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Disputed Land Rights and Conservation-led Displacement: A Double Whammy on the Poor

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ABSTRACT

The practice of conservation through displacement has become commonplace in developing countries. However, little is known about the credibility of land-based compensation schemes designed to prevent impoverishment and restore social justice. In this paper, based on a case-study of the displaced indigenous people from the Shuklaphanta Wildlife Reserve in Nepal, we find two sources that made the indigenous Rana Tharus community vulnerable to impoverishment. First, the history of social exclusion rooted in the land reform and settlement policies deprived them of proper land rights. Second, the present land-based policy resulted in an illegitimate compensation. The legal land title holders on average received less than 60% of their owned land. Moreover, due to the poor quality of soil in the resettlement areas the average crop yield was less than half the quantity produced before displacement. While the economic indicators show widespread impoverishment with less food security, low agricultural productivity and landlessness, social indicators suggest depletion of social capital in the resettled communities where there are less job opportunities and less social networks in the neighborhood. This suggests that land compensation schemes should take into consideration of the present entitlements as well as the historical process of land settlements.

Keywords: Conservation-led-displacement; Land Compensation; Indigenous Groups; Poverty; Nepal; Asia

I. INTRODUCTION

The use of land is a contentious issue. The debate often involves what should take precedence in determining the use of land with more than 12 per cent of the surface land under protected areas.¹ While the trade-off between the claims of indigenous people and the claims for non-human species are unclear (Colchester, 2004; Agarwal and Redford, 2009), a call for ‘double sustainability’ - the sustainability of people’s livelihoods and that of biodiversity has been advocated by social scientists (Cernea and Schmidt-Soltau, 2006). However, protecting the natural environment has made displacement and compensation-based resettlement a taken-for-granted strategy (Brandon and Wells, 1992; Chatty and Colchester, 2002; West, Igoes and Brockington, 2006; Agrawal and Redford, 2009). Furthermore the practice of conservation through displacement remains commonplace in developing countries, which adversely affects people’s welfare, and particularly that of economically marginalized people (Agarwal and Redford, 2009).

Nepal has 16 protected areas (including 11 buffer zones), covering almost 23% of its total surface area for conservation (DNPWC, 2010) while 31 per cent of its population still lives below the national poverty line (World Bank 2010). The large-scale displacements continue to represent the major conservation strategy in the densely populated Tarai region (Lam 2003; McLean & Steffen 2003). Nepal has a history of ethnic divisions where social, economic and political exclusion have predominated (Pradhan & Shrestha 2005). Studies show that the protected areas often have management conflicts and these involve local ethnic groups who seldom receive adequate and fair compensation (McLean & Steffen 2003).

Many studies have documented that since the 1950s, Nepal has experienced rapid transformation in landownership from the indigenous economically marginalised groups who had the weakest political standing to the more powerful immigrant groups (Caplan 1970; Gurnerate 2002). It also closely corresponds to the local socio-economic context, particularly after the large number of immigrants led to disruptive social conflicts between indigenous and migrant groups. The backdrop of this socio-economic upheaval involved a displaced indigenous group, the Rana Tharus (hereafter referred as Ranas) in the western-most districts of Kanchanpur. They experienced a large-scale displacement due to the expansion of the Shuklaphanta Wildlife Reserve (hereafter referred to as the Park) in 2001. Consequently, considering the large-scale turmoil that might result from a poorly implemented policy, the Nepalese government carried out a land-based resettlement scheme. It was designed on the principle that all displaced families should be given cultivable land, which they lost previously due to the extension of the wildlife reserve (Bhattarai 2001: 270).

Responding to the risk of poverty and social turmoil caused by displacement, the 'Impoverishment, Risks and Reconstruction' (IRR) model was first proposed by Cernea (1999). Since then, the IRR has been extensively used to design a policy framework for displacement related developmental issues and more recently for the conservation-induced displacement (Mahapatra 1999; Schmidt-Soltau 2005). For example, the IRR is now adopted by most development agencies such as World Bank, Asian Development Bank and International Financial Corporation in their financed development projects (Cernea & Schmidt-Soltau 2006). Risk assessment, compensation schemes, livelihood reconstruction and policy evaluation are required to dam, irrigation

and other development-related projects (ADB 1998 ; Mathur 1998; Bartolome *et al*, 2000; World Bank 2001). ²The application of IRR is also increasingly popular in assessing the welfare impacts on refugees (Cernea & McDowell, 2000). Kibreab's study has shown that refugee fleeing from armed civil conflicts have faced similar social and economic problems as development-induced resettler (2000). He argues that IRR is a very practical relief tool to design rehabilitation programs for refugees. Furthermore, the IRR model has recently used to examine the impacts of conservation-induced displacement programs (Coad *et al.*, 2008) and one of the most extensive studies is done by Cernea and Schmidt-Soltau (2005). Their study has shown that most resettlers from 12 protected areas in Africa suffered severe impoverishment and social disarticulation after the displacement. Similar findings were found by McLean and Straede (2003) and Brockington (2002).

The IRR not only diagnoses and predicts risk but it also provides solutions for reconstructing the livelihoods of displaced people (Cernea 2000). Cernea (2000) asserts that targeting landlessness with a 'land-based resettlement' scheme is more likely to arrest impoverishment, as he clearly points out that resettlers regaining access to productive land is essential for reconstruction (2000: 77). However, little is known on how this conceptual model can fit into the conservation-induced displacement and turn into good practices. In particular, empirical evidence is lacking regarding the consequences of land compensation schemes on indigenous ethnic groups who are often the most socially, economically and politically vulnerable groups.³

Similarly, documented evidence for the large-scale displacement in

Shuklaphanta Wildlife Reserve and its interlocking relationships between sustainable local livelihoods and conservation practices is scant. While Bhattarai (2001) shows displaced families experiencing impoverished livelihood outcomes, his study does not provide convincing ethnographic evidence on the indigenous groups who are vulnerable to greater economic risks. Other studies only provide a general discussion on the relationships between local livelihood and the park but do not examine the long-term and cumulative livelihood impact of displacement on resettlers (Acharya 2002; Baral 2002).

In this paper, we aim to bridge the knowledge gap by examining the social and economic impacts of conservation-induced displacement in Nepal. In particular, we use an interdisciplinary approach, combining anthropology and economics, to assess the impact of land-based resettlement project in the Park on the welfare of indigenous Rana households located in the western-most district of Kanchanpur. We follow two simple steps. First, we examine the fairness of the land compensation policy, and second we assess the livelihood impact of the land-based compensation. We explore in greater depth how the creation and extension of the Shuklaphanta affects the livelihood systems of the indigenous Ranas. We focus on the issues of changes and adaptations of Ranas' livelihood systems, particularly their ability to cope with a new economic environment that has emerged as a consequence of the rapid social and environmental changes. We also bring to light the contemporary history of land policy, which bears the testimony of social injustice against marginalised groups and can help in evaluating the fairness of the land compensation policy.

Based on the Ranas' experience, we argue that an essential pre-requisite for a credible policy framework is to have a fair compensation policy that equally reaches different parts of society. Indigenous social groups are often the victims since compensation policies only take into account the present entitlements without considering the history and the rich cultural transformations over time. This is an important issue because human entitlements cannot be displaced and replaced with mere objects. This is hard to document when using only quantitative findings. In this paper, we link it to the historical perspective and qualitative evidence to obtain a better picture of the livelihood outcomes of conservation. Based on the survey outcomes and the in-depth ethnographic observations, we suggest a modified version of the IRR model that puts the conceptual ideas of land-compensation more credibly into practice. Our findings support that the state's land compensation scheme favoured the rich and it only increased social inequality by impoverishing the poor at a higher rate. Thus the land-based compensation schemes should not be thought of as a panacea that prevents impoverishment in displaced and vulnerable communities.

The plan of the paper is as follows. In section two, we provide a brief introduction on the establishment of the park and an overview of the land-based resettlement program. Sections three and four discuss the survey methodology and empirical findings respectively. In Section five, we integrate the qualitative, quantitative and historical evidence to create a sensible policy framework, which we explain the subsequent section.

