

Capacity Assessment and Analyzing Capacity Gaps of Harion Municipality, Sarlahi, Nepal

Anup Thapa ^a

^aMSDRM Program,

Department of Civil Engineering,

Institute of Engineering, Tribhuvan University, Nepal

Prof. Dr. Hari Darsan Shrestha ^b

^b Professor,

Department of Civil Engineering Tribhuvan University,

Institute of Engineering, Nepal

Abstract:- Sendai Framework for Disaster Risk reduction prioritizes the understanding of the disaster risk, managing the risk governance and enhancing the disaster preparedness with the investigation for resilience. To contextualize this theme into local government and governance system, a systematic macro level study of the governance system is essential for disaster risk management. It is quite challenging task to growing cities like Harion to cope changing pattern of city with the disaster management plan because growth of cities does not correspondingly grow the capacity in relation to disaster preparedness. Capacity assessment of the city is one of primary needs to analyze the context and situation of the city which shall aid to visualize the gaps and find further needs of the city.

This research paper analyzes the capacity of Harion municipality in relation to different prevailing hazards and other possible hazards that might strike Harion. Here the data are achieved from municipal records, key informant interviews, and different governmental sites. The site was visited several times to achieve the prevailing nature and condition and for verification and validation of mapping data. The survey for capacity assessment was done by preparing the questionnaire.

This research shows the gaps and needs that the Harion Municipality needs to achieve to make a resilient municipal city. The measure and mapping of capacity done in this paper shows the general ability of the municipal city in terms of disaster preparedness. The mapping of the capacity helps the local government to analyze capacity gaps in any particular area visualizing the needs and demands in terms of capacity development that needs to be equipped. Also the study of capacity shall aid to find the buffer zone and the reliability of existing capacity during any disaster or hazard events. This will also help the concerned authority to prepare disaster response framework and incorporate disaster management plan with the developmental works.

Keywords: Sendai Framework, capacity assessment, disaster preparedness, possible hazards, governance, key informant interviews, questionnaire, disaster response framework

INTRODUCTION

The adverse effect of disaster can extend to a longer timeframe in various human, social, environmental and economic sectors resulting to the hindrance in development. Disaster resilient development is largely dependent upon the capacities owned by the respective local government in the field of planning and managing developmental activities. Capacity development is one of the major activities to substantially reduce disaster loss (SFDRR, 2015). Most of the local government in terai belt seems not to be aware and careful in the subject of analysis

of disaster vulnerabilities and disaster losses. Striking of disaster would bring these local levels to a traumatic situation. Vulnerability to disasters in Nepal is accentuated by unregulated urban and rural planning (UNDP, 2008). According to NSDRM, 2008 Nepal is a hotspot for various geophysical and climatic hazards and it is ranked comparatively very high in terms of vulnerability to natural hazards (National Disaster Report, Nepal, 2011). In Urban and urbanizing areas, it is believed that due to population growth the level of risk is increasing very rapidly. Mainly in this context, visualizing the rapid urbanization, Nepal should make it well prepared for the future scenario that could strike it. Capacity development and Capacity assessment works are recommended to be based on a detailed understanding of the situation within the concerned authority and elected members of local government (UNDG, 2008).

The hazards like fire, thunderbolts, heavy rainfall, flood, earthquake, etc. has been frequently reported in Harion municipality. The DRR portal also shows that from 2016 due to various hazards, the municipality has gone the estimated loss of Rs.1850000 with death of 7 people, missing of 2 people and around 5 injured people affecting 36 families. The hazards that are major threats to this municipality are fire, cold wave, earthquake, heat wave, snakebite, inundation and flooding. The occurrence of such hazards in the past decade, has especially affected in informal and marginalized settlements (slump area, shanty settlement, and riverbank settlement), and has resulted fear in communities blaming the local government for not being able to manage the situation. The worst affected in such conditions are usually the poor, who have major issues in service delivery. Similarly aged people, infants and children, pregnant woman, pwds, and unhealthy people are the one to suffer much.

