

Community Perceptions of Disaster Severity in Remote Hilly Regions of Nepal

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Abstract

In addition to household economic resources, disaster studies increasingly recognize other critical components of household well-being, such as social capital and other resource categories. However, these dimensions of well-being are less easily expressed in quantitative terms and are typically overlooked in accounts of disaster effects. This research proposes an approach for assessing perceptions of the importance that community members attach to a range of non-economic or non-conventional resource categories. Through this means, the subjective value of these categories may be expressed in simple numerical terms, and the severity of a disaster event can also be gauged by examining the loss experienced by the community in the respective categories through the event. Diverse disasters can then be characterized in terms of their impact profile across the range of resource categories, as well as their overall impact. Three disasters that have occurred in Nepal in recent years are examined from the perspective of eight affected communities. The results demonstrate the differing effects that the disasters had on various components of household well-being. Apart from the numerical data derived, the approach prompted useful discussion of a range of issues pertinent to the community's well-being, and these are also presented.

Keywords

Nepal disasters, household well-being, disaster impacts, vulnerability, non-tradeable resource categories

1. Introduction

Disaster impacts are commonly expressed in terms of measurable effects such as deaths, injuries, number of people displaced, houses destroyed, cropland affected, economic loss, etc. Certainly, such statistics help to indicate the scale and severity of the disaster event. However, the social sciences increasingly emphasize household resources that are difficult to measure quantitatively, which are still critical components of household well-being, and which may be seriously undermined in a disaster. Since they can only be assessed subjectively, they are often neglected in describing disaster outcomes. Besides economic resources (which can be defined in monetary terms) these “non-tradeable” resources depend on the circumstances of the household in its social and community setting, reflecting the advantages available through their connections and relationships, the capabilities of household members, and the natural environment.

Even though the overall welfare of the affected population is the overriding concern, disaster impact assessments typically do not directly address these important dimensions of household well-being. In addition, it is recognized that different disaster events affect the various dimensions in very different ways. A better understanding of the effects of a disaster on household well-being will be gained by examining the range of these household resource categories, based on the perceptions of the affected communities.

In its recent history, Nepal has experienced diverse disaster events. The 2020-22 Covid-19 crisis was part of a worldwide pandemic, which caused over 12,000 deaths in Nepal [1] and has had major impacts on people's livelihoods. The 2015 Gorkha

earthquake was a geophysical event, causing 9,000 deaths and the destruction of over 500,000 houses [2]. The People's War (*Jana Yuddha*, or *Sankat Kal*) of 1996-2006 was a political and social crisis leading to the deaths of over 17,000 people. The typologies of these events were very different from each other, even if some of their outcomes were similar. Statistics like the numbers of lives lost can readily be stated, and patterns in household economic loss can be identified, as in Friberg and Bajracharya (2022) [3]. But the wider range of impacts on household well-being should also be considered. Since many communities in Nepal have endured all three of these events, this affords an opportunity to compare and contrast their effects.

This paper reviews pertinent literature in Section 2, with the research objectives stated in Section 3. Section 4 presents a methodology to assess the non-tradeable household resources in comparison with their economic resources, and its application is described in Section 5. The results of the research are presented and discussed in Sections 6 and 7, respectively.

2. Literature Review

A range of “assets” or resource categories that underpin household well-being are presented in various literature, such as in Siegel and Alwang [4]. These may include:

- Economic resources: financial and physical assets such as property in land, houses, and other possessions, savings, employment income, etc.
- Social capital: the value derived from cooperative relationships, networks, formal and informal memberships, etc.

- Public or administrative resources: the value of good government with competent authorities providing effective administration, efficient management, and provision of good infrastructure and public service systems.
- Human capital: the value that comes from having good health, skills, experience, knowledge, qualifications, ability to work, etc.
- Natural capital: the value that stems from the natural environment (soil, water, climate, etc.); natural resources.

In the context of disasters, a wide range of literature has explored the link between disaster outcomes and features that render a community vulnerable [5]. This connection is often documented through case studies, which draw conclusions from particular events. For instance, He, et al. [6] and Aryal [7] examine disaster vulnerability specifically in context of Nepal.