II. A BRIEF HISTORY OF THE SHULAPHANTA WILDLIFE RESERVE

Creation and Expansion of the Park

During the 1960s, influenced by the growing global conservation ideology and the King's special interest in establishing protected areas in Nepal, Shuklaphanta was first designed in 1969 as the Royal Sikar Reserve (closed to public shooting) in the western district of Nepal, Kanchanpur (Figure 1). Later in 1976, it was officially declared the Royal Shuklaphanta Wildlife Reserve with a total area 155 sq. km as a response to the shrinkage of the forest area in Kanchanpur district. This had been caused by the rising population and demands on agricultural land and forest resources. The designation of the Park is a typical fence-to-fence management model which is part of the International Union for the Conservation of Nature and National Resources (IUCN) protected area categories, in which all settlements and human activities such as cultivation, fishing and hunting are outlawed.

Although the Park is relatively small in size⁴, it is ecologically important for many reasons. The Park is home to the world's largest population of Swamp deer (2000 at last count), and its extensive grassland and swamp along with the tropical and sub-tropical forests has supported some endangered species of tigers, elephants and rhinoceros. Moreover, a total of 349 bird species including six globally threatened species has been recorded in the Park (Upadhyaya & Yonzon, 2003). However, the on-going development of new settlements adjoining the Park and illegal settlements in the whole district has hindered preservation efforts in the Park. Activities such as logging, grazing and poaching have seriously damaged the natural environment and

wildlife habitats. Since the Park area was relatively small for wildlife protection, an extension of the Park was mandated in 1981 to strengthen conservation of the flora and fauna in the area (Bhattarai 2001). It was proposed to extend it by 155 sq. km for the reserve (see Figure 2). This time, a total of seventeen existing blocks of five VDCs inside the proposed extension area were affected.

The Land-based Resettlement Program

Considering the large-scale turmoil that would have resulted from poorly implemented policy, the royal directives emphasized three principles:

- 1) All displaced families should be given land which they lost to the extension of the Park
- 2) All compensation land should be cultivable
- 3) The social and cultural composition of displaced villagers should be maintained in the resettled areas (Bhattarai 2001: 270).

Figure 2 shows that seven places adjoining the Park were designed for resettling affected families and one major consideration in allotting land was on the basis of land registration record. The State decided to provide a similar landholding size to affected families who had official land documents or some sort of record in survey field books, while the rest which were identified as illegal occupations could only get five to ten kattas (0.035ha) of land. According to Bhattarai (2001), there was no appeal mechanism for these families against the decision of the State.

The Park's resettlement program, which took nearly twenty years (since 1981) was completed in May 2002. As pointed out by Bhattarai (2001) this delay had serious

implications for the local livelihoods and the preservation of the forest. The rapid encroachment in the resettlement sites amidst corrupt bureaucracy and dramatic changes in the political environment after the 1990 People's Movement⁵, made the resettlement commission outcomes worse. Over a period of 20 years the 18 commissions were unable to satisfactorily resolve the resettlement program because it became virtually unenforceable (see Table 1).

It took almost six years to gather information on household composition and land distribution. During the 4th and 5th Commissions, surveys were carried out but they failed to properly document each household's name and gender composition. Moreover, the surveys did not distinguish between landowners who were the original inhabitants or encroachers, which caused further difficulties in land allocation resulting in *ad hoc* distribution. At the same time, the delays encouraged encroachers to resettle in new areas that were already occupied and this created less incentive for the affected families to resettle. Also, many affected families often supported by political parties created resistance to leave and this resulted in further delay. Above all, the number of affected households increased three-fold in 11 years, from 1199 in 1987 (4th commission) to 3397 in 1998 (15th commission), which put further pressure on forest areas. Finally, a total of 2108 hectares of forest land was cleared to resettle 2249 households in seven locations (Table 2). These households were categorized into four groups: 1) Households with proper landownership (926), 2) Households with registered land but without ownership title (100), 3) Households confirmed as encroachers (954) and 4) Households under investigation (169). The remaining households received no compensation; they were identified as settling in the Park after the announcement of extension program

(Pandey & Yonzon 2003).

In October 2001, the Park authority decided to enforce the extension program with the help of the army. This action was undertaken by the Park management under the authority of the State. Remaining households inside the extension area were forced to evacuate as the army deployed elephants to destroy their houses. The evacuation was completed in May 2002 (Pandey & Yonzon, 2003). However the disputes continued even after the displacement was over. As documented by Bhattarai (2001: 319), the major objective of the project was to remove local communities from the Park with little sign of effort to restore people's livelihoods properly. Instead of paying Rs 2000 to the affected families to relocate, as mentioned by Bhattarai, the Park authority should have extended better support mechanisms to cushion them from the transition and post-displacement traumas. As a result there was a steady deterioration in people's livelihoods with increasing poverty and rising social strife in local communities.

III. FIELDWORK ON THE RANAS

The fieldwork was motivated by the lack of evidence⁶ concerning the socio-economic impacts of conservation on marginalised social groups. We adopted a multiple research methodology including household survey, focus group discussion, participant observation and in-depth participant interviews. While the household survey was designed to capture a broader picture of the socio-economic conditions of the Rana society, the conventional anthropological techniques of participant observation⁷ and in-depth participant interviews were conducted to analyze more closely the daily

livelihood practices of Ranas and the transformations in the Rana society during the relocation and in the new settlement. Focus group discussions were also implemented to encourage the local inhabitants to enumerate the relocation experience in their own words. Discussion group participants included local leaders, ex-government officials and local people (both Ranas and hill migrants). Frequent discussions among locals also allow us to verify the information under challenging circumstance such as in the absence of baseline data and the political insurgency. Also, the information from the group discussions complemented the survey outcomes by providing greater insights into the Ranas' growing impoverishment.

Based on repeated consultations with the Park authority and some local NGOs, the indigenous Ranas from the Rauteli Bichawa Village were considered to be the most appropriate subject of our study. The Rauteli Bichawa village, located in the western part of Kanchanpur district, was selected for several reasons, including its unique location and historical relevance. Before the establishment and extension of the Park, the Rauteli Bichawa village overlapped with the Park area. It is the biggest park-affected village with more than 1,000 displaced households. As shown in Table 3, after the forced displacement in 2001, Rauteli Bichawa became the smallest administrative village in Kanchanpur district with only three existing hamlets - Iymilia, Jhilmila and Shivapur. Moreover, it was the first settlement for indigenous Ranas⁸. It was also the first human settlement in Kanchanpur district and the Ranas originally settled in in this particular forest frontier (KDDC 2002). The earliest settlements were Iymilia, Hariya, Bataya and Bichawa, which were located in the southern part of the Park and later extended to other areas such as the neighboring district, Kailali. Today,

the Ranas are found only in Kanchanpur and Kailali districts in Nepal and the States of Uttarakhand and Uttar Pradesh in India.

Historical circumstances made the Ranas one of the dominant population groups in Rauteli Bichawa Village. According to the ex-secretary of the Rauteli Bichawa Village Development Committee Office, before the displacement, the total population of Rauteli Bichawa in 2000 was 9,956 with 1,649 households (2005, personal communication). Official data on the Rana population is not available for many reasons mainly because the Ranas are broadly classified as the 'Tharu' group⁹ and the Nepalese government does not publish national population census figures on Tharu sub-groups. Secondly, some local data is in the hands of the Maoists, which are difficult to access. However, the information from the village office¹⁰ and the focus group discussions outcomes suggest that the total number of Rana households was 350 in 2000, about 20 per cent of the total households and they were distributed unevenly in the nine hamlets (Table 3). After the forced displacement in 2001, the Rana population in Rauteli Bichawa declined to only 150 households, all of them settled in Iymilia and Jhimila. They were relocated to different villages and one of the biggest resettlement areas was Dhokka Block, which was located about four km from the old Rauteli Bichawa Village (Figure 2).

