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**Search and Rescue Capacity Building of Nepal's Security Forces for
Effective Response**

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Abstract

Capacity building encompasses the training, knowledge, skills, abilities, processes, and resources. The present paper highlights Nepal's security forces integral role in disaster response and its need of the capacity building in search and rescue. Responding to disasters is a special task that demands a high level of training, knowledge, skills, and types of tool, equipment, and accessories. During the study, trained manpower for search and rescue within the Nepali Army, Nepal Police, and Armed Police Force, Nepal, and their capabilities and challenges were analyzed. The study suggests need for investment in capacity building of security forces towards highly-trained manpower in search and rescue as per the international standard. Well-prepared human resource in sufficient number is key to effective response and integrated effort with sound coordination mechanism always gives the net positive results.

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Introduction

Disasters are life-threatening events in human life. They are a serious disruption of the functioning of a community or society involving widespread human, material, economic or environmental losses, and impacts, which exceed the ability of the affected community or society to cope by using only its resources (United Nations International Strategy for Disaster Reduction [UNISDR], 2009). An increase in damage and loss from disaster poses a serious problem in societies. Reducing the risk of disaster is associated with three components, preparedness, response, and recovery. Disaster risk reduction measures are undertaken to build local resilience (Nepal Disaster Report , 2009).

Nepal is highly vulnerable to natural disasters such as extreme drought, floods, landslides, fires, and epidemics effects. Nepal's geographic location also makes it extremely susceptible to seismic activity from the nearby Indian and Tibetan plates. (Nepal Disaster Management Reference Handbook, 2017). Due to the vulnerability of the population and the regular and frequent occurrence of different natural hazards, Nepal is a hotspot for disaster (Nepal Disaster Report , 2009). Similarly, the man-made disaster also has a crucial impact on Nepal. Geology is a key determinant of Nepal's hazard scape. Geologically, Nepal can be divided into five major zones separated by faults namely, Terai and foreland basin, Chure/Siwalik range, Lesser Himalayan, Higher Himalayan, and the Tibetan Tethys Himalayan (Nepal Disaster Report, 2009). Globally, Nepal ranks 4th and 11th in terms of its relative vulnerability to climate change and earthquakes, respectively. The country is among the 20 most disaster-prone countries in the world, both natural and man-induced. More than 80 percent of the total population of Nepal is at risk of natural hazards such as floods, landslides, windstorms, hailstorms, fires, earthquakes, and Glacial Lake Outburst Floods (GLOFs) (Disaster Risk Reduction National Strategy Plan of Action, 2018). Disaster Risk Reduction (DRR) is the concept and practice of reducing disaster risks through systematic efforts to analyze and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events (UNISDR, 2009).

Security forces are actively engaged in rescue and relief activities in different parts of the world. Although, the primary task is to maintain peace and security, especially in the wake of natural calamities security forces intervene in assisting society (Raj, 2008). The secondary role of security forces is "aid to civil power". There has been an international practice to call out security forces in a catastrophic situation. Kumar and Dimri (2018) state when any natural or man-made disaster takes place in any part of the world, the armed forces are frequently deployed for disaster risk management. Kumar and Dimri (2018) further explain security

force's professional training and spirit to deliver and will to assist the community, are always the first choice of any state.

HGU(2011) defines capacity building as the process of developing and strengthening the skills, instincts, abilities, processes, and resources that organizations needed to achieve the organizational objectives. National risk reduction consortium flagship two highlighted national capacity building of the country is essential for enhancing the ability to respond and to scale up preparedness levels including effective partnerships to strengthen coordinated efforts among stakeholders.

Specialized and professional integrated Search and Rescue (SAR) teams for search and rescue workers have not yet been formed in Nepal. In the present situation, the trained human resource of the Nepali Army (NA), Nepal Police (NP), and Armed Police Force (APF), Nepal are carrying out SAR work for disaster response separately. National strategic Action Plan for Search and Rescue (NSAPSAR) 2014 envisaged the national level search and rescue capacity building within security forces. This strategic action plan has been developed by taking the response design of the SAR group under the International Search and Rescue Advisory Group (INSARAG) as a basis and adjusting it to a national form. National Disaster Response Framework (NDRF) 2014 also highlighted the importance of security forces for emergency response aftermath of any disasters, which is further reiterated by the recent National Disaster Risk Reduction and Management (NDRRM) Act, 2017 tasking security forces to carry out the search, rescue, and relief operations.

The study address questions like the number of trained manpower in security forces to effectively respond to any kind of disaster in Nepal, challenges in search and rescue operations, preparedness of Nepali security forces for search and rescue, and capacity-building activities. So, the objective of this study is to assess the capabilities and challenges for search and rescue trained manpower within Nepali security forces. This paper suggests Government of Nepal (GoN) to develop a national SAR team by increasing the number of trained manpower among security forces.

