

U.S.-India Homeland Security Cooperation

Building a Lasting Partnership via Transportation Sector Security



**PROJECT
DIRECTOR**
Rick "Ozzie" Nelson

JUNE 2013

AUTHORS
Brianna Fitch
Melissa Hersh
Rick "Ozzie" Nelson
Ally Pregulman
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*A Report of the CSIS Homeland Security
and Counterterrorism Program*

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CONTRIBUTORS

Grace Jones
Ashley Nichols
Lauren Powell
Matt Shahian
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Acronyms and Abbreviations

AAI	Airports Authority of India
AEO	authorized economic operator
BCS	Ministry of Civil Aviation, Bureau of Civil Aviation Security
BFAS	Board for Aviation Safety
BSF	Border Security Force
BEOC	business emergency operation center
CCI	U.S.-India Counter Terrorism Cooperation Initiative
CERT	computer emergency response team
CISF	Central Industrial Security Force
CIT	Ministry of Communications & Information Technology
CPO	Central Police Organisation
C-TPAT	U.S. Customs Trade Partnership against Terrorism
DGCA	Directorate General of Civil Aviation
DHS	U.S. Department of Homeland Security
EEZ	exclusive economic zone
FAA	U.S. Federal Aviation Administration
FEMA	U.S. Federal Emergency Management Agency
GRP	Government Reserve Police
HAZMAT	hazardous materials
HQIDS	Headquarters Integrated Defence Staff
ICG	Indian Coast Guard
ICT	information and communications technology
IM	Indian Mujahideen
IN	Indian Navy
IR	Indian Railways
ISI	Directorate for Inter-Services Intelligence
ISR	intelligence, surveillance, and reconnaissance
IT	information technology
LeT	Lashkar-e-Taiba
MDZ	maritime defense zone
MoU	memorandum of understanding
MoD	Ministry of Defence
MHA	Ministry of Home Affairs
MRA	mutual recognition agreement

NATGRID	National Intelligence Grid
NCTC	U.S. National Counterterrorism Center
NIAC	U.S. DHS National Infrastructure Advisory Council
NMIC	U.S. National Maritime Intelligence Center
PNR	passenger name record
PPI	public-private infrastructure
RPF	Railways Protection Force
SAAI	Supreme Audit Authority of India
SAFE	Standards to Secure and Facilitate Global Trade
TSA	U.S. Transportation Security Administration
TWIC	Transportation Worker Identification Credential
ULFA	United Liberation Front of Assam
UID	unique identification number
WCO	World Customs Organisation

U.S.-India Homeland Security Cooperation

Building a Lasting Partnership via Transportation Sector Security

Introduction

Given India's rapid development, the nation has become an increasingly vital world actor. India has the 11th largest economy in the world, and with its annual economic growth rate averaging 7 percent per year since 1997, it could surpass the United States and China to become the world's largest economy by 2050.¹ This economic capacity facilitated billions of dollars in investments since 2006 to expand and upgrade India's defense and security capabilities, including the launch of its first nuclear-powered submarine and the ongoing acquisition of a fleet of aircraft carriers.² The growth of India's economic and military sectors increases its strategic importance to the United States and other partners interested in ensuring stability and security in Asia.

Despite these developments, critical gaps in the country's capabilities remain, as evidenced by the November 2008 terrorist attacks in Mumbai, which underscored India's need for a more robust homeland security enterprise. Faced with a group of heavily armed and well-trained gunmen, Mumbai's first responders were overwhelmed in the early minutes of the assaults. Local police officers, many armed only with bamboo sticks and lacking body armor, were powerless to stop the terrorists, while ambulances and fire services proved ill-equipped for the crisis, which lasted three days.³

A broad and persistent array of groups seeking to foster chaos and upheaval are present in the region, including sophisticated terrorist groups operating from Pakistan, a

1. Central Intelligence Agency, "The World Factbook: India," February 5, 2013, <https://www.cia.gov/library/publications/the-world-factbook/geos/in.html>; "India: From Splendid Past to Prosperous Future," *Thomas White International, Ltd*, May 2010, <http://www.thomaswhite.com/explore-the-world/india.aspx>.

2. Guy Ben-Ari and Nicholas Lombardo, "India's Military Modernization," *CSIS Critical Questions*, April 1, 2011, <http://csis.org/publication/indias-military-modernization>.

3. Yaroslav Trofimov, Geeta Anand, Peter Wonacott, and Matthew Rosenberg, "India Security Faulted as Survivors Tell of Terror," *Wall Street Journal*, December 1, 2008, <http://online.wsj.com/article/SB122809281744967855.html>; Bala V. Balachandran, "Dealing with the Aftermath of Attacks," *The Sunday Guardian*, October 2010, <http://www.sunday-guardian.com/analysis/dealing-with-aftermath-of-attacks>.

widespread Maoist insurgency, violent separatist movements, and a variety of domestic religious extremists. These groups continue to plague the nation, perpetuate instability, and could impede the nation's progress. Another terror attack similar to Mumbai could lead to armed conflict, threatening the country's rise as well as regional and potentially international stability.

These challenges underscore India's potential to benefit from a more robust homeland security enterprise intended to enhance its defenses against such threats. At present, India is only beginning to build its homeland security—or "internal security" as it is known in the country—architecture and capabilities. The lack of coordination between state and Centre governments complicated response efforts during the Mumbai attack, as did the absence of an established crisis management infrastructure.⁴ Even when elite government forces finally mobilized, the absence of adequate transportation delayed their arrival in Mumbai for 11 hours. Indian forces repeatedly exhibited tremendous bravery during the three-day assault, yet their response to the crisis demonstrated India's urgent need to further develop homeland security capabilities.

India's growing strategic importance, coupled with gaps in its homeland security enterprise, provides an opportunity to expand its partnership with the United States and become a key partner in ensuring stability and security in Asia. Since the end of the Cold War, India and the United States have increased cooperation to include economics, security, energy, education, environment, health, and technology.⁵ India now conducts more military exercises with the United States than with any other nation and the two countries have invested tens of billions of dollars in each other's economies.⁶ Extending this partnership to homeland security would be a natural evolution of the countries' shared interests and can draw on each nation's experience countering internal threats and working within a federal system.

Key areas for increased cooperation and coordination on homeland security matters not only exist between the governments of the United States and India, but also with the private sector, which plays an important role in building India's critical infrastructure and is a major actor in ensuring the country's safety and security.⁷ However, the development of an effective Indian homeland security enterprise faces a variety of challenges at the political, organizational, technological, and even societal levels. These obstacles must be identified and overcome to improve India's homeland security enterprise.

This report seeks to explore these challenges, while focusing on tangible areas where U.S.-India cooperation can advance both nations' homeland security interests. Given the wide array of homeland security issues, this report highlights challenges and

4. Randeep Ramesh and Maseeh Rahman, "Guns, grenades, then a battle to the death in 105-year-old hotel." *The Guardian*, November 27, 2008, <http://www.guardian.co.uk/world/2008/nov/28/mumbai-terror-attacks-police-response>.

5. Ministry of External Affairs, "India-U.S. Relations," Government of India, March 2012, <http://meaindia.nic.in/mystart.php?id=50044540>.

6. Ben-Ari and Lomdardo, "India's Military Modernization."

7. "PPP Projects Pipeline in India," Asian Development Bank, December 22, 2010, <http://www2.adb.org/India/PPP/projects.asp>.

opportunities within the transportation security sector as a lens through which to view the broader homeland security enterprise. The report provides an overview of the strategic landscape and threats facing India's transportation sector and then examines opportunities for progress across the rail, maritime, and aviation security sectors before concluding with specific recommendations on key areas for cooperation.

Strategic Landscape

India and the United States recognize the interrelationship between their homeland security concerns and have already begun laying the foundations for closer cooperation and coordination. Improved competency in homeland security issues is a top priority for both countries, due to their history of attacks by foreign terrorists and homegrown extremist groups. As U.S. Secretary of Homeland Security Janet Napolitano has said, there is much “to learn from each other, and much to gain from a beneficial relationship.”⁸

An information exchange prompted by the 2008 Mumbai attacks provided a solid basis for increased United States–India collaboration on several recent high-level initiatives and homeland security cooperation efforts. For example, the U.S.-India Strategic Dialogue began in 2010 to enable bilateral cooperation on mutual strategic interests and to “[s]trengthen security cooperation through expanded dialogues and exercises as well as sharing of advanced technologies.”⁹ The third session of this dialogue occurred in Washington, D.C., in June 2012. During this high-level meeting, the United States and India affirmed cooperation on a range of security issues, including counterpiracy, counter-narcotics, humanitarian assistance and disaster relief, cybercrime, counterterrorism, and policing.

In addition, several memoranda of understanding underpin bilateral homeland security cooperation efforts specifically. The 2010 U.S.-India Counter Terrorism Cooperation Initiative's (CCI MoU) allows the United States to facilitate capacity building and training in India across a number of specific areas, including but not limited to:

- Developing investigative skills;
- Promoting cooperation between forensic science laboratories;
- Establishing procedures to provide mutual investigative assistance;
- Improving capabilities to act against money laundering, counterfeit currency, and terrorist financing;
- Trading best practices on mass transit and rail security;

8. Janet Napolitano, “Building Strong International Security Partnerships: The U.S.-India Homeland Security Dialogue,” transcript from event at CSIS in Washington, D.C., June 2, 2011, 6, http://csis.org/files/attachments/110602_DHS_transcript.pdf.

9. U.S. Department of State, “Security Partnership for the 21st Century,” July 19, 2011, <http://www.state.gov/r/pa/prs/ps/2011/07/168744.htm>.

- Increasing interactions between Coast Guards and Navies on maritime security;
- Exchanging experience and expertise on port and border security; and
- Enhancing liaison and training between specialist Counter Terrorism Units, including the National Security Guard, and their U.S. counterparts.¹⁰

In 2011 the U.S. Department of Homeland Security (DHS) and India's Ministry of Communications & Information Technology (CIT) signed an MoU on cybersecurity collaboration.¹¹ In May 2011, the United States and India launched the inaugural U.S.-India Homeland Security Dialogue, specifically focused on homeland security and counterterrorism cooperation. At this initial meeting, Secretary Napolitano and India's Minister of Home Affairs P. Chidambaram focused on joint efforts regarding urban policing, supply chain security, countertrafficking, and cybersecurity.¹² However, despite technical and operational strides occurring, there remain key opportunities for closer cooperation, both across governments and with the private sector.

