of the University of British Columbia (Number: H15-02417).
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List of Abbreviations

ALP  Alternative livelihood project
APG  Aba Prefecture Government
CBD  Convention on Biological Diversity
CI   Conservation International
DFID Department of Foreign and International Development
EPB  Environmental Protection Bureau
FB   Forestry Bureau
GDP  Gross Domestic Product
HURDB Housing and Urban-Rural Development Bureau
IUCN International Union for Conservation of Nature
JBR  Jiuzhaigou Biosphere Reserve
JMA  Jiuzhaigou Management Administration
MEP  Ministry of Environmental Protection
MHURD Ministry of Housing and Urban-Rural Development
NGOs Non-government organizations
NRs  Nature reserves
NTFPs Non-timber forest products
PAs  Protected areas
PoWPA Work on Protected Areas
RFFP Return Farmland to Forest Project
SDG  Sustainable Development Goals
SFA  State Forestry Administration
SL   Sustainable Livelihoods
SNNR Shennongjia National Nature Reserve
SNNRMA  Shennongjia National Nature Reserve Management Administration
SS   Scenic Spots
STIG Shennongjia Tourism Investment Group
TCPS Tri-Council Policy Statement
TNC  The Nature Conservancy
UNEP United Nations Development Program
UNESCO United Nations Educational, Scientific and Cultural Organization
WWF  World Wildlife Fund
WCED World Commission on Environment Development
WDPA World Database on Protected Areas
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To the children of the communities where I worked in China
Chapter 1: Introduction

Protected areas (PAs) have traditionally been seen as one of the most important tools for conserving endangered wildlife and biodiversity (Geldmann et al., 2015). However, PAs often involve the displacement of local people. With the spread of development theory, human concerns moved to center stage in the 1970s and early 1980s, and revenue sharing from tourism was suggested at the 1982 World Parks congress in Bali as a method to support communities surrounding PAs (Naughton-Treves, Holland, & Brandon, 2005).

PAs in China experienced the same process: the initial purpose for the establishment of PAs was to protect biological diversity. Since then, social-economic development for local people has emerged as an important consideration (Nepal, 2002). China, with its large population and rapid economic growth, provides a unique context for the development of PAs. However, we know very little about the impacts of PAs on local livelihoods in China, or how livelihoods have changed in the context of a rapid development (Zhong et al., 2015; Zhang et al., 2017).

In this study, I examine the impacts that the establishment of PAs have had on the livelihoods of local people in two protected areas in China by asking: 1) What changes have local people been experiencing since the PA was established? 2) How do stakeholders perceive changes in equity with respect to the cost and benefits that local communities experience? 3) How do local governments affect the management authority and village development in PAs?
In this dissertation, I first introduce the theory and background of conservation and livelihoods (Chapter 1), followed by a description and explanation of the methodology (Chapter 2). I then examine the remarkable changes that local people in two PAs in China have experienced, basing my work on their own perceptions (Chapter 3), and discuss the equity issues that have arisen throughout the entire process (Chapter 4). I analyze the issue of irrational governmental organization (Chapter 5), and present a final discussion of my findings (Chapter 6). More details of the thesis structure are provided in section 1.4 (Overview of the Dissertation).

1.1 Background

1.1.1 Approaches to Conservation and Livelihoods

1.1.1.1 Protected Areas and Livelihoods

Modern protected areas (PAs) were first established in the 19th century in North America, Australia, Europe, and South Africa (e.g. 1864, Yosemite National Park in the U.S.; 1872, Yellowstone National Park in the U.S.; 1866, Blue Mountains National Park in Australia; 1879, Royal National Park in Australia; 1885 Banff National Park in Canada; 1887, Tongariro National Park in New Zealand) (Naughton-Trevés, Holland, & Brandon, 2005). Following the establishment of these early parks, the idea of PAs spread around the world, and other countries began to adopt the concept (Phillips, 2004). In the last century, PAs have increased remarkably, both conceptually and geographically (Watson et al., 2014). However, the effectiveness of PAs has been criticized due to the continuing loss, degradation, downsizing and fragmentation of natural habitats (Allan et al. 2017; Butchart et al. 2012; Mascia et al., 2014), and the decline in the populations of key species (Craigie et al. 2010; Micheli & Niccolini 2013). Recent reviews have
concluded that most of time, well-managed PAs can play an important role in reducing habitat loss and fragmentation (Geldmann et al., 2013; Clark et al., 2008), preventing species extinctions and biodiversity loss, and maintaining food and water supplies (Dudley & Stolton, 2003; Postel & Thompson, 2005; Juffe-Bignoli et al. 2014a; Watson et al., 2014). Due to concerns about the rapid loss of species and ecosystems, the amount of land and sea designated as PAs has increased remarkably since the 1970s. Based on data from the World Database on Protected Areas (WDPA), as of April 2016 there were 202,467 PAs, covering about 14.7% (19.8 million km²) of the world’s territories and inland water areas (UNEP-WCMC and IUCN, 2016). The interest in land designated to be under legal protection continues to grow; approximately 1% of recorded PAs were expanded after 2014 (UNEP-WCMC and IUCN, 2016). In 2010, the 196 signatory countries of the Convention on Biological Diversity (CBD) agreed to adopt the Strategic Plan for Biodiversity and the Aichi targets. Target 11 suggested that to achieve effective protection and management by 2020, the number of PAs needed to be increased to at least 17 percent of terrestrial and inland water areas, and 10 percent of coastal and marine areas (CBD, 2018). PAs were also adopted by the United Nations in 2015 as an important approach to meeting goals Sustainable Development Goals 14 and 15 of the 2030 Agenda for Sustainable Development, which aim to conserve ocean resources and terrestrial ecosystems (UN, 2019).

With the rapid geographic expansion of PAs, the number of local people interacting with PAs is increasing. As a result, increasing conflicts have arisen between the needs of biodiversity conservation and the needs of local communities (Watson et al., 2014; Duan & Wen, 2017;
Clements et al., 2010). The approach adopted by PAs in the past has been to isolate the land and evict local people, as people have generally been seen as a threat to conservation (Naughton-Treves, Holland, & Brandon, 2005; Bennett & Dearden, 2014; Wright et al., 2015).

This type of conservation has been termed “fortress” or “protectionist” conservation, and has been at the centre of biodiversity conservation strategies for decades (Torri, 2011; Büscher & Dietz, 2005). As a result, during the process of PA establishment, the rights and interests of local people have often been ignored and their access rights, withdrawal rights, and management rights to natural resources have been voided or relocated (Bennett & Dearden, 2014).

The impacts of PAs on local people have been mixed (Table 1). On the benefits side, PAs have the potential to mitigate climate change and natural disasters, such as storms, floods, and landslides (Dudley, Higgins-Zogib & Mansourian, 2009). PAs can also contribute to the maintenance of essential ecosystem services, including securing water supply and quality, ensuring food security, and maintaining human health (Dudley, Higgins-Zogib, & Mansourian, 2009; Dudley et al., 2011). PAs also contribute to spiritual and cultural welfare by protecting sacred natural sites with cultural values (Dudley et al., 2011). PAs can become attractions for tourism and recreation, resulting in job opportunities and revenue streams that can benefit local communities (MacKinnon, Dudley, & Sandwith, 2011; Stolton et al., 2008)(more details about tourism in PAs can be found in 1.1.1.2). A global review and analysis (data from 165 terrestrial and marine PAs) of the social impacts and conservation outcomes of PAs found that positive socioeconomic
benefits are related to positive conservation outcomes (Oldekop et al., 2015). Another study (Naidoo et al., 2019), focusing on PAs in 34 developing countries, found that compared with households living further than 10 km from PAs, people living in multi-use PAs (IUCN categories V and VI, and unrelated with tourism) were less likely to be poor. This was because local people could enjoy the benefits from environmental protection, which means that more natural resources could be used. They could also access markets (unlike categories I to IV PAs) where they could sell plant and animal products. However, PAs may also result in forced emigration, increased restrictions on the use of natural resources, loss of tenure, and other socio-cultural conflicts (Bennett & Dearden, 2014). The livelihoods of local people are usually affected by PA establishment (Figure 1) through the denial of their access, withdrawal, and management rights to resources (Wright et al., 2015; Colchester, 2004). PA establishment in many places such as the Congo basin, the Mkomazi Game Reserve in Tanzania, and Yellowstone National Park in the U.S. forced the eviction or resettlement of entire local communities to make room for preservation (Cernea & Schmidt-Soltau, 2006; Brockington, 2004; Colchester, 2004). In addition, it appears that some more marginalized households are seeing a deterioration in their material condition due to the conservation induced displacements (Kabra, 2009). This approach to conservation has been criticized by many anthropologists and sociologists, as it denies local peoples' rights to land, undermines their livelihoods, causes property loss, offers little or no compensation, and increases poverty (e.g. Colchester, 2004; Dudley et al., 2010; Vedeld et al., 2012).
Since the 1982 World National Parks Congress in Bali, a marked shift in the protection approach has occurred globally, with a move away from fortress conservation towards a more equitable conservation strategy, reflecting how local people’s rights have started to move to the centre stage (Dudley et al., 2010; Naughton-Treves, Holland, & Brandon, 2005). The International Union for the Conservation of Nature (IUCN) has changed the definition of PA to, “a clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values” (Dudley & Stolton, 2008). This definition places greater emphasis on “nature conservation,” and the word “nature” (as used by some actors) includes broader ecosystem services and consideration for cultural values, especially for Indigenous and local peoples (Juffe-Bignoli et al., 2014a). Since the mid-1980s, more holistic approaches that integrate social and economic development with biodiversity conservation have been adopted (Naughton-Treves, Holland, & Brandon, 2005). For example, integrated conservation and development projects that incorporate economic, social, and political challenges in addition to the existing environmentally-focused strategies to conservation have been used as a fundamental framework for many international non-government organizations (NGOs) that previously focused only on nature conservation, such as Conservation International (CI), the IUCN, and the World Wildlife Fund (WWF) (Reed et al., 2016). These approaches have resulted in a shift away from the old conservation model in some areas, but the idea of excluding local people from PAs still remains deeply embedded in many conservation practices (Reed et al., 2016).
Figure 1 is based on an examination of the relevant literature and on the pilot studies conducted during this research project. It illustrates the relationship between the establishment of PAs and changes in livelihoods. Creating PAs may cause changes in livelihoods by limiting the access rights of local people to the use of natural resources, which in turn may lead to a search for alternative livelihood strategies, such as ecotourism development. Alternatively, resettlement can occur as a direct result of the establishment of PAs, leading to changes in livelihoods.
### Table 1 Potential impacts of protected areas on local people

<table>
<thead>
<tr>
<th>Establishment of PAs</th>
<th>If develop tourism in PAs</th>
</tr>
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<tbody>
<tr>
<td><strong>Pros</strong></td>
<td><strong>Pros</strong></td>
</tr>
<tr>
<td>Increases food security</td>
<td>Increased wealth</td>
</tr>
<tr>
<td>Increases wild plant and animals sell at nearby market— increase income</td>
<td>Empowerment of local community</td>
</tr>
<tr>
<td>Securing water supply and quality</td>
<td>Empowerment of women</td>
</tr>
<tr>
<td>Protects genetic recourses</td>
<td>Provide jobs/income</td>
</tr>
<tr>
<td>Ensuring food security</td>
<td>Improved governance</td>
</tr>
<tr>
<td>Mitigation climate change and natural disaster</td>
<td>Improvements in infrastructure</td>
</tr>
<tr>
<td>Maintenance of culture services and recreation</td>
<td>Better health</td>
</tr>
<tr>
<td>Disease control</td>
<td>Greater community organization</td>
</tr>
<tr>
<td><strong>Cons</strong></td>
<td><strong>Cons</strong></td>
</tr>
<tr>
<td>Limitation on natural resources usage</td>
<td>Pollution</td>
</tr>
<tr>
<td>Loss of land tenure</td>
<td>Increase conflicts</td>
</tr>
<tr>
<td>Increased poverty</td>
<td>Inequitable benefits sharing</td>
</tr>
<tr>
<td>Forced migration</td>
<td>Increases social tension</td>
</tr>
<tr>
<td>Loss of food security</td>
<td>Loss of culture and tradition</td>
</tr>
<tr>
<td>Increased vulnerability</td>
<td></td>
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<tr>
<td>Loss of local culture</td>
<td></td>
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<tr>
<td>Increases conflicts</td>
<td></td>
</tr>
<tr>
<td>Crop-raiding by wildlife</td>
<td></td>
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</table>

Sources: Dudley et al., 2011; Brockington and Schmidt-Soltau, 2004; Brondo and Brown, 2011; Kelly, 2011; Lele et al., 2010; Adams et al., 2004; Peters, 1999; Schmidt-Soltau, 2009; Lustig and Kingsbury, 2006; Kabra, 2009; Bennett & Dearden, 2014; Naidoo et al, 2019.
1.1.1.2 Tourism in Protected Areas

Tourism development based on the natural surroundings of PAs has been seen as a strategy to protect the environment with a small ecological footprint, as well as bringing direct benefits (such as increasing jobs and income, creating development opportunities for local tourism entrepreneurs, developing markets for local products and services, providing direct payments for ecosystem services) and indirect benefits (better infrastructure, education, health services, empower local community, empower women) to local communities (Nyaupane & Thapa, 2004; Eagles et al., 2002; Almeyda et al., 2010; Hernandez et al., 2005; Jones, 2005; Nepal, 2007; Vivanco, 2001; Weaver & Lawton, 2007) (Table 1). By measuring more than 600 PAs in 34 developing countries, Naidoo et al. (2019) found that tourism development in PAs could have significant positive effects on household wealth and on children’s health, as well as reducing poverty by increasing income from tourism-related employment and markets.

Many case studies have demonstrated the benefits that tourism can bring. For example, in the Gwaii Hannas National Park Reserve in Canada, where ecotourism has been developed involving the local Haida people, a positive relationship between Parks Canada and the Haida people has been found (Thomlinson & Crouch, 2012). The largest private forest reserve in Canada—the Haliburton Forest and Wildlife Reserve, is successfully managed and financially self-sufficient, with 70% of revenues deriving from tourism activities (Eagles et al., 2002). And in southwestern Uganda, a change in women’s traditional roles has occurred due to their participation in
ecotourism activities, which has allowed them new sources of income and more rights (Tran & Walter, 2014).

However, few researchers advocate tourism as a panacea for communities in PAs: some studies have indicated that tourism may cause benefit leakage and social tensions due to the inequitable distribution of tourism benefits among community members. This is because the initiatives are usually driven by individual entrepreneurs rather than by local communities, primarily due to a lack of start-up capital. Tourism could also cause environmental pollution, wildlife population decline, loss of traditions and culture, and conflicts in local communities (Stone & Wall, 2004; Gurung & Seeland, 2008; Broadbent et al., 2012). For example, working in PAs in Hainan province in China, Stone and Wall (2004) demonstrated that local communities received very few socioeconomic benefits from the development of tourism, and were not included in the planning, implementation, or monitoring phases of their establishment. In another case, Stronza and Gordillo (2008) identified some negative influences of three Amazon ecotourism projects, including restrictions on time, decreased reciprocity, and social conflict. Similar results have been found in other case studies in both developing and developed countries (Hernandez et al., 2005; Jones, 2005).

These negative cases do not refute the positive impacts that ecotourism present by pursuing socioeconomic development with a small ecological footprint on the environment (Broadbent et al., 2012; Hunter & Shaw, 2005). In determining the appropriate balance between positive and
negative impacts, Krüger (2005) identified that local community involvement is a key element to ensure the sustainability of ecotourism. His conclusion was based on a meta-analysis of 251 ecotourism case studies worldwide. He claimed that local people should not be alienated from the land, and should have opportunities to participate in the development of ecotourism. However this does mean that all decision-making powers have to be devolved to local people (Krüger, 2005).

While the existing literature provides a good understanding of the impacts of tourism on the livelihoods of people living in or close to PAs, in the case of China, there is only a small amount of literature that deals fully with the changes in livelihoods of local people that occur when a PA is established (Liu et al., 2001). This represents a significant gap: there is a clear need for empirical work on the effects of PA establishment and tourism development. The first aim of my dissertation is to contribute to filling this gap, and doing so from the perspective of local people. More details about my research questions and objectives can be found in section 1.2. The theoretical foundations for this part of my research are presented in section 1.3.1. The methods used in the study are described Chapter 2, and the results of this part of the study are presented in Chapter 3.

1.1.2 Social Equity for Local Communities in Protected Areas

In the view of many anthropologists and sociologists, the process of achieving biological conservation has often resulted in the less well-off (e.g. low income communities, Indigenous
peoples) receiving fewer environmental goods and less environmental protection, while simultaneously being exposed to greater environmental risks and other problems (Schlosberg, 2004; Shoreman-Ouimet & Kopnina, 2015). This is an important issue of social equity that is directly related to the field of biodiversity conservation.

Theories on social equity in biodiversity conservation focus on the costs and benefits of the decisions being made, especially on the distribution of costs and benefits between the rich and the poor (Friedman, 2018; Bovarnick, 2010). Equity is usually defined by three dimensions: distribution equity, which focuses on who enjoys benefits and who bears costs; procedure equity, referring to the decision-making process, i.e. who participates and how; and recognition equity, concerning respect for different cultures and identities (Friedman, 2018; Martin et al., 2016; Sikor et al., 2014). In PAs, the main equity concerns are focused on access to natural resources, land rights and tenure or ownership, sharing economic benefits, the maintenance of livelihood opportunities, and participation in decision-making for both instrumental and ethical reasons (Riseth 2007; Lam et al. 2018; Timko & Satterfield, 2008).

Equity can contribute to the success of PAs, as any failure to consider the concerns of local communities and resource users may result in social conflicts and opposition to the PAs (Borrini-Feyerabend et al., 2004). Ethically, considering local people and equity issues in PAs is the right

1 The term “equity” is used instead of “justice” to maintain consistency with Aichi Biodiversity Target 11 under the Convention on Biological Diversity (CBD), as this is the term used in the international political process. However, in the literature, the term “justice” is frequently used.
thing to do (Brockington & Wilkie, 2015). Local communities, Indigenous peoples, and the livelihoods of the traditional users of natural resources are all closely related to natural resource use. These people should have a voice in the decisions that are made about these resources, and should have the right to participate in the decision-making process of PA establishment and daily management if it affects them. For these reasons, the approach of some NGOs (such as the rights-based approach), good governance principles (such as accountability, transparency, etc.), and social norms (such as rights, justice, etc.), are often codified with international policies that emphasize the rights of local and Indigenous peoples and the inclusion of equity concerns into the design of PAs (Bennett, 2018). However, equity issues always arise, as local people are easily excluded from effective participation and are usually granted lesser decision-making power for political and social reasons (Hill et al., 2016). At the 1982 World National Parks Congress in Bali, delegates suggested that attention should be given to communities surrounded by parks, the first time that the impacts on local people were seriously considered (Naughton-Treves, Holland, & Brandon, 2005). At the 1992 IUCN World Parks Congress, the “win-win” scenarios of biodiversity conservation and community development were further developed, and a formal international goal for this was forged at the 1992 Rio Earth Summit, when the Convention on Biological Diversity (CBD) was drafted (Naughton-Treves, Holland, & Brandon, 2005). There are three primary goals of the CBD, and “fair and equitable sharing of the benefits arising from the use of genetic resources” is one of them (CBD, 2019). Going one step further, workshop participants at the Vth IUCN World Parks Congress in Durban in 2003 emphasized that the human rights of local and Indigenous peoples should be included in the evaluation of PA
effectiveness (Hockings, Ervin, & Vincent, 2004). In order to achieve this CBD objective, Article 15 of the CBD lays out requirements for free, prior and informed consent and mutually agreed-upon terms (CBD, 2019). This requirement indicates that, as stakeholders, local people have the right to be informed, and this point was codified with the participation equity principle (CBD, 2019). Another related policy, Article 14 of the Nagoya Protocol, also mentions equity issues: “protecting the rights of individuals or groups to be treated fairly, to satisfy those needs that enable people to pursue lives that they value” (Martin, 2013, page 99). Aichi Target 11 requires its 193 signatory parties to reach equitable management of PAs through processes that recognize and respect local peoples, and ensures an equitable sharing of benefits and costs by 2020 (CBD, 2018; Zafra-Calvo et al., 2019). All these examples of political processes indicate the importance of considering the equity issues that affect local and Indigenous peoples.

Besides international political processes, some international conservation institutions, such as The Nature Conservancy (TNC) and Conservation International (CI), have tried to address justice issues by shifting from fortress conservation to integrated conservation and development projects (ICDPs). Such projects include ecotourism, agroforestry, and the additional sustainable harvest of biological resources. They involve more marketable methods, such as payments for ecosystem services, and these institutions have recently moved towards a rights-based approach (Martin, Gross-Camp, & Akol, 2015). The rights-based approach (RBA) in conservation means setting the principles and standards of human rights into conservation planning, implantation and assessment, as well as ensuring that conservation actions respect, protect and fulfill human
rights whenever possible (Campese, 2009). Human rights here include both political rights (such as rights for life, liberty, freedom of expression and rights to participate in political process) and essential social, cultural and economic rights to an adequate standard of living (such as rights to food, housing, education and a job) (Overseas Development Institution, 1999). Rural people usually have strong economic and social connections with the land and with natural resources. As a result, conservation actions have the potential to affect many of their rights (Overseas Development Institution, 1999). In 2009, the Conservation Initiative on Human Rights (CIHR) was established by a group of international conservation organizations. It has the goal to integrate human rights in conservation policy and practice more effectively. It gives special consideration to human rights in the programs of each organization, and is aimed at protecting the livelihoods of local people through the implementation of major principles concerning the respect for human rights, the promotion of human rights within conservation programs, the protection of the vulnerable, and the encouragement of good governance (Conservation International, 2019).

In principle, all human rights should be respected and protected. However, in practice, there are many obstacles to this goal. Firstly, different rights may be conflicting and one group of people may conflict with another group when exercising their rights (Springer, Campese and Painter, 2011). In addition, many layers (from international law to customary laws) of rights may apply to local people in different PAs, making it hard to formulate a unified rights-based framework for people in different places (Schreckenberg et al., 2010). Rights issues are always shaped by broader governance and power relationships, which are complex and difficult to change (Springer, Campese and Painter, 2011).
Other attempts have been made to achieve more equitable forms of conservation (Riseth 2007). Local and Indigenous peoples have sought compensation for what they lost in this process due to the unequal distribution of conservation costs and benefits (Riseth 2007; Lam et al., 2018). However, there are serious obstacles to achieving equitable outcomes, and efforts to do so have frequently fallen short of the goals (Brockington & Wilkie, 2015). Equity within conservation tends to focus on monetary distribution, which makes it challenging to develop a universal standard measurement for conservation (Ferketic, Latimer, & Silander, 2010; Martin, Mcguire, & Sullivan, 2013; Tumusiime & Sjaastad, 2014; Friedman, 2018). A global assessment of equitable management in PAs, based on 225 PAs worldwide, found that in at least half of the PAs it will be difficult to incorporate social equity into the management of the PA (Zafra-Calvo et al., 2019). This will make it very difficult to achieve Aichi Target 11 by 2020.

1.1.3 Protected Areas in China

There were no national nature reserves (NRs) or PAs in China until 1956, when the Dinghushan Nature Reserve was established in Guangdong Province (Miller-Rushing et al., 2017). The first Western-funded project – a WWF panda conservation project – began in China in 1979 after the opening to the West (Ghimire, 1997). As with many other developing countries, China’s nature reserves have been greatly influenced by Western countries. This is because attracting

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2 Nature reserves are the major type of protected area in China. Nature reserves focus on natural resource protection.
international funding is one of the reasons to designate sensitive areas as nature reserves (Ghimire, 1997; Brüggemann, 1997). In 1993, China became a signatory to the CBD, and since then various efforts have been made to achieve conservation targets, including establishing a multi-department committee under the lead of the Ministry of Environmental Protection, conducting a national-wide biodiversity conservation research project in 1995–1997 and 2012–2013 (second stage), formulating a state action plan— involving the selection of 32 terrestrial biodiversity hotspots and three marine hotspots, establishing the National Committee for Biodiversity Conservation, and planning to meet the CBD objectives (Xue, Wu and Zhao, 2012).

There are many types of PAs in China, including forest parks, scenic resorts, NRs, and wetland reserves. NRs usually focus on terrestrial biodiversity conservation, and around 80% of NRs are forested. China’s NR network has grown substantially since the 1980s, when there were only 19 NRs. By the end of 2016, 2740 NRs had been established. More than 400 are national NRs, and these account for more than 60% of the total area of NRs in China (Ministry of Environmental Protection of China, 2017). About 56% of the total area of NRs is concentrated in three western provinces: Tibet, Qinghai, and Xinjiang (Wu et al., 2011). More than 50% of NRs were established after 1995 (Zhou & Grumbine, 2011). There are two major driving factors for the rapid increase in the number of NRs. One is the concern over the depletion of natural resources, and the other is the rapidly growing demand from the middle class in China for nature-based tourism (Wang et al., 2012). However, expansion of the coverage of PAs is only one aspect of effective
conservation, and in order to increase the effectiveness of PAs, appropriate legal frameworks and governance structures are necessary (Geldmann et al., 2015).

In most instances, NRs in China have been established in places already occupied by local people. Based on a national survey taken by the Ministry of Environmental Protection, there were 12 million people living in NRs in China in 2014, and many of them are impoverished rural villagers who rely on products from natural ecosystems to sustain their livelihoods (Zhou & Grumbine, 2011; Zhou et al., 2014). Because of this, most NRs in China comprise three different zones. The first is a core zone, where human activities are strictly prohibited. The second is an “experimental” zone, where local people still live and where some human activities, including scientific experiments, teaching, visiting, tourism, reproduction programs for rare and endangered wildlife, farming, and other activities that create a living for local peoples, are allowed. The third is a buffer zone that lies between the core and experimental zones, in which human activities, with the exception of scientific research and monitoring, are mostly forbidden (The Regulation on Nature Reserves, No. 18, 1994). The design of the experimental zones aims to achieve ecological conservation and livelihood development “harmoniously”. However, in reality, NRs can threaten local development by restricting opportunities to improving transport and other infrastructure, restricting opportunities to get agriculture products to markets, and restricting the autonomy of families to develop agriculture production plans. This is unfortunate as there is considerable overlap between PAs and high-poverty areas in China, and the creation of the PAs has hampered efforts to reduce that poverty (Duan & Wen, 2017).
Information about the establishment of PAs is sometimes not conveyed to local people, exacerbating the problems. For example, a study undertaken in the Caohai Nature Reserve in Guizhou found that local farmers were not informed of government plans to build a PA in their village in the early 1980s. The creation of the PA entailed some households losing more than 50 percent of their land, and no compensation was provided (Herrold-Menzies 2006). A survey conducted with 560 households in seven panda PAs in Southwest China found that people living within PAs lost some of their income from crop production due to strict limitations on timber harvest and crop damage by wild animals (Duan & Wen, 2017). The disadvantages are not only apparent in income. Impacts on education, physical condition, and market access have all been documented, and minority groups have been affected more than others (Duan & Wen, 2017). In other cases, local people have been resettled with little or no compensation. Such payments would have enabled them to develop new livelihood opportunities (Yeh, 2013).

In many places, tourism development has been perceived as an opportunity to solve the dilemma between conservation and the loss of livelihoods of local peoples (Buckley et al., 2008). In China, NR tourism has developed rapidly since the 1990s, and 80% of NRs now have some form of tourism (Li, Ge, & Liu, 2005). Nature-based tourism has the potential to provide both socioeconomic and environmental benefits, including reducing poverty, creating more jobs to reduce the reliance on natural resources, improving health and education, and empowering local peoples (Krüger, 2005; Li et al., 2006; Tao & Wall, 2009; Bennett & Dearden, 2014). However,
only 16% of reserves in China have regular monitoring programs in place to assess the impacts of tourism on the environment (Li & Han, 2001). A lack of knowledge and management experience has created unexpected negative influences on both the environment and local societies due to high visitor impacts and extensive construction within PAs (Buckley et al., 2008). Many negative effects have been reported, including flagship species being adversely affected, declines in wildlife populations, habitat alteration, pollution, conflicts with local communities, exclusion of local communities, and insufficient revenue creation for conservation (Krüger, 2005).

Due to the lack of an early warning mechanism, remedial efforts are usually undertaken only after fragile ecosystems have been lost (Li, 2004). Some countries, such as Kenya, Ecuador, Rwanda, Botswana, and Bhutan, use a high pricing policy and controls on the numbers of tourists to ensure sustainable tourism development (Gurung & Seeland, 2008). However, no NRs in China have adopted a high pricing policy, and the high number of visitors in some NRs is a serious problem (Li, 2004). Although thousands of reserves have been established, there are many problems in effective on-the-ground management (Lü et al., 2003). There are many examples of ‘paper parks’, which are particularly obvious amongst lower-level PAs, such as those managed at the county level³ (Su, Wall, & Eagles, 2007; Brockington, 2004; Yeh, 2013).

³ PAs have different levels in China based on the importance of biodiversity conservation: national-level, provincial-level, and county-level.
Some of the management difficulties in PAs are related to flawed administration and legal systems. Although some efforts have been made to strengthen the legislative basis for PAs in China, there is still no comprehensive legislation, due to the considerable disagreements about the management of PAs that exist among different agencies, departments, scientists and the public (Xie, Gan, & Yang, 2014). The concerns about PAs in China that are addressed by national legislation can be divided roughly into two parts: laws and administration regulations\(^4\). The first part includes the *Environmental Protection Law* (revised in 2014), the *Forest Law, Grassland Law, Water Law*, and the *Wild Animal Protection Law* (revised in 2018) (McBeath & Leng, 2006; Xu et al., 2012). Although these laws are related to PAs, none are specifically focused on them. The second part is a series of administrative regulations, and includes the *Rules on Management of Forestry Parks*, the *Regulations on Nature Reserves*, and the *Regulations on Scenic and Historic Areas*, among others (McBeath & Leng, 2006; Xie, Gan, & Yang, 2014). The *Regulation on Nature Reserves*\(^5\) (1994) is the legislation that is most relevant to biodiversity conservation (McBeath & Leng, 2006).

In terms of the administrative system, Article 29 in the *Environmental Protection Law* specifies that all levels of the Chinese government have the responsibility to protect natural resources and ecosystems, which means that each administration level is responsible for the PAs under its own administration jurisdiction (*Environmental Protection Law*). Prior to a major re-organization in

\(^4\) Laws are enacted by the National People's Congress; while administrative regulations are formulated by the State Council. The legal effect of administrative regulation is lower than the laws.

2018, the management of PAs in China was the responsibility of a variety of different administrations (Xu et al., 2012) (Figure 2, Figure 3). For example, the Forest Parks, Wetland Parks, and forest-type Nature Reserves were the responsibility of the State Forestry Administration, whereas Geological Parks were under the jurisdiction of the Ministry of Land and Resources. Moreover, it was common for one PA to contain natural resources that were under the jurisdiction of different departments (Xu et al., 2012) (Figure 2). As a result, China formed both vertical (different administration levels) and horizontal (different departments) administrative management systems for PAs (Figure 3). The lack of consistent regulations across different departments led to management chaos and confusion, and this has been seen as one of the biggest problems for PA management in China (Xie, Gan, & Yang, 2014; Xue et al., 2012).
At the level of the central government, many departments had the responsibility for the management of PAs. These included the State Forestry Administration (SFA), the Ministry of Environmental Protection (MEP), the Ministry of Agriculture, the Ministry of Housing and Urban-Rural Development (MHURD), the Ministry of Land Resources, and the State Oceanic Administration (example, Figure 2) (Xie, Gan & Yang, 2014). The distribution of the PAs among

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6 In March 2018, a major change in the governance of PAs occurred, and most PA-related ministries have been merged into a new integrated ministry – the Ministry of Natural Resources of the People’s Republic of China. This figure illustrates the resource management of a watershed ecosystem before March 2018 in most PAs in China.
different department was uneven: about 80% of PAs were under the management of the SFA, which was responsible for China’s forests, wetlands, and terrestrial wild animals; around 10% of PAs were under the management of MEP; and MHURD was responsible for the management of scenic areas (Xie, Gan & Yang, 2014). In this study, one research area, the Jiuzhaigou Biosphere Reserve (JBR), is both a nature reserve and a scenic area, so it was managed by both the SFA and MHURD. This arrangement was based on the function of different departments, which in China is normally called a “professional relationship” (in Chinese: yewu guanxi) (see footnote 6 for more explanation). However, there was little or no coordination among these different departments over PA management (Xie, Gan, & Yang, 2014).

