

Improving U.S.-India HA/DR Coordination in the Indian Ocean

Nilanthi Samaranayake • Catherine Lea • Dmitry Gorenburg



Cleared for public release
DRM-2013-U-004941-Final2
July 2014

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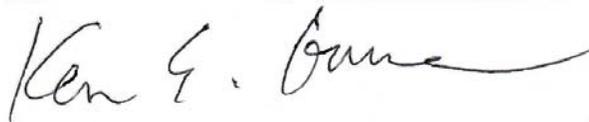
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Approved for distribution:

July 2014



Ken E. Gause, Director
International Affairs Group
CNA Strategic Studies

This document contains the best opinion of the authors at the time of issue.

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Summary

The CNA Corporation conducted this study to determine how the United States can best deepen coordination with India on humanitarian assistance and disaster relief (HA/DR) in the Indian Ocean. This study builds on the findings of a 2012 CNA Corporation study, *U.S.-India Security Burden-Sharing?*, which identified HA/DR as a functional area in which the United States could advance naval relations with India.¹ This is due to the frequency with which natural disasters strike the region, especially the Bay of Bengal, and, for India, the relative domestic political palatability of working with the United States in the aftermath of natural disasters.

The United States is increasingly looking to India to contribute to security in the Indian Ocean. Deepening U.S.-Indian economic connections, shared democratic identities, declining U.S. defense budgets, and the rise of China have drawn the United States closer to India as a security partner in the region.

To advance bilateral naval ties through coordination on HA/DR, this study determines how the United States can best draw on:

- India's new disaster response architecture and growing naval capabilities and experiences;
- lessons learned from case studies of U.S. and Indian relief provision after previous natural disasters in the Indian Ocean; and
- research into likely outcomes of future natural disaster scenarios.

¹ Nilanthi Samaranyake, Satu Limaye, Dmitry Gorenburg, Catherine Lea, and Thomas A. Bowditch, *U.S.-India Security Burden-Sharing? The Potential for Coordinated Capacity-Building in the Indian Ocean*, CNA Corporation, Apr. 2013, <http://www.cna.org/research/2013/us-india-security-burden-sharing>.

Findings

India has made substantial improvements in HA/DR capabilities and architecture in the last decade

Since the 2004 tsunami, the Indian government has allocated additional resources to improving India's disaster management capabilities. New organizations and entities include the National Disaster Management Agency (NDMA), the National Institute for Disaster Management (NIDM), and the National Disaster Response Force (NDRF). The Indian Navy has increased its capabilities by acquiring new multi-functional tankers, amphibious ships, and frigates, in addition to holding multinational HA/DR naval exercises. After the 2004 tsunami, all deployed Indian Navy ships began carrying disaster relief "bricks" containing food, medicine, clothing, water purification equipment, and kitchen supplies.

To match this growth in capabilities, there is a greater recognition among Indian officials and experts of the benefits of disaster relief diplomacy for India as a rising power in the Indo-Pacific.² A growing body of literature on the subject can be found among Indian strategists and officers, who write about the soft-power benefits of India providing relief to countries in the region and even to Japan after the 2011 tsunami. CDR Sarabjeet Singh Parmar of the Institute for Defence Studies and Analyses (IDSA) writes that these efforts portray India as a "responsible nation."³ The Indian Ministry of Defence has also publicized the military's HA/DR efforts after the 2004 tsunami, Cyclone Sidr, and Cyclone Nargis, among other operations, in its annual reports.⁴

² D. Suba Chandran et al., "India's Disaster Relief Diplomacy," *Indian Foreign Affairs Journal* 4, no. 2 (Apr.–Jun. 2009), 63–80.

³ CDR Sarabjeet Singh Parmar, "Humanitarian Assistance and Disaster Relief (HADR) in India's National Strategy," in *Anti-Piracy and Humanitarian Operations – International Order at Sea: Workshop 1*, Jo Inge Bekkevold and Robert S. Ross, eds. (Oslo: Norwegian Institute for Defence Studies, 2011), 36, http://idsa.in/system/files/book_OrderSea.pdf.

⁴ Indian Ministry of Defence, *Annual Reports, 2004-2009*, <http://mod.nic.in/reports/welcome.html>.

Both countries' navies have comparative advantages in disaster relief

Despite additions to the Indian Navy's capacity over the past decade, the U.S. Navy will continue to have an advantage in capabilities. However, India will still have the advantage of location in responding to disasters in the Indian Ocean, as its forces will be able to arrive on scene more quickly than U.S. forces. For example, after the 2004 tsunami struck, Indian aircraft and ships arrived within 24 hours in the first of three countries in which India would conduct relief operations—even before U.S. naval forces.⁵ Similarly, the Indian Navy was the first to offer relief by sea after Cyclone Nargis struck Burma in 2008.⁶

There will also be challenges

India may have “backyard anxieties” over coordination on HA/DR planning and the U.S. provision of disaster relief in India's near abroad, especially when it comes to the smaller South Asian countries. There are two main sources of discomfort: New Delhi's belief that India will play the leading role in the foreign affairs of its smaller neighbors, and its aversion to appearing to work too closely in concert with the United States, which, among other reasons, could upset China. Recognizing New Delhi's concerns will help the United States when it chooses to coordinate on HA/DR. Washington will need to exercise patience and have realistic expectations.

⁵ Sunil Balakrishnan, “HADR Operations: Lessons Learnt by the Indian Navy,” in *Indian Ocean Challenges*, Pradeep Kaushiva and Abhijit Singh, eds. (New Delhi: Kw Publisher, 2013), 120; Vijay Sakhuja, “Indian Naval Diplomacy: Post Tsunami,” Institute of Peace and Conflict Studies (IPCS), Feb. 8, 2005, <http://www.ipcs.org/article/navy/indian-naval-diplomacy-post-tsunami-1640.html>; Uday Bhaskar, “Tsunami Reveals Indian Military's Humanitarian Response Capability,” *IDS Comment*, Jan. 8, 2005, http://www.idsa.in/idsastrategiccomments/TsunamiRevealsIndianMilitaryHumanitarianResponseCapability_CUBhaskar_080105.

⁶ Indian Ministry of Defence, *Annual Report 2008-2009*, 157; Hlaing Aung, “Let's Work Together for the Nation to Be Able to Rise from Natural Disaster,” *New Light of Myanmar*, May 15, 2008, 6, <http://burmalibrary.org/docs4/NLM2008-05-15.pdf>.

India's preference for ad hoc operational arrangements will not disrupt U.S.-Indian naval coordination on HA/DR

U.S. perceptions of the level of cooperation with the Indian military tend to be low, given India's refusal to sign the so-called foundational agreements, including the Logistics Support Agreement (LSA), Basic Exchange and Cooperation Agreement (BECA) for Geo-Spatial Cooperation, and Communication Interoperability and Security Memorandum of Agreement (CISMOA). However, both navies have been able to coordinate operationally in areas such as counterpiracy and HA/DR. Furthermore, strong consensus exists among Indian interviewees that whenever naval coordination needs to occur with the United States, it will take place. India's preference for ad hoc arrangements may be undesirable to Washington, but it does not preclude effective coordination on HA/DR.

Larger disasters lead to closer coordination

Our case study and scenario analysis reveal that Indian policymakers are more likely to grant certain allowances after a calamity strikes, thereby facilitating significant coordination with U.S. and other military forces. Operational U.S.-India naval coordination after the 2004 tsunami had a chance for success from the start due to the longstanding friendship between Admirals Walter Doran, then the commander of U.S. Pacific Fleet (PACFLT), and Arun Prakash, then India's chief of naval staff. Yet, the creation of the Tsunami Core Group (consisting of the United States, India, Japan, and Australia) was critical in providing the overarching political support for effective disaster relief. In terms of India's ability to coordinate with other countries, this vehicle facilitated relief operations with New Delhi, permitting special landing clearances and overflight rights.

Introduction

In 2012, the CNA Corporation examined the potential for the United States and India to coordinate on providing security assistance and capacity-building in the South Asian littoral countries of the Indian Ocean as a form of security burden-sharing.⁷ Of all the functional areas of maritime security analyzed, we concluded that humanitarian assistance and disaster relief (HA/DR) cooperation provides the best chance to advance bilateral naval relations. This is for several reasons. First and foremost, the United States and India are the two major maritime nations operating in the region, and therefore they have the greatest ability to contribute to future HA/DR operations in the region. Second, the Indian Ocean, especially the Bay of Bengal, is prone to regular natural disasters. Third, political sensitivities that otherwise inhibit closer bilateral cooperation tend to diminish in the aftermath of a natural disaster.

This study continues CNA's analysis of prospects for enhancing navy-to-navy cooperation between the United States and India by focusing on identifying ways for the two navies to coordinate on the provision of disaster relief to Indian Ocean countries. There is a precedent for the United States and India working together during HA/DR operations. After the 2004 tsunami, which killed over 200,000 people in 12 countries, the two navies coordinated their response operations. There is another precedent for operational coordination, outside the realm of HA/DR. Following the 9/11 terrorist attacks, the Indian Navy agreed to an American request to escort U.S.-flagged high-value vessels through the Strait of Malacca under Operation Sagittarius.⁸ Offshore patrol vessels INS *Sukanya* and INS *Sharda* escorted 24 U.S. vessels between Port Blair and Singapore from April to September

⁷ Samaranayake et al., *U.S.-India Security Burden-Sharing?*

⁸ Sudesh Rani, "Indo-U.S. Maritime Cooperation: Challenges and Prospects," *Maritime Affairs* 8, no. 2 (2012), 130.

2002.⁹ India's National Maritime Foundation scholar Sudesh Rani called this coordination an "unprecedented step by India that opened a new chapter in maritime relations."¹⁰ Admiral Walter Doran, who commanded PACFLT during the 2004–2005 tsunami response operations, cites this escort operation as an important development that illustrated the benefits of naval cooperation and paved the way for the two navies to coordinate on HA/DR in 2004.¹¹

In addition to the propensity for disasters to strike the Indian Ocean, there are other, broader, factors that may draw the United States and India into a closer HA/DR partnership. The value of U.S.-India cooperation is part and parcel of Washington's view of New Delhi as a strategic partner, given the countries' shared democratic political systems, deepening economic linkages, and apprehensions about the rise of China. The decline of the U.S. defense budget also necessitates that the U.S. government seek security burden-sharing opportunities with India whenever possible.

Over the past decade, the U.S. and Indian navies have coordinated operations when their interests have overlapped. The U.S. Department of Defense *Report to Congress on U.S.-India Security Cooperation* lists four occasions of operational naval coordination: the previous two examples of post-9/11 escorts and the 2004 tsunami responses, plus the 2006 non-combatant evacuation in Lebanon and the ongoing counterpiracy operations in the Gulf of Aden.¹² U.S. cooperation with India is likely to grow as India modernizes its navy and adds capabilities to support improved disaster relief operations and as the fre-

⁹ Gurmeet Kanwal, "Maritime Cooperation: Enhancing India's Reach and Influence in the Asia-Pacific Region," in *Naval Forces* 23, International Forum for Maritime Power, 2012, 27.

¹⁰ Rani, "Indo-U.S. Maritime Cooperation," 130.

¹¹ Admiral (ret.) Walter Doran, "U.S.-India Military Engagement: A CSIS Report Rollout Event," Remarks at CSIS, Washington, D.C., Nov. 20, 2012.

¹² U.S. Department of Defense, *Report to Congress on U.S.-India Security Cooperation*, Nov. 2011, 4, www.defense.gov/pubs/pdfs/20111101_NDAA_Report_on_US_India_Security_Cooperation.pdf.

quency of natural disasters, and therefore HA/DR missions, continues to increase in the Indian Ocean.¹³

Bilateral agreements have committed the United States and India to improving HA/DR cooperation. In the June 2005 *New Framework for the U.S.-India Defense Relationship*, U.S. Secretary of Defense Donald Rumsfeld and Indian Minister of Defense Pranab Mukherjee agreed to “strengthen the abilities of our militaries to respond quickly to disaster situations, including in combined operations.”¹⁴ A month later, President George W. Bush and Prime Minister Manmohan Singh launched the *U.S.-India Disaster Relief Initiative*. According to the fact sheet on that initiative:

As part of the Disaster Relief Initiative, the U.S. and India agree to cooperate to help build disaster response capabilities in other countries. They would also share best practices and experiences with a view to strengthening a regional response to natural disasters.¹⁵

In 2011, the U.S.-India Defense Policy Group meeting between U.S. Under Secretary of Defense for Policy Michèle Flournoy and Indian Defense Secretary Pradeep Kumar prioritized HA/DR, along with maritime security and counterterrorism, as areas of cooperation.¹⁶

More broadly, the 2014 *Quadrennial Defense Review* voices support for India’s emergence, and the 2012 U.S. Defense Strategic Guidance encourages India to be a provider of security to the Indian Ocean re-

¹³ Bernard D. Cole, “Maritime Support for Humanitarian Aid and Disaster Relief Ashore,” in *Anti-Piracy and Humanitarian Operations – International Order at Sea: Workshop 1*, Jo Inge Bekkevold and Robert S. Ross, eds. (Oslo: Norwegian Institute for Defence Studies, 2011), 52, http://idsa.in/system/files/book_OrderSea.pdf.

¹⁴ *New Framework for the U.S.-India Defense Relationship*, Arlington, Virginia, Jun. 28, 2005, <http://library.rumsfeld.com/doclib/sp/3211/2005-06-28%20New%20Framework%20for%20the%20US-India%20Defense%20Relationship.pdf>.

¹⁵ U.S. Department of State, “Fact Sheet: U.S.-India Disaster Relief Initiative,” Washington, D.C., Jul. 18, 2005, <http://2001-2009.state.gov/p/sca/rls/fs/2005/49730.htm>.

¹⁶ U.S. Department of Defense, *Report to Congress*, 2011, 2.

gion, which certainly includes HA/DR responsibilities.¹⁷ And despite India's recurring sensitivities over appearing to side with the United States in matters of security policy, Indian Minister of Defence A. K. Antony appeared to support this role for India in a speech to the Naval Commanders Conference: "The Indian Navy has been mandated to be a net security provider to island nations in the Indian Ocean region."¹⁸ More recently, Prime Minister Singh repeated this call for India in May 2013:

We have also sought to assume our responsibility for stability in the Indian Ocean Region. We are well positioned, therefore, to become a net provider of security in our immediate region and beyond.¹⁹

A disaster in this part of the world is a matter not of *if* but of *when* the next one will occur. Given the frequency of natural disasters in the Indian Ocean, military forces, and especially navies, will surely be called upon to respond. It is worth remembering, however, that there will be only so much the United States and India can control in the aftermath of what are inherently unpredictable and highly emotional situations. Policy-level direction and media scrutiny will influence military operations, depending on the severity of the disaster. Washington and New Delhi can improve the quality of their responses in the face of these uncertainties through effective coordination that draws on the comparative advantages of their navies.

Analytical approach

We relied on a combination of analytical processes, including a comparative assessment of the Indian and U.S. navies' capabilities to conduct HA/DR; an analysis of New Delhi's receptivity to U.S. disaster

¹⁷ "The United States is also investing in a long-term strategic partnership with India to support its ability to serve as a regional economic anchor and provider of security in the broader Indian Ocean region." U.S. Department of Defense, *Sustaining U.S. Global Leadership: Priorities for 21st Century Defense*, Jan. 5, 2012, 2.

¹⁸ Antony quoted in Rani, "Indo-U.S. Maritime Cooperation," 131.

¹⁹ Singh quoted in Vinay Kumar, "India Well Positioned to Become Net Provider of Security: Manmohan Singh," *Hindu*, May 23, 2013.

relief in Indian Ocean countries; and a scenarios-based exploration of Indian and U.S. naval perspectives following natural disasters.

First, we examined past operations in which both the United States and India provided relief to smaller South Asian and Bay of Bengal countries in the Indian Ocean: Bangladesh, Burma, Sri Lanka, and Maldives. We investigated whether U.S. and Indian coordination existed in response to several natural disasters in the region: the 2004 tsunami, the 2007 cyclone in Bangladesh, and the 2008 cyclone in Burma. Through these case studies, we conducted a historic assessment of decision-making in Indian Navy crisis responses. This analysis allowed us to understand Indian and U.S. approaches to HA/DR operations, thereby providing a basis for recommendations to enhance future U.S.-Indian naval coordination.