Understanding the capacity assets, optimizes existing capacities that are already strong and well founded, strengthening the other capacities, increasing capacities in other sectors and formulating a capacity development response plan is necessary to cope with the unexpected situation that could strike the local unit due to certain disaster in some future timeframe.

The research paper here discuss about the frequent disaster and possible disaster that might strike Harion municipality in the future. This research focuses on extracting baseline information about the available resources and capacities

and the void in capacities. Further this helps to capture the capacity needs and fill the gaps in the knowledge and resource.

OBJECTIVE

The main objective of the research is to conduct the capacity assessment of the local government and find the capacity gaps. The objectives is to be attained by studying the existing governance and coordination mechanism of the local government and find the gaps and challenges in effective coordination between different government line agencies during emergency situation.

OVERVIEW OF RESEARCH AREA

Harion municipality is located in province number 2 in Sarlahi district, Janakpur zone of Nepal. The neighboring local government at the boundary of Harion municipality is Lalbandi municipality in east, Bagmati municipality in west, Barathawa municipality and Haripur municipality in south and Hariharpur Rural Municipality (Sindhuli district) in the north. Harion municipality was declared municipal city on 18 May 2016 by merging the parts of Atrouli, Sasapur, Ghurkauli and Harion VDCs. It lies in latitude between $27^{\circ} 21'13.2''$ to $27^{\circ} 84' 45.9''$ and longitude between $85^{\circ} 30' 52.9''$. As indicated in annual development plan of the city shows that the total population of city is 43924 within an area of 86.06 square kilometer. The altitude of city varies from 130 m to 550m. The municipality has eleven wards. The municipality extends from Lakhandi River in the east to Harion River in the west.

Harion Municipality, Sarlahi, Nepal

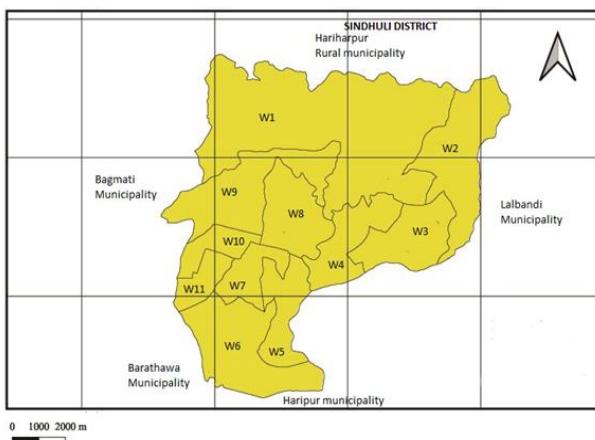


Figure 1 Map of Harion Municipality

The municipality lies in three geographical region i.e. chure, bhavar and terai. This region lies in a temperate zone. The average maximum and minimum temperature of this region is 31°C and 20°C respectively with average annual rainfall of 1699.6 mm.

The census report of 2068 B.S. shows the literate population to be 59.77 % of which 67.91% is male population and rest 52.13% is female population. Also the report shows that 68.5% population use hand-pump,

16.92% population use well, 6.88% population use tap water and rest use spring and river as a source of drinking water. The major industries and factories in this region are sugar factory, brick factories, rice mill, furniture, cottage industry, etc.

METHODOLOGY

This research is based on interpretive philosophy and as it uses both statistical and theoretical data for analysis, it is a mixed research which is the combination between quantitative and qualitative method within the same research. At later stage without using theories and hypothesis, primary data were collected through interview and secondary data was obtained from different municipal records and online sources. So the research used an inductive approach. This research is based on survey strategy and since this research does not try to compare or observe changes of phenomenon over long period, this research is a cross sectional study.