The research follows a qualitative approach via a collection of primary data from observation and interviews with key informants. Secondary data were based on literature analysis, which has been analyzed iteratively about search and rescue. The study was mainly focused on search and rescue trained manpower within security forces and their SAR activities and the necessity to increase trained manpower to develop the national level SAR team.

Literature review

Sendai framework for DRR (2015) highlights disaster risk governance at the national, regional, and global levels which are of great importance for effective and efficient management of disaster risk. Strengthening disaster risk governance for

prevention, mitigation, preparedness, response, recovery, is, therefore, necessary and fosters collaboration and partnership across mechanisms and institutions for the implementation of instruments relevant to disaster risk reduction and sustainable development.

Mallik (2007) analyses the role of armed forces in internal security and explains the principles of necessity, minimum forces, impartiality, and good faith for armed forces in aid of the civil authority to restore law and order. He pointed out that most of the training in the armed forces is focused on the primary role (defending external and internal threats). The armed forces are unable to lay adequate stress on training for their secondary role (aid to civil authorities).

Zaw and Lim (2017) define that the military plays a major role in various aspects of humanitarian assistance because of its readiness, preparedness, facilities, capabilities, mobility, and systematic organizational structure. The involvement of the military in disaster relief operations can be mandated statutorily or requested by civil authorities based on military physical assets. Rietjens (2007) describes the military primary objective in disaster response as creating a secure environment that can be assessable to relief organizational operating disaster response, transportation, and communication. The secondary objective could be to assist in the disaster area for rehabilitation.

UK Essay (2018) stresses on the contribution of armed forces in dealing with disasters is not over-emphasized. This contribution has usually been made under some form of official arrangement for aid to the civil power, as laid down in the standing operating procedures. The flexible organizational structure, the capability of sustained operation in all weathers by day and night, and the well-trained management system of the armed forces make them particularly well-suited for effective disaster relief operations. Thus armed forces can offer assistance to the victims with invaluable support in engineering, communications, transport, rescue, emergency medical services, field sanitation, water supply, and so on.

Dagur (2008) investigates the role of armed forces in disaster management and focuses on two different views one view recommends dampening our response and discouraging enthusiasm, and the other recommends a larger, proactive, and more participative role in disaster management. He also evaluates the other government agencies like the natural disaster response force, a paramilitary force, and state administration in process of disaster management and their coordination with armed forces.

DRRM Act, 2017 defines disaster search and rescue team as a specialized search and rescue team active in search and rescue in time of disaster or prepared to be mobilized for disaster management. It also refers to trained humanitarian workers. Urban Search and Rescue (USAR) is a specialized multifunctional discipline

that involves the location, disentanglement, extrication, and initial medical stabilization of victims trapped in collapsed structures. USAR Team USAR teams are specialized multifunctional resources, comprised of management, logistics, search, rescue and medical (SARTWG, 2014).

Trainor, Mcneil, and Aguirre (2008) highlighted the USAR task forces in the United States, is a collection of multidisciplinary taskforces created by local emergency responders organized under a federal framework for response in the aftermath of structural collapses. These task forces arrive at the site complete with the necessary tools, equipment, specialized training, and skills. Activities such as structural shoring, canine searches, complex rope systems, confined space entry, and technically assisted void search procedures are now being used. The development of heavy rescue search capability was initiated in California, after the 1971 San Fernando Earthquake (Naum, 1993).

Nepal Army is a national army of Nepal that plays a vital role to overcome natural and human-made disaster challenges. Nepal army has played a significant role in rescue and relief distribution in various disaster periods like B.S. 1990 earthquake, B.S. 2045 earthquake in Udayapur, B.S. 2050 earthquake in the mid area of Nepal, B.S. 2065 flood in Koshi river of the eastern region, B.S. 2066 cholera and diarrhea epidemics etc., as well as vital relief during avalanches, fires, landslides, air and other transportation disasters. In the international context, Nepal Army in the role of UN peacekeeping actors have also played a major role in providing emergency assistance during the disaster to needy people of various country (Nepali Army, 2021).

Armed Police Force (APF), Nepal is tasked with the protection of life, property, and liberty of the people by maintaining peace and order. During natural calamities or epidemics in any part of the country, APF, Nepal, has been playing a crucial role by showing the highest level of professionalism in emergency needs of disaster victims such as search and rescue, providing shelters, and distributing relief materials (Armed Police Force, 2021).

Nepal Police has been playing important role in disaster management. Nepal Police has formed Disaster Management (DM) division and conducted activities of pre-planning, prompt deployment, and result-oriented and skillful search and rescue. Nepal Police have deployed their manpower to affected areas for search, rescue, and relief distribution during the disaster period (Nepal Police, 2021).