The Rauteli Bichawa Ranas had to endure many new challenges and the ways in which they cope with those is central to our analysis. This provides us with the opportunity to probe the influence of forced displacement and transformation in landownership on the livelihood of indigenous Rana communities. Three field trips

were conducted over a period of 18 months between 2004 and 2006. In particular the visit in 2006 contributed to the current study in two substantial ways. Firstly, the latest information on the Rana households enhanced the quality of our analysis on the relationships between resettlement and household livelihood status. Secondly, it helped us verify and share the main findings with local informants. The sample was restricted to a group of 72 households due to financial constraints and adverse socio-political conditions¹¹. The comparison group, comprising of 30 Rana households, was selected from the two hamlets of Rauteli Bichawa village, Iymilia and Jhimila, located near the periphery of the Park (see Figure 2). The resettled group selected for our study included 42 displaced Rana households from the two hamlets, Rampur and Beldandi of the Dhokka Block (Table 4).

The Rana households within each hamlet were selected randomly. Also both genders responded to the household level questionnaire. However, the survey does not allow us to examine the socioeconomic impact of displacement on other dominant ethnic and caste groups¹² in Kanchanpur district who were also affected by the extension of the Park. Although we were unable to evaluate the overall impact of the relocation on the displaced people, it helped us identify the comparison group and the displaced Ranas to the best possible extent. Nepal is an ethnically diverse country and the heterogeneity in the socioeconomic status across different ethnic groups makes it difficult to identify a closely matched control and treatment group at the baseline. Kanchanpur has particularly experienced substantial demographic changes due to the influx of hill migrants in the past thirty years (Pandey & Yonzon 2003).

In this study, Ranas in both the comparison and the treatment (displaced) group

shared similar socio-economic characteristics. They all lived in the Rauteli Bichawa Village before the displacement. They spoke the Rana language and practiced the same daily rituals. While the landholding sizes varied among the Ranas, particularly Ranas from Ward 3 (Andaiya) being the richest, all Ranas were actively engaged in agriculture. Most of them were illiterate and experienced similar social changes such as the introduction of land reform policy, hill migration and the creation of Park. Thus, the relatively homogenous nature of the Rauteli Bichawa Ranas, provides good matching criteria between the comparison and the treatment (displaced) group.

However, the field survey data we collected prevents us from pursuing a rigorous impact evaluation¹³ on many grounds. First, in the absence of the baseline information we used recall methods to estimate the past landholding size for the Ranas who were relocated to the resettlement areas. This includes the possibility of telescoping in the reported size of land that they had actually owned before relocation due to the difficulties in remembering this with precision. Second, the small sample sizes (both the comparison and the displaced group) are too small to provide a reliable estimate of the impact. Third, the matching criteria involve only a handful of 'Rana traits'. Fourth and finally, the relocation process continued over a period of 20 years, which may possibly lead to some attribution effect. During the same period, the history of disputed land reforms, especially with the transformation of landownership from the hands of indigenous Ranas to migrants from the hills, is likely to account for a portion of the growing impoverishment for displaced Ranas.

Nevertheless, we hope that the availability of detailed qualitative data and

information available through focus group discussion makes our assessment informative and policy relevant. As Woolcock (2009: 5) points out, 'A truly rigorous evaluation is one that deploys the full arsenal of social sciences research tools (qualitative, quantitative and historical) as part of a strategy focused on achieving an optimal match between these methods (or combination of methods) and the *type* of problem to which the project (or policy) is responding'.

IV. EMPIRICAL FINDINGS

Land Compensation: The Reality

Land compensation among the displaced population was based on the principle that all displaced families should be given cultivable (same quality they possessed before relocation) land which they lost due to the extension of the Park (Bhattarai 2001: 270).

The new resettlement area of Dhokka Block was originally covered with extensive dense forest. After the resettlement villages were built, the soil quality in Dhokka Block was classified as Class II, which was not as good as old Rauteli Bichawa's Class I quality and was only suitable for terraced agriculture (KDDC 2002). However, to boost cultivation, a new irrigation canal was also built in the Dhokka Block.

The land compensation scheme under the resettlement program was carried out in two phases. The resettlement program started in 1988 and continued until 2001. In the first phase, about 200 households received land as compensation from the government. All of them were from Rauteli Bichawa village including 60 Rana households. In 2001, when the second phase of the resettlement program was

administered, the remaining households from the seven hamlets (part of the Park extension) of the Rauteli Bichawa village were forced to move out, and as a result another 100 households were relocated to Dhokka of whom ten were Rana households (Table 5).

Although the land compensation principle mandated that each household should get the same amount and quality of land they lost due to displacement, the outcome was far from what the government promised. As shown in Table 6, the average landholding size for the resettled Rana households dropped from 151.2 Katta to 74.8 Katta and 88.8 Katta to 38.2 Katta in Rampur and Beldandi, respectively. The average difference of the landholding size is statistically significant at 1 per cent. The Rana families who were categorized as illegal occupants because they did not have legal land registration were affected the most. They received on average around 11 per cent of their actual land (only 2-10 Kattas), whereas the households with proper registration had an average compensation rate around 56 per cent. Moreover, almost one-third of the households with proper land registration became joint owners (see Table 7).

Household respondents were also asked about the amount of the produce (in kg). Local experience showed that in the 20 Kattas of land at Dhokka Block, Ranas produced 12 bags of '*Dhan*' (unhusked rice), which was less than half of that produced at Rauteli Bichawa (25 bags). As one bag was 70 kg, the total quantity of *Dhan* from 20 kattas (0.67 ha) of land in resettled and non-resettled areas was 840 kg and 1,750 kg respectively. After being milled, 20 Kattas of land could produce approximately 420 kg '*Chamal*' (husked rice) in the resettled area and 875 kg in the non-resettled area.¹⁴ A

few Rampur Ranas even pointed out that the quantity of rice in Dhokka Block was five times less than in Rauteli Bichawa. Rather than taking into account a few exceptional cases, it seemed more reasonable to accept the majority Ranas' experiences.¹⁵ The average productivity rate of the resettled households was about 21 kilograms per Katta, which was less than half of what the households in the Rauteli Bichawa village produced on average. The mean difference of the productivity rate is found to be statistically significant at 1 percent (see Table 8).

According to the resettled Ranas, the land quality in the Dhokka Block was poor. The lower water storage capacity of the soil caused difficulties for rice planting. Field visits were conducted in the rice fields in Rauteli Bichawa and Dhokka Block. Most comparison group Ranas mentioned that the soil could keep water for almost one week so they had plenty time to do rice transplanting. However, resettled Ranas pointed out that after ploughing and irrigating, they had to plant rice immediately because the soil would be dry again within a few hours. On average, they had to spend double the time in ploughing the same size of land than before. The implication was that more farming work led to decreased opportunities and motivation for them to visit and talk with their relatives and friends. One Rana respondent commented on his life that 'I feel very lonely because no one in here wants to talk. People are in fact friendly in here but we all need to work hard, worry about our own lives so we don't have a chance to talk to each other.'

Ramesh Rana's story was another example illustrating the difficulty in planting in the resettled area. He owned nearly 80 Kattas of land and the major labourers were

couples themselves and one young working boy. It was mid-June 2005 when rice planting began. The temperature rose to 45 degrees Celsius due to the late monsoon. Every morning, Ramesh went to plough the land with the boy for the whole day. His wife joined them in the early evening when the temperature fell. Their dinner was often late because much work still to be done. The wife did not have time to make dinner. She cut rice seedlings and tied them into small bunches for rice transplanting. Ramesh estimated that they needed one month to finish rice planting. After three days, the couple transplanted their rice in one whole day with the help of their eldest son. Unfortunately, half the rice seedlings started to die after 1-2 days. This may have been caused by bad weather. However, it could be also related to bad soil, the delay of irrigation and transplanting. Ramesh admitted that because labour was in such short supply, the crop produced was unsatisfactory.