For this research first strategy of local government, governance mechanism, acts, policies and guidelines was studied to prepare the information collection framework. A review of the literature on existing approaches to capacity assessment was undertaken, in addition to a review of related literature. Relevant sources were drawn from an extensive time span. A critical and descriptive literature review was undertaken to capture previous work, major concepts and possible existing problems of the municipality. The questionnaire was prepared for survey and interview based on literature review. Checklists for the interviews with key informants and local people were prepared. After this characterization and listing of resources and institution was done. This was followed by semi-structured interviews, key informants interview and questionnaire survey.

The information collected from various sources was validated from the field studies and concerned agencies. The information is cross checked to ensure its reliability. GIS map of built-up of year 2010 and 2020 was prepared to study change in built-up area. Similarly fire brigade response map the municipality was prepared to analyze response time for fire disaster and also to analyze accessibility and remoteness of the area in the municipality. Similarly, land coverage map of 2020 was prepared to study about the recent land coverage situation of the municipality. The information and the mechanism is compared to the scenario and mechanisms of local governments various of countries as a result of which the capacity gaps can be found.

DISCUSSION AND FINDINGS

No doubts there are dynamic change in the population of the world. It is estimated that more than half of the population of world are residing in urban areas for various reasons. Increasing urbanization in Nepal has increased the pressure to the local government for delivery of service. Also the urbanization can be changed from haphazard into planned and safe type by mobilization and regulation of norms set by local government. Uncontrolled and

unplanned urbanization is sure to bring the cause of disaster.

As Harion municipality being the focused city for the people of neighboring district for education, job opportunities, ease of access to different facilities and ease of living, it is experiencing unprecedented growth in population. This city is both focal point for development and point of accumulation of risk. The major necessities like Local Disaster and Climate Resilient Plan, Disaster Preparedness and Response Plan, Disaster Risk Reduction and Management Act, etc that were identified to be the necessity of local government are still not compromised. This has created the problem in preparing guidelines for disaster fund and utilizes the funds in disaster management section of the budget. Formation and training to local volunteers and use of BIPAD portal for updating hazard data self assessment of capacity has been lagging in the municipality. All these problems and scopes are needed to be managed by the local government.

From the study it is seen that Harion municipality continue to experience rapid growth in houses and market which can be analyzed through comparing built-up area map the year 2010 A D and 2020 AD. The study of these maps indicates the fact that growth trend in built-up area is scattered type which is too random which thus accumulates the risk. The concentration of built up area is now maximum in center belt. After the center belt the south-east belt has more concentrated built up area which is the linked with Haripur municipality. The center belt has higher concentration of built up area due to access to main market and access to one of the main highways (Mahendra highway) of Nepal. Similarly, the southern belt has more concentration of built up area because of influence Indian market which is relatively cheaper and has easy trade access which is linked to Haripur municipality.

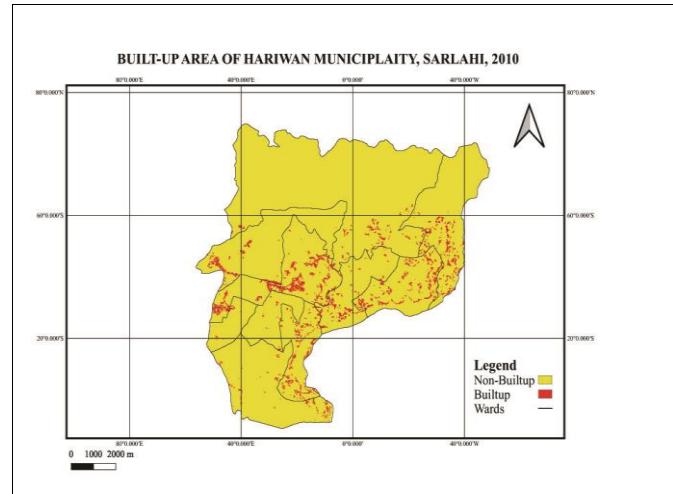
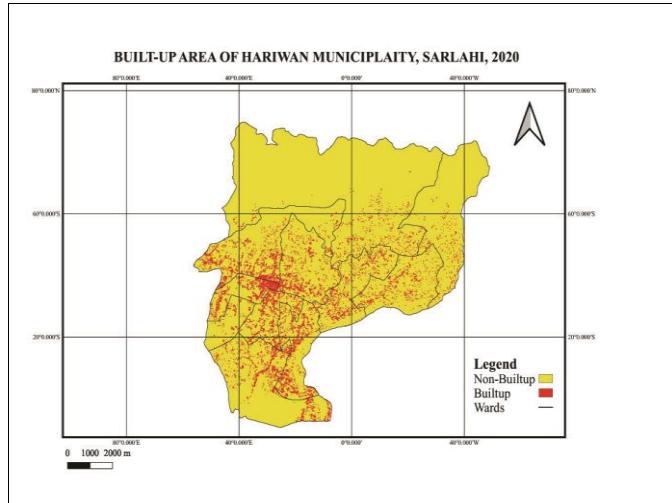