Ministry of Home Affairs, Government of India (2022) states that the National Disaster Response Force (NDRF) is a disaster response agency under National Disaster Management

Authority (NDMA) which was created by the Ministry of Home Affairs, Government of India. It consists of ten battalions of Central Armed Police Forces

(CAPF), including two each of the Border Security Force (BSF), Central Reserve Police Force (CRPF), Central Industrial Security Forces (CISF), and Indo-Tibetan Border Police (ITBP). It has 13,000 trained manpower and has been mobilizing for search and rescue operations in India, this force also responded to Japan's triple disaster in 2011 and Gorkha Earthquake in 2015.

National Society for Earthquake Resilience (NSET) Program for Enhancement of Emergency Response (PEER) Course (2017) states that PEER has contributed to giving shape to the national emergency response system and has improved the training strategies in Nepal. There has been a growing awareness of the need for developing qualified Medical First Responder (MFR) and Collapsed Structure Search and Rescue (CSSR) instructors to train the end users or responders in PEER partner organizations, mainly the security organizations. The vision of establishing trained and equipped response teams led to steady progress in the Nepali Army, Nepal Police, and Armed Police Force, Nepal. These organizations have taken initiatives in owning the PEER program, utilizing and adapting the MFR and CSSR curricula in the capacity building of their emergency response teams.

Pont (2005) defines training is about developing people as individuals and helping them to become more confident and competent in their jobs. Training implies learning to do something, and when, it is successful, it results in things being done differently (Bramely, 2008)

UN INSARAG (2008) reads that INSARAG activities are guided by UN General Assembly Resolution 57/150 on "Strengthening the Effectiveness and Coordination of International Urban Search and Rescue Assistance", by the INSARAG Hyogo Declaration. The INSARAG mandate entails the development of effective international USAR procedures and operational standards, implementation of improving cooperation and coordination amongst international USAR teams at disaster sites, and promoting activities to improve USAR preparedness in disaster-prone countries. It develops standardized guidelines and procedures, shares best practices amongst national and international USAR teams, and defines standards for minimum requirements of international USAR teams.

Disaster management in Nepal

International Federation of Redcross and Red crescent (2020) states disaster management as the organization and management of resources and responsibilities for dealing with all humanitarian aspects of emergencies in particular preparedness, response, and recovery to lessen the impact of disasters. Due to the high occurrence of disasters, GoN has prioritized disaster management

as the top concern. In recent years, the GoN has taken steps to move from the relief response paradigm towards emphasizing disaster risk management by addressing all stages of the disaster management cycle (Nepal Disaster Report, 2013). The Ministry of Home Affairs (MoHA) is the focal agency for disaster management in Nepal which is guided and directed by the Executive Committee headed by the Home Minister. The Ministry acts as a supervisory authority and formulates, and implements national disaster plans, programs, and policies (Nepal Disaster Report, 2013).

Managing disasters are multi-sector engagement with coordinated efforts. GoN has prepared numerous action plans to increase the resilience of Nepali society. All the stakeholders from the local level to the central level have initiated improving coordination between civil society and security forces in building a resilient Nepalese society. In this regard, there have been numerous response plans, joint exercises, awareness programs, resource mobilization, hazard mapping, and interaction programs between civil society and security forces. Nepali security forces are focusing to enhance the capacity of the community by providing awareness, training, and logistics. Such activities are required to build a rapport between civil society and security forces. Disaster risk reduction activities should be integrated into the periodic plan and the program should be regularly monitored (Disaster Risk Reduction National Strategy Plan of Action, 2018).

Constitutional and legal provision of security forces for disaster management

Every country in the world has established a competent security force for internal and external security. In the context of Nepal, there are three security forces with a primary task to maintain peace and security. The Nepali army has always been committed to safeguarding the national unity, territorial integrity, and sovereignty of Nepal. It is under the ministry of defense with active hundreds of thousands of personnel actively engaged in disaster management in Nepal. The constitution of Nepal 2072 has provisioned to mobilize the Nepali army for disaster management without prior authorization of parliament (Nepali Army and Disaster Management, 2020).

Nepal Police are civil police with the primary task of law enforcement, crime investigation, and community policing. It comes under the home ministry with active eighty thousand personnel deployed throughout the country. The police act 2012 and police regulations regarding the duty and responsibility state that every police has to be mobilized for disaster management. (Nepal Police Act, 2012).

APF, Nepal is an elite force established to maintain peace and security with more than thirteen mandates. The primary function of APF is border security, riot control, VIP security, and assisting the Nepali army in the external invasion. The armed police act 2058 directs APF in disaster search and rescue.

National Disaster Response Framework (NDRF) 2013 is the national system for disaster response and international assistance for disaster response, which highlights the actions taken immediately before, during, and after disasters with a certain timeline, by which all the security forces have to deploy their search and rescue team. The functions, duties, and powers of the security agencies are explained in NDRRM Act 2017. Security forces have a vital role in all 4 levels namely the executive committee, provincial disaster management committee, district disaster management committee, and local disaster management committee. By which security agencies shall discharge functions of (a) provide an early warning on possible disasters and making aware the communities about the disaster risk reduction; (b) get mobilized immediately in any place once getting the information about the occurrence of a disaster and communicate such information to the concerned officials or agencies; (c) carry out an emergency search, rescue and relief operations in an effective manner; and (d) conduct training on search and rescue operation and public awareness programs on disaster management.

