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About ASSOCHAM

ASSOCHAM is the oldest Apex Chamber established in 1920. ASSOCHAM initiated its endeavour of value creation for Indian industry since its inception. It spearheads the interest of more than 400 Chambers and Trade Associations under its fold, catering directly and indirectly over 4,00,000 members across the country.

ASSOCHAM is well respected for its balanced and studied approach to matters pertaining to development of trade and industry and promotion of government-industry inter-linkages. ASSOCHAM plays an important role in the shaping of India's Economic, Trade, Fiscal and Social policies.

ASSOCHAM's National Councils (nearly 90) represent different segments of service and manufacturing industry e.g. taxation, insurance, finance, capital markets, international trade, energy, oil & gas, mining, coal, steel, aviation, Defence, automotive, agriculture, manufacturing, shipping and logistics, road transport, housing, environment and safety, CSR, HR and labour affairs, legal cell, information technology, International trade etc. The

National Councils serve as the backbone for Chamber's effective functioning and help identify industry concerns and influence Government (Central and State) policies. ASSOCHAM thus provides networking opportunities for its constituent members and also makes special efforts to emphasize its member's viewpoints in policy formulations.

ASSOCHAM has emerged as the fountainhead of knowledge for the Indian industry, which is all set to redefine the dynamics of growth and development in the technology-driven cyber age of the 'knowledge-based economy'.



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Foreword



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The Indian Government's policy initiatives like Make in India and the nation-wide implementation of a uniform indirect tax system hold promise for an efficient, integrated and buoyant economy. Logistics industry would be a critical enabler and facilitator on this journey towards achieving the envisioned growth potential - with better stakeholder coordination, increased infrastructure investment and improved operational efficiency.

ASSOCHAM recently organized a conference titled "India on the cusp of a logistics revolution" in which diverse stakeholders groups including policymakers, transport and terminal infrastructure service providers, and logistics service providers (LSPs) deliberated on issues impacting the sector. Discussion centered around three themes, namely the primacy of end-to-end logistics integration, role and

impact of digitization and the contours and efficacy of a comprehensive National Logistics Policy.

This post-conference thought paper explores each of these themes. It discusses how inadequate infrastructure, lack of digital adoption, insufficiently skilled labour, low performance standards and regulatory hurdles continue to affect the performance of the logistics industry. The paper focuses on how integrated end-to-end logistics network with required infrastructure facilities, and a digital and services platform can lead to improved efficiency. The paper also highlights that how globalization and digital evolution viz. new technologies such as Cloud Computing, Block Chain Technology, Internet of Things, are being used by the logistic sector to streamline processes and ensure a smoother interface. The paper finally suggests the possible contours of a National Logistics Policy that the Government may consider and implement.

It was our privilege to support ASSOCHAM as their post-conference knowledge partner on this important topic. We hope that this paper leads to a discourse among policymakers and industry players on revitalizing India's logistics industry to enhance its contribution to the economic growth potential of the country.



1. Introduction

The performance of logistics sector in the economic development of India has never been more compelling. A robust logistics sector can go a long way in boosting India's quest for being a manufacturing giant given that several initiatives like 'Make in India' have been launched by the government. Increasingly, companies across the globe are looking at the world as both a unified production base and a market that a competitive logistics sector can successfully tap into. The industry has seen rapid growth in the last few years due to increased planned outlay of the government, improved infrastructure facilities and greater access to global markets. However, our services have not adequately capitalized on the opportunity in the global market as multiple challenges continue to mire the sector.

The effort in the years ahead is to build a more robust logistics network in the country. With better infrastructure planning, increased coordination among stakeholders and improved operational efficiencies, India aims to unlock the potential of the sector needed to fuel economic growth.

A conference titled 'India - On the Cusp of a Logistics Revolution' was organised by ASSOCHAM in July 2017 to discuss and deliberate various aspects pertaining to the sector. Stakeholders from across the industry, which included policymakers, modal infrastructure service providers, terminal infrastructure providers and logistics service providers (LSPs), attended the conference.

The conference aimed to: a) identify key challenges that inhibit growth of the logistics sector, b) deliberate potential solutions such as integrated end-to-end logistics and adoption of digital technologies, and c) discuss /examine possibility of implementing a cohesive national logistics policy.