Figure 2 Change in density of built-up area of Harion municipality in a decade

The maximum part of Harion municipality is covered with vegetation. The land cover map of Harion overlaid via GIS shows the abundant amount of barren land. These barren land are seen to be mainly along the river bank. The maximum concentration of built-up area was seen to be mainly in ward 10 and in the junction area of ward 7, ward 8, ward 9 and ward 10. This is the major market area of the town and the highway pass through this zone. This shows that the built-up area concentration was maximum in these areas and distribution was being sparse in a radial from the main market area and the highway (mahendra highway). The map below presents the land coverage status of Harion municipality in the year 2020.

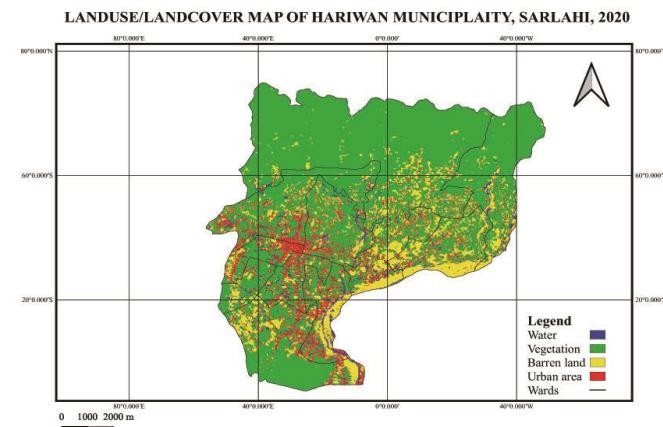


Figure 3 Land cover Map of Harion Municipality

The municipality services and infrastructure was compared to the norms and standard mentioned in 'Planning Norms and Standard 2013' the norms for cities (40000 to 1 lakh population). This showed that municipality lags in major services like road, water supply, sanitation and sewerage, waste management and storm drainage management, transportation facilities and others. Similarly, the services like hospitals, provision of open spaces, colleges and schools etc are seen to be sufficient in response to

population of the city as per the Planning Norms and Standard 2013. The municipality was facing problem in expanding access to infrastructure services with the available financial and technical resources. This may be the reason that the municipality has not been able to pay sufficient attention to address different problems and minimize the accumulated risk. Ward 10 and 11 seems to be densely populated with dense settlement lying at north and south of the Mahendra highway and the market also lies in ward 11 which therefore can be major threat in case of fire emergency.

Harion municipality was not seen to have developed integrated development plan for overall developmental activities to be run in the municipality. But for the transportation development within the municipality, it has developed municipal transport master plan for the identification, classification and prioritization of roads within municipality with a motive to construct, upgrade, maintain and rehabilitate prioritized roads on the basis of approved criteria with calculation of financial budget. The major spending of budget are in the field of infrastructure and urban development, administration, training and empowerment, sanitary and health, emergency management and environment conservation. In the year 2019 the municipality had spent 5.5 million rupees in flood control. Also, in the year 2020-21 the municipality has separated around 10 million for emergency in case of road accident management and control, and other epidemic and disasters. The major source of municipal budget in case of DRR was used for tree plantation, river bank embankment, flood controlling structure and health and sanitation. In this year for empowerment, skill development training, awareness programmes the municipality had separated around two million rupees.