The growing importance of transportation to India's continued development highlights a key sector for additional opportunities for bilateral homeland security cooperation. That said, insufficient or inadequate infrastructure is a major barrier to enhanced internal security and India's future growth. Short and medium term development efforts require considerable expansion of rail, air, and maritime infrastructure capabilities. The Indian rail system may see ridership increase over 5 percent in the coming year alone, adding millions of riders to an outdated system that already sags under the demands of over 20 million passengers per day.¹³ India also lacks the rail capacity to handle the freight demands of the growing nation, leading to significant delays and high shipping costs.¹⁴ Further, demand for air transportation currently outstrips India's infrastructure capacity, leading to congestion and lost productivity, and demand continues to grow. In the past decade, Indian domestic air traffic increased by roughly 460 percent and the demand for civil aviation is expected to triple by 2020.¹⁵ In the next five years, the volume of

10. Embassy of the United States, New Delhi, "Ambassador Roemer Signs U.S.-India Counterterror Cooperation Agreement," July 23, 2010, <http://newdelhi.usembassy.gov/pr072310.html>; Embassy of India, Washington, DC, "India-US Sign Counter Terrorism Cooperation Initiative," July 23, 2010, <http://www.indianembassy.org/prdetail1560/-india-us-sign-counter-terrorism-cooperation-initiative>.

11. U.S. Department of Homeland Security, "United States and India Sign Cybersecurity Agreement," July 19, 2011, <http://www.dhs.gov/ynews/releases/20110719-us-india-cybersecurity-agreement.shtm>.

12. U.S. Department of Homeland Security, "Readout of Secretary Napolitano's Trip to New Delhi," May 27, 2011, <http://www.dhs.gov/news/2011/05/27/readout-secretary-napolitanos-trip-new-delhi>.

13. Ministry of Railways, Republic of India, "Highlights of the Railway Budget 2012-2013," http://www.indianrail.gov.in/EHighlights_2012-13.pdf; Ministry of Railways, Republic of India, "Statistical Summary—Indian Railways," 2010–2011, http://www.indianrailways.gov.in/railwayboard/uploads/directorate/stat_econ/Annualreport10-11/annual_report_summary_eng.pdf.

14. Vikas Bajaj, "Clogged Rail Lines Slow India's Development," *New York Times*, June 15, 2010, <http://www.nytimes.com/2010/06/16/business/global/16indiarail.html?pagewanted=1&r=1>.

15. "India formulating new air cargo promotion policy," *Mid-Day News*, March 14, 2012, <http://www.mid-day.com/news/2012/mar/140312-India-formulating-new-air-cargo-promotion-policy.htm>.

air cargo carried by Indian aviation is projected to increase 10 percent annually.¹⁶ Finally, the Indian port system, which is currently inadequate, expects sizable increases in demand over the medium and long term, which would further strain India's transportation infrastructure.¹⁷ India's future growth hinges on addressing the gaps in these industries.

In many ways, India's success over the past decade and a half has contributed to infrastructure challenges. These problems are signs of a vibrant, rapidly growing economy that has outpaced the progression of existing infrastructure. India has already begun to address these issues; the government seeks to invest \$1 trillion over five years to upgrade and expand transportation infrastructure, including in the rail, maritime, and aviation domains.¹⁸ If successful, these efforts could help pave the way for India's continued growth. However, internal security represents a potential stumbling block for these plans.

INDIA'S INTERNAL SECURITY THREATS

To a large degree, expanding India's transportation infrastructure, and its support of the vital flow of goods and people, hinges upon the country's ability to provide internal security. At present India faces a variety of international and indigenous threats with the potential to hinder internal security and stability. Groups seeking to threaten Indian security could exploit current gaps in the transportation sector's security. These threats manifest in a variety of forms, cover the length and breadth of India, and challenge the nascent homeland security apparatus, as well as the already overstretched transportation infrastructure.

Perhaps the most notorious threat facing Indian homeland security is dangerous militant groups, including Lashkar-e-Taiba (LeT), a sophisticated Pakistani terrorist group with origins in the conflict over Jammu and Kashmir. With alleged ties to Pakistan's powerful Directorate for Inter-Services Intelligence (ISI) and possibly even al Qaeda, LeT is believed to be responsible for many of India's most deadly terrorist incidents.¹⁹ In addition to the 2008 multi-day assault against hotels and other targets in Mumbai, these incidents include a brazen strike against the Indian Parliament building in 2001 and coordinated train bombings in 2006.²⁰ LeT may have also expanded its operations into Afghanistan, where the group reportedly launched attacks against Indian interests and personnel.²¹

16. "India's shifting aviation landscape," *Air Cargo World*, January 27, 2012, <http://www.aircargoworld.com/Air-Cargo-News/2012/01/indias-shifting-aviation-landscape/274682>.

17. K. Ravichandran, Neha Joshi, and Ankit Patel, "Indian Port Sector," ICRA Research Services, July 2012, http://www.icra.in/Files/ticker/Indian%20Port%20Sector_27July12_Final%20Release.pdf.

18. Matthias Williams, "U.S. pitches India infrastructure push, warns on trade," Reuters, March 26, 2012, <http://www.reuters.com/article/2012/03/26/india-us-trade-idUSL3E8EQ70X20120326>.

19. Stephen Tankel, "Lashkar-e-Taiba, Mumbai, and the ISI," *Foreign Policy*, May 20, 2011, http://afpak.foreignpolicy.com/posts/2011/05/20/lashkar_e_taiba_mumbai_and_the_isi.

20. National Counterterrorism Center, "Counterterrorism 2013 Calendar—Lashkar-e-Tayyiba (LT)," <http://www.nctc.gov/site/groups/let.html>.

21. Alissa J. Rubin, "Militant Group Expands Attacks in Afghanistan," *New York Times*, June 15, 2010, <http://www.nytimes.com/2010/06/16/world/asia/16lashkar.html>.

There are a host of indigenous groups that seek to wreak havoc within India. An Indian Islamist group, Indian Mujahideen (IM), is believed to be responsible for a number of attacks across the country, including a bombing outside the New Delhi High Court in 2011 and a May 2008 string of nine blasts that killed sixty-three people in Jaipur.²² The group is allegedly tied to LeT and has been accused of supporting the 2008 Mumbai attacks.²³ Additionally a widespread and persistent Maoist insurgency, which has existed in one form or another since 1967, is present in twenty of India's twenty-eight states and controls significant swaths of territory.²⁴ The Maoists foster violence and instability in a "Red Corridor" across India's east. They raid police stations, attack government officials and troops, and extort or sabotage local industry. With tens of thousands of members and many times that number of sympathizers and supporters, the Maoist movement has been dubbed "the single biggest internal security challenge ever faced by our country" by Prime Minister Manmohan Singh.²⁵ India is also battling a violent separatist movement in the northeastern state of Assam, part of a conflict that has killed over 10,000 people in the course of two decades.²⁶ Although a large faction of the primary separatist group, the United Liberation Front of Assam (ULFA), entered into a cease-fire and is currently negotiating for peace, a small but committed group of rebels continues to launch attacks against government forces.²⁷ While these groups exhibit great variety in their capabilities and motivations, they collectively represent a troubling threat to India's internal stability.

Securing Indian infrastructure is an immense undertaking. While India seeks to reform its internal security apparatus, it has experienced difficulty in matching the evolving threat to its transportation systems, often resulting in lives lost. The LeT operatives who perpetrated the 2008 Mumbai attacks, killing 171 individuals,²⁸ had few problems evading the Indian Navy (IN) and Indian Coast Guard (ICG), even after these forces were alerted to the fact terrorists would likely approach the city from the water.²⁹ Further, the bombing or forced derailment of passenger trains by terrorist or militant groups operating in India has occurred, with hundreds of civilians killed in recent attacks perpetrated by various groups. The communal violence that swept through the state of Gujarat in 2002, killing over 1,000 and displacing 150,000, was linked to an alleged attack against a

22. "UK cites indiscriminate attacks, bans Indian Mujahideen," *The Indian Express*, July 5, 2012, <http://www.indianexpress.com/news/uk-cites-indiscriminate-attacks-bans-indian-mujahideen/970731/0>.

23. U.S. Department of State, "Country Reports on Terrorism 2011—Chapter 6. Foreign Terrorist Organizations: Indian Mujahideen (IM)," July 31, 2012, <http://www.state.gov/j/ct/rls/crt/2011/195553.htm#im>.

24. Jim Yardley, "Maoist Rebels Widen Deadly Reach Across India," *New York Times*, October 31, 2009, <http://www.nytimes.com/2009/11/01/world/asia/01maoist.html?pagewanted=all>.

25. Jyoti Thottam, "India's Scourge," *Time Magazine*, October 24, 2010, <http://www.time.com/time/magazine/article/0,9171,2026792,00.html>.

26. "India signs peace pact with rebel group," AFP, September 3, 2011, <http://www.google.com/hostednews/afp/article/ALeqM5ha-VeY8UpCBuOj2dlzEyf64j4J2Q?docId=CNG.8e3e8af3a6fc02c8a1fde7406092ab00.8a1>.

27. "ULFA Faction Behind Attack on Army Convoy: Gogoi," *Rediff News*, August 1, 2012, <http://www.rediff.com/news/report/ulfa-faction-behind-attack-on-army-convoy-gogoi/20120801.htm>.

28. Associated Press, "'Final' count puts death toll at 171 in Mumbai attacks," CBC News, December 3, 2008, <http://www.cbc.ca/news/world/story/2008/12/03/mumbai-toll.html>.

29. Rahul Bedia, "India's intelligence services 'failed to act on warnings of attacks,'" *The Telegraph*, November 30, 2008, <http://www.telegraph.co.uk/news/worldnews/asia/india/3537279/Indias-intelligence-services-failed-to-act-on-warnings-of-attacks.html>.

passenger train carrying Hindu pilgrims.³⁰ The costs of such insecurity in the transportation sector extend to the economy as well. Maoist insurgents sit atop rail lines connecting Indian industry with major deposits of iron, coal, and other minerals. Attacks targeting these rail lines³¹ threaten the flow of an estimated \$80 billion worth of resources into the Indian economy.³² These human and financial losses undermine the stability of the Indian transportation sector, calling into question the utility of further infrastructure development efforts. If such efforts are to succeed and India is to continue to grow, the development of transportation infrastructure must, by necessity, be accompanied by the expansion of transportation security architectures and capabilities.