Nepali security forces in search and rescue operations

Nepali security forces have demonstrated their skill to cope disaster at the most catastrophic event. In both natural and man-made disasters, the availability of Nepali security forces has raised the belief of people towards security forces. The deployment of troops and their presence in every district have ensured security among the people. In the major disasters like Koshi flood of 2008, Jure landslide in 2014, Gorkha Earthquake of 2015, Nepali security forces have saved millions of lives and upheld humanitarian crises. Disaster management encompasses three different stages i.e. pre-disaster, during a disaster, and after disaster. Nepali security forces are actively engaged in all the phases of disaster management and their stringent action is seen during the disaster. The ability to locate victims, extricate them, segregate, and save lives are the activities during disasters.

Nepali security forces have been constantly responding to a small incident to mega disasters within short notice. Immediately after Gorkha Earthquake 2015, NA, NP, and APF, Nepal was mobilized for search, rescue, and relief operations. Altogether 7762 people were rescued by helicopters and 4089 by land transport. While 4521 SAR personnel from 34 countries were mobilized for SAR operation and rescued 16 lives along with security forces. This shows the importance of national search and rescue teams for a timely response since time is of paramount importance for saving lives aftermath of disasters (Nepal Disaster Management Reference Handbook, 2017).

The following data indicate the search and rescue by Nepali security forces in the last 5 years.

Table 1: Search and rescue operations performed by Nepali security forces

Year	Number of disasters	Casualties	Rescue victims	Deployment of Security forces
2017	2046	4375	3815	23607
2018	1874	4748	4405	21937
2019	2636	5766	5212	35682
2020	1763	3777	3341	14810
2021	1958	2658	1543	18110
Average	2055.4	4264.8	3663.2	22829.2

Source: APF Disaster Management and Deployment Division (2022)

Analyzing the data from Table 1, average 2055 disasters occurred between 2017-2021 and 3663 lives were saved after deploying 22830 security forces, which show the importance of search and rescue operations by Nepali security forces in saving the lives of the people.

When asked about the resources crunch for search and rescue, one of the officers working in the APF Disaster Management Training School, Kurintar articulated the following.

“We don’t have rescue vehicle which can transport and provide specialized types of equipment. For the water rescue operation, we need an auto engine motor boat and an electric pump to inflate the raft. Most of the CSSR equipment is not in good condition for eg, the rotary rescue saw is unserviceable while accessories for the electric chain saw are not available in the market. We don’t have enough Personal Protective Equipment (PPE) for eg, the Mitton used for rope rescue is becoming old which costs a high price. As an instructor, we have to provide training and we also have to respond to any disasters occurred any part of the country.”

So above interview shows that there is a lack of sufficient trained manpower, there is a lack of basic PPE to rescue vehicles, and maintenance and sustainability of types of equipment is another challenge. The trained manpower in the unit has both tasks of providing training and deploying for SAR operations in any part of the country because of the limited number.

Nepali security forces in SAR operations in Gorkha Earthquake 2015

The post-Gorkha Earthquake 2015, has haunted the whole nation with serious disruption of life. Criminal offenses like theft, robbery, brawl, and harassment also occurred, creating challenges to security. Nepal Police officer, deployed in response to Gorkha Earthquake mentioned that the aftermath of the earthquake brought lawlessness for some time. Immediately, the situation was controlled with

the deployment of security forces (Adhikari, 2021).

After the destructive Gorkha Earthquake, according to NDRF 2013, Nepali Army in the search and rescue activities has conducted operation crisis relief by its effective presence in the lower level sectors. According to data, 66069 Nepali Army personnel were mobilized in search and rescue operation. The emphasis was on protecting the lives of the victims by operating at the most affected sites faster than in the situation where the earthquake occurred. Initially, an operation of relief from the Nepali army was launched to deliver search, rescue, and relief from all levels.

A total number of 41776 Nepal Police including specialized rescuers of the DM division with the help of different types of equipment, have been deployed to conduct search and rescue operations. During operation, to minimize secondary collapse/hazards, NP had conducted collecting of information on locations of casualties and situations, access to casualties, and extricate activities and trained dogs were also deployed to find the situation of casualties buried in collapsed infrastructure. A total of 59 dead bodies and 4 live victims were rescued. NP had conducted SAR operations on the front line and also managed the chaos, uprising criminal activities, and uprising fear of citizens by unnecessary publicity of earthquake for maintaining peace and security during the disaster period. Nepal Police in local units had conducted SAR operations by utilizing indigenous TEAs in rural areas.