(a) Livelihood changes and coping strategy

Before the extension of the Park, agriculture was the Ranas' main source of livelihood. Most of the Ranas were landowners cultivating their own land. Once resettled a sizable portion of them became landless. This caused a significant change in the livelihood choices; we find that almost 27 percent of the displaced Ranas started contractual agricultural work for others to meet their economic needs (Figure 3). Difficulties with current livelihoods have been the biggest change in their lives according to their responses.

Households were also asked about how they coped with the growing impoverishment and social strife. The coping strategies for the Rauteli Bichawa Ranas were mainly cutting down on their expenses, women working harder and sending

household members to India for work. For the resettled Ranas working for others has been the most common coping mechanism. Almost one-fifth of the respondents said that they had to take loans to meet their daily expenses (Figure 4, 5).

To get a better picture on the increasing vulnerabilities after displacement, the household respondents were also asked, “How many months you have enough food for?” The average food security for the comparison group was 9.5 months; it was 9.1 months for those who received respectable compensation and only 5.6 months for those who failed to provide any land registration (Table 9). Because of the higher variation in the landholding sizes we also looked at the level of food security per unit of land they owned (in Katta). Once measured this way, the worst affected Rana households have average food security for one more day compared to the other resettled Ranas. This indicates two important things. First, given the same land size the resettled Ranas have significantly less food security compared to the comparison group of Ranas. This directly points to the low productivity of the new settlement area. Second, resettled Ranas with a very small plot of land rely on food sources other than cultivating their own land. Once asked how satisfied they were with their lives, all the resettled Ranas expressed negative views mostly because of the bad soil quality and not having enough food (Figure 6).

(b) Life in the resettlement villages

Out of 42 displaced Rana households, more than 80 per cent of them expressed negative opinions concerning their new homes in the Dhokka Block. They faced a number of

difficulties in the new settlements; some of them are the poor quality of the land, lack of food and weaker social relations (Figure 7). They often described the new place as ‘Nobody will like it’ (Lam 2009).

The new place was also perceived to be narrow (*Saaguro in Nepali*) by many Dhokka Block Ranas. The term ‘*Thaau Saaguro*’ referred to barriers in social interactions rather than spatial limitations. The place especially became narrow because there were limited social interactions between the Dhokka Block Ranas. Instead of socializing with others, most of them chose to keep working in the field for the whole day and preferred to stay at home after work. Social interactions among the Ranas became much less than before. The immediate outcome was that most Ranas felt lonely in Dhokka Block. We can therefore interpret their word *Saaguro* as being similar to the English word ‘lonely’. This social outcome was not what the policy-makers had envisaged; they had intended the resettlement area to minimise the social impacts of displacement. Affected communities sharing the same cultural background were resettled in the same area. This was particularly the case in the Rampur area.¹⁶ Rana communities from Rauteli Bichawa were grouped together. The aim was to maintain their community network and cultures but obviously something had gone wrong.

Why then did most of the Dhokka Block Ranas feel lonely in their new abode? In order to answer this question, a closer look at their social networks might be helpful. As Figure 8 shows, half of them did not have any relatives or friends living around them in contrast to the families from other social groups. Although the level of loss in social networks due to displacement among displaced Ranas differed, both shared the same

feeling of loneliness (92%). For example, Jilabati Rana had few friends around but most of her friends moved to other villages because of the Park. She said:

I am very unhappy because we Ranas, are no more living in same place. If they are around me, I will feel better. Nowadays, I only stay on my land and seldom go outside. In my old place, I always spent time with my friends. Now I find it very hard having to spend time in here.

Bhagora Rana did not have friends and relatives living close by and said, 'Without any friend, most of time I only work in the field and stay at home. Life is lonely.' One of the effects of the dislocation is that it can often change interpersonal interactions in a latent and silent way. Even having relatives and friends living close by cannot guarantee the maintenance of Rana community solidarity because after the dislocation, the previous interaction patterns no longer existed.

The economic hardships were inflated by long separations from their family members as long distances made it virtually impossible for them to visit each other. For example, Roson Rana was a sixty-five year-old man. His family moved out from the Rauteli Bichawa four years ago and was told he would receive ten Kattas of land in Beldandi as compensation, yet the government's promise did not come true. He now lived alone on his two Kattas of land and his son's family moved to another village to tenant land in order to get work. Every night he felt extremely lonely without his family and friends. He said, 'I had land, big house and my family inside the park. I have never thought before that my life will become like this one day.' Similarly, Bann Rana lived alone in Beldandi. He totally relied on help from his grandson who worked in another

village. He never visited his grandson's family because he could not afford to pay for the bus ticket. Only the grandson visited him once or twice a year to bring him some rice. Another problem Beldandi Ranas faced was that they found it difficult to communicate with their new hill neighbors. They could not speak Nepali and frequently the result was social isolation.

(c) **Overall effect**

To determine the overall welfare impact we follow a simple regression-based approach. The model (Equation 1) determines the single difference of the welfare outcomes between the resettlers and the comparison group based on the post-displacement observation we collected. The mean comparison approach is appropriate in our case because the resettled group can be identified based on observables. We estimate the following regression model:

$$(1) \quad \mathbf{y} = \beta \mathbf{Resettlers} + \mathbf{X}'\gamma + \varepsilon$$

The dependent variable in Equation 1 is the welfare indicator measured as food security in the future measured in months. As an alternative to this, we also use number of days for which a household has sufficient food per Katta (unit of land). Defined this way, it records the future food security as well as the productivity of the land. With a similar sized landholding, food security over a longer period implies better quality of land, based on the evidence that food consumption habits are similar across the Rana households.¹⁷

We decided not to use the productivity (measured as crop yield) as the dependent variable because it is an estimation based on focus group discussion. Despite the fact that the data on food security suffers from self-reporting bias, it directly reflects the availability of food after the resettlement and their understanding of what food sufficiency meant at the local level. In addition, the Rana respondents did not include incomes from non-agricultural activities while answering the food security question. They only considered the family size and the amount of crop yield from their own cultivation. Together with this, the food security indicates the productivity and family size as well.

In Table 10, we provide regression outcomes on food security. We use food security as a dependent variable measured in two ways: the number of months they have enough food and the number of days they have enough food per landholding size (in Katta). Displaced households are found to have lower food security irrespective of the way it is measured. The outcome is robust and statistically significant in most cases. The models with the food security variable measured in terms of the number of days they have enough food given the landholding size show better fit. While smaller households are better off, the households with bigger land on average have food security for a longer period of time. For the purpose of robustness, we ran the same model on a restricted sample comprising only those Rana households who resettled in 2001. Overall, the outcome remains unaffected.

V. DISCUSSION ON LAND POLICY

Our empirical findings have shown that by and large the land-based compensation

policy has failed to prevent impoverishment in Rana society. It also failed to restore social justice. The poor land quality in the new settlements reduced the food security for those who could have maintained a better living standard in their previous lifestyle. Furthermore the households with no land title became landless (with barely two Kattas of land just to construct a home). In this section we reexamine these outcomes in the light of the contemporary history of land reform and socio-political movements in Nepal.

In Nepal, land was the property of the State and this type of land was known as *Raikar*, except *Kipat* land which belonged only to some hill tribes like Limbus, Rais, Tamangs (Regmi 1999). However, *Kipat* tenure was abolished in 1963 and incorporated into the *Raikar* tenure system (Regmi 1999). In Kanchanpur land ownership was considered to be part of the *Raikar* system. Under this state-as-landlord system, the government had absolute power to grant and confiscate land for grantees and could appropriate land for its own needs (Caplan 1970). Before the 1950s, land used to be granted by the State in an attempt to buy favour. All *Raikar* users had only the right to use land but not the right to alienate any part of it, or to sell or mortgage it. Historically, the State also granted authority to the local elites to decentralize political power. These local elites became landlords and local communities perceived them to be the authority instead of the State. As pointed out in the focus group discussions, in the past they had to register their land with the approval of the big Rana landlord.