Second, we evaluated India's evolving disaster relief organizations and capabilities which have emerged over the past decade. We analyzed additions to Indian Navy capabilities since the 2004 tsunami operations and Indian Navy disaster relief exercises with other countries. We then assessed the improvements that these changes have produced for the U.S.-Indian naval relationship.

Research and analysis in these two areas drew on four sources of information: interviews, think-tank meetings and conferences, CNA Corporation archives of disaster relief studies, and open-source information.

- In January–March 2013, CNA conducted semi-structured interviews with nearly 50 respondents, including current and retired Indian and U.S. officials and officers, in New Delhi, Washington, D.C., and Honolulu (see the appendix). This number includes questions asked of high-ranking officials when formal interviews were not possible. The study team also conducted interviews with officials and experts from other Indian Ocean countries, including Sri Lanka, Maldives, and Seychelles.²⁰

²⁰ Except when respondents' identities are stated, we conducted interviews on a not-for-attribution basis. Footnote details (e.g., location of interview, month of interview) are omitted in order to protect the anonymity

- The CNA study team participated in 10 think-tank meetings and conferences in Washington, D.C., and Honolulu, including the fourth annual CNA-National Maritime Foundation (NMF) workshop. At these public and private meetings, we posed study-specific questions to high-ranking U.S. and South Asian government officials and influential experts.
- We reviewed CNA Corporation studies on previous disaster relief operations.
- We also accessed open-source media and journal articles; books; and database information. These included U.S. Department of Defense HA/DR doctrine; concepts of operations; and tactics, techniques, and procedures.

To test our analysis, we vetted our findings through a facilitated roundtable which used scenarios to explore how U.S. and Indian navy leaders might coordinate operations after future natural disasters in the Indian Ocean. Roundtable participants reacted to the following three disaster scenarios:²¹

- A cyclone in the Bay of Bengal that strikes both Burma and Bangladesh
- Flooding in Bangladesh that is exacerbated by climate change
- A tsunami in the Indian Ocean that affects southern India, Sri Lanka, Maldives, and Seychelles.

We designed these scenarios to explore how operational coordination, if any, could unfold between U.S. and Indian forces after a disaster. On the basis of our analysis, we were able to form conclusions and recommendations on how the United States could pursue coordination with India on HA/DR in the Indian Ocean.

of interview respondents. The appendix details the organizations and government agencies with which some respondents are affiliated. *Please note that their opinions referenced in this report do not represent the official views of their organizations or government agencies.*

²¹ This two-hour, closed-door event was held at CNA Corporation headquarters in April 2013. We invited five prominent, retired U.S. Navy and Indian Navy officials to participate.

Organization of this report

The remainder of this report comprises four chapters. The first chapter examines three past U.S. and Indian disaster relief operations in the Indian Ocean and the lessons learned from them. The second chapter analyzes additions to India's disaster relief architecture and capabilities over the past decade. The third chapter analyzes U.S. and Indian naval coordination over the past decade. The final chapter provides conclusions and recommendations for the United States to consider in order to enhance its HA/DR interactions with India in anticipation of future disasters in the Indian Ocean.

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U.S. and Indian disaster relief experiences in the Indian Ocean

This chapter examines previous U.S. and Indian naval operations and instances of cooperation, in order to determine lessons learned for future HA/DR efforts in the Indian Ocean. For this analysis, we selected three relief operations that followed major natural disasters in the past decade: the Indian Ocean tsunami in 2004, Cyclone Sidr in Bangladesh in 2007, and Cyclone Nargis in Burma in 2008.

Our discussion of each operation focuses on India's disaster responses rather than those of the United States to better understand New Delhi's political-military perspectives and decision-making on naval operations during such crises. Furthermore, responses by the United States have been studied much more extensively, including by CNA. We also detail evidence of U.S.-India coordination, if any.

2004 Tsunami

The response to the 2004 Indian Ocean tsunami is the standout episode of U.S.-Indian operational coordination on disaster relief in the Indian Ocean.²² While the two countries did not conduct integrated operations, their navies did coordinate by maintaining continual contact at the senior levels. Admiral Arun Prakash, India's chief of naval staff, and Admiral Walter Doran, PACFLT commander, were in frequent communication. The two became friends as junior officers at the Defence Services Staff College in Wellington, Tamil Nadu. The two admirals' friendship of nearly 30 years facilitated

²² For analysis of the U.S. response to the 2004 tsunami, see Maria Kingsley and Alison Rimsky Vernon, *Disaster Relief and Engagement Operations, 1990-2010: A Synthesis of CNA Analyses*, CNA Corporation, Apr. 2011, <http://www.cna.org/research/2011/disaster-relief-engagement-operations-1990-2010>.

communication and reassurance during disaster relief operations.²³ They kept in regular contact, and shared the general locations of their ships and the areas in which they were providing aid.²⁴ Vice Admiral Sureesh Mehta, India's deputy chief of naval staff, was responsible for managing disaster relief operations at Naval Headquarters in New Delhi.²⁵ He was in communication with then Vice Admiral Jonathan Greenert, U.S. Seventh Fleet commander, who was in Utapao, Thailand. Admiral Prakash dispatched one liaison officer to Utapao and another to Hawaii to coordinate with U.S. forces for relief operations.²⁶

While there was little side-by-side coordination between the two navies during tsunami response operations, both countries were working on delivering relief at the same time and deconflicting efforts.²⁷ Admiral Doran, commander of PACFLT at the time, states that his goal was to ensure that U.S. naval forces did not arrive at the same location where Indian forces were already based. This implies that effective coordination with India may not require close interoperability in the sense that interoperability with Australia—a treaty ally—is understood.

The Indian armed forces conducted both domestic and international operations after the tsunami. Domestically, India conducted Operation MADAD in Tamil Nadu, Pondicherry, and Kerala, and Operation SEA WAVES in the Andaman and Nicobar Islands. In Sri Lanka, Maldives, and Indonesia, India's response missions were Operation RAINBOW, Operation CASTOR, and Operation GAMBHIR,²⁸ re-

²³ S. Amer Latif, "A Tale of Two Admirals," *U.S.-India Insight*, CSIS, Oct. 2012, http://csis.org/files/publication/121101_WadhvaniChair_USIndiaInsight.pdf.

²⁴ CNA interview with Admiral (ret.) Walter Doran, 2012.

²⁵ Balakrishnan, "HADR Operations," 119.

²⁶ CNA interviews of retired Indian Navy and U.S. Navy officials, 2013 and 2012, respectively.

²⁷ CNA interview with Admiral (ret.) Walter Doran, 2012.

²⁸ Because the focus of this report is the South Asian countries in the Indian Ocean, we will not analyze India's response in Indonesia, Operation GAMBHIR.

spectively. Estimates vary as to the number of ships and personnel dispatched by the Indian Navy.

India responded quickly and was even first to arrive in the tsunami-affected Sri Lanka.²⁹ The 2009 Indian Maritime Doctrine states that 27 Indian Navy ships deployed within 12 hours of the disaster.³⁰ Interviewees who were high-ranking Indian Navy officials at the time have said that the Indian Navy sailed all the ships it could.³¹ By the end of the first evening after the tsunami struck, India's relief aircraft had landed in Sri Lanka.³² By the following morning—i.e., within 24 hours of the tsunami—two Indian Navy ships, INS *Sharda* and INS *Sandhayak*,³³ had arrived in Galle and Trincomalee.³⁴ The Indian Navy conducted a hydrographic survey of Galle port and set up medical camps. On December 28, a third ship, INS *Sutlej*, arrived in Galle. In interviews, retired and active-duty Indian Navy officers explain how comfortable their country's forces already were after operating for years in Sri Lanka. Indian forces had even conducted flood relief there in the year before the 2004 tsunami, during Operation DENIM.³⁵

In Maldives, INS *Mysore* arrived within 48 hours of the tsunami, and INS *Udaygiri* and INS *Aditya* came the next day, December 29.³⁶ The Indian Navy set up a maritime coordination center at Male, which facilitated helicopter deliveries. The Indian Air Force carried out relief operations in Colombo and Male, using two HS-748 medium-sized

²⁹ Parmar, "Humanitarian Assistance and Disaster Relief," 37; Bhaskar, "Tsunami Reveals."

³⁰ Integrated Headquarters, Ministry of Defence (Navy), Indian Maritime Doctrine, INBR 8, 2009, 121.

³¹ CNA interviews, 2012 and 2013.

³² CNA interviews, 2013; John Lancaster, "India Takes Major Role in Sri Lanka Relief Effort," *Washington Post*, Jan. 20, 2005.

³³ Bhaskar, "Tsunami Reveals."

³⁴ Balakrishnan, "HADR Operations," 120-121.

³⁵ CNA interviews, 2013.

³⁶ Bhaskar, "Tsunami Reveals."

turboprop aircraft and six Mi-8 and Mi-17 twin-turbine transport helicopters.³⁷

In total, India deployed 32 ships, 20 helicopters, and seven aircraft during five disaster relief operations.³⁸ The 2009 Indian Maritime Doctrine estimates that roughly 5,000 naval personnel worked in these missions.³⁹ Captain Sunil Balakrishnan estimates that the Indian Navy “pressed 654 ship days into service” and conducted more than 450 helicopter or aerial sorties.⁴⁰ By February 2005, Indian Navy operations had switched from search and rescue to relief, recovery, and reconstruction.⁴¹

In addition to India’s contributions, it is worth noting other important disaster response efforts from countries in the region. For example, the Pakistan Navy had already been in Maldives for a goodwill visit when the tsunami struck and was the first foreign responder. PNS *Tariq* and PNS *Nasr*, plus Pakistan Navy helicopters, assisted local forces in evacuating tourists, surveying damage, and providing medical aid.⁴² Meanwhile, Australia’s Defence Force was the first responder in Indonesia, the day after the tsunami hit; U.S. and Indian forces arrived days later.

Compared to the Indian Navy, U.S. naval forces took longer to reach the disaster areas in Sri Lanka and Maldives. The Indian Navy provid-

³⁷ Indian Ministry of Defence, *Annual Report: 2004-2005*, 183.

³⁸ Sakhuja, “Indian Naval Diplomacy.” Vice Admiral Raman Puri, who was Chief of Integrated Staff to Chairman, Chiefs of Staff Committee, during tsunami relief operations in 2004, has detailed the resources deployed for all Indian armed forces operations: Vice Admiral Raman Puri, “Tsunami Relief Operations by Indian Armed Forces,” United Service Institution (USI) of India, 2010, <http://www.usiofindia.org/Article/?pub=Journal&pubno=560&ano=484>.

³⁹ Indian Maritime Doctrine, 2009, 121.

⁴⁰ Balakrishnan, “HADR Operations,” 121.

⁴¹ Sakhuja, “Indian Naval Diplomacy.”

⁴² “Maldives Confers Top Award on Pakistan Naval Commander,” *Haveeru*, Oct. 10, 2013, <http://www.haveeru.com.mv/news/51686>; Pakistan Navy documents on HA/DR provided to CNA by the Embassy of Pakistan, Washington, D.C., Sept. 24, 2013.

ed updates to U.S. forces prior to their arrival.⁴³ The United States established Joint Task Force 536 in Utapao, Thailand, on December 28—two days after the tsunami struck.⁴⁴ Admiral Thomas Fargo, then commander of U.S. Pacific Command (PACOM), and Admiral Doran, PACFLT commander, soon announced Operation UNIFIED ASSISTANCE and ordered all ships to disaster areas. Also on December 28, Admiral Jonathan Greenert, who was Seventh Fleet commander at the time, ordered USS *Abraham Lincoln* to depart Hong Kong and go to Indonesia.⁴⁵

Meanwhile, USS *Bonhomme Richard*, leading Expeditionary Strike Group Five, left Guam and was steaming toward Sri Lanka when it was diverted to Indonesia; it arrived January 3, 2005. USS *Duluth*, with three helicopters on board, continued on to conduct relief operations in Sri Lanka, arriving on January 9. Two U.S. ships that were prepositioned in Guam delivered relief to Maldives in late January. The hospital ship USNS *Mercy* provided important medical relief in Southeast Asia. By January 5, Operation UNIFIED ASSISTANCE had provided major relief consisting of over 25 U.S. Navy ships, 45 fixed-wing aircraft, and 58 helicopters carrying 600,000 pounds of food, water, medicine, and other items.⁴⁶

The United States and India also coordinated at the policy level after President George W. Bush announced the creation of the Tsunami Core Group, consisting of the United States, India, Japan, and Australia. The respective country leads were Marc Grossman, the U.S. under secretary of state for political affairs; Shyam Saran, the Indian foreign secretary; Koji Tsuruoka, the deputy director general of the Japanese Ministry of Foreign Affairs; and Doug Chester, the deputy secretary of the Australian Department of Foreign Affairs and Trade. The Tsunami Core Group coordinated daily through conference calls.⁴⁷ Because of this assembling, the Indian government granted ad

⁴³ CNA interviews with retired Indian Navy officers who worked on tsunami relief operations, 2013.

⁴⁴ Marolda, *Ready Seapower*, 144.

⁴⁵ Ibid.

⁴⁶ Marolda, *Ready Seapower*, 145.

⁴⁷ Marc Grossman, “The Tsunami Core Group: A Step toward a Transformed Diplomacy in Asia and Beyond,” *Security Challenges* 1, no. 1 (2005), 13,

hoc “special procedures” such as overflight rights and landing clearances to Core Group military aircraft.⁴⁸ In 2005, Dr. S. Jaishankar, then joint secretary in the Indian Ministry of External Affairs and now ambassador to the United States, discussed the benefits of the daily conference calls and how U.S.-India coordination in Sri Lanka was especially effective:

Each participant provided a daily briefing of their national effort and, in turn, received similar accounts from others. This coordination was extremely useful and effective, as it allowed sharing of information and avoidance of duplication so integral to optimising an international relief effort. In many cases, one party had assets and capabilities that addressed the needs of another, thereby obviating a situation where additional resources would have to be summoned with loss of time. Gaps were filled and back-ups provided on a timely basis as a result. From the Indian perspective, coordination between India and the United States in rescue and relief operations in Sri Lanka was of particular note.⁴⁹

U.S. and Indian operational coordination ended up being as successful as it was in part because both navies had political top cover due to the Tsunami Core Group.

2007 Cyclone Sidr

The U.S. Operation SEA ANGEL II in 2007 was in many ways a repeat of the successful U.S. response operation in Bangladesh after the far more devastating Cyclone Marian in 1991.⁵⁰ However, we do not find

<http://www.securitychallenges.org.au/ArticlePDFs/vol1no1Grossman.pdf>.

⁴⁸ Dr. S. Jaishankar, Joint Secretary, Ministry of External Affairs, Government of India, “2004 Tsunami Disaster – Consequences for Regional Cooperation,” 26th Annual Pacific Symposium, Asia Pacific Democracies: Advancing Prosperity and Security, Institute for National Strategic Studies, National Defense University, June 8-10, 2005, <http://www.ndu.edu/inss/symposia/Pacific2005/jaishankar.pdf>.

⁴⁹ Ibid.

⁵⁰ For analysis about the U.S. response to Cyclones Sidr and Marian, see Maria Kingsley and Alison Rimsky Vernon, *Disaster Relief and Engagement Operations, 1990-2010: A Synthesis of CNA Analyses*, CNA Corporation, Apr. 2011, <http://www.cna.org/research/2011/disaster-relief-engagement->

evidence of U.S. and Indian operational coordination in documentation or interviews. The contemporary climate of U.S.-India defense relations makes it hard to imagine that the United States and India would not coordinate during future relief operations in Bangladesh. Therefore, it is worth examining both India's and the United States' provision of disaster relief in the aftermath of Cyclone Sidr; by doing so, we can gain potential insights into future opportunities for U.S.-India HA/DR coordination in Bangladesh.