The fire brigade response map prepared using GIS show that the fire engine can reach any accessible within 25 minutes. If the incident is reported in time the fire can be controlled with a minimum loss. But the large fire can end everything within that period. So for the areas with high response time help should be taken from the neighboring local level. Also those areas need to be equipped with local level or mini scale fire control system which shall control the fire until the fire brigade arrives. Some areas in ward 1 and ward 2 seem to be inaccessible to fire brigade. These are the areas with forest and agricultural land. Accessibility to fire brigade needs to be planned by municipality in those areas.

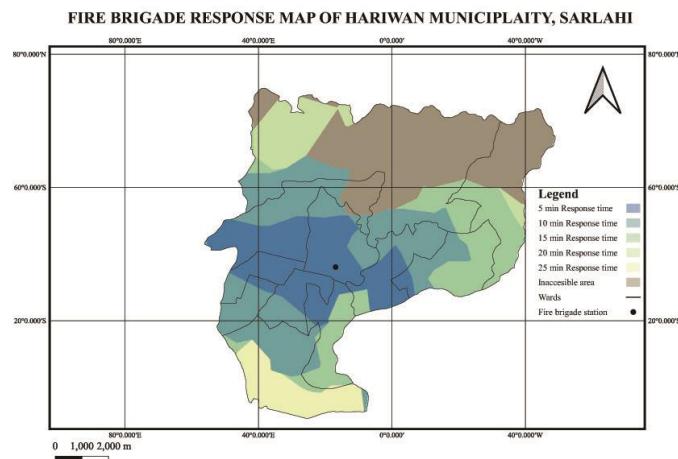


Figure 4 Fire Brigade Response Map of Harion

Human resource is the competitive factor that reflects the strength of the local government. The sufficient and qualified human resource shall aid to increase capability of the municipality. The municipality has still not processed to listing and mapping of both human and non human resource. This in a whole may push DRR related subject to be skipped to the corner.

This research has clearly shown that local government was only acting as facilitator for disaster relating activities. But recent change in the set-up provides the local government with various role and responsibilities through the constitution of Nepal, DRM act, National DRR Policy & Strategic Action Plan. This has shown that after 2017 it has been the most effective years for municipal action to publish policy for effective implementation. Before that as no legislation was available at that time so there was no obligation for the local government to enforce implementation of disaster coordination mechanisms, vulnerable area identification, maximizing early warning systems at the local level and other DRR activities.

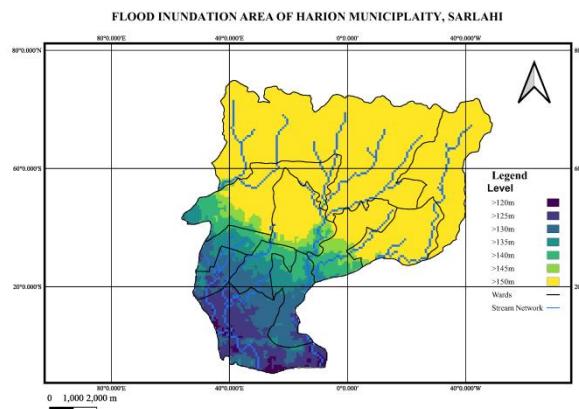


Figure5 Inundation Vulnerable Area Categorization

The municipality has been mainly involving in the management of flood risk, fire incident, monsoon drain and inundation. But after the strike of COVID-19, it has been seriously focusing on health sector. Due to the serious issue

of epidemic worldwide, the municipality has been taking initiatives for its management. As the response to spread of corona virus all over the country, the management of quarantine and 100 bedded isolation wards with oxygen facility was one of the remarkable activities during that health emergency period.