Approaches which intend to indicate a generalized disaster vulnerability have also been developed, such as the Social Vulnerability Index or SVI [8]. SVI scores are derived for distinct administrative units (such as districts or regions) based on census data, and these scores are typically applied to maps, so that the areas with populations that are deemed vulnerable can be distinguished on the basis of the SVI score. This approach has also been applied to Nepal [9, 10].

Community based methodologies, such as the Vulnerability and Capabilities Analysis or VCA [11, 12] are also applied to assess the community features with a view to increasing disaster preparedness. The Sustainable Livelihoods Approach or SLA [13, 14], similarly examines community resources and livelihood strategies.

Based on the consistent contrast between household vulnerabilities, and the capabilities or resources which allow it to overcome the effects of a disaster, Friberg [15] argues that the two should be seen as opposite sides of the same coin, and presents a framework which links them analytically to disaster outcomes.

But what appears to be missing in the literature is a systematic approach to assessing the impact of a disaster on non-tradeable categories of household resources: Apart from economic resources, what is the loss or damage through the disaster to their social, public/administrative, human, or natural capital? Since these non-economic resource categories are critical determinants of household well-being, disaster impacts in these dimensions should also be examined. Making "before and after" comparisons across these categories would provide a better understanding of the overall effect of a specific disaster. And it would also allow different disaster events to be meaningfully compared alongside each other.

3. Research Objectives

In observing the impact of a disaster on the various dimensions of household well-being, two questions present themselves:

1. How can the value of the non-tradeable household resources be measured, in comparison with those that can

be measured in economic terms? Alternatively, can the importance the household (or community) places on those resources be gauged and in some way compared with an economic standard?

2. Can the loss or damage to the various resource categories be assessed in a way that allows the effects of different disaster events to be compared to each other?

This research proposes a means of assessing the value of the various resource categories in relation to each other, and of gauging the effect of a disaster event on these respective categories, based on the subjective perceptions of members of the affected communities. From this, an impact profile of a specific disaster across the categories can be described, as well as the overall severity of the disaster. This provides a useful means to compare and consider the disaster outcomes and their implications for the affected population.

4. Methodology

As outlined above, household and community resources include non-tradeable categories, which cannot be evaluated in monetary terms in the same way that economic resources are. This research takes the premise that community members nevertheless recognize their importance, and that they can give a subjective judgment of their relative value, in comparison to a recognized economic benchmark. Therefore, an approach was adopted of engaging small groups of knowledgeable community members in structured group interviews (SGIs) to obtain a consensus on pertinent features of their community, including the effects of the specific disasters. The interviews followed a prescribed format through a questionnaire, with information taken on a field data sheet [16, 17]. Through the SGIs, the participants' responses were sought as follows:

1. The "threshold income" [15] was defined as one that a household of average size would require just to meet their basic needs through the year, without facing shortages but also not enjoying surpluses. The participants were asked for their consensus what this income level would be for their community.
2. As far as possible, simple economic profiles were developed of typical households representing respective segments in the community (from the poor to those who are well-to-do) with respect to their holdings and possessions, what kind of house they would have and its value, etc. In particular, the "threshold segment" was designated as one that has just enough household economic resources (land, fields, livestock, etc.) to provide their own basic needs through the year without having to leave the community to look for outside work.
3. A visual exercise adapted from Jayakaran [18] was employed to gauge the value of the various resource categories relative to each other. The five resource categories outlined above were labeled on a sheet of paper and a short description was made of each of them, with discussion to illustrate their importance to household well-being. The participants were then asked to distribute 25 seeds over the five categories on the paper, to indicate the importance they would attach to each resource category, as shown in Figure 1. Five seeds on every category would indicate they all have equal importance. Adding seeds to