Cyclone Sidr struck Bangladesh on November 15, 2007, and killed nearly 3,500 people. While a Ministry of Defence press release discussed how India undertook disaster response "in the immediate aftermath of the cyclone,"⁵¹ India's first aid did not arrive until one week after the cyclone made landfall. On November 18, Prime Minister Manmohan Singh pledged to provide any assistance needed by Bangladesh. On November 19, India offered a relief package of \$1 million, which was the same amount promised by China, but less than that promised by Japan (\$14 million) or by the United Kingdom (\$5 million), for example.⁵² A journalist writing in the *Times of India* the following day criticized the "paltry \$1 million" amount and urged India to dispatch naval vessels and helicopters.⁵³ By comparison, President George W. Bush announced on November 17 that the United States was offering \$2.1 million in assistance to Bangladesh and stated that USS *Essex* and USS *Kearsarge* had begun moving to the Bay of Bengal.⁵⁴ The ships reached Bangladesh on November 22, and relief

operations-1990-2010; Lt. Col. Gary W. Anderson, *Operation SEA ANGEL: A Retrospective on the 1991 Humanitarian Relief Operation in Bangladesh*, Naval War College, Jan. 15, 1992.

⁵¹ Indian Ministry of Defence, "Bangladesh Relief Operations – Indian Navy," Dec. 13, 2007, <http://pib.nic.in/newsite/erelease.aspx?relid=33985>.

⁵² "Donors Pledge Over \$142 Million Assistance for Cyclone Affected People," *Daily Star*, Nov. 20, 2007.

⁵³ Indrani Bagchi, "India Gives a Meagre \$1M To Cyclone-Hit Bangladesh," *Times of India*, Nov. 20, 2007.

⁵⁴ U.S. Department of State, "Bushes Offer Condolences to Victims of Cyclone Sidr in Bangladesh: USS *Essex*, USS *Kearsarge* en route to assist in aid operations," Nov. 17, 2007, <http://iipdigital.usembassy.gov/st/english/texttrans/2007/11/20071119112508xjsnommis0.7737085.html#axzz2zvdPF2H6>.

provision soon began.⁵⁵ Meanwhile, two U.S. Marine Corps (USMC) C-130 aircraft carrying a humanitarian assistance survey team and medical equipment arrived in Dhaka on November 19, although delivery of relief did not begin until a few days later, after the team had coordinated with the Bangladeshi government.⁵⁶

An Indian Air Force (IAF) IL-76 cargo aircraft first landed in Dhaka a week after the cyclone struck, on November 22, with roughly 40 tons of relief materials and medical supplies.⁵⁷ The IAF continued to send multiple shipments of medicines, tents, blankets, ready-to-eat meals, and portable water-purifiers to Dhaka.⁵⁸ The IAF airlifted medical supplies worth 5.5 million Indian rupees, or \$140,000 at the time.⁵⁹ Dispatched from Visakhapatnam at the Eastern Naval Command (ENC), the Indian Navy's amphibious ships—INS *Gharial*, INS *Mahish*, INS *Cheetah*, and INS *Kumbhir*—shipped rice and other relief materials to Chittagong. Of the four ships, INS *Cheetah* arrived first, on December 8, with 250 tons of rice. The tank-landing ship INS *Gharial* transported 4,000 tons of rice to Chittagong during four phases between December 9, 2007, and January 26, 2008.⁶⁰ In total, the Indian Navy provided 5,000 tons of rice.⁶¹ Bangladesh Navy Commodore Abdul Baten, now assistant chief of naval staff for materials, confirms that Indian Navy assistance consisted of “logistic ships and amphibious vessels” and describes with gratitude the Indian Navy’s “wholehearted support in post-Sidr disaster management.”⁶²

⁵⁵ Kingsley and Vernon, *Disaster Relief and Engagement Operations*, 30.

⁵⁶ Ibid.; “Military Rescuers Reach All Districts,” *Daily Star*, Nov. 21, 2007; “Two US Marine Aircraft in Dhaka with Medical Teams,” *Daily Star*, Nov. 22, 2007.

⁵⁷ “Relief Pouring In: WB Pledges \$250m; Pakistan, India Sending Relief by Ship, Plane,” *Daily Star*, Nov. 22, 2007.

⁵⁸ “Pranab Arrives This Morning,” *Daily Star*, Dec. 1, 2007.

⁵⁹ Indian Ministry of Defence, *Annual Report: 2007-2008*, 105.

⁶⁰ Indian Ministry of Defence, *Annual Report: 2008- 2009*, 157.

⁶¹ Ibid., 36.

⁶² Abdul Baten, “Humanitarian Assistance and Disaster Relief: A Perspective from Bangladesh,” in *Indian Ocean Challenges: A Quest for Cooperative Solutions*, Pradeep Kaushiva and Abhijit Singh, eds. (New Delhi: Knowledge World Publishers, 2013), 130.

After examining the areas where U.S. and Indian forces provided aid, it appears that the primary reason they had little or no operational coordination was that they were working in different areas of responsibility. U.S. forces went into remote and heavy-hit locations to deliver food and medical assistance, whereas Indian relief appears to have been restricted to the port of Chittagong and the airport in Dhaka. Pranab Mukherjee, India's minister of external affairs, stated that New Delhi offered to send helicopters to conduct rescue operations in affected areas, but Dhaka declined.⁶³ The U.S. naval forces nearest Chittagong operated in Kutubdia, farther south. Both countries delivered relief in Dhaka; they may have communicated in order to de-conflict, but we did not find evidence of this.

Whereas Indian forces were the first to respond in Sri Lanka after the 2004 tsunami struck, Indian Navy ships did not arrive in Bangladesh until December 8, and IAF aircraft did not arrive until three days after USMC C-130s. It is unclear what contributed to the delay in ordering Indian relief after Cyclone Sidr made landfall.⁶⁴ Perhaps Bangladesh's interim military-backed, caretaker-government at the time was not consulting with India as closely as it was with the United States, or perhaps India did not want to appear intrusive by responding before a formal request came from Bangladesh.⁶⁵ The United States did not wait for such a request before dispatching naval ships,

⁶³ "Statement by External Affairs Minister Shri Pranab Mukherjee to the Bangladeshi Media Followed by Question and Answer Session Prior to Departure from Dhaka," Ministry of External Affairs, Government of India, Dec. 1, 2007, <http://www.mea.gov.in/media-briefings.htm?dtl/3879/Statement+by+External+Affairs+Minister+Shri+Pranab+Mukherjee+to+the+Bangladeshi+media+followed+by+Question+and+Answer+session+prior+to+departure+from+Dhaka>.

⁶⁴ A controversy developed a few weeks after India's initial disaster response over difficulties in exporting Indian rice to Bangladesh across land border customs stations. See D. Suba Chandran et al., "India's Disaster Relief Diplomacy," 70.

⁶⁵ Indian foreign policy is especially mindful of sovereignty concerns, as seen in the debate over the "Responsibility to Protect" principle that emerged after Cyclone Nargis in Burma. See CDR Sarabjeet Singh Parmar, "Humanitarian Assistance and Disaster Relief (HADR) in India's National Strategy," *Journal of Defence Studies* 4, no. 1 (Jan. 2012), 95-97.

because those ships would have to travel long distances and needed to be ready when the request would—in Washington’s view—likely come. Despite holding off on delivery of relief until the Bangladeshi government sent this request, the United States still received criticism for its early response.⁶⁶

A 2008 report by the government of Bangladesh makes clear that “no formal international appeal for foreign assistance was made by the Government.”⁶⁷ Yet, the government of Bangladesh requested U.S. relief on November 22, and relief provision soon began.⁶⁸ Meanwhile, an Indian envoy was part of the United Nations Development Program team surveying the damage on November 21.⁶⁹ It appears that the Indian government’s decision to dispatch its first relief supplies came on November 21 during a meeting at the Ministry of Defence, which was attended by representatives from the Ministries of External Affairs and Home.⁷⁰ Due to India’s proximity to Bangladesh, IAF cargo aircraft arrived in Bangladesh the following morning; Indian Navy ships understandably took longer to steam to Chittagong; they first arrived on December 8.

Despite the obstacles of coordinating relief request, dispatch, and delivery of relief between countries at the political level and publicizing the steps in this process, the cause for the delay at least does not appear to have resided in the Indian military. In fact, all three services had already been making preparations to provide relief to populations in West Bengal and Orissa states in case the cyclone hit India’s

⁶⁶ Kingsley and Vernon, *Disaster Relief and Engagement Operations*, 31-32.

⁶⁷ Government of Bangladesh (Assisted by the International Development Community with Financial Support from the European Commission), *Cyclone Sidr in Bangladesh: Damage, Loss and Needs Assessment for Disaster Recovery and Reconstruction*, Apr. 2008, 7, http://gfdrr.org/docs/AssessmentReport_Cyclone%20Sidr_Bangladesh_2008.pdf.

⁶⁸ Kingsley and Vernon, *Disaster Relief and Engagement Operations*, 30.

⁶⁹ “16 Envoys Visit Cyclone-Hit Shoronkhola,” *Daily Star*, Nov. 22, 2007.

⁷⁰ “India Rushing Relief Supplies for Bangladesh Cyclone Victims,” Ministry of Defence, Government of India, Nov. 21, 2007, <http://pib.nic.in/newsite/erelease.aspx?relid=32874>.

own territory.⁷¹ The IAF arrived in Bangladesh on November 22, one day after the Indian government decided to dispatch military relief there. Although defending India's cumulative response to Cyclone Sidr, Joyeeta Bhattacharjee of the Observer Research Foundation observes that "India's delay in announcing the package and dispatch of the IAF aircraft attracted the attention of many" because it contrasted with the "swift response from the international community."⁷²

In the future, U.S. forces will be prepared to assist Bangladesh as they have in previous disasters. In fact, the United States and Bangladesh have completed three annual security dialogues, building on their initial meeting in 2012. HA/DR continues to be discussed as an important area of cooperation between Dhaka and Washington, which has built 30 Coastal Crisis Management Centers and 500 cyclone shelters throughout Bangladesh. While the United States and India do not appear to have cooperated on response operations after Cyclone Sidr, they should consider working together given their 2005 Disaster Relief Initiative commitment and the progress that has been made on HA/DR in Bangladesh by Washington in recent years.

2008 Cyclone Nargis

The case of Cyclone Nargis which struck Burma in 2008 illustrates the potential benefit to the United States from coordinating with India in the aftermath of disasters. New Delhi has certain diplomatic and geographic advantages over the United States when providing relief in the Indian Ocean. While Washington's relations with Naypyidaw have been gradually warming since 2011, only six years ago Burma refused U.S. naval assistance after Cyclone Nargis due to strained bilateral diplomatic and economic ties.⁷³

⁷¹ "Disaster Alert As Cyclone Sidr Heads towards India," *IBN Live*, Nov. 15, 2007.

⁷² Joyeeta Bhattacharjee, "Has India Responded Adequately to Sidr?" Observer Research Foundation, Dec. 12, 2007, <http://www.orfonline.org/cms/sites/orfonline/modules/analysis/AnalysisDetail.html?cmaid=13081&mmacmaid=13082>.

⁷³ For analysis about the U.S. response to Cyclone Nargis, see Jennifer D. P. Moroney et al., *Lessons from Department of Defense Disaster Relief Efforts in the*

Cyclone Nargis hit Burma on May 2-3, 2008, and killed an estimated 85,000 people. In total, the cyclone left 140,000 people missing or dead in Burma.⁷⁴ Affecting the Irrawaddy delta, the disaster spanned five states and divisions: Yangon, Irrawaddy, Mon, Kayin, and Bago. The Thai military provided the first foreign relief at Yangon International Airport on May 6,⁷⁵ while India's naval and air assistance followed the next day along with relief from other countries.

In contrast, the Burmese leadership prevented the delivery of the United States' Joint Task Force CARING RESPONSE disaster relief. Bilateral relations had been poor for nearly two decades since the ruling junta's refusal to step down after losing elections in 1988 and Washington's subsequent diplomatic isolation and imposition of economic sanctions. Moreover, the leadership had a historical fear of foreign invasion, especially since 1988. In September 2007, the Burma junta had received Western condemnation over its crackdown on Buddhist monk protestors and was therefore even more sensitive to the potential for Western intervention when the cyclone hit in May 2008. Consequently, U.S. sailors and marines arrived to deliver relief, but sat off the shore for 22 days before departing. Other Western navies, such as those of the U.K. and France, were also denied access.⁷⁶ In terms of relief by aircraft, the United States was able to dispatch U.S. Air Force C-130s⁷⁷ from Utapao, Thailand, but only after gaining permission from Burma on May 12—five days after India's air force delivered its initial relief.

Asia-Pacific Region, RAND Corporation, 2013,
http://www.rand.org/pubs/research_reports/RR146.html.

⁷⁴ United Nations Environment Programme, "Disasters and Conflicts" in *UNEP Year Book 2009*, 33,
http://www.unep.org/yearbook/2009/PDF/4-Disasters_and_Conflict_UNEP_YearBook_09_low.pdf.

⁷⁵ Hlaing Aung, *New Light of Myanmar*, May 15, 2008, 6.

⁷⁶ J. Belanger and R. Horsey, "Negotiating Humanitarian Access to Cyclone Affected Areas of Myanmar: A Review," 2008,
<http://www.odihpn.org/humanitarian-exchange-magazine/issue-41/negotiating-humanitarian-access-to-cyclone-affected-areas-of-myanmar-a-review>.

⁷⁷ Warren Hoge and Seth Mydans, "U.N. Leader Tells Myanmar to Hurry on Aid," *New York Times*, May 13, 2008.

Unlike New Delhi's response after Cyclone Sidr in Bangladesh in the previous year, India was the first country to deliver assistance to Burma by sea under Operation SAHAYATA. A retired Indian Navy official recalls how the Indian Navy had been tracking the storm and had ordered ships to follow the cyclone rather than return to their home bases. At the time, it was unclear whether the storm would hit Bangladesh or Burma, so the Indian Navy was closely monitoring the cyclone's movement.⁷⁸

Two days after the cyclone struck on May 5, New Delhi dispatched two Indian Navy ships—INS *Rana* and INS *Kirpan*—to Burma to deliver with food items and cooking utensils, tents, blankets, clothing, medicines, three generators, and water tanks.⁷⁹ The ships arrived early morning on May 7, making them the first ships to enter Yangon after the cyclone.⁸⁰ Indian Navy Captain Sunil Balakrishnan wrote about traveling up the Yangon River and seeing severe damage, including two capsized naval ships and two collapsed gantry cranes.⁸¹ Roughly 25 Burmese Navy vessels sank, and reportedly 30 officers and 250 sailors died.⁸² Figure 1, from an Indian Ministry of Defence report, shows India's ambassador to Burma, Mr. Bhaskar Kumar Mitra, handing over relief to Burma's minister for social welfare, relief and resettlement, Major General Maung Maung Swe, in a ceremony at Thilawa port.⁸³ India's pride in its disaster relief efforts was evident in this publicity.

⁷⁸ CNA interview, 2013.

⁷⁹ Indian Ministry of Defence, *Annual Report 2008-2009*, 157; "Republic of India Donates Foodstuff, Medicines, General Products to Storm Victims," *New Light of Myanmar* 16, no. 20, May 8, 2008, 11, <http://burmalibrary.org/docs4/NLM2008-05-08.pdf>.

⁸⁰ Indian Ministry of Defence, *Annual Report: 2008-2009*, 157; Hlaing Aung, *New Light of Myanmar*, May 15, 2008, 6.

⁸¹ Balakrishnan, "HADR Operations," 121.

⁸² Vijay Sakhuja, "Myanmar: Expanding Naval Ties with India," Institute of Peace and Conflict Studies (IPCS), Apr. 8, 2013, <http://www.ipcs.org/article/peace-and-conflict-database/myanmar-expanding-naval-ties-with-india-3876.html>.

⁸³ Indian Ministry of Defence, *Annual Report: 2008-2009*, 36; "Republic of India Donates Foodstuff," *New Light of Myanmar*, May 8, 2008, 11.