Since the 1950s, however, a series of land reforms were introduced where the State wanted to regain its ownership control at the local level. Thus, one of the major

implications of the land reform programs was to centralise State control over local land resources (Praff-Czarnecka 1997: 437; Sharma 1997: 479). Our local informants pointed out that since the 1960s in the Rauteli Bichawa village, local Ranas started to deal directly with the State instead of the Rana landlords regarding land issues. Based on the life histories collected from the Rauteli Bichawa villagers, many state officials came to the Rauteli Bichawa village to map their land and establish new settlements. Consequently, the State officials visited the Rauteli Bichawa village in the 1970s and 1980s and the goal of State intervention was to diminish local autonomy by removing the concept of landlords from Rana society.

The Ranas, like many traditional societies, failed to perceive the modern concept of landownership as an exercise in land registration documents. For them, the concept of landownership was more about the actual land use practices. Guneratne (1996, 2002) explains that the concept of obtaining the legal land documents to secure ownership does not exist among many tribal or ethnic communities, particularly those from the lowland Tarai region of Kanchanpur. In the focus group discussions, many Rana informants mentioned that they had been cultivating their land for generations so they never feared losing it. This, however, put the indigenous Rana population into a weak position to protect their ancestral land, particularly those with small landholdings.

The story of Jekur Rana provides an example. The Jekur Rana family is one of the displaced families from the Andaiya hamlet of the Rauteli Bichawa Village. He had 100 Kattas of ancestral land, which had been used as the main source of livelihood through subsistence agriculture for more than one hundred years. However, his land was

not registered officially. According to him, the older generations had no idea about the land registration procedure. Moreover, when government officials came to their village on one occasion, they only talked to the rich and educated people, not them. As a result, only the rich and influential families, including some wealthy Ranas, registered their land with the government. In 2001, the family of Jekur Rana was forced to move out from the extension area of the Park. Since he did not possess any legal registration, Jekur Rana's family received only two Kattas in order to build a shelter in the new resettlement area in accordance with his inhabitant status. Jekur Rana pleaded to the Park authority to reassess his case many times but without success. There were at least ten other Rana families in the Dhokka Block in a similar situation like Jekur Rana.

Focus group discussions with both resettled and non-resettled Ranas found that the Ranas, who had close relations with local elites and owned large plots of land, obtained official documents and thus suffered less from the relocation. As our data shows, a majority of the displaced Ranas receiving almost equivalent size of their registered land were rich, owning more than 200 Kattas of land inside the park. Thus, the design of the state policy of land compensation scheme apparently favored the rich and it only increased social inequality by impoverishing the poor at a higher rate.

Since the 1950s the State has played a leading role in the transformation of landownership from the hands of indigenous Ranas to migrants from the hills (Pahaaris). This was administered through a series of land reform policies and state-sponsored resettlement programs in Kanchanpur, particularly in the Rauteli Bichawa village and in the Tarai region as a whole. The migrants were mainly higher caste people, including

Brahmans and Chhetris. They were mostly literate and had closer ties with the state officials, such as sharing the same language (ability to speak and write in Nepali) and culture. This made access to land resources and assistance from the state easier for them, and in turn gave them greater control over land.

As found in the focus group discussions, this was apparently another major reason why some Ranas could not register their land properly or even lost most of their land to the migrants. Many Ranas complained that in many instances the disputes over land between them and the migrants were resolved in favor of the migrants. As in matters regarding the registration and transaction of land, it required good communication skills with the state officials verbally and literally. There were also complaints against the migrants that they took advantage of the illiterate Ranas and confiscated their land by providing them with flawed contracts. For example, one displaced Rana stated that without the consent and authorization of his grandfather, his father signed a land transaction document to a migrant state official. However, when his grandfather contested it, the land was already a property of the state official.

As our qualitative evidence suggests, the impact of Nepal's land compensation policy has resulted in a disproportionate distribution of land where the poor have come out the worst. This has serious consequences for the social deprivation of marginalized groups who has less political clout. This also indicates the necessity of a land compensation framework that must consider overcoming the social divisions and political economy of past land settlement policies. Without thoughtfully considering the political, economic and cultural contexts, land-based compensation schemes will only

serve as a mechanism to further accelerate social inequality and social strife among different groups.

VI. CONCLUSIONS

In this paper we used a cross-disciplinary approach to assess the quality and welfare impact of a land compensation policy targeting an indigenous displaced community in Nepal. We surveyed indigenous Ranas who were displaced from the Rautelli Bechawa village due to the expansion of the Shuklaphanta Wildlife Reserve in the district of Kanchapur. The survey outcomes show that their compensation was inappropriate both in terms of the quality of land and size. It also indicates a disproportionate distribution of land that favored the rich. Overall, it led to further impoverishment of the displaced community where the poor suffered the most.

In the first stage, the land compensation scheme adopted by the State authority in Kanchapur failed to meet the prerequisites for a well designed land compensation outcome as outlined in the Impoverishment, Risks and Reconstruction (IRR) model devised by Cernea (1999). The poor quality and smaller size of compensated land can alone generate a welfare loss. However, our qualitative evidence goes beyond this. A closer look at the contemporary history of land reform and land settlement policies reveals that the Ranas have been socially excluded for decades, and the present land compensation scheme only compounded the social injustice.

The most important critique of displacement has been the injustice involved in

the involuntary removal of marginalised peoples from their homes and lands (Chatty Colchester 2002; Agarwal & Redford 2006; 2009). Our in-depth cross-disciplinary evidence indicates the necessity of a socially inclusive and carefully designed land-compensation policy. Perhaps a modified version of the Impoverishment, Risks and Reconstruction (IRR) model should pay more attention to the marginalised people who often fail to provide sufficient documented evidence of property rights regarding generations-old cultural values.

A carefully designed policy may still not guarantee social justice by just including a fair distribution of land as part of the compensatory policy.¹⁸ Since the adverse impact of a displacement is likely to hurt the poor at a higher rate (Heming & Rees 2000), as suggested by Kanbur (2002), a credible next step could be to provide a generalized safety nets in addition to land compensation-specific safety nets. This may help the poor indigenous people build social and physical capital for sustainable development. Despite the fact that illiteracy was recognized by indigenous Ranas as the major cause of their impoverishment, among the present generation Ranas only a handful of them send their children to schools. This clearly suggests one area where a generalized safety net can work well.

Finally, a cross-disciplinary evaluation of a land-based compensation package spells out the potential danger of insurgency resulting from social grievances against the improper distribution of land. Such discrimination in landownership and inherent socio-political exclusion have been closely intertwined with the drawn-out 10 year-long Maoist insurgency (De Sales 2000; Hutt 2004; Joshi & Mason 2010; Murshed & Gates

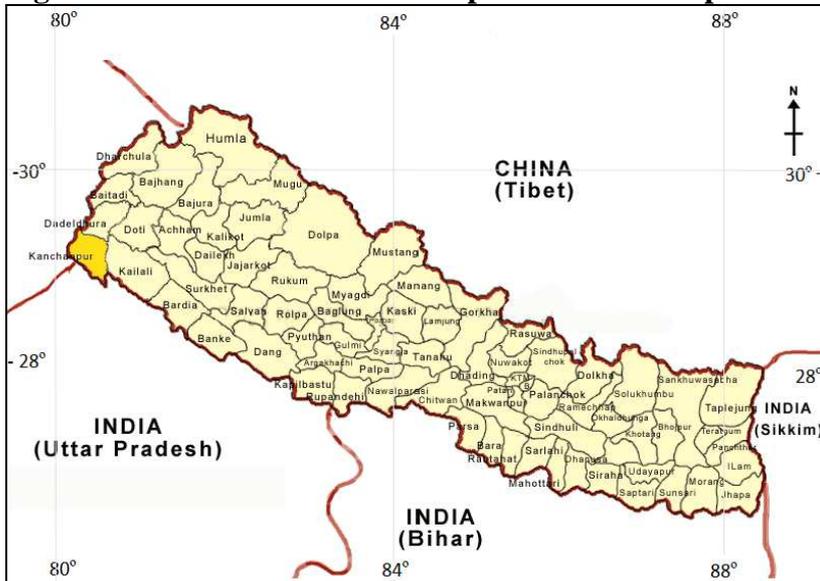
2005) and recent ongoing ethnic social movements in Nepal (Guneratne 2002 ; Pradhan & Shrestha, 2005; Hangen, 2007). This essentially violates the key purpose of land conservation and asks the fundamental question, `Conservation for whom'? At a broader scale, a fair land tenure system which accommodates any marginalised society, from an economically deprived indigenous group to female-headed households with less political voice should be promoted to resolve the disputed land rights and social conflicts.