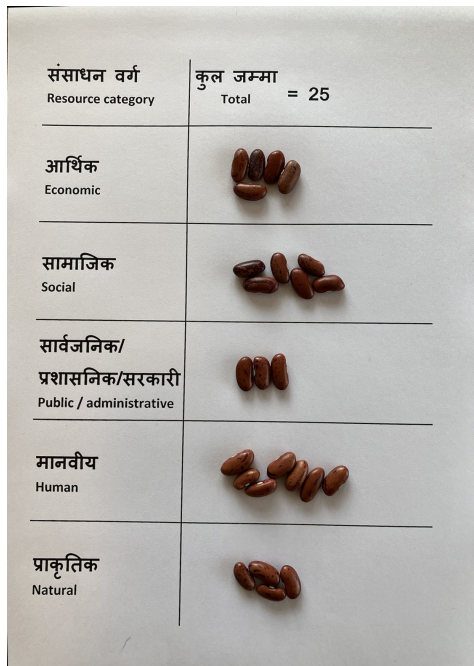


Figure 1: Seeds distributed to indicate perceived value of resource categories

one category (increasing its importance) meant a decrease for the other categories. A rule was made was that the economic resources category must have five seeds or more, but it could not have less. This rule reflects the premise that the basic economic needs of a household (for food, clothing, shelter, etc.) must be met, before they can plausibly consider the value of other categories, such as social capital or public/ administrative resources, etc. Thus, five seeds on the economic category represented the threshold level of economic resources.

4. The three disasters which have affected Nepal in its recent history were then discussed, with the observation that each of them affected the diverse resource categories in different ways and to different degrees. To gauge the dissimilar impacts on the respective categories, another exercise was carried out, with ten seeds placed on each category to represent the level of household well-being in the period before the disaster happened. Then the effect of the disaster was represented by removing some number of the seeds from each category, so that the remaining seeds represented the level of well-being after the disaster, as shown in Figure 2. The number of seeds removed indicate the degree of loss or damage the community experienced to that resource category; namely the disaster impact on that category.

5. Study Areas and Data Collection

To test this methodology, communities were chosen that were fairly similar to each other, so that differing results would be due to the different disaster effects and not to divergent community characteristics. The research was conducted in eight communities in west and central Nepal, as shown in Figure 3, typical of the remote, hilly regions of Nepal where people have traditionally relied on subsistence farming and herding for their livelihoods.

Figures 4 to 6 show photos from the fieldwork. The SGIs had from 3 to 6 respondents, who were typically community leaders

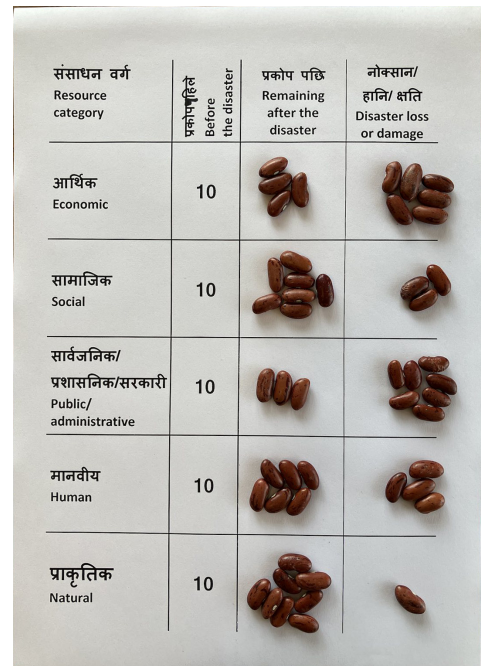


Figure 2: Seeds distributed to indicate perceived impact of disaster on respective resource categories

familiar with the local situation and the community’s history. Jumla, Mugu and Humla Districts were not directly affected by the Gorkha Earthquake. But all aspects of the disaster were widely reported so that people throughout the country were intimately familiar with it. In these locations the participants were asked to imagine the effects disaster in their own situation.