In terms of air relief, India's Integrated Defence Staff ordered two IAF AN-32 aircraft to deliver medicine, tents, and blankets which arrived in the afternoon on May 7.⁸⁴ Burma's foreign minister, U

Figure 1. Indian disaster relief to Burma in 2008



Nyan Win, greeted the arriving aircraft at the Yangon airport.⁸⁵ The next day, an IL-76 transport aircraft left Palam Technical Airbase in New Delhi for Yangon with tents, medicine, and blankets. In total, IAF aircraft delivered relief material to Burma via six IL-76 and two AN-32 sorties, with supplies costing about 54 million Indian rupees, or roughly \$1.3 million at the time. Relief included tents, ready-to-eat meals, water purification supplies, and medicine.⁸⁶

After Burma's request on May 15, the Indian Armed Forces Medical Services' Disaster Management Cell deployed teams of doctors and medical supplies from May 17 to June 3, and treated roughly 15,000 Burmese citizens.⁸⁷ Despite the fact that the USS *Essex* Expeditionary Strike Group was already off the coast of Burma on May 15, the junta initially trusted only India and Thailand to provide medical teams for treating injured citizens.⁸⁸

⁸⁴ "India Launches 'Operation Sahayata' in Nargis-hit Myanmar," *One India News*, May 7, 2008; "Planes Carrying Relief Supplies from Foreign Countries Arrive at Yangon," *New Light of Myanmar*, May 8, 2008, 11.

⁸⁵ P. S. Suryanarayana, "A Disaster and the Politics of 'Democracy'," *Hindu*, May 12, 2008.

⁸⁶ Indian Ministry of Defence, *Annual Report: 2008-2009*, 152.

⁸⁷ *Ibid*, 109.

⁸⁸ Rahul Singh, "India To Fly Aid to China, Myanmar," *Hindustan Times*, May 16, 2008; "Myanmar Asks India To Send Doctors To Help Cyclone Relief," *Agence France Presse*, May 15, 2008.

Given limited U.S. involvement, we do not find evidence of U.S.-India coordination on their response operations. Indian interview respondents who were senior naval leaders at the time confirmed a lack of high-level coordination in these operations, in contrast to that after the 2004 tsunami.⁸⁹ At the policy level, interestingly, there was some coordination when Secretary of State Condoleezza Rice requested the assistance of Indian Minister of External Affairs Pranab Mukherjee in convincing Burma to accept U.S. relief.⁹⁰

As of 2014, Washington has lifted most sanctions on Burma. However, if the leadership's current reforms backslide and Washington reduces the pace of engagement with Naypyidaw, bilateral relations could return to where they were a few years ago. In that case, Washington will certainly need to coordinate with New Delhi—with whom regular, high-level policy meetings have since been established, including the annual strategic dialogue between the U.S. secretary of state and Indian minister of external affairs. After the next disaster, India may be willing to help coordinate relief from the United States and other countries in order to avoid a repeat of the 2008 delays and to ensure maximum distribution of relief.

In future Indian relief operations, the Andaman and Nicobar Command (ANC) will be increasingly important. In Operation SAHAYATA, the Indian Navy had been dispatched from the ANC with disaster relief bricks—a lesson learned after the 2004 tsunami. (Since then, all deployed ships have been carrying such food, water, and medical supplies in modular container units.) This illustrates the important role and location that this command provides in Indian disaster operations in the Indian Ocean. Another lesson learned from the 2004 tsunami was that the ANC should serve as a field headquarters for coordinating relief distribution among all Indian armed forces.⁹¹ Since the tsunami's devastation to parts of it, the ANC

⁸⁹ CNA interviews, 2013.

⁹⁰ "India Urges Myanmar to Accept International Aid," *Outlook India*, May 12.

⁹¹ Institute for Defence Studies and Analyses (IDSA), "Overseas Humanitarian and Disaster Relief Operations" in *Net Security Provider: India's Out-of-Area Contingency Operations* (New Delhi: Magnum Books, Oct. 2012), 37, <http://www.idsa.in/book/NetSecurityProviderIndiasOutofAreaContingencyOperations.html>.

has been rebuilt and includes a new naval air station. Useful in HA/DR operations, the landing craft utility (LCU) that India plans to acquire will likely be based at the ANC.⁹²

⁹² Abhijit Singh, *The Indian Navy's New 'Expeditionary' Outlook*, Observer Research Foundation (ORF), no. 37, Oct. 2012, 4, http://www.observerindia.com/cms/sites/orfonline/modules/occasionalpaper/attachments/occasional_37_1351144676325.pdf.

India's evolving disaster relief architecture and capabilities

In the aftermath of the 2004 Asian tsunami, India began to focus on improving its disaster relief capabilities, especially in the area of inter-agency coordination. In this chapter, we describe the new Indian disaster relief authorities promulgated after the 2004 tsunami and the new agencies created by these authorities. We also examine the Indian Navy's HA/DR-relevant capabilities, and analyze the navy's disaster relief exercises with other countries.

New disaster relief agencies and mandates

Before the shock of the 2004 Asian tsunami, Indian disaster response was largely reactive and ad hoc in nature. Responsibility for handling disasters resided at the Ministry of Agriculture until 2002, when it was transferred to the Ministry for Home Affairs.⁹³

Not long after the December 2004 tsunami devastated large parts of coastal India, the Indian government decided that it needed to develop a new approach to disaster relief. In February 2005, the president of India made a speech calling for legislation on disaster management that would include the establishment of a National Disaster Management Authority (NDMA). He called for the development of a long-term strategy for dealing with natural disasters throughout the country but highlighting the threat to coastal areas.⁹⁴ After some debate about the tasks and structure of the new agency, the Disaster Management Act was passed by Parliament in December

⁹³ V. K. Jetley, "NDMA: Role and Function," *Defence and Security Alert*, Jul. 2011, <http://www.dsalert.org/disaster-management/255-ndma-role-and-function>.

⁹⁴ "President Addresses Joint Session of Parliament," Government of India press release, Feb. 25, 2005, <http://pib.nic.in/newsite/erelease.aspx?relid=7327>.

2005. It not only set up the NDMA as the coordinating authority for disaster response by both civilian and military agencies, but also authorized the establishment of similar authorities at the state and district levels.⁹⁵ In the years since the passage of this act, the NDMA and its regional equivalents have become the key agencies responsible for planning and implementing disaster response efforts in India.

National Disaster Management Authority

The NDMA was tasked with developing a “proactive, holistic and integrated approach” to disaster management and was given the authority and the necessary funding to achieve these goals.⁹⁶ The NDMA’s key tasks include preparing national disaster response plans, establishing guidelines for minimum standards for disaster relief, and coordinating across civilian and military agencies both in planning for disasters and in responding to them. It is also responsible for sending out disaster response teams.⁹⁷ Its National Executive Council comprises heads of the key ministries potentially involved in disaster planning, including the minister of defense.

The establishment of the NDMA signaled a shift by the Indian government, from an approach based purely on responding to specific disasters as they occur, to one based on proactive planning for potential disasters, which includes taking actions to prevent the worst consequences of natural disasters. This approach has been especially effective in creating links between civilian disaster management agencies and the military, which is often the first to respond in an emergency.

State- and district-level disaster management authorities

The Disaster Management Act also authorized the establishment of state- and district-level disaster management authorities that would perform similar coordinating and planning functions at those levels of government. The State Disaster Management Authorities (SDMA)

⁹⁵ “Disaster Management Act 2005,” National Disaster Management Authority, http://ndma.gov.in/ndma/pdf/DM_Act2005.pdf.

⁹⁶ Jetley, “NDMA.”

⁹⁷ “Roles and Responsibilities,” National Disaster Management Authority, <http://ndma.gov.in/ndma/rolesrespons.html>.

are tasked with formulating state disaster management plans, coordinating their implementation, and seeking funds for disaster preparedness and mitigation. Paralleling the national-level structure, state governments are tasked to convene state executive committees, to be headed by the chief secretary to the state government, to coordinate and monitor the implementation of the national and state plans and policies. District disaster management authorities act as the planning, coordinating, and implementing bodies for disaster management at the district level.⁹⁸

It took some time for all the states to set up SDMAs; the last authority was set up only in December 2010, in Manipur.⁹⁹ While it is not clear how many states have actually produced disaster management plans so far, West Bengal's plan provides a good example of what can be expected from the state agencies in formulating their plans. The West Bengal plan is divided into two parts: the first is a thorough review of the state's potential vulnerabilities to natural disasters, down to the district level;¹⁰⁰ the second includes measures to be taken to mitigate these vulnerabilities, as well as response plans for emergency situations. Relatively little attention is paid to the role of the military, although the navy is given a role in providing alerts to approaching cyclones, and the army is listed as serving a role in disaster response teams in the event of a cyclone or catastrophic flood.¹⁰¹

National Institute of Disaster Management

The National Institute of Disaster Management (NIDM) was set up by the government in order to develop educational and training materials for disaster relief and management. It has a professional staff of 16

⁹⁸ Ibid., 12-13.

⁹⁹ "Details of State Disaster Management Authorities (SDMAs)," National Disaster Management Authority, May 1, 2012, <http://ndma.gov.in/ndma/pdf/sdmaconstitution.pdf>.

¹⁰⁰ "West Bengal Disaster Management Plan, Book 1 (2009-2010)," Centre for Distributed Computing, Jadavpur University, http://ndma.gov.in/ndma/pdf/DMPlan2009-10_Book-1.pdf.

¹⁰¹ "West Bengal Disaster Management Plan, Book 2 (2009-2010)," Centre for Distributed Computing, Jadavpur University, http://ndma.gov.in/ndma/pdf/DMPlan2009-10_Book-2.pdf.

faculty members. It organizes an extensive set of training workshops, holding 80-100 per year on topics as varied as cyclone risk management, civil defense, school safety, and formulating a district disaster management plan.¹⁰² It also organizes online training and self-study courses, and is developing an online database of all personnel who have attended its training programs (a beta version is available on its website).¹⁰³ Further, it supports state-level disaster management centers that conduct training at the regional and local levels.

In addition to its work on domestic disaster response, NIDM hosts the Disaster Management Centre for the South Asian Association for Regional Cooperation (SAARC). The Centre is part of the multinational disaster response envisioned in the SAARC Agreement on Rapid Response to Natural Disasters, which was signed by the foreign ministers at the SAARC summit in November 2011 and ratified by India in August 2012.¹⁰⁴ NIDM interacts with another foreign agency, the U.S. Federal Emergency Management Agency (FEMA), on disaster management training.¹⁰⁵

The institute has produced manuals for the preparation of state and district disaster management plans, and has formulated a set of standard operating procedures for responding to natural disasters.¹⁰⁶ It publishes a biannual journal entitled *Disaster and Development*, as well as a book series on disaster management topics. It also has been tasked with formulating and implementing a human resources development plan that would cover all aspects of disaster management, though such a plan does not appear to have been produced as of March 2013.

¹⁰² "Training Courses conducted by NIDM during 2012-13," National Institute of Disaster Management, http://nidm.gov.in/PDF/trgcal/trgcal_12_13.pdf.

¹⁰³ Trainee Database, National Institute of Disaster Management, <http://nidm.gov.in/trainee.asp>.

¹⁰⁴ "India ratifies the Agreement on Natural Disasters," SAARC Press Release, Aug. 21, 2012, <http://saarc-sec.org/2012/08/21/news/India-ratifies-the-Agreement-on-Natural-Disasters/98/>.

¹⁰⁵ CNA interview, 2013.

¹⁰⁶ "Manuals," National Institute of Disaster Management, <http://nidm.gov.in/manuals.asp>.

The institute has developed guidelines for the use of national armed forces in disaster management. These guidelines recognize that the armed forces are frequently the first to respond to disasters because of their ready availability and preparedness for rapid deployment. According to the guidelines, the armed forces can be assigned a wide range of tasks, including the following:

- Survey work and damage assessment
- Setting up of infrastructure for communication and command and control
- Search, rescue, evacuation, and provision of immediate relief services such as medical aid, trauma management, water, food, and relief camps
- Evacuation of people to safer areas
- Detection and disposal or deactivation of explosives
- Nuclear, biological, and chemical disaster response
- Maintenance and restoration of essential services
- Assistance in maintaining law and order
- Construction and repair of roads and buildings
- Management of international relief.

At the same time, the guidelines indicate that military forces are to be called out for disaster relief only when necessary, with the focus being on dedicated civilian disaster response units whenever possible.¹⁰⁷

National Disaster Response Force

The National Disaster Response Force (NDRF) was formally established in 2006 after the passage of the Disaster Management Act,

¹⁰⁷ Amarjeet Kaur, "Role of Armed Forces in Disaster Management," National Institute of Disaster Management, http://nidm.gov.in/idmc2/PDF/Presentations/Armed_Forces/Pres5.pdf.

though some units had been formed as early as 2003. According to the Indian government, it is the only dedicated disaster response force in the world. In addition to disaster response, its mandate includes disaster prevention, mitigation, and capacity building.

It currently consists of 10 battalions located throughout the country, with plans to increase its strength to 12 battalions. The battalions come from a variety of Indian military and paramilitary organizations, including the India-Tibet Border Police, the Border Security Force, the Central Reserve Police Force, and the Central Industrial Security Force. The two additional battalions will come from the Armed Border Force. Each battalion provides 18 self-contained search and rescue teams of 45 personnel each, including electricians, technicians, engineers, dog squads, and medics/paramedics. The total strength of each battalion, including support personnel, is approximately 1,149. Four of the battalions are trained in combating chemical, biological, radiological, or nuclear (CBRN) disasters.¹⁰⁸

The NDRF is also responsible for training state disaster response forces, which are largely modeled on the NDRF. The NDRF initially trains state police personnel in the basics of disaster management, with the goal of establishing at least one battalion as the State Disaster Response Force (SDRF) modeled on the NDRF. The SDRF may comprise units from the state armed police force, fire services, home guards, or civil defense units. States and union territories are being encouraged to create disaster management training facilities at their police training colleges.¹⁰⁹ Such forces are gradually being created in various states, with Karnataka the latest to declare its intentions to establish an SDRF.¹¹⁰

¹⁰⁸ “National Disaster Response Force: Saving Lives and Beyond,” National Disaster Response Force, <http://ndrfandcd.gov.in/cms/Ndrf.aspx>.

¹⁰⁹ Rakesh Kr Sinha, “Role of Police in Disaster Management,” National Disaster Management Authority, http://nidm.gov.in/idmc2/PDF/Presentations/Armed_Forces/Pres3.pdf.

¹¹⁰ “Karnataka to raise disaster response force to meet calamities,” *Times of India*, Mar. 16, 2013.

Since the NDRF's formation, the force has been used in various types of disaster response operations, including natural disasters such as floods, cyclones, and earthquakes, and man-made catastrophes such as train accidents, fires, building collapses, and boat sinkings. The force's CBRN capabilities have also been used in responses to chlorine and ammonia gas leakages and radiation contamination. An NDRF team was deployed to Japan for two weeks in 2011 in response to the Tohoku earthquake and tsunami.¹¹¹

NDRF personnel have participated in numerous exercises and training events with foreign forces, including annual training events at the Asia-Pacific Center for Security Studies (APCSS) in Hawaii and advanced search and rescue courses in Florida. They also represent India at annual International Search and Rescue Advisory Group (INSARAG) meetings and exercises. In 2011, the NDRF participated in the multinational IOWAVE 2011 exercise, which was designed to simulate the events of the December 26, 2004, tsunami and to test national preparedness for a similar event. The exercise involved units from 10 states and union territories, the navy, and the coast guard. CBRN response was also tested at three nuclear plants.¹¹²

This preparation was given a real-life test in April 2012, when the NDMA put a dozen NDRF teams on stand-by after an 8.7-magnitude earthquake in Indonesia triggered a tsunami alert. The Indian Navy and Air Force likewise put their warships and aircraft on high alert for a post-quake tsunami. The air force had two C-130J Hercules aircraft on "hot stand-by mode" at the Hindon air base to fly 80 NDRF personnel and assorted relief equipment to Port Blair. One Il-76 aircraft from Chandigarh and two AN-32 and Dornier aircraft were also put on stand-by in the southern sector for disaster relief. The Navy put its warships and bases at Port Blair on high alert and sailed all warships at the base out of the anchorage as a precautionary measure. Ships with disaster relief teams on board were also readied at the

¹¹¹ "Operations," National Disaster Response Force, <http://ndrfandcd.gov.in/operationsNdrf.aspx>; Alok Avasthy, "Role of NDRF," National Institute of Disaster Management, http://nidm.gov.in/idmc2/PDF/Presentations/Armed_Forces/Pres2.pdf.