Acknowledgement

We are grateful to the participants of the GCOE conference at the Osaka University for a stimulating discussion over the necessity of an interdisciplinary approach on this issue; authors are solely responsible for any error.

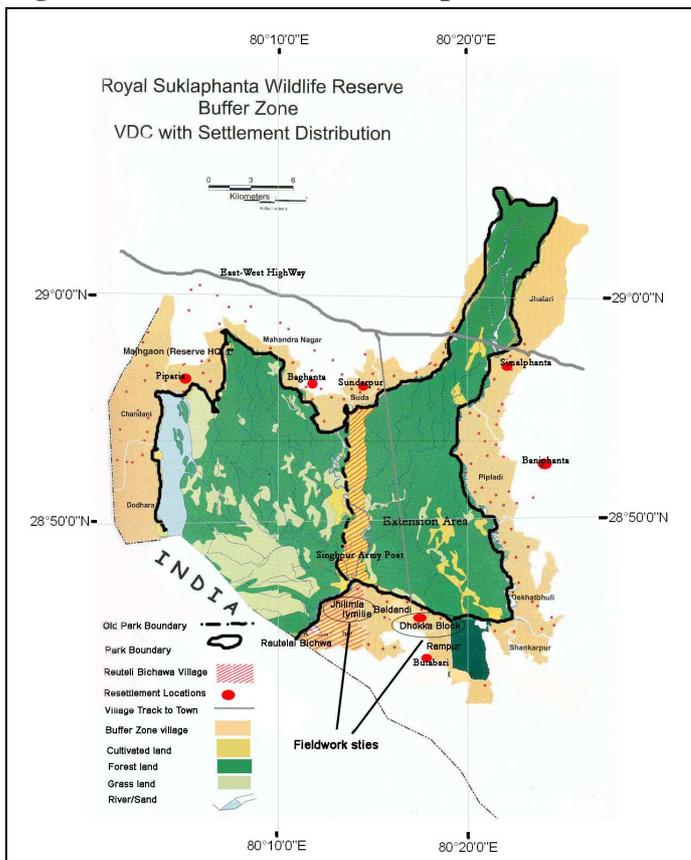
List of Table/ Figure

Figure 1 The location of Kanchanpur district in Nepal



Source: <http://www.mapsofworld.com/nepal/nepal-district-map.html>

Figure 2 Location of the Shuklaphanta Wildlife Reserve and fieldwork sites



Source: Modified from DNPWC (2003)

Table 1 The performance of eighteen commissions regarding the Park resettlement project

| Time Period | Commissions | Performance and Major Problems |
|-----------------------|--|--|
| 1981 | 1 st Commission | No work done |
| Mid-1982 | 2 nd Commission | Acquired 217 ha of forest land and clear-felled, but resettled none. |
| Early 1986 | 3 rd Commission | No significant work done |
| Late 1987 to mid-1988 | 4 th and 5 th Commissions | Household surveys and land allocations were carried out. However, the survey quality was poor and caused unfair land allocations. |
| Mid-1992 to 1995 | 6 th to 10 th Commissions | The Commissions were beset by party politics. Almost no significant work of resettlement was done. |
| Mid-1996 to 1999 | 11 th to 18 th Commissions | The Commissions were headed by politicians. All Commissions were short-lived due to the frequent change of government. Land was even distributed to unlisted households who commissioners knew personally. |

Source: Bhattarai (2001) and Pandey (2003)

Table 2 Resettlement locations and land distribution

| Resettlement locations | VDCs / Municipality | Land Grant (Ha) |
|------------------------|-----------------------------|-----------------|
| Dhokka Block | Beldandi/ Rampur Bilashipur | 680 |
| Simalphanta | Jhalari | 108.8 |
| Butawari | Laxmipur | 284.24 |
| Baghphanta | Mahendranagar | 565.76 |
| Piparia | Mahendranagar | 115.6 |
| Sundarpur / Bandarpur | Suda | 217.6 |
| Banijhala | Krishnapur | 136 |
| Total | | 2,108 |

Source: Pandey and Yonzon (2003)

Table 3 The land acquisition and the Ranas in Rauteli Bichawa village in 2000

| Village Area | Hamlets | Total Households | Rana Households |
|--------------------------------|--------------|------------------|-----------------|
| Part of the extended Park area | Badani Kheda | 42 | 25 |
| | Darak | 170 | 126 |
| | Andaiya | 514 | |
| | Bhursa | 193 | 27 |
| | Lalpani | 29 | 0 |
| | Radhapur | 68 | 26 |
| Outside the Park | Iymilia | 120 | 120 |
| | Jhilmila | 279 | 26 |
| | Shivapur | 234 | 0 |
| Total | | 1,649 | 350 |

Source: Ex-Secretary of the Rauteli Bichawa Village Development Committee Office

Table 4 The number of Rana households in the four study settlements

| | Rauteli Bichawa village | | Dhokka Block | |
|---------------------|-------------------------|---------|--------------|----------|
| | Iymilia | Jhimila | Rampur * | Beldandi |
| Total households | 100 | 165 | 506 | 460 |
| Rana households | 90 | 20 | 126 | 19 |
| Surveyed households | 15 | 15 | 25 | 17 |

*The Rampur estimate was based on information provided by the ex-chairperson of Beldandi and Rampur Buffer Zone User Group Committee, Bhim Thapa.

Source: Household Survey 2005

Table 5 Resettlement history of Dhokka Block

| | | 1889-1992 | 1993-2000 | 2001 | Total |
|-----------|---------------------|-----------|-----------|------|-------|
| 1988-1990 | All households | | | | 200 |
| | Rana households | | | | 60 |
| | Surveyed households | 9 | 6 | 20 | 35 |
| 1991-2001 | All households | | | | 100 |
| | Rana households | | | | 10 |
| | Surveyed households | 0 | 0 | 7 | 7 |

Source: Household Survey 2005

Table 6 Land compensation

| | | Land holding (Katta) (Present) | | land holding (Katta) (Before resettlement) | |
|------------|----------|-----------------------------------|------|---|------|
| | | Mean | SD | Mean | SD |
| Comparison | Iymilia | 59.1 | 53.1 | | |
| | Jhimila | 24.1 | 14.3 | | |
| | Rampur | 74.8 | 49.2 | 151.2 | 94.2 |
| Resettled | Beldandi | 38.2 | 23.0 | 88.8 | 74.2 |

Source: Household Survey 2005

Note: Mean Land holding size is significantly different for the resettled households (at 1 % significance level) Land is measured in Katta

Table 7 Compensation rate and ownership type for resettled households

| | Compensation Rate (%) | | | Single Owner (%) |
|---------------------------------------|-----------------------|-----|-----|------------------|
| | Mean | Min | Max | |
| Households with unregistered land (8) | 10.8 | 2 | 50 | 100 |
| Households with registered land (34) | 56.1 | 3 | 100 | 62 |
| All Households (42) | 47.4 | 2 | 100 | 69 |

Source: Household 2005

Note: Compensation rate is calculated as $100 \times \frac{\text{Land Received}}{\text{Land Owned}}$