At the provincial “horizontal” level, each province had a Forestry Bureau (FB), Environmental Protection Bureau (EPB), Housing and Urban-Rural Development Bureau (HURDB), and other administrative units. These bureaus were responsible for work at the provincial level. Similar bureaucracies existed at the city and county levels. The forest department is an example of a “vertical” authority. At the central level, the vertical authority was the SFA; at the provincial level, it was the provincial Forestry Bureau; at a municipal level, it was the municipal Forestry Bureau, and so on. Overall, China had five horizontal layers of political systems (national, province, municipality, county, and township) (Figure 3).

7 Scenic areas, in one type of PAs in China, are usually places with good natural scenery. Scenic areas are different from forest parks; forest parks are another type of PA and were managed by SFA.
8 Corresponding reforms were asked to carry out at the provincial level in accordance with the reform at the central level. This reform is under way and has not yet been fully completed.
The imaginary XXX Nature Reserve is a forest reserve. Different types of reserves are under the management of different bureaus. Nature Reserves can have different levels of administration. In this figure, XXX Nature Reserve is a reserve below the town level (village level). If it was a town administration level nature reserve, it would have been under the jurisdiction of administration departments that are one level higher, which are the County People’s Government and Municipal Forestry Bureau. This figure shows the administration arrangement before March 2018 in most PAs in China. The leadership relationship means that the government at each level is the true leader for different bureaus, as the government controls the crucial management elements for the followers, such as financial rights and promotion opportunities. A professional relationship refers to the higher-level organization professionally.
The Provincial People’s Governments have the same bureaucratic rank as ministries, the Municipal Peoples’ Governments have the same bureaucratic rank as provincial bureaus, and so on (Figure 3) (Lieberthal, 1997). The result of this administration system can be conceptualized by the phrase “a specialized organ usually has two masters,” For example, a municipal FB had two masters: the Municipal People’s Government and the provincial FB (Lieberthal, 1997). In practice, territorial governments usually had priority over the same level of functional bureaus in decision-making, as the leaders of the territorial governments had the power to appoint all top positions at the lower levels. This type of relationship is called a “leadership relationship” (in Chinese: lingdao guanxi) (Figure 3). “Leadership relationships” usually represent horizontal authorities.

Due to the lack of internal coordination between the “horizontal” and “vertical” lines, management was chaotic and there were many contradictory actions (Zhou et al., 2014; Zhou & Grumbine, 2011; Xie, Gan & Yang, 2014). In addition, factors such as the lack of regular funding, the lack of an effective system to supervise the natural environment, impoverishment, minimal professional training for staff, and poor relations with local peoples have all added to the complexity of PA management in China (Su, Wall, & Eagles, 2007; Brockington, 2004; Zhou & Grumbine, 2011; Xu et al., 2012).
1.2 Research Questions and Objectives

PAs have the potential to play an important role in the prevention of biodiversity loss (Clark, Bolt, & Campbell, 2008). However, the establishment of PAs can also increase economic opportunity costs, resulting in economic hardships, impoverishment, and social problems (Norton-Giffiths & Southey, 1995; Colchester, 2004). In pursuit of reducing reliance on natural resources and improving the well-being of local people, tourism has been developed in many PAs as a strategy to protect the environment and empower local communities (Almeyda et al., 2010).

Due to the large population in China, the development of PAs continues to experience pressure from people living around PAs. It is crucial to address the potential conflict between conservation and the improvement of local livelihoods if both social-economic development and conservation are to be achieved. Some work has been done in China’s nature reserves on the impact of tourism on natural resources and financing trends (Li et al., 2006; Li & Li, 2012). However, there has been a very limited focus on changes in the livelihoods of local people as a result of the establishment of PAs in China.

This research aims to provide further insights into the changes in livelihoods following PA establishment, and does so from the perspective of local communities. In particular, shifts in power are analyzed. This is done through three research questions that separately examine the changes in livelihoods since PA establishment, conservation equity issues during this process, and changes in government arrangements.
This study has the following research questions:

1) What changes are local people experiencing in the process of PA establishment and the subsequent development of tourism? What strategies did they take to face these changes?

2) How do stakeholders perceive changes in equity with respect to the distribution of burden and the sharing of benefits within local communities as a result of PA establishment and the subsequent development of a tourist industry?

3) How do local government structures affect management authority and village development in PAs?

Research questions 1 and 2 are linked to the research objective of examining changes in livelihoods from the perspective of local people. The first research question assesses the status of the livelihood by seeing how major livelihood capitals and livelihood strategies have changed. Based on these changes, the second research question explores the conservation equity issue behind the changes. Research questions 2 and 3 link to the research objective of analyzing shifts in power. Research question 2 explores the equity issue, which is strongly related to shifts in power. Research question 3 further examines the changes in government arrangements and how these have affected the development of the local community.
1.3  **Theoretical Foundation**

1.3.1  Framing the Research

The first research question focuses on providing a longitudinal perspective of changes in livelihoods, in terms of PA establishment and subsequent tourism development, for the case study sites. A systematic longitudinal analysis was the basis for understanding the impact of the establishment of a PA on local people. Based on capital theories, the Sustainable Livelihoods Framework provided an opportunity to conduct a comprehensive analysis of changes in livelihoods (more details can be found in section 1.3.2).

These changes in livelihoods were related to the distribution of the conservation burden and benefits to local people, which was the core element of the concept of conservation equity. In other words, conservation equity partly explained the different livelihoods results. This is what the second research question focused on – understanding the perceptions of different stakeholders on conservation. A conceptual framework of conservation equity perception was used for this part of the study (more details can be found in section 1.3.3).

All the changes in livelihoods and changes in equity perception occurred in the context of the top-down conservation governance system in China. PA establishment is led exclusively by government, and the government can affect all the changes listed above. Without an exploration of related government systems, it is difficult to understand the real “problem” deeply. Therefore, the third research question attempted to connect these changes to the management authority,
and to allow for the development of an understanding of how this type of government arrangement affects local people and conservation equity. To some extent, the government arrangement can explain why there were different results in livelihoods and equity. Concepts related to government arrangement and linkage were used to help answer the third research question (more details can be found in section 1.3.4).

These three research questions were considered together to pursue the objective of this study: the in-depth examination of the impacts that the establishment of PAs has had on local people.

The relationship between these three research questions are illustrated in Figure 4.

Figure 4 Research framework for this study

Livelihoods Changes (Research Question 1; Capital theory)

Conservation Equity (Research Question 2; Conservation equity theory)

Government Arrangement (Research Question 3; Theory: government arrangement and linkage)

10 Livelihoods changes could be partly explained by conservation equity and partly explained by government arrangement, but this does not mean that livelihoods changes were only affected by these two elements.
1.3.2 For Research Question 1: Capital Theory and the Sustainable Livelihood Framework

Many approaches have been developed to measure welfare and livelihoods. Most approaches employ composite indicators to represent welfare and livelihoods. This is because for a long time, dominant institutions such as the World Bank considered economic growth as the most important indicator of development. These methods usually aggregate information into a single (usually monetary) indicator, such as Gross Domestic Product (GDP), but have been criticized for their heavy reliance on monetary values while ignoring other aspects of livelihoods (Kulig, Kolfoort, & Hoekstra, 2010). As a result, many other approaches have been created that adjust GDP or other macro-economic aggregates by including aspects of social capital, natural capital, human capital, or government efficiency. For example, the Genuine Savings indicator used by the World Bank includes education (human capital) and the value of natural resource depletion (Kulig, Kolfoort, & Hoekstra, 2010; World Bank, 2006). Most of these synthetic approaches are based on three dimensions (economic, environmental, and social), and are consistent with the Brundtland Commission’s definition of sustainable development (World Commission on Environment Development, WCED, 1987).

More recently, the “capital approach” has been used for sustainable development theory and as a framework for further analysis (Ekins, Dresner, & Dahlström, 2008; Goodwin, 2003; Maack & Davidsdottir, 2015). Capital is defined as “an asset that produces future benefits in the form of a flow of services” (Maack & Davidsdottir, 2015). “Capital” was originally a concept in economics, but has been broadened to include human capital, social capital (Bourdieu, 1986), and natural
capital (Kulig et al., 2010). The notion of capital can be traced back to Marx (1894). In his theory, capital has two characters, one being the surplus value that is generated, and the other being represented as an investment with an expectation of return in the form of benefits. As theory has developed, the traditional concept of capital has been modified and refined, but these two elements have been retained as the most important and basic characters (Lin, Cook, and Burt, 2008, P4). The two characters are present in the broadened concepts, for example as a key part of human capital, education, could be seen as an investment for a future return—earnings; and social capital could also be seen as an investment that “will provide useful ‘support’” (Bourdieu, 1977, P. 503). So capital is not simply seen as a resource that people can use, but it also represents assets that provide people with the capability to act (Bebbington, 1999). Capital theory states that livelihoods and welfare depend on service flows from different assets (natural, social, human, physical, and financial capitals; see Table 2 and 1.3.2.1) (Maack & Davidsdottir, 2015).

Support for the use of capital theory to measure sustainability is mounting in the scientific literature (Atkinson & Hamilton, 2003; Kulig et al., 2010; Pearce & Atkinson, 1993; Victor, 1991). Kulig et al. (2010) indicated that the lack of uniformity in welfare debates over the past 40 years is due to the lack of a proper theoretical basis, but the capital approach provides a consistent and theoretically sound method of measurement.
The Institute of Development Studies team defined a “sustainable livelihood” as one that “can cope with a recovery from stresses and shocks, maintain or enhance its capabilities and assets, while not undermining the natural resources base” (Scoones, 1998). This definition emphasizes the maintenance and improvement of assets while not diminishing natural resources. The UK Department of Foreign and International Development (DFID) developed the Sustainable Livelihoods (SL) framework. It focuses on human well-being and sustainability rather than on economic growth (DFID, 1999). The SL framework addresses the five main assets that affect people’s livelihoods (DFID, 1999). Instead of working in a linear manner, the SL framework focuses on people, and how to help different stakeholders structure the many factors that affect their livelihoods (DFID, 1999). The SL framework has quickly become a widely-used tool for analyzing the social impacts of conservation. The livelihoods of local people can be adversely affected by the establishment of NRs due to the limitations imposed upon their use of natural resources; in such circumstances, local people may seek an alternative livelihood strategy, such as tourism development (Dudley et al., 2011; Brockington and Schmidt-Soltau, 2004; Brondo and Brown, 2011; Kelly, 2011). Such changes can have an impact on the sustainability of the livelihoods of local people, as all five types of capital will change accordingly.

There are some critiques of the SL framework. Some researchers have suggested the use of other capitals. For example, Serageldin and Steer (1994) used four types of capital: man-made capital, natural capital, human capital, and social capital. Bebbington (1999) used produced, human, natural, social, and cultural capitals. Scoones (1998) used economic, natural, human, and
social capital. Baumann & Sinha (2001) suggested the addition of political capital, as they believed that structured power was only considered partially in the original framework. Moser and Norton (2001) argued that important concepts relating to power relations, institutions and social structures (e.g. gender, class) were missing from the SL framework and this framework focused on micro detail than on micro-macro policy linkage. Other researchers have critiqued the inability of the SL framework to cover the complexity of individual livelihoods, and some have questioned how to employ it in practice (Mdee, 2002; Morse, McNamara, & Acholo, 2009). However, as Serageldin and Steer (1994) have suggested, we should halt the interminable discussion about what constitutes a perfect formula.

The sustainable livelihood literature provides a frame of reference for this study. There are some strengths in the SL approach. People living in rural areas often carry out a variety of activities for their livelihoods, and it is this complex combination of activity that matters for the household (Chambers and Gordon, 1992). The recognition of this complexity is one of the strengths of the SL approach (Krantz, 2001). The SL approach also emphasizes the linkages between these activities and tries to examine the livelihoods combination in a dynamic and historical context. This is important for this study, which tries to examine changes in livelihoods over a timespan of 40 years (Moser and Norton, 2001). The dynamic character of the SL approach increases the flexibility to respond to changes in the situations of people (Ashley and Carney 1999). As a people-centered approach, it is an operational tool that can assist practitioners working at multiple levels (Moser and Norton, 2001). By using the SL approach (DFID, 1999; Scoones, 1998)
as a theoretical framework, I examine how local people living in two different PAs in China have secured their livelihoods during the establishment of the PAs (Chap. 3). The framework for this study is illustrated in Figure 5. This framework can help analyze changes in the livelihoods of local people systematically, which is addressed by research Question 1. The understanding of these changes and different results in two different PAs are the basis for the discussion on conservation equity, which is addressed by research Question 2. Analyzing the changes of five different capitals are the key to addressing research Question 1. More details about each capital and how they are measured in this study can be found below.

**Figure 5 Livelihoods capitals, strategies and outcomes framework**

![Figure 5 Livelihoods capitals, strategies and outcomes framework](image)

Modified from Sustainable Livelihoods framework, by DFID, 1999; Scoones, 1998.
Table 2 Definition of the capital assets (adapted from DFID, 1999)

<table>
<thead>
<tr>
<th>Capital Type</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural capital</td>
<td>The basic natural resources that are used to generate the products and services that create livelihoods for local people</td>
</tr>
<tr>
<td>Physical capital</td>
<td>The material products, including infrastructure and goods, that are used to support livelihoods (e.g. tools and equipment used to maintain land-based livelihoods; shelter and buildings; infrastructure related to transport, communication and energy production)</td>
</tr>
<tr>
<td>Human capital</td>
<td>The health, as well as the skills and knowledge, needed by people to achieve their objectives, including maintaining their livelihoods</td>
</tr>
<tr>
<td>Financial capital</td>
<td>The financial infrastructure needed by people to maintain their livelihoods. This includes access to credit, various types of savings, and the ability to make and receive payments.</td>
</tr>
<tr>
<td>Social capital</td>
<td>The inter-relationships among people that enable them to maintain their livelihoods. This also includes the networks, rules, norms, and sanctions that may be associated with particular institutions.</td>
</tr>
</tbody>
</table>

1.3.2.1 Understanding and Measuring Five Capitals

Natural Capital

Natural capital plays a fundamental role in the livelihoods of rural residents. It not only provides essential ecosystem services, such as water purification and flood control, but it is also crucial for provision services, such as agriculture products and fuelwood for rural residents, especially for the more impoverished (Zheng et al., 2019, Collinson & Erasmus, 2014).
When considering natural capital changes, there is a need to include different types of natural assets that are related to local livelihoods, land-use changes, the access and tenure issue, the quality of the resources, and how different types of natural resources are combined (DFID, 1999).

*Physical Capital*

Physical capital consists of two parts. The first is the infrastructure that helps people meet their basic needs, such as roads, railways and telecommunications. The second is the tools or equipment that could help people work more productively. DFID (1999) summarized five essential components for livelihoods. They are: transport, shelter or buildings, adequate water supply and sanitation, affordable energy and access to information. These five parts are used to assess the changes in livelihoods in this study.

*Human Capital*

The concept of human capital was initially developed as a tool to help value workers’ skills (Field, 2017). Sheffrin (2003) defines human capital as: “the stock of skills and knowledge embodied in the ability to perform labor so as to produce economic value”. For individuals, human capital directly affects job-seeking and employment opportunities (Dae-Bong, 2009). DFIF (1999) categorizes direct and indirect support to the accumulation of human capital. Increasing human capital by direct support includes improving related infrastructure and personnel and developing relevant knowledge or skills, such as building more schools, hiring more teachers, and computer
skills training. There are also indirect supports for human capital accumulation, including health/education related policy reforms, and changing social norms such as changing the belief that girls should not go to school. These two types of supports are considered in this study.

**Financial Capital**

Financial capital is the most versatile of the capitals. It directly represents the economic component of livelihoods, which is the core of poverty alleviation (Wunder, 2001). There are two forms of financial capital: available stocks and regular inflows. As the most important stock, savings can be held in monetary form, such as cash or bank deposits. Another form of stock is in liquid form, including agricultural and forest products that could be converted to monetary income, e.g. by selling crops, logs and charcoal (DFID, 1999). Regular inflows of money that make a significant contribution to financial capital, such as income, compensation and pensions, have been put at the centre of the rural development agenda (Scoones, 2009). Developing financial agencies to provide services to the poor could support the rural poor (DFID, 1999). The two forms of financial capital and financial services are used to assess the financial capital changes in this study.

**Social Capital**

Social capital has drawn much attention and interest in many disciplines over the last three decades (Woolcock 1998; Coleman, 1988; Fine, 2001). It is crucial for rural livelihoods, as participants in social networks can provide local people with useful information and lower the costs of production and marketing, especially when the information is related to markets and
crop trading. Mutual trust among rural residents and participation in networks are factors that are conducive to reaching a common goal or collective action (Grootaert & Bastelaer, 2002).

Different scholars define social capital in different ways. For example, Putnam (1993) defined social capital in terms of "networks of civic engagement". Lin (2001) provided a straightforward definition of social capital as “Investment in social relations with expect returns.” Woolcock and Narayan (2000) defined it as: “social capital refers to the norms and networks that enable people to act collectively”. Bourdieu defined social capital as “the sum of resources, actual or virtual, that accrue to an individual or a group by virtue of possessing a durable network of more or less institutionalized relationships of mutual acquaintance and recognition” (Bourdieu and Wacquant 1992, P. 119). These broad complex definitions distinguish two form of social capitals: one is the structural social capital that is relatively objective and can be readily observed as external structures, such as rules, procedures, institutions, groups, networks, and associations. The other is cognitive social capital, which is subjective and intangible to measure, such as trust, local norms, solidarity and reciprocity (Grootaert et al., 2003; Grootaert & Bastelaer, 2002).

It is possible to view social capital at different levels and three are particularly relevant to this study. At the micro level, it is important to focus on cooperative behaviour and the value of collective action at the individual or household level. At the macro level, the society level, the institutional, social and political structures and environment that serve as backdrops of entire social-economic activities are important. At a meso level, situated between the individual and
society levels, there are structures that connect the two levels, such as regional groups and community associations (Frank, 2005; Grootaert & Bastelaer, 2002).

However, the measures of social capital are difficult for three reasons. First, the complexity and intricacy of social capital means that any quantitative analysis necessarily involves simplifications, reductions and assumptions, resulting in a simplification of the concept (Markowska-Pryzbyla, 2012; Engbers, Thompson & Slaper, 2017). Some aspects, such as trust and solidarity, are too imprecise for mainstream economists to tackle in a formula (Field, 2017, P.38). The lack of agreement on the concept of social capital is also leading to measurement chaos. For example, some scholars consider group membership as the cause for social capital: joining a group could increase social capital, whereas others consider it as a consequence of social capital (Engbers, Thompson & Slaper, 2017). Another problem is related to data aggregation. Aggregated data than combines individuals to groups can lead to distortions of the influence of the local context (Markowska-Pryzbyla, 2012).

The forms of social capital perform in many ways and can vary from one social-economic setting to the next (Eastis 1998). This study focuses on the micro level (household level) social capital in the communities in two PAs. Given the social-economic context in the two PAs, and following Pantoja (2002), the World Bank Social Capital Assessment Tool, Krishna and Shrader (1999), and
the Saguaro Seminar Project11 (2001), the forms of social capital considered in this study are: (1) Social networks, including family and kinship connections, which are based on blood and affinity; and wider social networks, including formal and informal membership and interactions. (2). Social trust, mainly concerning the trust between unrelated individuals. (3) Political engagement. For the case study communities, the formal political organization is the village administration. (4) Social norms, religions and values, including widely shared culture and values affecting the local society.

1.3.3 For Research Question 2: Social Equity and Concept Framework for Characterizing Perception of Equity

In A Theory of Justice, John Rawls (1971) points out that in a just society, everyone should have the same rights to social, economic, and political goods. His idea of “justice as fairness” emphasizes one of the most important principles in equity: the distribution of equity. Distribution equity is an important equity value, and it is about fairly and equitably sharing the benefits and burdens between different people, such as receiving payments for providing ecosystem services (Schlosberg, 2004). A focus on distribution equity has been observed in past conservation regulations and practices, such as the framing of “fairness” as one of the three objectives of the CBD and its Nagoya Protocol, and as an element in Aichi Target 11 (Martin et al., 2015; Zafra-Calvo et al., 2017).

11 The Saguaro Seminar was born out of a need to assess social capital and civic engagement in America
Young (1990) claims that injustice is not caused solely by distribution inequity, and that there are key social and institutional reasons why some people receive less. If equity does not include the recognition of differences in the social, cultural, and political realms, the consequence is maldistribution (Honneth 2001; Taylor 1994). Recognition is “about acknowledging people’s distinct identities and histories and eliminating forms of cultural domination of some groups over others” (Sikor, 2013). Recognition concerns social mechanisms that combine both economic and cultural factors, and causes hierarchies of cultural values and social status differences (Martin et al., 2016). Some formal institutions such as laws or regulations may aggravate this misrecognition, e.g. property laws denying rights to land and resources to Indigenous peoples (Martin et al., 2016). In conservation, recognition equity has not received as much prominence as distribution equity. Biodiversity conservation programs are largely constructed from the same blueprints, building on wildlife representation, level of threat, species rarity, and diversity. They rarely engage fully with the variety of beliefs about nature, or culturally explore and take traditional beliefs into consideration during program implementation (Martin et al., 2016). This has led to a critique of growing neo-liberal globalization and a concern for the resulting monoculture (Schlosberg, 2004). The call for equity, in this instance, is a call for multiculturalism in contemporary terms. In order to attain this multiculturalism, affirmative attempts to revalue underestimated cultures are needed, and the transformation of underlying economic and political powers is necessary (Martin et al., 2016).
Some theorists (e.g. Young, 1990; Fraser, 1997) have noted that there is a link between misrecognition and a decline in participation. Schlosberg (2004) summarized this as, “If you are not recognized, you do not participate.” Using the definition provided by the World Bank (1996, Page xi), participation here means “a process through which stakeholders influence and share control over development initiatives and the decision and recourse which affect them”. In practice, there is evidence that effective stakeholder participation contributes to a more comprehensive understanding of complex socio-ecological systems, and thus improves the quality of environmental decisions (Reed, 2008). Given these characteristics of participation, the empowerment of stakeholders, democracy in decision-making processes, equal representation, accountability, and transparency are all key elements in accomplishing effective and just participation (Hayes & Knox-hayes, 2014; Reed, 2008). Equal representation intends to eliminate the power inequalities among representatives, and to take into account their characteristics and heterogeneity, including gender, ethics, and age (Luyet et al., 2012). In many cases, insufficient professional knowledge leads to less meaningful involvement (Reed, 2008). Sufficient information needs to be provided to participants to ensure that they are well informed, and to thereby aid in accountability and transparency (Zafra-Calvo et al., 2017).

While concerns about conservation equity have been discussed for three decades, the definition of “conservation equity” still lacks clarity and faces challenges (Martin et al., 2016; Friedman, 2018). There is a lack of a unified assessment method for social equity, especially for the non-monetary components (participation and recognition equity) (Zafra-Calvo et al., 2017). People
living in different historical and cultural backgrounds may have different perceptions, and therefore different standards and moral acceptances of equity exist (Pascual et al., 2014; Zafra-Calvo et al., 2019). Instead of deriving universal principle of equity, Schlosberg (2007) and Walker (2011) seek to understand the principles of equity asserted by different people and activists. This represents a shift towards focusing on understanding how these principles of equity affect what people do (Sikor, 2013).

Based on the above, three aspects of conservation equity were used in this study to assess changes in the perceptions held by local people of how the establishment of PAs affected their different forms of equity. They are distribution equity, participation (procedural) equity, and recognition equity. In this study, the perceptions were obtained from different stakeholders, and the assessment was based on the original theories of social equity in conservation that focus on what cost decisions were made, and who benefits from them (Friedman et al., 2018). The cost and benefits for local peoples since PA establishment are examined in Chapter 3. The following modified conceptual framework (Martin et al., 2013; Schlosberg, 2004; Sikor et al., 2014) was used to help analyze this (see Figure 6).
In this study, the three major stakeholders were the central government, which designs conservation and other related environmental policies, the local government, which implements policy, and local people, who are directly affected by particular events or policies. The equity dimensions are: distribution equity, meaning the fair or equitable distribution of benefits and burdens; recognition equity, referring to the acknowledgement of local culture, identity and histories; participation equity, concerning the extent to which local people govern decision-making. Events in this context refer to the outcomes of the policy implementation process. The different dimensions of equity provide the framework that I used to assess whether stakeholders were treated equitably during different events.

Based on this framework, I first analyzed what local people received or lost during different events. I then examined the perceptions of social equity among different stakeholders under particular conditions, namely the implementation of the policy related to the protected area.
(environmental aspects) and the accelerated period of tourism industry development that followed (economic aspects).

1.3.4 For Research Question 3: Government Arrangements and Linkages

Preventing local people from accessing natural resources can cause them severe hardship, and could even lead to social conflict (Bennett, 2014). The context of governance is critical for resolving social-ecological trade-offs, as the successful recognition and exploitation of cross-scale authority is important for understanding the governance hierarchy, the sharing of power between the state and other stakeholders, and the opportunities that might exist to improve well-being (Robinson & Kagombe, 2018; Carlsson & Berkes, 2005; Cash et al., 2006). In this study, the establishment of PAs was led by government. Changes in the livelihoods of local people and the imposition of an unequal share of the conservation burden both occurred in the context of a top-down government system. A better understanding of the governance hierarchy might partially answer why this was the case.

Cross-scale, cross-level governance architectures or systems can cause the fragmentation of information-sharing arrangements, planning, and the coordination of monitoring activities (Robinson & Kagombe, 2018). Overcoming any such fragmentation is critical, as institutional arrangements, specifically any jurisdictional scales that have a clear hierarchy, could directly affect the establishment and operation of the rules that affect the users of natural resources (Cash et al., 2006).
The importance of exploring the linkages between cross-scale and cross-level government arrangements for improving the governance of natural resources has been recognized (Wyborn, 2015). For example, the multi-level governance concept, which refers to “mechanisms of steering involving increasing connectivity between putatively separated spheres of governance,” has been discussed as a way to tackle fragmentation and increase collaboration between different actors around the world. However, it is difficult to apply on the ground in China due to the complexity of government interests and power relationships (Westman, Broto, & Huang, 2019).

In this study, the governance of one case (the Jiuzhaigou Biosphere Reserve) comprises various scales and levels of government organizations. Problems caused by complex vertical and hierarchical government structures have been discussed in section 1.1.3. With this in mind, I try to unpack the relationships between local government structures and local people’s livelihoods in the JBR. In order to understand how local government structures might affect the management authority and village development in PAs in China, I gathered and analyzed how local people and local officers viewed the management by local government. Studies of the perceptions of local people can provide insights and evidence that allow for the development of an understanding of social and ecological outcomes of conservation programs and polices (Bennett, 2016; Bennett 2014).
1.4 Overview of the Dissertation

There are six chapters in this dissertation (Figure 7). In the next chapter, the methodology for this research is introduced. In Chapter 3, the first research question – What changes are local people experiencing during and after the process of PA establishment? What strategies did they take to face these changes? — is addressed based on the SL framework. By comparing communities in JBR and the Shennongjia National Nature Reserve (SNNR), this study explores what changes the PA establishment and tourism industry development brought to local livelihoods, and why they differed between regions.

In Chapter 4, the second research question — How do stakeholders’ perceptions of equity change with respect to the distribution of burden and the sharing of benefits within local communities as a result of PA establishment and tourist industry development? — is discussed based on stakeholders’ perceptions on what they lost and received during different events. This research question could help further uncover the reasons why livelihoods in JBR and SNNR are so different.

In Chapter 5, the last research question — How does local government structure affect the management authority and village development in PAs? — is unpacked based on the perspectives of local people and local officers on government structure and the livelihoods of local people in JBR. PA governance is critical to understanding social-ecological trade-off
problems. By exploring the cross-scale, cross-level governance structure, the problems behind research Questions 1 and 2 can be further understood.

Chapter 6 is the concluding chapter, and summarizes and synthesizes the findings of Chapters 3–5, examines policy insights and implications, assesses the limitations of the research, and proposes future research.

**Figure 7. Structure of the dissertation**

Objective: To deepen the understanding of the impacts of PA establishment on local people’s livelihoods in protected areas in China

Question 1: What changes are local people experiencing in the process of PA establishment and the following development? And what strategies did they take to face these changes?

Question 2: How do stakeholders’ perceptions of equity change with respect to the distribution of burden and the sharing of benefits within local communities as a result of PA establishment and tourist industry development?

Question 3: How does local government structure affect the management authority and village development in PAs?

Ch.1 Introduction
Ch.2 Methodology
Ch.3 Local livelihoods during the establishment of protected areas and the development of a tourism industry
Ch.4 Seeking equity for local communities in the process of tourism development in protected areas
Ch.5 Local government structure matters for livelihoods in protected areas
Ch.6 Conclusion

Study area

Theory and concept framework used for each chapter

Capital theory and the Sustainable Livelihood Framework

Social equity and concept framework for characterizing perception of equity

Government arrangements and linkages

Jiuzhaigou Biosphere Reserve
Shennongjia National Nature Reserve

Jiuzhaigou Biosphere Reserve
Shennongjia National Nature Reserve

Jiuzhaigou Biosphere Reserve
Chapter 2: Methodology

2.1 Qualitative Design

This research aims to understand, from their perspectives, the changes affecting the livelihoods of local people in nature reserves in China. Qualitative methods are useful for gaining an in-depth understanding of the perspectives of local people. Complex and detailed information is required in order to understand the research questions, and these details can only be gathered by establishing rapport and talking directly with the local people, allowing them to tell their stories themselves. All of these practices are consistent with the nature of qualitative research, which is to understand how people interpret their experiences and construct their world (Merriam & Tisdell, 2015). Different to quantitative studies that aim to generalize the results to a larger population statistically, qualitative studies focus more on building a complex, holistic picture to interpret phenomena in depth (Creswell, 1998, p.15).

This study can best be described as an embedded case study. A case study is an in-depth description and analysis of a phenomenon that is undertaken because scientific and practical interests are tied to the phenomenon and are difficult to separate from its context (Yin, 2013; Merriam & Tisdell, 2015). Embedded case studies contain more than one research unit (case). Researchers derive data from one case to link or compare with another case or cases. In this study, two PAs were selected, and four to five communities were chosen within each of those PAs. This design not only allowed me to obtain an in-depth understanding that would help me to
answer the research questions, but also presented a comparison of emerging themes among the communities while providing valuable insights into unique community situations.