APF, Nepal has immediately mobilized 24775 personnel for search and rescue operations during Gorkha Earthquake 2015. Out of a total, 628 disaster management trained personnel were mobilized. In the initial period of the earthquake, APF, Nepal immediately started to collect information, analyzed the information and deliver the analyzed information to concerned units to mobilize personnel for SAR operations to minimize the damage and immediate rescue of victims. APF, Nepal rescuer had also provided as long as available first aid to a victim in locations before mobilizing to various health units and hospitals.

Trained personnel with rescuing tools had been deployed for search and rescue activities in various areas of Kathmandu along with Sindhupalchowk, Kavrepalanchowk, Dolakha, Gorkha, and other districts. As a result of disaster preparedness, APF, Nepal was able to find the trapped victims from collapsed infrastructure and evacuate them safely. APF, Nepal has been deployed for collapsed infrastructure management, the search for historical and archeological monuments, to free the traffic, shelter management, demolishing the dangerous infrastructure, and other various social services. The data of wounded rescued and dead body management by APF, Nepal personnel have given below in a table.

Table 2: Rescue and dead body management by APF, Nepal

Area	Live rescue		Dead body search and management	
	APF alone	Joint rescue	Single	Combined
Kathmandu Area	258	369	285	1457
Eastern Development Area	21	20	3	57
Mid Development Area (Excluding Kathmandu)	65	178	38	6588
Western Development Area	1	70	14	449
Mid-Western Development Area	0	0	0	2
Total	345	637	340	8553

Source: Operation Department, APF, Nepal Headquarters (2015)

Table 2 shows that APF, Nepal itself rescued 345 lives from rubble and combined with national and international search and rescue team, were able to rescue 637 lives from the collapsed structure and rubble.

One of the rescuers has been interviewed who had experience in search and rescue operations in Kathmandu areas during Gorkha Earthquake 2015. He mentioned the following:

“During Gorkha Earthquake 2015, APF, Nepal, and other security forces have gained experiences working together with different international SAR teams like NDRF of India, China International Search and Rescue (CISAR) team of China, Groupe de Secours Catastrophe Français (GSCF) of France, Israel, Turkey, United States of America, Hungary and others. They highly appreciated the rescue job performed by Nepali security forces.”

So the performance of the Nepali security forces was praiseworthy and has been highly appreciated by the Nepali people as well as the international community, primarily for search and rescue operations in saving lives and secondarily by assisting the GoN in early recovery.

Nepal’s security forces preparedness for search and rescue operations

Disaster management has been a crucial task from a global perspective. It involves different phases. The period of preparedness, formulation, and implementation of strategy, response planning, capacity building, and hazard mapping is the

activity in the pre-disaster phase (National Institute of Disaster management, 2020). National preparedness includes a combination of efforts and resources i.e., equipment, training, education, and funding (Institute for Security Governance, 2022). The Constitution of Nepal, 2015 has set the policy of early warning, disaster preparedness, rescue, relief, and rehabilitation for preventing disasters (Disaster Risk Reduction National Strategy Plan of Action, 2018). Nepali security forces are actively engaged during the time of disasters and their necessity has been raised day by day. Hence, it has been a prerequisite to train the personnel (Paudel, 2021). All three security forces have prioritized SAR training and have established their training schools. The objective of training school has given ample emphasis to producing competent, confident, and committed technically trained manpower in disaster-related rescue operations and other humanitarian relief activities. Furthermore, all security forces have established disaster management dedicated units in all layers of operations. The Nepali army has established a Disaster Management Training School under the Directorate of Disaster Management. The primary roles of the Nepali Army in disaster relief are search and rescue missions, medical assistance and evacuation, air rescue, mass evacuation, flood control, etc. (Nepali Army, 2021).

Similarly, APF, Nepal has established a Disaster Management and Deployment Division under the operation and border security department. APF was the only security force to envision the concept of a disaster management training school in Nepal. The training school conducts various disaster-related basic and advanced courses and other professional courses to enhance technically disaster search and rescue skills in MFR, CSSR, Dead Body Management (DBM), water-induced disaster rescue including Out Boat Motor (OBM), rappelling and climbing, firefighting techniques, and deep diving training (Armed Police Force, 2021). These technical training builds confidence and develops professional and trained disaster personnel who are effective in rescue operations.

In Nepal Police, DM Division consists of a training section that conducts training and simulation exercises for technical skill development and capacity enhancement of police as per the community requirement. An officer of the Nepal Police states all police are skilled in community-based search and rescue. As Nepal Police is the first responder in all disasters, they are trained in MFR, DBM, Canine handling, Fire-fighting, Rope rescue, road crash rescue, confined space rescue, and water-induced disaster rescue (Nepal Police, 2021).