¹¹² "Tsunami Drill across Indian Ocean Carried Out," *Outlook India*.

ENC and in the Bay of Bengal. In the end, no tsunami occurred and the disaster response teams were stood down after several hours.¹¹³

The role of Indian armed forces in disaster response

The National Policy on Disaster Management, adopted in 2009, begins by assessing the risks for each type of disaster across the country. The section dealing with the armed forces' response is worth quoting at length, as it summarizes the Indian government's conceptualization of the armed forces' role in disaster response:

Conceptually, the Armed Forces are called upon to assist the civil administration only when the situation is beyond their coping capability. In practice, however, the armed forces form an important part of the Government's response capacity and are immediate responders in all serious disaster situations. On account of their vast potential to meet any adverse challenge, speed of operational response and the resources and capabilities at their disposal, the armed forces have historically played a major role in emergency support functions. These include communication, search and rescue operations, health and medical facilities, and transportation, especially in the immediate aftermath of a disaster. The air and heli-lift and movement of assistance to neighbouring countries primarily fall within the expertise and domain of the armed forces.... At the national level, the Chief of the Integrated Defence Staff and the Chairman Chiefs of Staff Committee has [sic] already been included in the NEC. Similarly, at the State and District levels, the local representatives of the armed forces may be included in their executive committees to ensure closer coordination and cohesion.¹¹⁴

Indian military experts on disaster response note that the armed forces are often best suited for immediate disaster response because of their ability to react quickly and without having to depend on elements of the local administration that are likely to become non-

¹¹³ "Indian Navy, air force on high alert for any post-quake tsunami," *DNA India*, Apr. 11, 2012; "Post-quake, Tsunami alert a good drill," *Economic Times*, Apr. 12, 2012.

¹¹⁴ "National Policy on Disaster Management," National Disaster Management Authority, 18, <http://ndmindia.nic.in/NPDM-101209.pdf>.

functional during severe disasters. At the same time, units of the armed forces are envisioned as short-term responders, with the expectation that civilian disaster relief agencies could normally take over all aspects of the relief operation within 15 days.¹¹⁵

Plans for military response to disasters are described in the “Armed Forces Assistance for National Disasters” policy guidance document that was issued by the Defence Crisis Management Group (DCMG) in the aftermath of the 2004 tsunami. The Integrated Defence Staff is tasked to coordinate disaster relief efforts by interacting with the Ministry of Defense, Ministry of Home Affairs, Ministry of External Affairs, and other relevant agencies.¹¹⁶ The types of assistance that are likely to be provided by the armed forces in the initial stages of a disaster relief operation are likely to include the following:

- Restoration of communications
- Coastal surveys to determine locations where relief supplies may be delivered
- Medical assistance
- Transportation of relief supplies
- Establishment of relief camps
- Construction and repair of roads and bridges
- Maintenance of essential services
- Evacuation, both during and after the disaster
- Diving assistance to civil authorities
- Distribution of international relief supplies.¹¹⁷

¹¹⁵ CAPT Rahul Parmar, “HADR in the IOR & the Indian Navy,” Paper presented at the 2010 IONS HADR Workshop, 2010, 3, <http://ions.gov.in/sites/default/files/Papers%20presented%20during%20seminar%205.pdf>.

¹¹⁶ IDSA, “Overseas Humanitarian and Disaster Relief Operations,” 2012, 37.

¹¹⁷ Parmar, “HADR in the IOR,” 3-4.

The Indian Navy's role

The Indian military views the navy as particularly suited to disaster response in coastal areas. The navy's role in disaster response is discussed in INBR 1920(A) on Disaster Management, which spells out procedures for handling various types of disasters.¹¹⁸ Navy ships can easily access coastal areas even when transportation infrastructure has been damaged or destroyed. Deck-based helicopter operations allow for the distribution of relief supplies when coastal infrastructure makes docking ships impossible. Navy ships' ability to move several hundred miles per day allows them to respond quickly to disasters, even in remote locations. Their integral logistic support and quick replenishment turn-around times allow ships to sail at short notice and to remain in their area of operations for extended periods without the need for external support.¹¹⁹

To ensure the rapid delivery of relief supplies, the Indian Navy has stockpiled relief materials such as tents, clothing, medical supplies, rescue equipment, and portable generators. These supplies have been categorized into eight types of bricks for ease of transportation and distribution. The WNC and ENC each have enough bricks to supply 5,000 people for seven days, and the Southern Naval Command can supply 3,000 people for seven days.¹²⁰

Indian Navy HA/DR capabilities

In recent years, the Indian government has increasingly come to recognize that the country's navy can play a key role in humanitarian assistance and disaster relief operations. As a result, it has begun to implement a significant upgrade of naval forces relevant to HA/DR operations, including a number of amphibious ships and ships with medical facilities on board. India's larger plan to establish its navy as a world-class blue-water force will help extend its reach in future disaster assistance and humanitarian operations.

¹¹⁸ Indian Maritime Doctrine, 2009, 121.

¹¹⁹ Parmar, "HADR in the IOR," 6-7.

¹²⁰ *Ibid.*, 5-6.

Augmentation of amphibious capabilities

Amphibious capabilities are applicable to HA/DR operations due to cargo capacity, medical capabilities, and ship-to-shore connectors. In the last decade, the Indian Navy has decided to focus on improving its amphibious assault capabilities. This decision was made partly because the 2004 Indian Ocean tsunami demonstrated that the navy needed to augment its HA/DR capabilities.¹²¹ At the time of the tsunami, the navy's amphibious capability consisted of eight ships, including two domestically built Magar-class large LST (landing ship, tank) vessels, built in the 1980s and 1990s. These are 5,600-ton ships, capable of carrying 500 troops and each equipped with a helicopter and four LCV (landing craft, vehicle, personnel) ships.¹²² The other six ships were Polish-built Polnochny-class medium LSTs, with a displacement of 1,200 tons and a carrying capacity of 180 troops and five tanks. Two of these ships have been retired in recent years, leaving four still in service.¹²³

To improve its amphibious capabilities, the Indian Navy acquired USS *Trenton*, an Austin-class LPD (landing platform dock) from the United States, in June 2007. The process for its acquisition began soon after the tsunami. Congress approved the ship's transfer in 2005, and India committed to the purchase in the summer of 2006. At the time, the United States offered to sell India a sister ship along with USS *Trenton*, but India turned down the offer because the military wanted to get experience with one ship before committing to additional purchases.¹²⁴

¹²¹ The Indian government's plan to increase the military's overall expeditionary capabilities also played a role in the decision to focus on increasing the Navy's amphibious assault capabilities. Rahul Bedi, "India's Army and Navy Call on MoD for More Amphibious Vessels," *Jane's Defense Weekly*, Jun. 11, 2010.

¹²² "Magar Class," *Bharat Rakshak*, <http://www.bharat-rakshak.com/NAVY/Ships/Active/163-Magar-Class.html>.

¹²³ "Polnochny Class," *Bharat Rakshak*, <http://www.bharat-rakshak.com/NAVY/Ships/Active/164-Polnochny-Class.html>.

¹²⁴ Gulshan Luthra, "India Says 'Not Yet' to Another Assault Ship from US And to Hawkeye II, Too," *India Strategic*, Aug. 2007, <http://www.indiastrategic.in/topstories20.htm>.

This ship, now renamed INS *Jalashwa*, provided the Indian Navy with a previously unavailable level of ship-to-shore capability. It has a top speed of 20 knots and a displacement of close to 17,000 tons at full load. It can carry a battalion of troops with their equipment. It has space for four landing craft and carries six Sea King helicopters. The Indian Navy acquired landing craft and helicopters along with the ship. Its flight deck can handle emergency landings by vertical-and/or short-take-off-and-landing (V/STOL) aircraft. During HA/DR operations, it can accommodate up to 900 evacuees, provide command and control for disaster relief operations, and serve as a hospital ship.¹²⁵ The onboard medical facilities include four operating theaters, an x-ray room, a 12-bed ward, and a bacteriological laboratory.¹²⁶

In addition to INS *Jalashwa*, India has added three smaller, indigenously produced amphibious ships in recent years. These are Shardul-class LSTs, an updated version of the Magar class. They have a displacement of 5,600 tons and a top speed of 18 knots, and can carry 11 tanks, 10 armored vehicles, and 500 troops for amphibious operations. The ships are equipped with a helicopter and can act as hospital ships during HA/DR operations.¹²⁷ INS *Shardul* was commissioned in January 2006, INS *Kesari* in April 2008, and INS *Airavat* in May 2009.

Most of the Indian Navy's larger amphibious ships, including INS *Jalashwa*, INS *Airavat*, and both Magar-class LSTs, are based in the ENC. INS *Shardul* is based in the WNC, and INS *Kesari* and the four remaining Polnocny-class ships are based at Port Blair.

As part of the upgrade in amphibious capabilities, the Indian government announced in 2010 a plan to upgrade the ANC into the military's major amphibious hub by building a combined land-sea fighting unit based at the command and setting up amphibious train-

¹²⁵ "US hands over USS Trenton to India," *BBC Monitoring South Asia*, Jan. 18, 2007.

¹²⁶ S. Vijay Kumar, "Navy Showcases Its Combat, Rescue Skills," *Hindu*, Oct. 28, 2012.

¹²⁷ "LST(L) Shardul - Landing Ship Tank - Large (LST-L)," *Global Security*, <http://www.globalsecurity.org/military/world/india/l-shardul.htm>.

ing facilities on the archipelago. As part of the plan, India is in the process of upgrading the islands' airfields to support operations by Su-30MKI fighter aircraft, moving three additional army battalions to the area, and increasing the number of warships based at Port Blair.¹²⁸ In July 2012, a new naval air station was opened at Campbell Bay on Great Nicobar Island, primarily for the purpose of enhancing India's maritime surveillance capabilities in the region. The station will also support C-130J and C-17 transport aircraft, which were acquired from the United States and will be operated by the IAF.¹²⁹

New multi-functional tankers

The Indian Navy's HA/DR capabilities have also been increased by the commissioning of two new fleet tanker ships in 2011. The addition of INS *Shakti* and INS *Deepak* will allow the navy to maintain two fleet tankers on each coast, extending the reach of its combat ships. By doubling its fleet tanker capacity, the Indian Navy will greatly augment its expeditionary capabilities and the range its ships can travel for HA/DR response operations. In addition to supplying fuel to ships at sea, these ships also carry provisions, ammunition, and other supplies. They are equipped with modern medical facilities and can carry up to 250 passengers in the event of an evacuation. They have a range of 10,000 nautical miles and a top speed of 16 knots.¹³⁰

Indian Navy officials fully recognize the role these tankers can play in HA/DR operations. At the induction ceremony for INS *Deepak*, Navy Chief Admiral Nirmal Verma noted that its induction would add "significantly to the Indian Navy's ability to conduct and sustain operations distant from our coast, a factor that is central to the Navy's ability to protect and promote India's maritime interests and national security in today's world." He went on to say:

The ship not only represents an increase in our operational flexibility and reach, but also our ability to maintain credi-

¹²⁸ Dipankar Bose, "Tsunami still haunts...", *Statesman*, Feb. 5, 2012.

¹²⁹ "Rising Tide—India's Naval Expansion Strategy," *Jane's Intelligence Review*, Jul. 5, 2012.

¹³⁰ Rajat Pandit, "2 new fleet tankers to boost naval presence," *Times of India*, Jan. 11, 2011; "Indian Navy boosts combat capability," *BBC Monitoring South Asia*, Sep. 23, 2011.

ble presence for prolonged durations in areas important to our national interests. Besides this, she will also enhance our ability to extend humanitarian assistance, disaster relief and medical support to friendly nations in the region.¹³¹

New frigates extend navy's reach

The Indian Navy is also in the midst of a major expansion of its blue-water combat fleet: eight new frigates have been commissioned over the last decade and one more will be commissioned in 2013, bringing the total number of frigates in service to 15. Together with the eight active destroyers and single aircraft carrier, these ships give the Indian Navy an impressive blue-water capability. While these are combat ships, and thus their primary purpose is national defense, they can provide India with an auxiliary HA/DR capability.

The new ships are divided into three classes:

- Two indigenously built Brahmaputra-class guided-missile frigates were commissioned in 2004 and 2005, bringing the total number of ships of this class to three. This class is a modification of the older Godavari class, with similar hull and propulsion characteristics. The ships have a displacement of 3,850 tons, a range of 4,500 nautical miles, and a top speed in excess of 30 knots. They carry two helicopters that could be used for evacuations.¹³²
- Three Russian-built Talwar-class frigates were commissioned in 2003 and 2004. The success of these ships, combined with delays in the construction of the Shivalik frigates, led India to order three more ships of this class: two were commissioned in 2012, and the third is expected to be transferred in 2013. The ships have a displacement of 4,050 tons and a range of 4,850 nautical miles, with a top speed of 30 knots. They each carry one helicopter.¹³³ The Indian Navy has been reported to be ne-

¹³¹ Manu Pubby, "With New Fleet Tanker, Navy to Have Enhanced Footprint," *Indian Express*, Jan. 22, 2011.

¹³² "Brahmaputra (Type 16A) Class," *Bharat Rakshak*, <http://www.bharat-rakshak.com/NAVY/Ships/Active/179-Brahmaputra-Class.html>.

¹³³ "Talwar (Krivak III) Class," *Bharat-Rakshak*, <http://www.bharat-rakshak.com/NAVY/Ships/Active/180-Talwar-Class.html>.

gotiating with the Russian government for the purchase of three additional ships of this class.¹³⁴

- The indigenously built Shivalik-class ships are the newest frigates in the Indian Navy, with three ships commissioned between 2010 and 2012. These ships incorporate some stealth technology that has been reported to make them undetectable until they are within 100 kilometers. They have a displacement of 6,200 tons and thus are among the largest frigates in the world. When running on gas turbine engines, they have a top speed of 32 knots and a range of 5,000 miles. When switched to the diesel engines, they are slower (22 knots) but have a maximum range of 9,000 miles, allowing them to travel for up to a month without refueling. The ships can carry two helicopters.¹³⁵

Future plans for developing HA/DR capabilities

The Indian Navy plans to further develop its HA/DR capabilities over the next decade. The focus will be on further development of amphibious capabilities. In February 2011, the navy announced a tender for four LHD (landing helicopter dock) ships with lift capabilities similar to those of INS *Jalashwa*. The minimum criteria for the ships include an aviation deck that can carry 10 heavy-lift helicopters, space for one battalion of soldiers or a tank squadron, a range of at least 6,200 miles, hospital facilities, and a naval command center.¹³⁶ French, Spanish, South Korean, and Italian companies have proposed designs for the ship, and companies from the Netherlands, Germany, the United States, and the U.K. are also reported to be po-

¹³⁴ “Индия ведет переговоры о заказе еще трех фрегатов проекта 11356,” (“India Is Conducting Talks on Ordering Another Three Project 11356 frigates”) *Flotprom*, Jul. 17, 2012, http://flotprom.ru/news/?ELEMENT_ID=117643.

¹³⁵ “INS 'Shivalik' – the S-class Stealth Frigate,” *Weapons and Technology*, May 2010, <http://weapons.technology.youngester.com/2010/05/ins-shivalik-s-class-stealth-frigate.html>.

¹³⁶ “Navy Planning to Induct Four Landing Platform Docks,” *DNA India*, Feb 13, 2011, <http://www.dnaindia.com/india/1507289/report-navy-planning-to-induct-four-landing-platform-docks>.

tential contenders.¹³⁷ These ships will be accompanied by eight new 800-ton domestically built LCUs that will be based at the Port Blair amphibious hub, replacing the navy's existing outdated LCUs. The first LCU is to be completed in 2014, with the rest to follow over the next several years.¹³⁸

The Indian Navy's new ships will give it extensive capabilities for conducting HA/DR operations, including the capacity to evacuate close to 8,000 people if all of its LHDs, LPDs, LCUs, and LSTs are activated for an operation.