Structured Group Interview (SGIs) Location and Communities			
SGI #	District	Nagar/ gaupalika	Community
#1	Jumla	Patarasi	Tirkkhu
#2	Mugu	Luma	Chayanath
#3	Humla	Chankeli	Devkota
#4	Gorkha	Arughat	Arughat bazaar
#5	Gorkha	Darche	Kasigaun
#6	Gorkha	Arughat	Dunchet
#7	Gorkha	Arughat	Pokhari
#8	Dhading	Nilkantha	Namunatol

Figure 3: Communities where SGIs were conducted



Figure 4: Approaching Kasigaun, Gorkha District



Figure 5: Structured group interview (SGI) in Jumla



Figure 6: 25-seed SGI exercise in Arughat, Gorkha District

6. Results and Analysis

The structured group interviews showed that the SGI participants could readily engage in exploring the topics concerned. They could relate to the concept of a threshold level of minimum economic resources necessary for a household to be maintain itself adequately (*jibika parjan* in Nepali), and they could characterize the make-up of the community by giving estimates of how many of their neighborhood households comprised various segments (from very poor to wealthy) in relation to the threshold level.

Even though the idea of non-tradeable resource categories had probably never been made explicit to them previously, they understood the discussion and affirmed these categories as important factors in securing household well-being, in addition to having economic resources. These exercises produced a great deal of discussion, leading at some point to a consensus among the SGI participants. The numbers resulting from these exercises were reviewed with the participants before the SGI ended. In some cases this led to re-consideration and re-adjustment of certain values, based on further discussion.

The average consensus from the eight SGIs of the threshold monthly income for a household of average size was NRs 21,250. The figures for the subjective value attached to the various resource categories by the participants in the eight SGIs, expressing their perceived importance to household well-being, are shown in Figure 7. As with any subjective impressions, their responses varied over a certain range, and changed with the flow of the discussion as different points were addressed.

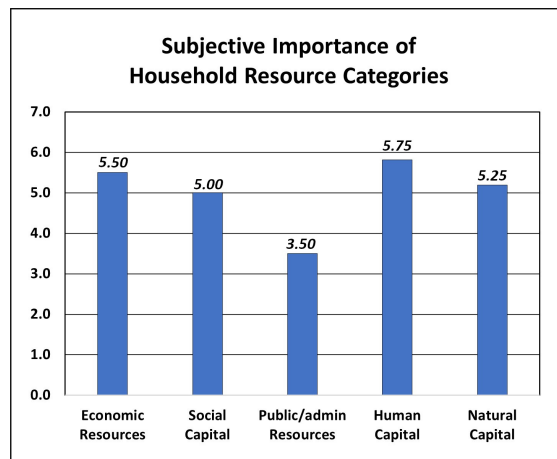


Figure 7: Perceived value of household resource categories

The table in Figure 8 shows the perceived loss in well-being caused by each of the disasters in the respective resource categories, as well as the total loss, as perceived by the SGI participants.

Resource Category	Well-being before disaster	Perceived Loss in Well-being		
		Covid pandemic 2020-2022	Gorkha Earthquake 2015	People's War 1996-2007
Economic resources	10	7.1	6.9	5.5
Social capital	10	5.1	2.4	5.2
Public/admin resources	10	4.3	3.5	6.9
Human capital	10	3.8	3.9	5.3
Natural capital	10	1.1	4.1	1.5
Total	50	21.4	20.8	24.4

Figure 8: Perceived loss through disaster event from original level of well-being in respective resource categories

The graphs in Figures 9 to 11 show the same information graphically. These give a visual depiction of the impact profile of each of the disasters across the respective resource categories.

