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COMPREHENDING LANDSLIDES, MGNREGS AND DECENTRALISED GOVERNMENT: A STUDY IN SIKKIM AND DARJEELING

Shikha Subba*

Abstract

In India, over 12percent of the total land is vulnerable to landslide disasters. Being a region-specific disaster and a local problem, landslides have to be dealt with locally. In this regard, a decentralized form of governance is considered to be more suitable for disaster management and risk reduction. Sikkim and Gorkhaland Territorial Administration region (consisting of Darjeeling and Kalimpong districts) in West Bengal frequently face landslide problems. Both regions have similar geological, geomorphologic, geographical structures and common landslide problems. There is, however, a difference in terms of local government that deals with the landslide disaster. Sikkim state is considered to be having one of the best decentralised governments in the country. However, in the Gorkhaland Territorial Administration region, local administration functions are undertaken by the district government since there is no local government at the village level as elections have not been held

In this paper, we examine the role of the local government in disaster risk reduction. First, we discuss the functions assigned to local government in disaster risk reduction in both regions. Second, we analyse the performance of disaster risk reduction-related activities undertaken under the Mahatma Gandhi Rural Employment Guarantee Scheme (MGNREGS). The key finding is that the performance of Sikkim is better in the implementation of MGNREGS activities such as flood control, water conservation and harvesting, land development and renovation of traditional water bodies which have considerable potential to reduce the risk of landslides. It is argued in the paper that the better performance in Sikkim can be attributed to the decentralised government in the state.

Keywords: Decentralisation, Disaster Risk Reduction, Landslides, Darjeeling Gorkha Hill Council, Gorkhaland Territorial Administration, Mahatma Gandhi National Rural Employment Guarantee Scheme.

Introduction

It is estimated that 30 percent of the World's landslides occur in the Himalayan region which spans five nations - India, Nepal, China, Bhutan and Pakistan. Nearly 15 percent of the land in India is landslide-prone to various degrees. The most sensitive area in the country is the Himalayan region, the Nilgiris, Western and Eastern Ghats. Himalayan landslides kill one person per 100 sq km per year. It is estimated that the average losses due to Himalayan landslides cost more than Rs. 550 crores per year and causes more than 200 deaths (NDMP 2016).

Darjeeling and Sikkim Himalayan Region[1] frequently experience landslides. A study on the effectiveness of the local government in this region is interesting because local decentralised government is present in Sikkim, while decentralisation government has not been functioning in the Darjeeling region for the last one-and-half decades. Therefore, there is a need for a good methodological setting for the study of the effectiveness of local decentralised government in addressing landslide-related disasters.

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[1] Darjeeling is a district from the Indian State of West Bengal located in East India, while Sikkim is a North-Eastern state. The two regions are more prone to landslides, the details of which are provided in the subsequent section of this paper.

Local government is best suited to deal with landslides as these are local disasters. Messer (2003) argued that disaster is mostly a local phenomenon and rarely affects the entire country. Since these are local disasters, the use of local information, knowledge and resources is critical for effective disaster management including risk prevention measures. Even if the central government is not interested in disaster risk prevention and preparedness, local politicians, who are accountable to their voters, can draw the attention to the central government and also raise funds locally and allocate more resources for disaster preparedness.

The role of local government in three phases of disasters can be as follows. The ***prevention measures in the pre-emergency phase*** typically include risk mapping, application of building code, land zoning, construction of dams, embankments, etc. The local government can undertake functions relating to these activities. ***The emergency phase*** requires an immediate and quick response. A decentralised government, located close to disaster-affected citizens, can mobilise resources very quickly using local knowledge and expertise. Local politicians who wish to garner political capital will have strong incentives to participate in relief and rescue efforts. ***Rehabilitation and reconstruction in the post-emergency phase*** can also be effectively implemented and coordinated by the local government with appropriate assessment of the damage and proper targeting. In short, greater availability of information and the presence of accountability mechanisms, targeting efficiency and cost-effectiveness may lead to efficient disaster risk management by the decentralised government.

Against this background, this paper attempts to comprehend the role of local government in landslide risk reduction. In the next section, an attempt is made to delineate the functions assigned to local government in disaster risk reduction with the help of a review of official documents and interviews with officials. As the discussion in the second section below shows that formal functions assigned to the local government in Sikkim and West Bengal are related to disaster management; but, they are more related to relief and rehabilitation and not so significant in the case of disaster risk reduction. Even so, as the discussion in this paper shows, the local government in Sikkim has been playing an important role in landslide disaster management as compared to the Darjeeling region.

Discussions with the officials revealed that funds earmarked for Mahatma Gandhi National Rural Employment Scheme (MGNREGS) have been used to undertake measures aimed at landslide disaster risk reduction. Under this scheme, livelihood security is provided as a legal right. The Gram Panchayats are the key local organisations for planning and implementing MGNREGS. The activities undertaken under MGNREGS are related to the greater environmental services such as groundwater recharge, flood control (risk reduction), providing irrigation and improving soil quality, soil moisture and retention (erosion control) etc. (Rajasekhar *et al* 2012).

Several of these activities have the potential to reduce the risk of landslide disasters. According to a study undertaken by Institute for Rural Management Anand (IRMA) in Sikkim, MGNREGA has provided a platform to undertake the pertinent community activities. Land development activities such as flood control, soil erosion and those enhancing land stability, etc., have been undertaken in the state and increased the level of community participation in MGNREGS. The case studies by IRMA (2010) show that MGNREGS activities have contributed to the reduction of landslide risk. This implies that MGNREGS may have significantly contributed to landslide disaster risk reduction. However, the effectiveness of

MGNREGS in the landslide disaster risk reduction may be less in the Darjeeling region due to the absence of a local decentralised government, which, as per the design, has been entrusted with the responsibility of mobilising people to present their needs and preferences for the activities under the scheme, decentralised planning to identify the shelf of projects and implementation of MGNREGS works. The effectiveness is likely to be better in Sikkim because of the well-functioning decentralised government. To test this hypothesis, we have collected secondary data from the official website of MGNREGS and analysed the same to examine whether the local government in Sikkim is more successful in the implementation of MGNREGS.