2.2 Researcher Position

I am a 29-year-old female PhD student in the Faculty of Forestry at the University of British Columbia. I am from a middle-class Chinese family. Throughout my time in China, I have experienced the rapid economic growth and fast changes of the last 20 years, as well as the resulting environmental and social problems that have arisen as a cost of the economic development. Over time, I gradually became aware of the environmental and livelihood issues in China. For my PhD research, I focused on exploring the livelihoods of local people in PAs in China. I wanted to understand the local people who have managed to survive in biodiverse areas that have strict protection policies and limitations, and I was interested to learn about their livelihood changes and choices. Therefore, this research examined the views of local people and gathered information about their feelings, experiences, thoughts, and behaviours. Several conceptual frameworks were used in this study, and local people were encouraged to give full explanations of their thoughts, even if what they expressed might beyond the framework. I always reminded myself to keep in mind the position of the researcher during data collection in the field, data analysis, and the final writing stages.
2.3 Area of Study

Two protected areas were chosen: Shennongjia National Nature Reserve (SNNR) in Hubei Province (central China) and Jiuzhaigou Biosphere Reserve (JBR) in Sichuan Province (western China); see Figure 8. This choice was based on a pilot study undertaken in October and November of 2015 by the author to identify study cases. Five PAs in China were visited, including Jiuzhaigou, Baihe, Shennongjia, Dajiuhu, and Wuyishan. The potential pilot study areas were chosen based on geographical location (two in western China, two in middle-China, and one in eastern China) and because of previous connections with these PAs. Interviews and informal discussions were conducted with local people and officers. I considered that a suitable study area would satisfy three criteria: 1. a long PA history with sufficient time to observe the changes; 2. a PA where tourism developed after it was established; 3. a PA in which most of the original inhabitants were still living. There are no tourism activities within the PAs in Baihe and Wuyishan Nature Reserve. Many of the registered inhabitants of Wuyishan Nature Reserve have moved to cities, and it therefore would have been difficult to conduct interviews with them. In the Dajiuhu NR, the local communities were moved outside the PA boundaries, and in November 2016 when the fieldwork was conducted, only a few households were still present in the reserve. As a result, Baihe, Wuyishan, and Dajiuhu were excluded and the research was narrowed down to Shennongjia and Jiuzhaigou, as most of the registered local people are still living within the NR boundaries, and have experienced the establishment of the protected areas and their subsequent tourism development.
During this visit, I spoke with local village leaders and established collaborative relationships with these communities, as they agreed to support this study with community introductions and the sharing of background information about the PA establishment and tourism development in their communities. I visited the Jiuzhaigou Management Administration and Shennongjia National Nature Reserve Management Administration after I was introduced by the Sichuan and Hubei Provincial Forestry Bureaus, respectively, and then visited four communities in the Jiuzhaigou Biosphere Reserve and five communities in the Shennongjia Nature Reserve. I spent about two weeks in each location. My intention was to introduce myself, inform people what I planned to do in their communities, and seek potential participants. During my visits, I emphasized that I was conducting a research project, and that I not represent the government or any companies. I also assured people that I would not share their information with anybody else and that my study would not bring any form of trouble to their lives. I explained that it would be hard for the results of this study to benefit them directly, but the results could help deepen the understanding of the problems caused by PA establishment and tourism development in their communities. I maintained contacts after my fieldwork with the communities that I visited, and shared my research results with three officials and all the village leaders I visited. We also kept up communication about the development of the local communities. In April 2019, a meeting was arranged at Renmin University aiming to share different conservation practices and experience. Village representatives from Jiuzhaigou and Shennongjia were invited, but due to the time conflicts and transportation costs, they finally were unable to participate in the meeting.
When I conducted my pilot study in 2015, SNNR had not yet been selected as a pilot area for China’s National Park Administration System Reform that began in 2016. During the formal fieldwork for this study in 2016, SNNR had just started its administration and local governance changes; the process and results of these changes are still unclear. Consequently, for research Question 3 (How does local government structure impact of management authority and village development in PAs?), I was limited to using JBR.

**Figure 8 Locations of the study areas**

Maps adapted from Google Earth
Table 3 Comparison of study areas

<table>
<thead>
<tr>
<th></th>
<th>SNNR</th>
<th>JBR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location/Province</td>
<td>Central/ Hubei</td>
<td>West/ Sichuan</td>
</tr>
<tr>
<td></td>
<td>110°03’–110°33’E, 31°21’–31°30’N</td>
<td>103°46’–104°50’E, 32°55’–33°20’N</td>
</tr>
<tr>
<td>Establishment date</td>
<td>1982</td>
<td>1978</td>
</tr>
<tr>
<td>Average rainfall</td>
<td>1440mm</td>
<td>600 mm</td>
</tr>
<tr>
<td>Size</td>
<td>704.66 km²</td>
<td>730 km²</td>
</tr>
<tr>
<td>Landscape</td>
<td>Mountainous</td>
<td>Mountainous; 114 lakes</td>
</tr>
<tr>
<td>Altitude</td>
<td>Average altitude 1584 m</td>
<td>Average altitude 2930 m</td>
</tr>
<tr>
<td>Income$^{12}$ (2013)</td>
<td>6305 yuan$^{13}$(927 US dollar)</td>
<td>25000 yuan (3676 US dollar)</td>
</tr>
<tr>
<td>Population</td>
<td>8370</td>
<td>1403</td>
</tr>
<tr>
<td>Main nationality</td>
<td>Han (&gt;95%)</td>
<td>Tibetan (94.3%)</td>
</tr>
</tbody>
</table>

(Main source: SFA, MEP)

2.3.1 Jiuzhaigou Biosphere Reserve

JBR is a Tibetan area located in Jiuzhaigou County, Aba Prefecture, Sichuan Province, Southwest China, about 450 km (about 280 miles) to the north of Chengdu City (the capital of Sichuan Province). Its name means “nine villages valley” due to the existence of nine Tibetan villages in this area (“Jiu” in Chinese means “nine,” “Zhai” means “village,” and “Gou” means “valley”).

$^{12}$ This income is the average income per person per year within the SNNR and JBR areas.
$^{13}$ The average exchange rate in June 2017 between the U.S. dollar and Chinese Yuan is: 1 USD = 6.8 RMB
These nine villages have merged into four major villages: Heye, Shuzheng, Zezhawa, and Zharu village. Of these four villages, Zharu is isolated from the primary tourist locations.

Jiuzhaigou has been regarded as a holy mountain and watercourse by the Tibetan people. The geology of JBR is calcareous, and the valley bottom is dominated by a series of lakes with remarkable travertine deposits, resulting in colorful vistas, spectacular emerald lakes, and waterfalls (Li, 2009). It is best known for these lakes, the remarkable waterfalls, and its unique wildlife. JBR was declared a World Heritage Site by the United Nations Educational, Scientific and Cultural Organization (UNESCO) in 1992 (UNESCO a, 2016), and joined the Man and Biosphere Conservation Network in 1997 (UNESCO b, 2016).

As the JBR is located on the eastern slope of the Tibetan Himalayan Plateau in the Min Mountains region, its elevation ranges between 1,990 m (6,529 feet) and 4,764 m (15,630 feet) above sea level. It encompasses an area of 730 km², and its location at the intersection of the subtropical and temperate floristic zones makes it a highly diverse and biologically important faunal region (Jiuzhaigou Management Administration (JMA), 2017). A total of 2,567 plant species, 223 bird species, and 27 state-protected rare and endangered animals have been recorded,14 including the giant panda (Ailuropoda melanoleuca), golden monkey (Cercopithecus

14 More details about the animal species present can be found at: http://www.jiuzhai.com/language/english/science.html
kandti), Thorold's deer (locally called the white-lipped deer, *Cervus albirostris*), and the black-necked crane (*Grus nigricollis*), among others (JMA, 2017).

Jiuzhaigou became a nature reserve in 1978. Before that, logging was the major activity in the valley, with the forestry activities being conducted by two national forest farms since the 1960s (JMA, 2007). In 1984, Jiuzhaigou started to develop tourism in its experimental region (Li, 2009). Around 50 km² of the total 720 km² was developed as a scenic area and was formally opened as a tourist destination (JMA, 2017). Before tourism development, local people lived an impoverished life with an average annual income per person of only $23 in 1978. The income was derived from farming, grazing, wood-cutting, and hunting (Li, 2009). With the dramatic growth in tourists, traditional livelihoods have changed to tourism-related jobs, which are associated with a much higher income (Urgenson et al., 2014). Revenue generated through tourism has not only supported conservation and monitoring activities, but has also created jobs and enabled investment in community involvement (Li, 2009). However, due to disputes over benefit sharing, compensation problems, and land ownership issues, there have been conflicts between the local communities and the management authority (Borges et al., 2011).

The number of tourist visits have increased to over 4 million since 2014 (JMA, 2017). The maximum daily number of visitors exceeded 20,000, 30,000, and 50,000 in 1998, 2001, and

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15 An earthquake happened in Jiuzhaigou on August 8th, 2017, and tourism temporarily stopped.
2012, respectively (Gu et al., 2013). Several measures have been taken to protect the environment, including a restriction on the number of visitors, a green bus transportation system, and the removal of all restaurants and accommodation from the park. Despite such efforts, concerns still remain over the long-term sustainability of the JBR (Borges et al., 2011). The JBR has one of the highest frequencies of natural disasters in China. On May 12th, 2008, a magnitude 7.9 earthquake occurred in Wenchuan county, and the Jiuzhaigou area was badly affected and completely inaccessible for some time (Borges et al., 2011). On August 8th, 2017, a magnitude 7.0 earthquake occurred in Jiuzhaigou, and the entire reserve was evacuated. The following day, the JBR was closed to visitors. The JBR has also been affected by other geological disasters. During the pilot fieldwork for this study (October 2015), the highway from Chengdu to Jiuzhaigou was damaged and temporarily blocked by debris flows. Debris flows occur almost every year during the summer and autumn rainy season.

2.3.2 Shennongjia National Nature Reserve

The SNNR was set up in 1986. It was established as a Provincial Nature Reserve in 1982, and after four years, it was elevated to a National Nature Reserve. It is located in the Northwest of Hubei Province, Central China. Due to crustal movements, the topography in Shennongjia is very unusual, and is crisscrossed by mountains and rivers. Forest cover is more than 90% (UNESCO b, 2016). The conservation of Shennongjia is not only important for the biodiversity in this area, but

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16 Wenchuan County is about 200 km away from Jiuzhaigou.
is also critical for the safety of the Yangtze River, particularly in terms of soil and water conservation (Chen et al., 2005).

The total area of the SNNR is 704.66 km², 52% of which is considered to be a strictly protected area and 34% of which is designated for sustainable land-use activities, including tourism. As with the JBR, the number of visitors to the SNNR has risen rapidly. In 2005, there were 125,000 visitors, but this had almost doubled to 236,000 visitors by 2010 (Xiang et al., 2011). In 2013, the tourism industry accounted for 50.3% of GDP in the Shennongjia region, but difficult transportation conditions and restrictions on the use of natural resources have resulted in farmers in the reserve being poorer than those living outside. In 2013, the average annual income per person for rural households in Shennongjia was only 751 US dollars (5110 Chinese Yuan) (Shennongjia Report, 2014). Farmers' livelihoods varied greatly between villages due to a range of factors including natural resources, transportation, and the availability of information (Chen et al., 2005). In 2016, Shennongjia was selected as one of the first nine National Park pilot areas in China, and underwent a series of reforms that included re-defining the boundaries, merging with other nature reserves, administrative structural and management changes, and adjustments to the administrative levels.
2.4 Participation and Sampling Strategy

2.4.1 Participation

There were 100 participants in total from the two research areas, i.e. 50 from each area. Participants represented a variety of actors, including administrative officers, local elites, administrative village leaders, and villagers. In total, 9 administrative officers were interviewed in the JBR; only one of them was female. In the SNNR, 3 male administrative officers were interviewed. Local elites were defined as people who were respected within their communities for their contributions, but were not administrative village leaders. Nine local elites were interviewed in the JBR; most of them were local entrepreneurs, and one was female. In SNNR, 2 local elites were interviewed: one who ran a hotel, and another who owned a small construction company. One was male and one was female. Administrative village leaders are usually elected by villagers, and 6 and 3 were interviewed in the JBR and the SNNR, respectively. They were all male. Overall, there were more male participants than female, as more men work as officers, village leaders, or entrepreneurs (Table 4). During this process, I tried to invite more females to participate in this study to keep the gender ratios balanced. I asked initial contacts to introduce more female managers and entrepreneurs to me. I contacted and encouraged more female villagers to participate my study. Finally, if a male and female within a family were both willing to participate in the study, I preferred to do interviews with the female. However, because of the lack of females amongst the regions’ managers and amongst the entrepreneurs, there were still more male participants than female.
### Table 4 Number of participants by type and gender in each nature reserve

<table>
<thead>
<tr>
<th>Type</th>
<th>Gender</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management administrative officers</td>
<td>Male</td>
</tr>
<tr>
<td>JBR</td>
<td>9</td>
</tr>
<tr>
<td>SNNR</td>
<td>3</td>
</tr>
<tr>
<td>Local elites</td>
<td>9</td>
</tr>
<tr>
<td>JBR</td>
<td>9</td>
</tr>
<tr>
<td>SNNR</td>
<td>2</td>
</tr>
<tr>
<td>Administrative village leaders</td>
<td>6</td>
</tr>
<tr>
<td>JBR</td>
<td>3</td>
</tr>
<tr>
<td>SNNR</td>
<td>3</td>
</tr>
<tr>
<td>Villagers</td>
<td>26</td>
</tr>
<tr>
<td>JBR</td>
<td>3</td>
</tr>
<tr>
<td>SNNR</td>
<td>42</td>
</tr>
<tr>
<td>Male</td>
<td>31</td>
</tr>
<tr>
<td>Female</td>
<td>19</td>
</tr>
<tr>
<td>Female</td>
<td>29</td>
</tr>
<tr>
<td>Female</td>
<td>21</td>
</tr>
</tbody>
</table>

#### 2.4.2 Sampling Strategy

Both purposive sampling and snowball sampling strategies (Noy, 2008) were used to select participants who were knowledgeable about their community, or had different opinions and were interested in participating in this study. Unlike a quantitative sample, which is a statistical representation that is intended to reflect the entire population, a qualitative sample is designed to identify a variety of views held by participants. Therefore, participants were purposely selected under two principles: (1) the various principle, which holds that participants should represent various genders, groups, socioeconomic statuses, and ethnicities (purposive sampling), and be introduced by initial contacts and gatekeepers. By taking this principle, participants were chosen to represent a wide range of types, which could help to generalize and best inform the research questions from different perspectives and backgrounds, avoiding getting information from only a part of representatives. As this study focused on livelihoods, wealth is a very important indicator, and when I asked local people to introduce me to other participants, I suggested that they provide me names based on different wealth status. Through this process, the diversity of genders, groups and ethnicities was also considered. (2) the importance-influence principle, which classifies stakeholders according to their importance and their
influence on local issues and decision-making (DeGroot et al., 2006; Palomo et al., 2011). Village elites, village leaders, and local entrepreneurs have stronger influence on local issues compared with normal villagers, and they know better how decisions were made and how the power-relation structures operate at the local level. Staff at the local management authority and local elites (such as the village leaders) were contacted, and relationships with these gatekeepers were developed during the pilot study. I asked the gatekeepers to suggest initial participants based on the various and importance-influence principles. Further sampling was based on connections and recommendations from the initial contacts (snowball sampling method). To better understand the policy mechanism and to obtain information from a greater variety of stakeholders, purposive and accessible sampling strategies were used to select government officers and entrepreneurs, but their participation always depended on their willingness to participate and their accessibility.

Participants who expressed interest at the initial contact were provided with an explanation of the study, including its purpose, the procedure that would be used, and examples of the interview questions that they could expect.

I personally conducted all the interviews, which were completed between August and November 2016.
2.5 **Data Collection Procedures**

2.5.1 Collecting Information

Data were collected using three different methods (see Table 5).

**Table 5 Research methods for the different research questions**

<table>
<thead>
<tr>
<th>Research objective</th>
<th>Research questions</th>
<th>Research methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>To examine the</td>
<td>1. What changes are local people experiencing in the process of PA establishment</td>
<td>Interview; Observation;</td>
</tr>
<tr>
<td>impacts that PA</td>
<td>and the following development? And what strategies did they take to face these</td>
<td>Document</td>
</tr>
<tr>
<td>establishment has</td>
<td>changes?</td>
<td></td>
</tr>
<tr>
<td>on local peoples’</td>
<td>2. How do stakeholders’ perceptions of equity change with respect to the</td>
<td>Interview; Observation;</td>
</tr>
<tr>
<td>livelihoods in</td>
<td>distribution of burden and the sharing of benefits within local communities as</td>
<td>Document</td>
</tr>
<tr>
<td>two protected areas</td>
<td>a result of PA establishment and tourist industry development?</td>
<td></td>
</tr>
<tr>
<td>China through the</td>
<td>3. How does local government structure affect the management authority and village</td>
<td>Interview; Document</td>
</tr>
<tr>
<td>lens of changes in</td>
<td>development in PAs?</td>
<td></td>
</tr>
<tr>
<td>livelihoods, equity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>issues, and</td>
<td></td>
<td></td>
</tr>
<tr>
<td>government</td>
<td></td>
<td></td>
</tr>
<tr>
<td>arrangements</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2.5.2 Semi-structured Interview and Interview Protocol Design

Interviews were the primary strategy for this study, as it was designed to capture in depth the
experiences in the participants’ lived worlds. I conducted a series of interviews guided by open-ended questions. During the initial stage of this study, fully-structured interviews were considered. However, the paucity of studies on the context of livelihoods in PAs in China made it difficult to design a fully-structured questionnaire. To ensure that the views of important actors were obtained, a semi-structured, open-ended interview format was selected. This meant that flexibility could be maintained both in designing and conducting the interviews. It also provided participants with a certain degree of freedom to express their thoughts, and allowed two-way communication. Furthermore, it enabled me to question particular responses in greater depth, and allowed the participants to go into greater detail when needed (Horton, Macve, and Struyven, 2004). The interview protocol served only as a guide; some questions were not raised with some participants, and questions dealing with conservation were expanded to develop a deeper understanding of the issues involved.

To address the first research question, I designed the interview questions based primarily on the Sustainable Livelihoods framework, which covers most aspects of livelihoods (a sample of the interview questions is provided in Appendix A). In this part of the study, both open-ended and theory-driven questions were incorporated. Both helped elicit responses about participants’ experiences and were guided by existing research.

Open-ended interviews were conducted to address the second research question. Research Question 2 was not a predetermined question; instead, it arose during the interview process.
When conducting interviews, I realized that the terms “fair,” “equity,” “participate,” “benefits and cost,” and “participant” had been mentioned many times, and the interviews turned usually turned to the topic of conservation equity. I decided to give participants more opportunities to explore these concepts. Although the existing literature related to conservation equity usually divides equity into three aspects, I did not directly ask participants for their views about abstract concepts such as “distribution equity,” “participation equity,” and “recognition equity.” Instead, I used open-ended questions to gain an insight into what local people had lost or gained throughout the process of conservation, as well as how they felt about these losses or gains (questions can be found in Appendix A). This approach enabled me to avoid asking participants questions that were beyond their understanding, and instead allowed me to focus on the essence of equity. During the analysis, I categorized their answers based on the three dimensions of equity.

Open-ended interviews were also used to address the third research question. The interviews were held with local villagers and management officers and focused on local governance issues. This part of the interview protocol was developed based on the existing literature and the pilot interviews that I undertook in 2015. Instead of asking participants direct questions about changes in government arrangements, I asked what the governments did during different development stages, and what the roles of governments and local people were in these processes. This made it easier for participants to provide details about the events that happened, and how the events affected their lives/jobs.
In-depth interviews were completed with each participant. For the local villagers, I started the interviews by asking demographic questions (including their age, gender, education level, basic situation of their family and current job). With the government officers, I started with general questions about their job content and responsibilities. In both cases, I then moved to the formal interview questions. Each interview lasted between 30 and 300 minutes. Participants could express their views freely, even beyond the interview questions. Follow-up questions were asked based on the information provided by some participants.

A semi-structured interview is a useful tool for exploring the experiences and feelings of people. This method provides participants and researchers with a chance to start a conservation, and allows for two-way communication and discussion. In qualitative research, it is important to check the credibility of the answers. In this study, when the questions were related to income, subsidies, or justice, I could feel that some participants were hesitant in answering, and some of the answers were contradictory. For example, during the interview, one participant described the poor economic status of her family. However, her house was newly decorated with luxurious Tibetan-style wooden materials, which would have cost at least 300,000 yuan (about 42,500 US dollars). This estimate is based on interviews with other participants who had similar decorations in their houses. I increased the credibility of the answers by interviewing a large number of different participants representing different group of people, and this strategy also greatly increased the richness of data. Interviews were supplemented with observations and
documents, especially when answers were contradictory, enabling triangulation of the
information (more details can be found in sections 2.5.3 and 2.5.4). Furthermore, in the analysis
process, after I coded the first five transcripts, I asked a research assistant to code these five
transcripts independently and then compared her codes with mine to ensure accuracy (more
details can be found in section 2.6).

2.5.3 Observation

In this study, direct observation was used to record and analyze local people’s perceptions of
their livelihoods and the situations of their villages. Observation offers the opportunity to view
an “enactment” of social phenomena in their original settings, as seen through the eyes of the
researcher (Ritchie, 2003, Page 45). I referenced what I observed in my questions during
interviews. For example, in the second week of my field work in Heye Village, Jiuzhaigou, I
observed that new road lamps had been installed. Then, in the interviews conducted the
following day, I asked people why they did not have road lamps in the past, along with some
other questions related to infrastructure construction, an important component of physical
capital (one capital of the five capitals listed in the Sustainable Livelihoods framework).

2.5.4 Documents

In order to support and triangulate this study, several data sources and other case studies about
livelihoods in nature reserves, especially the impacts of rights reallocation on local people, were
reviewed. The documents included: internal government reports in Shennongjia, the Regional
Annual Economic Report for Shennongjia and Jiuzhaigou, the Jiuzhaigou Scenic Area Plan (Revised version 2005), the Jiuzhaigou County Annals, Jiuzhaigou Local History, the autobiography of the first JMA director (Book: *Forever Jiuzhaigou*), news items from the official website of JBR (https://www.jiuzhai.com/), related news from the Internet and newspapers, and other public texts. These documents were used as supplementary materials for the analysis.

Documents played an important role in this study, especially in confirming some of the interview results. Both of the PAs used in this study were established around 1980. For many people, it was hard to remember events and discussions from several decades ago. As a result, I received many vague descriptions and answers. To verify these answers, documents from different resources were used to screen the results. For instance, one participant mentioned that after the establishment of the PA, he received subsidies for charcoal, as did everyone else. However, in other interviews, most participants said they did not get such a subsidy. After reviewing documents, I found that the subsidy was only received by a group of people living in a particular area. With questions related to income changes or government policies, some participants were selective with the information that they provided. For example, when I asked what benefits local communities received, some participants only provided a partial picture of the situation, mentioning only the direct sharing of entrance fees. Other benefits, including the financial shares in the Nuorilang Restaurant, the selling of souvenirs, the photography and the clothes renting services, all of which were restricted to local people, were not mentioned by some participants. I
used documents, observations and further interviews to build a complete picture of the situation.

2.6 Data Analysis Approach

With one exception, interviews were digitally recorded. The exception occurred because one individual was uncomfortable with having the interview recorded. In this case, detailed notes were taken instead. I then transcribed all of the interviews verbatim. A research assistant checked the accuracy of the transcriptions by listening and confirming the voice records. During this process, initial thoughts and notes were recorded. The transcription and data analysis were undertaken in Mandarin to maintain the originality of the data and to reduce any effects of translation. I translated the results of the analysis into English for this dissertation. NVivo (QSR International Pty Ltd., 2017), a qualitative data analysis software package, was used to help code and maintain the data.

Interview transcriptions were coded against the three main thematic categories: changes in livelihoods, conservation equity, and government structure. A combination of inductive (themes emerging from field interviews) and deductive (derived from the theoretical frameworks) approaches were used to analyze the data.
For research Question 1, which relates to livelihoods changes, pre-arranged coding frames that included different livelihoods capitals and living strategies were created with NVivo prior to starting the analysis. For research Question 2, which relates to conservation equity, broad themes based on aspects of equity were used to facilitate analysis. Finally, for research Question 3, which relates to government structure, coding was not restricted to particular themes, and an inductive coding approach was used.

I first read all the transcripts repeatedly to immerse myself in the material and to get a sense of the data as a whole. I highlighted key words in the transcripts and wrote down notes while I was reading. I then used an open coding method to identify patterns and key ideas via a line-by-line review of the data from five transcripts. I derived the coding directly from the interview transcriptions and assigned simple codes (e.g. road renewal, compensation from the Return Farmland to Forests Project (RFFP)) to summarize each phrase for the entire data set. Some codes were exact words from the text, and I created others based on the key themes in the texts. During this phase, I did not attempt to limit the number of codes I created as this could have led to misinterpretations of the data. I first open coded five transcripts. Initial codes were created and then reviewed, repetitions were deleted, words with similar meanings were merged, and major sub-themes (e.g. land tenure change, compensation issues) were identified. After the sub-themes were reviewed, some sub-themes were merged together based on how similar they were. After that, I created the preliminary codes and made a code book. I then used these codes to code the remaining transcripts, and added new codes when I found that the data could not fit
into any of the preliminary codes. Table 6 presents examples of themes and codes. An example of a question analysis can be found in Table 7. After all the data were coded, I examined the data within each code to verify that the data really matched the code. Finally, I organized the resulting themes, sub-themes, and codes into a hierarchical structure.

Table 6 Examples of themes and codes

<table>
<thead>
<tr>
<th>Research Questions</th>
<th>Example Themes</th>
<th>Example codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>What changes are local people experiencing in the process of PA establishment and the following development? And what strategies did they take to face these changes?</td>
<td>Social Capital, Human Capital, Physical Capital, Financial Capital, Natural Capital, Emigration, Tourism, Agriculture, Off-Farm Work</td>
<td>relatives, help each other, cooperation, hospitals, kids' education, insurance, land for housing, house renew, facility, bank, loan, borrow from friends, RFFP, NTFP, environment protection, marriage, education, poor condition (road, electricity), family inns, specialities sale, employment, not for sale, NRFPs, wild animals, construction, tourism services, age limitation</td>
</tr>
<tr>
<td>How do stakeholders’ perceptions of equity change with respect to the distribution of burden and the sharing of benefits within local communities as a result of PA establishment and tourist industry development?</td>
<td>Recognition equity, Participation equity, Distribution equity</td>
<td>cultural identity, land tenure, own village plan, transparency, procedure, decision-making, entrance ticket sharing, &quot;living outside&quot; policy, RFFP</td>
</tr>
<tr>
<td>How does local governmental structure impact management authority and village development in PAs?</td>
<td>Different incentives, Imbalanced arrangement, Overlapped authority</td>
<td>lack of interest, GDP priority, different functions, authority rights vs. fiscal rights, unclear plan, fragmented, cooperation</td>
</tr>
</tbody>
</table>
I took a few steps to ensure the accuracy of the analysis. First, the transcriptions of the interviews were checked by some of the participants to ensure data accuracy and validity. Second, the five transcripts that were first analyzed were also analyzed by a research assistant. After she finished her analysis, we compared her version to mine and discussed the differences to ensure the accuracy of the code book. Finally, a final report of this study was sent to some participants to check. However, it was not possible to do this in person, as the JBR was closed due to the earthquake in 2017 and flood in 2018.

2.7 Ethical Considerations

This research followed the ethical approaches proposed by the Canadian Tri-Council Policy Statement (TCPS). The study included the following key concepts: (1) Informed consent: I provided each potential research participant with a copy of an introduction letter to this research, as well as an informed consent form. I provided an oral explanation of this research for people who had difficulty reading. (2) Confidentiality: as stated by the TCPS, in order to safeguard entrusted information, the information should be available only to the participants, myself, and my supervisor. Only aggregate information was shared with others. (3) Security: as required by TCPS, I kept the data in a laptop computer protected by a password. (4) Identifiable Information: this research asked for anonymous information, and the names of participants have not been made available.
As this study included humans as participants, an ethics review was approved by the UBC Behavioral Research Ethics Board. The ID number of this research is H15-02417.
Chapter 3: Local Livelihoods During the Establishment of Protected Areas and the Development of A Tourism Industry

3.1 Introduction

Protected areas (PAs) involve the placement of clear geographical boundaries that legally restrict human activities on the use of land, with the primary goal of protecting biodiversity. They are the most commonly used tool for conservation (Miteva, Pattanayak, & Ferraro, 2012). Historically, PAs have only focused on biodiversity conservation, and have neglected issues associated with the improvement of local livelihoods and the significant costs experienced by local people. This problem has been debated in terms of wildlife needs versus human needs. On a local scale, the debate often comes down to biodiversity conservation versus food production (Dudley et al., 2011). Recently, efforts have been made to pursue trade-offs in conserving biodiversity and ecosystem services, and the mechanisms that ensure that equity is appropriately addressed have been repeatedly emphasized by the Convention on Biological Diversity (CBD) (Naidoo et al., 2008). Although some efforts have been made to balance the conservation costs and benefits, the impacts at the local level vary greatly (Juffe-Bignoli et al., 2014b). Within this context, developing nature-based tourism seems to have the potential to provide a “win-win” result.

Developing tourism in PAs could provide positive incentives in the form of providing local people with an alternative income, which in turn would provide an incentive to give up overharvesting, poaching, and habitat destruction (Miteva, Pattanayak, & Ferraro, 2012). Tourism-related economic benefits to the local community can arise in the form of economic diversification,
increasing local employment, a share of entrance fees into certain areas, and the sale of goods and services (Bennett et al., 2012). However, researchers have pointed out that developing tourism has not necessarily resulted in an improvement in local livelihoods, as many local communities lack sufficient capacity to engage in tourism development (Adams et al., 2004).

Nature-based tourism in PAs is reportedly one of the fastest-growing sectors in global tourism, and Balmford et al. (2009) have argued that it could provide a strong incentive for both conservation and sustainable development. Research based on 280 PAs in 20 countries found that in three-quarters of the countries, visits to PAs are increasing. However, such increases raise concerns about wildlife disturbance, pollution problems, CO₂ emissions, and the extent to which revenues filter down to local people (Balmford et al., 2009).

This study focuses on local people’s perspective and experience about the establishment of PAs and the tourism that was subsequently generated in their home areas. The Sustainable Livelihoods (SL) framework provides a tool to improve our understanding of how livelihoods are affected by different factors (DFID, 1999). This framework presents the primary factors affecting livelihoods and allows us to describe how existing activities contribute to the sustainability of livelihoods (DFID, 1999) (Figure 5).

By using this framework, this chapter develops an understanding of how local peoples’ livelihoods have changed since the establishment of a PA. It allows us to understand not only
how the changes occurred, but also why they occurred in a particular way, from the perspectives of the people involved. More details about the SL framework are provided in section 1.3.2. This chapter is the foundation for Chapters 4 and 5, which are based on a clear understanding of the changes in livelihoods.

This chapter makes three empirical contributions. First, the changes of livelihood capitals in different contexts have been analyzed and compared. Second, I analyze why tourism development causes different results in the two places. Third, different livelihood strategies are based on the changes of livelihood capitals; and these strategies have been compared between the two cases.

### 3.2 Methodology

Research Question 1 aimed to provide an understanding of the changes affecting the livelihoods of local people in nature reserves, as perceived by the people themselves. I used a qualitative research approach to understand the perceptions of the impacts of the PA, and the ensuing tourism development, on the livelihoods of local people. Qualitative methods are frequently used in community research (Su, Wall, & Jin, 2016). Data were collected via direct observation of the lifestyles of local people, and in-depth interviews with villagers and government officials.

I used face-to-face, in-depth, semi-structured interviews as the primary data collection method. I conducted interviews with 100 participants (50 from the JBR, 50 from the SNNR) to elicit
information on their experiences of changes in their communities and economic situations, livelihood management practices, the challenges they faced after the PA was established, and benefits from tourism activities. I conducted the fieldwork from August to November 2016.

During interviews, demographic and easy questions were asked first to help participants become familiar with the style of the interview and to eliminate any feelings of tension. Of the 100 participants, a few were officers and village leaders, but most of them were local villagers. For local villagers, I asked very detailed questions related to all aspect of livelihoods based on the five different capitals and livelihoods strategies. For example, when talking about firewood, I asked the villagers when logging started to be forbidden. After I received an answer, I continued the interview by asking what alternative energy they used and how much it cost, when they began to use electricity, why the small hydropower stations were dismantled after a few years, how much subsidy they received from the JMA, and other questions. In contrast, the questions I asked officers and village leaders were more general, and were usually based on the entire region or village. For example, I asked some village leaders, “what effects do you think PA establishment have had on your village; what change did you see and feel?” Sample questions can be viewed in Appendix 1. This sample provides only the framework for the interview, and I did not necessarily ask in any particular interview all the questions that are listed. Some questions raised in the interview were asked, and questions were adjusted to different participants. Due to the different development situations in the JBR and the SNNR, I focused on different aspects even for similar questions. For example, the type of immigration in the JBR
tends to produce higher living standards, but immigration in the SNNR was forced by the pressures of life. Therefore, I could estimate the living conditions of participants in the JBR by asking if they had an apartment in Chengdu (the capital of Sichuan and the nearest big city to Jiuzhaigou) and whether they went to Chengdu during the winter. However, in the SNNR, I focused on asking participants why they want to immigrate, and what help they received during the immigration process.

