Disaster Management in the Context of India's National Security: An Assessment

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Abstract

Disasters and environmental degradation are generally considered parts of non-traditional threat to National Security. India by virtue of its geo-climatic and socio-economic conditions is one of the five most affected countries in the world in terms of number of deaths and due to various natural disasters that make it vulnerable. However, India has also transitioned to a position of being an important 'provider of assistance in international disasters.' Since India has a progressive and forward looking development agenda of inclusive growth, which is getting impacted by disasters, disaster risk reduction has emerged as a high priority focus area in India's national policy framework. In this perspective, the paper examines the 'vulnerability' aspect of India in the larger context of disaster management in India's national security.

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Introduction

"Hazards are less predictable, Exposure is growing and Vulnerability is compounding […]"

— Global Assessment Report, 2019.[1]

Globally, in recent times natural disasters coupled with impact of Climate Change have led to substantial increase in loss of lives and economic losses. Especially in developing countries, this phenomenon has also led to displacement of population inhabited in vulnerable regions, thereby severely impacting their livelihood. By virtue of its geo-climatic and socio-economic conditions India is one of the five most affected countries in terms of number of deaths and affected population due to various natural disasters. With impact of Climate Change becoming more pronounced it is estimated that by 2030 up to 4.5 per cent of India's GDP is likely to be at risk. Unless some effective Disaster Risk Reduction and Climate Change Adaptation measures are taken, by 2050 situation is likely to be grim.[2]

India is embarking on creation of infrastructure with huge investments which is an important pre-requisite for sustained development. Statistics prove that economic losses due to any major disaster in terms of expenditure in rescue and relief, evacuation and rehabilitation of affected/displaced population and reconstruction of critical infrastructure is colossal. Disaster losses impact overall economy, and consequently meeting aspirations of improving standard of living of the population.

Disasters and environmental degradation are generally considered part of Non-traditional threat to National Security. Disasters impact safety of citizens and economy, impinging on sustained development, which are important tenants of National Objectives. Therefore it is important that Effective Disaster Management and Climate Change Adaptation should be part of National Security Strategy so that in policy formulation and execution these issues remain in focus.

Disaster Management: Understanding the National Perspective

According to United Nations Office for Disaster Risk Reduction (UNDRR, formerly UNISDR), 'disaster' (as revised) is defined as:

> "A serious disruption of the functioning of a community or a society at any scale due to hazardous events interacting with conditions of exposure, vulnerability and capacity, leading to one or more of the following : human, material, economic and environmental losses and impacts."[3]

The Disaster Management Act 2005 defines disaster in a very comprehensive manner, as follows:

> "a catastrophe, mishap, calamity or grave occurrence in any area, arising from natural or manmade causes, or by accident or negligence which results in substantial loss of life or human suffering or damage to, and destruction of, property, or damage to, or degradation of, environment, and is of such a nature or magnitude as to be beyond the coping capacity of the community of the affected area."[4]

Owing to these definitions of 'disaster,' it becomes essential to have an understanding of 'what it means by disaster management.' To which, as per the revised terminology of UNDRR, Disaster Management (DM) is understood as " the organisation, planning and application of measures preparing for, responding to and recovering from disasters."[5] While Disaster Risk Management is "the application of disaster risk reduction (DRR) policies and strategies to prevent new disaster risk, reduce existing disaster risk and manage residual risk, contributing to the strengthening of resilience and reduction of disaster losses."[6]

However, the term DM as used in the DM Act 2005, National Policy on Disaster Management (NPDM) 2009,[7] and National Disaster Management Plan (NDMP) 2019,[8] is far more comprehensive and covers all aspects that encapsulates: prevention of danger or threat of any disaster; mitigation or reduction of risk of any disaster or its severity or consequences; capacity building; preparedness to deal with any disaster; response to a threatening disaster situation or disaster; evacuation, rescue & relief and rehabilitation and reconstruction.

The template for the national framework for DM is based on the responsibility of undertaking rescue, relief and rehabilitation measures in the event of a disaster rests with the State Government. The Central Government supplements the efforts of the State Governments by providing logistic and financial support in case of severe natural calamities. The logistic support includes deployment of aircraft, boats, special teams of Armed Forces, Central Armed Police Forces (CAPFs) and National Disaster Response Force (NDRF),[9] arrangements for relief materials and essential commodities including medical supply, restoration of critical infrastructure including communication network and such other assistance as may be required by the affected States and UTs to meet the situation effectively.