To understand the role assigned to the local government in the Constitution and by the higher levels of government, interviews were held with officials from both Sikkim and West Bengal. In Sikkim, personal interviews were held with the Secretary of Panchayats at Gangtok, District Disaster Management Officer (DDMO) and elected representatives of Zilla Panchayat in South Sikkim district and elected GP leaders. The interviews, conducted with an open-ended questionnaire, focusing on the functions assigned to the local government regarding landslide risk disaster management, staff provided to undertake these functions and funds allocated.

In so far as the Darjeeling region is concerned, a discussion was held with the Principal Secretary of Panchayat, West Bengal, at Kolkata. In the year 2017, the Darjeeling region was bifurcated into two districts: Darjeeling and Kalimpong. The newly-created Kalimpong district, which has a relatively larger area exposed to landslide disasters and borders Sikkim state, is appropriate for the study. Hence, interviews were conducted with DDMO located at the headquarters of Kalimpong. Since Zilla Panchayat does not exist in the district, no discussion with elected representatives at the district level could be held. After the discussion with the DDMO, it was learnt that at the village-level nominated Executive Assistant is entrusted with the responsibility to deal with landslide disasters. We have therefore spoken to this official from the District Administration. The information collected with the help of a checklist included the institutions that are assigned to deal with landslide disasters in the Darjeeling region governed by Gorkhaland Territorial Administration (GTA), funds allocated, and so on.

Landslides in Sikkim and Darjeeling

Landslides are a widespread phenomenon and these are major hydro-geological and anthropogenic hazards that not only affect the hilly region but also the mining areas, plateau river terrains, and coastal and offshore areas (Nad 2015).

Darjeeling district in West Bengal and Sikkim state (hereafter Darjeeling-Sikkim region) are highly prone to landslides. The highly vulnerable areas of landslides are those which are subject to Seismic shaking, mountainous land with high relative relief and places where mining or land use has been unscientific. The moderately vulnerable areas are those that suffer from land degradation, areas covered with thick sheets of loess and also the areas with high intensity of rainfall and poor drainage system.

The rising trend of the Himalayan young fold mountains is also one of the basic reasons for frequent landslides in these regions. An All India Soil and Land-use Survey in some areas of Darjeeling district was carried out by the Ministry of Agriculture, Government of India. Barring this, there is no

systematic soil mapping in this region. Therefore, there is no database of how much soil cover has been destroyed (Nad 2015).

In the Darjeeling-Sikkim region, several deaths due to landslides have been reported. Primarily, landslides are the result of two main causes: physical and human-induced factors. In the context of the Sikkim-Darjeeling region, the ***physical factors*** for landslides include; (i) shocks and vibration occurring from the earth's seismic activity; (ii) high rate of soil erosion and heavy precipitation especially during the time of monsoon rainfall; (iii) an increase in the slope angle if stream erodes the bottom slope; (iv) increase of pore water pressure in the slope materials, exceeding the water holding capacity of the soil and surface runoff.

The ***human-induced factors*** include local shocks and vibration occurring from the operation of heavy construction machinery, steepening of the slope due to building works when there are additional weights placed on the slope by dumping of waste or by building construction, deforestation, the unscientific way of mining and quarrying that had reduced the basal support ofthe slope, heavy vehicular movement to local shocks and vibration, heavy land degradation by human activity, roadways construction, population pressure, use of non-degradable materials like plastics etc(Nad 2015). The discussions with key stakeholders (state-level officials and others) from Sikkim during the visit show that most of the landslides in the region occur because of excess human intervention (such as construction activities) on the topography.

Administrative arrangement in Sikkim and Darjeeling

Sikkim became one of the Indian states in 1975. Owing to the historical antecedent, Sikkim did not witness the community development phase experience of the early 1950. Under the Indo-Sikkim Treaty, 1950, it was agreed to have progressive association of people with the governance of the state, for that matter in the formation of village Panchayats on an elective basis. The local area Panchayats were established in 1951 but the then government of Sikkim did not show any interest in the proper functioning of these bodies. These institutions became defunct as soon as they were established (Dhamala 1994).

The Sikkim Panchayat Act, 1965, was an attempt at establishing Panchayat Raj Institution in Sikkim. The Act stipulated non-hierarchical Panchayat at the village level. The block Panchayat constituted under this Act continued till 1981. During this period, four elections were held in 1966, 1969, 1972 and 1976. Block Panchayats were given a wide range of functions which may be grouped under three heads, a) development, b) welfare and c) agency.

Popular participation is the cornerstone of the Panchayat raj system. This was lacking in the Panchayati system established under the Sikkim Panchayat Act, 1965 though much lip service was given to this objective before 1975. Real participation was sought to be ensured with the enactment of the Panchayat Act 1982. In keeping with the recommendations of the Ashok Mehta Committee, a two-tier system was introduced. The 73rd Constitutional Amendment Act also stipulated a two-tier Panchayat system for the state because it had less than 20 lakh population (Dhamala 1994).

The state's two-tier system of local governance in rural areas consisted of the Gram Panchayat at the lowest level and Zilla Panchayat[2]at the district level.To fit with the various developmental profiles of the villages which have different needs and aspirations, remote locations etc, decentralised governance had to focus on need-based development. To achieve these needs, Block administrative centres have been established to provide administrative, accounting, and technical support to a cluster of gram Panchayats. These centres functioned as support offices for clusters of agriculture and education sectors to support the cluster of Gram Panchayats. Institutions that facilitate decentralisation, i.e. the District Planning Committee, the State Election Commission, and the State Finance Commission, have been made fully functional. In addition, decentralised planning has been formalised with the Village Development Action Plan (VDAP) exercise, in which perspective multi-sectoral plans are under preparation at the Gram Panchayat level (Tambe*et al*2012).