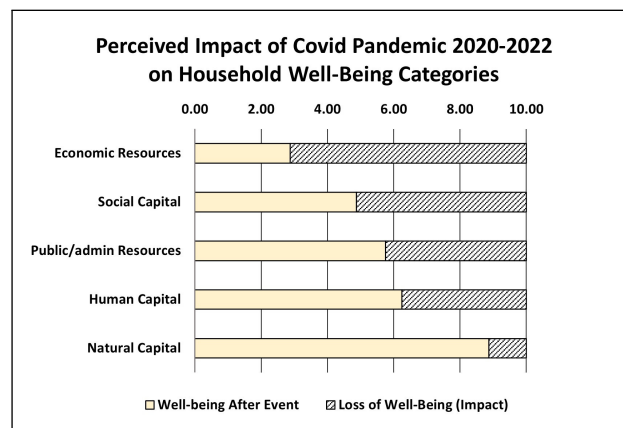


Figure 9: Impact profile of Covid pandemic

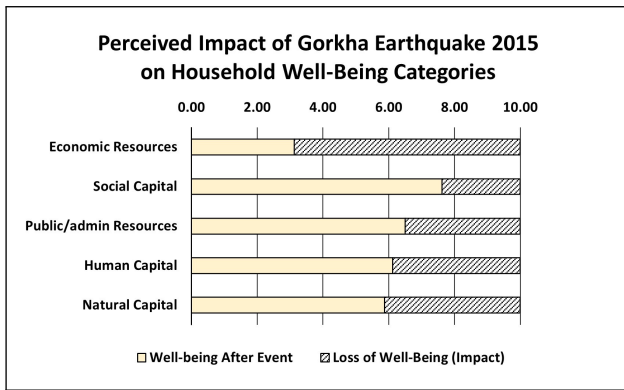


Figure 10: Impact profile of Gorkha Earthquake

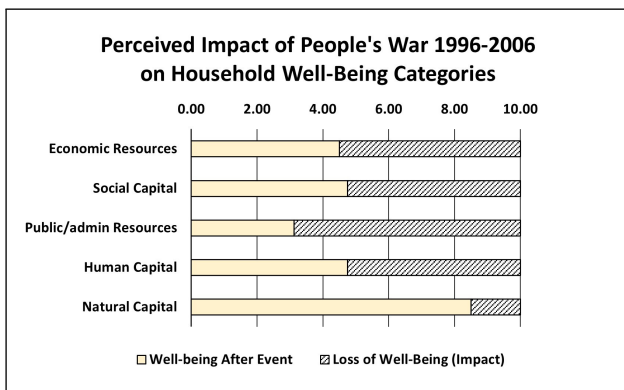


Figure 11: Impact profile of People's War

7. Discussion

The three disasters can be compared on the basis of the results above, which also leads to further observations.

The importance of the non-tradeable resource categories for household well-being is confirmed by the values assigned to them by the SGI participants. Only half of the SGIs (4 out of 8) assigned more than the minimum value to economic resources (placing 6 beans on it instead of just the requisite 5), meaning it was more important to the participants to have comparable resources in the other categories, than to have additional economic resources above the threshold level. This bears out the argument that these other components of household well-being should not be neglected, just because they are difficult to measure.

While the the highest value was placed on human capital, similar values were also assigned to economic resources, natural capital and social capital.

Public/administrative resources is assigned a comparatively low value. Discussion revealed that this was not so much a reflection of its lesser importance in the eyes of the participants, but rather a lack of confidence that the governmental systems would function as hoped or expected to address household needs in times of crisis. Given this perceived weakness, it is considered better to place more reliance on the other categories.

The impact profiles shown in Figures 9 to 11 allow the respective disasters to be compared. While the disaster impacts on some resource categories are similar, it is seen that other categories can be impacted quite differently.

The perceived impact on economic resources was very large for the Covid pandemic and for the Earthquake. The impact was somewhat less for the People's War, even though still substantial.

The impact on social capital was also significant for Covid and for the People's War. Discussion revealed that this impact was due to isolation and and loss of normal social contacts during Covid, and to distrust and broken relationships during the People's War. The impact on social capital for the Earthquake, stemming from the displacement that communities experienced when their houses were destroyed and disruption in their normal relationships, was much lower.

Regarding public and administrative resources, the impact of the People's War was very large, reflecting the disruption the communities saw in the governmental affairs that resulted from the open conflict between the Maoists and the Nepal Army. The competing power structures meant that villagers would have to take sides, and then would subsequently suffer retribution from the other side. Some of them were also coerced to take up arms in the conflict. The impact of Covid and Earthquake on perceived public and administrative resources was less. Again, this reflects not so much a reduction in the governmental capacity, but rather unfulfilled expectations in those crises of what they felt the government's response should be.