In addition to the amphibious ships, the Indian Navy has recently ordered three helicopter-carrying cadet training ships to replace its two aging (and much smaller) training ships. These ships will have a displacement of 4,000 tons and will be able to support disaster relief and search-and-rescue operations when called upon.¹³⁹

The ongoing expansion of the combat fleet will also contribute to the navy's HA/DR capabilities. Current plans include the construction of seven modified Shivalik-class frigates, to be delivered between 2018 and 2021, and seven Kolkata-class destroyers.¹⁴⁰ Finally, three new aircraft carriers are to be added to the fleet over the next decade. The first of these is the troubled INS *Vikramaditya*, a Kiev-class carrier whose modernization in a Russian shipyard was more than five years behind schedule before being transferred in late 2013.¹⁴¹ In the meantime, work is continuing on the first indigenously built aircraft

¹³⁷ "Multi-Role Support Ship (MRSS)," *Global Security*, <http://www.globalsecurity.org/military/world/india/l-mrss.htm>.

¹³⁸ Rajat Pandit, "Amphibious Vessels to Strengthen Navy," *Times of India*, Sep. 10, 2011.

¹³⁹ "ABG Shipyard Bags Rs. 485 Crore Order from the Ministry of Defence," *Indian Defense Review*, Dec. 12, 2012, <http://www.indiandefencereview.com/news/abg-shipyard-bags-rs-485-crore-order-from-the-ministry-of-defence/>; S. Anandan, "Steel to Be Cut for Naval Cadet Training Vessel," *Hindu*, Jan. 18, 2012.

¹⁴⁰ "Jane's Sentinel Security Assessment - South Asia, Procurement," *IHS Jane's*, 39-40, Jan. 8, 2013.

¹⁴¹ "INS Vikramaditya: Waiting for Gorshkov..." *Defense Industry Daily*, Dec. 24, 2012.

carrier, with delivery now expected in 2018.¹⁴² If all goes well, a second, much larger flat-top carrier will be built after the first is completed, with a tentative commissioning date of 2025.¹⁴³

The role of disaster relief in naval exercises with other countries

Since 2004, India has sharply increased the frequency of its participation in international naval exercises and the range of countries with which it engages in this way. Ten years ago, India held annual exercises with the United States, France, Singapore, and Oman, as well as hosting the multinational MILAN exercise series. Since then, it has expanded its exercise program with the United States and institutionalized new annual or biennial exercises with Russia, South Africa, Brazil, Oman, and the U.K., as well as joint patrols with Indonesia and Thailand (see table 1).

India has also participated in significant naval exercises with Japan, China, Israel, and Australia, although these have not so far been regularized into annual events.¹⁴⁴ In addition, it has launched the Indian Ocean Naval Symposium (IONS) series of biannual meetings on naval interoperability in the Indian Ocean and has suggested transforming the MILAN exercise into a joint task-force to patrol the array of

Table 1: The Indian Navy's regular exercise series

<u>Country</u>	<u>Name of exercise</u>
Multinational	MILAN
Brazil/South Africa	IBSAMAR
France	VARUNA
Indonesia	Joint patrols
Oman	Naseem Al Bahr
Russia	INDRA
Singapore	SIMBEX
Thailand	Joint patrols
United Kingdom	KONKAN
United States	MALABAR
	HABUNAG
	SALVEX
	Spitting Cobra
	Joint Exercise India
	RIMPAC

¹⁴² Sudhi Ranjan Sen, "Indian Aircraft Carrier: More Costly, Already Delayed," *NDTV*, Nov. 20, 2012.

¹⁴³ Ritu Sharma, "India Plans a 65,000-tonne Warship," *New Indian Express*, Aug. 6, 2012.

¹⁴⁴ Based on Indian Ministry of Defense annual reports for 2004–2012.

maritime security threats in the Asia-Pacific.¹⁴⁵

In addition to the ongoing series of exercises with the United States, India has some long-running exercises with several other countries. The SIMBEX exercise with Singapore is the longest running, having been conducted annually since 1994. The VARUNA exercise series with France has taken place annually since 2001, with exercises occurring in the Indian or Atlantic oceans or in the Mediterranean. Russia and India have conducted bilateral naval exercises named INDRA since 2003. Exercises in the KONKAN series with the United Kingdom have been conducted eight times since 2004, with the most recent exercise taking place in 2011. Biennial exercises have also been conducted with the Omani Navy since 2004. Exercises in the IBSAMAR (India-Brazil-South Africa maritime) series have taken place every other year since 2008, always off the coast of South Africa. In addition to these exercises, the Indian and Indonesian navies have conducted biannual coordinated joint patrols along the two countries' maritime boundary line since 2002. The Indian Navy has conducted similar patrols with the Thai Navy since 2006.¹⁴⁶

These developments demonstrate the extent to which India has sought over the last decade to become the leading naval power in the Indian Ocean region. It has taken steps to initiate or deepen partnerships with most maritime states in its region and with all major world naval powers. At the same time, relatively few of the exercises in which it has participated in recent years have focused on humanitarian assistance and disaster relief. Instead, HA/DR has usually been seen as a "lesser-included" case in more-complex exercises that have focused on naval warfighting – especially when such exercises have included a significant amphibious operations component. Furthermore, some long-running exercise series – such as KONKAN with the U.K., SIMBEX with Singapore, and INDRA with Russia – have never included an HA/DR component.

¹⁴⁵ "Navy's Milan Exercise to Become Asia-Pacific Taskforce," *Rediff*, Feb. 9, 2010; "Australia for Joint Task Force with India to Counter Maritime Terror," *DNA India*, Feb. 7, 2010.

¹⁴⁶ Based on Indian Ministry of Defense annual reports for 2004–2012.

HA/DR-specific exercises

The Indian Navy has started to pay somewhat more attention to HA/DR exercises in the last five years. Some exercises have included a specific focus on HA/DR. The VARUNA exercise that took place in 2008 included an HA/DR component, as well as anti-submarine warfare and maritime interdiction operations. The HA/DR component involved the then recently purchased INS *Jalashwa* and the French amphibious ship *Mistral*, which engaged in cooperative disaster relief and amphibious landings. The exercise took place off India's eastern coast.¹⁴⁷

The 2011 MALABAR exercise was intended to be a trilateral U.S.-India-Japan exercise, but, as it turned out, the Japan Maritime Self-Defense Force did not participate, because it had actual HA/DR commitments following the Tohoku earthquake. The resulting bilateral exercise included an HA/DR component, with at-sea portions conducted in the western Pacific Ocean off Okinawa and timed to coincide with the Indian Navy's deployment to the western Pacific. The overall goal of the exercise was to advance U.S.-Indian coordination and operational capacity. HA/DR was one of the components in an extensive series of interactions that also included liaison officer exchanges, a communications exercise, surface action group exercise operations, formation maneuvering, helicopter cross-deck evolutions, underway replenishments, gunnery exercises, VBSS (visit, board, search, and seizure), maritime strike, air defense, and anti-submarine warfare.¹⁴⁸ In July 2014, the MALABAR exercise was held successfully as a trilateral U.S.-India-Japan exercise in the western Pacific Ocean, but HA/DR does not appear to have been a component.

The 2012 exercise was the first exercise in the IBSAMAR series to focus on disaster relief. The aim of the exercise was "to evaluate the capacity of an International Task Force to combine protocols and procedures whilst conducting humanitarian and evacuation assis-

¹⁴⁷ "Indian Navy – French Navy Joint Exercise 'Varuna 08,'" *Frontier India News Network*, May 8, 2008.

¹⁴⁸ "Seventh Fleet to Conduct Exercise Malabar with Indian Navy," U.S. 7th Fleet Public Affairs, Apr. 2, 2011, http://www.navy.mil/submit/display.asp?story_id=59538.

tance.”¹⁴⁹ The primary scenario involved providing assistance to a coastal community that had been affected by a military incursion. Participants included security personnel, firefighters, and medical teams from all three participating countries: Brazil, India, and South Africa. The Indian ships included the guided missile destroyer INS *Delhi* and the replenishment tanker INS *Deepak*. As part of the exercise, a joint Indian and South African security team controlled protesters and entered into negotiations while Brazilian and South African firefighters put out fires on the scene. Medical assistance was provided by the Indian Navy Medical Services, based on INS *Deepak*. They set up a temporary relief camp ashore, which included an operating theater and a burn unit. In addition to the HA/DR component, the exercise also included classic maritime operations, such as swept channel navigation, air operations, cross-deck landings, night firing, and replenishment at sea, as well as maritime interdiction operations, combating threats from fast inshore attack craft, and repelling an air attack.

In 2012, India sent an observer to the multi-national Rim of the Pacific (RIMPAC) exercise hosted by the United States in Hawaii. The 2012 exercise was the first in this series to include an HA/DR event that provided training and certification for expeditionary forces to respond to foreign disasters.¹⁵⁰ In 2014, India participated in RIMPAC for the first time by contributing a frigate. The 2014 exercise also included a component on HA/DR.

The MILAN exercise series has taken place every two years since 1995, with a break in 2001 when India hosted the International Fleet Review and a one-year postponement in 2005 in order to give the participants the chance to recover from the effects of the December 2004 tsunami. Improving HA/DR interoperability with Indian and Pacific Ocean navies has been one of the primary goals of the exer-

¹⁴⁹ Dean Wingrin, “Ibsamar Naval Exercise Ends on Dramatic Note,” *DefenceWeb*, Oct 29, 2012, http://www.defenceweb.co.za/index.php?option=com_content&task=view&id=28281&Itemid=106.

¹⁵⁰ Stephanie Smith and Kaitlyn R. Breitreutz, “RIMPAC 2012 Concludes,” Commander Naval Surface Force, U.S. Pacific Fleet, Aug 3, 2012, <http://www.public.navy.mil/surfor/Pages/RIMPAC2012Concludes.aspx>.

cise series since at least 2008. The 2008 and 2010 iterations of the exercise included seminars on disaster response, although that was not the focus of either.¹⁵¹ In 2012, HA/DR was the focus of the MILAN exercise for the first time since its inception. The exercise was aimed at increasing the speed of humanitarian assistance and disaster relief response by improving the interoperability of participating naval forces and establishing standard operating procedures for multinational operations in the event of a natural disaster or tsunami. Countries sending ships to participate in the exercise included Australia, Bangladesh, Brunei, Indonesia, Malaysia, Burma, Singapore, and Thailand. Maldives, Mauritius, New Zealand, Philippines, Seychelles, and Sri Lanka sent personnel. In February 2014, the biggest edition of the MILAN exercise took place, with 17 countries participating including India. At a seminar on HA/DR, officers from Bangladesh, Burma, Philippines, and Indonesia gave presentations on their countries' experiences with disaster response.

IONS, which was established in 2008 and modeled on the U.S.-led Western Pacific Naval Symposium, seeks to provide the chiefs of Indian Ocean navies with a forum for dialogue and opportunities to strengthen their forces' capabilities and increase mutual interoperability. One of the four principal objectives for IONS is to "develop interoperability in terms of doctrines, procedures, organisational and logistic systems and operational processes, so as to promote the development of regional naval capacities for speedy, responsive and effective Humanitarian Assistance and Disaster Relief (HADR) throughout the Indian Ocean region."¹⁵² IONS symposia and workshops focus on a number of issues, such as maritime security and counterpiracy, though HA/DR remains a priority.

The 2010 IONS workshop held in Bangladesh focused specifically on HA/DR and produced a number of papers on the topic by participants from Australia, Bangladesh, India, and Indonesia. These papers

¹⁵¹ "Milan Maritime War Exercise Concludes in Andaman," *Brahmand.com*, Feb. 9, 2010; Mrityunjy Mazumdar, "Exercise Milan 08: Friendship Across the Seas," *Bharat Rakshak*, Jan. 2008, <http://www.bharat-rakshak.com/NAVY/Articles/Article11.pdf>.

¹⁵² Indian Ocean Naval Symposium, "About IONS," http://ions.gov.in/?q=about_ions.

addressed topics such as capacity building, civil-military relations, the impact of climate change, and the roles of the participating countries' defense forces in HA/DR operations.¹⁵³ At the 2012 symposium in Cape Town, South Africa, IONS participants decided to focus on three issues and tasked three participating countries to prepare concept papers that could lead to the development of standard operating procedures for the organization. Australia was assigned to present a paper on anti-piracy; Singapore, a paper on maritime domain awareness; and India, a paper on HA/DR.¹⁵⁴ There appears to be a consensus in the region to develop IONS into the key organization promoting multinational cooperation in HA/DR. At the March 2014 IONS meeting in Perth, Australia, there was some discussion about potential working groups on HA/DR among other maritime security issue areas.

¹⁵³ Indian Ocean Naval Symposium, "HADR Workshop – 2010," Oct. 11, 2010, <http://ions.gov.in/?q=content/hadr-workshop-2010>.

¹⁵⁴ K.V. Prasad, "IONS Gearing to Tackle Piracy," *Hindu*, Apr. 23, 2012.

U.S.-Indian naval coordination since the 2004 tsunami

Military cooperation with India has gradually become more significant for the United States over the past decade, resulting in bilateral agreements and regular interactions. At the same time, U.S. efforts to involve the Indian military in more cooperative activities have not always been successful, in large part because of Indian reluctance to appear too close to the United States or to help augment U.S. activities in the Indian Ocean. Bilateral exercises have generally been more acceptable to India than participation in U.S.-led multilateral activities.

Improvements in coordination

As discussed earlier, operational cooperation between the U.S. and Indian navies began when the Indian Navy provided security for U.S. ships transiting the Strait of Malacca after the September 11, 2001, terrorist attacks. In the HA/DR sphere, the two countries coordinated the distribution of relief supplies after the Indian Ocean tsunami in order to avoid duplication of effort. The United States led efforts in Indonesia and other affected parts of Southeast Asia,¹⁵⁵ while India was the key player in Sri Lanka and the Maldives.¹⁵⁶ Much of this cooperation was on a personal level between the admirals leading the

¹⁵⁵ Center for Excellence in Disaster Management and Humanitarian Assistance, "Indian Ocean Earthquake & Tsunami Emergency Update," Dec. 31, 2004, <http://www.coe-dmha.org/Research/ResearchInfoMgmt/Tsunami/Tsu123104.htm>.

¹⁵⁶ Airavat Singh, "The Indian Ocean Tsunami – Impact on U.S.-India Military Cooperation," *Ezine Articles*, Jan. 27, 2007, <http://ezinearticles.com/?The-Indian-Ocean-Tsunami–Impact-on-US-India-Military-Cooperation&id=430994>.

relief efforts. The ships operated in separate geographic zones, with deconfliction taking place between ship commanders as necessary.¹⁵⁷

In 2006, the two navies worked together again during noncombatant evacuation operations in Lebanon after the outbreak of conflict between Israel and Hezbollah. Cooperation during this operation was relatively minimal and primarily involved deconfliction between the two countries' task forces during the period of their involvement in the evacuation operation. Finally, both countries' navies have also worked together on counterpiracy operations in the Gulf of Aden since 2008.

These experiences in real-world contingency operations convinced leaders in both countries that the experience with ad hoc arrangements for operational coordination could lead to more institutionalized coordination efforts. As a result, future HA/DR operational cooperation could be made more effective. Efforts to this end included the creation of a formal framework for military cooperation, an increase in the frequency and complexity of exercises, and some initial efforts to improve the interoperability of equipment.¹⁵⁸

Creating a framework for cooperation

As the first step towards HA/DR cooperation, the two countries signed the bilateral Disaster Relief Initiative in July 2005. This initiative involved both civilian and military government agencies in an effort to improve bilateral disaster response integration and to cooperate in order to share best practices and help build disaster response capabilities in other countries throughout the Indian Ocean. On the military side, it involved establishing the U.S. Pacific Command and the Indian Integrated Defence Staff as the "respective military leads in each country to establish a dialogue and identify additional military training needs, skills-development requirements,

¹⁵⁷ CNA interviews with retired Indian Navy officers who worked on the 2004 tsunami response operations, 2013.