The focus on empowering the Panchayats was initiated in 2002-2003 with the devolution of specific functions, transfers of more grants and posting of suitable personnel to the Panchayats through the ideal design of the three Fs- "Functions – Funds – Functionaries" (Dafflon 2011).

According to the Ministry of Panchayati Raj, Government of India, in 2010–2011, Sikkim was ranked third in the country and ranked first among the smaller states in performance and accountability. The overall development through the decentralisation process has gained marked achievements.

The state of Sikkim has been progressing remarkably well in terms of rural development. The decentralised governance helped to rebuild the development in many aspects, and the rural poverty had declined from 30.9 percent in 2005 to 13.1 percent in 2010 (much less compared to the country's average is 33.8 percent). The total forest cover area accounts for 47.59 percent which is double the country's average of 23.81 per cent. Through the local representation, the needy households are identified for the housing programme; as a result, Sikkim was declared as a katcha free house state by 2013, and it is the first state to achieve 100 percent sanitation (NSSO 2010). The rural road connectivity has increased, and the protected area coverage is 33 percent which is far above the national average of 5 percent. These are very pertinent outcomes of decentralisation which are important for Disaster Risk management.

Darjeeling: Gorkhaland Territorial Administration (GTA)

The Gorkhaland Territorial Administration comprises of Darjeeling District and the recently-bifurcated district of Kalimpong. Until 2012, the administration was under Darjeeling Gorkha Hill Council (DGHC) and from 2007 the region is administrated under Gorkhaland Territorial Administration (GTA).

The administrative system in Darjeeling is different. Since 2000, under the then Hill council of Darjeeling Gorkha Parisad, Panchayat elections have not been held in the last 18 years (Chhetri 2016). There was discussion about conducting a three-tier Panchayat election. However, it did not happen, as

[2] However in North Sikkim the traditional village administrative system known as Dzumsa, can be found in two villages of Lachen and Lachung. It was established in the 19th century. The Dzumsa is directed by a group of people, elected or designated by villagers depending on the period, to represent them and manage village affairs. This system exists in Lacehn and Lachung, was officially recognised in 1985 and continues to function. The Dzumsa isvested with administrative functions such as economic mobilisation, decision-making in common affairs, employment, etc. However, they also play an important role in times of emergencies, natural calamities and deaths by asking every villager for some amount of contribution.(Sabatier)

it could only be done after making a few amendments to the laws about conducting such elections. A proposal for a three-tier Panchayat election was forwarded by the state to the central government and both ruling and opposition parties in the hills had also given their consent. However, there was no further development on this. We hypothesize that the lack of Panchayats may have affected many areas, especially rural areas where development benefits through the Panchayat system may not have reached.

Gorkhaland Territorial Administration (GTA) was constituted in 2011 after the Gorkhaland Territorial Administration Act of 2011 was passed. All the administrative / executive/ financial powers were vested with the Territorial Authority. The Disaster Management activities were listed under Section 26 (XXXV) of the GTA Act of 2011.

In a notification issued by the Disaster Management Department, it was noted that the two programmes administered by the department are: i) Distribution of House Building Grants for people who are affected by natural calamities like fire, flood, cyclone, earthquake, landslide, tsunami, avalanche, landslide and cloudburst, and, ii) Distribution of Economic Rehabilitation Grant among persons belonging to the BPL category against fixed quota.

In the notification, the procedure for sanctioning these grants was revised and specified as follows. A four-member Joint Inspection Team for Rural Areas consisting of a Block Development Officer (BDO), concerned Member of GTA for the area, Pradhan (his or her authorised representative), and leader of the opposition in Gram Panchayat will be constituted to select the beneficiaries. In the absence of an opposition leader, there will be no fourth member. The BDO will prepare and approve the priority list of beneficiaries in consultation with the Members of GTA after the finalisation of claims and objectives and send the proposal for sanction of grant to the Principal Secretary of GTA. In so far as grants for economic rehabilitation is concerned the members of GTA will be consulted by the BDO before finalising the list of beneficiaries and the list will be sent to the Principal Secretary of GTA. This implies that there is no role for people's representatives in the selection of beneficiaries and distribution of grants to disaster victims in the area governed by GTA.

Local government in the landslide disaster risk management in Sikkim and Darjeeling

In Sikkim, a two-tier decentralised government exists. According to the notification issued by the Rural Management and Development Department, Government of Sikkim (dated 29/04/2008), the state of Sikkim has transferred all the 29 subjects to Panchayati Raj Institutions (PRIs) as specified in Article 243G of the Indian Constitution. In so far as the Disaster Management is concerned, the Zilla Panchayat is vested with the functions of: i) investment in preventive measures and also preparedness; ii) minor repairs and maintenance of activities (with a budget ranging between 10 to 20 lakhs); iii) assisting in the assessment of damages during natural calamities; and iv) providing training for relief and rescue work, coordinating with district relief committee and Village relief committee.

The functions assigned to Gram Panchayat are: i) temporary restoration of village road, water supply, schools and health centre; ii) mobilisation of the community for relief and rescue; iii)

identification of the victim and providing relief; and iv) organising rescue and relief through the Zilla Panchayat and Gram Panchayat Committee.

There are no elected bodies in the Darjeeling region. As a result, all the functions related to disaster management are assigned to Disaster Management Department and the BDO office at the block level.

How are these functions performed at the local level? Interviews were conducted with key stakeholders at the state and district levels to find an answer to this question.