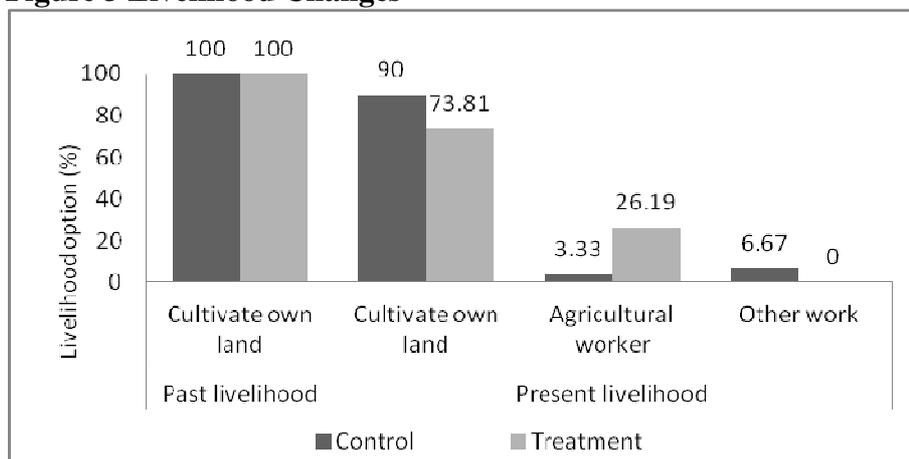
Table 8 Productivity Rate (Kilograms / Katta)

| | Mean |
|-----------------------------|------|
| Comparison group households | 44 |
| Resettled group households | 20.9 |

Source: Household survey 2005

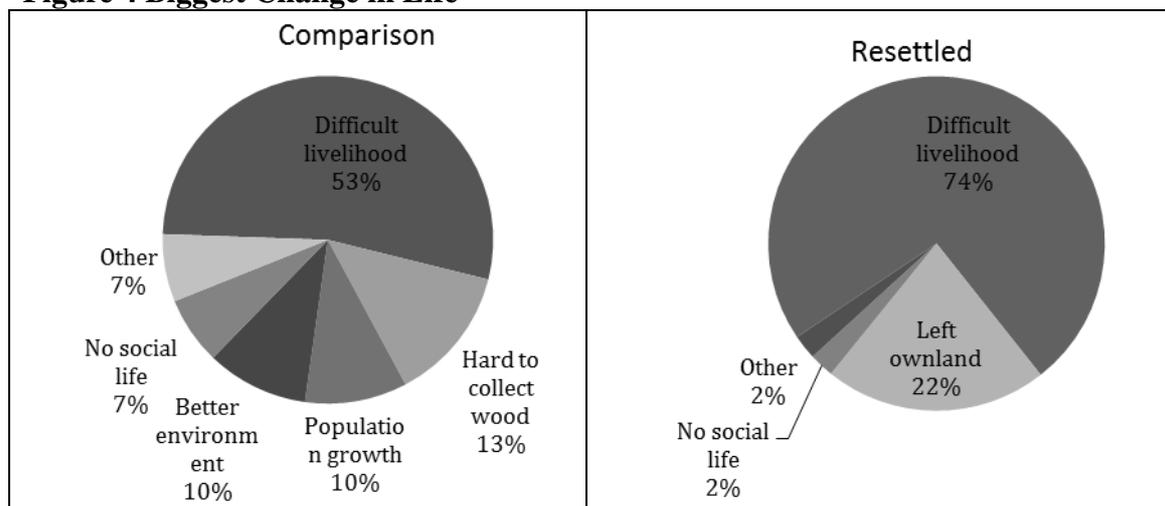
Note: Mean Productivity is significantly different for displaced group households (at 1 % significance level)

Figure 3 Livelihood Changes



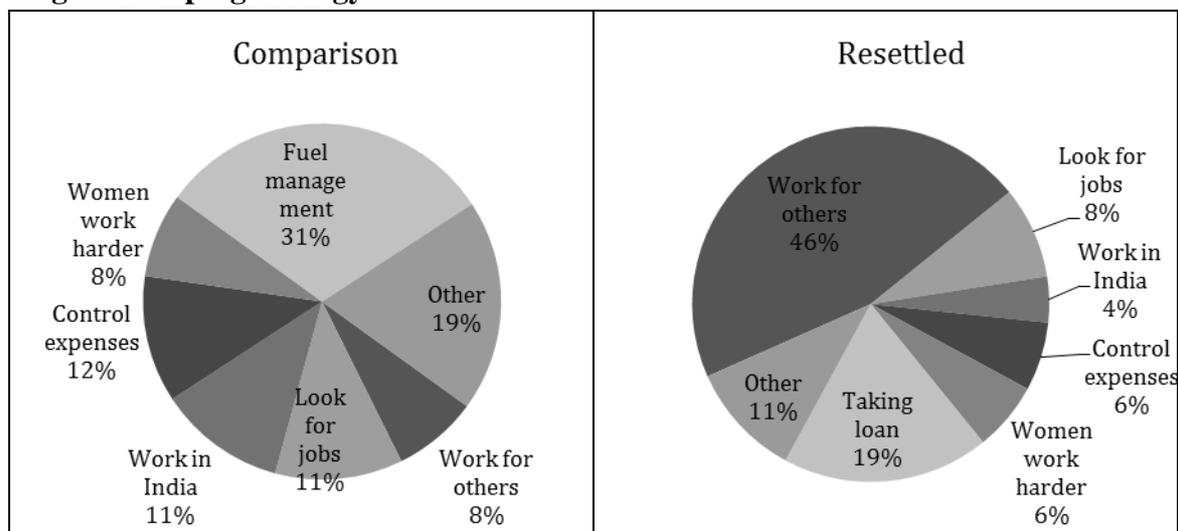
Source: Household survey 2005

Figure 4 Biggest Change in Life



Source: Household survey 2005

Figure 5 Coping strategy



Source: Household survey 2005

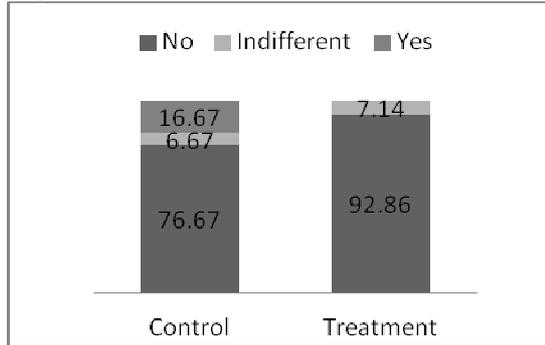
Table 9 Food security

| | Months | Days / Katta | | |
|--------------------------------|--------|--------------|-----|------|
| | | Mean | Min | Max |
| Comparison | 9.5 | 4.2 | 0.7 | 10.8 |
| Registered land | 9.1 | 2.2 | 0.6 | 5.76 |
| Resettled Unregistered land | 5.6 | 3.4 | 0.9 | 7.2 |

Source: Household survey 2005

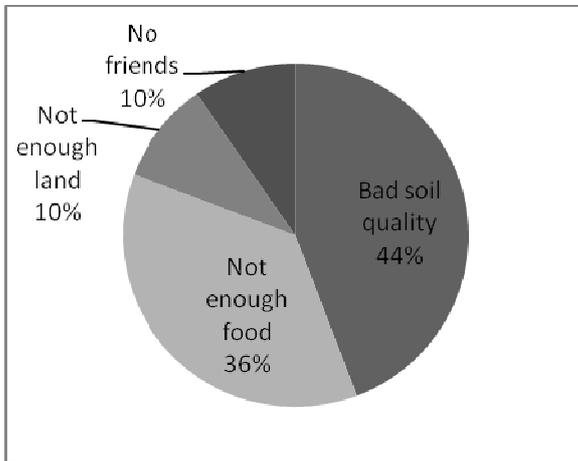
Note: The question on food security was originally asked as “How many months you have enough food for?” We created another variable that measures number of days a household has enough food for given the amount of land it owns.