However, the DM Act 2005 & NPDM 2009 marked a paradigm shift in India's disaster management, by shifting from a relief–centric approach to a holistic and integrated approach covering the entire gamut of disaster management (prevention, mitigation, preparedness, response, relief, reconstruction and rehabilitation). The approach is based on the conviction that development cannot be sustainable unless disaster mitigation is built in the development process. This led to the establishment of National Disaster Management Authority (NDMA), as the apex body headed by the Prime Minister to steer various facets of DM as enshrined in the DM Act 2005. To note, the vision of NDMA aims at building:

> "a safer and disaster resilient India by a holistic, pro-active, technology driven and sustainable development strategy that involves all stakeholders and fosters a culture of prevention, preparedness and mitigation."[10]

Global Trends of Disaster and India's Vulnerability Profile

Globally, in the last 20 years there has been a rising trend especially in the Hydro-met disasters (account for 91 per cent of 7255 recorded major disasters), with 92 per cent deaths occurring in under-developed countries.[11] Wherein, the Asian Region remains to be the epicentre of global disasters with 45 per cent of global disasters, 42 per cent of economic losses, 83 per cent of mortalities and 86 per cent of people getting affected. With 80 per cent of global disasters being weather related, impact of Climate Change is very significant. Fast economic growth, high population growth, rapid urbanisation (largely unplanned) and the fact that over 1 billion people in Asia survive below base poverty line, poverty drives vulnerability to disasters.

Since 1980, more than two million people and over US$ 3 trillion have been lost to disasters caused by natural hazards, with total damages increasing by more than 600 per cent from US$ 23 billion a year in the 1980s to US$ 150 billion a year in the last decade.[12] With 10 per cent of global disasters occurring in India, it is one of the five worst affected countries in the world in terms of number of deaths and people affected According to the Global Climate Risk Index report 2019, India ranked to be the 14th most vulnerable country in the world, accounting for loss of around 2,736 lives in 2017 due to disasters with economic losses accounting for around US$ 13,789 million, the 4th highest in the world.[13] However, as per the 2020 UNDRR Report on "Human Cost of Disasters," India has been ranked third, after China and the US, in recording the highest number of natural disasters over the last 20 years (2000-19), paying a huge economic and human cost[14]—highlighting the vulnerable profile of India.

To note, in 2019 India recorded the highest number of deaths due to disasters. India, due to its unique geo-climatic and socio-economic conditions, is vulnerable, in varying degrees, to all types of disasters. As per the NDMA's report, 58.6 per cent landmass is prone to earthquakes; 12 per cent land is prone to floods; out of 7,516 km coastline, 5,700 km is prone to cyclones and tsunamis; 68 per cent of the cultivable land is vulnerable to drought, 15 per cent of landmass is at risk from landslides and avalanches.[15] Out of the 36 States and Union Territories (UTs) in the country, 27 are prone to one or more disasters with 5,161 Urban Local Bodies (ULBs) being prone to urban flooding.[16]

While additional hazards include fire incidents, industrial accidents and other manmade disasters involving chemical, biological and radioactive materials. The risks are further compounded by increasing vulnerabilities related to changing demographics and socio-economic conditions, unplanned urbanisation, development within high risk zones, environmental degradation, climate change, geological hazards, epidemics and pandemics.[17] Clearly, these contribute to a situation where disasters seriously threaten India's economy, its population and sustainable development.

Climate Change & Disaster Management in the Context of National Security

Climate Change is a reality and its manifestation in recent times has been very pronounced. Climate Change is a global phenomenon but with local consequences. As a populous, tropical developing country, India faces a bigger challenge in coping with the consequences of Climate Change than most other countries.

With changing weather patterns and rising global temperatures, increasing number of extreme weather events have become the 'new norm'. Almost every month of 2018 had one or the other 'unprecedented' weather event in the form of hailstorms, unseasonal rainfall, strong thunderstorms

and lightning, floods and droughts, long dry spells, cyclones, and both our monsoons—Southwest and Northeast—were below normal; while the average temperature over the country was 'significantly above normal,' making 2018 the sixth warmest year on record since 1901.[18] Thus, it would be no exaggeration to term 2018 as a year of multiple disasters; both in terms of 'visible ones' such as the catastrophic floods in Kerala in August, and 'silent ones' like an unprecedented monsoon rainfall deficit of more than 20 per cent in the Northeast region of the country.[19] Continuing with manifestation of changing weather patterns, 2019 saw frequent extreme weather events across the country from excruciating heatwaves to record number of cyclones, extremely long dry spells to record-breaking amounts of rainfall, viz. floods in Karnataka and Kerala, Cyclone *Fani*, floods and heatwave in Bihar.[20]