Transportation as a Cross-Sectional Lens: Opportunities and Challenges for Cooperation

To cooperate on transportation security issues, the United States and India must understand the existing Indian security architecture and current challenges. A variety of organizations and agencies secure the Indian rail, aviation, and maritime transportation sectors and each possess their own dynamics and challenges. While the U.S. and Indian security architectures bear a number of similar traits, others are unique.

For instance, India's exploration of policy options for policing transport systems via dedicated transport police networks, border security initiatives, and technology acquisition and systems integration might provide new perspectives for the United States. In turn, India can gain valuable insights by examining the U.S. experience with homeland security policies, procedures, and procurements post-September 11, 2001, through the lens of transportation infrastructure.

These lessons learned could aid India's development of a coordinated internal security strategy. Ensuring India's legislative and regulatory groundwork guides consistent, coherent, and sustainable domestic and international civil security cooperation is crucial to building a successful national security framework. One of the greatest hurdles to improved Indian national security is a lack of a political consensus between the state and Centre governments over the need for a national civil security policy. Increasing the dialogue between state and Centre governments via homeland security improvements to the transportation industry could facilitate improved cooperation in support of this policy. Once articulated, the policy will guide discussions on technology mapping, needs assessments, procurement procedures, and training. In the interim, a discussion of critical infrastructure security, focused on transport, can serve to highlight opportunities

30. Gardiner Harris, "Justice and 'a Ray of Hope' after 2002 India Riots," *New York Times*, July 2, 2012, <http://www.nytimes.com/2012/07/03/world/asia/gujarat-riot-trials-may-alter-indias-cycle-of-violence.html?pagewanted=all>.

31. "Naxalites blow up rail track in Chhattisgarh," *The Times of India*, June 11, 2012, http://articles.timesofindia.indiatimes.com/2012-06-11/india/32174016_1_naxalites-blow-iron-ore-dantewada.

32. Andrea Falkenhagen, "Mining and the Maoists," Stimson Center, March 14, 2011, http://www.stimson.org/spotlight/mining-and-the-maoists/#_ftn1.

and challenges for more holistic civil security cooperation between India and the United States.

RAIL

Current Status and Challenges

India's railways are considered the "lifeline to the nation."³³ Railways for freight and public transit are an esteemed Indian national institution.³⁴ Indian Railways (IR), a state-owned and -operated enterprise,³⁵ is the world's eighth largest employer and is marginally larger than India's armed forces.³⁶ Indian passenger rail is currently experiencing a renaissance as fuel prices and environmental concerns related to other modes of transportation escalate.³⁷ Presently, "IR carries approximately 19 million passengers and 2.28 million tons of freight traffic daily on a network spread over 64,015 route kilometers with 7,030 stations."³⁸ Continued upward urbanization trends will require further development of rail and other mass transit systems, such as metro, to respond to increased demands on the system. While plans to increase freight and passenger rail capacity would be economically beneficial, the current state of the Indian rail system presents a number of security challenges that would be exacerbated by a larger infrastructure.

Expanding the current rail system without attention to threats increases the potential for mass casualties as well as trade and transit disruptions that could trigger severe economic losses. Railways are a critical component of the global supply chain. For example, U.S. rail capacity operates near its limits when trade is at normal levels.³⁹ Even a small disruption to the railroad sector could impact both the U.S. railroad industry and cross-sectoral trade. In India, as the economy continues to grow, the country will increasingly rely on the rail system to distribute goods and services. Disruptions to the supply chain might impact India's future economic successes. Further, the U.S. and Indian militaries rely on freight rail for military mobilization, including connections between military bases and points of embarkation for overseas deployment.⁴⁰ Transport support operations

33. Indian Railways, Republic of India, 2011, <http://www.indianrailways.gov.in/>.

34. Graeme Wood, "The Indian Railway King," *The American—American Enterprise Institute*, February 13, 2009, <http://american.com/archive/2009/february-2009/the-indian-railway-king/>.

35. OECD Working Group on Privatisation and Corporate Governance of State Owned Assets, "Occasional Paper: State Owned Enterprises in India: Reviewing the Evidence," January 26, 2009, 3, <http://www.oecd.org/dataoecd/14/28/42095406.pdf>.

36. Ruth Alexander, "Which is the world's biggest employer?" *BBC News Magazine*, March 19, 2012, <http://www.bbc.co.uk/news/magazine-17429786>.

37. Eric Heymann, Tobias Just, Lonneke Lowik, and Maren Vath, "450 bn reasons to invest in India's infrastructure," Deutsche Bank Research, November 28, 2007, 13, http://www.dbresearch.biz/PROD/DBR_INTERNET_EN-PROD/PROD000000000218232/450+bn+reasons+to+invest+in+India's+infrastructure.PDF.

38. Supreme Audit Institution of India, "Security Management in Indian Railways," Union Audit Report no. 14, introduction, New Delhi, India, 2011–2012, 2, http://saiindia.gov.in/english/home/Our_Products/Audit_Report/Government_Wise/union_audit/recent_reports/union_performance/2011_2012/Railways/Report_no_14/Chapter_1.pdf.

39. Stephen M. Carmel, "Stephen Carmel at USNI/AFCEA Joint War Fighting Conference 2009," U.S. Naval Institute, June 2009, <http://blog.usni.org/2009/06/12/stephen-carmel-at-usniafcea-joint-war-fighting-conference-2009>.

40. American Association of the State Highway and Transportation Officials, *Transportation Invest in America: Freight-Rail Bottom Line Report*, 2000, <http://rail.transportation.org/Documents/FreightRailReport.pdf>;

within military and civil security supply chains that are susceptible to severe congestion are a vulnerability to operational continuity and resilience.

Freight rail is also the primary method used to move hazardous materials (HAZMAT), including nuclear materials and waste.⁴¹ India's status as a nuclear power necessitates the occasional transport of spent nuclear fuel and radioactive waste by rail; moving such material via insecure infrastructure invites exploitation of this vulnerability by terrorists or other non-state actors.⁴² According to the Supreme Audit Authority of India (SAAI),⁴³ vulnerabilities faced by railways in India include:

Railway facilities rely on open architecture and easy movement of passengers in the railway stations and to and from trains. Due to large number of passengers, the number of entry and exit points in a railway station is also large. In addition, the railway networks traverse through high density urban areas that offer easy accessibility for attack and easy escape as well as vast rural and forest areas that are difficult to patrol and secure. Disruption in the transportation of freight can lead to a dislocation of supplies in a particular area as well as environmental problems in case of sabotage of rakes used to transport hazardous materials. Features used to secure airports and airplanes like passenger screening, and the elaborate deployments of metal detectors, X-ray machines, explosives sniffers, hand searchers, and armed guards cannot be transferred easily to railway stations.⁴⁴

The disparate nature of India's railways requires close coordination between the Centre and state governments, including a wide variety of agencies, to address the system's vulnerabilities and ensure future safety and security successes. State governments must effectively police and surveil railways and stations and collect, analyze, and distribute intelligence to share with the Centre government. In return, Centre government agencies under the Ministry of Home Affairs (MHA), the Ministry of Railways, and the policing allegiance of the Government Reserve Police (GRP; administered under state governments), must share information with the Centre government at-large and other states.⁴⁵

H. Shivananda, "Is India's Transport Infrastructure Prepared for the Eastern Front?" Institute for Defence Studies and Analysis, June 15, 2011, http://www.idsa.in/idsacomments/IsIndiasTransportInfrastructurePreparedfortheEasternFront_shivananda_150611.

41. U.S. Department of Transportation, Federal Railroad Administration, "Hazardous Materials Transportation," <http://www.fra.dot.gov/Page/P0151>; David Henry Bierling, "Movement of Hazardous Materials," Texas A&M Transportation Institute, 2013, <http://tti.tamu.edu/group/rail/research/research-areas/hazmat/>.

42. India began sanctioned civil nuclear energy production in 2009 after signing a safeguards agreement with the International Atomic Energy Association. International Atomic Energy Agency, "India Safeguards Agreement Signed," February 2, 2009, <http://www.iaea.org/newscenter/news/2009/indiaagreement.html>.

43. The SAAI serves as an instrument for ensuring accountability as mandated under the Constitution to act as auditors to the nation.

44. Supreme Audit Institution of India, "Security Management in Indian Railways," Union Audit Report no. 14, introduction, New Delhi, India, 2011–2012, http://saiindia.gov.in/english/home/Our_Products/Audit_Report/Government_Wise/union_audit/recent_reports/union_performance/2011_2012/Railways/Report_no_14/Chapter_1.pdf.

45. Ministry of Railways, Republic of India, "Organisation Structure," February 12, 2013, http://www.indianrailways.gov.in/railwayboard/view_section.jsp?lang=0&id=0,1,304,305.

The Railways Protection Force (RPF), an armed outfit of the central armed police force whose aim is to assist passengers and prevent and/or respond to criminal activities, falls under the auspices of the Ministry of Railways.⁴⁶ General railway passenger security is overseen by the RPF and the GRP.⁴⁷ The GRP is part of the state police force whose costs are shared by the state governments and the Ministry of Railways.⁴⁸ Multiple agencies, including the RPF, initiated legislative and regulatory modifications as part of a cross-sectoral effort to improve railway security. Such efforts include amending the 1989 Railway Act to increase the RPF's authority to enhance security measures on passenger trains and within rail station premises, and deploy more female police officers to ensure the safety and security of female passengers.⁴⁹

Moving forward, close interagency coordination will be essential to counteract terrorist attacks, which have proven deadly in India: incidents on the IR system increased markedly between 2005 and 2010, with 67 deaths and 253 injuries in 2010 alone.⁵⁰ The increased incidences, including sabotage of railway tracks, have heightened India's threat perception and awareness of the rail infrastructure vulnerabilities and underscored to non-state actors the ease and attractiveness of exploiting such vulnerabilities.⁵¹ Efforts to enhance security and resilience could serve as a deterrent against future terrorist acts and would benefit public confidence, tourism, trade, foreign investment, and employment. The decentralized nature of IR poses a challenge to standardizing operating procedures, training, and technology procurement into an integrated security policy. However, such improvements are critical to addressing IR's vulnerabilities and provide an opportunity for the United States to share lessons learned from coordinating government agencies in efforts to improve homeland security post-September 11, 2001. Ultimately, improving India's rail infrastructure requires a balance between the need for security while enabling the continued flow of passengers and goods.