Observations and documents were used to confirm the data that I obtained in the interviews, and to provide supplemental information. Interviews were all based on the descriptions provided by participants and, as such, it was hard to judge whether the correct information was being provided. I was asking participants to recall events from twenty to thirty years ago, and it was sometimes hard for them to remember every detail. Documents from various sources provided good evidence to verify some of the information that I received from the interviews. As this first research question focused on livelihoods, observation was useful to help me recognize problems and ask questions, especially for questions related to natural and physical capitals. During the data collection process, I visited participants’ houses, and some participants’ farmland and living places, all of which provided me with direct data from the field.

Initial categories for the first research question were pre-arranged based on the SL framework, and included natural capital, social capital, physical capital, human capital, financial capital, tourism, off-farm work, and agriculture (Figure 5). After reading through all the transcripts of the
interviews, the analysis of content related to livelihoods began with line-by-line coding. I did not try to limit the number of initial codes, and allowed for the use of as many codes as was necessary. Then, initial codes were merged into sub-themes before they were assigned to different categories (an example can be found in Table 7 An example question analysis). NVivo (QSR International Pty Ltd., 2017), a qualitative data analysis software package, was used to help manage and code the data. More details about the methodology that I used can be found in Chapter 2 (details about data analysis can be found in section 2.6).
Table 7 An example question analysis for research Question 1\textsuperscript{17}

<table>
<thead>
<tr>
<th>Example Question</th>
<th>Example Answers</th>
<th>Code</th>
<th>Sub-theme</th>
<th>Theme</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Where do you/your kids get education? Any local knowledge? How is the quality of it? Any concerns about education?</td>
<td>&quot;All kids here get education outside [of the village]: Mianyang [City], Chengdu [City], the county.&quot;</td>
<td>education in city</td>
<td></td>
<td></td>
<td>The young generation gets better education compared with the old generation; Education immigration is a way to pursue better education; Education immigration reduced the chance to learn traditional culture.</td>
</tr>
<tr>
<td></td>
<td>&quot;I only went to school for four years. My wife never went to school...All my grandsons/granddaughters go to school in Chengdu now. But they cannot speak the Tibetan language well. They came back only on holidays. Our tradition is being lost.&quot;</td>
<td>limited education for last generation; education in city; concern about culture losing.</td>
<td>Education improvement; Education immigration; Tradition lost.</td>
<td>Human capital</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&quot;[In the 1960s] it was very inconvenient for me to go to school. For the school that had Grades 1 and 2, I needed to walk about 1 km. For Grades 3 and 4, that was in another school. I needed to walk about 3km. For Grades 5 and 6 [in another school], I needed to walk 3 to 4 hours to school.&quot;</td>
<td>inconvenience for school; frequently change school</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\textsuperscript{17} The results here are only an example to show how the analysis was conducted. The results in this thesis are based on analysis of the complete data, not only from these few examples.
3.3 Livelihoods Changes in the Five Capitals

3.3.1 Natural Capital

The interviews revealed that, in both the JBR and the SNNR, all five categories of capital were affected by both the creation of the NR and the subsequent development of tourism. In terms of natural capital, the economic activities of the local people before the creation of the PAs were focused on self-sufficiency through hunting and family-based agriculture, and all their activities heavily relied on natural resources. Due to the low population density in both NRs and their rich natural resources, the per person occupancy of the volume of the natural resources was high. As stated by an old-aged man mentioned in the JBR (Interview JBR No.13):

“During the three years of the Great Chinese Famine [between the years 1959 and 1961], we heard that some people starved to death in other villages, but this never happened in our village...Our land is fertile...We could hunt in the forests...And we have a lot of fish in the lakes. We Tibetans do not eat fish [for religious reasons], but when the famine happened, we could eat fish a little bit...”

As in the JBR, people in the SNNR enjoyed the abundant natural capital assets. Local residents who lived within the NR boundaries indicated they had more than enough food provided by nature. Some interviewees commented:

“Our land was fertile, and we could harvest lots of food each year, far more than we needed...It was better than outside [of the mountain area], except the electricity or road” (Interview SNNR No.4, middle aged woman)
“I planted corn, potatoes, vegetables; and sometimes, I made wines, also honey... All for family use.” (Interview SNNR No.21, old aged woman)

These interviewees all indicated that rich natural resources provided them with plenty natural products for food and other materials for their lives, especially during the period of the planned economy (which lasted from 1950 to the end of the 1970s) when many rural villagers elsewhere suffered from food shortages.

The creation of NRs in the JBR and the SNNR limited the use of natural resources. The park regulations forbade hunting, grazing, and logging, but the managers in both places did not enforce the regulation for small-scale logging for firewood or grazing (information from interviews with local officials in JBR and SNNR). However, there were some restrictions on logging and grazing. For example, logging for firewood was not allowed in natural forests, local people were encouraged to cut branches rather than taking the whole tree, small-scale grazing was allowed but not in immature forests, and the collection of herbal medicines was allowed provided that there was no damage to the forest (information from interviews with local villagers).

Immediately after the establishment of the NR, the JBR started tourism development, which greatly reduced the reliance that local residents placed on natural resources. The limitations on
the use of natural resources had a bigger effect on the residents of the SNNR. Interviewees stated:

“PA establishment had great effects on us...All [natural resources] are protected and we are not allowed to touch them.” (Interview SNNR No.20, old-aged man, farming small piece of land at home)

“We farmed, and sometimes went out for [digging] herb medicines, but now I do not dare to do that. Trees are not allowed to be cut...We also did hunting, and nobody monitored that in the past. Now you cannot do [hunting].” (Interview SNNR No.19, middle-aged men, farmer and off-farm labour worker)

In addition, the national Return Farmland to Forests Project (RFFP, also known as “Grain-to-Green” or “Sloping land conservation program”) began around 2000 and affected both locations. Every household in the JBR area converted all their croplands to tree plantations. In the SNNR, households converted only part of their croplands. In both the JBR and the SNNR, RFFP compensation is around 260 yuan (about 40 dollars) per year per mu\(^1\). In the JBR, the type of tree that could be planted was decided by the Jiuzhaigou Management Administration in order to match the scenery (information from Interview with local officers in the JBR). In the SNNR, local people could decide the choice of species by themselves (Interview SNNR No.47). The

\(^1\) 1 mu = 0.06667 ha
tenure for these forest lands still belongs to local people, and logging decisions could be made by them if the forest type is commercial forest\textsuperscript{19}. However, if the forest type is ecological forest (explanation in footnote 19), it could not be cut (Interview JBR No.45, SNNR No.47).

In the SNNR, 80\% of the interviewers indicated that they returned less than 5 mu farmlands to forests. As the converted land comprised small pieces of land on infertile slopes, and off-farm work had become the main source of income, local people felt that they were able to abandon marginal fields. The RFFP did not make much difference to the daily lives of people in the SNNR. As one interviewer mentioned:

“RFFP started around 2000, at that time the compensation was reasonable. It is hard to earn money from Agriculture. All villagers look for off-farm job, except people who [old, disable, kids] could not. The land returned to forest is not a good land; it is a slope, returning it to forest is not a bad thing for us” (Interview SNNR No.8, female)

Most participants did not care much about the subsidy, as labouring has become the major income source for people in the SNNR, and the subsidy only represented around 1 to 3 percent\textsuperscript{20} of people’s income. However, eight participants (16\% of the 50 participants in the

\textsuperscript{19} After the forest tenure reform, the forest was divided into commercial forest and ecological forest. Ecological forest aims to protect the forest cover in the headwater regions of major rivers and lakes, steep slopes, and other ecologically important areas. It is not permitted to cut ecological forest. Commercial forest could be logged, and the owner could make the decision to do so. Farmers owning ecological forests could get subsidy (i.e. compensation) from the government. However, as these forests were already subsidized by the RFFP, they were not able to “double dip”.

\textsuperscript{20} Calculated by the author based on the land area returned to forest, compensation standard and average income per household.
SNNR) complained that the subsidy had not increased since the beginning of the program, while food prices continue to increase.

Compared with the SNNR, the area of returned farmland to forest in Jiuzhaigou is much bigger. In the JBR, people returned all their farmland to forests or pasture, and 80% of the participants reported that they returned more than 50 mu. The RFFP further reduced people’s reliance on natural resources in the JBR area. Having enough to eat is no longer a problem. This project was therefore accepted by people in the JBR, especially the young generation. Since opening to tourism in 1984, the number of tourists visiting the JBR has increased from a few thousand a year to more than a million around 2000, when the RFFP\(^{21}\) started (Urgenson et al., 2014). The rapidly growing economic benefits from tourism persuaded people to abandon agriculture. The rapid changes made the abandonment of farming the proper and natural choice. “people are busy with tourism services, no time was left for farming.” (Interview JBR No. 39, young female engaged in tourism services), “Can you image a young person who dresses gracefully [to work in tourism] then holds a sickle [to farm]?“ (Interview JBR No. 13, middle-aged male, engaging in souvenir photo service).

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\(^{21}\) This depends on the landscapes. In some areas of the JBR, farmland was returned to pasture, not forest.
I did not hear any complaints in the JBR about the subsidy not being raised, but two participants thought they should be receiving more compensation, as they thought that because their land is a part of the scenic area, it should be more valuable than normal farm land.

In the SNNR, people complained about human-wildlife conflicts. Forty-two participants (of a total of 50 interviewed) mentioned that they had experiences of croplands being destroyed by wild animals. It was difficult to receive compensation from the local Forestry Administration because they are required to provide proof of the damage. As one participant put it: “It is hard to provide direct evidence: videos or photos showing wild animals are destroying the crops (Interview SNNR No. 15, female)”. Before the NR was established, local people used firecrackers or guns to scare away wild animals, but these methods were forbidden after the establishment of the PA.

Participants mentioned:

“The most common problems are caused by the wild boars. Shooting is not allowed, the only thing we can do is try to keep them away.” (Interview SNNR No.9, male)

“Wild animals destroyed the farmland very seriously, [such as] bears, wild boars; but you cannot shoot them... I have to sleep in my farmland during the harvest season to guard my crops... When I hear the wild animals, I beat a gong to scare them away” (Interview SNNR No.32, male)
The policy on wild animal protection in the SNNR negatively affects the livelihoods of the local people. Considerable costs are entailed in the guarding of crops, and it is hard to get compensation once the crops are destroyed by wild animals. However, biodiversity conservation also created benefits to local people, including fewer natural disasters, fresh air, clean water, and opportunities for recreation (Interview JBR No.14, Interview JBR No. 23, Interview SNNR No.22).

When talking about environmental protection, local people in the JBR mentioned their efforts to protect the forest from cutting by forest farms. In one example:

“Two national forest farms came here for logging around the 1960s to 1970s. They planned to log in these mountains, which are seen as sacred places by us, and logging is not allowed. So we stood in their way to stop the trucks...Finally they gave up on logging in these forests, but went to others.” (Interview JBR No.13, old man)

In addition, they recognized that a healthy environment and beautiful scenery can attract tourists. Local people are “fully aware of the importance of the environment” (Interview JBR No.41, young woman working as photographer and tourist guide), as they clearly understand that “Outsiders [tourists] come to Jiuzhaigou for the beauty of the mountains and lakes, so it is important to protect our environment (Interview JBR No.25, middle-aged male, souvenir seller)”. “People here care about the environment a lot. If we see any tourists throwing garbage, any Jiuzhigouer will persuade them [not to do that] (Interview JBR No.41, Female).”
The Tibetan traditional religion that emphasizes social-ecological connections and the actual needs for nature-based tourism development both contribute to the strong awareness of environmental protection in the JBR.

3.3.2 Physical Capital

Physical capital, including tools and equipment, shelter and buildings, infrastructure related to transport, communication and energy production, were enhanced at both places.

In the JBR, physical capital was greatly enhanced with the development of tourism. The improvements in infrastructure included transportation, communications, electricity networks, wireless network, renovated houses, TV broadcasting services, garbage disposal services, and energy supply. These improvements were a direct result of tourism development. For example, demand for tourism in the JBR accelerated the construction of transportation corridors and improved housing conditions: a highway and an airport were established, and a high-speed railway is under construction. These were all designed to provide services for tourists. Hydropower was implemented in the JBR specifically to protect the environment and to encourage sustainable tourism. As one officer interviewed in the JBR (interview JBR No.45, male) commented:
“In order to reduce logging in JBR, three small hydropower stations were built by the JMA in the 1990s. You [local people] need electricity, but I need to protect the environment [reducing logging] ...We made a trade.”

Most participants renewed or rebuilt their houses as family hotels to attract tourists in 1990s. As one local resident mentioned:

“The housing conditions changed a lot with the development of tourism. Before that, there was no toilet in the house. Now all the houses have toilets...Many of these houses, as you see, are luxurious” (Interview JBR No.39, a young woman selling souvenirs to make a life)

The major changes in physical capital happened in the JBR were primarily brought about by the development of tourism, but also reflected changes in national policies. Taking the electricity supply as an example: In the 1990s, three small hydro-power stations, which were “funded by JMA and constructed by local people”, were built “in order to provide alternative energy and avoid cutting forests” (Interview JBR No.45, officer). The three stations were dismantled at the end of 1990s as the State Power Grid Project had been extended into the area and as a result, a more stable and effective electricity supply could be provided. The state power grid extension is a nationwide infrastructure improvement project. Similarly, the high-speed railway construction in the JBR “is part of the State high-speed railway spread project” to connect each province, in
this case “connecting Sichuan and Gansu Province” (Interview JBR No. 12, middle-aged man, village leader). Generally speaking, the rapid development of physical capital in the JBR is closely connected to tourism development and state-driven infrastructure investment in China.

The enhanced infrastructure in the SNNR not only addressed the needs of tourists, but also benefited the local residents. As in the JBR, the enhancement of physical capital in the SNNR was partly the result of tourism developments, especially road renewal, road widening, and airport construction. A large proportion of the enhancement occurred as a result of economic development, and some projects were completed under national plans. For example, the Nationwide Radio and TV Coverage Extension Project launched in 1998 enabled people in the SNNR to access radio and TV. In addition to infrastructure development, national policies also focused on households. For example, China’s Rural Appliance Subsidy Program provided around 10-20% subsidies for the purchase of home appliances. Many interviewees mentioned this program, and how they had taken the opportunity to change their appliance, such as colour TVs, refrigerators, air conditioners and water heaters (e.g. Interview No. 11, No. 16 and No. 30 in the SNNR).

However, not every village in the SNNR received infrastructure improvements. Some remote mountain villages remained inaccessible, and their residents usually prefer to migrate to other areas when the opportunity arises. Interviewees who moved down from the upper mountain area explained that the major reason for migration is inconvenient access:
“We moved down last year [2015]...It was about 5 kilometers from my home to the nearest highway; and it took about 1 or 2 hours without carrying any stuff [to arrive at the highway]. It was a very steep mountain road.” (Interview SNNR No.10, middle-aged men engaging in off-farm labouring).

“In Yinyuhe [the village where the interviewee previously lived], my younger brother was in charge of collecting medicinal herbs and selling them. He needed to walk 10 or more kilometers down to the bottom of the mountain and then catch a bus to reach a market where he could sell the herbs ...Our family moved down 20 years ago...There is no road to the top mountain area even today...It is impossible...too steep.” (Interview SNNR No.3)

“In summer, once it rains, the road becomes too muddy to pass...The water level of the river increases, and always caused floods [which could] totally ruin the road.” (Interview SNNR No.21)

The poor infrastructure in the upper mountain area has stimulated people to move downhill to access better infrastructure, especially roads and transportation.

Generally, people in the JBR have stronger physical capital than people in the SNNR, as they have accumulated more material wealth from tourism development. For instance, most people in the
JBR use vehicles for transport, but in the SNNR most people use motorcycles, since they are a cheaper form of transport. For houses, “at least 30% residents in the JBR have bought apartments in Chengdu” (Interview JBR No.17, young woman engaging selling souvenirs in JBR), the capital of Sichuan Province. They usually choose to live in Chengdu during the winter, which is also the off-season for tourism.

“My parents-in-law move to Chengdu during winter. Many old people in Jiuzhaigou move to Chengdu in winter. It is too cold here. They stay here in summer.” (Interview JBR No.16, middle-aged woman who married a local man, then immigrated to the JBR)

“I earned money from selling souvenirs in Jiuzhaigou…I bought an apartment in Chengdu by myself…My boyfriend has an apartment in Chengdu, too.” (Interview JBR No.14, local young woman; her boyfriend is from the same village)

In contrast, people in the SNNR bought or built new houses close to their old house, sometimes in town, or moved from the hilltops to the bottom of the valley to be near the road (because there is no road access at the top of the hills). They preferred to do this as they could not afford the housing price in cities. Examples show why people in the SNNR moved:

“I moved down for seven years…I rented a house in the first few years, about 3 to 4000 yuan per year. The school in the upper mountain area has been dismantled for about five years…It [the village where the participant previously lived] is a remote area with poor education conditions. So we decided to send our kids to other schools. My family
was poor, so I only went to school for a few years. I should let my kids have a better education.” (Interview SNNR No.25, middle-aged man with two children, engaging in labouring around the town)

“When I went to school [in the upper mountain area], the school had Grades 1 to 5. But then it only had Grades 1 to 3. This year the school is dismantled...My kids need to go to school outside.” (Interview SNNR No.24, middle-aged woman)

For many, convenient transportation is the primary motivation for them, proximity to schools and services for their children, as well as access to job information.

3.3.3 Financial Capital

The creation of the PAs reduced the financial capital of both the JBR and the SNNR. Before the establishment of the reserves, cash income for people in both places came from selling non-timber forest products (NTFPs), wild animal meat, wood, and charcoal. Since the establishment of the NRs, local people have lost these sources of income. However, the China Economic Reform policy has led to huge labour demands, and has provided off-farm work opportunities.

In 2014, the salary income (off-farm income) per person in the SNNR was 3228 yuan (474 US$), while the agriculture-related income was 2480 yuan (364 US$). Off-farm work brought in more income to local households. Tourism development did not bring many direct benefits to the
people in the SNNR, as most were not living away from the tourism centre, and some were far from the main road. Labour opportunities related to tourism developments, such as construction work, restaurant and hotel staff, and drivers, have increased. Interviewees in SNNR stated:

“There are many construction jobs here, and I work as a mason. I could earn 120 yuan [17 US$] to 150 yuan [22 US$] per day. But these jobs are not continuous; sometimes I can find a job, sometimes not.” (Interview SNNR No.10, middle-aged man)

“My son drives a van. Some tourists rent his van [for travelling], about 80 yuan to 100 yuan per customer per day. He does not have tourist resources. Other people share [the information] and ask him [to serve the customers]. Not every day.” (Interview SNNR No.5, old woman, retired worker)

Even though people in the SNNR did not receive direct benefits from tourism, tourism development in this area increased the off-farm work opportunities, which indirectly increased the financial capital.

In the JBR, local people received a share of the tourism entrance fees to the reserve. Each year, 7% of the entrance fees were distributed equally to local people. In 2016, each person received nearly 20,000 yuan. Twenty percent of the JBR administration employees are local people, resulting in steady salaries. Local people can also get income from tourism-related services such as photography, renting traditional clothes, and selling souvenirs. Most local people own stocks
in the Nuorilang Restaurant (the only restaurant within the JBR). In 2016, each stock of Nuorilang Restaurant produced a dividend of 2,000 yuan.

In both the JBR and the SNNR, financial services organizations have been established that can provide savings and credit services. However, most people indicated that if they needed a loan, they would rather borrow money from relatives or friends, due to the complex processes involved in formal loans and their lack of collateral. One interviewee (Interview JBR No.6, middle-aged man, ferry bus driver) commented:

“We prefer to borrow money from friends and relatives, in very few cases you can get a loan from the bank...Unless there is no other solution, we may consider the bank...It needs a mortgage and other processes, which is not convenient for us.”

The ability to borrow money from friends and relatives reflects the strong social capital in these communities. More details can be found in 3.3.5.

3.3.4 Human Capital

In both the JBR and the SNNR, the current (35–50 years old) and older (older than 50 years old) generations are very poorly educated due to the past low levels of economic development and infrastructure. The high dropout rate in these two places in the past were primarily caused by financial problems in the families, distance and bad traffic conditions, inadequate school
environments and buildings, and security problems for girls (Interview JBR No.5, No.13, No.19, Interview SNNR No.4, 21, 15, 18).

A middle-aged woman who is now a homemaker mentioned that the lack of schools and bad traffic conditions caused her to drop out:

“One reason why I quit school after the third year was because the elementary school in our village only had first to third year... We would have to go to another school in another village for the fourth year and above. The road was very dangerous, especially when it rained heavily; children could be washed away and this happened every year.”

(Interview SNNR No.31)

For the few people who insisted in going to school, they needed to overcome many difficulties. One interviewee who was born in the SNNR and who was finally admitted to a college mentioned his own experience:

“[In the 1960s] it was very inconvenient for me to go to school. For the school which had Grades 1 and 2, I needed to walk about 1 kilometer. For Grades 3 and 4, that was in another school, I needed to walk about 3 kilometers. For Grades 5 and 6 [in another school], I needed to walk 3 to 4 hours to school. I lived at school and came back home once a week... When I went to junior school, it was in another town, I needed to wake up at 5 o’clock in the morning and then walked to No.318 Country Road [to get a bus]. I arrived [at the school] at 4 am in the morning the next day... During winter, sometimes
there were no buses, I needed to walk two days [to transfer].” (Interview SNNR No.40, old man, retired from a government department)

Restricted periods of school education were very common, as these interviewees attest:

“During my school years, there was a school in our village...I started to work after elementary school...Many people from our village only went to school for two or three years, and then went out for jobs....” (Interview SNNR No.22, middle-aged man engaging in labouring).

Due to tourism development, it became important for local Tibetan people in the JBR to learn Mandarin so that they could communicate with tourists. Many local residents older than 70 years could not communicate in Mandarin. For people around 40 to 65, they learned Mandarin mainly through connections with outsiders. As one interviewee indicated:

“After the Cultural Revolution, there was ‘night school,’ so I learned a little [Mandarin] from there [every night]...After that, some business men came here...I learned some Mandarin from them. After the 1980s, many forest workers came here...Through communicating with them, I learned a little bit more Mandarin.” (Interview JBR No.1, old-aged man working as a photographer for souvenir photos)

The young generation in the JBR could speak Mandarin fluently, as they have had many communications with outsiders since they were born and some go to schools in nearby cities where Mandarin is used as the teaching language.
The education situation has improved for younger generations in both the JBR and the SNNR, although there are differences between the two PAs. In the JBR, due to the rapid economic growth resulting from tourism, local residents are now living better lives and have indicated a strong willingness to support better education for their children. I discovered that in all four villages in the JBR, nobody had registered their children at the elementary school in the local town, claiming that its education quality was poor. They preferred to send their children to private schools or public schools in big cities such as Chengdu and Mianyang. As they are not selecting the local schools, which provide local people with free education for nine years, they must pay a high “school selection fee,” and most of them have to pay dormitory fees. As a result, most young (under 35) people in the JBR have the opportunity to receive a better education, and some have opportunities to study abroad. The choice of schooling for residents in the JBR was explained by interviewees:

“There were schools here, one village, one school, until the 1990s. Then kids went to schools in town, and then the county. Nowadays, they all go outside, to Chengdu, Mianyang [city]. Kids stay at their teachers’ homes. [Parents] earn some money, all [spent] on their kids...My grandson needs 7,000 yuan per term.” (Interview JBR No.1, old man)

“My younger son did his Grades 1 and 2 in the county...moved to Chengdu since Grade 3. He stays with another family, and we pay 3,000 yuan per month...My older son did
his elementary school in the town and then junior school in the county...The school here [local] is not good.” (Interview JBR No.20, middle-aged woman, selling souvenir to tourists)

In the SNNR, the situation is less positive, and most interviewees indicated that the education quality within the SNNR is not as good as elsewhere in Hubei Province. However, they could not afford to send their children to schools outside the SNNR.

Health services were poor in both places when the PAs were established, due to their remote locations. During my interviews, many participants described how helpless they were in the past when they or their family members fell sick. One interviewee said, “in the past, if it is not a serious illness, you could recover by yourself; if it was a serious one, you would wait to die” (Interview SNNR No. 22, middle-aged man, off-farm worker). Another interviewee (interview SNNR No.34, middle-aged woman, Inn owner) recalled her own experience 30 years ago:

“When I was a kid, there were no health services nearby, and it took hours to get to the closest clinic. Most of the time, if I got a fever, my parents would ask me to drink some water with charcoal ash. I didn’t understand why, but that was what people did in our village”.

It is obvious that health services were extremely limited in both the JBR and the SNNR in the past. Nowadays, people in both areas agree that medical conditions have improved significantly.
Led by the Ministry of Health of the State Council, the New Rural Co-operative Medical Insurance was launched in 2003. It aimed to overhaul the healthcare system and provide affordable healthcare access and treatment for rural residents, especially the rural poor. This insurance has been very welcome in both Jiuzhaigou and Shennongjia. The participation rate had reached 98% in Jiuzhaigou by 2012, and 97% in Shennongjia by 2015 (Jiuzhaigou Yearbook, 2014, P.261; Shennongjia Yearbook, 2017). However, like many of the major infrastructure projects, this improvement in healthcare was a national level program and was unrelated to the establishment of the NRs or tourism development.

In the JBR, people preferred to get healthcare services in big cities, as they thought that “the local health services were inadequate” (Interview JBR No.37, old man, driver), “the local doctors are not as good as doctors in Chengdu” (Interview No. 4, middle-aged woman, Inn owner), “healthcare facilities are better in big hospitals” (Interview No.19, old man) and most importantly, they could afford to go outside the village. In the SNNR, most residents chose to receive healthcare services locally, as they could not afford the better healthcare services offered in large cities.

In the JBR, local residents have been able to utilize tourism-related practices to improve or develop new capabilities. For example, their marketing skills (running restaurants and hotels) and tourism service skills (photography and acting as tour guides) have improved. The number of successful entrepreneurs in the area has gradually increased. In contrast, most people in the
SNNR have not had such opportunities and have continued to work on farms or as manual laborers.

3.3.5 Social Capital

Residents in JBR have strong social networks based on family and kinship. As one interviewee mentioned: “90% of local people are relatives” (Interview JBR No.11, old woman, an entrepreneur). Due to the isolation of the JBR in the past, most local people married within the same or nearby village; as a result, most villagers are related to each other. These marital connections have contributed to the strong social relationships between the villagers.

Beside this affinity-based relationship, formal and informal memberships commonly involve local people. One example is the joint company, which focused on maintaining community in a harmonious state and creating a good business environment. During the 1990s, with many family inns being built, business competition became severe. In order to “reduce the severe and risky business competition among villagers and to maintain community stability” (Interview JBR No.2, middle-aged man, who worked as a broad member of the joint management company), a joint management company was founded by the local villagers. The joint management company signed contract with each household and provided a unified set of business rules. In this way, “on one hand tourism business kept healthily increasing, on the other hand, villagers became solidarity” (Interview JBR No.2). Some villagers said they even felt “more harmonious than before” (Interviews JBR No.5, No.8, No.10). This joint venture not only brought a steady revenue
from tourism, but also organized and united the local community in a new way. However, following a rise in environmental concerns, all business operations in the JBR were halted, and the joint venture was shut down in 2003.

A few other associations and groups have been established in the last five years in the JBR. These include a seniors club that aims to organize activities for senior residents; a dance team, with good participation by young local females who are interested in the Tibetan style of dance; an organization aiming to support local young entrepreneurs; and a Tibetan cultural group focusing on recording and restoring local Tibetan culture.

Many other events in local villages also contribute to the strong social network. Religious events praying for good luck always attract the attendance of many villagers. There are also many household events, such as wedding ceremonies. During the fieldwork for this study, I was fortunate to be able to attend a local wedding ceremony. A couple got married, and more than 800 people (more than half of the population) attended the wedding ceremony, something that they claimed was very normal. The new couple prepared free meals for all villagers for a period of two days. They set up a temporary tent, and almost all of the women in the village came to help with the cooking while the men helped with other wedding preparations.

It is possible that the social networks in the JBR will not survive through to the next generation. With tourism development, the income of local people has increased quickly, and children are
being sent to schools in big cities. As a result, the strong connections with their families and communities are being lost. Many interviewees expressed their worries: “Now the kids even do not know local villagers. For our generation, I not only know you, but your parents, your family members, even your family stories. But not anymore,” (Interview JBR No.2, middle-aged man), “some kids even cannot communicate in the Tibetan language.” (Interview No.1, old man).

The people in the SNNR have similar strong family and kindship networks. As in the JBR, the isolation of the villages in the past led to many people marrying within the community. As a result, most people in each community are relatives and, in some villages, many villagers have the same family name. One interviewee mentioned his family is really big: “there are more than 100 people in this village who are my relatives” (Interview SNNR No.35, middle-aged man, labourer). These family-based social networks also play a big role in immigration (Interview SNNR No.46, middle-aged man, construction worker) stated:

“We moved out from the mountains in 1992, through the help of relatives. We had poor living conditions in the mountains; it got harder and harder for men to get married, as local women preferred to marry outsiders. After a woman got married and moved out, some of her relatives, such as cousins, brothers, and sisters would move out with her help.”

Besides the family-based connections, local people used to help each other during the busy farming season. Today social networks have played an important role in sharing information
about the outside world. Social networks have remained strong despite the dispersal of their members. As one interviewee mentioned “If one person goes out to work from our village, and found there are more job opportunities, he will contact us and introduce us to the jobs.” (Interview SNNR, No.25, labourer in town). However, unlike in the JBR, there are no formal or informal organizations or groups in the SNNR.

Social trust in both places is strong. As an example, when asked questions about where to borrow money (financial capital), people in both places told me that they would ask relatives and friends for help, as it was easy and convenient (Interviews JBR No.13, 37, 20, SNNR No.12, 24). Some were not even worried about the borrower defaulting, as “it will not happen” (Interview JBR No.9) “Most people here are relatives, we trust each other.” (Interview SNNR No.6).

In terms of political engagement, as with all other villages in China, the people in the case study villages are members of the village administration and have the right to vote for village leaders. Apart from this, local people “do not have much interest in politics” (Interview SNNR, No. 4, female).

Social norms in the SNNR are similar to other Han Nationality dominated parts in China; while in the JBR, the Tibetan Buddhism ideology undoubtedly affects the world views of local people. In both places some interviewees expressed concerns about the effects of the market economy on their communities, including an increase in the gap between rich and poor and a loss of
People mentioned that the traditional world view and values have been highly affected by market economics and, as a result, “more people became greedy for money, and the only thing they know is money, money, money.” (Interview JBR No.1, old man).

In general, the interviews revealed that the establishment of the PA had little effect on the social capital of local communities, but the resulting tourism development did affect the social norms and the social networks, especially for the next generation in JBR.

Table 8 Socio-economic changes since PAs were established in Jiuzhaigou and Shennongjia

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3.4 Livelihood Strategies and Outcomes

Many different livelihood strategies have been employed in the NRs, including migration, wage employment, agriculture products, and tourism enterprises.

3.4.1 Emigration

Those interviewed indicated that emigration took place in both the JBR and the SNNR, but in different ways.

In the JBR, there were two stages of migration. The first occurred in the 1990s, “we (local villagers) want to do tourism business, family inns, restaurants etc., so people living in uphill area voluntarily moved closer to the main road” (Interview JBR No.1, old man, ran a family inn in the 1990s). This move brought obvious benefits, as it was much more convenient for them to run family inns and to attract more tourists. Further changes occurred after 2000, when increasingly more residents bought houses in big cities. Some of the villagers started moving temporarily to cities during the winter season, “especially the old, as winter in Chengdu is much warmer than Jiuzhaigou” (Interview JBR No.41, young woman).