There are both external and domestic dimensions to India's Climate Change policy which has been articulated through two key documents. One is the National Action Plan on Climate Change (NAPCC) adopted on 30 June 2008; and the other is India's Intended Nationally Determined Commitments (INDC) submitted to the UN Framework Convention on Climate Change (UNFCCC) in October 2015.[21] To note, the NAPCC has an essentially domestic focus, while the INDC is a statement of intent on Climate Change action. Primarily, the NAPCC incorporates eight "national missions" enshrined in India's vision of ecologically sustainable development and steps to be taken to implement it. It is based on the awareness that Climate Change action must proceed simultaneously on several intimately inter-related domains, such as energy, industry, agriculture, water, forests, urban spaces and the fragile mountain environment.[22]

To avert economic losses due to climate change and disasters, countries need sustainable economic growth and good development and disasters and climate change put both at risk. For instance, the 2010-2019 decade marked the costliest in the modern record for global natural

disasters on a nominal and inflation-adjusted basis. Total direct economic damage and losses tallied US$ 2.98 trillion during this decade. This was US$ 1.1 trillion higher than the previous decadal period (2000-2009); US$ 1.8 trillion.[23] As per World Bank's data, average annual losses due to disasters amount to approximately US$ 520 billion, which is adversely impacting economic well-being of affected countries. It is estimated that without urgent action, climate impacts could push an additional 100 million people into poverty by 2030.[24] The world lost as much as US$ 232 billion (Rs 16.5 lakh crore) due to natural disasters in 2019. In India, June-October monsoon floods caused a loss of US$ 10 billion with 2019 Cyclone *Fani*, which affected Odisha, was the tenth-most costly natural disaster in the world. India suffered death of 1,750 people—the most among all natural disasters last year.[25]

The United Nations in a report, released ahead of the International Day for Disaster Reduction on 13 October 2018, has said that India lost US$ 80 billion to natural disasters over the past 20 years and ranks among the top five countries that have suffered the most. The report's analysis makes it clear that economic losses from extreme weather events (constituting 77 per cent of losses) are unsustainable and a major brake on eradicating poverty in hazard exposed parts of the world.[26] It is estimated that in a decade (by 2030), climate change and global warming could put 2.5 to 4.5 of India's GDP at risk annually.[27] To note, studies suggest that impact of climate change is likely to not only increase the frequency of extreme weather events but also their intensity causing devastating losses unless rigorous mitigation and adaptation measures are taken.

Above stated statistics do not include loss due to manmade disasters such as fire, chemical industrial disasters and environmental degradation due to natural or manmade disasters such as oil spill, coastal erosion, forest fire, river bank erosion, population displacement, and others. With regard to biological and public health emergencies, considering the impact of an unprecedented event like the COVID-19 pandemic in

terms of loss of life and huge economic loss suffered due to lockdown of industries and consequent effect on livelihood of millions, also needs to be factored in our future planning. Since India has a progressive and forward looking development agenda of inclusive growth, which is getting impacted by disasters, DRR has emerged as a high priority focus area in India's national policy framework. Hence, disaster management which encompasses all aspects of prevention, mitigation, preparedness for response, rescue and relief, and rehabilitation needs to be an important tenant of the National Security Strategy.

National Security is multifaceted and an all-encompassing concept, including effective management of challenges of external security and ensuring internal stability which is pre-requisite for provision of an environment for sustained economic growth, development and building Comprehensive National Power. Another perspective of National security has been described as the ability of a state to cater to the protection and defence of its citizenry. United Nations Office for the Coordination of Humanitarian Affairs' (OCHA) expanded definition of human security calls for a wide range of areas including economic, health, food security and so on.[28]

Therefore, citizens of the country and their well-being in conditions of internal and external peace and stability should be and are part of India's national objectives. Though India does not have a National Security Strategy, its broad objectives would be to cater to external and internal security, non-traditional threats, providing for welfare and good standard of living for every citizen and creating a political, social and security environment to enable sustained high rates of inclusive economic growth. Increasingly, threat to a nation is more due to non-military threats, which include activities such as terrorism, ethnic extremism, cyber security, energy security, epidemic or pandemic affecting public health, poverty, shortage of food, stability of society, demographic challenges, narcotics trafficking, etc. It is also being recognised that natural disasters,

environmental degradation and climate change pose threats to national security.