When asked about the constraints of capacity building in disaster management, one officer working in the DM division of Nepal Police articulated the following:

“Though there is a disaster management company in all provinces but overall number of disaster-trained manpower is less. we can produce only 180 DM trained manpower in a year. We don’t have any water rescue equipment including raft boats, and a limited water rescue-trained manpower who have undergone training in APF disaster management training school, Kurintar. We have a few fire-fighting equipment but there is no compressor to fill the oxygen in the cylinders. We need to go outside to fill the oxygen.”

Three security forces have developed nearly two to three months of disaster management course which consists of CSSR, MFR, DBM, firefighting, rope rescue, water rescue, and camp management packages. As of now, the following DM-trained manpower has been produced by respective training schools:

Table 3: Disaster Management trained manpower in Nepal’s security forces

Organization	DM Trained Manpower	Total Strength	Percentage
Nepali Army	11000	96000	11.45%
Armed Police Force	2770	37054	7.47%
Nepal Police	1739	79554	2.18%
Total	15509	212608	7.29%

Source: Directorate of Disaster Management of Nepali Army, APF Disaster Management and Deployment Division, Nepal Police Disaster Management Division (2022)

In total, 7.29% of the total strength have undergone DM training within Nepali Army, Nepal Police, and APF, Nepal. This number is quite less because trained human resource is a pre requisite for effective response. Since the role of the Nepali security forces has been broadened from raising awareness in the local community to immediately deploying to carry out search and rescue operations. This number should be increased to deploy the trained manpower in all units.

Security force operational capacity is highly dependent on Tools, Equipment, and Accessories (TEAs). Tools and equipment are the major weapons to overcome disaster response. The availability of equipment reduces the workload and saves a lot of time (Paudel, 2021). SAR operations require specialized TEAs capable of penetrating concrete, locating trapped victims, communicating in complex confined spaces, and performing difficult and delicate rescues. The dearth of necessary TEAs was felt during SAR operations during Gorkha Earthquake 2015. To address the paucity of TEAs, GoN has presided over efforts to procure, assemble and stockpile SAR tools and equipment to strengthen the capacity of security forces.

Nepali security forces are advancing for preparedness after lessons learned and experiences during major disasters. Nepali Army has strengthening SAR capacity. APF, Nepal is emphasizing capacity building by advancing its DM training school in Kurintar and acquiring more SAR equipment, and prepositioned them in Provincial Brigade. Nepal Police has formed a disaster management company with a strength of 125 in all seven provinces. Security forces have a limited number of TEAs specially CSSR and MFR equipment for search and rescue in collapsed structures, which was used after Gorkha Earthquake. Both the NA and APF, Nepal has water rescue capabilities having rescue rafts and motor boats, mostly used in monsoon floods. Security forces have fire-fighting and rope rescue equipment. APF, Nepal has the deep diving trained manpower along with deep diving equipment, prepositioned in provincial units. Nepal Army has air capabilities with stand-by helicopters in command headquarters for emergency rescue and relief operations. But this equipment is less in comparison to trained manpower.

When interviewed with one of the officers working in the directorate of disaster management in the Nepali Army about the major challenges in DM, he mentioned the following:

“We are producing trained manpower from our training school but we have a limited number of search and rescue equipment. TEAs are important means for professional search and rescue. Sometimes we also face the problems of good coordination among stakeholders during and after any incidents. To take the credibility of work is another problem after any disasters, every organization has unhealthy competition to gain credibility for their task.”

So, the interview shows that there is a paucity of TEAs in all the security forces.

Nepali security forces are advancing in preparedness for emergencies in hospitals. The lesson learned from Gorkha Earthquake 2015 has alerted GON to prepare for HOPE (Hospital preparedness for emergencies). All the security forces of Nepal have dedicated hospitals to provide curative and rehabilitative health services to personnel and their dependents. During the time of mega-disaster, security forces and hospitals have contributed to the treatment of victims. The enhancement of preparedness programs, conduction of HOPE training, and cooperation with health institutes to save life are concurrent activities. After the spike of COVID-19, APF, Nepal has transformed its hospital into a COVID dedicated hospital. It has proved to be admirable in responding to citizen medical treatment.

When interviewed with one officer working as a commander for SAR operations, when asked about the challenges he has faced in terms of training, equipment, and morale of the rescuer, he mentioned:

“The trained manpower who are scattered in all units need refresher training so that they can operate the equipment. Another problem is most of the equipment, specially CSSR Equipment is now old and not maintained well and they are not in practice in most of the units. There are some sophisticated equipment like Ground Penetrating Radar, and only a few people can operate it. Such new equipment needs to be practiced by all rescuers in time basis. There is lack of PPE for firefighting and they are responding such incidents by traditional approach. We can use water carrying drones, old model helicopters, and blower machines to control fire. Morale and motivation parts for rescuer is also overlooked, they put their life at risk but do not get any incentives. At least rescuer should get minimal allowance while operating in major disasters.”