Prospects for Increased U.S.-India Cooperation

India and U.S. experiences with rail infrastructure provide an opportunity for increased cooperation through sharing best practices. Lessons learned from the U.S. experience with

46. Powers bestowed to the RPF are derived from the 1957 Railway Protection Force Act and the 1989 Railways Act. See Ministry of Railways, Republic of India, "Railway Protection," <http://www.indianrailways.gov.in/railwayboard/uploads/directorate/coaching/pdf/RPF.pdf>; Indian Railways Service of Mechanical Engineers, "The Railway Protection Force Act," August 29, 1957, 11–22; http://irsme.nic.in/establishment/RPF_Act1957.pdf, Railway Claims Tribunal, "The Railways Act, 1989," June 3, 1989, http://www.rct.indianrail.gov.in/railway_act_1989.pdf.

47. Ministry of Railways, Republic of India, "About Indian Railways," July 31, 2012, http://www.indianrailways.gov.in/railwayboard/view_section.jsp?lang=0&id=0,1.

48. Bureau of Police Research and Development, New Delhi, *Data on Police Organisations in India*, "Chapter 5: Police Budget," January, 1, 2009, <http://bprd.nic.in/writereaddata/linkimages/0414372886-Chapter%20%205%20Police%20Budget.pdf>.

49. Ministry of Railways, Republic of India, "About Indian Railways," July 31, 2012, http://www.indianrailways.gov.in/railwayboard/view_section.jsp?lang=0&id=0,1.

50. Supreme Audit Institution of India, "Security Management in Indian Railways," Union Audit Report no. 14, introduction, New Delhi, India, 2011–2012, 2, http://saiindia.gov.in/english/home/Our_Products/Audit_Report/Government_Wise/union_audit/recent_reports/union_performance/2011_2012/Railways/Report_no_14/Chapter_1.pdf.

51. Ibid.

rail infrastructure and services may prove helpful to India's expanding rail operations. In return, the United States can raise the domestic profile of rail transit by emulating India's national vision and momentum behind rail modernization and expansion, particularly regarding passenger rail.⁵² For example, even though Chinese and Indian railways are already among the largest in the world, a World Bank–moderated south-south knowledge exchange between the two economic giants resulted in a set of useful lessons learned for India, including strategies to expand railway networks.⁵³ India and the United States could establish their own knowledge exchange program comprised of the U.S. Department of Transportation, DHS, and the private sector with their sister agencies and divisions in Indian government and industry.

As India contends with rail capacity challenges, a U.S.-India understanding of how to garner federal and state political and financial support could prove useful. The U.S. public sector lacks “programs [to] deal with capacity expansion in primary rail corridors and their resources fall well short of the needs.”⁵⁴ Moreover, current systems do not allow for crossover funding between the public and private sector. “There is very limited discretion within existing public sector programs to invest in private rail facilities, to leverage public investment with private investment, or to recover public investment through user fees tied to economic growth and increases in rail traffic volumes.”⁵⁵ Increasing the capacity of the rail system in the United States would likely require public investment, a challenge with which India has also dealt.

In India the majority of power rests with the state governments, causing inherent tension in the Centre-states relationship and preventing efficient operation of the homeland security apparatus. While the Centre cannot function without cooperation from the periphery, states are not currently required to accept the imposition of government institutions, such as the central National Investigation Agency, a federal agency created to combat terrorism in India.⁵⁶ Major transportation infrastructure modernization projects are more likely to succeed if several states are incentivized to assume the financial burden. Individual states would likely push back against singularly funded projects that would provide downstream benefits for other states, even if improved capacity also aided their own economic and security interests. The power retained by Indian states, which far outweighs that of states in the United States, enables the individual states to make security decisions

52. Government of India, Ministry of Railways, “Indian Railways Vision 2020,” December 2009, <http://www.prsindia.org/uploads/media/Railways%20Vision%20Document%202020.pdf>.

53. World Bank. “Two Giants Meet: India Railways and China Railways Compare Notes,” November 18, 2010, <http://www.worldbank.org/en/news/2010/11/18/two-giants-meet-india-railways-and-china-railways-compare-notes>; Ben L. J. Eijbergen. “India and China Exchange Strategies,” World Bank, August 31, 2011, <http://wbi.worldbank.org/sske/case/india-and-china-exchange-strategies-expand-railway-networks#summary>; “Kashmir Railway v. Tibet Railway,” *China Over India* (blog), March 20, 2011, <http://chinaoverindia.blogspot.com/2011/03/kashmir-railway-v-tibet-railway.html>.

54. “Rail Freight Transportation Bottom Line Report,” Cambridge Systematics, Inc., April 2008, http://www.dot.state.oh.us/groups/tft/Appendix%20B/Multi-Modal%20Articles/AASHTO_Rail%20Freight%20Bottom%20Line.pdf.

55. *Ibid.*

56. A. Varshney, “State of the Union: December 2009,” <http://www.indianexpress.com/news/state-of-the-union/550191/>.

about policy and procurement on a magnitude generally reserved for central governments. This federalism not only creates a challenge for increasing state investment in Centre initiatives to improve internal security, but also for potential U.S.-India cooperation. The U.S. government's experience working with federal and state entities to complete major infrastructure projects that transcend state lines might provide some lessons learned in this area. However, in recognition of the power of the Indian states, future U.S. efforts to engage the country in homeland security cooperation might need to engage both the Centre government as well as the state governments on issues that require their support.

India's leadership in effective passenger movement and U.S. capacity for freight movement are obvious points of departure for bilateral cooperation to enable each nation to achieve its economic, safety, and security goals over the next ten to twenty-five years. Increased partnerships and information sharing regarding rail infrastructure and security best practices would prove beneficial for both countries. As of 2010 the United States was the world leader in freight rail tonnage, but it mainly invested in highway and aviation infrastructure for passenger transport.⁵⁷ The United States must ensure its transportation infrastructure capacity does not fall behind that of other countries in order to maintain its ability to effectively and securely move goods and passengers. Building an "infrastructure program that significantly improves and balances the U.S. transportation network will take decades of sustained commitment."⁵⁸

A logical entry point for cooperation might be a joint examination of the ability of recent achievements in cyber security to transform the transportation industry. In July 2011 the United States and India signed an MoU to share vital information and expertise related to cybersecurity via computer emergency response teams (CERTs).⁵⁹ The MoU not only solidified U.S.-India cooperation on counterterrorism issues but also increased the dialogue and coordination on cybersecurity issues. The increased use and accessibility of cyber technologies for physical security purposes, including transport control systems, enable continued sharing of homeland security best practices. With the assistance of U.S. public and private sectors, India can upgrade its technological readiness and training and secure critical infrastructure.⁶⁰

In 2005 the U.S. DHS National Infrastructure Advisory Council (NIAC) explored the increasing risk of interconnected information technology (IT)-managed systems that support or directly control critical infrastructure, such as banking, transportation, energy,

57. U.S. Department of Transportation, "National Rail Plan: Moving Forward," progress report, Federal Railroad Administration, September 2010, 8, http://www.fra.dot.gov/downloads/NRP_Sept2010_WEB.pdf; Phillip. Longman, "Back on Tracks," *Washington Monthly*, January/February 2009, <http://www.washingtonmonthly.com/features/2009/0901.longman.html>.

58. U.S. Department of Transportation, "National Rail Plan: Moving Forward," progress report, Federal Railroad Administration, September 2010, 8, http://www.fra.dot.gov/downloads/NRP_Sept2010_WEB.pdf.

59. U.S. Department of Homeland Security, "United States and India Sign Cybersecurity Agreement," July 19, 2011, <http://www.dhs.gov/news/2011/07/19/united-states-and-india-sign-cybersecurity-agreement>.

60. U.S. Department of Homeland Security, National Infrastructure Advisory Council, "The NIAC Convergence of Physical and Cyber Technologies and Related Security Management Challenges Working Group: Final Report and Recommendations by the Council," January 16, 2007, http://www.dhs.gov/xlibrary/assets/niac/niac_physicalcyberreport.pdf.

and emergency services.⁶¹ In addition to highlighting the vulnerabilities of IT-managed systems, the findings included the necessity of using technology to achieve enhanced operational capabilities and competitiveness. The NIAC reports could improve Indian understanding of the successes and failures of private sector outreach and integration and enable the incorporation of these lessons learned into their own strategic planning and procurement schedules.⁶² Further, integrating public-private infrastructure (PPI) into the transport sector could provide an opportunity for the private sector, both foreign and domestic, to lobby for the introduction of standards and best practices to be shared across the whole of rail operations—a move that would greatly impact overall safety and security.⁶³ Moreover, Indian experience with PPI partnerships could prove helpful as the United States explores innovative ways to integrate more PPI partnerships into the rail transport sector. Increased U.S.-India cooperation regarding rail infrastructure and security not only addresses vulnerabilities within the industry but also provides downstream security benefits for other transportation sectors. Moving forward, the current status of the Indian and U.S. rail sectors provides an opportunity for enhanced interoperability via knowledge exchange programs to share best practices and lessons learned. Importantly, increased U.S.-India cooperation would enable both countries to increase the capacity of and support to the rail infrastructure, engage local and regional stakeholders, and leverage new technologies to improve transport security while also strengthening bilateral ties.

AVIATION

Current Status and Challenges

The Indian civil aviation industry significantly expanded over the last five years and is considered a key industry for generating growth across all sectors of the economy.⁶⁴ India's rapidly expanding air infrastructure sends "about 2.5 billion passengers across the world in a year; moves 45 million tons of cargo through 920 airlines . . . and five Indian carriers fly to and from 40 countries."⁶⁵ However, the air infrastructure is currently unable to accommodate growing demands on the system. The Airports Authority of India (AAI) only considers 89 of the 454 Indian airports to be operational, though it expects to increase this

61. Ibid.

62. U.S. Department of Homeland Security, National Infrastructure Advisory Council, "Intelligence Information Sharing: Final Report and Recommendations," January 10, 2012, <http://www.dhs.gov/xlibrary/assets/niac/niac-intelligence-information-sharing-final-report-01102012.pdf>. See also U.S. Department of Homeland Security, National Infrastructure Advisory Council, "Presentation: Intelligence Information Sharing," January 10, 2012, <http://www.dhs.gov/xlibrary/assets/niac/niac-intelligence-information-sharing-presentation-01102012.pdf>.

63. Government of India, Ministry of Railways, "Indian Railways Vision 2020," December 2009, 6, <http://www.prsindia.org/uploads/media/Railways%20Vision%20Document%202020.pdf>. See also Asian Development Bank, "ADB \$500 Million Loan to Boost Indian Railways," September 1, 2011, <http://www.adb.org/news/adb-500-million-loan-boost-indian-railways>.