This paper is divided into four main sections comprising session summaries and insights into the key themes of the conference.

The paper begins with a discussion of challenges that ail the logistics sector in the country. The following sections discuss possible ways to address these issues, of which the integration of the logistics value chain and adoption of digital technologies are two chief components, sewn together within an overarching framework of a National Logistics Policy.

Highlights from the conference

Theme 1

The need for a National Logistics Policy in India

- Infrastructure creation to move from being unstructured/arbitrary to a planned model at Government policy level.
- Need for a National Logistics Policy with guidelines to maximize use of existing infrastructure/assets, while creating a blueprint for future growth/demand, both at Govt. and private investment level.
- Research reports are available with various ministries, but lack cohesive action due to multiple Ministries and agencies involved
- Is there need for a Logistics Infrastructure Development panel with investment and regulatory powers?

Theme 2

Transitioning towards an integrated end-to-end logistics

- Should we first create Demand before developing modes of Supply?
- Need for an integrated well-knit network of logistics enablers-rail, road, air and waterways.
- Need to ensure cargo movement in the right mode, for optimum use of existing infrastructure.
- Dangers of a skewed logistics framework with catastrophic effect on the environment.

Theme 3

Adopting digital technologies in logistics chain

- Are traditional logistics companies ready for a digitally connected and integrated supply chain?
- Is India ready to implement digitalization of the logistics chain involving the cloud, internet, 3D printing, virtual realities, and most important, skilled workforce.
- How some companies are using technology to improve their supply chain ecosystem.



2. Challenges of the Indian logistics sector

With globalization, logistics is expected to play an increasing role in driving the Indian economy. In 2016, India was ranked 35th in The World Bank LPI Index that ranks countries based on their logistics performance — moving up from 54th in 2014. While this is reflective of improvement in the sector, multiple challenges of infrastructural deficiency, lack of integration amongst stakeholders, lack of skilled manpower and slow adoption of technology continue to weigh it down.

- **Infrastructure** - It is one of the biggest hurdles that has cramped growth of the logistics sector. It gets reflected in inadequate and low-quality modal and terminal transport infrastructure,

suboptimal modal mix, inefficient and ill-designed storage facilities for cargo and containers and inefficient operational and maintenance protocols, and poor adoption/adaptation of technology. This leads to high and inconsistent cargo transit time, inefficient use of resources and poor fleet management. The selection of the mode of transport, or even storage and terminal handling protocols are rarely linked to cargo characteristics (distance of travel, parcel size, density, etc.). As a result, there is overuse of high-cost modes like road at the expense of cost-effective and sustainable modes like inland waterways and railways. The continuing and prolonged suboptimal system, which erroneously appears

to be in equilibrium, needs to be changed. The way to strengthen the Indian logistics infrastructure is about deconstructing the old and building a new rational equilibrium.