In Sikkim, the Secretary of the Panchayat Raj Department in Gangtok believes that Panchayats play a major role in Disaster Management. According to the official, the State Institute of Rural Development has conducted several rounds of capacity-building programmes for Panchayat functionaries and these were termed to be helpful for disaster prevention. The official from this department maintained that since landslides in Sikkim are mainly area-specific and are mostly due to human intervention (road construction, etc.), the response should also be local specific. The Disaster Management Department at the district level notes that the functions relating to disaster risk reduction and providing relief during and after landslide disasters are undertaken by the Zilla Panchayat and Grama Panchayat. According to them, Disaster Management Committees have been set up in all Grama Panchayats.

For the Darjeeling region, the Secretary of the Panchayat, West Bengal, did not provide any information on the role of the Panchayat or local government in disaster management or landslide mitigation. When it was asked whether the absence of Panchayats has any implication in so faras landslide disaster risk reduction is concerned, she was non-committal. She also mentioned that she is not convinced that the local government would make any difference in landslide disaster mitigation.

According to the officer from the District Disaster Management Department in Kalimpong, Panchayats have only minimum functions in landslide mitigation. It was also clarified that only a very minimal set of activities relating to prevention and mitigation are undertaken at the grassroots level; otherwise, most of the activities are undertaken only during the post-disaster phase.

Since there are no elected bodies at the village level, some people approach the Gram Panchayat Executive office or Block office directly, whichever is convenient owning to distance if there are landslide-related issues.

Due to the lack of Panchayat Raj bodies in Darjeeling, funds for disaster management are not properly generated and used. The district office does not have any funds earmarked separately for pre- and post-disaster activities. The funds go directly to the GTA. In practice, according to the district-level official, funds earmarked for landslide management are spent only for post-disaster activities. This is because funds are released only after the submission of a monsoon report on calamities and damages that occurred in the previous year. This is usually done in the initial month (February) of the following year. Thus, the funds are not usually spent for landslide disaster risk reduction. For landslide risk reduction the only activity that the district office is undertaking is to conduct landslide awareness generation programmes for locals and school students.

There are differences in the administrative functioning of the local self-government in the GTA and Sikkim state. In the case of GTA under the state of West Bengal, the Panchayats do not seem to be

active in landslide mitigation and prevention. The major challenges for landslide mitigation, according to officials, are mainly policy-related issues, where rules are there but people are not following them; they are constructing houses in fragile zones. The other problems are natural challenges, deforestation, fund issues, financial vulnerability, physical vulnerability etc.

According to the Executive Assistant of Sangsay Gram Panchayat DGHC region, the Gram Panchayat is very vulnerable to landslides. In this Gram Panchayat, vulnerable areas and sinking zones have been identified and reported to the block-level office. For the prevention of landslides, they have planted 5,000 Vertebra grass plants in the sinking zone of the Upper Mansaydhura ward which comes under their Gram Panchayat. In the case of disaster relief, shelter points are being made in schools and community halls. School teachers, the Gram Panchayat Relief Committee and NGOs volunteer during emergencies. Regarding the funds, he added that till now there is no separate fund for landslide mitigation or Disaster Management. The last meeting with locals for landslide mitigation and management was held in 2013. There are development meetings with Block-level officials where issues about landslides, earthquakes etc. are discussed.

According to the information provided by the Executive Assistant, some people come to complain about the landslide problem after a disaster. He added public awareness is very less in the case of mitigation and prevention of landslides. Due to the absence of a village representative or elected representative, it is very difficult for an Executive Assistant to handle different issues as he needs to cover a large area.

MGNREGS and Disaster Risk Management

The above discussion shows that decentralised government is actively functioning in Sikkim and is undertaking the works related to disaster management. On the other hand, there are no Panchayats in the Darjeeling region. Did this make a difference in the implementation of development programmes that promote disaster risk reduction at the local level? We take the case of MGNREGS to address this question. As mentioned earlier, this programme is selected because several of MGNREGS works are related to land and water conservation, and potentially they can be used for disaster risk reduction. In the field, the stakeholders at the district and local levels noted that flood control works under MGNREGS were utilised for reducing the risk of landslide occurrence.

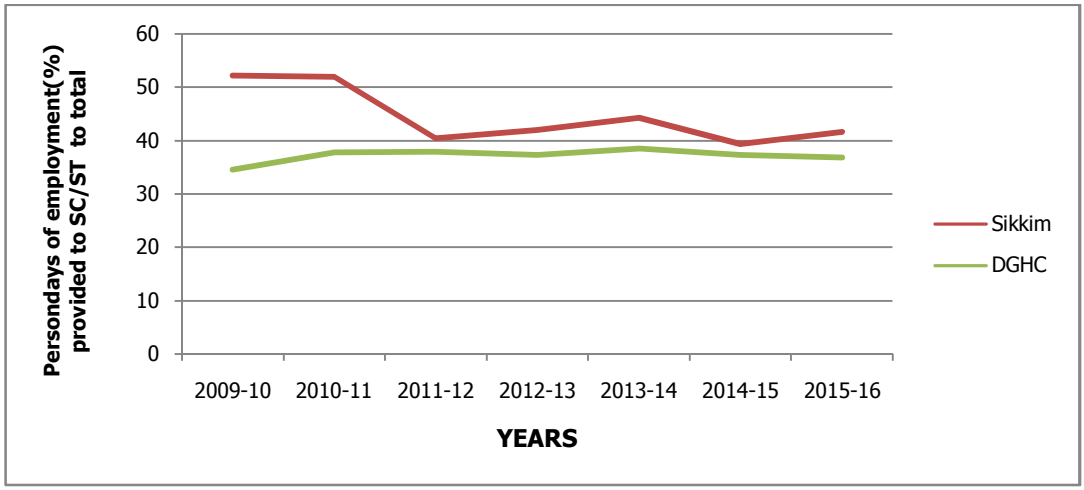
For exploring the link between MGNREGS and landslide disaster risk reduction in this section, the secondary data provided by the Ministry of Rural Development, Govt. of India, has been used. The data pertain to Sikkim and DGHC (the Darjeeling Gorkha Hill Council is an autonomous body comprising two districts – Darjeeling and the newly-formed Kalimpong district) are analysed. Although we have collected the secondary data for 2006 to 2016, only the data from 2009 to 2016 are used in this paper as figures were available for both Sikkim and DGHC region only for this period.