In the SNNR, there were four different types of emigration. The first was related to marriage. Some females married people outside their village, using this as a way to leave their home villages. They would then help some of their relatives to move out. The second type was forced
emigration. This occurred around 2003, and involved people who lived within the core biodiversity area of the NR. People were forced to move out with very little compensation, and had to find new homes by themselves. This practice was terminated very quickly. The third type was voluntary emigration without help from others. Only households with relatively good economic conditions could choose to move out this way, as they needed to have sufficient financial capital to support themselves while they started new lives elsewhere. Nowadays, many people choose this type of emigration due to concerns about their children’s education and easy access to labouring jobs. One interviewee (Interview SNNR No.30) who migrated from the hills three years ago commented:

“Living here [at the foot of the hills] is much more convenient than before. In the past, we had to carry everything home, even buying a bag of salt took hours…It took too long for children to go to school, and we were worried about our children’s safety, especially on bad weather days…In the past, it was also inconvenient for me to find labouring jobs. If someone called and asked me to work immediately, I could not, as it took me hours to go downhill. But now, if I get a phone call, I could arrive there soon”.

Another interviewee talked about the reason why they chose to move downhill:

“My previous village did not have electricity or roads until 2004…If you needed some cash income, you had to carry the heavy agricultural products to the nearest market. It
took a whole day to sell some stuff. When returning home, it was already dark...I was determined to move out” (Interview SNNR No.35, middle-aged man, labourer).

Another interviewee mentioned the process how he moved downhill:

“There were 50 to 60 households living uphill. I was the first one to move downhill. I have a relative. This land [downhill] belonged to him. I bought it from him and then I moved here [downhill].” (Interview SNNR No.13, old man).

The fourth and final type is emigration associated with the central government’s Target Poverty Alleviation Policy (in Chinese: Jing Zhun Fu Pin). The SNNR government is building houses in the valley bottoms and moving poor people from the hilltops so it is easier for these people to get access to some important infrastructure, such as electricity and transportation, and start new lives. This policy targets the very poor individuals in the SNNR.

3.4.2 Tourism As A Livelihood Strategy

Tourism acts as an important livelihood strategy in both places, but especially in the JBR where most families left farm work to work in tourism. Activities related to tourism in the JBR and the SNNR are shown in Table 9. Tourism provides employment and other opportunities in both places, although people in the JBR are more involved than those from the SNNR. This is because communities in the JBR are geographically closer to the tourism heartland, and as such
they were involved in tourism investment at an early stage of tourism development. In 1984, the first hotel in the JBR provided a tourism service – a homestay. It was built by a local villager, and was quickly copied by other villagers. However, these homestays, which brought local people considerable income, were closed in 2003 due to concerns about environmental pollution. Although some compensation was provided by distributing a portion of the entrance fees to villagers, there was considerable dissatisfaction with this action.

Prior to 2000, most tourism services in the JBR, such as restaurants, hotels, guides, and photo services, were provided by local communities, and a joint company was created by the local people to manage these services. As one interviewee recalled:

“Since 1992, most people started to do tourism-related jobs in our village [Heye Village]. [By contrast], a small portion of people still did farming, mostly middle-aged and elderly people. The young people all go out [to do tourism jobs], not farming.”

(Interview JBR No.1, old man, ran a family inn in 1990s, now engaging in souvenir photo services)

In contrast, tourism development in the SNNR was led by a government-owned company called “Shen Lv,” and local villagers living within the NR were mostly excluded from the development process.
“Shen Lv company charges the shuttle buses within SNNR... It originally belonged to the Shennongjia Administration Management. It is not related to us...It does not share any benefits with us.” (Interview SNNR No.2, tourist car driver, lived in SNNR in the past)

In general, people in the JBR have more chances to directly engage in tourism related business or jobs; while in the SNNR, most tourism benefits were earned by the government-owned company, and local people received limited benefits from tourism development.
Table 9 Sources of tourism income

<table>
<thead>
<tr>
<th>Direct income from tourism for the local community:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>JBR</strong></td>
<td><strong>SNNR</strong></td>
</tr>
<tr>
<td>Administration employment in the park (20% of the administrative staff are local people, employed as rangers, managers, and maintenance staff) for both formal employment and temporary employment during peak seasons</td>
<td>Sales of local products (e.g. honey, chestnuts, wild kiwi fruits)</td>
</tr>
<tr>
<td>Semi-community-run Nuorilang Restaurant: community has 49% of the equity</td>
<td>Temporary laboring jobs for NR-related construction (hired by SNNR administration)</td>
</tr>
<tr>
<td>Entrance fee redistribution (7% entrance fee shared with local people)</td>
<td>Income from homestays (very few)</td>
</tr>
<tr>
<td><strong>Semi-community-run Nuorilang Restaurant:</strong> community has 49% of the equity</td>
<td></td>
</tr>
<tr>
<td><strong>Sales of souvenirs</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Individually-run enterprises: restaurants and hotels</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Leasing land for parking lots</strong></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Indirect income from tourism for local community:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>JBR</strong></td>
<td><strong>SNNR</strong></td>
</tr>
<tr>
<td>Wages from employment at hotels, family inns, and restaurants</td>
<td>Wages from employment at hotels, family inns, and restaurants</td>
</tr>
<tr>
<td>Wages from employment in labor jobs (e.g. construction)</td>
<td></td>
</tr>
</tbody>
</table>
3.4.3 Agriculture and Off-farm Work

Agriculture was abandoned in the JBR in 2000. In contrast, agricultural products still comprised 35% of the net household income in the SNNR in 2014. Some of the agricultural products there were for family consumption, not for sale. Agriculture therefore contributes to local livelihoods more than is apparent from net income, as it is significant for local food security.

One interviewee briefly recalled the process of agricultural abandonment:

“Before 1988, there were no houses here [next to the main road]. It was all farmland. Houses were all in upland...Then tourism started...and people started to build houses here [close to the road]...Finally due to tourism development, the farmland was abandoned and all transferred to forest, the Returning Farmland to Forest Project.”

(Interview JBR No.4, middle-aged woman, former family inn owner)

Rapid tourism development is the main cause of agriculture abandonment. In the SNNR, agriculture is still important for people, especially for subsistence. The interviews provide two examples:

“I plant potatoes, vegetables, mushrooms, a little tea and raise chickens. Mainly for self-use...It is impossible to sell [these agricultural products]. The transportation is inconvenient...My income is mostly from off-farm work. I worked as a miner in Hunan [Province] for three years. Now, I work locally as a mason.” (Interview SNNR No.12, middle-aged man, labourer).
“I raise pigs, grow tea, corn, vegetables...Collecting chestnuts...The corn is used to feed pigs. The pigs are for ourselves [to eat], not for selling...We rely on off-farm work [for cash income]...My husband works outside for construction jobs, like building a house...Most of the time, he could get something [a job] to do every day.” (Interview SNNR No.11, young woman, homemaker).

Agriculture still plays an important role in the livelihoods of local people in the SNNR. Major agricultural crops include maize, potatoes, and soybeans. Stock breeding includes pigs, cattle, goats, and chickens. Destruction of crops by wild animals near or within the SNNR has been a severe problem. Many local residents had to build shelters near their farmland to protect their crops during the night. As a result, many local people believe that biodiversity conservation negatively affects them. Some villagers have chosen to collect NTFPs from the forest, including honey, wild fruits (such as wild kiwi fruits), and nuts (such as chestnuts) to sell to tourists.

Along with tourism, off-farm work plays a very important role in improving livelihoods in both NRs, but especially in the SNNR where income from off-farm work now exceeds agriculture. The China Economic Reform started in 1978, almost at the same time as the establishment of the SNNR. This reform marked an economic change from a government planned to a free market-based economy.
Subsequently, there was a high demand for labour associated with industrial development. This introduced rural people to new opportunities and to a new livelihood strategy. The Economic Reform proposed off-farm work as an alternative, which contributed to the reduction of reliance on natural resources, and alleviated the opposition to the NRs.

3.5 Discussion

The two studies indicate that the impacts of the PAs on local livelihood strategies and livelihoods outcomes have been mixed (Table 10).

Table 10 Livelihoods outcomes comparison between JBR and SNNR

<table>
<thead>
<tr>
<th></th>
<th>JBR</th>
<th>SNNR</th>
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</thead>
<tbody>
<tr>
<td>Natural capital</td>
<td>Traditional livelihoods that rely on natural resources have been totally abandoned, but natural resources are the most important resources for tourism development. Local people have high environmental awareness.</td>
<td>Local people still partly rely on natural resources for subsistence. Off-farm work has instead of agriculture become the major income source. Farmland is bothered by wild animals.</td>
</tr>
<tr>
<td>Physical capital</td>
<td>Improved a lot, and highly related to tourism development. From bad road condition to a place where could be access by flight, railway, and highway. Houses were renewed or rebuilt. Many families have apartments in big cities. Affordable energy (electricity) and access to information (TV, broadcast, internet). Most families have cars.</td>
<td>There are some improvements: Roads to most areas, but not to some mountainous area. Locally rebuilt houses. TV, broadcast accessibility. Electricity available.</td>
</tr>
<tr>
<td>Financial capital</td>
<td>Income reduced due to NR establishment initially. Cash income increased later is highly related with tourism development. Richest area in local prefecture.</td>
<td>Income reduced due to NR establishment initially. Income percentage from agricultural products selling reduced. Cash income increased majorly due to off-farm labor work.</td>
</tr>
<tr>
<td><strong>Human capital</strong></td>
<td>Compensation and subsidies received related with tourism development. Limited financial services.</td>
<td>Limited financial services.</td>
</tr>
<tr>
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<td>-------------------------------------------------------------------------------------------------</td>
<td>-----------------------------</td>
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<tr>
<td>Illiteracy is high in the older generation. Young generation goes to good school in cities for better education. Clinic in town is available. Almost no health services in the past. Now the health services are not good, lacking good physicians. Local people prefer to get health services in big cities.</td>
<td>Children receive local education that is not as good as in cities, but much improved on the last generation. Almost no health services in the past. There are limited health services at town, but the quality is not good.</td>
<td></td>
</tr>
<tr>
<td><strong>Social capital</strong></td>
<td>Family based social network is strong; Formal and informal groups exist; Strong social trust; Normal political engagement; Strong Tibetan Buddhism world view. Local social capital reduces in the next generation.</td>
<td>Strong family and village based social network, especially useful for immigration and job seeking information share. Strong social trust. Normal political engagement.</td>
</tr>
<tr>
<td>Moved closer to the main road in order to develop tourism. Seasonal and temporary immigration to a big city during tourism low season.</td>
<td>Moved downhill for better road condition, education, and job opportunities.</td>
<td></td>
</tr>
<tr>
<td><strong>Tourism</strong></td>
<td>Highly involved in tourism-related activities and services.</td>
<td>Partly but not mostly directly involved in tourism.</td>
</tr>
<tr>
<td><strong>Agriculture and off-farm work</strong></td>
<td>Agriculture totally abandoned. Most off-farm works are related to tourism services.</td>
<td>Farm land provided food for villagers, but are bothered by wild animal. Off-farm labor jobs contributed to more than half of income.</td>
</tr>
</tbody>
</table>

Traditional livelihood strategies such as logging, hunting, and agriculture are usually heavily reliant on natural resources. As such they are usually seen as being negatively affected by the establishment of NRs. NRs are viewed worldwide as a substantial constraint on the ability of local people to secure their livelihoods (Vedeld et al., 2012), and conflicts are often at the heart of NR...
creation and maintenance (West et al., 2006). This is because NRs place limits on people’s livelihood choices, while sometimes failing to provide alternatives. In the JBR, local people abandoned their old lifestyle – a traditional lifestyle based on agriculture – and instead chose a new livelihood strategy: tourism. People in the JBR are very environmentally conscious, as respecting nature is an important part of Tibetan tradition. Moreover, they know that a healthy environment is the foundation for successful tourism development. Hiwasaki (2006) found that the environmental awareness of communities in three PAs in Japan is high. Tsaur, Lin and Lin (2006) found that awareness of environmental protection and support for resource conservation could be stimulated in Taiwan by the development of ecotourism.

In contrast to the JBR, local people in the SNNR still partly rely on natural resources for subsistence, as tourism in this area has not reached the same successful level as in the JBR, and has not yet provided sufficient alternatives to improve their livelihoods. The establishment of the PA brought more costs than benefits, especially the limitation on natural resources use and the human-wildlife conflicts. The local Forestry Administration gave biodiversity conservation top priority, but paid insufficient attention to the needs of the local people. It was very difficult for local farmers to receive compensation for the crops destroyed by wild animals. As in other studies, it was found that if compensation is meagre and payments are delayed, animosity to the PA will grow among local farmers (Gubbi, 2012; Mukeka et al., 2019). This also explains the dissatisfaction of local people in the SNNR.
Physical capital improvement in both places was strongly related to efforts by national programs to provide better infrastructure in rural areas. The rapid improvement of infrastructure in rural China has been closely linked with rapid economic growth since the economic reforms in 1978. As highlighted by Bai and Qian (2010), the growth of electricity generating capacity and passenger-km on highways from 1978 to 2007 kept pace with the growth of real GDP in China, which was 9.8% during this period. Both the JBR and the SNNR could be seen as a microcosm of this economic reform. Most residents in the JBR and the SNNR are in the experimental zones of the PAs. Investment in construction is supposed to be strictly limited, based on the requirements of No. 18 The Regulation on Nature Reserves (1994). However, due to the local government’s enthusiasm for tourism development and fast GDP growth, these limitations were not fully enforced (Zinda, 2012). As with physical capital, the economic growth in China also positively affects human capital in the JBR and the SNNR. Health and education services have improved over the past 40 years, from a situation where medical services and schools were lacking to today where there are clinics and schools in the towns. This is especially the case for the JBR, where children go to big cities to pursue a good quality education, and people go to hospitals in Chengdu for better health care. However, the quality of education in rural China remains poor and much investment is still needed (Khor et al., 2016).

The five livelihood capitals are closely linked to each other, which suggests the need for an interrelated method to improve livelihoods capability (Munanura et al., 2016; Bebbington, 1999; Haggblade, Hazell, & Reardon, 2010). Income streams are important to villagers, but the
evidence suggests that other capitals are equally meaningful to local people. For example, social capital is important in both the NRs studied here. In the JBR, local people could not have started the joint operation to run the tourism business without first having strong social capital. In the SNNR, social capital plays an important role in information sharing and emigration. In addition, without improvement in physical capital, people in the JBR could not have developed homestays or have connected with the outside world. Similar results have been found elsewhere. Gautam and Andersen (2016) showed that salaried jobs are crucial to well-being, but involvement in salaried jobs is determined by multiple social, human, and physical capitals, and these capitals could be the entry barriers for the poor. Jiao, Pouliot, & Walelign (2017) also suggested that the improvement of rural livelihoods, especially if it would enable the poor to move out of the vicious poverty trap, requires the improvement of infrastructure and communication, more opportunities for education and skills buildings, and access to financial and technical resources. The cases of the JBR and the SNNR indicated that there is a need for policy support to improve capital assets, especially physical capital. Physical capital improvement is strongly related to the investments in infrastructure construction made by the government, and there have been many efforts to enhance transportation, communication, and other types of infrastructure in rural areas. These have generated positive impacts on the livelihoods of rural people, especially the poor. However, most of these policies are quite separate from conservation-related policies (Zinda, 2012).
Developing tourism in protected areas has the potential to improve livelihoods for local communities significantly, but many people in the SNNR lack the opportunity to participate in tourism. There were two reasons for this. The government followed a top-down style of management that excluded local people from the design, planning, and management stages of tourism development in the area. In addition, the local people lacked the necessary preconditions for participation, including geographical advantage, initial funds, and management knowledge. The first of these reasons is the most important. The ability to participate could have been enhanced through capital building training, but the local people never received this. This is confirmed by other studies. Zinda (2012) found that the local state was sufficiently powerful to control tourism operations and channel the profits from mass tourism in Pudacuo National Park in China, with local people only receiving limited benefits. Stone and Wall (2004) found that ecotourism in Hainan Province, China, had become a profitable state-run tool which brought limited socioeconomic benefits to the local communities and did not contribute any revenues towards conservation.

Tourism development could introduce new sources of income and alternative livelihood opportunities, as demonstrated in the JBR. An increase in financial capital could positively affect other capitals by improving human capital via education and health services, and by improving physical capital. This is indicated by spending: vehicle purchases, house renovations, and new house purchases. Naidoo et al. (2019) found similar results through an examination for 190,000 households across 34 countries in the developing world. They found that tourism development
had strong positive impacts on household wealth through generating material benefits that can then be spent on other livelihoods assets. Nonetheless, tourism development and market economics have led to the loss of traditional knowledge, language, culture, and even social connections (Tao & Wall, 2009). This is obvious in the JBR, where younger generations have left their homes to go to schools in big cities, leaving behind their local social networks. However, the good thing is that there are many groups and activities have been organized by local people, and these organizations are strengthening social networks.

As there are fewer opportunities to participate in tourism development and the ensuing benefits sharing, people in the SNNR have paid less attention to environmental protection. PAs have the potential to protect biodiversity while improving the livelihoods of local people, but only when local people are considered, and when they are assisted with finding alternative livelihood options (Bennett and Dearden, 2013). In such cases, work opportunities for people in both the JBR and the SNNR are crucial as alternative livelihood strategies, as they directly contribute to the accumulation of financial capital, which plays an important role in improving other related capitals and pursuing a better livelihood. Similar results have been found in other studies (De Janvry & Sadoulet, 2001; Ruben & Van Den Berg, 2001;). Ruben & Van Den Berg (2001) showed that non-farm income and employment are particularly important to the food security of rural households, so more attention should be given to human capital improvement programs (e.g. education, skill training) that assist entry into off-farm activities. However, more non-farm job opportunities will not guarantee access to the rural poor, as these job opportunities focus on
people who are well endowed with other capitals, such as human capital and social capital (Haggblade, Hazell, & Reardon, 2010).

In comparing the different livelihoods outcomes between the JBR and the SNNR, the major difference is that an alternative livelihood strategy (tourism) has been developed in the JBR, while in the SNNR it has not. As a result, local people in the JBR have the opportunity to share the conservation benefits, while in the SNNR, local people only bear the conservation burden. This outcome is related to the conservation equity issue, which will be discussed in greater detail in the following chapter.

Compared to compulsory emigration for conservation, voluntary emigration is preferred by the government for two reasons. It reduces criticism and unrest over compulsory resettlement, and voluntary resettlement is cheaper, as there are no livelihood restoration requirements or compensation requirements (international standards for resettlement are only applied to compulsory resettlements) (Schmidt-Soltau & Brockington, 2007). Voluntary emigration as a livelihood strategy could be effective, as emigration can lead to rapid growth in some capital assets. In the SNNR, voluntary emigration immensely improved the physical capital of transportation for local villagers. However, as discussed by Schmidt-Soltau and Brockington (2007), it is hard to distinguish between a real or forced choice when it comes to voluntary emigration. It is also questionable whether voluntary resettlement can really bring more choices to the affected people. The options for affected people are to either decide to move away, or to
stay with little or no compensation, restricted access to natural resources, few or no opportunities to benefit from resources, and the need to cope with the crop damage caused by animals (Schmidt-Soltau & Brockington, 2007). In the case of the SNNR, “voluntary emigration” is driven by both push and pull factors. On one hand, inconvenient living conditions “push” people to move; it is more about “have to” than “want to.” On the other hand, large-scale urbanization and increased job opportunities in cities attract many people, especially within the ambitious young generation. For this process, the government should consider people’s livelihoods by providing support for voluntary emigration.

3.6 Conclusions

I used a modified Sustainable Livelihoods framework to analyze livelihoods changes and strategies conducted in the process of PA establishment at two sites in China. Based on different capitals, this framework helped to explore the changes that occurred within different aspects of livelihoods, and the associated adaptation strategies. This framework could be applied in broader circumstances to assess livelihoods or welfare changes, not only in NRs, but also for other livelihoods or development-related projects.

The establishment of PAs directly affected the access and use of natural resources in both study cases, so natural capital for local people was reduced. With the tourism development in both places based on local natural resources, people received direct or indirect benefits from it.
Affected by fast growth of China’s economic and rural improvement policies, and local tourism development, human capital, physical capital, financial capital have all increased in both places. Social capital is important for livelihoods improvement. However, with the economic success of the JBR, social capital is weakening for the younger generation of local people. This suggests that the improvement of livelihood wealth requires a broad array of policies considering different livelihoods capitals. Infrastructure development, development of the market economy, and improvements to the employment market, are all critical for the improvement of conservation and livelihoods outcomes.

In the JBR, local residents realized the importance of biological conservation because they could directly see its benefits in relation to development. In contrast, conservation strategies in the SNNR limited the use of natural resources and local development. People in the SNNR did not actively participate in conservation, as conservation was seen as a government priority. Instead, the local people wanted to pursue better living conditions. Tourism development in the SNNR did not directly involve people who lived within the PA boundaries, and as a result they have less opportunity to benefit from tourism. Involvement in tourism requires an ideal geographical location and sufficient capitals. This includes not only financial and natural capital, but also physical, social, and human capitals. Most rural villagers do not possess these. Current conservation policies typically make insufficient provisions for alternative livelihoods, and lack incentives that would encourage local people to participate in conservation-related activities. The difference between the JBR and the SNNR has revealed the unequal conservation burden
and benefits sharing experienced in different PAs. This conservation equity issue is further examined in Chapter 4.
Chapter 4: Seeking Equity for Local Communities in the Process of Tourism Development in Protected Areas

4.1 Introduction
As is evident from the discussion presented in Chapter 3, the process of the establishment of PAs and subsequent tourism development changed the livelihoods of local people, and the results were often different. Based on these differences, a question that is often asked is, “Who benefits from it, and who is left out?” In recent decades, there has been an increasing tendency to consider social equity and justice in the planning and implementation of PAs, especially for those policies and projects that aim to improve both conservation and local livelihoods (Juffe-Bignoli et al., 2014a). Due to a lack of consistency over which aspects of equity and justice should be pursued, the status and trends in equity and justice issues are not available internationally (Juffe-Bignoli et al., 2014a). However, it is possible to consider equity issue in a specific context, based on three forms of equity: distribution equity, participation equity and recognition equity (Sikor, 2014).

In conservation equity theory, distribution equity focuses on the distribution of both benefits and burdens in society (Rawls, 1971; McDermott et al., 2012). Participation equity and recognition equity have also been proposed. These focus on democratic decision-making procedures and the recognition of social, cultural, and political differences (Fraser, 1997; Honneth, 2001).
In contrast to many western countries, China’s large population means that there are around 30 to 60 million people living in or around protected PAs (Zhou & Edward Grumbine, 2011). Equitable sharing of responsibilities and benefits arising from biodiversity conservation with local/Indigenous peoples is important, especially for countries such as China that have millions of people living in or close to protected areas. However, there have been limited studies to further our knowledge about conservation equity for local people. A research study based on a survey of six giant panda nature reserves showed that nature reserve communities experience greater poverty and lower income levels (Ma et al., 2019). However that study only focused on one part of conservation equity—income inequality—and overlooked participation equity and recognition equity in the development of PAs. There has been little empirical research on government perceptions of equity issues during the development and implementation of local policies (Graham, Barnett, Mortreux, Hurlimann, & Fincher, 2018). Within this context, this chapter makes a number of contributions. First, this empirical research tracks the progress toward more equitable conservation practices over 40 years and provides a comprehensive analysis to understand conservation equity for local people based on three important equity principles. Second, the research explores how governments perceive equity during local policy development and implementation. Third, this study examines changes in how equity is perceived over time and across development stages, and how this depends on local economic activities and policy implementation. Fourth, this study adds to the literature showing that distribution equity is easier to achieve than either participation equity or recognition equity. Fifth, this study found that the central government’s equity-promotion policy in China is severely restricted when it is...
implemented by local governments. Finally, this study introduces the idea that key events need to be considered as an element in any equity analysis framework (Figure 6). This provides a framework to analyze equity changes over long time periods.

4.2 Methods

A case study approach was used. This provides an opportunity for an in-depth description and analysis to understand stakeholders’ perceptions of equity issues. Two case study PAs (JBR and SNNR) were selected and, within each of these PAs, four to five case study communities were chosen. There were four administration communities in the JBR, all of which were chosen as cases for the study. In the SNNR, villagers were recommended by the local forestry administration based on their suitability for this study. This strategy allowed a comparison of the different cases: they were very different. Although both cases were selected as PAs, and both had restrictions on the use of natural resources, the livelihood outcomes were completely different (as discussed in Chapter 3). In the JBR, local people participated significantly in the development of tourism, while in the SNNR, few people had the chance to work directly in a tourism-related area. These different livelihoods outcomes might contribute to different views on social equity, providing the opportunity to draw a comparison.

It is difficult to find a unified international standard for the concept of equity (Juffe-Bignoli et al., 2014a). For example, Martin et al. (2014) conducted research in Rwanda and found that local people’s conceptions of justice differed from the globally-referenced concept of justice.
Additionally, local people did not think that a lack of recognition was injustice. In my study, I did not use a unified standard, and participants were instead encouraged to express their feelings about costs and benefits, and their views on equity. Participants’ feelings about and perceptions of equity can only be obtained through a qualitative research design. In order to understand different stakeholders’ perceptions on conservation equity during the NR establishment process in the JBR and the SNNR, complex and detailed information was required. Such information could only be obtained by talking directly with people and listening to their opinions and experiences. Semi-structured interviews were therefore used to collect the data.

Questions about perceptions of equity were asked of local villagers, village leaders, government officers at the county level, and local management administrations. Detailed questions related to decision making, prior informed notice, transparency, participation, and cost and benefit sharing were asked (Appendix 1, Governance & Following questions; Appendix 2 questions No. 2,3,4,6). The study covered a period of almost 40 years, and a number of events happened in both places during this time. To clearly understand if and how people’s perception of equity had changed over time, the study was conducted based on different historical events. Before the formal interview started, I first contacted a few villagers who were familiar with the development of their village to ask their opinion about their village development. From these conversations, I listed the important events that had occurred and policies that had been implemented since the PA establishment in their villages. I then started my formal interviews with different participants, and focused on asking what local people got and lost due to each event, along with their feelings.
about the process. These are core questions when conceptualizing equity (Friedman, 2018) (see Figure 6 for the framework). Other questions related to decision-making, prior informed notice, transparency, and participation were asked to obtain a general picture. During this process, although researchers categorize equity in terms of participation, distribution, and recognition, I did not ask participants directly about these categories, as the concepts may have been difficult for the participants to understand. Follow up questions were asked based on information elicited during the interviews. Some informal interviews were also conducted during the author’s stay in the local community. These conversations were more open and casual, and interviewees were more likely to speak frankly. To better understand the policy mechanisms involved, and to hear from different stakeholders, purposive and convenience sampling strategies were utilized to select key participants such as village leaders, government officers, and local people knowledgeable about their community. The actual sample was dependent on their willingness to participate and their accessibility. A total of 100 interviews were conducted in the JBR and the SNNR from August to November of 2016. Because of the difficulty of interviewing officers at the central and provincial levels, documents, especially government files, were used to understand the perception changes of officers at these high levels.

For this research question, I used conventional content analysis. The conventional approach usually avoids using preconceived categories, and instead allows the categories or themes to emerge from the data (Hsieh & Shannon, 2005). This approach is suitable for interview or open-ended questions (Hsieh & Shannon, 2005). For this study, the three different conservation equity
categories were used as themes, as they were very broad and still allowed themes to flow from
the data. As this study has a long time span, I chose to analyze the data based on different
historical phases or events. For example, for the JBR analysis, I did not analyze conservation
equity from the perspective of the process as a whole. I instead analyzed the equity issues
associated with each event, such as the equity issues in the establishment of the PA, and the
equity issues involved in the Returning Farmland to Forest Project. Example codes are provided
in Table 6.

Additional details about the methods can be found in Chapter 2 (data analysis details can be
found in section 2.6).

NVivo (QSR International Pty Ltd., 2017), a qualitative data analysis software package, was used
to help manage and code data.

4.3 Results

Jiuzhaigou was established as a NR in December 1978 to protect endangered species and their
natural surroundings; and the SNNR was set up in 1986. As is common with many other NRs in
China, both are divided into three zones: a core zone, where human activity is forbidden; a
buffer zone; and an experimental zone, where human activities are only partly allowed. In 1984,
Jiuzhaigou was selected as a National Scenic Spot, and tourism was allowed in the experimental
zone. A local farmer built a family inn within the experimental zone that same year, which
marked the beginning of family-owned tourism businesses within the reserve. Tourism development in the SNNR started in the 1990s, and had strong support from the local government and the Shennongjia National Nature Reserve Management Administration (SNNRMA). The primary aim of the SNNRMA is to protect biodiversity. However, the SNNRMA turned to tourism to obtain additional financial support that primarily comes in the form of income from entrance tickets (Interviews SNNR No.47, No.48, officers).

4.3.1 The Situation in the JBR

The development of Jiuzhaigou can be roughly divided into three different periods based on the different stages of tourism development. Stage I consisted of the establishment of the PA and the initial start of tourism (1978–1990). Stage II comprised a period of rapid tourism development during which the number of family inns in the local communities reached its peak (1990–2000). Stage III represents the period when some forms of tourism were reduced. This is when policy changes resulted in local communities being forced to close family inns, hotels, and restaurants within the boundaries of the JBR (2000–2016²²). In the following sections, I describe the important events and policy changes that affected the rights and livelihoods of local people, especially those affecting the benefits and costs for local people. I then analyze the perceptions of equity among the different stakeholders: local communities, local government and central government.

²² Field work for this study was conducted in 2016, so in this dissertation Stage III ended in 2016.


4.3.1.1  Stage I. Establishment of the PA and Initial Tourism Development (1978–1990)

Event 1 PA Establishment

Although Jiuzhaigou is a traditional Tibetan area, it differs from many other Tibetan communities as growing of crops, rather than grazing, is the major economic activity. As one interviewee (Interview JBR No.1, old man, engaged in taking souvenir photos) described:

“We made a living from the land; when I was a little boy [in the 1960s], all of these lands were farmland, only small woods in the middle. During the Land Reform Movement and the ‘Emulating Da-Zhai on Agriculture’ campaign, the small areas of woodland were all felled and turned to farmland. In addition to the farmland, we also made charcoal, hunted and collected non-timber forest products (NTFP) and then sold them. We earn money [cash] from that.”

As it is a mountainous area, hunting, the production and sale of charcoal, and the collection of NTFPs are important for villagers’ livelihoods, particularly for cash income. Since the establishment of the PA in 1978, limitations have been placed on logging, hunting and NTFP collection.

In the process of PA establishment, local people lost elements of their “bundle of rights” (Schlager and Ostrom, 1992) associated with the forest resources that they had previously been entitled to. They lost withdrawal rights to obtain products from the surrounding forest, as
hunting and the collection of NTFPS were forbidden. Although local people still have access rights to the surrounding forest (except in the core area of the PA), without withdrawal rights, the right of access lost its meaning. Local people also lost the management right to regulate internal forest use patterns. The exclusion and alienation rights were transferred from local people to the Jiuzhaigou Management Authority (JMA).

One interviewee (Interview JBR No. 22, middle-aged man) recalled the livelihoods in that period:

“There was no compensation [for the limitation of natural resources use]. At that time, the country gave an order and said you could not do it anymore, then you could not, and no one dares to say ‘no’...”

An officer from JMA (Interview JBR No. 45) mentioned the lack of agriculture and the economic poverty during this period:

“People in this place cultivated the opium poppy until the 1950s, so agriculture is not advanced, being mostly restricted to slash-and-burn cultivation. In addition, due to the short frost-free season, farmers could only plant a one crop [per year]...So at that time, it [the establishment of PA] caused some difficulties in our lives...there was no compensation, as the whole country was very poor. Where would the money come from to compensate the villagers?”
The PA was established to protect endangered species, which benefits the entire ecosystem, but the cost to society was unevenly distributed to local villagers without any compensation. The rights of local people were ignored by the central government. No requirements related to compensation to local people were mentioned by the central government in the files and documents related to the establishment of the PA (Table 11). Local government also paid no attention to equity issues. Local people did not express their objections because to do so at that time was perceived as being politically risky as the Cultural Revolution, a political high pressure period, had just ended.