Theoretically policies, guidelines and national protocols could aid and speed up disaster risk reduction efforts. So the planning and implementation of such plans and policies is important part in disaster response. The municipality though has developed its DRRM act yet it has to be more effectively implemented. The municipality has not identified vulnerable areas, early warning system was not optimized and moreover very less awareness and mitigation programmes had been conducted in the field of disaster risk management. It was seen that the municipality has taken only few initiatives as per the assigned roles and responsibilities as stated in DRRM act.

The major issues and challenges that the municipality was facing were seen in the implementation of the different policies. This was found by analyzing the target of policies and its progress. The municipality had not been able to adapt the newer strategies to capture the need evolution of the vulnerability and was also not being able to avoid community risk and adapting measures for risk reduction. The realization of importance of accounting for community perception in determining the possible risks and the possible factors that ignites the risk has aided to propose the development of strategies for disaster mitigation, as part of a complete approach that is inclusive of community perception. This as a result revealed that for predicting the appropriate risk reduction measures both the physiological and socio economic parameters can be used. So, it was necessary for the municipality to strengthen own source revenue collection adopting the appropriate strategies to find the tax payers for adopting risk reduction measures in urban area.

CONCLUSION

This study shows that both the policy implementation and stakeholders and public participation is essential to counter fort the financial deficiency and encourage people to avoid and manage their exposure to vulnerable situation. Also the municipality should focus on boosting the community participation and perception as an important factor for successful DRR measures as the old programs run by municipality had not reached the desired community.

One of the effective intervention strategies for preparedness and response plan involves convincing people that there are certainly many things that can be done by them to effectively reduce the possible risk which can be used as a strong tool to make people understand the concept and theme of disaster risk reduction in their communities. This should be started by self analysis of capacity and preparing Disaster Preparedness and response plan, Disaster Risk reduction and management act at local level and local disaster and climate resilient plan. The study of past annual plan and its implementation reflects

the constraints of vision, plan, funds and awareness in the municipality that needs to be tackled by upgrading existing methodologies, approaches and tools based on the available resource, prevailing institutional setup and understanding and knowledge of needs and priorities of the community and people.

RECOMMENDATION

It's quite a challenging and most necessary to establish disaster risk reduction structures at local government level. There will be poor achievements in substantial reduction of disaster losses in absence of such sphere structure. Following listed recommendation are proposed in order to foster capacity development and address the challenge of disaster risk reduction.

- Mapping of available resources and identification of gaps in resources needs to be analyzed at regular interval
- Preparing local DRRM act, DPRP plan, DCRP plan formation of local volunteer and providing training to them at ward level
- Disaster fund can only be utilized as per the provision made in LDRRM act, thus it should be formulated as soon as possible
- DRR works should be addressed in development plans through integrated and sustainable development plan highlighting the needs of DRR activities in each developmental works.
- Municipality needs to work development and implementation of its own feasible and contextual policies and strategies to address DRR activities.
- The municipality should take the authentication of BIPAD portal from concerned ministry that will aid in real time monitoring, resource and capacity assessment.

REFERENCES

- [1] (2011). *National Disaster Report, Nepal*. Ministry of Home Affairs.
- [2] SFDRR. (2015). *Sendai Framework for Disaster Risk Reduction (2015-2030)*. UNISDR.
- [3] UNDG. (2008). *Capacity Development Group, Supporting Capacity Development: the UNDP*. Retrieved from <http://www.undp.org/capacity>.
- [4] UNDP. (2008). *Capacity Assessment Practice Note*.
- [5] Government of Nepal. (2016). *Third United Nations Conference on Housing and Sustainable Urban Development (Habitat III) – Nepal National Report, Kathmandu*: Government of Nepal, Ministry of Urban Development. MoUD
- [6] NDRF. (2013). *National Disaster Response Framework*. MoHA.
- [7] CBS. (2012). *National Population and Housing Census 2011*. Nepal, Kathmandu: Central Bureau of Statistics (CBS) and National Planning.
- [8] UNDP. (2008). *Capacity Assessment Practice Note*.