These data are analysed to look at the participation of different social groups, employment provided and performance of MGNREGS in Sikkim and Darjeeling. In so far as the performance is concerned, the works relating to landslide disaster risk reduction are identified. Subsequently, the proportion of completed works to total landslide disaster-related works is worked out to find out whether the performance varied across the two regions.

Figure 1 provides the percentages of SC/ST participation in MGNREGS in Sikkim and DGHC. It can be seen that SC/ST participation was comparatively less in DGHC during the period 2009 to 2016. According to the census of 2011, the proportion of the ST population is 33.8 percent and SC is 4.63 percentin Sikkim, in DGHC the percentages of ST and SC are 21 percent and 17 percent respectively.

In the case of SC/ST participation in Sikkim, the state is doing better than DGHC. The participation of SC/ST households was less in the DGHC region at 34.6 percent in 2009-10 and 37.9 percent in 2010-11, while in Sikkim 52.19 percent and 51.93 percent, respectively.

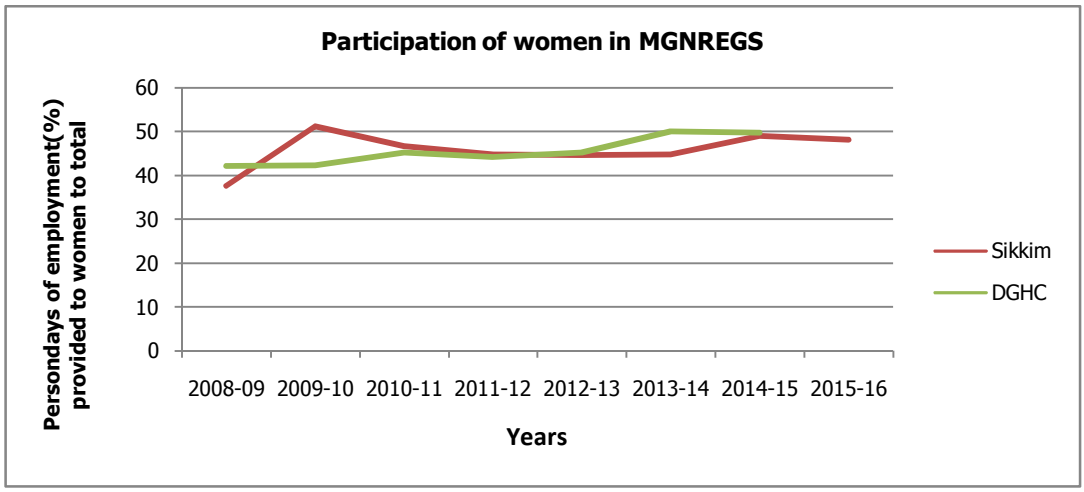
Figure 1: Participation of SC/ST households in Sikkim and DGHC



Source: http://nrega.nic.in/netnrega/home.aspx

In Figure 2, the percentage figures on person-days of employment provided to women to a total have been provided for Sikkim and DGHC. In 2010-11, the participation of women in Sikkim was higher as compared to DGHC. But in subsequent years, their participation in Sikkim declined.

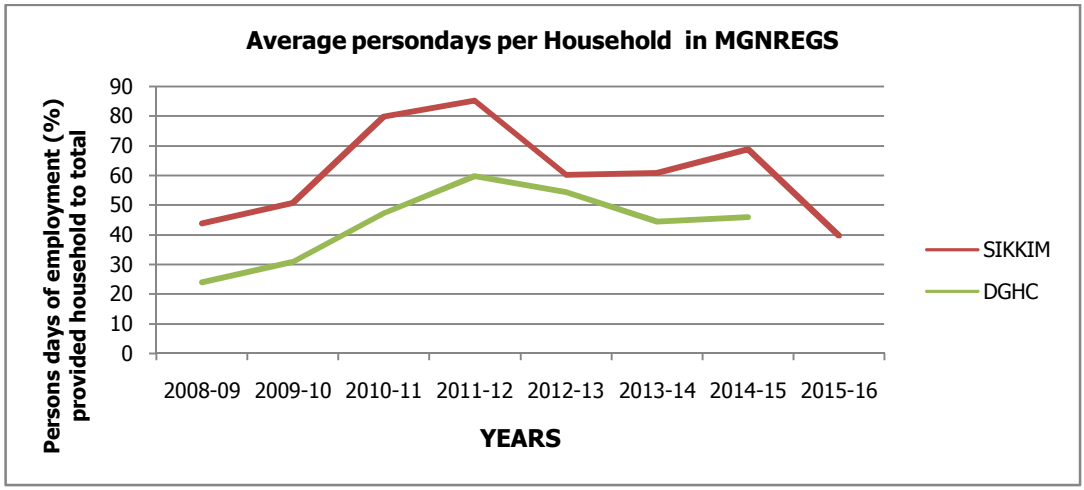
Figure 2: Participation of Women in MGNREGS in Sikkim and DGHC



Source: http://nrega.nic.in/netnrega/home.aspx

Figure 3 provides the average number of person-days of employment provided to each household. It can be seen that Sikkim state has done remarkably well in this. In the years 2009-10 and 2010-11, the average person-days of employment was in the range of 80% to 90%. Although the average number started to decline from 2011-12, the figures remained substantially above those inDGHCduring the period 2011-12 to 2014-15. This can perhaps be attributed to the well-functioning of Gram Panchayats in the state as they may have provided information, mobilised the people in the planning and implementation of works, and monitoring. On the other hand, in the case of the DGHC region, the number of person-days of employment has gone down to 45.95 in 2014-15.