From 1984 onwards, the JMA hired local villagers to begin the process of forest restoration. Past over-harvesting had resulted in geomorphological hazards in the area, especially in the form of landslides and debris flows. As a result, the JMA initiated debris flow control projects in 14 ravines, and hired many local people in the process. Thus, in the early years of the JMA, many local households earned cash income by providing labour for these restoration efforts.

“Most labourers for debris flow control projects were local people...They carried the sand and other building materials up to the hills, and earned some money...They were happy about this, as here is their hometown. They felt proud to work for their hometown and also played a role as the labour force.” (Interview JBR No.45, JMA officer)
This was also confirmed by many local people. Many interviewees had worked for the JMA. One interviewee recalled (Interview JBR No. 1, old man):

“Around 1985, after the logging teams left, we [villagers] started to clear what was left behind, namely the stumps. We could earn 20 yuan for one cubic metric of wood. We earned that money as income.”

Some villagers had the opportunity to work for the JMA, and not just as labourers. One interviewee mentioned that he once worked for the JMA (Interview JBR No.35, old man, an entrepreneur):

“Around 1987, the JMA founded a tourism company, which could totally provide 1000 beds for tourists at three different locations. I was hired there [to provide tourism-related services] for a few years.”

With tourism growing rapidly, by the end of the 1980s more and more villagers had opened family inns and restaurants, abandoning their farmlands. One interviewee (Interview JBR No. 8, old woman, retired from a government department) living in Heye Village stated:
“People living in upland locations moved down for tourism purposes...It was totally voluntary...People seldom live off the farmland [since then].”

After 1986, logging by local people was only allowed in specific areas and, soon after that, logging was completely banned. In the 1990s, three small hydropower stations were built. They provided free electricity to local people, satisfying their household energy needs. At the end of the 1990s, the three small hydropower stations were dismantled and electricity was provided by the state power grid, which had just been extended into the area. Since then, local people have received a 65% electricity price subsidy, rather than a free supply of electricity. Interviewees mentioned:

“Our electricity fee is very cheap, only 0.22 Yuan [per kilowatt hour]; the JMA gave us an electricity subsidy, about 0.4 Yuan [per kilowatt hour]. Probably you cannot find a second place in the whole country to compete with us about the electricity price.”

(Interview JBR No. 2, middle-aged man)

“There was no electricity facility until 1960s, in Heye village, we had a very small hydropower station in Penjingtan [a place name], and that was only for illumination [lights] use. Then we developed hydroelectric power at the initial stage of tourism development. But those hydroelectric stations had a bad influence on the scenic spot, so they were dismantled around the end of 1990s. After that we use the electricity from
the National Power Grid, which is about 0.2 Yuan [per kilowatt hour], [it is] cheap. It should be around 0.6 Yuan. JMA gave us a subsidy.” (Interview JBR No.4, middle-aged woman, previously an inn owner)

The JMA tried to solve the energy use problem by developing hydropower as an alternative energy source. However, it is difficult to demonstrate that the government actually focused on distributive equity to compensate local people in this process. During the study, I discovered that the primary purpose behind the hydropower implementation was not to provide energy to local people, but rather for environmental protection and sustainable tourism promotion.

It is clear that during the period of PA establishment, the central government did not have any policies concerning compensation for people who had lost their rights (Table 11). The local government, which implemented the policy, also did nothing, or did not have the capacity to do anything in this regard. Distributive equity is usually the most fundamental part of conservation equity. However, during this period, compensation was completely ignored, which indicates that there was also no participation equity or recognition equity.

The establishment of the PA was an exclusively top-down process with a dominant command-and-control approach. Even the local government was unable to participate in the process of decision-making, and there was no possibility for local people to express their opinions. Local people were not given the opportunity to decide whether they wanted to participate in the
program or not. Due to previous political campaigns, people were still nervous about expressing their opinions, so although there was a highly inequitable situation, nobody expressed dissatisfaction.

Because of the political climate at that time, there was a lack of respect for the local culture and traditional knowledge, and recognition equity was impossible to achieve. There were no obvious differences between the Tibetan area and other areas in the implementation of policies related to the establishment of the PA.

Although there were some inequities during this period, three factors limited their impacts. First, farming was the major economic activity for local people when the PA started, and agriculture was not affected much by PA establishment. Second, people received some income from labouring jobs associated with the JMA. However, this was a normal employer-employee relationship, rather than a form of compensation or welfare for local people. Finally, tourism developed rapidly after the establishment of the PA and started to play a greater role in the livelihoods of local people, which reduced people’s reliance on natural resources.
### Table 11 Equity context in central policies

<table>
<thead>
<tr>
<th>Policies formulated or approved by central government</th>
<th>Context related to equity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1978, Establish PA in Jiuzhaigou, State Council [1978] Policy No.256</td>
<td>No equity issues were mentioned</td>
</tr>
<tr>
<td>1978, Promote Jiuzhaigou to a National level PA, State Council [1978] Policy No.34</td>
<td>No equity concerns were mentioned in this file</td>
</tr>
<tr>
<td>1984, Establish Scenic Area and start tourism development, State Council [1986] Policy No. 136</td>
<td>No equity concerns were mentioned.</td>
</tr>
<tr>
<td>2000, Returning Farmland to Forest Project, State Council [2000] No.24, requirement 1-5, 2-6, 2-7</td>
<td>1-5: RFFP should consider the poverty alleviation and insist the voluntary participation principle. It should fully respect the wishes of local farmers.  2-6: Every level government should effectively implement the subsidy for providing food, cash, and seedlings to the farmers.  2-7: For areas, where the actual agriculture output value exceeds the subsidies, if farmers are unwilling to return the land to forest, forcibly returning it is not allowed; farmers' will must be respected.  2-7: The cost of subsidized food shall be borne by the central government; the freight cost shall be borne by the local government. These fees should not be distributed to the farmers.</td>
</tr>
<tr>
<td>2005, Jiuzhaigou Scenic Area Plan (Revised version), approved by Ministry of Housing and Urban-Rural Development (central level), rule No.55</td>
<td>1. Build hotels outside JBR and use the operating revenue to subsidize local people;  2. Most operating revenue of restaurants within JBR should be subsidized to local people;  3. Fairly share the benefits from investment on the tourism buses;  4. Providing jobs to local people;  20 yuan will be extracted from each selling ticket to subsidize local people.</td>
</tr>
</tbody>
</table>
4.3.1.2  Stage II. Rapid Tourism Development (1990–2000)

Event 2 Development of family inns

Local people were allowed to start tourism-related businesses in 1984, and by the 1990s almost every household was participating in such businesses. About half of these households owned family inns. Many households provided accommodation, hotels, restaurants, and entertainment, whereas other people worked as photographers or rented traditional clothes to tourists who wanted to wear them while having souvenir photos taken. In 1978, the annual per capita income in Jiuzhaigou was only $23 US dollars (Li, 2009). In the 1990s, due to the development of tourism, Jiuzhaigou became one of the wealthiest places in Sichuan Province (Li, 2009).

Different interviewees recalled the tourism scene at that time:

“Flourishing tourism started in 1990...At that time, there were no hotels outside [of the JBR], all visitors had to live here [within the boundary of the JBR]. Our family started family inns in 1992, some others started earlier than us... In the year of 1998, there were 380,000 visitors... The business is very good. ” (Interview JBR No.19, male, engaging with souvenir photo taking)

“We made money in those years...Visitors lived here, had meals here, had entertainment [Tibetan dancing and singing] here, and had barbecues here...Most
visitors stayed for two or three days, some stayed here for a week or even longer”
(Interview JBR No. 9, middle-aged man, driver).

During this period, both the central and local governments had few resources, and local people were given the freedom and opportunity to develop family inns (Interviews JBR No.11, female entrepreneur, No.46, retired officer). This development was not a consequence of any top-down process; it was the result of demand from tourists. When visitors came, they needed tourism-related services. Seeing this opportunity, local people started tourism businesses. Consequently, this cannot be considered as participation or recognition equity. Although local people received benefits from tourism development, there was no indication of any deliberate attempt by the government or management authority at distribution equity.

*Event 3 Road Renewal*

In the early 1990s, the roads in the JBR were rebuilt by the local government. The new roads were constructed on farmland or forest land belonging to some of the households, but no compensation was given. During the interviews, it was mentioned that the JBR was a very poor area at the time, and had almost no usable infrastructure. The JMA had a severe shortage of funds and was unable to compensate local people for their lost land, even if it had wanted to. The primary objective for the JMA was to build tourism infrastructure as quickly as possible to
accelerate the development of tourism (Table 12). One retired officer said (Interview JBR No. 46):

“When we built the [tourism] road, a lot of [local people’s] land was occupied. At that time, we did it at a very fast speed; there was construction every year, as we wanted fast development. Nevertheless, to be honest, we did not compensate local people for occupying their land. We [Jiuzhaigou Management Administration] were too poor to provide compensation [to local people]...This part of the money should have been repaid [to local people], but it was not.”

One local villager mentioned (Interview JBR No. 6, middle-aged man, ferry bus driver):

“Our farmland was close to Wuhuahai [a famous attraction], where we planted barley and wheat. That piece of land was occupied by the widened road, and we did not get any compensation.”

Another villager recalled (Interview JBR No.9, middle-aged man, ferry bus driver):

“If we mentioned the compensation for land, the entire Jiuzhaigou needs to be paid...We have had land contracts for decades [with the government], but now we only
get a little compensation for the land which has been transferred to forest. What about the other part [of the land]?”

Most interviewees lost part of their land during the process of road renewal or road widening. The decisions about road renewal were made by the JMA without any consultation with local villagers. Neither the JMA nor local people were concerned about equity issues in this process. Local people did not complain about the road because they also wanted the road to be renewed and widened so that they could attract more tourists, which in turn could lead to an increase in their income. It was seen as a partnership: the JMA paid for the road construction and local people paid for the land that was used.
**Table 12 Infrastructure construction list 1985–2001**

<table>
<thead>
<tr>
<th>Year</th>
<th>Program</th>
<th>Cost (Chinese Yuan)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985</td>
<td>Garbage disposal; Road renewal; Viewing deck construction</td>
<td>870,000</td>
</tr>
<tr>
<td>1985.7</td>
<td>Heliport in Pengfeng</td>
<td>1,721,500</td>
</tr>
<tr>
<td>1985.8</td>
<td>Construction of Jiuzhaigou Hotel</td>
<td>N/A</td>
</tr>
<tr>
<td>1986</td>
<td>Rizegou, Xiongmaohai, Jinghai, Jijiehai debris flow control project</td>
<td>3,240,000</td>
</tr>
<tr>
<td>1986-</td>
<td>Zhenzhutan viewing deck; Shuzheng village infrastructure construction; Road renewal from the park entrance to Nuorilang (14.16 km)</td>
<td>N/A</td>
</tr>
<tr>
<td>1987</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1988</td>
<td>Road renewal from Nuorilang to Old-growth Forest (9.6 km)</td>
<td>N/A</td>
</tr>
<tr>
<td>1990</td>
<td>Road renewal (7.5 km); Ground satellite receiving stations</td>
<td>N/A</td>
</tr>
<tr>
<td>1991</td>
<td>Zharu Tibetan Buddhism Temple renovation</td>
<td>N/A</td>
</tr>
<tr>
<td>1992</td>
<td>Near gate bridge renewal; Nuorilang power station renovation</td>
<td>N/A</td>
</tr>
<tr>
<td>1993</td>
<td>Zhenzhutan scenic bridge construction; Wucaichi Parking spot built; Wuhuahai road renewed</td>
<td>N/A</td>
</tr>
<tr>
<td>1994</td>
<td>18 km road asphalt road surface construction</td>
<td>3,054,000</td>
</tr>
<tr>
<td></td>
<td>800 megahertz Mobile Communication system</td>
<td>N/A</td>
</tr>
<tr>
<td>1995</td>
<td>Jiuzhaigou Mineral water factory construction</td>
<td>3,000,000</td>
</tr>
<tr>
<td>1996</td>
<td>Nuorilang debris flow sand intercepting dam #1; 270 m river levee built; 400 boardwalks constructed</td>
<td>N/A</td>
</tr>
<tr>
<td>1997</td>
<td>Nuorilang to Changhai 17 km asphalt road surface construction; Wuhuahai, Xiongmaohai, Zhenzhutan trestle and boardwalk; Nuorilang debris flow control project</td>
<td>12,000,000</td>
</tr>
<tr>
<td>1998</td>
<td>Jiuzhaigou Guibinlou Hotel</td>
<td>11,800,000</td>
</tr>
<tr>
<td></td>
<td>Jiuzhaigou Hotel renovation</td>
<td>10,000,000</td>
</tr>
<tr>
<td></td>
<td>Shuzheng, Xiongmaohai, Zhenzhutan boardwalk renewal</td>
<td>N/A</td>
</tr>
<tr>
<td>1999</td>
<td>5000 m boardwalk built; 5500 m boardwalk renewal; Public toilets and sewage treatment works built.</td>
<td>N/A</td>
</tr>
<tr>
<td>2000</td>
<td>Visitor center and square; New construction and renovation 5000 m boardwalk; Zharu debris flow sand intercepting dam #1</td>
<td>N/A</td>
</tr>
<tr>
<td>2001</td>
<td>10 km road renewal; Entrance Parking expansion; 30 half-way houses built; 5 parking areas at the entrance were built; Nuorilang Restaurant built; 11 environmentally-friendly toilets built; purchase of 8 mobile toilets</td>
<td>81,470,000</td>
</tr>
</tbody>
</table>

N/A indicates that no data was available

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23 Most of the costs for these infrastructure constructions were provided by the Aba Prefecture government. This data is from the Jiuzhaigou county annals, 2011.
**Event 4 Returning Farmland to Forest Project**

In 2000, the national Returning Farmland to Forest Project (RFFP) was implemented. This policy came from the central government. It required all households living in the JBR area to convert their cropland to tree plantations. Financial subsidies were given to each household depending on their land area and the food prices in the given area. After the reform, all farming was eliminated.

One interviewee stated (Interview JBR No.1, old man, engaging in souvenir photo taking services):

> “Since 2000, farming has been totally abandoned, and all farm land has been returned to forest. Our family had a little more than 90 mu [6 ha] farm land, and 20 mu [1.33 ha] has been afforested...We got 22000 yuan as compensation.”

> “After RFFP the country [government] gave us food [rice] for the first two to three years. [We] could not eat it all, and a lot of it got mouldy. Then they [the government] changed to give money [instead of rice].” (Interview JBR No.9, middle-aged man, driver)

During the implementation of the RFFP program, the local government focused on distribution equity when it implemented the policy on the ground, and this was reflected in the compensation regulations. For local people, the conversion of cropland to forest marked the end
of a farming era. Some older farmers were unwilling to convert, as farming was their traditional lifestyle and had emotional meaning for them. From the perspective of participation equity, a core principle of the RFFP implementation was voluntary participation, and this principle was emphasized repeatedly by the central government (He & Sikor, 2015) (Table 11). However, as in many other places in China, local officials adopted a top-down approach to implementation, and local people were excluded from the decision-making process (He & Sikor, 2015). During program development, recognition justice was ignored by both the government and the local people. There were no requirements to respect the cultural landscape. Urgenson et al. (2014) indicated that the local Tibetan people have lived in the JBR for more than 2000 years and that they have created an ethnobotanically useful landscape, especially the meadows. However, the RFFP resulted in the loss of the meadows, with more and more meadow being planted with trees. The plantation species selected by the JMA were fast-growing species, grown in monocultures, and this has intensified biodiversity losses (Harrell et al., 2016). Traditional ecological knowledge, especially about the balance between meadows and forests, has been completely ignored by the JMA in this process (Trac et al., 2013). During this time period, local people focused more on distribution justice, as the RFFP provided an opportunity and impetus for them to transition to more profitable non-farming activities (Trac et al., 2013). Although some local people noticed that the RFFP has led to changes in the traditional landscape (Urgenson et al., 2014), there is no evidence to show that local people have taken any actions to prevent the changes.
Event 5 Green bus system

In 1999, a green bus system for ferrying tourists was introduced as a tool to minimize the increasingly severe traffic and related pollution problems. Funding for the bus system was raised from private capital, including JMA staff, local government officers, and local villagers in the JBR.

An officer recalled (Interview JBR No.45):

“The plan for the green bus system was approved by both municipal and provincial governments, but they did not have money. We had to raise funds by ourselves...Banks and consortiums worried about funding security and our ability to repay loans, so they did not want to lend us money...Finally, we had to ask for private investments, including from staff in the JMA, and staff in other government departments in our county and even in other counties, all villagers in the JBR...a lot of individuals. The green bus company brought good returns, as it was a monopoly operation, every visitor had to take this bus and buy a ticket...However, due to some reasons, some cadres from the prefecture thought this was an appropriation of the country’s resources and said it was illegal, and finally asked Aba finance to buy and refund the initial shares [to the original buyers].”

One local person mentioned:
“We [local people] have invested a lot of money in the green buses company. [The investment] ranged from 5,000 to 20,000 yuan for each household. After a few years the prefectural government asked us to withdraw our stocks with no reasons. Some people even did not get their original money back.” (Interview JBR No. 27, middle-aged man, engaging in selling souvenirs)

This bus system provided significant revenue to the shareholders. However, after four years of successful operation, the initial shares were forcibly refunded to the investors and their rights to a share of the benefits were stopped. An enterprise owned by the Aba Prefecture Government (the city-level government responsible for Jiuzhaigou area) purchased all the stocks and took over control of the bus company. This takeover of a profitable investment made by local people violated the terms of the Jiuzhaigou Scenic Area Plan approved by the central government (Revised version, 2005) (Table 11), as the Plan stated that the benefits from the bus system should be shared with local shareholders to support their livelihoods. This takeover had a significant impact on the livelihoods and benefits of local people. No appropriate compensation was given to the local people, and no reasonable explanation was offered.

During this stage of tourism development, the central government considered distribution equity primarily in the Return Farm to Forest Project and in the requirements of the Jiuzhaigou Scenic Area Plan (Table 11). In the RFFP, voluntary participation principles were mentioned a few times by the central government (Table 11). Nevertheless, in this process, the local government
ignored the requirements in the Jiuzhaigou Scenic Area Plan along with participation equity. Throughout the process, local people were not involved in the decision-making process, and they passively accepted these policies and the compensation standard that was formulated by the government. Even today, many local people are still unclear about why their initial investment for the green bus system was returned to them by the company led by the prefectural government. In this stage, no concerns about recognition equity related to the use of the local Tibetan traditional landscape were mentioned by any stakeholders.

4.3.1.3 Stage III Reduction in Tourism (2001–2016)

Event 6 Closure of hotels and restaurants

In the early 2000s, the “Travelling inside JBR, living outside JBR” policy was approved by the Ministry of Housing and Urban-Rural Development (central level) to address the very severe pollution problems in the park. This policy required local people to close all restaurants and accommodation within the JBR, and visitors were banned from overnight stays within the JBR. Hotels within the JBR were dismantled in 2001, and owners were only compensated for their construction costs. Various previous hotel owners recalled:

“At first, we ran family inns which were very cheap, and then with the demand for better living conditions, we ran a hotel. But it was forbidden later, and only 400 yuan per square meter [was given to us as compensation]...We did not know who decided the compensation price, it was just decided...It was enough to cover the construction
cost...For family inns, the compensation was even lower...We could not negotiate.”

(Interview JBR No. 29, middle-aged male, engaging in souvenir selling).

“We were asked to stop the business in 1999. At that time, we were against [this policy]. We lost a lot. But I could not resist the policy...Some hotels had been operated for 10 years, the cost was earned back. But my hotel had just been opened for 2 years, and I invested 1 million yuan, 120 beds, 1600 square meters.” (Interview JBR No. 9, middle-aged man, driver).

In this process, the local government recognized the issue of distribution equity and tried to compensate the local people. However, the compensation was much lower than the economic loss. Procedure equity was still lacking; local people did not participate in the decision-making process. All of the compensation focused on the economic aspects, and cultural and ethnic aspects were ignored.

**Event 7 Jiuzhaigou Scenic Area Plan**

Since hotels and restaurants were banned within the JBR, a cost-of-living subsidy has been given to people whose registered residency (in Chinese “hukou”) is in the JBR, based on the requirements of the Jiuzhaigou Scenic Area Plan (Revised version, 2005). This is specified in rule No. 55: “1. Two four-star hotels (around 500 beds) should be built outside JBR, the operating revenue should be used to subsidize local people; 2. Unified management in the restaurants within the JBR, and most operating revenue should be subsidized to local people; 3. Benefits
from the 10 million Yuan bus system investment by local people should be equally shared with local people based on original stocks. 4. Providing related jobs to local people...20 Yuan from the entry tickets will be extracted for building the two four-star hotels...restoring Tibetan housing style and dismantling non-Tibetan style hotels.”

The second requirement was met: the Nuorilang Restaurant was the only restaurant operational after 2003. This is a joint investment by local people (49% ownership) and the JMA (51% ownership). Most of its profits (77%) go to the local people who bought stocks in the restaurant around 2000. In 2015, each Nuorilang stock received a 2000 Yuan dividend.

“When building this Nuorilang Restaurant, the country [JMA] paid more, but when sharing the benefits, JMA got less. 77% was given to local people...To be honest, JMA got little benefits [from the Nuorilang Restaurant]; it gave most [of the benefits] to us...Until today, it is still like that. I worked there before, so I know that. However, many local people do not know the details about how to distribute the benefits...” (Interview JBR No.3, middle-aged man, worked at Nuorilang Restaurant before)

The first requirement, the construction of two four-star hotels, made no progress until 2013. In 2013, more than 1000 local people participated in a sit-in protest directed at the Jiuzhaigou Management Authority, the representative of the local government. They were expressing their concerns about the insufficient compensation, particularly the failure to build the four-star
hotels that were intended to be an important part of the compensation system. Interviewees stated:

“Our whole family participated in the protest, even my old grandma...It was a voluntary event. The day before the protest, people were talking about it, and then the next day, we all went, as it was for our own benefit.” (Interview JBR No. 14, young local woman)

“The file from central government approved the compensation standards, but the local government never fulfilled the promise until the file was found by us, and we were super angry about that. That was why we did the sit-in protest...the JMA did not know what to do, and waited for the cadre from Aba prefecture to come and quell the protest.” (Interview JBR No. 12, male, village leader)

After a few months of negotiation, the Aba Prefecture government agreed to give two pieces of land (approximately 280 mu (18.67 ha)) and 140 million Yuan to local communities to end the protest. However, the local communities had not reached an agreement on how to use the money or land by the time my fieldwork took place.

The third requirement, sharing revenues from the bus network, was reversed by the local government. The fourth requirement, sharing the entry fees, was greatly reduced, as only 7 yuan is shared with the local people instead of the prescribed 20 yuan. In 2015, each local person
received about 26,000 Yuan as a subsidy from the entry fees. Local people were allowed to participate in economic activities such as clothes rental and photography businesses.

Interviewees stated:

“After family hotels were banned, I started to take souvenir photos for visitors, but the business got worse and worse. Now visitors have their own cameras, or selfie sticks...In the past, on average I took 50–60 photos for customers every day; now it’s at most 20 photos.” (Interview JBR No.7, old male).

“The ‘travelling inside, living outside’ policy is not wrong, it helps to protect Jiuzhaigou. However, the subsidy is not enough. Our living quality has not improved since 2000...By contrast, people who live outside get richer and richer, as travelers live and eat outside now.” (Interview JBR No.26, middle-aged female, engaging in selling souvenirs).

Besides the distribution people received from the government, local people were also concerned about the distribution among themselves. One interviewee mentioned:

“If you get married to a local guy, you cannot get the subsidy until three years later. Why do we have to do that? For example, an outsider gets married to you, not because of you, but for getting the subsidy. She/he could get around 20,000 Yuan, just because he/she got a residential identification of local citizenship [in Chinese: hu kou] of Jiuzhaigou. And then they may get divorced a few years later, but that person would not
move her/his *hu kou* out, in order to keep getting the subsidy. That’s not rational, even though it [our rule] is in compliance with the Marriage Law...There is a total of 35 million Yuan as subsidy. We, 1300 people, share the 35 million. If we have 1000 people, it is still 35 million. This cake is this big, if it is divided more, it will be less [for each person]. So we made some village rules about the sharing.” (Interview JBR No.4, middle-aged woman, was an inn owner)

The village leader recalled:

“People have a lot of complaints about the subsidy sharing. Then I proposed that we vote about who should take it and who should not...In 2013, all villagers came to vote; if 70% of people think you could get the subsidy, then you get it...We have very specific standards, for example: people who have formal jobs should not get it, people who get married with a local villager may get it, depending on the situation, etc...But I know it conflicts with the Marriage Law somehow, and I heard that some people said they would go to court to sue me...” (Interview JBR No.12)

Local people decided how to share the subsidy among themselves by voting. Finally, they made a very detailed list about different type of people eligible to receive the subsidy.

In the Jiuzhaigou Scenic Area Plan, the central government addressed distribution equity by providing compensation for service facilities that were dismantled, providing subsidies to local
people through the Nuorilang Restaurant, and by permitting the construction of two four-star hotels to subsidize local livelihoods. However, these still represent top-down planning, and local residents did not engage in the discussion about their homeland’s future. Even this level of distribution equity was subsequently ignored by the local government; the four-star hotels were not built, and incomplete subsidies were provided to local people. The failure to share conservation benefits equitably, especially the two 4-star hotel buildings, directly led to the sit-in protest, which further worsened the relationship between the local people and the local government.

Distribution equity is not only about the subsidy that local people got from the government, but also about the equity sharing within the community. In the JBR, local people formulated the sharing rules within their community by voting. Even though it conflicts with the law, local people still implement it as a village rule.

The implementation process of the Jiuzhaigou Scenic Area Plan ignored participation equity. For example, all rules in the Jiuzhaigou Scenic Area Plan were top-down, and local residents’ voices were hardly reflected in the planning process. Recognition equity was addressed by both the central government and the local government by mentioning the need to restore Tibetan culture and housing style, although this could also be viewed simply as another method to improve tourism. During this period, local people arranged a collective protest to express their dissatisfaction as a group, which conveyed their notion of recognition equity. By ignoring the
needs for equity, the local government finally had to pay enormous costs not only in the form of cash and land awards, but also through the risk of social upheavals and the hostility of local residents. Unfortunately, this hostility has continued.

*Event 8 Local Village Plan*

In 2011, an elected village leader, together with the local elite, started to pressure the government to support the renewal of infrastructure in the four villages within the JBR. The village leader paid a company to develop and deliver a Village Plan to the local government. The village leader recalled during the interview (Interview JBR No.12):

> “We first proposed the Village Plan in 2011...There is a development plan for Jiuzhaigou, but no detailed small plans for the villages...We invited Dadi Fengjing [a planning company] to help us with the Village Plan. They [the people in the company] told me they had never worked for a village like us because other village plans were proposed by higher level governments, and they had never seen a village leader go to them for it [the plan]...We submitted this plan to the JMA and higher-level government: the prefectural government...It took two years to approve it...”

Uniquely, this Village Plan adopts a bottom-up approach, not the usual top-down manner. After several years of discussion, this plan was approved by the provincial government in March 2014, and construction funds were provided by the Aba Prefecture government. In addition, the local elite constituted a cultural group with a strong interest in recording and restoring local Tibetan culture. The “Xia Mo” song and dance, which expresses the local Tibetan culture with its focus on
agricultural production, was restored and further developed, and 80 local women joined the “Xia Mo” dance team. These actions were generated by a few senior members of the villages. One interviewee mentioned:

“Xia Mo is a kind of farming dance. The altitude of each village is different, and at different places people helped each other during the busy farm season. After they finished farm work for the day, they danced together. This dance showed various farming actions, fertilization, sowing, and so on. Now I am doing the restoration of folklore. It has been done before by JMA, but the results were not good. It’s better now because it’s local people who are doing it.” (Interview JBR No.34, young female, working at the local cultural group).

During this stage, local elites offered a proposal on village planning using a bottom-up approach. This was a turning point; it changed the pattern of participation, and marked the point when local Tibetans realized recognition equity and claimed their rights as an ethnic group.

4.3.1.4 Equity Changes in Three Stages in JBR

A comparison of the perceptions of equity held by the central government, the local government, and local residents (Table 13) reveals three trends. Compared to participation equity and recognition equity, distribution equity is normally recognized earliest. Secondly, the central government’s policy usually focuses on some equity issues, but when implemented by the local government, the effects of equity cannot be guaranteed and are sometimes ignored.
Thirdly, the bottom-up practices of local people can provide them with the power to pursue equity, especially in the context of participation and recognition equity.

Table 13 Perception of equity changes in three stages in JBR24

<table>
<thead>
<tr>
<th>Stage I PA Establishment and Initial Tourism Development (1978-1990)</th>
<th>Event No.</th>
<th>Perceptions of equity types</th>
<th>Stakeholders</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. PA establishment</td>
<td>Distribution</td>
<td>Lack</td>
<td>Lack</td>
</tr>
<tr>
<td></td>
<td>Participation</td>
<td>Lack</td>
<td>Lack</td>
</tr>
<tr>
<td></td>
<td>Recognition</td>
<td>Lack</td>
<td>Lack</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Family inns development</td>
<td>Distribution</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Participation</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Recognition</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>3. Road Renewal</td>
<td>Distribution</td>
<td>N/A</td>
<td>Lack</td>
</tr>
<tr>
<td></td>
<td>Participation</td>
<td>N/A</td>
<td>Lack</td>
</tr>
<tr>
<td></td>
<td>Recognition</td>
<td>N/A</td>
<td>Lack</td>
</tr>
<tr>
<td>4. Returning Farmland to Forest Project</td>
<td>Distribution</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Participation</td>
<td>Yes</td>
<td>Lack</td>
</tr>
<tr>
<td></td>
<td>Recognition</td>
<td>Lack</td>
<td>Lack</td>
</tr>
<tr>
<td>5. Green bus system</td>
<td>Distribution</td>
<td>Yes</td>
<td>Lack</td>
</tr>
<tr>
<td></td>
<td>Participation</td>
<td>Lack</td>
<td>Lack</td>
</tr>
<tr>
<td></td>
<td>Recognition</td>
<td>Lack</td>
<td>Lack</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stage III Tourism Reduction Stage (2001-2016)</th>
<th>Event No.</th>
<th>Perceptions of equity types</th>
<th>Stakeholders</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. Hotels and restaurants</td>
<td>Distribution</td>
<td>N/A</td>
<td>Yes, but not enough</td>
</tr>
<tr>
<td></td>
<td>Participation</td>
<td>N/A</td>
<td>Lack</td>
</tr>
</tbody>
</table>

24 Lack means the stakeholders (local community, local government, central government) did not consider the specific equity dimension. N/A means, in this event, specific stakeholder is not involved.
4.3.2 Situation in the SNNR

4.3.2.1 Equity Perceptions on the Limitation of the Use of Natural Resources

Before the PA establishment, people in the SNNR relied heavily on natural resources for their livelihoods. Every family logged firewood, and some logged for cash. Hunting and collecting NTFPs were also very common. However, the implementation of the PA introduced a number of rules and limited the livelihoods of local people. Because these limitations were implemented by a command-and-control method, local people did not have a chance to participate in decision-making, and conflict ensued. One officer (Interview SNNR No.48) described this:

“During the first few years, local people were very unsatisfied. When our park rangers patrolled in the mountain to forbid them [local people] from collecting herbs for medicines, if they found the rangers, they would catch the rangers and beat the rangers...Because during those years, we did not provide adequate education on this matter, and many local people were very poor and did not get any compensation, so they were unwilling to accept it.”
One local resident mentioned:

“I have hunted a few bears [in the past]. Bears were valuable. One bear was more than 10,000 yuan. But then it was forbidden...I still do beekeeping. I have about 100 beehives within the PA boundary. They are still there. I did not get much honey last year, as they [SNNR] did pesticide for trees within the PA that affected the flowers and honey production....No compensation.” (Interview SNNR No.2, middle-aged man, driver, lived within SNNR before)

It is clear that when the PA was established, distribution equity was ignored by both the central and local governments. The burden for biodiversity protection was unfairly laid on local people.