64. Government of India, Planning Commission, "Working Group: Transport—Civil Aviation Introduction," April 6, 2011, <http://planningcommission.gov.in/aboutus/committee/index.php?about=12strindx.htm#tran>.

65. Indian Brand Equity Foundation, "Indian Aviation Industry," IBEF December 2012, <http://www.ibef.org/industry/indian-aviation.aspx>.

number to three to five hundred working facilities by 2030.⁶⁶ Currently, both the public and private sector are working to increase the capacity of the aviation industry, which would in turn generate employment opportunities, enhance the ease of moving goods and services, and stimulate the Indian economy. Though India seeks to become one of the top five civil aviation markets in the global market by 2017, the current status and rapid expansion of its aviation infrastructure pose security risks that might hinder this endeavor.⁶⁷

Civil aviation is a highly visible industry in which transit-related disruptions or disasters quickly become high-profile media incidents and negatively impact business. While the aviation industry can mitigate the risk of disruptions through insurance and alternative financing measures, it cannot protect itself from negative public perceptions and fear of travel following an incident. Following the September 11, 2001, terrorist attacks in the United States, the number of airline passengers sharply declined and “it took nearly three years, until July 2004, for the industry to match and finally surpass the pre-9/11 levels.”⁶⁸ Should a similar attack occur on India’s aviation infrastructure, it would impact passenger numbers and have far-reaching economic impacts on this growing sector.

As mentioned, the continued growth of India’s economy will place increased demands on the country’s transportation infrastructure, particularly effective and efficient cargo and passenger screening capabilities. India’s potential to become a world economic leader hinges upon its ability to distribute goods and services to far-reaching markets. Perhaps one of the greatest challenges to the security and future development of India’s aviation industry is the growing disconnect between the size of its current workforce and rapidly expanding infrastructure.⁶⁹ As the number of India’s operational airports continues to grow, they will require a balance between improved security measures to address threats from internal and external actors and enhanced processes to move an increased number of passengers and goods through airport screening and facilities in a timely manner. Increased capacity at airports requires a properly trained workforce capable of meeting these increased demands, as well as standardized operational procedures to ensure consistent security measures across the industry. Improving security and operations at India’s airports hinges upon creating and maintaining the appropriate human capital and support network.

Given the interconnected nature of the aviation industry, Indian government agencies and international bodies have a stake in resolving vulnerabilities in the aviation infrastructure. The Ministry of Civil Aviation develops national policies and programs for India’s civilian air infrastructure and oversees the directorates responsible for safety and

66. U.S. Department of Commerce, “Secretarial India Infrastructure Business Development Mission Statement,” March 25–30, 2012, http://export.gov/indiamission2012/eg_main_042793.asp.

67. Government of India, Planning Commission, “Working Group: Transport—Civil Aviation Introduction,” April 6, 2011, 31, http://planningcommission.gov.in/aboutus/committee/wrkgrp12/transport/report/wg_civil.pdf.

68. Ken Notis, “Airline Travel Since 9/11,” RITA, February 22, 2013, http://www.rita.dot.gov/bts/sites/rita.dot.gov/bts/files/publications/special_reports_and_issue_briefs/issue_briefs/number_13/html/entire.html.

69. “Airports,” Public Private Partnerships in India (Ministry of Finance), 2010, <http://www.pppinindia.com/sector-airports.php>.

security. The AAI manages safety across airports, air traffic services, and infrastructure, whereas the Ministry of Civil Aviation, Bureau of Civil Aviation Security (BCS), similar to an amalgamation of the U.S. Transportation Security Administration (TSA) and the Federal Aviation Administration (FAA), oversees Indian aviation security.⁷⁰

The Central Industrial Security Force (CISF), a law enforcement arm overseen by the BCS, is mainly responsible for the protection of “[m]ajor critical infrastructure installations of the country in diverse areas.”⁷¹ CISF received responsibility for airport security after the 1999 hijacking of an Indian airlines flight and uses 21,000 personnel to “manage security at 59 airports across the country.”⁷² However, recent reports that almost three-fourths of airline and CISF personnel failed a basic BSC security test, a prerequisite for conducting security at airports, lends credence to the International Civil Aviation Organization’s recent recommendation that India create a dedicated Aviation Security Force in lieu of the CISF.⁷³

Prospects for Increased U.S.-India Cooperation

Though India has already made several recent proposals to reform the aviation sector, the continued challenges faced by this growing industry indicate a need for improvement, providing an opportunity for greater U.S.-India collaboration. The future success of India’s aviation infrastructure requires close collaboration between government and industry to ensure services are effectively scaled up without compromising security. Efforts to enhance human capital resources and security at airports not only stimulate the economy through increased employment options and opportunities for economic growth, but also address the current vulnerabilities in these systems. India could benefit from the U.S. experience post-9/11 reforming the existing aviation sector and heightening security measures without negatively affecting the transit of passengers and goods.

While reassurances that India is enhancing and streamlining regulatory oversight for civil aviation and air transport are encouraging, there are concerns these changes are slow-moving and mired in political standoffs.⁷⁴ Aside from political setbacks, the greatest challenge to India’s aviation industry is its human capital deficit, for without properly trained safety and security operators, mechanics and engineers, policy analysts, and pilots, India will be unable to effectively manage the growing demand for air transit. Current

70. Government of India, Bureau of Civil Aviation Security, “Organization,” <http://www.bcasindia.nic.in/aboutus/aboutus.html#ORGANISATION>.

71. Government of India, Ministry of Home Affairs, “Central Industrial Security Force,” <http://cisf.nic.in/>.

72. Vijaita Singh, “CISF unhappy as ministry mulls Aviation Security Force,” *The Indian Express*, August 10, 2012, <http://www.indianexpress.com/news/cisf-unhappy-as-ministry-mulls-aviation-security-force/986337/2>.

73. Press Trust of India, “Over 70% airline, CISF personnel flunk basic test on security,” *The Times on India*, February 10, 2013, http://articles.timesofindia.indiatimes.com/2013-02-10/india/37019776_1_cisf-personnel-aviation-security-force-bcas.

74. Anshul Dhamiji, “Aviation minister keen to extend industry’s mass reach,” *The Times of India*, July 17, 2012, http://articles.timesofindia.indiatimes.com/2012-07-17/mumbai/32712936_1_indian-aviation-atf-cost-oil-ministry; “IATA attacks government for airport charges hike, delay in infrastructure development,” *The Economic Times*, June 11, 2012, http://articles.economictimes.indiatimes.com/2012-06-11/news/32175163_1_airport-regulator-airport-charges-delhi-airport.

efforts to resolve this issue have resulted in ad hoc institutions with limited ability to effect systemic changes. Though India created the Board for Aviation Safety (BFAS) and the Directorate General of Civil Aviation (DGCA) to serve as oversight and regulatory bodies to maintain standards within this growing industry, these organizations have thus far earned “a dismal safety report card.”⁷⁵ While DGCA’s inability to meet India’s rising air traffic control needs could hinder future growth of the air infrastructure, it provides an opportunity for India-U.S. cooperation to further improve regulatory oversight.⁷⁶ India could learn from the U.S. experience in leveraging the cooperation of industry and government stakeholders to heighten aviation security measures post-9/11 to overcome its own political challenges.

As India examines measures to strengthen airport and aircraft safety and security, the United States has an opportunity to glean best practices to improve its own aviation industry. India seeks to improve vulnerabilities in airport infrastructure to better defend against threats to facilities, passengers, cargo, information and communications technology (ICT), and personnel. The United States could reevaluate its current policies and procedures against India’s proposed enhancements to its system. In turn, the United States could share lessons learned with India as it seeks to reshape its aviation sector. India recently investigated the Australian and Israeli security model of extensively questioning passengers, as well as the Dutch model of placing security screening of passengers and luggage at individual departure gates, to identify successes and challenges within these practices. Both the United States and India could leverage this inquiry to augment current practices and technology uses. Sharing best practices would not only facilitate increased cooperation between the countries but would also benefit the aviation industry.

Several existing U.S. initiatives, in combination with India’s use of innovative technologies to bolster aviation security, could inspire changes within both aviation industries. India recently began to leverage biometric technologies to create a national registry of citizen’s biometric data through the use of unique identification numbers (UIDs).⁷⁷ The compilation of biographical, demographic, and biometric data could enable India to transform security measures for the aviation industry. For example, the U.S. Transportation Worker Identification Credential (TWIC), a measure administered by the U.S. TSA and Coast Guard, requires all maritime transportation workers to carry biometric identification cards within secured facilities and vessels in an effort to mitigate unauthorized access to

75. Government of India, Directorate General of Civil Aviation, “Surveillance and Enforcement,” http://dgca.nic.in/surv_enf/surv_main.htm.

76. PTI, “India Faces Aviation Security System Downgrading,” *Hindustan Times*, July 22, 2012, <http://www.hindustantimes.com/India-news/NewDelhi/India-faces-downgrading-of-its-aviation-security-system-CAPA/Article1-893529.aspx>.

77. The government of India’s initially created the the Unique Identification project as a way to ensure “as the basis for efficient delivery of welfare services” via identification of the residents requiring assistance. The program also intended the program to “also act as a tool for effective monitoring of various programs and schemes of the Government.” The subsequent citation “UIDAI Background” is the source for this quote. Currently, there are no policies or bills that have recommended using this registry for security purposes. Government of India, Unique Identification Authority of India, “UIDAI Background,” 2012, <http://uidai.gov.in/about-uidai.html>; Fareed Zakaria, “The Plan to Fingerprint 1.2 Billion in India,” *The Jeenyus Corner*, July 4, 2012, <http://jeenyuscorner.com/2012/07/04/plan-to-fingerprint-over-billion-india/>.

these areas.⁷⁸ India could leverage its existing database of biometric data to create similar identification processes for its aviation facilities. Further, the TSA's Pre-Check program, in which trusted travelers are prescreened in order to allow them access to expedited security measures, might inspire similar measures within India.⁷⁹ Implementing such a program in India could enable security personnel to focus on interdicting threats instead of routinely screening a large number of "trusted" travelers.

These and other programs, such as the TSA's Secure Flight Initiative, which asks passengers to share personal identifying information when booking tickets to improve watch-list matching, require increased information sharing between the TSA and U.S. intelligence organizations.⁸⁰ Close cooperation between these entities enables the verification of passenger name records (PNRs) against boarding document identification, as well as sharing information regarding potential threats. Leveraging such programs within India would require increased interoperability between government agencies, as well as the state and Centre governments. Given the continued evolution of U.S. passenger screening and airport security programs, as well as India's advancements in the use of biometric technology, there is tremendous space for dual cooperation and cross sharing of ideas within the aviation sector. Ultimately, the aviation sector presents a variety of opportunities for U.S.-India cooperation to leverage new technologies and shared experiences to improve screening and training standards as well as enhance the overall security of the industry and India at large.