The impact on human capital was perceived to be higher again for the People's War than for Covid and for the Earthquake. This again reflects the greater costs exacted in terms of deaths, human suffering, and the resultant uncertainty and instability.

Natural capital was regarded as almost untouched by either the Covid pandemic or the People's War, while a moderate impact was shown for the Earthquake. This reflects the damage to the physical environment in that event. Since the communities involved in this research are located in remote, hilly regions, the damage caused by landslides to their upland fields and in other ways was a significant factor in the Earthquake.

Regarding the overall impact on all the resource categories taken together, it is seen that the People's War was perceived to have the greatest impact; greater than the Gorkha Earthquake or the Covid pandemic. While the perceived economic impact of the People's War was somewhat less than the other two disasters, it had the highest impact of the three on social capital, on public and administrative resources, and on human capital. It is also noteworthy to consider that, of the three events, the People's War was most distant in the past. Questions about that period produced lively discussion about the difficulties and challenges it caused, with the older participants taking the opportunity to re-live many of their personal experiences.

The overall impact of the Covid pandemic and the Earthquake are seen to be quite similar. The difference in their profiles is that Covid took a greater toll on social capital, while the Earthquake took more from natural capital.

Regarding the Covid pandemic, the observations above highlight a basic dilemma that the responsible authorities faced: While controlling and reducing the spread of the disease was a paramount priority, the measures taken to do this had significant negative consequences on other dimensions of household well-being. Consider that the Covid pandemic was seen to have a fairly moderate impact on human capital (reflecting deaths and disease) while at the same time, its impact on economic

well-being was the most severe of any of the recorded impacts. In a setting where large numbers of households subsist at the threshold level of economic well-being, many lives and livelihoods were no doubt jeopardized by the measures taken to combat Covid. In the face of multiple vulnerabilities, compromises have to be made; one component of household well-being cannot be exclusively favored while sacrificing others, such that overall household well-being is undermined.

The discussions about household economic resources in the SGIs made it clear that large numbers of households in many communities depend on outside employment to sustain their families. Their own holdings (in terms of fields, livestock, etc.) produce only enough to cover their needs for part of the year – typically six months, or even just three months or less for significant numbers of people. (The very poor segments in some communities have no fields, and only work the fields of other families, receiving part of the harvest as payment.) This is coupled with significant population growth in these communities over the last 30 or 40 years. As a result, most of the households need to send their working-age members to seek employment in neighboring districts or cities, or in India for part of the year, or further abroad in the Middle East, Malaysia, or elsewhere. The remittances sent by these workers to their families are a key feature in Nepal’s economic development in the last few decades.

The severe economic impact of the Covid pandemic in Nepal was largely due to the closure of these avenues for making outside income. This highlights the unexpected consequences which world events like the Covid pandemic can have in distant places.

Abundant anecdotal evidence suggests that even in normal times, there can be significant risks in pursuing work overseas. Exploitation of foreign workers is not uncommon. To pay the manpower agencies who arrange overseas employment, many families take major loans at high interest rates. If things do not work out they may fall into serious debt. In these cases the workers and their families often have little recourse. Those who leave for overseas employment tend to be members of the younger generation, those who are able-bodied, more highly skilled, and better educated. In view of the substantial human capital represented, it is ironic that these communities take considerable risks to send them far from home.

Another observation concerns the question of “avoidability.” The Covid pandemic and the Gorkha earthquake could not be foreseen and were beyond human control. The People’s War, in contrast, was the result of individual and collective choices, and cannot be considered to have been inevitable. In comparison with the other disasters, this makes the War all the more tragic.

8. Conclusions

An approach for assessing the subjective value of non-tradeable (non-economic) household resources is presented here, by gauging the importance which the community attaches to them. It also allows the loss or damage to these resources to be assessed, so that an impact profile of a disaster can be characterized across the respective resource categories. In this way a more comprehensive picture emerges of the disaster effects on the various dimensions of household well-being, which allows diverse disasters to be compared alongside each

other. This is based on the perceptions of community members in the affected population expressed quantitatively. The process of reaching a consensus uncovers relevant issues, and this suggests this methodology could find wider application in disaster studies.

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