Natural hazards such as earthquake, droughts, floods, cyclones, etc., being geophysical in nature, can emanate in one part of the region and affect many other parts. Disaster can cause major destruction of communication and critical infrastructure affecting development and local economy, pushing a region or a country back by a couple of decades. Besides triggering displacement of affected population and making them disaster-refugees, such events in India's neighbourhood do impinge on its national security. To cite few examples, a calamity such as Muzaffarabad earthquake of October 2005 seriously impacted bordering State of Jammu and Kashmir (now a Union Territory); floods in Pare Chu in China affected bordering districts of Himachal Pradesh along Satluj in August 2004; *Kosi* floods in August 2008 consequent to breach of *Kosi* embankment in Nepal led to submerging of number of villages in North Bihar; and more recently earthquake in Nepal in 2015 considerably affected India's bordering states. Likewise, tropical cyclones and Tsunami emanating in South and South East Asian region seriously impact India's coastal states.

It has been experienced that major disasters affect functioning of government and public life due to disruption of IT and communication impacting banking system, power, damage to critical infrastructure such as rail or air movement, and others. Major natural disasters and health crisis in recent times, such as the Kerala floods (2018 & 2020), Cyclone *Ockhi* (2017), Cyclone *Titli* (2018), *Fani & Bulbul* (2019), *Amphan & Nisarga* (2020); urban floods in Mumbai, Chennai (2015) and COVID-19 pandemic led to economic losses due to the disruption of commercial activity. Huge economic losses due to destruction caused by disasters and consequent investment in reconstruction of damaged/lost infrastructure and rehabilitation of affected/displaced population seriously impinge on economic strength of the Nation. Since disasters

cause substantial loss of lives, property, infrastructure and degradation of environment, as discussed above, it is pertinent to include disaster management as an essential tenant of India's National Security Strategy.

Though it is not possible to eliminate the risks of disasters, based on Hazard Risk Vulnerability Analysis (HRVA) and Cost-Benefit Analysis of investment in Risk Reduction, but development initiatives can be planned to reduce the losses. For instance, the 2015 UNISDR Report notes that a sustained investment on DRR strategies could reduce economic losses by 20 per cent.[29] In this regard, it is for the first time that the 15th Finance Commission has recommended creation of National and State Disaster Mitigation Fund. In their interim Report for FY 2020-21, allocation has been proposed for Natural Disaster Risk Management Fund to cater for mitigation, capacity building, response and relief, and recovery and reconstruction.[30]

Threats posed by disasters and effects of climate change need to be tackled with a holistic, flexible, cooperative, coordinated and multifaceted approach. Therefore, DM as a tenant of National Security Strategy would encompass focus on all elements of DRR including capacity building besides climate change adaptation measures.

Finding Solutions to Manage Disasters: Initiatives Taken by India

In recent years India has transitioned to a position of being an important 'provider of assistance in international disasters.' This position potentially allows India to leverage its DM/HADR operations abroad for furthering and securing its national interests through projection of 'soft power.' To add further, India plays an active role in global initiatives on DRM, such as, India is signatory to the "Sendai Framework for Disaster Risk Reduction,"[31] and other global initiatives with a commitment to achieve laid down objectives through systematic and institutional efforts. With multi-dimensional initiatives and expertise at play, India is taking a leading

role in strengthening regional and international efforts in mitigating and reducing effects from disasters. For instance, India is working closely with the UNDRR, and other UN agencies based in India. Besides, India has also signed MoUs/agreements with many countries for cooperation in the field of DM to include exchange of ideas and expertise, capacity building, sharing of technical inputs and provision of assistance on occurrence of calamities and post disaster reconstruction/rehabilitation. India has embarked on several initiatives at regional and global level which are in form of 'soft power' projection—that go beyond provision of relief material and dispatch of NDRF/Teams of Armed Forces.