MARITIME

Current Status and Challenges

India's maritime industry comprises the bulk of its international trade and is a key component of the country's current and future economic prosperity. The country's large coastline enables over 95 percent of India's international trade by volume to take place via twelve major ports and forty-five minor ports.⁸¹ Increased sea trade, offshore hydrocarbon explorations, and other economic activities in the exclusive economic zone (EEZ) in India

78. Mickey McCarter, "FAA Struggles to Define Progress on Pilot IDs without TSA Input," *HSToday.us*, April 15, 2011, <http://www.hstoday.us/briefings/today-s-news-analysis/single-article/faa-struggles-to-define-progress-on-pilot-ids-without-tsa-input/44b6b91f0b4a10f2b37f72b601efc1f7.html>; U.S. Department of Homeland Security, Transportation Security Administration, "Transportation Worker Identification Credential," 2011, http://www.tsa.gov/what_we_do/layers/twic/index.shtm.

79. U.S. Congress, "Maritime Transportation Security Act of 2002," November 25, 2002, <http://www.tsa.gov/assets/pdf/MTSA.pdf>.

80. U.S. Department of Homeland Security, "Transportation Security Administration Secure Flight Test Phase," September 21, 2004, http://www.tsa.gov/sites/default/files/assets/pdf/secure_flight_pra_notice_9.21.04.pdf. The TSA's Secure Flight program is a mechanism for comparing passenger name records (PNRS) from "domestic flights to names in the Terrorist Screening Database (TSDB) maintained by the Terrorist Screening Center (TSC), including the expanded TSA No-Fly and Selectee Lists, in order to identify individuals known or suspected to be engaged in terrorist activity."

81. KPMG, "Indian Maritime Landscape: A Background Note," KPMG in India, February 2008, http://www.ebtc.eu/pdf/Indian_Maritime_Landscape_A_Background_note.pdf; "Indian shipping industry has weathered economic recession in US and Europe," DHL Logistics Arena, September 15, 2012, <http://economictimes.india-times.com/industries/indian-shipping-industry-has-weathered-recession-in-us-and-europe/dhlarticle/show/16410256.cms>.

contribute to a growing discourse on the criticality of coastal security.⁸² India's EEZ is expected to double by 2015, which would likely increase the necessity of protecting shipping and other offshore assets. Currently, over 8,000 tankers per year pass through Indian ports; India's projected overseas trade is expected to reach \$1 trillion by 2020.⁸³ The expansion of India's maritime trade capabilities hinges upon effective maritime security measures to thwart threats from a variety of non-state actors.

The expansive nature of the maritime sector presents security challenges related to physical threats as well as effective interfaces between security stakeholders. Terrorist groups increasingly use maritime attack capabilities to exploit vulnerabilities in port and maritime security. In November 2008 the ICG and other security forces failed to detect LeT as it used a small sea craft to access Mumbai, which enabled the group's devastating attack against the city.⁸⁴ Terrorist groups without maritime capabilities may also exploit gaps in maritime security by shipping freight containers containing weapons or explosive devices via ports with lax security to the United States or other targets. The volume of freight transiting India's ports makes it an attractive target for such exploitation, as even small interruptions to the global distribution of goods and services could have significant impacts on Indian and world economies.

Of significance to Indian internal security are anti-piracy operations and coastal border security. Currently the ICG and IN lack clear delineation of roles and responsibilities regarding anti-piracy activities, including intelligence gathering and incident responses. Due to increased piracy in the Indian Ocean, a piracy bill was introduced into Parliament in April 2012.⁸⁵ The Ministry of External Affairs is currently revising the bill. If passed, it would address gaps in India's counterpiracy policies and expand ICG and IN jurisdiction to include the entire EEZ, provide for more rapid prosecution regardless of nationality, and allow for extradition of suspects.⁸⁶ Despite recognition of the threats to maritime security, the current lack of coordination between security stakeholders precludes effective interdiction of these dangers and presents an opportunity for increased U.S.-India cooperation.

Effective maritime security hinges on cooperation within Indian government agencies as well as across international organizations. Whereas DHS oversees the U.S. Coast Guard, the

82. "Exploring the Exclusive Economic Zone of India," National Institute of Oceanography, Government of India, http://www.nio.org/index?option=com_newsdisplay/task/view/tid/4/sid/23/nid/35; P. Sunderarajan, "India Hopes to Double its EEZ," *The Hindu*, June 12, 2011, <http://www.thehindu.com/news/national/article2096905.ece>.

83. P.S. Das, "India's Maritime Concerns and Strategies," *USI Journal* 136, no. 565 (July–September 2006): 456, quoted by Alok Bansal, "Synergising Indian Navy and the Coast Guard," *Journal of Defence Studies* 2, no. 1 (Summer 2008), http://www.idsa.in/system/files/jds_2_1_abansal.pdf, 83.

84. Sebastian Rotella, "Did the U.S. Know More Than It Let On about Mumbai Attacks Suspect?" PBS Frontline, November 22, 2011, <http://www.pbs.org/wgbh/pages/frontline/afghanistan-pakistan/david-headley/did-the-u-s-know-more-than-it-let-on-about-mumbai-attacks-suspect/>.

85. "The proposed piracy bill defines "piracy" as any illegal act of violence or detention for private ends by the crew or passengers of a private ship or aircraft on high seas or at a place outside the jurisdiction of any State." See "The Piracy Bill, 2012," *PRS Blog*, April 27, 2012, <http://www.prsindia.org/theprsblog/2012/04/27/the-piracy-bill-2012/>.

86. Devirupa Mitra, "Ministries keep hands off anti-pirate bill," *New Indian Express*, January 13, 2013, <http://newindianexpress.com/thesundaystandard/article1419074.ece>.

ICG is a paramilitary outfit administered by the Ministry of Defence (MoD).⁸⁷ Since its creation in 1978, the duties and functions of the ICG have expanded to include coastal security in all territorial waters, including those patrolled by the coastal police. The director general of the ICG commands the coastal command and coordinates all Centre and state security measures.⁸⁸ A recent two-phased coastal security scheme, based on recommendations by the group of ministers responsible for reforming the national security system, initiated upgrades to the ICG's capabilities while also improving the presence of law enforcement.⁸⁹ This five-year plan provides assistance to nine coastal states and four union territories to establish new coastal police stations, including equipment.⁹⁰ In 2011 Phase II of the plan commenced, providing surveillance equipment and computer systems to coastal police stations, as well as establishing an institutional mechanism for coordination among Centre and state security agencies to ensure that Centre intelligence agencies and state police forces receive the same up-to-date information.⁹¹

The ICG has a secondary role as the fourth armed unit of the MoD, to use its surface and airborne capabilities to supplement and act as surge capacity for the IN. While an operational doctrine for ICG-IN cooperation and consolidation of assets does not exist, there are tacit expectations the ICG will contribute to maritime defense as needed.⁹² The ICG and other offshore security entities currently report to the IN as the designated authority for maritime security, but a more clearly delineated chain of command and information sharing architecture would be of great value.⁹³

IN and ICG joint operations are presently cordial. Nonetheless, historical evidence of “inter-service rivalry and mutual bickering” between the Indian Army and Border Security Force (BSF) raises concerns about the potential for future strains if the IN-ICG

87. “Indian Coast Guard Personnel,” Indian Government, April 15, 2011, http://india.gov.in/govt/armed_forces.php?id=5.

88. Ministry of Defence, “Annual Report: 2011–2012,” Government of India, 2012, 51, <http://mod.nic.in/reports/AR-eng-2012.pdf>.

89. Shri Mullappally Ramachandran, “Coastal Security Scheme Phase-II: State-Wise Physical Component,” Ministry of Home Affairs, Government of India, 2010, <http://www.satp.org/satporgtp/countries/india/document/papers/2010/Statewpc.htm>; “Coastal Security Scheme, West Bengal,” West Bengal Police, 2012, 2, http://policewb.gov.in/wbp/misc/COASTAL_SECURITY_SCHEME.pdf; Anwar Ehsan Ahmad, “Measures to Strengthen Coastal Security Put on Fast Track,” Press Information Bureau, Ministry of Home Affairs, Government of India, SS-18/SF-18/21.01.2010, New Delhi, January 1, 2010, http://pib.nic.in/release/rel_print_page1.asp?relid=57167.

90. Shri Mullappally Ramachandran, “Coastal Security Scheme Phase-II: State-Wise Physical Component,” Ministry of Home Affairs, Government of India, 2010, <http://www.satp.org/satporgtp/countries/india/document/papers/2010/Statewpc.htm>.

91. Ravidner Singh, “Securing India’s Coastline Post Mumbai Attack,” League of India, July 2, 2011, <http://leagueofindia.com/blog/securing-indias-coastline-post-mumbai-attack>.

92. Government of India, “Chapter III: Duties and Functions of the Coast Guard,” *The Coast Guard Act, 1978*, <http://indiancoastguard.nic.in/Indiancoastguard/CG%20Act%201978/Chapter3.htm#14>; Abhishek Mishra and Swati Mishra, “Formulating the Concept, Principles, and Parameters for Performance-Related Incentives (PRI) in Government,” report, Sixth Central Pay Commission, Government of India, New Delhi, India, February 2008, 48, <http://india.gov.in/govt/studies/cluster-IV.pdf>. The director general of the Indian Coast Guard quoted in Alok Bansal, “Synergising Indian Navy and the Coast Guard,” *Journal of Defence Studies* 2, no. 1 (Summer 2008), 80, http://www.idsa.in/system/files/jds_2_1_abansal.pdf.

93. “CSS Approves Phase-II of Coastal Security Scheme,” *The Times of India*, September 25, 2010, http://articles.timesofindia.indiatimes.com/2010-09-25/india/28270569_1_coastal-security-scheme-coastal-police-stations-offshore-security.

relationship is not better defined.⁹⁴ To date, the ICG lacks a position at the Headquarters Integrated Defence Staff (HQIDS), which results in its treatment as if it is a Central Police Organisation (CPO) rather than a part of the union of armed forces under the MoD.⁹⁵ Currently India is considering adopting the U.S. concept of maritime defense zones (MDZs) that clearly delineate responsibilities between the U.S. Coast Guard and Navy. This could enhance IN-ICG cooperation, reduce overall combat deficiencies, and establish standard practices for protecting ports and coastal waters.⁹⁶ While MDZs might aid interagency interoperability, their adoption could likely raise technology and equipment integration challenges, as well as highlight doctrinal gaps between the organizations.⁹⁷ Further bilateral cooperation with the United States on maritime homeland security issues might enable reconciliation of these internal security considerations.