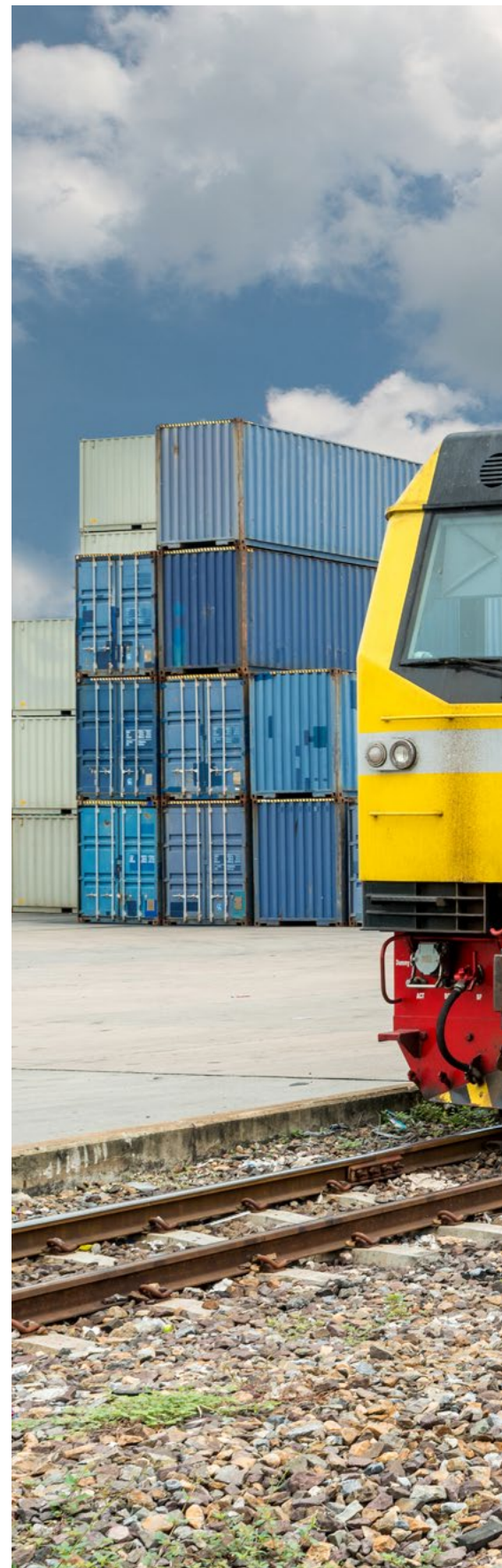
- **Skill Development** - India has a demographic advantage but the availability of appropriately skilled manpower remains a challenge. This is particularly so in the logistics sector as it is seen more as a support industry than a mainline one. Lack of skilled manpower is the result of inadequate training and proper leadership and support. The sector needs to specifically build a pool of personnel comprising truck drivers, seafarers, warehousing managers, quality inspection supervisors, among others. There are limited institutes for soft skills, and operational and technical training. Also, due to the unorganized nature of the sector, which is characterized by poor working conditions and low pay scale, it is not a preferred choice among skilled personnel.
- **Information Technology** - Slow adoption of new technologies has been another big constraint. Awareness about the economic benefits of using digital technology is low and collaboration among stakeholders far from satisfactory. As a result, the logistics ecosystem is fraught with operational inefficiencies and poor asset utilization. Lack of technology systems and insufficient technical knowledge add to the pain. Technological infrastructure has remained inadequate, marked by slow network speeds, subpar performance, and unreliable hardware and software — all leading to high costs and underperformance.
- **Regulatory Hurdles** - The introduction of GST could change the contours of the logistics sector completely but such disruptive reform requires proper implementation. Multiple regulatory agencies, if not coordinated and brought under a single umbrella, could slow down the creation and operation of logistics infrastructure. Obstacles in land acquisition and consolidation, and change in land use still continue to be major impediments. Lack of transparency in compliances further adds to the woes of the sector.
- **Performance Standards** - With a diverse customer base, consumer behaviours and expectations are also diverse. Both individual and corporate customers demand personalized services, flexibility and faster services. Due to these complexities and prevalence of fragmented suppliers, there is a need for integration of services in order to meet performance standards. There is a need for standardized services, transparency and compliance. Therefore, logistics service providers need to align their strategy with the business model and targeted customer segments. Additionally, initiatives such as real-time track-and-trace and other value-added services, will help service providers cut cost, raise productivity and optimize the supply chain.

It is clear that the Indian logistics sector faces challenges and there is a lot to act upon. Use of innovative models, new technological systems, international best practices, research and adequate implementation approach can all help to improve the sector, which in turn can stimulate growth and employment in the country.



Industry speaks

- In the absence of a systematic and holistic approach, the use of different modes of transport has remained skewed and inefficient.
- There is no single ministry to regulate the logistics sector, which is in dire need of being accorded the status of an industry. Equally pressing is the need to set up a National Logistics Commission to boost growth. Lack of coordination between central and state government poses yet another challenge for the logistics sector to work holistically. Red tape-ism makes both decision-making and procedures slow and lengthy.
- Logistics Performance Index is not an appropriate framework for appraising domestic logistics segment where we can see how much money we are losing. It is more useful for assessing international trade.
- IT systems and EDI (Electronic Data Interchange) facilities are inadequate. As such, it is not always possible to rely on a standardized system to transfer information electronically, which makes it difficult to get real-time status of operations and services.
- Additional workforce is needed to meet the growing demand. It is also important to invest in their skill development to ensure quality and efficiency in services.
- A wide customer base has led to demanding expectation, including personalized solutions. There is little awareness about using proper modes of transport for different uses and about environmental concerns.
- With deficient physical infrastructure, it is difficult to meet the growing demand despite the increased planned outlay by the government. Private investment is necessary to boost the sector, as is the presence of pan-India players to provide end- to-end logistics services and integrated solutions.
- Under the GST regime, services in relation to transport of goods outside India where both service provider and recipient are located in India shall be taxable. Earlier, these services were not subject to levy of service tax.
- In addition, the e-way bill shall be introduced with effect from April 01, 2018 but a clarity is awaited regarding the provisions pertaining to local transportation of goods within a state. The industry hopes that the GST Council will re-look the earlier draft rules to simplify the entire process of generating e-way bills on the GST portal.