¹⁵⁸ U.S. Department of Defense, *Report to Congress*, 2011.

and other challenges to a speedy and effective disaster response,” including through joint and combined military exercises.¹⁵⁹

Military cooperation on disaster relief was included in the overall boost in defense ties that resulted from the signing of the New Framework for the U.S.-India Defense Relationship in June 2005. This 10-year bilateral defense agreement included plans for cooperation in multinational operations and resulted in the establishment of an annual Defense Policy Group meeting, at the under-secretary level. It is designed to serve as the overarching mechanism for maintaining and expanding the bilateral defense relationship.¹⁶⁰

Bilateral defense relations were expanded further after Barack Obama’s election as President of the United States. The 2011 Defense Policy Group meeting declared HA/DR, as well as maritime security and counterterrorism, to be a priority area for defense cooperation.¹⁶¹ At his speech at the 2012 Shangri-La conference, Leon Panetta, then U.S. defense secretary, highlighted U.S.-Indian defense cooperation as being an essential part of the U.S. effort to focus on Asian security, arguing that India “will play a decisive role in shaping the security and prosperity of the 21st century.”¹⁶² He also highlighted the importance that the United States attaches to disaster response, pointing out that the recently initiated rotational deployment of marines and aircraft to northern Australia would allow the U.S. military to increase the effectiveness of its response to natural disasters in Southeast Asia and the Indian Ocean region.

Most recently, the Defence Trade and Technology Initiative (DTTI) initiative by Deputy Secretary of Defense Ashton Carter and Indian National Security Advisor Shivshankar Menon has led to the estab-

¹⁵⁹ “U.S.-India Disaster Relief Initiative,” U.S. Department of State, Jul. 18, 2005, <http://2001-2009.state.gov/p/sca/rls/fs/2005/49730.htm>.

¹⁶⁰ Michael Sirak, “DoD Plans Busy Second Half of Year with India, Starting with Krieg Trip,” *Defense Daily International*, May 12, 2006; “India, US to step up military cooperation,” *Times of India*, Oct. 24, 2006.

¹⁶¹ U.S. Department of Defense, *Report to Congress*, 2011, 2.

¹⁶² Leon Panetta, “Speech at the Shangri-La Security Dialogue,” Jun. 2012. <http://www.cfr.org/asia/panettas-speech-shangri-la-security-dialogue-june-2012/p28435>.

lishment of a structure that enables a holistic examination of U.S.-Indian defense ties. This sparked a U.S. Senate initiative to request a Pentagon report on the normalization of U.S.-India defense ties, including discussions of co-production and co-development of defense systems.¹⁶³

More frequent and complex military exercises

In practical terms, U.S.-Indian naval cooperation consists of four regular exercises, as well as occasional joint operations and infrequent equipment transfers. The most significant exercise is the MALABAR series, which has taken place annually since 1992. Although it began with relatively simple maneuvers, MALABAR has evolved into a fairly high end exercise that in various years has included carrier-based fighter combat operations, anti-submarine warfare, maritime strike, and maritime interdiction operations. HA/DR has never been a particular focus of the exercise, though it was part of the 2011 iteration off Okinawa.¹⁶⁴

HABUNAG is the most important bilateral exercise with a regular HA/DR component. Conducted more or less annually since 2006, this tabletop exercise involves both U.S. Navy and Marine Corps personnel. Indian naval experts have described it as providing a basic foundation for potential cooperation in real-world HA/DR operations.¹⁶⁵ For example, HABUNAG 2008 was a tabletop exercise conducted in Visakhapatnam, India. The exercise scenario examined joint naval operations during an HA/DR mission in the aftermath of an Indian Ocean tsunami.¹⁶⁶ The focus of the exercise was to use the Rapid Response Planning Process (R2P2) to develop contingency

¹⁶³ Manohar Thyagaraj, "The Future of India-US Defence Relationship," *Political and Defence Weekly* (New Delhi), Jan. 1, 2013, 17-18.

¹⁶⁴ Phil Johnston, "Security of Maritime Trade: A Cooperative and Coordinated Approach for the Indo-Pacific Region," *Australian Journal of Maritime and Ocean Affairs* 4.1 (2012): 1-10; Aaron M. Pineda, "U.S., Indian Navies Kick Off Malabar 2011," Commander, U.S. Seventh Fleet, Apr. 5, 2011, <http://www.c7f.navy.mil/news/2011/04-april/007.htm>.

¹⁶⁵ CNA interviews, 2013.

¹⁶⁶ Indian Ministry of Defense, *Annual Report: 2008-2009*, 37.

plans based on different scenarios and conditions that forces might find in a real-world relief effort.¹⁶⁷

India resumed its participation in the exercise in 2010 when several Indian officers embarked on USS *Essex* to observe Navy and Marine amphibious training and participate in a tabletop exercise. The goal of the week-long exercise was for the Indian officers to observe “how two different services with two different goals mesh their operations and personnel to complete those goals” in order to improve cooperation between the Indian Army’s amphibious element and the navy ships that carry them.¹⁶⁸

In 2010, PACOM and the Indian Integrated Defence Staff conducted the inaugural Joint Exercise India (JEI) in Alaska. JEI 2010 was a joint, combined tabletop exercise based on a HA/DR scenario. This was the first multi-service exercise held by the two countries. In 2011, HABUNAG was conducted in conjunction with JEI to maximize complementary amphibious and HA/DR training. In addition, both navies conduct other specialized exercise series: SPITTING COBRA, which focuses on explosive ordnance destruction, and SALVEX, which focuses on diving and salvage, especially after natural disasters.¹⁶⁹

Improvements in equipment interoperability

Interoperability between partner navies is often easier when they use similar equipment. India long avoided purchasing American military equipment, because of its concerns dating back to the Cold War period. The transfer of USS *Trenton* and its accompanying Sea King helicopters, described above, was the Indian Navy’s first acquisition of a

¹⁶⁷ “Exercise Habu Nag,” *Bharat Rakshak*, no date, <http://www.bharat-rakshak.com/NAVY/Galleries/Visits/Trenton/Trenton13.jpg.html>.

¹⁶⁸ Andrew Smith, “USS *Essex* (LHD 2) Conducts Exercise Habu Nag with India,” Commander Naval Surface Force, U.S. Pacific Fleet, Oct. 5, 2010, <http://www.public.navy.mil/surfor/lhd2/Pages/USSEssexConductsExerciseHabuNagwithIndia.aspx>.

¹⁶⁹ Indian Ministry of Defense, *Annual Report: 2004-2005*, 200; U.S. Department of Defense, *Report to Congress*, 2011, 3-4.

major platform from the United States.¹⁷⁰ Since then, it has purchased eight P-8I Poseidon maritime surveillance aircraft, the first of which was delivered in December 2012.¹⁷¹ More important for HA/DR purposes, the IAF has ordered ten C-17 and twelve C-130J transport aircraft and plans to base them at the multi-service ANC.¹⁷² These aircraft could potentially play an important role in delivering relief supplies and evacuating civilians in a future HA/DR operation. In fact, India deployed both P-8I and C-130J aircraft to search for the missing Malaysian Airlines plane in March 2014. Senior U.S. and Indian officials envisage that the experience of operating the same types of aircraft will allow for closer-to-seamless cooperation.¹⁷³

Limits on cooperation

Differences in operational culture are a primary source of limitations on naval interoperability between India and the United States. Residual suspicion among some parts of India's political and military leadership and in some segments of society places limits on military cooperation and force integration even for low-sensitivity operations such as HA/DR. Specifically, the term "interoperability" has been cited by some analysts to be "anathema to Indian officials" because of its connotations of military alignment—which is seen as unacceptable by leaders raised in a culture of foreign policy non-alignment.¹⁷⁴ To

¹⁷⁰ Data gathered from Stockholm International Peace Research Institute (SIPRI) Arms Transfers Database, <http://www.sipri.org/databases/armstransfers>.

¹⁷¹ "Navy receives first of P-8I maritime surveillance aircraft," *Economic Times*, Dec. 19, 2012.

¹⁷² "Rising tide – India's naval expansion strategy," *Jane's Intelligence Review*, Jul. 5, 2012; "India Buys C-130J-30 Hercules for Special Forces," *Defense Industry Daily*, Jan. 21, 2013; "Boeing delivers first C-17 Globemaster III military transport aircraft to Air Force of India for flight test," *Air Recognition*, Jan. 25, 2013. http://airrecognition.com/index.php?option=com_content&task=view&id=615.

¹⁷³ Timothy Roemer, "Towards a Global Commons," *Financial Express*, Sep. 28, 2010.

¹⁷⁴ S. Amer Latif, *U.S.-India Defense Trade: Opportunities for Deepening the Partnership*, CSIS, Jun. 2012, 21,

avoid these sensitivities, U.S. officials and military planners use terms such as “the ability to cooperate” in place of “interoperability.”¹⁷⁵

Indian officials have also expressed reservations about the seemingly intrusive nature of U.S. disaster response operations: American procedures utilize survey teams to determine local needs and to provide assistance directly to those in need whenever possible. In contrast, Indian procedures are focused on close interaction with governments in affected areas, with the goal of providing assistance directly to the state for subsequent distribution to those in need. U.S. procedures are seen as likely to alienate officials in recipient states, both because they potentially violate local sovereignty and because providing assistance outside government channels implies that the U.S. government does not trust these governments to distribute the aid.¹⁷⁶

The second source of limitations on naval interoperability is India’s refusal to sign “foundational agreements,” including the LSA, CISMOA, and BECA. An LSA would allow the two sides to have “reciprocal use of facilities for maintenance, servicing, communications, refueling, and medical care.”¹⁷⁷ In the first years after the tsunami relief operation, the United States argued that an LSA would greatly facilitate joint operations during future disaster relief operations.¹⁷⁸ According to media reports, the agreement was close to being signed in 2007 but was held up because of Indian officials’ fears that India could become “entangled in U.S. military operations in the region.”¹⁷⁹

http://csis.org/files/publication/120703_Latif_USIndiaDefense_Web.pdf.

¹⁷⁵ Ibid.

¹⁷⁶ CNA interviews, 2013.

¹⁷⁷ K. Alan Kronstadt and Sonia Pinto, *India-U.S. Security Relations: Current Engagement*, Congressional Research Service, R42823, Nov. 13, 2012, 12, <http://www.fas.org/sgp/crs/row/R42823.pdf>.

¹⁷⁸ Sridhar Kumaraswami, “The big story – new great game,” *Asian Age*, Sep. 9, 2007.

¹⁷⁹ Seema Mustafa and Sridhar Kumaraswami, “US, India near new military pact,” *Asian Age*, Jul. 14, 2007; Kronstadt and Pinto, *India-U.S. Security Relations*, 12.

In recent years, the U.S. government has downplayed the importance of signing an LSA. Leon Panetta, former U.S. secretary of defense, noted that he did not discuss this agreement during his 2012 visit to India, saying that he did not see the absence of an agreement as an impediment to improving military relations with India.¹⁸⁰ Instead of pushing ahead on LSA negotiations, the two sides have focused on developing work-arounds and are examining cooperation agreements for specific situations when necessary. The same holds true for the CISMOA. In the 2004 tsunami relief operations, both navies temporarily exchanged communications equipment to allow each side to coordinate with the other operationally.¹⁸¹ Indian officials and analysts believe that these kinds of actions are sufficient to allow for interoperability when the need for naval cooperation arises.

Upon considering where the Indian and U.S. navies began in the early 1990s, many Indian interview respondents are impressed by the advances in interoperability since then. The need to work out the modes of cooperation after future disasters may introduce delays into relief operations and cause uncertainty about the extent to which the two navies will be able to work together. However, both navies have always found ways to work around the absence of foundational agreements when operational needs have required cooperation.

¹⁸⁰ “Remarks by Secretary Panetta at the Institute for Defence Studies and Analyses in New Delhi, India,” U.S. Department of Defense News Transcript, Jun. 6, 2012, <http://www.defense.gov/transcripts/transcript.aspx?transcriptid=5054>.

¹⁸¹ Kronstadt and Pinto, *India-U.S. Security Relations*, 13.

Conclusions and recommendations

In this section, we detail our conclusions and make recommendations on how the United States can advance HA/DR ties with India in the Indian Ocean. Previous instances of U.S.-Indian operational coordination and India's new disaster management organizations and naval capabilities for HA/DR reveal opportunities to deepen navy-to-navy cooperation. In future natural disasters in the Indian Ocean, there are many ways in which U.S. and Indian forces can work together more effectively.

Still, despite both countries' converging interests on HA/DR in the Indian Ocean, New Delhi—and therefore the Indian Navy—faces domestic political constraints on intensified security cooperation with the United States. Washington should move forward on HA/DR with care and patience, as in other realms of cooperation with India.

Conclusions

India has made improvements in HA/DR capabilities and architecture in the last decade

The 2004 tsunami was a wakeup call to the Indian government and military because it highlighted the need for India to develop a disaster management infrastructure and stronger naval capabilities. Since then, the Indian government has allocated resources to creating new agencies and policies, including the NDMA, NIDM, and NDRF. Also, the Indian Navy has increased its capabilities by acquiring new multi-functional tankers, amphibious ships, and frigates in addition to holding HA/DR naval exercises with other countries. After the 2004 tsunami experience, all deployed Indian Navy ships began carrying disaster relief bricks containing food, medicine, clothing, water purification equipment, and kitchen supplies. To match this growth in capabilities, there is a greater recognition among Indian officials and strategists of the benefits of disaster diplomacy for India as a rising power.

Both countries' navies have comparative advantages in disaster relief

In future Indian Ocean disasters, the U.S. Navy will continue to have an advantage in capabilities, despite the additions to Indian Navy capacity over the past decade. For example, its rotary-wing support will be superior to the Indian Navy's assets. U.S. naval construction capabilities are also more advanced than those of the Indian armed forces.

However, India will have the advantage of location in responding to disasters in its near abroad. The 2004 and 2008 disaster case studies found India to be generally the first responder in the countries in which it delivered relief (the first by air and sea in Sri Lanka; among the first in Maldives; the first by sea in Burma; and among the first by air in Burma).¹⁸² Thus, despite an advantage in capabilities, U.S. naval forces will probably take longer than their Indian counterparts to arrive on scene after a disaster. In the meantime, the U.S. Navy would benefit from receiving damage reports from the Indian Navy, as it did in 2004. Moreover, depending on the affected country, India may have diplomatic advantages. In 2008, for example, Burma accepted disaster relief from the Indian Navy while U.S. naval forces' relief on the coast was refused by the junta.

In short, both countries have advantages in terms of the disaster relief they can offer. Their comparative advantages in HA/DR would be an area for further dialogue and information exchange, in order to better allocate relief after a natural disaster.

There will also be challenges

While many possibilities exist for U.S.-Indian naval coordination, India can have "backyard anxieties" over the U.S. provision of disaster relief in India's near abroad, especially when it comes to the smaller South Asian countries. The sources of discomfort lie in New Delhi's desire to play the leading role in the foreign affairs of its smaller neighbors such as Bangladesh, Sri Lanka, Maldives, and Burma, as

¹⁸² This report did not analyze India's response in Indonesia, Operation GAMBHIR.

well as concern over the potential for the United States to interfere with these relations. For example, in the 2004 tsunami operations, India was reluctant for U.S. armed forces to arrive in northern Sri Lanka to deliver relief. In most cases, it makes sense for India to provide relief to an area that is closer to it geographically. India was reportedly able to handle sensitive territory in Sri Lanka and delivered relief to Liberation Tigers of Tamil Eelam (LTTE)-held territory in the north and east of the country.¹⁸³ Meanwhile, U.S. forces provided relief mostly in the southern part of the country.

New Delhi has historically held feelings of both obligation and possessiveness toward its smaller South Asian neighbors, as well as a generalized fear of invasion of its own territory from the sea dating back to Vasco da Gama. As a result, Indian sensitivities have sometimes been on display, such as in the 1980s when New Delhi suspected foul U.S. intentions in the northern Sri Lankan port of Trincomalee. Even though Admiral Doran's goal in 2004 was deconfliction, anxieties over U.S. presence can potentially be a complicating factor for New Delhi when relief is delivered in its near abroad. This dynamic may diminish as the United States and India grow closer; India has become more comfortable with the U.S. presence in Diego Garcia.

Indian policymakers will also continue to have concerns about appearing to be too close to the United States—even on work in the relatively innocuous area of HA/DR. One domestic political and strategic consideration for New Delhi is China's reaction to Indian naval exercises with the United States that may appear too ambitious.¹⁸⁴ Moreover, India may also be occupied in handling domestic disaster relief duties if a cyclone or tsunami hits the region, as in 2004. Giving India political space and acknowledging its proximity and expertise in responding to disasters in the region will help U.S. HA/DR efforts in the years to come.