Figure 6 Life satisfaction



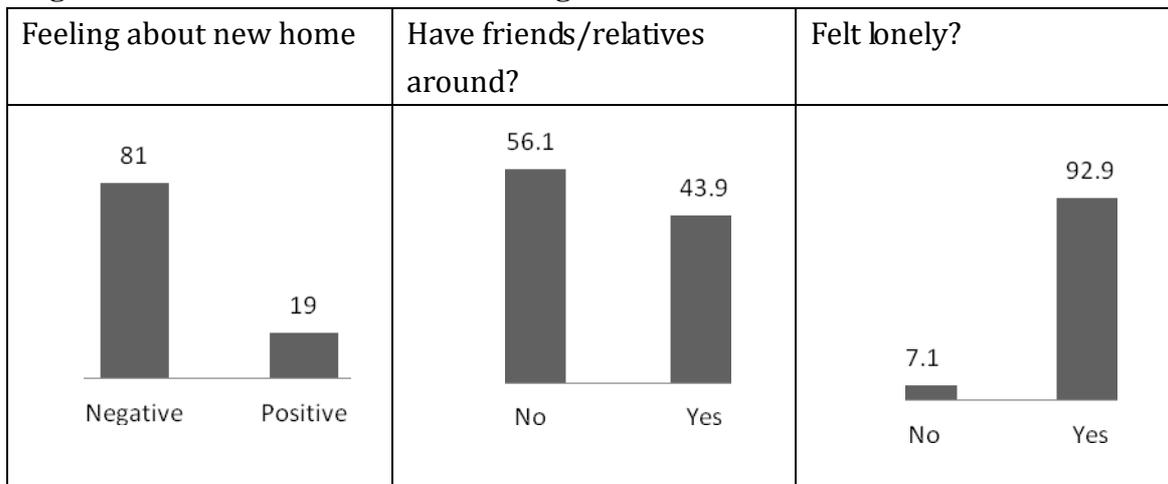
Source: Household survey 2005

Figure 7 Difficulties currently faced



Source: Household Survey 2005

Figure 8 Social life in the resettled village



Source: Household survey 2005

Table 10 Regression outcomes on food security

| | Dependent variable: Food security (months) | | | Dependent variable: Food security (Days per Katta) | | |
|-------------------------|--|-----------------------------|-------------------|--|-----------------------------|--------------------|
| | Base | Base plus household control | Restricted sample | Base | Base plus household control | Restricted sample |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Resettled (Yes=1) | -1.01 (0.71) | -1.71* (0.73) | -2.00* (0.83) | -4.40** (1.35) | -5.51*** (1.29) | -4.42** (1.28) |
| Log age | | 0 (0.56) | -0.43 (1.47) | | -1.07 (1.51) | -5.25 (2.70) |
| Gender (Female=1) | | 1.55* (0.74) | 1.28 (0.88) | | 0.92 (1.40) | 0.58 (1.62) |
| Household members | | -0.08 (0.05) | -0.12 (0.07) | | -0.41*** (0.10) | -0.41*** (0.10) |
| Land holding (in katta) | | 0.03** (0.01) | 0.03*** (0.01) | | | |
| Livestock (numbers) | | -0.01 (0.11) | 0.32 (0.22) | | -0.03 (0.16) | 0.53 (0.50) |
| Constant | 9.46*** (0.55) | 8.89*** (2.28) | 9.81 (5.43) | 10.44*** (1.18) | 19.13** (6.17) | 33.25** (10.45) |
| Observations | 70 | 67 | 53 | 70 | 67 | 53 |
| R-square | 0.03 | 0.2 | 0.24 | 0.15 | 0.37 | 0.44 |

Note: Restricted sample implies to only those households who resettled in 2001.

Robust standard errors are given within parenthesis, coefficients with * mean significant at 10%, **means significant at 5% and ***means significant at 1%

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Notes

¹ According to the World Conservation Monitoring Center (WCMC), in 2008 the total number of protected areas was more than 12,000 with an area covering 21 million sq. km, which is over 12.2 per cent of the total surface land.

² According to World Bank's resettlement policy, all affected people should at least enjoy their former living standards after the displacement. Resettlement policy should also pay attention to increase resettlers' capacity for income generation.

³ Nayak (2000) and Lassailly-Jacob (2000) find that the land-based resettlement approach will help displaced people better cope with stress from displacement and avoid risks associated with landlessness. While their studies identify some of these risks, they did not discuss in-depth how land-based resettlement can prevent landlessness.

⁴ The largest protected area in Nepal is Annapurna Conservation Area (7,629 sq. km) and the smallest one is Rara National Park (106 sq. km.) (DNPWC 2008).

⁵The 1990 People's Movement (Nepali: *Jana Andolan*) was a multi-party movement in Nepal. It brought an end to absolute monarchy and eliminated the Panchayat system. It marked the beginning of constitutional democracy (see Hutt 2004). In 2006, following the restoration of absolute monarchy in Nepal, the *Loktantra Andolan* was launched, which once again illustrated a unity between various political parties leading some to brand it *Jana Andolan II*.

⁶ Although displacement is one of the most common conservation practices in protected areas in Tarai region in Nepal, its economic and social impacts have not been well documented (; Sah 2002; Lam 2003; McLean & Steffen 2003). Only McLean and

Straede (2003) and Lam (2003) used an anthropological approach to evaluate the social impacts of displacement on local communities. However, these studies do not touch on the core aspect – how does this displacement influence local livelihoods and how do the locals react to such changes. In addition, the only comprehensive study that explored the complex relationship between Tharus and Chitwan National Park were done by Muller-Boker (1999). Studies on Ranas and Shuklaphanta are almost nil.

⁷ The first author conducted fieldwork over a period of 15 months. During this time, she actively observed and participated in Rana daily social life including daily conservations, farming activities, festival celebrations, marriage ceremonies, rituals and collecting forest resources.

⁸ Despite the fact that written histories on the origin of Ranas in Kanchanpur are very few, their past has been recorded via local oral traditions. Rauteli Bichawa Ranas claimed that they originated in the state of Rajasthan in India. Their descendants are nowadays known as Rana Tharus. Most Ranas refuse to be labeled ‘Tharus’ and call identify themselves only as Ranas (Lam 2009).

⁹ The argument about the exact number of people is an issue of debate between the State and ethnic groups in Nepal. Gaige (1975) has made an in-depth analysis of this. Some ethnographic studies have also shown that increasing the population is often a

strategy that many ethnic groups use to increase their political influence (Fisher 2001; Guneratne 2002).

¹⁰ The secretary was a village local and therefore familiar with the composition of the local population.

¹¹ The research was carried out when conflicts between the Maoists and Nepalese government were severely endemic. The armed Maoists would regularly patrol the village particularly in Dhokka Block and one of their strategies was to foment frequent strikes. The researcher was interrogated several times by Maoists and their permission was needed.

¹² According to the 2001 census data, the caste and ethnicity distribution of the population in Kanchanpur were as follows: Chettri (30%), Tharu (20%), Brahmin (17%), Dalits (14%); Thakuri (5%); and others (14%).

¹³ There is an ongoing debate among social scientists (notably among economists) whether to pursue a rigorous impact evaluation for the assessment purpose. Proponents of such rigorous techniques believe that they help find the true impact of policies, thus increasing the policy relevance of research (Angrist & Pischke 2010; Imbens 2010). Others have argued that high demands for rigor are often correlated with lack of

information on the heterogeneity of the impact and missing long-term equilibrium effects (Acemoglu 2010; Deaton 2010).

¹⁴ The estimate for rice productivity was based on the normal agricultural year, i.e. did not include serious crop failure from natural disasters such as floods or drought.

¹⁵ Those interviewed Rampur Ranas had suffered serious changes in their livelihood after relocation, so they might tend to overstate their hardship to outsiders in order to gain more sympathy.

¹⁶The situation in Beldandi was different in that this area was mainly designated for resettling those affected landless families including Ranas and other caste groups. There was no consideration of cultural factors. As a result, few Rana households were sparsely settled and they were surrounded by the hill population.

¹⁷ According to the field observation, the Rana diet is found as having less variety with mostly plain rice. A standard dish is served with very little curry and large amounts of rice. On average, every adult Rana male could eat at least 1.5 kg of rice per day.

¹⁸ Apart from agricultural land, displaced Ranas also lost their access to common forest resources which constituted a very important part of their livelihood systems. For reasons of space this paper cannot cover this issue.