Figure 3: Average number of person-days of employment under MGNREGS in Sikkim and DGHC

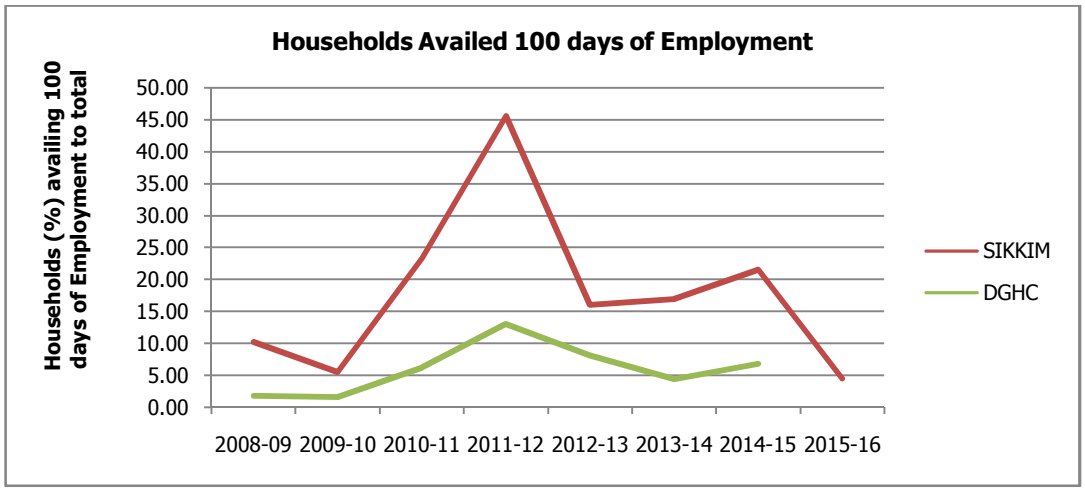


Source: http://nrega.nic.in/netnrega/home.aspx

Figure 4 provides the percentage of households availing 100 days of employment under the scheme in Sikkim and the DGHC region. It may be noted that this variable is important to assess the success of the scheme in the provision of employment and providing need-based activities for the region. It may also be noted that several observers of the performance of MGNREGS in India have noted that the scheme has not been successful because hardly 10 percent of the households have obtained 100 days of employment as provided in the scheme.

In the DGHC region, the proportion of households obtaining 100 days of employment was by and large less than 10 percent during this period. Sikkim has performed quite differently in this respect. As can be seen from Figure 4, the proportion of households obtaining 100 days of employment touched the highest of 45 percent in 2011-12 and remained higher than 15% for a couple of years. Although the figure fluctuated, the performance of Sikkim was much better than that of DGHC.

Figure 4: proportion of households availing 100 days of employment under MGNREGS in Sikkim and DGHC



Source: http://nrega.nic.in/netnrega/home.aspx

Did MGNREGS works contribute to landslide risk reduction?

Several MGNREGS works relate to land and water conservation, and can potentially be utilised for landslide risk reduction. We have identified works relating to flood control, land and water conversation, renovation of traditional water bodies and drought-proofing as important for the achievement of the objective of landslide risk reduction through MGNREGS. In the ensuing paragraphs, we will analyse the performance by looking at the rate of completion of these works to the total taken up in each year. In Tables 1 to 5, we provide the percentages of completed projects under different activities that are directly or indirectly related to landslide risk reduction activities.

Table 1 shows that Flood Control works under MGNREGA. The discussions with officials and elected representatives revealed that most of the activities about landslide risk reduction such as land terracing, Jhora training work, plantation, etc. are done under the Flood Control measures. In this regard, the completed work proportion in DGHC is far less than the national average in the respective years.

In the year 2014-15, the proportion of completed works in DGHC has come down to three percent against the national average of nine percent. However, in the same year, Sikkim has a comparatively more proportion of completed Flood Control works with 20.64%.

Table 1: Proportion of completed flood control works to total in Sikkim and DGHC region

	Sikkim			DGHC		
Years	**Projects Taken up**	**Projects Completed**	**%**	**Projects Taken up**	**Projects Completed**	**%**
2009-10	215	93	43.26	164	99	60.37
2010-11	273	181	66.30	196	86	43.88
2011-12	390	60	15.38	362	84	23.20
2012-13	475	74	15.58	962	61	6.34
2013-14	512	36	7.03	659	128	19.42
2014-15	373	77	20.64	1034	31	3.00
2015-16	286	58	20.28	1941	93	4.79
7 years Averages	360.57	82.71		759.71	83.14	
Average per village	5.49	1.26		7.48	0.82	

Source: http://nrega.nic.in/netnrega/home.aspx

Table 2 shows the proportion of completed water conservation-related MGNREGS works. Water conservation work is specially done through water conservation in arable and in-arable land, and through water harvesting by constructing check dams, stop dam, talab and village pond.

The figures, however, are not significantly positive except for some years as the proportions of completed works are very less. The average proportion of completed water conservation work in these years is - India is 24.68, DGHC 30.27% and Sikkim 31.24%.

Table 2: Proportion of Water Conservation works to total in Sikkim and DGHC

	Sikkim			DGHC		
Years	**Projects Taken up**	**Projects Completed**	**%**	**Projects Taken up**	**Projects Completed**	**%**
2009-10	258	197	76.36	5	2	40.00
2010-11	431	360	83.53	6	4	66.67
2011-12	186	10	5.38	84	20	23.81
2012-13	325	42	12.92	235	55	23.40
2013-14	386	87	22.54	94	50	53.19
2014-15	409	48	11.74	81	2	2.47
2015-16	495	31	6.26	662	16	2.42
7 years Averages	355.71	110.71		166.71	21.28	
Average per village	5.41	1.68		1.64	0.21	

Source: http://nrega.nic.in/netnrega/home.aspx

Table 3 provides the proportion of completed Drought-proofing works. Drought proofing work includes afforestation consisting of covering up degraded forest and barren land, eco-restoration of forests, block plantation and silvipasture. These activities have the potential to contribute to landslide risk mitigation by maintaining soil quality and acting as flood resistant.