Prospects for Increased U.S.-India Cooperation

U.S.-India cooperation in the maritime domain is an ongoing enterprise. In 2006 the Indo-U.S. Framework for Maritime Security Cooperation articulated methods for implementing persistent and emerging maritime security policy and operational matters, including:

- Convening regular maritime security policy and implementation discussions in the Defense Policy Group, the Naval Executive Steering Group, and the Military Cooperation Group; and
- Pursuing cooperation to prevent and respond to transnational crime, search and rescue operations, information exchange and technical assistance on marine pollution, and enhance maritime domain capabilities through technology cooperation and defense trade, including logistical support.⁹⁸

While the United States and India have already begun cooperation in the maritime sector through this framework, there are additional opportunities for continued engagement as the industry undergoes further reforms. Insights from the U.S. experience with MDZs, as well as increasing interoperability between the ICG, U.S. Navy, and DHS, continue to inspire improvements to Indian maritime security. Moreover, India completed the authorized economic operator (AEO)⁹⁹ pilot project, a component of the World Customs Organization (WCO)'s Framework of Standards to Secure and Facilitate Global Trade (SAFE Framework) which certifies the country's compliance with supply chain security standards, and will soon begin implementing the program.¹⁰⁰ Indian participation in the AEO

94. Alok Bansal, "Synergising Indian Navy and the Coast Guard," *Journal of Defence Studies* 2, no. 1 (Summer 2008): 85, http://www.idsa.in/system/files/jds_2_1_abansal.pdf.

95. Ibid.

96. Ibid.

97. Ibid.

98. U.S. Department of Defense, "Indo-U.S. Framework for Maritime Security Cooperation," March 2006, 1, <http://www.defense.gov/news/Mar2006/d200600302indo-usframeworkformaritimesecuritycooperation.pdf>.

99. European Commission, "Taxation and Customs Union—Authorised Economic Operator," January, 31, 2013, http://ec.europa.eu/taxation_customs/customs/policy_issues/customs_security/aeo/index_en.htm.

100. World Customs Organization, "WCO SAFE Package," http://www.wcoomd.org/en/topics/facilitation/instrument-and-tools/tools/safe_package.aspx.

program and efforts to improve supply chain security might stimulate similar changes as the United States continues to improve its oversight of freight security at ports. Once India implements the AEO program, the U.S. Customs Trade Partnership against Terrorism (C-TPAT) could institute a mutual recognition agreement (MRA) with India to facilitate the ease of moving low-risk shipments and identifying high-risk cargo via customs-to-customs and customs-to-trade level interactions.¹⁰¹ Moving forward, increased cooperation between the United States and India on maritime issues would benefit the homeland security infrastructures of both countries.

One of the most significant challenges to improved Indian maritime security is a lack of clearly defined roles for stakeholders. While the 2012 piracy bill may address ICG and IN jurisdiction in India's EEZ, further improvements are needed. Strong demarcation of the ICG's enhanced capabilities versus the role of the IN would provide an opportunity for U.S.-India engagement on best practices to enhance operational compatibility between India's maritime organizations, particularly the ICG and IN.¹⁰² India's adoption of the U.S. MDZ system might further facilitate increased cooperation between the ICG and IN, as it would clearly define roles for each agency. Lessons learned from the U.S. experience in implementing the system, and aiding the U.S. Coast Guard and U.S. Navy in adopting the new approach, might prove useful to India as it seeks to address similar inter-agency tensions. However, implementing the MDZs requires concurrent adoption of other reforms, including clear lines of authority regarding the use of technology and equipment, as well as a broader need for overarching maritime regulations.¹⁰³

Clear delineation of responsibilities would also help address the disconnect between the ICG and coastal police officers. Government-directed attention toward the need for improved coastal security has prompted initiatives including upgrading the ISR capabilities of the ICG and bolstering law enforcement presence. However, despite a mandate for coastal police stations to patrol shallow waters, the police generally retain their tendency to look inward at land-based issues, whereas the IN viewed the mandate as a reason to cease shallow-water patrols, contributing to a gap in security.¹⁰⁴ Again, U.S. experience coordinating multiple organizations in overlapping efforts might prove useful to the Indian maritime security sector. Improving India's concept of operations and institutionalizing organizational roles will be vital to improving coastal security. Furthermore, better defined roles and responsibilities would also aid India's prioritization of resources in a time of fiscal austerity. Existing resource constraints within the IN and ICG could be mitigated by closer cooperation between these agencies. Clarification

101. "C-TPAT: Customs-Trade Partnership Against Terrorism," U.S. Customs and Border Control, accessed February 20, 2013, http://www.cbp.gov/xp/cgov/trade/cargo_security/ctpat/.

102. U.S. Department of Homeland Security, U.S. Coast Guard, "Office of Counterterrorism & Defense Operations," August 7, 2012, <http://www.uscg.mil/hq/cg5/cg532/pwcs.asp>.

103. Bansal, "Synergising Indian Navy and Coast Guard."

104. Pushpita Das, "Why India's Coastal Security Arrangement Falters?" Institute for Defence Studies and Analyses, August 26, 2011, http://www.idsa.in/idsacomments/WhyIndiasCoastalSecurityArrangementFalters_pdas_260811.

that maritime security is the responsibility of all stakeholders, despite individual roles, could also help address a number of challenges moving forward.

Enhanced information sharing between security stakeholders presents an opportunity for increased U.S.-India cooperation and might mitigate some of the current vulnerabilities within the maritime infrastructure. The interconnected nature of the maritime system, as well as the number of involved security organizations, necessitates good information-sharing procedures to ensure threats are appropriately observed, assessed, and addressed. U.S. insights into the procedures and systems used by the National Maritime Intelligence Center (NMIC), the overarching body for U.S. maritime intelligence, could provide invaluable lessons to India's proposed National Intelligence Grid (NATGRID).¹⁰⁵ The Mumbai attacks, which originated from the water, provided much of the impetus for the NATGRID. However, current NATGRID plans do not include the ICG, which was recently designated lead intelligence agency for maritime borders, as a "user" or "provider" of NATGRID-generated intelligence.¹⁰⁶ The U.S. experience with the National Counterterrorism Center (NCTC), which is "a center for joint operational planning and joint intelligence, staffed by personnel from the various agencies," might provide lessons learned in incorporating multiple intelligence and security stakeholders within one organization.¹⁰⁷ Nonetheless, in the absence of an overarching institution that addresses internal security, there is much speculation as to how India will integrate and coordinate the work of the Ministry of Home Affairs, the Ministry of Finance, and the Ministry of Defence, which could preclude effective information sharing.

As India's private sector continues to grow, an additional challenge for the public maritime sector has been the ability to attract and retain human capital. The private sector attracts many ICG officers with the lure of higher pay.¹⁰⁸ Further, a large percentage of ICG officers and enrolled personnel are medically unfit to serve at sea, limiting human capital options for staffing critical patrol missions.¹⁰⁹ The need to transform this workforce deficit into security readiness and enforcement cannot be underestimated. India and the United

105. National Maritime Intelligence Agency—Integration Office, <http://www.nmic.gov/>; Government of India, Ministry of Home Affairs, "Notes on Demands for Grants, 2012–2013—Demand No. 54: Police," <http://www.cybex.in/india-budget/pdf/sbe54.pdf>. See also, PTI, "MHA seeks over Rs 3,400 crore for NATGRID," *Deccan Herald*, August 3, 2011, <http://www.deccanherald.com/content/181065/mha-seeks-over-rs-3400.html>; "Rs. 1,100 crore for NATGRID," *The Hindu*, June 15, 2012, <http://www.thehindu.com/news/national/article3529461.ece>. Currently the Ministry of Home Affairs (MHA) will receive the majority of allotments to further the technical and administrative side of the NATGRID initiative. See Vinay Kumar, "National Intelligence Grid gets lion's share in Home Ministry allotments," *The Hindu*, March 17, 2012, <http://www.thehindu.com/news/national/article3003550.ece>. In short, NATGRID aims to link databases across users to facilitate internal terrorism prevention and response.

106. V. Balachandran, "NATGRID Will Prove to be a Security Nightmare," *The Sunday Guardian*, August 2, 2012, <http://www.sunday-guardian.com/analysis/natgrid-will-prove-to-be-a-security-nightmare>. See also Government of India, Ministry of Home Affairs, "Notes on Demands for Grants, 2012–2013—Demand No. 54: Police," <http://www.cybex.in/india-budget/pdf/sbe54.pdf>.

107. "About the National Counterterrorism Center," National Counterterrorism Center, accessed March 12, 2012, http://www.nctc.gov/about_us/about_nctc.html.

108. Abhishek Mishra and Swati Mishra, "Formulating the Concept, Principles, and Parameters for Performance-Related Incentives (PRI) in Government," report, Sixth Central Pay Commission, Government of India, New Delhi, India, February 2008, 50, <http://india.gov.in/govt/studies/cluster-IV.pdf>.

109. *Ibid.*

States can add additional milestones to their Strategic Dialogue to bridge the gaps in workforce development. Specifically, allocating funds toward a new ICG academy and assistance in building a sustainable training portfolio raise opportunities for the U.S. Coast Guard to provide administrative and technical assistance to the ICG.¹¹⁰ Improvements to India's human capital deficit via guidance on personnel, technology, and regulations could facilitate deeper U.S.-India cooperation. An examination of best practices for the maritime security and trade industries would benefit both the United States and India as they seek to reform and improve their own maritime infrastructure.

