Chair - Shri TK Ramachandran, Former Secy MoPS&W

Lead Speaker – Dr Arun Singh, Chief Global Economist, Dun & Bradstreet (D&B)

Panelist – Shri Vikas Narwal, MD, Indian Ports Association (IPA)

Moderator – Dr Shishir Shrotriya, Centre for Maritime Economy & Connectivity (CMEC)

The Maritime Knowledge Lecture Series session on *Maritime India – Next Gen Ports and Infrastructure* brought together policymakers, economists, industry practitioners, and students to reflect on India's maritime future at a moment when the country's economic ambitions are expanding rapidly. Organised under the aegis of the Centre for Maritime Economy and Connectivity in collaboration with RIS and the India Habitat Centre, the lecture formed part of a sustained capacity-building and stakeholder-integration effort aligned with the Maritime India Vision 2030 and the Maritime Amrit Kaal Vision 2047. The session underscored that ports and maritime infrastructure are no longer supporting sectors but central pillars of India's journey from a developing to a developed economy.

The opening remarks by Dr Shishir Shrotriya (CMEC) placed the discussion within the broader policy context, highlighting that India's maritime vision documents lay out clear quantitative and qualitative targets. India aims to move from a current port capacity of roughly 2,800-3,000 million tonnes per annum to more than 10,000 million tonnes by 2047, supported by mega ports, port clusters, green initiatives, and digital transformation. The emphasis was not only on infrastructure creation but also on efficiency, sustainability, and technological readiness. The lecture series itself was positioned as a platform to bridge policy, industry, and academia, with this session marking the twelfth lecture since its inception in early 2025.

The keynote speaker Dr. Arun Singh, Global Chief Economist at Dun & Bradstreet India, framed the maritime sector through a macroeconomic lens. He noted that India has already emerged as the fourth-largest economy and is on a credible trajectory to become a USD 30 trillion economy by 2047, roughly equivalent to the size of the United States economy today. What makes this transition unprecedented is the speed at which economic expansion will occur. The time required to add each USD 5 trillion to GDP is expected to shrink sharply, implying that capacity creation across infrastructure sectors must accelerate far beyond historical norms. Ports, as gateways for trade, will face disproportionate pressure because around 40 percent of India's GDP is linked to merchandise activity, which directly translates into maritime cargo movement.

Dr. Singh highlighted a critical structural issue underlying India's maritime demand: the composition of manufacturing and exports. India's export basket still contains a large share of high-volume, low-value goods, which generates higher container throughput per unit of GDP compared to high-value manufacturing such as semiconductors. As more MSMEs enter global markets, container intensity is likely to rise further, increasing pressure on ports even if GDP growth remains constant. Using different growth scenarios, the presentation suggested that India's container throughput could reach between 114 and 248 million TEUs by 2047, while total maritime trade volume could exceed 7,100 million tonnes per annum. At an assumed

utilisation rate of 65 per cent, this would require overall port capacity of more than 11,000 million tonnes per annum.

A major concern raised is the imbalance between major and non-major ports. While major ports are expected to roughly double their capacity by 2047, non-major ports would need to expand nearly sevenfold to meet projected demand. This presents not just an infrastructure challenge but also a governance, financing, and coordination challenge. Compounding this issue is India's limited presence among the world's top 50 container ports, with only two Indian ports currently ranked globally, underscoring the competitiveness gap, that must be bridged.

Physical constraints, particularly limited draft depth, were identified as a binding bottleneck. As global vessel sizes continue to grow, many Indian ports are unable to accommodate large next-generation container ships, forcing reliance on transhipment hubs outside the country. Addressing draft limitations through dredging, port redesign, and greenfield deep-draft ports was identified as essential for improving India's position in global shipping networks.

The second major theme of the lecture focused on technology as a strategic lever for capacity creation. Dr Singh argued that India cannot rely solely on building new ports; instead, it must extract significantly higher productivity from existing infrastructure. Digitalisation, automation, and green transition were identified as the three transformative forces reshaping global maritime operations. Technologies such as IoT-enabled smart quays, AI-driven analytics, automated cranes, autonomous vehicles, digital twins, and blockchain-based documentation systems were presented not as futuristic concepts but as operational realities in leading ports worldwide. These technologies enable real-time decision-making, reduce turnaround times, lower emissions, and effectively create "virtual capacity" by improving asset utilisation.

A critical caution was raised against narrowly adopting today's technologies without anticipating future trajectories. Just as infrastructure built in the past can quickly become obsolete, ports designed only around current technologies may struggle to remain relevant over multi-decade lifecycles. The discussion urged policymakers and port planners to think in terms of 2050 and beyond, recognising that a significant share of infrastructure that will exist in the future has not yet been built. This forward-looking approach was linked to India's historical experience of missing earlier industrial revolutions, with a strong call to ensure that the country does not miss the current wave of digital and green transformation.

Subsequent interventions from policymakers reinforced that India has already begun moving in this direction. Initiatives such as one-nation-one-process documentation, port community systems, digital twins at select ports, and emerging green and digital corridors with international partners were highlighted. The discussion acknowledged that while significant progress has been made, scaling these initiatives across the port ecosystem remains a challenge, particularly in aligning incentives for private terminal operators and ensuring cost-effective technology adoption.

The panel also broadened the conversation to sustainability and resilience. Issues such as ballast water management, desalination, water security, and circular economy principles were

raised, reflecting growing awareness that next-generation ports must integrate environmental safeguards alongside economic objectives. The importance of compliance with international conventions and the potential for innovation in offshore desalination and waste heat recovery were discussed as areas for future exploration.

Legal and institutional reforms emerged as another critical pillar of transformation. Recent legislative updates, including the replacement and amendment of key maritime laws, were cited as foundational steps toward creating a modern, flexible, and globally competitive maritime legal framework. These reforms aim to support ship registration, dispute resolution, investment facilitation, and alignment with international conventions, thereby strengthening India's attractiveness as a maritime jurisdiction.

Finally, the session consistently returned to the human dimension of maritime growth. Automation and technology were framed as augmenting, not replacing, human capabilities. The need for skilled manpower, specialised training, institutional capacity, and talent retention was emphasised as central to sustaining growth. With large public investments, new financing mechanisms, and ambitious capacity targets on the horizon, the success of India's maritime vision will ultimately depend on its ability to integrate infrastructure, technology, law, finance, and human capital into a coherent ecosystem.

In conclusion, the session presented a compelling narrative of opportunity and responsibility. India's maritime sector stands at the crossroads of unprecedented economic expansion and structural transformation. Achieving the goals of Maritime Amrit Kaal Vision 2047 will require not only massive investments in ports and logistics but also a reimagining of how ports operate, how technology is adopted, how sustainability is embedded, and how people are trained.

The event made it clear that ports will not merely support India's growth story; they are the essential nodes of sustaining the projected growth.