Some of the recent initiatives taken by India include the following: First, India has increasingly undertaken several HADR missions to render help to countries in the region and beyond, which got affected by major calamities. For instance, in Nepal, India's response action comprised of sending 16 Teams of NDRF and Armed Forces, including positioning of helicopters for rescue and dispatch of immediate relief material to remote areas, dispatch of huge wherewithal and medicines (worth Rs 380 Cr); as well as India also pledged support of US$ 100 million for reconstruction purpose.[32]

Second, India has taken various regional initiatives, such as: (a) established SAARC Disaster Management Centre at Gandhinagar, that provides Capacity Building Training to Nepal, Bhutan and Bangladesh Disaster Response Teams. (b) India's South Asia Satellite (GSAT-9),[33] formerly known as SAARC Satellite, is a geostationary communications and meteorology satellite operated by Indian Space Research Organisation (ISRO) for the SAARC region. (c) India provides technical support by sharing of data on Early Warning and forecasts through Indian Meteorological Department (IMD), Central Water Commission (CWC), ISRO and Indian National centre for Ocean Information Services (INCOIS).[34] (d) India conducts joint DM exercises with SAARC countries. For instance, post the Nepal Earthquake, in November 2015

India conducted the first International DM Exercise, wherein, Search & Rescue Teams of all Member States participated. To note, India has also conducted a Multi-State Tsunami Exercise in November 2017 with BIMSTEC countries and in 2019 organised a joint DM exercise for Shanghai Cooperation Organisation (SCO) Member countries.

Third, India has hosted various international events under multilateral frameworks, such as: Forum for India-Pacific Islands Cooperation in 2015 BRICS Ministerial Conference on DM in 2016; Asian Ministerial Conference for Disaster Risk Reduction (AMCDRR) with UNDRR in 2016; International Workshop on Disaster Resilient Infrastructure (IWDRI) in 2018 and 2019; Indian Ocean Rim Association Meeting (IORA) on Disaster Risk Management in 2019; and others.

Fourth, India has signed various MoUs on DM, bilateral MOUs with number of countries, significant being Memorandum of Cooperation (MoC) with Japan for enhancing collaboration between research institutes, cities and the private sector in the field of DRR.[35] India played a major role in assuring the success of the COP-21, UN Framework Convention on Climate Change, and adoption of the landmark Paris Agreement in December 2015. Wherein, India's initiative on the setting up an International Solar Alliance for promoting solar power worldwide was widely welcomed. India became Member of Consultative Group (CG) of Global Facility for Disaster Reduction and Recovery (GFDRR) in 2015. Consequent to its active engagement and laudable initiatives in the field of DRR, India has been unanimously chosen as co-chair for the fiscal year 2020.[36]

Fifth, India established Coalition for Disaster Resilience Infrastructure (CDRI). One of the most substantial initiatives that India has taken is to establish a CDRI in October 2019 pledging financial support of Rs 480 crore towards its corpus. It is a concept which was announced by PM during inauguration of AMCDRR in November 2016. As of now 18 countries and four organisations have joined the Coalition.

CDRI is a global partnership of national governments, UN agencies and programmes, multilateral development banks, the private sector, academic and knowledge institutions that aims to promote the resilience of infrastructure systems to climate and disaster risks, thereby ensuring sustainable development.[37] The mission of CDRI is to support countries to upgrade their systems to ensure disaster and climate resilience of existing and future infrastructure.

And Sixth, India became part of the International Search and Rescue Advisory Group (INSARAG).[38] Considering international exposure that NDRF had during the 2015 Nepal Earthquake and the initiative to conduct DM Exercises with SAARC, BIMSTEC & SCO, India has embarked on seeking INSARAG certification for selected NDRF Teams. On certification, the UN can send these teams for response anywhere in the world. INSARAG facilitates coordination between international USAR Teams which make themselves available for deployment.

Steps for Way Forward

The world has been unable to move away from a vicious cycle of disaster–respond–rebuild–repeat. Financing has historically focused on picking up the pieces post-disaster. Development assistance for risk reduction has been marginal as compared to financing for disaster response. As per the World Bank data, a total of US$ 5.2 billion spent for disaster risk reduction between 2005 and 2017 represents a marginal fraction (3.8 per cent) of the total amount spent as overseas development assistance.[39] Therefore it is important that DRR measures are embedded in all major development plans. Likewise, risk reduction processes have multiple connections with climate change mitigation, adaptation and vulnerability reduction. Failure to include climate change scenarios in assessment and risk reduction planning will build inherent redundancy in all we do. As per a UNDRR publication, India suffered a whopping US$ 79.5 billion economic loss due to climate-related disasters in the last 20 years.[40]