¹⁸³ Josh White, "Wolfowitz Cites Sri Lanka's Progress on Reconstruction," *Washington Post*, Jan. 18, 2005.

¹⁸⁴ India's 2007 MALABAR exercise with the United States, Japan, Australia, and Singapore was strongly protested by China and by leftists within India who saw the quadrilateral grouping as being anti-China. The result was that New Delhi has since not permitted multilateral exercises with the United States in the Bay of Bengal.

India's preference for ad hoc operational arrangements will not disrupt U.S.-Indian naval coordination on HA/DR

India has refused to sign the LSA, BECA, and CISMOA, which complicates U.S. planning and command and control. But both navies were able to exchange communications equipment during the 2004 tsunami disaster relief operations.¹⁸⁵

Furthermore, strong consensus exists among Indian interview respondents that India is better able to work with U.S. naval forces now than it was in the past. Before the early 1990s, for example, there were few interactions with the U.S. military. In fact, many Indian interviewees stated that coordinating with the United States in HA/DR will be a given in future disaster scenarios in the Indian Ocean. In other words, India's preference for ad hoc operational arrangements may not be ideal for Washington, but it does not preclude effective coordination on HA/DR.

Larger disasters lead to closer coordination

During smaller-scale disasters, there are fewer incentives for close disaster relief coordination. However, when the scope of devastation is larger and there is a greater urgency to deliver relief as rapidly as possible, the United States and India—including their navies—have the political space to operate with fewer political constraints. They also are likely to be the providers of the bulk of forces—and the most visible contributions—to disaster relief operations. This leads to closer navy-to-navy cooperation.

In our analysis of the disaster case studies and during the facilitated roundtable, we found that, in larger disasters, political barriers to cooperation are also lowered. Indian policymakers are more likely to grant special allowances, as seen in New Delhi's participation in the Tsunami Core Group with the United States, Japan, and Australia in 2004. This vehicle facilitated relief operations when New Delhi permitted certain landing clearances and overflight rights to fellow Core Group militaries. These four countries were able to share information daily and avoid duplication of relief efforts.

¹⁸⁵ K. Alan Kronstadt and Sonia Pinto, *India-U.S. Security Relations*, 10.

Recommendations

The United States currently has several options for deepening HA/DR coordination with India. These recommendations rest on the above findings about both the limits and the possibilities for HA/DR in Indian Ocean countries.

Advance the complexity of HA/DR in exercises

The 2004 tsunami and subsequent relief operations illustrated the need for the United States and India to participate in regular HA/DR exercises. The United States has engaged Indian naval services on HA/DR operations primarily in the HABUNAG exercise, in Joint Exercise India, and, most recently, in the 2012 SALVEX diving and salvage exercise. The United States and India could improve the quality and realism of the HABUNAG exercise by going beyond the previous tabletop components and requesting that Indian ships participate in the exercise. If funding or domestic political resistance are obstacles, Indian ships could be involved every other year.

MALABAR is an opportunity for the United States to engage in higher-end HA/DR interaction at sea with India. The Indian Navy is very proud of its bilateral cooperation with the U.S. Navy in MALABAR. If higher-end operations relevant to HA/DR—such as operational planning, command and control, and air operations—could be incorporated into a MALABAR scenario, there would be future benefits for U.S.-Indian HA/DR cooperation in the Indian Ocean. An Indian strategist sees one component of MALABAR as the opportunity to practice “procedures for disaster relief and casualty evacuation.”¹⁸⁶ Future MALABAR exercises could include facilitated roundtables, such as the one that CNA conducted for this study, that consider disaster scenarios in the Indian Ocean.

Because RIMPAC included HA/DR training and certification for response to disasters in 2012, this exercise could be another important avenue for increasing U.S.-India cooperation on HA/DR since the two navies do not exercise HA/DR scenarios each year. In 2014, India went beyond its previous observer role in RIMPAC by participating in

¹⁸⁶ Kanwal, “Maritime Cooperation,” 25.

the exercise for the first time with its frigate INS *Sahyadri*. The U.S. Navy could also request that the Indian Navy include INS *Jalashwa* in upcoming exercises, given its potentially sizable HA/DR contributions in the future.

Assist India in developing expeditionary skills that are applicable to HA/DR missions

India's future HA/DR operations would benefit from U.S. expertise on sea-based logistics (e.g., ship-to-shore movement of relief supplies by both rotary-wing and surface craft, as well as medical and engineering support). India does not have a dedicated naval infantry force like the USMC, but it has an amphibious division within the Indian Army.

There is growing recognition among Indian policymakers and strategists about the utility of expeditionary capabilities and skills for conducting HA/DR operations.¹⁸⁷ Given its experience with joint amphibious operations, the U.S. military is well placed to help India develop its capabilities across its military services in this field. While HA/DR will not be the main focus of India's amphibious forces, it could prove to be a relatively safe area for developing joint operational experience without antagonizing neighboring states and regional powers. To help India build this capability for HA/DR purposes, the U.S. Navy could request that an HA/DR element be added to the USMC-Indian Army SHATRUJEET exercise.

Discuss U.S. and Indian prepositioned relief stockpiles in mainland India and in Indian Ocean countries

Prepositioned disaster relief stockpiles in locations along the Indian Ocean littoral improve the delivery of relief during HA/DR operations. For instance, the United States has prepositioned supplies in Diego Garcia aboard Maritime Prepositioning Squadron ships. The Indian Navy likewise has disaster relief bricks embarked aboard all of its deployed ships. U.S. and Indian disaster relief subject matter experts could exchange information about the contents of their existing stockpiles and develop plans to allocate these supplies during

¹⁸⁷ Abhijit Singh, *The Indian Navy's New 'Expeditionary' Outlook*, 7, 9, 13.

future natural disasters. An IDSA report even calls attention to the need for the Indian government to examine prepositioning stockpiles in “well-connected staging areas that can be used when the need arises.”¹⁸⁸ The United States can identify its best HA/DR supply experts and then connect them with their Indian counterparts.

Because Indian Navy ships will almost certainly be closer to disaster sites in South Asia than U.S. Navy assets, both countries should explore how the United States can effectively supplement or complement Indian disaster relief efforts.

Advance HA/DR coordination in Southeast Asia

The United States and India could work together on HA/DR, not only in South Asia but also in Southeast Asia. If anything, HA/DR coordination might work better there. Unlike South Asia, Southeast Asia does not carry with it “backyard anxieties” for Indian policymakers regarding coordination with the United States. India is also expanding relationships there in support of its Look East policy. Most indications point to an increased desire by the Indian Navy to operate in the western Pacific, especially in the South China Sea. The U.S. Navy could engage the Indian Navy in Southeast Asia when the opportunity arises, such as through the U.S. Pacific Partnership deployment, which delivers humanitarian and civic assistance to countries in this region. There is a precedent for such cooperation: the Indian Navy provided medical engineering support to USS *Peleliu* during Pacific Partnership in 2007,¹⁸⁹ and supplied medical augmentation to the hospital ship USNS *Mercy* in 2009. The U.S. Navy could request Indian Navy participation again in future Pacific Partnership deployments.

The Indian Navy participated in the ASEAN Defence Ministers’ Meeting (ADMM) Plus HA/DR and military medicine exercise in June 2013. It deployed INS *Gharial*—which is one of the LSTs that con-

¹⁸⁸ Institute for Defence Studies and Analyses (IDSA), “Existing Capacity and Future Planning for Out-of-Area Contingencies” in *Net Security Provider: India’s Out-of-Area Contingency Operations* (New Delhi: Magnum Books, Oct. 2012), 56.

¹⁸⁹ Indian Maritime Doctrine, 2009, 121.

ducted relief operations after Cyclone Sidr struck Bangladesh—along with its four LCVPs, Sea King helicopter, and medical team.¹⁹⁰ The United States could pursue regular interactions with India on HA/DR exercises in multilateral forums as well as bilaterally before the next natural disaster hits Southeast Asia. Exercise evolutions with counterparts before and after primary exercises would be beneficial.

Coordinate on Burma, Maldives, and Bangladesh

Given their particular vulnerability to natural disasters, these three countries present clear opportunities for the United States to work with India. Both countries can provide much-needed HA/DR capacity-building to the navies and coast guards in Burma, Maldives, and Bangladesh and help them plan response operations before future calamities.

Given the thaw in U.S.-Burma relations since 2011, there is now more room for the U.S. and Indian navies to coordinate on HA/DR in this cyclone-prone country. The Burmese Navy participates in the Indian Navy's biennial MILAN exercise, which has a strong focus on HA/DR. India also has significant experience working with the Burmese Navy, in addition to providing critical disaster assistance after Cyclone Nargis in 2008. Burma observed the 2013 ADMM Plus exercise on HA/DR and military medicine in Brunei, in which both the U.S. and Indian navies participated. Given U.S. restrictions on military cooperation with Burma and India's experience with working on Burma on HA/DR, the United States could propose coordination with India to advance military medicine and HA/DR capacity-building with the Burmese Navy.

During the course of this study, Cyclone Mahasen progressed over Burma, as well as Bangladesh and India. It was not clear whether the Burmese Navy was primarily concerned about its own fate because it experienced severe losses after Cyclone Nargis.¹⁹¹ Cyclone evacuation

¹⁹⁰ Brunei Darussalam Ministry of Defence, "HADR Ex. Meaningful Platform to Test Tri-Services Synergy," Jun. 14, 2013, <http://www.mindef.gov.bn/ADMM2013/index.php/admm-plus/152-hadr-ex-meaningful-platform-to-test-tri-services-synergy>.

¹⁹¹ CNA email correspondence with an expert in Burma, 2013.

is clearly an area in which the Burmese Navy could benefit from assistance, and the Indian and U.S. navies are well positioned to provide it.

Maldives likewise could benefit from assistance in preparing for disasters. The 2004 tsunami permanently sunk four of its islands and caused fatalities and severe flooding elsewhere. The Maldives National Defence Force could use help in developing a comprehensive response plan to the effects of climate change and sea level rises, including work on constructing safe islands. Meanwhile, Male continues its campaign requesting that the international community cut its carbon emissions to mitigate the negative impacts of climate change.¹⁹² Consequently, this could be an opportunity for the U.S. and Indian navies to coordinate on a potential emergency to which their forces will deploy if requested by Maldives.

Bangladesh regularly experiences cyclones and flooding, and consequently there is room for the United States and India to coordinate on HA/DR here. As we found in our previous study, Bangladesh's naval forces could invite U.S. and Indian assistance on search and rescue operations, which would advance HA/DR cooperation. Furthermore, the United States and India could collaborate with Bangladesh on the Coastal Crisis Management Centers being built throughout the country.¹⁹³ They are funded by the U.S. government, but are basic in setup. The Bangladesh Coast Guard and Navy could invite Indian and U.S. naval forces to partner on this effort and provide expertise as well as equipment. Moreover, Bangladesh also has much expertise to lend both countries in the management of cyclones and flooding, given its many experiences with these types of disasters.

Revive the U.S.-India Disaster Response Working Group (DRWG)

Following the 2004 disaster relief operations, the July 2005 *U.S.-India Disaster Relief Initiative* (DRI) established the U.S. Agency for International Development and Ministry of Home Affairs as the civilian leads, while PACOM and the IDS were designated as:

¹⁹² CNA interviews with Maldivian officials, 2012 and 2013.

¹⁹³ Samaranayake et al., *U.S.-India Security Burden-Sharing?*, 105.

the respective military leads in each country to establish a dialogue and identify additional military training needs, skills-development requirements, and other challenges to a speedy and effective disaster response.¹⁹⁴

The DRWG emerged out of the DRI's mandate. A 2012 CSIS report recommends that the DRWG should be resurrected.¹⁹⁵ Regular communication with Indian counterparts should be the immediate goal for the U.S. military. Regular interaction and discussion about how to respond to Indian Ocean disasters even when coordination is not needed could be a useful exercise and would help entrench habits of cooperation that are vital to advancing bilateral relations. Because travel is expensive, exchanges could be as low key as arranging telephone or Skype conversations after major weather events hit Asian countries, to discuss how both countries could dispatch assets and develop a set of informal guidelines and procedures. The availability of such guidelines would speed up coordination in the event that the two navies had to work together to address a disaster.

Build off nascent civilian U.S.-India HA/DR interactions

India's civilian disaster management infrastructure is growing in prominence and resources. Since the establishment of the NDMA, India has sought to develop multi-agency disaster response capabilities, with the military playing just one part in a whole-of-government effort. U.S.-India HA/DR military exercises, however, have generally not involved civilian agencies. Future discussions at the U.S.-India Defense Policy Group, Military Cooperation Group, and Navy Executive Steering Group, and DRWG could include a focus on how navies, and military forces in general, would coordinate with civilian agencies in HA/DR operations. This shift in emphasis could lead to exercises that include Indian and U.S. civilian agencies (such as NIDM and FEMA, respectively) cooperating with military forces in ways that more closely simulate the situation on the ground during a real-world disaster response operation.

¹⁹⁴ U.S. Department of State, "Fact Sheet."

¹⁹⁵ S. Amer Latif, *U.S.-India Military Engagement: Steady As They Go*, CSIS, Nov. 2012, 8, http://csis.org/files/publication/121213_Latif_USIndiaMilEngage_Web.pdf.

The U.S. Navy could seek an observer role in FEMA's meetings with India's NIDM. This would further develop relationships between U.S. and Indian HA/DR civilian and military professionals and experts. The Indian Navy should also consider participating alongside the NIDM since the former maintains strong equities in disaster management despite the emergence of the latter.

Emphasize India in U.S. Navy billets and career paths

The United States should consider investing more resources in its navy personnel for the purpose of engaging India. Placing priority on professional military education in India will help develop the relationships that will be critical for improving U.S.-Indian HA/DR coordination, as well as navy-to-navy coordination in other areas. While the Tsunami Core Group was an important factor in relief operations, the coordination between admirals Doran and Prakash illustrates the importance of personal relationships begun at the junior level and their implications for future operations. The U.S. Navy can incentivize study in India, which will allow junior officers to interact with the future leaders of a growing strategic partner for the United States.

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Appendix: Interview respondents' organizations

Note: Respondents' opinions do not represent the views of their organizations. Total interview respondents are not limited to the organizations below.

United States

- Department of Defense
- Department of State
- U.S. Institute of Peace

India

- Indian Navy
- Indian Ministry of External Affairs (MEA)
- National Institute of Disaster Management (NIDM)
- SAARC Disaster Management Centre (SDMC)
- Embassy of India in Washington, D.C.
- Institute for Defence Studies and Analyses (IDSA)
- National Maritime Foundation (NMF)
- Forum for Strategic Initiatives (FSI)
- Indian Council of World Affairs (ICWA)
- Observer Research Foundation (ORF)

Other Indian Ocean countries

- Embassy of Maldives in New York City
- Embassy of Sri Lanka in Washington, D.C.
- High Commission of Seychelles in New Delhi

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Glossary

ADMM	ASEAN Defence Ministers' Meeting
ANC	Andaman and Nicobar Command
BECA	Basic Exchange and Cooperation Agreement
CBRN	chemical, biological, radiological, or nuclear
CISMOA	Communication Interoperability and Security Memorandum Agreement
DRI	Disaster Relief Initiative
DRWG	Disaster Response Working Group
ENC	Eastern Naval Command
FEMA	Federal Emergency Management Agency
HA/DR	humanitarian assistance/disaster relief
IAF	Indian Air Force
IBSAMAR	India-Brazil-South Africa maritime
IDSA	Institute for Defence Studies and Analyses
IONS	Indian Ocean Naval Symposium
JEI	Joint Exercise India
LCU	landing craft utility
LCVP	landing craft, vehicle, personnel
LHD	landing helicopter dock
LPD	landing platform dock
LSA	Logistics Support Agreement
LST	landing ship, tank
NDMA	National Disaster Management Authority
NDRF	National Disaster Response Force
NIDM	National Institute of Disaster Management
PACOM	U.S. Pacific Command
PACFLT	U.S. Pacific Fleet
RIMPAC	Rim of the Pacific
SAARC	South Asian Association for Regional Cooperation
SDMA	State Disaster Management Authority
SDRF	State Disaster Response Force
USMC	United States Marine Corps

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