However, the figures for the completion of drought-proofing work are very fluctuating and on average, Sikkim in this case seems to be performing better than the DGHC region.

Table 3: Proportion of Drought-Proofing work to total in Sikkim and DGHC

Sikkim				DGHC		
Years	**Projects Taken up**	**Projects Completed**	**%**	**Projects Taken up**	**Projects Completed**	**%**
2009-10	880	780	88.63	20	12	60.00
2010-11	578	415	71.79	209	11	53.58
2011-12	772	320	41.45	251	101	40.23
2012-13	476	205	43.06	324	2	8.02
2013-14	414	32	7.72	152	109	71.71
2014-15	633	18	2.84	23	11	47.82
2015-16	829	109	13.14	257	0	0
7 years Averages	654.57	268.42		176.57	53	
Average per village	9.96	4.08		1.74	0.36	

Source: http://nrega.nic.in/netnrega/home.aspx

Table 4 provides the proportion of completed works relating to the renovation of traditional water bodies. Renovation of water bodies includes some of the landslide mitigation measures such as check dams, maintenance of existing irrigation tanks, ponds, talabs, weirs structures, etc. In this case, the average proportion of completed work from 2009-2015 in India is 31.55%, DGHC 34.62% and Sikkim 38.19%.

Table 4: Proportion of completed renovation of water bodies work to total in Sikkim and DGHC

Sikkim				DGHC		
Years	**Projects Taken up**	**Projects Completed**	**%**	**Projects Taken up**	**Projects Completed**	**%**
2009-10	29	5	17.24	1	1	100.00
2010-11	26	17	65.38	10	6	60.00
2011-12	21	3	14.29	11	2	18.18
2012-13	23	7	30.43	29	10	34.48
2013-14	13	0	0.00	13	2	15.38
2014-15	5	2	40.00	42	0	0.00
2015-16	2	2	100.00	209	1	0.48
7 years Averages	17	5.14		45	3.14	7
Average per village	0.26	0.08		0.44	0.03	

Source: http://nrega.nic.in/netnrega/home.aspx

Table 5 provides the proportion of the completed land development works. Land development work includes landslide prevention measures such as land levelling of common land for production measures and development of common wasteland. The figures are fluctuating in both the regions. In 2014-15, the proportion of completed work in DGHC went down to 0.37% whereas the figure for Sikkim was 21%.

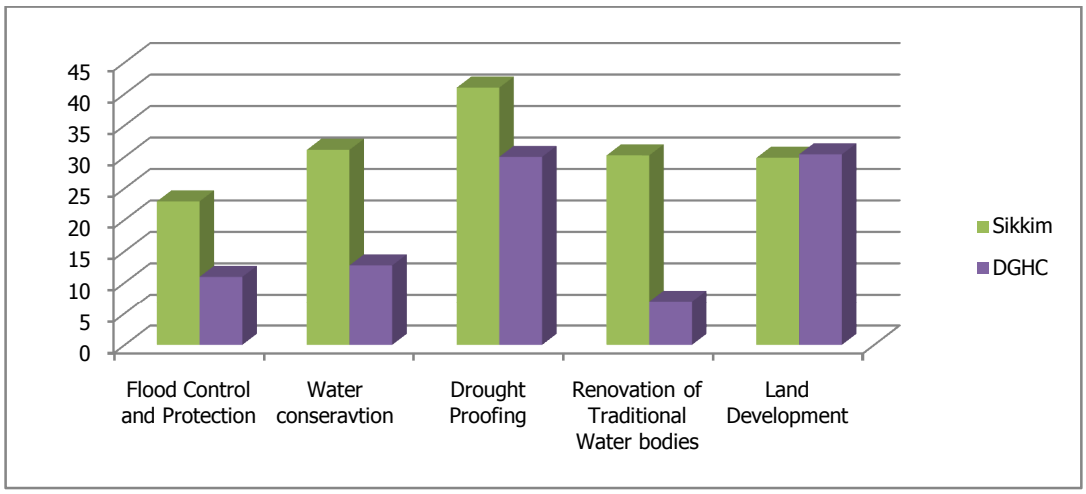
Table 5: Proportion of completed Land Development work to total in Sikkim and DGHC

	Sikkim			DGHC		
Years	Projects Taken up	Projects Completed	%	Projects Taken up	Projects Completed	%
2009-10	258	119	46.12	35	20	57.14
2010-11	305	199	65.25	133	69	51.88
2011-12	2196	311	14.16	476	140	29.41
2012-13	2034	445	21.88	1182	200	16.92
2013-14	1672	414	24.76	1116	601	53.85
2014-15	938	197	21.00	808	3	0.37
2015-16	708	113	15.96	815	27	3.31
7 Years Averages	1158.71	256.85		652.14	151.42	
Average per village	17.63	3.91		6.42	1.49	

Source: http://nrega.nic.in/netnrega/home.aspx

Figure 5, which pools the evidence on the performance (in terms of completed to total works initiated) across the two regions, shows that the performance in Sikkim was comparatively better in the case of flood control and protection, water conservation, drought-proofing and renovation of traditional water bodies. What factors contributed to the better performance in Sikkim?

Figure 5: Landslide Risk Reduction related Asset creation through MGNREGA (2009-16)



Source: http://nrega.nic.in/netnrega/home.aspx

Discussions with officials and elected representatives suggest that decentralised government in Sikkim is far more active in utilising MGNREGS funds for landslide risk reduction.

In the case of South Sikkim district, it was informed by the District Disaster Management officer that the department is collectively working with the Zilla Panchayat and Gram Panchayat for disaster management. Bamboo trenching, and plantation of Vertebra species are some of the risk-reduction strategies adopted from the district level. Till 2010, there was top-down approach in disaster management but from 2011 the focus has been given to discussion at the grassroots level and bottom-up approach.