The study found that the preparedness level of security forces is advancing after Gorkha Earthquake 2015, but most of the DM trained manpower need refresher training and they need to be intact in the unit not scattered in all units. The trained manpower should be familiarized with the TEAs so that they can easily operate in an emergency. The incentive parts of rescuer are also overlooked which minimizes work efficiency. Similarly, joint training, seminar, workshop, and national-level simulation exercise among all stakeholders provide clarity on roles and responsibilities and create a coordinated environment to work in integrated effort during and after disasters. Recently, the National Disaster Risk Reduction and Management Authority (NDRRMA) as per NDRRM Act, 2017, has been supporting Nepali security forces for capacity building and providing search and rescue equipment.

The importance and necessity of national-level search and rescue teams

The GoN has envisioned an independent SAR team. Till today, trained specialized capable, and skilled personnel from the NA, NP, and APF, Nepal are actively engaged as a SAR team since Nepal does not have a unified SAR force. To meet the existing challenges and enhance coordination in SAR activity, GoN has prepared National Strategic Action Plan for Search and Rescue (NSAP SAR), 2014. It is the first step in disaster response which has envisioned developing the minimum level SAR capacity from the trained and dedicated security personnel NA, APF, Nepal and NP. Which is based on the National Strategy for Disaster Risk Reduction (NSDRM), 2009 and analytical recommendations received from INSARAG in 2011.

The essence of NSAP for SAR is the formation, capacity building, and strengthening of integrated SAR by enhancing overall capacity and enhancing the rescue capacity for every new emergency response.

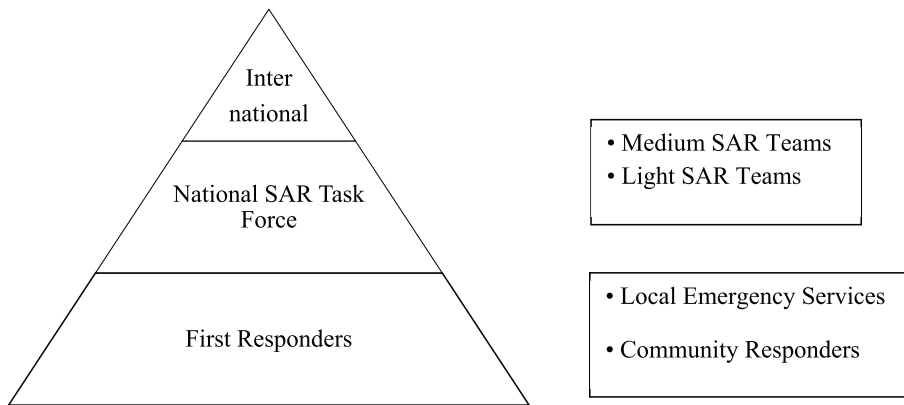


Figure 1: SAR Response Framework

Source: National Strategic Action Plan for Search and Rescue (2014)

SAR Response Framework shown in Figure 1 is the concept of a three-tiered structure of SAR teams, comprising community volunteers (including the Nepal Red Cross Society (NRCS), light SAR teams within the Nepal Police and Kathmandu Municipality Fire Department, and two medium SAR teams, one each managed by the Nepal Army and the Armed Police Force, Nepal.

The study of NSAP SAR has found that personnel from NA, APF, NP and Red Cross are not only extremely motivated to take on the responsibility of responding to a major disaster but also that some, such as those from the APF DM training school, have received training in the fundamentals of search and rescue. Capitalizing on this motivation and training the different security forces are developing dedicated search and rescue units. Ultimately, these dedicated units will train and work together as a cohesive search and rescue response across Nepal in highly specialized teams (MOHA, 2015).

Basic Disaster Response Program (BDRP) would become a foundational training course as shown in Figure 2. The benefits of this approach would be as follows: a) Standardized curriculum across all the SF and the fire service. b) Standardized equipment list used by all the SF and fire service resulting in interoperability and efficient supply chain management, c) Improved operational efficiencies so that all the responders would have the same training and hence understanding of standard operating procedures. d) Improved response to day-to-day accidents and incidents which is scalable to major incidents and disasters, when required. and e) Increases efficiency regarding developing a pool of instructors and increased efficiency in running refresher training.