Due to China’s opening-up policy and urbanization process, more and more villagers have moved or migrated to cities, where they find work, mostly in construction or in the service sector (Chen, Liu, & Tao, 2013). This trend has reduced local people’s reliance on the exploitation of natural resources and eased the tension between the SNNR Management Administration and local people. One local person (Interview SNNR No. 2, lived within SNNR before) mentioned:
“In the 1980s, even 1990s, some people still went hunting; if you hunted a bear, you could make more than ten thousand Yuan...Now few people want to do that. Now people work as migrant workers to make money.”

Although people have reduced their reliance on natural resources for income, agriculture is still important for the provision of food for family use. Many interviewees mentioned that wild animals are always destroying their farmland, and most of the time they do not receive any compensation.

“Too many wild animals. They eat potatoes, sweet potatoes, corn. No matter what we plant, they eat it! And they are protected animals, no harm to them is allowed. What can we do? Nothing, just lose [the food].” (Interview SNNR No.16, old woman, homemaker).

There is a compensation system for crops and farmland that have been damaged by wild animals, but it has very rigid requirements and compensation is difficult to get. For example, the system requires people to provide direct evidence, such as photos or videos, to show that the farmland was indeed damaged by wild animals. In this process, distribution equity, especially compensation for farmland, has been recognized by both the central and the local government, but in practice, it is hard for people to actually receive it.
In all of these processes, including both the establishment of the PA and the later compensation system for farmland damaged by wild animals, participation equity is ignored. Local people did not have opportunities to participate in the policy design, decision-making or implementation. Other than in these situations, recognition equity was not mentioned by people in Shennongjia. This may be because more than 95% of people there are of Han nationality (the largest nationality in China), and did not perceive recognition problems in their daily life.

4.3.2.2 Equity Perceptions on Tourism Development

Most villagers in the SNNR received no direct benefits from tourism development in this area. Instead, they received some indirect benefits such as infrastructure development and more opportunities for local employment. They did not receive direct benefits as most villagers were living in the areas that were not visited by tourists, which reduced their opportunities to get involved in family inns or restaurant operations. The entrance fees in the SNNR are collected by the Shennongjia Tourism Investment Group (STIG), which originally belonged to the SNNR Management Administration, and are not shared with the local villagers. Local villagers did not object to that, and, as one interviewee mentioned (Interview SNNR No.2, male, driver):

“The entrance fees are collected by STIG; [entrance fees] are not related to us. They built the road, they do the tourism development investment, and so they get the
benefits...Due to tourism development, there are more construction jobs here, which is good for us.”

As in the JBR, the RFFP was implemented in the SNNR with a compensation system based on food prices (more details are provided in Section 3.2.1). With the exception of the conditions spelt out in the RFFP, equity was not an issue during the process of tourism development, and local people did not raise this as an issue, as they were not living in the core area for tourism.

4.4 A Comparison of Equity Changes between the JBR and the SNNR

Perceptions of social equity in the JBR and the SNNR differ (Table 14).
Table 14 A comparison of local people’s perceptions on equity

<table>
<thead>
<tr>
<th>Time/Stage</th>
<th>People in the JBR</th>
<th>People in the SNNR</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA establishment stage</td>
<td>Did not participate. No advanced notice. No compensation.</td>
<td>Did not participate. No advanced notice. No compensation.</td>
</tr>
<tr>
<td>Tourism development stage</td>
<td>Directly get monetary benefits. Lacking participation in decision-making. Get compensation in RFFP.</td>
<td>Do not directly get monetary benefits. Lacking participation in decision-making. Get compensation in RFFP.</td>
</tr>
<tr>
<td>Post-tourism development stage</td>
<td>Recognition equity started to be recognized.</td>
<td>Recognition equity was not mentioned, maybe due to most people in SNNR are Han nationality.</td>
</tr>
</tbody>
</table>

At the PA establishment stage, all stakeholders in both the JBR and the SNNR ignored distribution equity, which caused some difficulties for the livelihoods of local people. The distribution equity issue became less severe with respect to the natural resources in these areas, as the local people reduced their reliance on natural resources. Here, I found that the conservation equity issue could be caused by a lack of consideration of equity in the conservation plan or project. However, external factors, such as the larger geographic and economic background, also affect conservation equity. In this case, tourism development benefited from a national opening-up policy, and tourism therefore soon replaced agriculture as the major economic source for local people, considerably reducing the distribution inequity issue caused by conservation. Others have also identified this change (see Klein et al., 2015). In the JBR, tourism became the major source of income. Due to the policy that forbade living inside the
JBR, the subsidy from JMA became important to local people. The feeling of equitable benefits sharing amongst local people is not only about the level of payment received from the government, but also about the sharing within local communities, based on gender, contribution to their village, and other factors. In the JBR, local people indicated that their perception of equity arose from the way that equity was shared in the community by voting on who should get the subsidy and who should not. As Gross-Camp et al. (2012) found, local people care more about equity sharing within the community than the level of payment they receive. In both the JBR and the SNNR, local people did not have a chance to decide the level of payment they could receive, as they did not have a chance to participate in the process. Most of the time, participation equity in both places was also ignored by the relevant stakeholders. This was a consequence of the command-and-control political system. However, certain events in the JBR clearly drew the attention of the central government to the importance of participation equity (Table 13).

A comparison among the notions of equity held by the central government, local government, and local residents (Table 13) in Jiuzhaigou reveals three trends. First, compared to participation equity and recognition equity, distribution equity is normally recognized earliest. Second, the central government’s policy usually focuses on certain equity issues, but when the policy is implemented by the local government, the equity effects cannot be guaranteed and are sometimes ignored. Third, the bottom-up practices of local people can provide them with the power to pursue equity, especially in the context of participation and recognition equity.
Participation equity is connected with the principle of inclusiveness governance, and they both refer to the ability to affect the decision-making process and are sometimes measured through attendance at meetings (Dawson et al., 2018; Lockwood, 2010). In reality, participation is not easy to achieve. Bennett and Dearden (2014) mentioned in their research in Thailand that participation was ineffective as it was largely controlled by local elites, and it is a problem of power structure that is deeply rooted in the society. In the case of the JBR, I found that the absence of participation was caused by a command and control management method, which excluded local people in the decision-making process. This cannot be solved by just attending more meetings. Instead, policy makers need to recognize the power imbalance and support a power-shifting process to start narratives and mobilize actors (Hill et al., 2015).

Recognition equity is also hard to achieve in practice, as the nature of recognition equity is culture based and includes stakeholders’ subjective perceptions. In the Nam Et-Phou Louey National Protected Area, Laos, recognition equity was not reported as an important aspect of conservation equity by local people (Dawson et al., 2018). In this study, the JBR is a traditional Tibetan area, there are a few new trends in the environmental management in the Tibet region in China. Since at least the 1990s, the Chinese Communist Party (CCP) has started to integrate more environmental concerns into the fabric of governmental logic (Yeh, 2009). Concurrent with the political decentralization reform and the relaxation of administration control, a lot of room has been provided for the growth of environmental NGOs (Yeh & Coggins, 2014). These ENGOs
started to providing funding, information, suggestions, services, monitoring and to solve social-environmental conflicts for government and also local communities (Yeh & Coggins, 2014). Many of these ENGOs work in the Tibetan area, including both international NGOs (such as CI, UNEP-GEF, WWF, and WCS) and local NGOs (such as Shanshui, Global Environmental Institution, and Fuqun). The work they have done in the past 30 years engages more directly than ever before in activities that bring traditional Tibetan ecological knowledge into biodiversity conservation practice (Foggin, 2014). A good example is in Sanjiangyuan National Park, Qinghai Province, where a partnership relationship with local Tibetan communities has been built, and Tibetan ecological knowledge is used in everyday park management, although more emphasis is still needed (Foggin, 2014). However, there are no NGOs working in the Jiuzhaigou area. The notion of recognition equity could still be found in the 2014 Local Village Plan, which was initially proposed by local people. Requirements for respecting local culture and traditions are present, and local traditional knowledge has started to be recorded by local groups in different formats (e.g. Xia Mo dance).

4.5 Increasing Conservation Equity in the Protected Areas Assessment and Co-management in the Future

This part of the study makes a contribution to the literature on conservation equity in a particular context. I found that equity issues are easily ignored by decision makers, decision implementers, and even local people affected by these policies. This does not mean that the conservation equity is unimportant and should be excluded from PA planning and assessment.
More attention is needed from laws, policies, management actions and PA assessment in a manner that is both equitable and inclusive. To do this, the government needs to collaborate with local communities, as they are an important actor in PA planning and management.

Bennett (2018) indicates that further attention on conservation equity is not only needed in research or policy, but also in real-world programs and management. Kolahi et al. (2013) made an assessment of the effectiveness of PA management in the Khojir National Park in Iran, and found that high scores were received in resource inventory, planning for land and water used, regulations and objectives. Community co-management received the lowest scores as there were few economic benefits to local communities and no local community involvement. I found similar results. Conservation equity did not receive enough attention in either location, as there was no compensation for conservation cost, entrance fees were not fairly distributed, and there was a lack of local community involvement in decision-making process.

In the current PA management assessment, conservation equity needs more attention. However, it is difficult to increase the equity dimension in the PA assessment due to the changes in the biodiversity conditions and different experiences of individuals, especially generational differences in human perceptions (Papworth et al., 2009). In this study the different perceptions towards conservation equity in two study areas clearly reflect this point. To address this point, the perspectives of different stakeholders should be considered, and linking to local context is necessary (Friedman et al., 2018; Dawson, Martin, & Danielsen, 2017). This is not denying the
efforts to develop standardized indicators, but suggests that adding stakeholders’ perceptions of conservation equity is an important part of any assessment. To do this, the government needs to collaborate with local communities, and treat them as an important stakeholder in PA planning and management.

Equity is an important element of the rights-based approach. Ensuring participation equity enhances the processes used to assess power relations, which could be an entry point to upholding substantive rights (Campese et al., 2009) and recognition equity. From the perspective of a rights-based approach, the state bears ultimate responsibility for protecting local peoples’ rights to know and rights to speak (Castillo & Brouwer, 2007). This approach seeks to build relationships with local people, and it needs an equitable, democratic and transparent environment to do so (Steiner, 2007). Collaborative management would be one way to achieving this.

Joint or community co-management could be applied as a collaborative management method to promote inclusiveness and address the inequitable power-relationship in decision-making. Co-management has been proposed as an equitable way to deal with ongoing conflicts between the national government, Indigenous peoples, and other stakeholders (Armitage et al., 2011; Castro & Nielsen, 2001). Co-management makes it possible for Indigenous peoples to share in authority and decision-making power (Castro & Nielsen, 2001; Eagles et al., 2002), such as a co-management and co-production of knowledge in Canada’s Arctic (Armitage et al., 2011) and in
Garig Gunak Barlu National Park and Uluru-Kata Tjuta National Park in Australia (Ross et al., 2009). Co-management is also an approach that could help reduce conflicts and create cooperation. For example, fishery cooperatives in Japan are under a co-management system in marine PAs (a Satoumi management scheme) (Hill, Johnson, & Adamowski, 2016; Heylings & Bravo, 2007). All of these examples show that co-management as a decentralized and community-based governance strategy could be an effective way to manage conflicts (Castro & Nielsen, 2001). In 2013, a large-scale conflict in the form of a sit-in protest occurred in the JBR when the local Tibetan people expressed their dissatisfaction over compensation levels. However, they did not express any desire for co-management during this process. This may be because local people were satisfied with other aspects of the JBR management process, such as the high electricity price subsidy and the rapidly improving livelihoods. This was one of the poorest regions in the province about 30 years ago, and it is now the richest. There was a significant change, especially in the context of the poorer conditions in the surrounding areas. People in the SNNR did not express any interest in sharing the benefits from tourism development, as their villagers are geographically far from the tourism destination. However, they complain about the lack or paucity of compensation for damage to their farmland by wild animals. Local people in the SNNR believe that the complex compensation process is unreasonable. They also feel that their voices will not be heard because they do not have the opportunity to participate in the decision-making process. Co-management, in this case, could play an important role in letting local people become stakeholders who can express their thoughts and participate in the decision-making process.
However, it is also worth mentioning that while a co-management approach may help to solve conflicts between local people and the management authority, but it is not a panacea. As Timko and Satterfield (2008) found with co-management practices implemented in Waterton Lake National Park in Canada, it may still be difficult to view this as genuinely equitable management due to the lack of Indigenous participation in the governance. In Jiuzhaigou, local people did not express a strong desire to participate in the official government management, such as getting involved in the decision-making process with the JMA. Instead, they started to use a bottom-up, self-organized approach, with the Village Plan being a good example. This may be another way to reduce conflict and start to gain power.

4.6 Conclusion

Distribution equity has clearly been important, and is based on the realization of basic rights such as land ownership (Myers & Muhajir, 2015; Adams & Hutton, 2007; Oldekop et al., 2015). The insights from Jiuzhaigou and Shennongjia demonstrate that the relevant governments tended to emphasize distribution matters. Identifying a suitable level of compensation for lost rights is crucial. The sit-in protest that occurred in Jiuzhaigou in 2013 was caused by the failure to implement compensation as promised. Moreover, there has been little to no compensation given to people when their farmland has been damaged by wild animals. However, a policy cannot be successful simply by identifying the right level of compensation or shared benefits without considering other important factors. It is necessary to identify and analyze what the local
people desire. The road renewal construction in the JBR in the 1990s was not opposed by local people as there was a mutual interest and anticipated benefits, despite residents not receiving compensation for lost land. Participation equity has been mentioned a few times in the policies made by central government. However, during the implementation it was ignored by local government. There needs to be a monitoring system to ensure that policies are not watered down at the implementation stage. Both the central and local governments paid insufficient attention to recognition equity. The only time that recognition equity was achieved was when people in Jiuzhaigou started a bottom-up process to make their own Village Plan. This demonstrated that a bottom-up approach could be useful for minority groups to pursue their own rights. Social equity is an important objective for biodiversity conservation. Efforts have been made to develop a uniform indicator system (Lucas et al. 2013; Coad et al. 2015). More attention to local contexts, especially traditional and cultural differences, is needed (Martin et al., 2016).

China has made progress in transitioning from a centrally planned and command economy to a decentralized and market-based economy, yet some institutions are still embedded in a top-down and command-and-control approach when it comes to economic, political, and cultural planning (Kolinjivadi & Sunderland, 2012). In the case of Jiuzhaigou, many rules and principles from state policy about equity were lost in the process of local implementation. This situation can be observed in other policies and in other places in China (He & Sikor, 2015). It reflects an inadequacy of decentralization and the lack of an effective monitoring system in the policy
implementation stage. This situation also reflects the lack of consensus between different levels of government that is caused by different incentives. These policy issues are further discussed in Chapter 5.

This top-down arrangement brought about a very efficient transition in infrastructure (see Table 12) during the initial stage of tourism development, and also rapidly accelerated the improvement of livelihoods for the local people within a short time period. However, this “old-style” approach is no longer applicable today, as such an approach often ignores participation equity. In the decision-making process, there are no channels for local people to express their voices and opinions, which caused conflicts and dissatisfaction in both my study areas. Without participation equity, recognition equity cannot exist. In Jiuzhaigou, local people received participation equity when they made a bottom-up village plan, which subsequently allowed them to gain recognition equity. This “bottom-up” method will likely become a trend, as local consciousness about rights has started to develop. If governments, especially local ones, ignore such equity issues, protest and hostility could arise among the local people, as demonstrated in the JBR (Corbera et al., 2007; Blackman & Woodward, 2009). Such protests are becoming increasingly common in China, and are usually related to dissatisfaction with the local government over environmental issues (Yeh, 2013).

This analysis is relevant not only to PAs, but also to other land-use policies with a multi-level governance and policies that relate to compensation payments to local residents. Recognition of
stakeholders’ notions of equity and the interrelated relationships between the different dimensions of equity will provide a better understanding of people’s reactions and choices. This in turn challenges related policy designers and implementers to focus on all three dimensions of equity, respect the opinions and interests of local people, and provide them with more opportunities to engage in the decision-making process in policy planning and implementation.
Chapter 5: Local Government Structure Matters for Livelihoods in Protected Areas
— Lessons Learned from Jiuzhaigou Biosphere Reserve in China

5.1 Introduction

In recent years, many researchers have studied social-ecological systems with an emphasis on the importance of understanding the cross-scale processes and interactions in environmental management (Kok, Biggs, & Zurek, 2007). The livelihoods of local people in protected areas (PAs) in China are heavily impacted by the local governments, which are a combination of both vertical (cross-level) and horizontal (cross-scale) government. Livelihood changes and conservation equity issues have been discussed in previous chapters. In this chapter, I will focus on the exploration of how governance interactions and processes affect livelihoods.

In the PA administration system (Figure 3), different ministries were responsible for different aspects of the management of PAs. For example, the State Forest Administration (SFA) oversaw forested nature reserves, whereas the Ministry of Housing and Urban-Rural Development (MHURD) was in charge of Scenic Spots. In this government administrative system, policies from the central government were passed down through five levels of government (the national level, provincial/ministry level, prefecture/city level, county level, and township level) to be implemented at the local level. This characteristic of China’s governmental system was termed

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25 This PA administration system was changed, and different ministries merged, in a major reorganization of the Chinese government in March 2018. Here, I describe the situation before March 2018, which is when my fieldwork took place.
“fragmented authoritarianism” by some scholars (Lieberthal & Lampton, 1992). There was a power hierarchy within this system, as lower level cadres were assigned by direct upper-level party units, which meant that the higher-level cadres held greater power (Chien & Hong, 2018).

This system had caused hidden problems in PA management, including fragmentation and inconsistent interests among different levels of government and different departments. This has made it difficult to achieve conservation equity. Even the central government has paid attention to it, as local governments held different interests and did not adequately implement central government policy (as discussed in Chapter 4). As a result, the conservation burden and benefits were unequally shared with the local people, which affected their livelihoods outcomes (as discussed in Chapter 3). In order to provide a deep understanding of these issues, this chapter investigates the potential effects of the government structure and system on the livelihoods of local people in the JBR through an analysis of the process of changes in government structure over the past 40 years.

This chapter makes several contributions. First, empirically, this study provides a grass roots level analysis of how fragmented authoritarianism affects local people in a biodiversity conservation field. Second, I found that an unclear distribution of management authority and responsibility has disrupted the departments’ coordination, and has hindered the improvement of rural livelihoods and village development. Third, this case demonstrates that obvious conflicts exist
between the ‘vertical’ and ‘horizontal’ lines of authority and that this is causing a failure to improve rural livelihoods.

5.2 Methods

The approach used to address research Question 3 was a qualitative research method embedded with a single descriptive case study. The study was qualitative in nature, as it sought to gather an in-depth understanding of the local processes governing PAs. Face-to-face, semi-structured, in-depth interviews were used for data collection (Holstein & Gubrium, 1995). To better understand the policy mechanisms involved, and to hear from different stakeholders, purposive and accessible sampling strategies were implemented to select key participants, including village leaders, government officers at the JBR, the Jiuzhaigou County Government, the Sichuan Forestry Administration, and local people knowledgeable about their community. Before the fieldwork was conducted, I had prior knowledge that the cross-level and cross-scale government system in PAs in China had caused problems. However, how this related to the improvement of local people’s livelihoods was unknown. Because it was impossible to design structured interview questions, I instead designed a few open-ended interview questions (The questions can be found in Appendix 1 Governance and Appendix 2). I encouraged participants to express themselves freely and not be limited by these questions.

To address research Question 3, I first conducted informal interviews with a few government officers and village leaders at the JBR, all of whom mentioned the government structural
arrangement problem in the JBR. During the informal interviews, three stages of government structural changes were summarized. In the next round of formal interviews with local villagers, I first invited them to talk generally about park services, decision-making, monitoring, regular management, problems, and difficulties in the management. I then guided them to discuss the three stages of government structural changes in terms of the governments’ and local people’s roles in these processes, the reasons why these structural changes happened, and the results of these changes (example interview questions can be found in Appendix 1). For formal interviews with government officers, guiding questions were asked that related to who made the decisions in a multi-level government situation and how, who could affect the decision, who could implement policy, and how these affected local livelihoods (example questions can be found in Appendix 2). As it was hard to interview central- and provincial-level government officers, documents from government reports, files, and some conference records and related academic papers were important data for this part of the study.

Content analysis, which focuses on classifying a large amount of textual data into categories (Hsieh & Shannon, 2005), was used for this part of the study. Although I had categorized the government structure into three stages, I did not use these as preconceived categories because government issues could be continuous and not based on an artificial timeline. Instead, I chose to allow the themes to flow from the data. An inductive coding approach (Elo & Kyngäs, 2008) was used for the examination of this research question. This process included open-coding,
grouping codes and creating categories, and abstraction. Some example codes are provided in Table 6, and an example analysis can be found in Table 15.

More details about this method can be found in Chapter 2, and details about data analysis in particular can be found in section 2.6, Data Analysis Approach.
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<td>Who made the decision? (Regarding the entrance fee sharing)</td>
<td>&quot;Aba Prefecture Government [APG] made the decisions. The JMA can only listen to APG. The JMA can do nothing, except implementation. It does not have fiscal rights, and the director of the JMA is appointed by the APG.&quot;</td>
<td>The APG has actual power; the JMA only implement policy</td>
<td>Imbalanced arrangement of power and responsibility; Different incentives for different departments. No participation chance for local people</td>
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<td></td>
<td>&quot;I am not sure who made the decision; it should be the APG or the JMA. I just heard about that from our village leader.&quot;</td>
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<td>&quot;I do not know who made the decision. I was never asked [about my opinion]. We have expressed our hope for increasing the sharing to the JMA. The JMA wants to do that, but it needs to ask the APG to approve it. The APG has power, but the APG has no incentive to do that for us.&quot;</td>
<td>Lacking participation; the JMA is powerless; the APG has actual power but no incentive</td>
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5.3 Results

5.3.1 Government Structure from 1982 to 1998

5.3.1.1 One Team with Two Head-titles

The JBR was approved as a nature reserve (NR) for biodiversity protection purposes in 1978, with 730 km² in the designated area. In 1982, it was approved as one of the first 44 National Scenic Spots, which are designated for tourism. About 50 km² of the 730 km² area of the JBR was then designed as a Scenic Spot for tourism. However, the NR and the Scenic Spot were separately managed by the Forest Bureau (FB) and the Housing and Urban-Rural Development Bureau (HURDB), respectively. As an officer in the Jiuzhaigou Management Administration (JMA) recalled (Interview JBR No.45, male, officer):

“At that time [around 1980], at the central government level, two vice-presidents were respectively in charge of the NR and the Scenic Spot. The one in charge of the NR was more conservative, insisting on rigid protection, and no human activities were allowed [in order] to protect animal species for safekeeping. The vice-president in charge of the Scenic Spot was interested in developing the Scenic Spot, consistent with the ‘opening-door to the outside world’ policy, and the key thought was to open up [tourism development]...The FB did not want the JBR to develop tourism...When I went to the FB for their approval of the Jiuzhaigou development plan, I was severely reprimanded by
the head of the bureau...But tourism development was already an unchangeable thing at that time”

From his recall, it is clear that since the start-up stage, Jiuzhaigou has been managed by two different government departments for two different purposes: conservation and tourism development. Although there was only one management team in the JMA, they needed to serve two masters – different higher-level departments: Sichuan Province FB for the protection of the nature reserve, and Sichuan Province HURDB for tourism development. As is often the case with local government at the township level (the lowest-level government), the grassroots governmental organization of the PA bears the administrative functions of multiple agencies. Therefore, the JMA, with a single management team, had two titles: the Jiuzhaigou Nature Reserve Management Administration and the Jiuzhaigou Scenic Areas Management Administration. This situation has continued until now. The different development goals within these two department have always caused conflicts.

5.3.1.2 The Leading Master

Even before the list of the first 44 National Scenic Spots was announced, Jiuzhaigou had prepared for tourism development. This was done as a county development strategy to pursue Gross Domestic Product (GDP) growth. Although Jiuzhaigou is a national-level NR and national-level Scenic Spot, its administration level is at the lowest level. This means that
during this period, the leader of the JMA was appointed by the head of the county. One interviewee recalled (Interview JBR No.46, male, retired officer):

“I was the secretary of the County Committee [the head of the county] at that time...We wanted this area to develop. We had considered many different ways, such as encouraging agriculture development, but the frost-free period was too short here, and transportation was poor and distances were far [to cities], so we did not undertake agriculture development...We had considered many [featured products]: herbal medicine, pepper, walnut, apple...After many studies and much discussion, we finally selected tourism as the priority for the whole county’s development strategy, and we made Jiuzhaigou the priority for tourism development...I appointed the first director of the Jiuzhaigou Management Administration: Deng Yi, who was my secretary before.”

This top-down appointment system means that the leader of the JMA should be sensitive to the goals of the top leaders at the next up level. The interviewer mentioned that, Deng Yi, the first director of JMA was appointed by the head of the county. This appointment pattern continues, and the power to appoint the director of the JMA still rests with the secretary of the County Committee— the head of the county. Therefore, the real control does not lie with the head of Sichuan Province FB, nor with the head of Sichuan Province HURDB, but instead with the head of the Jiuzhaigou County Government. As a result, the JMA indicated that tourism development would be its priority goal to pursue GDP development in the region and meet the needs of the
head of the county. However, in pursuing GDP, the requirements of Sichuan Province FB and Sichuan Province HURDB need to be considered, as they are the lead departments for the JMA.

5.3.1.3 Effects of 1982–1998 Government Structure on the Livelihoods of Local People

At this stage, at least four government departments (Sichuan Province FB, Sichuan Province HURDB, Jiuzhaigou County Government, and the JMA) had control over local livelihoods, as they all held jurisdictional power over the JBR. However, it was the township government of Zhangzha that had the real control over the livelihoods of local people (Figure 9). Township government is the direct management department in charge of rural livelihoods within its boundary.

This institutional arrangement created tensions and conflicts, as well as disconnected the local people in the JBR from their local administrative body. First, there were incentive conflicts between HURDB, the county government, and the FB. The intention of both the HURDB and the county government was to develop tourism. In contrast, the organizational mission of the FB was to protect biodiversity. However, when tourism development conflicted with biodiversity protection, the JMA prioritized economic goals (tourism development) over conservation, as their direction was to have a strong focus on economic growth. Second, the geographical overlap in responsibilities caused considerable problems, and possibly created the management conflicts between the township government and the JMA.

One interviewee mentioned:
“The JMA is responsible for providing government services for us. The function of the Resident Management Office of the JMA is equivalent to the function of a township government. But the JMA did not do that well.” (Interview JBR No. 29, middle-aged male, engaging in souvenir selling)

One officer (Interview JBR No.18, male) stated:

“Even though the township government should take care of the four villages, in reality it is difficult, as these villages are located within the JBR boundaries. If they [township officials] want to come here [to the JBR] to do anything, they first need to get a permit from the JMA to get into the area, which makes it inconvenient...It is also hard for us [the JMA] to finish our work under this management system. The JMA, as a public services institution, does not have law enforcement power, which limits our ability to manage. For example, to manage the selling of illegal souvenirs, we have to ask the local government department that has enforcement power to cooperate with us, but what if they do not come? We still have to do it. That is a problem with this system.”

Put another way, the township government, which should have the direct responsibility for the livelihoods of local JBR residents, was located outside the JBR territory, and officers were required to obtain permits from the JBR to do their day-to-day administrative work in managing
residents’ affairs. The JMA is located at the entrance of the JBR and has more management relationships with local people’s daily lives. However, it lacked some of the functions necessary to take the place of a local government, as the JMA was originally an organization in charge of biodiversity conservation and tourism development; its responsibilities do not include the management and improvement of local people’s livelihoods.

Third, although the county government encouraged the JMA to develop tourism, it did not have much funding for this entrepreneurial endeavour, in part due to financial difficulties that it was experiencing at that time. As a result, the JMA had to encourage local families to initiate businesses without government funding. Local residents were encouraged to build inns and restaurants, as interviewees stated:

“We [local people] did contribute to tourism development in Jiuzhaigou, as at that time the JMA was poor, and did not have enough money to build enough inns or hotels. We borrowed money from relatives and took the [business] risk to build [family inns].” (Interview JBR No.35, old man, an entrepreneur).

“When Ziyang Zhao [a previous high-ranking statesman in China] visited Jiuzhaigou, he encouraged local people to build inns. At that time, the government did not have much money. The Aba government was not conscious of [the importance of] tourism, not to
mention driving tourism development. It was all done by us [local people].” (Interview JBR No.11, old woman, an entrepreneur).

From these interviews, it is clear that the government did not have enough money to invest in tourism related infrastructure development, especially hotels and inns. So the government encouraged local people to participate by investing in family inns and restaurants. These policies and institutional arrangements directly affected the livelihoods of local people. On one hand, due to the policy of encouraging local people to provide tourism services, tourism soon became the central part of local people’s livelihoods, and their traditional agricultural lifestyle was gradually abandoned. On the other hand, villages within the JBR boundaries developed increasingly closer ties with the JMA due to their business involvement in tourism, and lost their former connections with the township government.
5.3.2 Government Structural Changes in 1998

5.3.2.1 Village Management Rights Transferred

As introduced above, despite the existence of the JBA, villages located in the JBR were managed by the township government before 1998. The township government was responsible for infrastructure construction and maintenance, education, medical services, and other livelihood-related issues. However, as the four villages — Zharu, Shuzheng, Zezhawa, and Heye — are geographically located within the JBR area, the county government decided to transfer...
management responsibilities for these four villages to the JMA, and in March 1998 entrusted the JMA with further village development (Figure 10). This transfer of responsibilities was done through an official letter, but it lacked clear instructions as what the JMA should do and how the JMA should improve village development and the livelihoods of local people. As an interviewee recalled:

“In 1998, the Jiuzhaigou County Government wrote a note to the JMA and asked the JMA to perform rural management [for the four villages]. However, the JMA is only a public institution in charge of tourism development and biodiversity conservation, not a level of government. As a result, it could not properly implement many policies from the central government as well as a level of government could. Many policies require cooperation with different departments; the JMA was unable to achieve that.”

(Interview JBR, No. 24, middle-aged man, officer)

Because it lacks many of the functions that would be expected at this level of government, the JMA encountered difficulties in implementing policies. Many problems related to the livelihoods of local people could not be solved by the JMA, even though they had been given this responsibility.
5.3.2.2 Effects of 1998 Government Structural Changes on the Livelihoods of Local People

The change in government structure directly affected the related government departments and relevant villages. In the past, village development was an objective of the township government, but it was not an objective of the JMA. Following the transfer, the JMA had to add new management objectives: village development and the improvement of livelihoods. The JMA set up a new office, called the “Resident Management Office,” to manage matters related to the residents.

“Our office is responsible for handling all kinds of chores; [for example] if there is something wrong with the water or electric supply at a villager’s home, they will call us to fix it...Most of these things are little things, but if we do not respond quickly and
effectively, conflicts easily arise...To be honest, none of us like working in this office [Resident Management Office]; we receive hundreds of calls [from villagers] each day.”

(Interview JBR No. 18, middle-aged man, officer)

Another officer also mentioned this point, saying:

“I was the head of the Resident Management Office. I am so glad I have changed to a new office now. You do not know how hard it is to solve problems with local villagers.”