In Sikkim, the MGNREGA officer concerned said that landslide prevention is mostly done under flood control activity which includes the maintenance of jhora (local name for drainage channel for waste and rainwater), proper drainage system, land terracing, plantation of Vetiver grass, bamboo plantation (which is considered to be good for both livelihood security and landslide prevention). Once there is job demand and the utilisation certificate is passed 100% of the MGNREGA job is implemented by Gram Panchayat.

According to the elected member of Zilla Panchayat, the Disaster Management Committee is formed at the Gram Panchayat level. The region faces severe landslide problem and Zilla Panchayat have a major role to play in all phases of landslide management. He further added that Zilla Panchayat is effective in the landslide risk reduction.

For prevention, they are carrying out activities such as land terracing, formation of protective walls, plantation, Jhora training work, catch water drains, retaining walls and breast walls. As far as relief and rehabilitation are concerned landslide-damaged houses are also retained through CMRHM (Chief Minister Rural Housing Mission). Meetings are being held among the Zilla and Gram Panchayat for discussing issues pertinent to landslides. The Zilla Panchayat is active in providing landslide awareness programmes and guiding Gram Panchayat for landslide emergencies. During landslide emergences, Zilla Panchayat comes in contact with Gram Panchayat, the District office and the office block.

The Grama Panchayat member of Turung Mamring Gram Panchayat under Namthang block, South Sikkim District, told that the area has a high problem of landslides. For prevention activities, they carry out activities such as plantation (of Vertebra grass) and building protection walls. Every Grama Panchayat has a trained Disaster Management Committee and active volunteers from all villages. On June 5th 2015, the Grama Panchayat planted 1,500 saplings provided by the forest department in the major landslide regions.

The project officer from Darjeeling mentioned that MGNREGA is the only development work under GTA. As far as the case about landslide risk reduction is concerned, the flood control activities are done, which include building and maintaining of protection wall and plantation of Vertebra grass.

MGNREGA work comes under GTA and the Executive Assistance and Gram Panchayat under District Collector; hence, the works through MGNREGA and Gram Panchayat are not functioning effectively. The officer assumed that without local rural bodies only 50% of the MGNREGA works are effective. Conversion of MGNREGA work is not successful in the case of GTA like Sikkim.

Conclusion

The Himalayan region is prone to the problem of landslides. The problem of landslides is usually confined to one region or locality. As a result, these disasters have hardly been an issue of national importance or attention. Landslide disaster risk reduction is a long-term process, and a top-down approach in the localities vulnerable to landslide disasters may not work very well and may cause a high risk to life and property.

Disaster Risk Reduction functions are vested with the central and state authority and then to some extent to the district and a little to Zilla and Gram Panchayats. Although the National Disaster Act 2005 and National Policy on Disaster Management 2009 highlight the importance of the local-level

government in disaster risk reduction, functions and roles assigned to local government are mainly related to relief and rehabilitation. The assigned role in disaster risk reduction seems to be somewhat insignificant.

The discussion with officials, including those from the Disaster Management Department, has revealed that Panchayats in Sikkim are playing an important role in disaster management. On the other hand, there is no defined role for local government in the case of the DGHC region presently known as the GTA region for landslide risk management. The absence of local representatives in the GTA region also marks the absence of an arrangement to represent the local problem and this affects the risk reduction strategies.

Secondary data on different dimensions of MGNREGS in Sikkim and Darjeeling are analysed in this paper to find out whether the decentralised government has used funds under this scheme to reduce landslide risk. Key findings from the analysis are the following: a) The total number of households obtaining wage employment under the scheme has declined in India during the period 2009 to 2016 while it has increased in Sikkim and Darjeeling region; b) The participation of people belonging to SC/ST community has been high in Sikkim as compared to India and the Darjeeling region; c) The participation of women in the programme has increased in all the three regions; d) The average person-days of employment provided to a household was substantially higher in Sikkim as compared to India and the Darjeeling region; e) The proportion of households obtaining 100 days of employment was also higher in Sikkim.

The works relating to flood control, planting of trees and grass, land and water conservation are related to landslide risk reduction. The percentage of completed landslide reduction-related works has been taken as a variable to measure the performance of MGNREGS in reducing the risk of landslide disasters in the Sikkim and Darjeeling regions. One can see fluctuations in the trend presented in the charts in the paper. If one takes up the figure for the entire period, it is clear that the performance in Sikkim tends to be better. This can be attributed to the decentralised government facilitating people's participation in the planning and implementation of MGNREGS works. The case studies presented in IRMA (2010) reveal that: "Tree plantation with broad leaf species like *Uttis, Aukhar*etc has also been carried out on village land primarily to prevent landslides" (p. 56). In another village, the women participating in the focus group discussion stated that catch drain works have been quite effective in arresting erosion of a large arable land (which runs into acres) as it channelises the gushing water into irrigation channels. They stated that "this makes water available for our land, and also prevents landslides and thereby huge personal losses as well" (p. 76).

Did the better performance of local government in the implementation of MGNREGS in Sikkim have a positive impact on landslide risk reduction? We do not have direct evidence to answer this question. However, the human and material loss on account of landslide disasters was much less in Sikkim as compared to the Darjeeling region. Data provided by the Geological Survey of India shows that, during the period 2009 to 2016, landslide disasters occurred in both the states more or less on identical dates (GSI 2018). The total number of landslide-related deaths in the Darjeeling region was 54 during this period, while it was only six in Sikkim. In addition, according to Geological Survey of India reports, the number of injuries and damages to houses and other properties on account of landslide

disasters are also high in Darjeeling. In 2009,a total of 550 houses were reported to be damaged due to a landslide in Darjeeling. It may not be completely correct to relate the lower incidence of landslides in Sikkim in the recent past to the better performance of the state in the implementation of MGNREGS. We need to have more data on this and undertake an in-depth analysis with primary data to shed more light on this.

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