Globally, the need for mainstreaming DRR as an integral part of development has been accepted since it helps reduction of vulnerabilities and exposure to risks besides strengthening resilience. Harmonising and integrating Climate Change Adaptation with Sustainable Development and linking with DRR effort is considered a new development paradigm. Essentially, Disaster Risk Management (DRM) approach encompasses risk identification, risk assessment, risk treatment and risk communication. An exercise to undertake Hazard Risk and Vulnerability Assessment (HRVA) including mapping of resources, development of Disaster Loss Data Base and Cost-Benefit Analysis of investment in Risk Reduction is likely to provide useful inputs to the Government for formulating development schemes/investment plans.

Investing in risk reduction and building resilience saves more than lives and livelihoods, it is also a good return on investment. Every US$ 1 invested in risk reduction and prevention can save up to US$ 15 in post-disaster recovery; and every US$ 1 invested in making infrastructure disaster-resilient saves US$ 4 in reconstruction.[41] While the World Bank suggests that mainstreaming disaster risk management into development planning can reverse the current trend of rising disaster impact. As noted, when countries rebuild stronger, faster and more inclusively after disasters, they can reduce the impact on people's livelihoods and well-being by as much as 31 per cent, potentially cutting global average losses.[42]

The changing profile of risk from disasters suggests that we must put concerted efforts to find new ways of response. Disasters are increasingly unpredictable; intensities are growing and 'unprecedented' events have become the new norm. Cyclone *Fani* in India in May 2019 was the strongest storm in 20 years. Slow-onset disasters, including drought and coastal erosion, are putting people increasingly at risk. Sea level rise point to certain areas becoming uninhabitable in the future. It is surmised that global resource requirements to deal with growing risk are increasing faster than national and international capacities to meet them.

Some of the critical areas of focus in India's policy planning include: recognising and empowering local leadership on risk reduction issues; focusing attention on emerging public health issues (epidemics/ pandemics); protecting and enabling access to social infrastructure, lifeline Infrastructure—schools, hospitals, community centres, access to housing, water and sanitation; supporting innovative ways to reduce risks, leveraging new technologies for systemic solutions; investing in education of youth and children to build long-term resilience; and diversifying funding routes to meet humanitarian needs and sustain NGOs. In view of this, India's Perspective Plan should entail the following.

- Strengthening of multi-hazard Warning System and ensure last mile connectivity for speedy dissemination.
- Formulating a robust Disaster Communication Network with GIS enabled Decision Support System (DSS) connecting Emergency Operations Centre (EOC) at the National, State and District level.
- Launching of Pan-India Earthquake, Floods and Landslide Mitigation Programmes similar to ongoing World Bank funded National Cyclone Risk Mitigation Programme covering coastal regions.
- Establishing the National Disaster Mitigation Fund, Risk Financing & Risk Insurance.
- Planning Higher Education and Research in DRR.
- Enhancing local capacity through volunteers so as to promote community resilience.

In addition, India has also taken numerous initiatives to engage with various international frameworks and having bilateral strategic dialogue/ partnership/ MoUs/agreements covering cooperation in the field of DM. However, the whole process needs to be formalised and requires a close coordination with the PMO, intelligence agencies, relevant Ministries besides the MEA, MHA, MoD/HQ IDS/Armed Forces HQs, along with Indian embassies in foreign countries providing specialist advice and

support. In this, the National Security Strategy should spell out suitable framework for the same.

While India has vast experience of undertaking HADR operations through Armed Forces, however response and involvement of the civil authorities/agencies remains sub-optimal. In order to evolve a cogent national strategy and plan, so as to render timely assistance, the civil capacity and capability requires to be bolstered and HADR needs to be included in India's National Security Strategy. In order to do this, a study of India's response during the 2004 Tsunami, 2011 Fukushima nuclear disaster in Japan and recent experience of stupendous effort in responding to Nepal earthquake of April 2015 could be taken up to formulate an effective framework and coordination mechanism for prompt international response.

Besides, the impetus to maritime engagements of the Indian Navy and Indian Coast Guard in responding to a calamity at sea and undertaking Search and Rescue (SAR) and HADR operations cannot be overemphasised. While providing disaster response, India could work either bi-laterally, or through multi-lateral institutions. In certain cases, bilateralism, may lead to India operating outside the mainstream international/HADR response. In case we opt to work through multi-lateral institutions, for example, like UNSC, UN OCHA, INSARAG, etc., then we would have to adopt their procedures and coordination mechanisms. These aspects need to be included in the SOPs/training manual for NDRF/other disaster response forces. India needs to leverage its DM/HADR operations abroad for furthering and securing Indian interests in the region. Therefore, it is important to broad-base this "assistance" and institutionalise it in order to further bolster national security.