All three transportation sectors face a variety of security challenges moving forward. While state and Centre initiatives to address security challenges are a positive initial step, the country needs a wider authority to ensure coordination of efforts. Current vertical divisions in which the Ministry of Railways leads rail transport efforts, the Ministry of Surface Transport oversees ports and maritime, and the Ministry of Home Affairs is responsible for internal security, do not allow for cross-sectoral collaborative decision making.¹¹¹ The country lacks a federal security policy for critical transport functions across air, sea, and land, hindering interoperability in security challenges affecting multiple aspects of the transportation industry.¹¹² Further, without an overarching institution to address internal security, the homeland security actions of the Ministry of Home Affairs, the Ministry of Finance, and the Ministry of Finance will remain diffuse, potentially allowing terrorist groups to exploit the exposed security vulnerabilities. In addition to the individual vulnerabilities in the railway, aviation, and maritime sectors, these high-level policy gaps provide additional areas for potential future U.S.-India cooperation. Importantly, both the United States and India could benefit from closer cooperation and sharing of lessons learned. While aspects of the U.S. transportation industry are currently better developed than that of their Indian counterparts, India's use of innovative technology and transformative thinking could prove inspirational to the U.S. sector. Enhanced U.S.-India cooperation on critical infrastructure security, via the lens of transport, could serve as the first step toward deeper bilateral homeland security cooperation at large.

Conclusions and Recommendations: Bilateral Homeland Security Cooperation

The challenges facing the Indian transportation sector may be numerous, yet they are not insurmountable. Enhanced U.S.-India cooperation could result in significant progress

110. Government of India, Ministry of Defence, "Annual Report: 2011–2012," 2012, 52, <http://mod.nic.in/reports/AR-eng-2012.pdf>.

111. The Ministry of Surface Transport was reconstituted in December 2011 and falls under the Director General of Shipping. The Department of Road Transport and Highways is part of the Ministry of Surface Transport. See Government of India, Ministry of Road Transport & Highways, "About Us," February 18, 2013, <http://morth.nic.in/index1.asp?lang=1&linkid=10&lid=144>; Colonel K.V. Kuber, *Procurement Systems Related to Transportation and Critical Infrastructure Security in India*, Working Paper, May 2012.

112. North Eastern Railway Gorakhpur, "Disaster Management Plan," North Eastern Railway Gorakhpur, January 2011, <http://www.ner.indianrailways.gov.in/uploads/files/1332135053282-dmp.pdf>.

toward a more secure and prosperous India, allowing the continued development of the rail, aviation, and maritime sectors. This progress requires cooperation not only between government agencies, but also among the private sectors of both nations. Moving forward, there are considerable opportunities for government-to-government and business-to-business cooperation, as well as for unique public-private partnership opportunities and joint ventures. By leveraging opportunities, the United States and India could chart a course in which India's transportation infrastructure is secure enough to handle the growing demands of a vibrant, dynamic economy.

Moreover, benefits of cooperation extend far beyond a single sector. The shared experience of working together on transportation security may pave the way for expanded U.S.-India cooperation across a variety of homeland security and other issues. Lessons learned from the transportation sector could likely be applicable to securing major cities, borders, and other critical areas. Perhaps more importantly, cooperation on transportation security could serve as an engagement framework for governments, agencies, and even private sector partners.

Indian officials are aware that they can no longer address national security threats by “[s]imply having more armed forces and buying more military hardware.”¹¹³ A focus on tangible areas of cooperation, particularly those involving technology, training and education, and information sharing, will enable the United States and India to enhance transportation sector security.

- Bolstering India's technological capabilities could profoundly affect their capacity to provide transportation security. India and the United States can share best practices to:
 - Use technology to create an actionable common operating picture, through information sharing, for access by intelligence and security forces;
 - Educate personnel on relevant technology to enhance situational awareness through surveillance and recognized techniques;
 - Once aggregated data is collected, train personnel to synthesize and analyze trends and patterns to produce actionable intelligence;
 - Leverage technological solutions to organizational problems to address issues of information dissemination across agencies
 - Employ cybersecurity's technological advances for physical security means, such as electronic transport control systems for railways;
 - Enable private industry, trade associations, and/or standards setting bodies to collectively work together to recommend the adoption and promotion of manufacturing, sourcing, and other equipment accreditation and best practices.¹¹⁴

113. Sunil Khilnani et al., “Nonalignment 2.0: A Foreign and Strategic Policy for India in the Twenty First Century,” independent analysis paper, National Defence College and Centre for Policy Research, New Delhi, India, 2012, 63, http://www.cprindia.org/sites/default/files/NonAlignment%202.0_1.pdf.

114. Like the U.S. DHS Safety Act (see <https://www.safetyact.gov/>), an internal liability clause may facilitate technology transfers. Such a move would be in line with India's growing insurance market.

India could facilitate measures using standardized technology specifications and requirements for technology procurement across new air-freight station outposts. Further, Indian agencies, such as the ICG, could encourage technological cooperation to lay out regulations for how domestic and foreign civil security providers could forecast multiyear research and development spending for civil or homeland security—an experiment that would be welcomed by the U.S. private sector. Technology has the potential to reshape Indian transportation security, but only if the United States and India can work together.

- Investment in the appropriate safety and security technologies that aim to enhance India’s counterterrorism capabilities will only be successful if there is equal investment in human capital via training and education to:
 - Bridge immediate and short-term gaps in workforce capital via U.S.-led train-the-trainer programs in relevant areas and on relevant technologies;
 - Focus medium and long-term strategies on optimizing educational programming; and
 - Establish standardized and certified training programs.

Again, these standards need not replicate U.S. standards. Instead, India should seek guidance from international and regional organizations that are involved in standard setting. Working groups—such as a technology procurement working group between the U.S. Coast Guard and ICG on MDZs with a view to technology integration, information sharing, and building technology proficiency for ICG and IN situational awareness, ISR, mapping, and general administrative measures—could prove very beneficial.

Building on successful higher education cooperation between the two nations, U.S. community colleges and merchant marine academies could work with Indian vocational and community colleges to develop standardized safety and security curriculum and degree and certificate granting programs, such as port, facility, and vessel security, in addition to adding security programs to the existing U.S. State Department’s Community College Initiative.¹¹⁵ Furthermore, the U.S. Coast Guard can work with the ICG to build a sustainable training portfolio to support the forthcoming ICG academy, as well as establish joint coastal security exercises to coordinate land-based policing and coastal surveillance and reconnaissance. Additionally, designs to cultivate behavioral organization management, workforce capital recruitment and retention, systems integration, and programs that support technology proficiency and continuous operational maintenance and continuity should contribute toward building resilience in securing India’s transport sector. As such, training and education of India’s security workforce represents a meaningful step in furthering U.S.-India cooperation.

115. “Community College Initiative Program 2012–2013,” U.S. Department of State, 2011, <http://exchanges.state.gov/non-us/program/community-college-initiative-program>; Bureau of Educational and Cultural Affairs, “Community College Initiative Program,” U.S. Department of State, <http://exchanges.state.gov/globalexchanges/community-colleges-initiative.html>.

- Accompany bilateral training or technological improvements with efforts to improve information sharing across the spectrum in order to:
 - Improve the flow of mutually beneficial information between the United States and India. For example, following India’s implementation of its AEO program, a mutual recognition agreement (MRA) with the U.S. C-TPAT program should be developed as a conduit to exchange information on high risk cargo and facilitate low risk shipment throughput;
 - Establish a knowledge exchange program between the U.S. Department of Transportation, DHS, the private sector, and their corresponding Indian partners; and
 - Enhance information sharing between the various Centre government agencies as well as between the Centre and state governments, and even private industry.

There would be great benefit to developing a joint public-private or business emergency operating center (BEOC) command center between IR and Centre government, with the designation of a chief security/risk officer that oversees the GRP and RPF to sit under the Ministry of Home Affairs or Ministry of Railways, creating bidirectional access to private sector operators.¹¹⁶ Further, whether or not India chooses an approach to privatize airport security or expand the capabilities of the CISF, or a public-private partnership solution, the BCS should actively pursue lessons learned by the TSA in terms of airport security. If progress in transportation security is to be made, new architectures will need to be put in place to facilitate the sharing of information across multiple levels.

As partners in security and prosperity, the United States and India should jointly work to realize their goals, collaborating with and learning from one another in order to foster greater homeland security in both nations. Cooperation on issues of transportation security, particularly as they pertain to technology, training and education, and information sharing, the potential exists to improve security for the transportation sector and pave the way for growing cooperation across a number of fronts. With a solid focus on shared interests, India and the United States are facing a remarkable opportunity to create a strategic and tactical partnership toward those ends—one that can provide for greater long-term security and achieve marked progress in homeland security and counterterrorism.

116. U.S. Department of Homeland Security, FEMA, “National Business Emergency Operations Center,” <http://kyem.ky.gov/teams/Documents/11%20NBEOC.PDF>.

About the Authors

Rick “Ozzie” Nelson is vice president for business development at Cross Match Technologies, the former director of the CSIS Homeland Security and Counterterrorism Program, and a nonresident senior associate at CSIS. A retired U.S. Navy officer, he has more than twenty years of operational and intelligence experience, including assignments at the National Security Council and the National Counterterrorism Center. His last military assignment was with the Joint Special Operations Command. He received a BA from George Washington University and an MA in national security studies from Georgetown University and is a graduate of the Naval War College.

Brianna Fitch is a candidate for an MA in nonproliferation and terrorism studies at the Monterey Institute for International Studies. She graduated from Wellesley College with a BA in political science and religion. She has held internships at the Center for Strategic and International Studies, the White House, the U.S. Mission to the European Union, the U.S. Embassy to Belgium, and the U.S. Mission to the North Atlantic Treaty Organization, as well as working at the Monterey Terrorism Research and Education Program, the Center for Nonproliferation Studies, and the Wellesley Centers for Women.

Melissa Hersh is an independent risk consultant currently residing in Washington, D.C. Throughout her career, she provided strategic analysis and guidance to public and private organizations looking to build operational continuity and resilience. Prior to working as an independent consultant, she was a global supply chain security consultant for Marsh Risk Consulting, as a technical officer on the Biological and Toxin Weapons Convention Secretariat; worked as a technical officer at the World Health Organization; and was a researcher at the Stockholm International Peace Research Institute. Her academic background is in bioethics (Skidmore College and The Medical College of Wisconsin), health security (The London School of Hygiene & Tropical Medicine), and disaster management.

Ally Pregulman is a project coordinator for the Homeland Security and Counterterrorism Program at CSIS. She received a BA in international affairs from the George Washington University and an MA in security studies from Georgetown University’s School of Foreign Service. She has held internships at the U.S. Department of State and the Eastern Congo Initiative and previously worked at International Relief and Development.

Rob Wise is the research assistant and program coordinator for the Homeland Security and Counterterrorism Program at CSIS. He has coauthored publications on a wide variety of topics, including the future of al Qaeda, the evolving dynamics of Special Operations, and the direction of the nation's homeland security enterprise. He received a BA in political science from the University of Pennsylvania, where he focused on the study of conflict and international security.

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