(Interview JBR No. 49, middle-aged man, officer)

The Resident Management Office functioned like a civil affairs bureau. It aimed to provide services to local villages, such as birth and marriage registrations, social insurance applications, house renovation applications and so on. However, unlike a township government that has a single comprehensive government system and comprehensive power over its territory, the JMA is a public institution created to pursue the public goals of nature conservation and tourist development. Consequently, this addition to its organizational mission caused difficulties for its managers. Some officers who worked in JMA explained this:

“The JMA is a public service entity, not a government...Asking us to take the responsibility [of villagers’ livelihoods] is unreasonable. For example, with education, it needs to be a unified plan throughout the education system, and the town government
is in charge of this. The town government is in charge of teacher assignment, or the construction plans for new school buildings...we do not have the department [function] to do that.” (Interview JBR No. 47, male, officer).

“The management pressure [to improve local livelihoods] has been transferred to us...There was no clear responsibility listed for us...A lot of things are very trivial, such as their [the villagers’] water pipe is broken, or the electricity has blacked out...They will ask us to solve those problems...Some other things, for example, they [villagers] illegally built family inns. However, because we do not have law enforcement power, we cannot dismantle them. And again, we need the cooperation of the town government.” (Interview JBR No. 18).

Local villagers also expressed unsatisfied needs:

“We do not have a pre-school for these four villages, so we have to send our kids out to a private pre-school which is a little far and not cheap. We have been asking the JMA to build a pre-school here for many years. But nobody does so. It’s the same situation with the health clinic.” (Interview JBR No. 48, old man, villager, engaging with souvenir photo taking).
From these interviews, it is clear that the 1998 government structural change caused management difficulties for the JMA, and these difficulties led to the stagnation of some projects related to the improvement of livelihoods. As a result, local people became frustrated with the JMA, and tensions grew. Taking education as an example, issues such as the number of teachers to hire and decisions over which village schools they would work in need to be passed in the Town Education Office’s annual plan and then approved by the County Education Bureau. However, as these four villages are no longer managed by the town, they are not included in the annual plan. The JMA does not have the authority to approve education plans, and therefore must initiate a negotiation with the corresponding governments and their education bureaus, presumably at multiple levels, as well as with other bureaus. The JMA is unlikely to go through such a complicated administrative procedure to get things done in such an ad hoc manner. At the time of my field interviews, there were no signs of education being included in the JMA’s agenda, either in the short term or in the long term.

Although there was no clear “to do” list for the JMA, the JMA completed some projects related to livelihoods, and focused on infrastructure improvement in the four villages during the 1990s. During this period, the JMA was a self-controlled revenue and expenditure institution with a focus on tourism development. Entrance fees to the tourist destinations brought in considerable income. As a result, the JMA had the economic strength to solve some local livelihood problems. For example, around 1990, the JMA paid for the cost of road renewal, including both the roads
used by visitors and the farm tracks. The JMA also invested in three small hydropower stations to solve the problem of energy needs, reducing the reliance of local people on firewood obtained through logging. Although the primary purpose behind some of these projects was environmental protection and the promotion of sustainable tourism, the infrastructure available to local people improved substantially. Tourism was developed with a view to improving the livelihoods of local people, rather than being completely independent.

5.3.3 Government Structural Changes in 2000

5.3.3.1 Management Rights of JMA Transferred

The government structure changed again in the JBR in 2000. This time, the city-level Aba Prefecture government, which oversees the Jiuzhaigou County government, raised the JMA’s administrative status a level, from the equivalent of a township to the equivalent of a county. The rationale behind this change in administrative status seems to lie in the Prefectural government gaining direct oversight of the JMA. This involved the JMA ceding its self-controlled fiscal revenue and expenditure rights to the city government. Its revenue, derived mainly from entrance fees, was collected by the Aba Prefecture Bureau of Finance, and its expenditures had to be approved in the prefecture-level budget. This was a big change for the JMA, and marked its loss of fiscal autonomy.

The Aba Prefecture government also took the management rights of the JMA away from the county government and called it “a prefecture – county governments collective management”.
The prefecture government held the power over management decisions, meaning that if there was a disagreement between the county and city governments over management issues of the JMA, the county government would have to accept the instructions of the city government (Figure 11). Since then, most policies and decisions regarding the JMA have been made by the prefecture government, and the county government has only been responsible for coordinating implementation.

**Figure 11 Government structural changes in 2000**

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Means a leadership relationship

Means a professional relationship
5.3.3.2  Effects of 2000 Government Structural Changes on the Livelihoods of Local People

The takeover of the JMA’s management rights by the prefecture government created further problems for the management of local livelihoods. First, the prefecture government was far away from the JBR. As one villager (Interview JBR No.4, middle-aged woman, was an inn owner) stated:

“The city [prefecture] government is far away from our villages. It is even farther than Chengdu [the capital of Sichuan Province]. The long distance makes it hard to do management here.”

Second, the exact division of labour between the city and county for collective management was unclear, and their jurisdictions overlapped. Nobody among the city government, the county government, or the JMA had a clear duty to improve the livelihoods of villagers. As a result, nobody took responsibility for livelihood issues in the JBR. As villagers mentioned:

“We are like kids without moms ...” (Interview JBR No. 11, old woman, an entrepreneur).

“They [the governments and JMA] only care about how many entrance fees they collect every year, and no one cares about our livelihoods ...” (Interview JBR No. 20, middle-aged woman, selling souvenir)
Finally, the JMA lost its rights to retain and allocate funds. In the past, although the JMA’s priority was tourism development, it still accomplished some projects that benefited livelihoods, such as road maintenance and hydropower construction. Since 2000, the JMA has lost the ability to implement such projects at its own will, as it no longer has any direct revenues. One interviewee (Interview JBR No.15, old aged man) stated:

“The JMA could not solve our [livelihoods] problems. The JMA cannot make decisions, as it needs to listen to the city government, and it does not have money.”

Since 1998, the “Travelling inside (JBR), living outside (JBR)” policy was gradually implemented in the JBR to address environmental concerns. This policy required local people to shut down restaurants and homestays within the JBR, although they were a major source of income. All hotels within the JBR were dismantled by the end of 2003. In 2001, the provincial government approved a compensation plan. However, due to the overlap of jurisdictions, the JMA, the county government, and the prefecture government all failed to implement the plan. This resulted in more than 1000 villagers staging a sit-in protest in August 2013. To end the protest, the city government agreed to give two pieces of land (approximately 280 mu\(^{22}\)) and 140 million Yuan to the local communities.

\(^{22}\) 1 mu=666.67 m\(^2\)

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5.4 Discussion

The government structure and institutional arrangement in the JBR cased jurisdictional overlap and problems associated with fragmented authoritarianism. At the horizontal level, the local government, provincial FB, and provincial HURDB had different management objectives. This multiple management resulted in conflicts between their policies, such as conflicts between tourism development and biodiversity protection policies. Changes in policies directly affected the livelihoods of local people and caused uncertainties. For example, in the initial stage, family inns were encouraged as part of the effort to develop tourism. Later, they were forbidden because the management focus had switched to the maintenance of the environment (the two are not completely unrelated). On a vertical level, multiple levels of government intervened in the management of the JBR, but due to unclear responsibilities, none implemented the compensation plan following the “Travelling inside JBR, living outside JBR” policy. Such situations reflected a failure of coordination among departments. Lieberthal (1997, Page 3) pointed out that the main problem within this governing system is that “[t]here is an obvious potential conflict between the ‘vertical’ lines of authority and the ‘horizontal’ lines of authority.” This kind of arrangement led to dual headship and institutional fragmentation, an enduring characteristic of Chinese politics (Mertha, 2009), especially in environmental governance (Kostka & Nahm, 2017). Different results have been found in this case. Unlike the “dual headship” mentioned by Lietherthal (1997) and Mertha (2009), it is a very complicated case: horizontally, it is at least a triple headship management with the province FB, the province HURDB and the government,
and within the government, vertically, prefectural/city level, county level and town level. All were involved in the management of the JBR at specific times.

A decentralized system of environmental governance was built through the vertical lines. As a result, local administrative leaders have sufficient flexibility to implement environmental policies, and they usually match environmentally-related policies to the needs of their jurisdictions (Lieberthal, 1997). However, most of the time, local governments prioritize GDP growth over environmental and local people’s livelihoods (Kostka & Nahm, 2017; Ran, 2013). The performance evaluations and promotion likelihoods of the officers involved are directly tied to GDP growth (Lieberthal, 1997; Kostka & Nahm, 2017). This may explain why the prefecture government took the fiscal rights – the entrance fees – away from the JMA. It also explains why neither the prefecture (city) government nor the county government took responsibility for improving livelihoods in the JBR, as local people’s livelihoods would not directly contribute to GDP growth.

Taking the fiscal rights to the prefecture level government could help to reduce the opportunity of corruption by removing the fiscal rights of the JMA, as well as separating the line of expenses and revenues. However, this has deprived the JMA of its extra-budgetary revenues, which has been seen as a key driver for the past rapid development, and has removed the opportunity to directly invest in rural livelihoods improvement (Lo & Tang, 2006). As the revenue is collected by
the higher-level government, it needs to be redistributed throughout the entire prefecture. This may be beneficial to the rest of the prefecture, but to the local people in the JBR, it is not.

In contrast to the prefecture and county governments, the JMA had incentives to manage local villages because the JMA was in daily, direct contact with local villagers. If any protest activities occurred, it would be the JMA that would come under the greatest pressure. This explains why, after the 1998 government structural change, the JMA paid for infrastructure construction in the local villages, including the road renewal and the hydropower stations. Unfortunately, due to the 2000 changes in governance, the JMA lost its fiscal rights. This reflected the imbalance between management “responsibility – authority” (including fiscal rights), and led to difficulties in solving the development problems of the local villages. This raises the issue of the unappreciated balance between authority and responsibility, and the inconsistencies between the interests and performance of the different levels of government.

In this case, the JMA increased its administration level by one step, from the town level to the county level. After this adjustment, it was directly within the jurisdiction of the prefecture government. This was a recentralization process, which is usually associated with tighter enforcement of policies at the local level (Kostka & Nahm, 2017). Theoretically, recentralization could be a method to reorganize the diverse and complex bureaus more effectively (Lam & Lo, 2018). However, recentralization had the opposite effect on livelihoods and village improvements in the JBR. This suggests that the recentralization process does not necessarily
guarantee better results, as it can cause overlapping authorities and management chaos without the presence of a suitable government structure.

There are a few ways to improve livelihoods within the government structure. If the precision of governance is improved, then management responsibility and authority can be clearly distributed. Equal communication between different departments should occur for this to happen. The term “equal” here means that different administration levels should not unduly influence the communication process. The balanced distribution of authority and responsibility would provide a sound foundation for the management of local livelihoods and cooperation among different departments. Next, there is no clear or widely-accepted way to measure improvements in local livelihoods. The process and procedures, as well as outcomes, of government services need to be more effectively measured (Davis & Martin, 2002). To increase the incentive for better performance by related government departments, the measurement of improvements in livelihoods should be added to the annual governance performance evaluation system. Different livelihoods aspects (the five types of capital) and livelihoods strategies could be considered when evaluating the livelihoods of local people. They should also be used as an indicator when considering job promotions. This would increase the incentive for government departments to pay attention to local village development and livelihoods, rather than concentrating exclusively on economic growth (Westman et al., 2019). Third, community development and works related to local livelihoods should be either returning back to the government (township or county level) or covered by the JMA, and more cooperation with local
government departments is needed to solve the difficulties in rural community and local livelihoods development.

5.5 Conclusion

This chapter contributes to empirical work on how the cross-level and cross-scale changes of government structure could affect the improvement of local livelihoods in specific protected areas in China. The horizontal and vertical administrative systems in PAs in China have resulted in overlapping authority and the fragmentation of governance. At the local level, which is usually the most powerful, the local government generally prioritizes economic development over PA management. This has created major problems for biodiversity protection and the improvement of livelihoods in PAs. Millions of people still live within PAs in China, and most are in economically less-developed areas. Neglect by local governments could lead to persistent poverty and livelihood problems.

The government structure in the JBR has changed twice since its establishment. The first change was the transfer of the management authority of local villages from the town government to the JMA. However, the JMA lacked many governmental functions, which resulted in several management difficulties. During the second change, the management authority of the JMA was transferred from the county government to the prefecture government, and a period of collective management was initiated. Unfortunately, this recentralization did not bring about the stronger enforcement of policies that promoted livelihoods. Instead, it created an imbalance in
the distribution of authority and responsibility among different departments, and finally led to
the failure to implement an approved compensation requirement. Recentralization by increasing
the government’s administration level would not necessarily produce a better result for
livelihoods, as a higher-level government may have different priorities.

These government structures and changes caused various problems, including the fragmentation
of management, unclear and imbalanced responsibility and authority, a lack of an adequate
measurement and monitoring system, and perverse incentives. The governance structure in the
JBR is unlikely to achieve its village development potential without improvements being made to
the management. It is also unlikely to solve the conservation equity and related livelihoods
issues, as has been discussed in previous chapters. Clear directions for distributing management
responsibility and authority, enhancing measurement, increasing the cooperation among
different government departments, and the participation of local people in the decision-making
process would be helpful if better results are to be obtained.

5.6 Postscript

During the development of this thesis, a major change occurred in the organization of China’s
PAs administration system. At the central level, all the horizontal departments related to PAs,
including SFA, MEP, MHURD, the Ministry of Land Resources, and the State Oceanic
Administration (Figure 3), were merged into a new department – the State Forestry and
Grassland Administration (SFGA) – under the lead of the Ministry of Natural Resources. This
horizontal merger could solve the problems created by overlapping authorities. However, this change in the administration system does not refer to the vertical system, especially in the distribution of authority between the SFGA and lower levels of administration, each of which may be more powerful within their own jurisdictions. If the priorities of local government are still not aligned with the SFGA, it is difficult to say if the results of PA management will be better.
Chapter 6: Conclusions

The stress caused by PA establishment and limitations on resource use can threaten the livelihoods of local people, especially for those who rely on natural resources for subsistence and survival (Dudley et al., 2011; Brondo and Brown, 2011; Lele et al., 2010; Juffe-Bignoli et al., 2014a, 2014b). The social impacts of conservation programs have provoked fierce debate in the past few decades, as biodiversity conservation and poverty reduction are linked problems, and win-win strategies and practices are usually elusive (Adams et al., 2004; Brockington and Schmidt-Soltau, 2004). This dissertation presents the results of a research project that focused on gaining an in-depth understanding of the changes in livelihoods that occurred after the establishment of two PAs in China.

This research assessed the status quo of livelihoods in two PAs in China, the JBR and the SNNR. It did so in terms of the changes faced by local people, conservation equity, and governance issues associated with the entire process. Based on the results, I make suggestions and recommendations for the improvement of the livelihoods of the local people. Chapter 3 shows the livelihoods of local people changed based on five capitals: social capital, physical capital, human capital, natural capital, financial capital, and three livelihood strategies: agriculture, tourism, and off-farm work. It highlights the different results of two PAs. Chapter 4 points to changes in the perceptions of individuals in local and central government, and of local people on social equity since PA establishment in these two places. Chapter 5 analyzes institutional
arrangements in Jiuzhaigou and explains why the arrangements could not benefit local community development.

6.1 Addressing the Research Questions and Contributing Knowledge to the Field

6.1.1 Research Question 1

The first question focuses on local people’s livelihoods changes and strategies since PA establishment and the subsequent tourism development. Chapter 3 addressed this question by analyzing five livelihoods capitals and livelihoods strategies’ changes based on the Sustainable Livelihoods Framework.

This study found that 1) in both places, establishment of PAs caused livelihoods difficulties, but these difficulties were soon diluted by tourism development and increases in off-farm employment. 2) In both places, some aspects of livelihoods have improved, especially in financial capital, physical capital and human capital. This is explained by tourism development and the fast economic development in China. 3) Tourism development in Jiuzhaigou caused local social capital to be lost in the next generation. 4) By comparing the five different capitals in the two places, I conclude that people in the JBR enjoyed more conservation benefits than people in the SNNR (Table 10). They received more opportunities to participate directly in tourism related activities. 5) Tourism has the potential to provide new income sources and bring alternative livelihoods in PAs, but local people need opportunities to participate in the processes.
Similar findings have also been found in other regions around the world where PA establishment causes conflicts with local livelihoods (Sunderlin, Belcher, & Wunder, 2005; Thapa Karki, 2013; Vedeld et al., 2012; Witter, 2013). People in the SNNR found it hard to get directly involved in tourism development. Thapa Karki (2013) reached a similar conclusion when looking at poor households and protected areas in Nepal. The conflicts between human and wild animals experienced by people in the SNNR have also been documented elsewhere. For example, Witter (2013) found that the increasing number of elephants in Mozambique’s Limpopo National Park has severely diminished residents’ access to natural resources, and residents are not permitted to defend themselves from wildlife encounters. In this study, cases indicated that alternative livelihoods could help people reduce reliance on natural resources and improve their livelihoods capitals. Others have also found this (e.g. Broadbent et al., 2012; Thomlinson & Crouch, 2012).

To a large extent, the livelihoods differences in the JBR and the SNNR are caused by the degree to which people participate in off-farm work, and the diversification of their livelihoods strategies. People in the JBR have entirely abandoned farm work, while people in the SNNR have a mixed strategy. However, their ability to choose this diversification is not only based on the human capital, but also relies heavily on many pre-conditions, including social-economic, geographic, and political issues. Other researches have similar findings. A study in Humla, Nepal found that when households chose the high return sector(s) among various off-farm opportunities, well-being can be enhanced. However, this was not a free choice, as it was rooted in different background preconditions (Gautam & Andersen, 2016). Another example deals with livelihoods strategies in Zagros, Iran, in which researchers found that diversified activities could
reduce the overuse of forest and reduce poverty, but this was not easy for farmers to achieve because of the insufficiency of existing agriculture technology and infrastructure (Soltani et al., 2012). In both the JBR and the SNNR, social capital played an important role in non-farm activities. In the JBR, people helped each other to build family inns and restaurants at the initial stage of tourism development. In the SNNR, people relied on their social network for job searching and immigration strategy. The importance of social capital in non-farm activities has been observed in other studies. In a study focused on mountain areas in the upper reaches of the Min River, China, researchers found that social capitals are crucial for non-farm activities compared with natural and human capital, and non-farm activities could make a significant contribution to the faster alleviation of poverty (Fang et al., 2014).

The contribution of this study is that it provides detailed reviews about livelihoods changes and the differences of livelihoods strategies in two PAs in China. In this study, the Sustainable Livelihoods Framework was found to be a useful tool to analyze livelihoods changes. It provides entry points to make plans for those communities located in or near PA boundaries. It also could be seen as a road map of different livelihoods aspects that need to be considered during biodiversity conservation plans. This study shows the different results in two PAs through analyzing livelihoods changes. People in the SNNR bear a lot of conservation costs but less benefits, as they did not participate sufficiently in the tourism development like people in the JBR. This shows that it is crucial that local people have chances to participate in development related activities and significant attention should be paid to local development.
These findings have a number of implications that policy makers should bear in mind. 1) There is a need to provide sufficient subsidies and alternative livelihoods options so that local people can cover the costs of conservation. 2) There is a need to provide local people with opportunities to participate in tourism or other alternative livelihoods strategies. 3) When developing a biodiversity conservation plan, there is a need to consider the implications of the plan for all the different livelihoods capitals. A broader array of policies, including infrastructure development, education improvement, market economic development, and employment market improvement, are necessary. 4) There is a need to give greater consideration to local communities in the design and management of PAs.

6.1.2 Research Question 2

The second research question covered the changes in the perception of equity amongst local government, central government and local people since the establishment of the PA, In particular, I looked at the role of key events that happened during this period of time. Chapter 4 addresses this by building a framework which contains different stakeholders, three equity aspects and key events. I was able to reach a number of conclusions based on the information that I obtained. 1) Initially, when the two PAs were established, central government, local government and local people did not pay any attention to the issue of equity. 2) The burden of biodiversity conservation, especially the limitation on the use of natural resources, and the increased occurrence of farmland damage by wild animals, did not receive appropriate
compensation. 3) It was the stakeholders that first recognized the needs for participation equity, recognition equity, and distribution equity. 4) While the central government created policies that at least partially recognized equity issues, they were largely ignored by the local government that was responsible for the implementation of the policies. 5) The bottom-up practices adopted by local people could be a way to achieve recognition and participation equity.

Similar findings have been found in other regions around the world (e.g. Bennetee & Dearden, 2014; Brockington 2004; Bennett, 2018; He & Sikor, 2015). Brockington (2004) pointed that the imbalance of power between policy makers and local residents caused the inequity results in PAs in Africa. As in Jiuzhaigou and the SNNR, when the PAs were established, local people were not given the opportunity to participate in the decision-making process. Their only choice was to accept the results. These processes lack distribution, participation and recognition equities. He & Sikor (2015) found that in the RFFP in China, local government did not carry out the participation equity order made by the central government. In this study, I also found this, and it indicates that there is a lack of any system to ensure that local governments comply with policies issued by the central government. Local people in the JBR started a bottom-up process to make their own village plan and finally received government approval of their plan. This indicates that they became new actors, and a new mechanism is forming to affect the governance process. Armitage, de Loë, & Plummer (2012) also found this in environmental governance, and they concluded that it is important to consider that conservation practice is influenced by emerging hybrid governance arrangements.
This study makes a few important contributions to the literature. First, it modified the equity analysis framework that can be used in similar research focusing on the perception of equity changes. It did so by analyzing them sequentially in relation to key events. Second, it reveals the stakeholders’ perception on social equity. Clearly, under the current command and control management style, government still plays an important role in promoting social equity results. In this study, central government played a role as policy maker, and it had started to pay attention on distribution equity and gradually to participation equity (e.g. RFFP). Local governments also played a key role to guarantee the equity outcomes, as they implement policies made by the central government. Local people were excluded in this process, until they started bottom-up initiatives (e.g. local village plan). Third, this study provides further insights on social equity issues in the process of biodiversity conservation and offers a way for the government to consider equity when making conservation plans.

Policies need to pay more attention to: 1) considering all three aspects of equity, not simply the distribution part, 2) making sure that the implementation process meets equity requirements, 3) adding equity aspects into protected area management assessments, 4) giving local communities opportunities to become involved in the decision-making process and supporting a power-shifting process, 5) addressing the recognition equity issue, especially for minority groups.
Local people should realize that through a bottom-up approach, they were able to get a local village plan approved, and that they also received funding from the government for their plan. This means that such approaches could be an effective way for them to be more involved in the decision-making process about their own community development.

6.1.3 Research Question 3

The third research question was about how government structure and institutional arrangements in the JBR affected the livelihood of local people and community development. Chapter 5 addressed this question by analyzing three-successive changes in government structure, the shifts in power associated with these changes, and the effects that the changes had on improvements in local livelihoods.

I drew a number of conclusions based on my analysis. 1) In Jiuzhaigou, the Province Forest Bureau, the Province Housing and Urban-Rural Development Bureau, the town government, the county government, the prefectural government and the JMA all had varying levels of responsibility for the development of the JBR, but this structure and institutional arrangement caused fragmentation and overlap among different departments. 2) This institutional arrangement further caused confusion over responsibilities, unstable policy and even policy conflicts. When these policies were related to the livelihoods of local peoples, they could cause negative consequences. 3) The governments prioritized GDP growth over the livelihoods of local people. This partly explains why the county and prefectural government had responsibility to pay
attention on local people’s livelihoods improvement, yet neither took any action to implement the compensation for the “Travelling inside JBR, living outside JBR” policy. 4) Due to the close day-to-day connection with local people, the JMA had incentives to consider local communities and keep a good relationship with them. However, with the fiscal rights being appropriated by the prefectural government, the JMA lost the ability to take more action. 5) Although the administration level of the JMA was increased from the village level to the county level, without any arrangement clearly specifying the rights and responsibilities of this higher level, the recentralized process did not lead to more effective management.

Similar results have been found by other researchers. Lieberthal (1997) mentioned that the “dual headship” in China’s administration was the reason for management chaos. In this study I found that administration could actually be much more complicated, as PA management could involve more than two heads. Without clear allocation of power and responsibilities amongst these heads, the “multi-headship” management caused overlap, chaos and the avoidance of responsibilities. Moreover, because attaining GDP growth is a key factor in a manager being promoted, local officers pursue GDP growth even with PA management. In the case of Jiuzhaigou, local officers had much more interest in tourism development than biodiversity conservation and local community development. As Ran (2013) has pointed out, there are perverse incentives present in environmental management in China. Biodiversity conservation and local community development should become two parallel indicators for promotion. The JMA is a public institution, and its purpose is to protect biodiversity and manage tourism.

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development sustainably. It is not a level of government, and as a result lacks many of the functions that a standard level of government would have to work on community development and local livelihoods improvement projects. Development work should either be returned to the regular government structure, or the remit (and resources) of the JMA expanded to address development.

There are a number of ways that these issues could be addressed. Based on my analyses, the various levels of government might consider the following steps. 1) Improve the precision of governance. The decision-making authority and associated responsibilities of each level of government, and each agency within a given level, need to be clear. 2) Change rules related to the promotion of government officers such that they receive credit for improving biodiversity conservation and community development, rather than focusing exclusively on GDP growth. 3) Returning the community management rights to local government, or provide the JMA with the capacity and mandate to work on community development issues.

6.2 Some Other Thoughts: How to Get Local People Involved in Conservation?

How can local people become more involved in conservation? This question has been on my mind since I started my fieldwork. In many villages I visited, I found people were unaware of any conservation actions being taken. Conservation was seen as an issue for the government. However, many local people are interested in contributing, whether because of their cultural beliefs, as with the Tibetan culture, or because of their love for their homeland. The problem
here is that they do not have the right to participate in conservation, and only the local forestry
department has the authority to do so. However, the local authority often does not perceive
local people as cooperators. Rather than seeing them as part of the solution, the local authority
sees local people as the problem. This perception of people being the problem prevents the
development of a more balanced approach to relationships in which local people are seen as
important stakeholders in conservation decisions.

If local people receive the rights to participate in conservation, will the conservation results be
better? The answer is, not necessarily. Besides the rights, they need the willingness and ability to
provide support to the conservation process. In terms of willingness, spiritual belief or love may
not be enough. People need to receive benefits that will motivate them to help in protection. In
the case of the JBR, the livelihoods of the local people were very closely related to a good
environment.

Another important question, in terms of protection, is whether local people have the ability to
undertake conservation. Professional training is necessary. In some other cases in China, such as
in some villages in the Sanjiangyuan National Park area, local people were trained to monitor
water quality in rivers using a simple device, and they cooperated with researchers to help them
solve environmental problems in the area surrounding their homes. Before this training, all they
could do was pick up garbage around their living area. While this is important, developing
scientific knowledge about the environment and protection is an important step for local people if there is a desire to move forward more effectively.

In general, many factors could affect whether local people are able to become involved in environmental protection, but reasonable rights, willingness, and ability are three important components, and should not be ignored in the development of future PA plans.

6.3 Future Work

There are many other issues that occur in PAs in China, including involuntary emigration, payments for ecosystem services, appropriation of tourism development by large companies, NGO participation, and environmental education. These have not been addressed in this study. My findings indicate that more attention needs to be paid to conservation equity issues, and the local context should be considered in when assessing the effectiveness of PAs. Questions however remain on how best to incorporate local people in PA planning and management. The development of detailed principles and the framework for incorporating local people into management planning requires further research. These problems were not examined in this study. Future studies could work on these issues and establish a more integrated picture of livelihoods in PAs in China.
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Appendix 1 – Interview Script for Local People

The following questions were used for conducting interviews in the case study communities.

Interviews were conducted in JBR and SNNR and in Mandarin (the author’s mother language), and questions were translated from Chinese.

Number of interview:

Place of interview:

Date of interview:

General questions

1. Could you describe your experiences with the creation of the nature reserve/ecotourism development/resettlement experience?
2. What are the differences in your daily life after the nature reserve was built (or ecotourism development/resettlement)?

Financial Capital:

1. How do the differences affect your family income? How reliable are these inflows?
2. How does it affect your family’s capital distribution/land distribution? Any investment in new featured economics (e.g. ecotourism), and why?
3. Which types of financial service organisations exist (both formal and informal, e.g. bank, rural credit cooperative)? What services do they provide, under what conditions (interest rates, loan, etc.)? Who – which groups or types of people – has access? What prevents others from gaining access?
4. In what form do you currently keep their savings (livestock, jewelry, cash, bank deposits, etc.)? What are the risks of these different options? How liquid are they? How subject to changes in value depending upon when they are liquidated?
5. What will you do if you need financial help?

Human Capital:

1. How is the education situation for your family members? Where do you/your kids get education? Any local knowledge? How is the quality of it? Any concerns about education?
2. How is the general health situation for your family? Any concerns about health?
3. From where (what sources, networks) do you access information that you feel is valuable to your livelihoods? Which groups, if any, are excluded from accessing these sources? (E.g. women are excluded, or some information are only shared with a small group of people.)
4. Are knowledge “managers” (e.g. teachers or core members of knowledge networks) from a particular social background?
5. Do you feel that you are particularly lacking in certain types of information?
6. Do you think you understand related policy, legislation, and regulation, and know what rights you have?
7. Any immigration in your family to other places? What’s the reason for these changes? What’s your opinion about immigration to cities (e.g. the effects for a family such as marital relations, parenthood)?

Social Capital:

1. How is your relationship with other villagers/family members (kin links)? Do you work together? Can you get any help when you need (e.g. funeral, marriage, stresses or shocks)?
2. Do you think the relationship is changing in your village?
3. Do you have any local institution in your community? What does this institution do (what activities)? Do you think this institution is useful for you, if yes, can you provide any examples (resources and services that support livelihoods)? Are you satisfied with these institutions? Any suggestions?
4. What’s the difference between the support you can get from the kin links and from the civil society institutions?
5. Have you ever joined any collective actions? Why? How is the result?
6. (Only for Jiuzhaigou) Did you join the Civil Rights movement in 2013? Which institution organized it? Who is the leader? How is the institution now? Do you think this movement is a successful one, or are you satisfied with the results?

Natural Capital

1. Which groups have access to which types of natural resources (before and after PA establishment)? What is the nature of access rights (e.g. private ownership, rental, common ownership, highly contested access)? How secure are they? Can they be defended against encroachment?
2. Is there evidence of significant conflict over resources?
3. How productive is the resource (issues of soil fertility, structure, salinization, value of different tree species, etc.)? How has this been changing over time (e.g. variation in yields)?
4. Is there existing knowledge that can help increase the productivity of resources?
5. Have any natural shocks happened? How do you overcome it?

Physical Capital

1. What infrastructure do you have in your community or your home? For example, items that enhance income (e.g. bicycles, rickshaws, sewing machines, agricultural implements); house quality and facilities (e.g. wall, floor, roof construction materials, cooking utensils, furniture); road, public transportation, piped water, electricity, waste disposal and other services (do people have access or not?); personal consumption items (e.g. radios, refrigerators, televisions). [Observation needed]
2. Does the infrastructure support a service?
3. Do you think they are appropriate? Can you use it for a long term? Can these infrastructures be adapted or upgraded in response to changing demand? Who do you think will do it?

Governance

1. Do you know what the development plan/policy for this nature reserve is? Have you been noticed? Who noticed you? What’s the notice and implementation process?
2. In your opinion, what did the government do for the establishment and management of this nature reserve? Who made the decision? How do you evaluate their job?
3. What effort do you/local people make to manage the nature reserve?
4. Have you ever been involved in the decision-making/management/monitoring process? What did you do?
5. Do you want to be involved in the future management? Why? If you will be involved, what do you plan to do?

Following questions

1. What did you lose (in the whole processes/each event)? What did you get? How do you feel about that?
2. Do you have anything to supplement?
Appendix 2 – Interview Script for Local Officers

1. Could you describe your experiences about the creation of the nature reserve/ecotourism development/resettlement in this area?
2. How do these affect local people’s livelihoods?
3. How do you make/implement policies? Who/which department could affect decisions? What is the usual decision-making/implementation process? Did you ever meet difficulties in implement policies? If yes, why?
4. What does the government do for the establishment and management of this nature reserve? How do you evaluate your job?
5. Do local people make contributions to manage the nature reserve?
6. Have local people ever been involved in the decision-making/management/monitoring process? What did they do?
7. Now what are the difficulties for management? Why? What is your opinion to solve these problems?
8. Do you have anything to supplement?