In view of the complexity and interdependence of the various elements of national security and the multiplicity of organisations responsible for the implementation of all subsets of National Security Strategy, there is

a need to draw up a holistic action plan with an inter-ministerial, inter-departmental and inter-agency approach.

Conclusion

India has indeed come a long way in terms of enhancing our capacity to respond to various types of disasters which we face almost every year. Considering the size of the country and our vulnerability to almost all types of natural disasters, the focus of our effort on DRR and mitigation remains a big challenge. Since India has embarked on various initiatives entailing huge investment on development of infrastructure, it is important that disaster resilience should be cornerstone of our strategy for achieving Sustainable Development. Harnessing technological advancements too is likely to play a vital role in preventing and reducing impact of a disaster.

In this regard, number of initiatives have been taken up by NDMA and the States to involve local administration, NGOs, Corporate and most importantly the Community. It is the local community which is the first to get affected and so also first to respond to any mishap, hence enhancing their level of awareness so as to prevent human-induced disasters and building their capacity to withstand impact of disasters is one of the important element of DM Plans at National/State/District level. Role of Volunteers to supplement capacity at the local level cannot be over emphasised. Initiatives in this regard by NDMA and the State Governments need to be given impetus.

During the period when we are reeling under impact of COVID-19, parts of India got affected by perennial floods, cyclones and heatwave which posed a great challenge to administration and response forces. It is important that our plans, SOPs and drills cater for tackling multi-hazard situations. Scenario building for major DM Exercises should factor impact of pandemics also.

India has reached a stage where sound legal, institutional and scientific frameworks are being put in place; we now need a social framework to take the message of Disaster Risk Reduction as a way of life to each and every citizen of the country. Thus we need to build a safer and disaster resilient India, which should be embedded as one of our National Security objectives. National Security Strategy should adequately dwell upon measures to be taken to reduce the huge impact of disasters and rigours of climate change, causing recurring losses of lives and property, so that we can achieve our goals of sustained development. Our initiatives in international cooperation to project our capacity and technical prowess in the field of DM should promote our national interests and help us to leverage the same.

Notes

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5. See "Terminology," UNDRR. Available online at https://www.undrr.org/terminology, accessed on August 24, 2020.
6. Ibid.
7. Ministry of Home Affairs, Government of India, "National Policy on Disaster Management 2009,"national Disaster Management Authority, October 2019. Available online at https://ndma.gov.in/images/guidelines/national-dm-policy2009.pdf, accessed on August 28, 2020.

8. The DM Act 2005 mandates that there shall be a NDMP for the whole country and it enjoins all Ministries and Departments of Government of India to prepare comprehensive DM Plans detailing how each of them will contribute to the national efforts in the domains of disaster prevention, preparedness, response and recovery. NDMP 2019 (revised version of the first NDMP 2016) synthesizes various themes into a futuristic plan. The period envisaged as "Long Term" in the NDMP is co-terminus with year 2030, the ending year of the above mentioned 2015 global frameworks. The main pillars of NDMP 2019 include: conforming to legal mandates—DM Act 2005 & NPDM 2009; participating proactively to realise the global goals, as per three important International Agreements of 2015, to which India is signatory—Sendai Framework for Disaster Risk Reduction, Sustainable Development Goals, and Paris Agreement on Climate Change (COP-21); Prime Minister's 10 Point Agenda for DRR articulating contemporary national priorities (enunciated in 2016); and Mainstreaming DRR as an integral feature.
9. One of the significant fallout of enactment of the DM Act 2005 was creation of NDRF, a specialised Force which over the years has expanded (currently 16 Battalions including four under raising) and is well equipped and trained to speedily respond to all types of disasters. This development has led to substantial reduction of employment of Army for disaster response.
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11. Danan Gu (2019), "Exposure and vulnerability of natural disasters for world's cities," Department of Economic and Social Affairs, United nations December 2019. Available online at https://www.un.org/en/development/desa/population/publications/pdf/technical/TP2019-4.pdf, accessed on August 20, 2020.
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