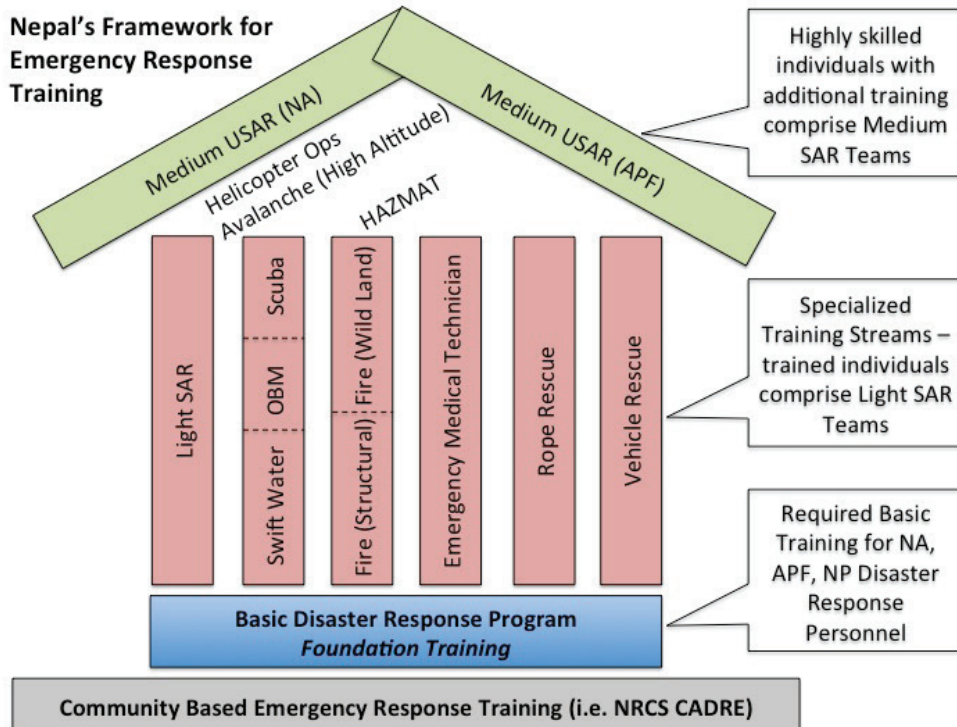


Figure 2: Nepal's Search and Rescue Training Framework

Source: Search and Rescue Technical Working Group (2014)

Figure 2 illustrates the need to build more specialized levels of capacity on a solid foundation. Simplistically, to build a house, the first requirement is a solid foundation, thereafter the walls can be erected and once the walls are in place, the roof can be placed on top. Without a strong foundation, the structure will not stand; similarly, to develop a sustainable capacity in Nepal, it needs to be developed on a strong foundation.

Medium level USAR team comprises different functions of management, logistics, search, rescue and medical. It needs to have a minimum 50 team members in which management team consists of 10 members, logistics team with 6 members, search team consists of 8, rescue team consists of 22 and medical team with 4 members (United Nations Development Program, 2012).

When interviewed with one officer who is working and studying disaster management asking the necessity of a medium-level search and rescue team in Nepal, he said:

“Once medium level SAR team is formed within NA and APF as well as light team in NP, all the team can be prepositioned in a suitable location to promptly and effectively respond to any kind of disasters in Nepal. Such highly

specialized SAR teams will act as an instructor to develop skilled trained manpower within respective organizations. INSARAG standard medium level USAR team can also respond as an international SAR team in disasters in other countries.”

The INSARAG network is strongly encouraged to assist disaster-prone countries in developing the capacity of their national USAR teams. The organizational and operational guidelines for national USAR teams are developed as a guidance document for capacity building of national teams so that there are common operational standards around the world (INSARAG, 2011).

The vital component in developing national capacity is the establishment of a national accreditation mechanism. Such mechanism allows a country to establish, monitor, and manage officially approved standards and adhere closely to the INSARAG guidance in developing its USAR national response systems. The national authority, with the relevant laws and regulations, is the ultimate authority to establish and certify that teams meet the national standards, in line with the INSARAG Guidelines.

Conclusion

Capacity building in SAR is a process of developing and strengthening SAR training, knowledge, skills, abilities and resources. It is revealed that 7.29% DM trained manpower within security forces is not sufficient to conduct search and rescue operations in disaster-prone country. So Nepal's security forces have to increase the number by multiplying the number of training in their respective training institutions. At the same time, safety of rescuers should be ensured, their morale and motivation should be maintained, and career planning should be carefully designed to retain highly trained manpower.

Disaster management is an integrated effort and there is always essential of a sound national coordination mechanism. The practice of national-level simulation exercise, mock drills, workshops, seminar, national symposium, collective exercise, and familiarization within and among all security forces build up better coordination and develops unity of work.

It is imperative to develop a national level light and medium USAR team within security forces which will improve response to day-to-day accidents and incidents which is scalable to major incidents and disasters and increases the efficiency regarding developing a pool of instructors and increased efficiency in running refresher training.

Limited number of trained manpower of Nepali security forces has been performing their duties for disaster management, primarily search and rescue operations in saving lives are praiseworthy. But lack of sufficient number of trained manpower

and their strategic preposition, adequate number of sophisticated equipment and their maintenance and sustainability, lack of national level SAR team as per INSARAG standard, and morale motivation factors for rescuers are hindering swift, prompt, and effective response in any kinds of disasters in any part of the country. So, the effectiveness of highly skilled trained manpower within Nepali security forces will be maximized if the GoN prioritizes increasing more trained manpower, acquiring more TEAs and developing national level SAR teams in Nepal.

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