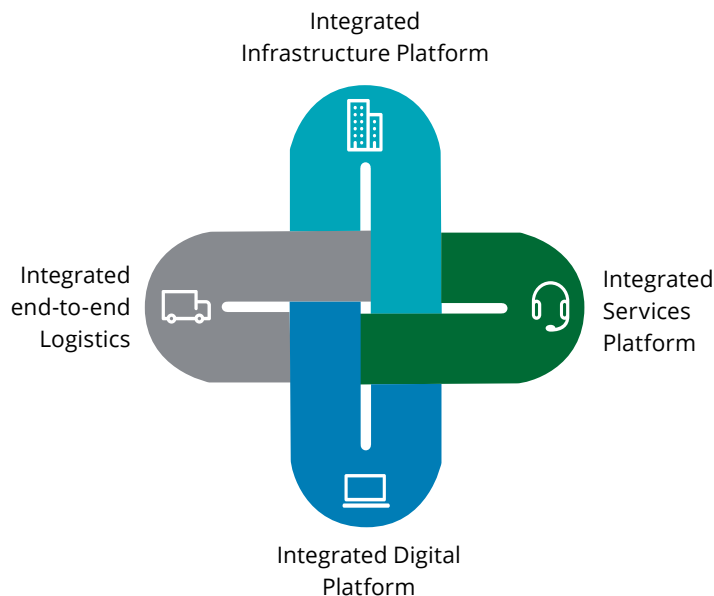
3. Integrated end-to-end logistics

A shipment is a set of horizontal flows which together constitute the chain interspersed with links, and which involves multiple stakeholders with varying business models and consequent expectations from the chain. Integrated logistics is the seamless flow of cargo across the value chain involving multiple stakeholders with varying business models. It helps to accomplish the task most efficiently, thereby reducing the cost and time of movement.

Integrated Transport and Logistics Policy – A step in the right direction

The Government of India is in the process of preparing an **Integrated Transport and Logistics Policy** that

aims to transform India's logistics from a 'point-to-point' to a 'hub- and-spoke' model, thus evolving centralized strategic networks for shipment distribution rather than relying on direct route operations that may not be efficient. As part of this initiative, the government plans to set up 50 economic corridors, 35 multimodal logistics parks (MMLP) at 15 locations, ten intermodal stations, among other things. While a policy is already being considered for integrated logistics to be successfully implemented, several elements need to be integrated with the horizontal flow across the chain - services, infrastructure and information.

Figure 1: Elements of Integrated end-to-end logistic

Integration of service providers and services

An end-to-end service provider is one who performs or consolidates, on one platform, a full range of logistics services – transportation, storage/warehousing and other value-added services – required for the cargo to move seamlessly from the origin to destination. The stakeholder groups involved in the flow of cargo on the other hand, are vertically integrated businesses targeted towards their own profit maximisation and/or other goals. Integration of service providers can be accomplished primarily through consolidation among existing stakeholders or the emergence of third-party service providers. Therefore, a complementary set of service providers could get together for mutual benefit, or one large logistics player could bring others from across the value chain into its fold.

Globally, the logistics market has undergone consolidation largely based on scale and operational efficiency. Partial service providers in the chain merge, acquire, and collaborate among

themselves to provide comprehensive third-party logistics services at competitive pricing. In India too, service providers, who until recently were fragmented across domains, have begun to merge businesses¹. The objective of an integrated system is to better sync the vertical integration of individual businesses with the horizontal flow of the supply chain.

Emergence of third-party logistics service providers is an evolutionary process and is linked with economic development of the country. Indian firms are looking at new logistics capabilities and more complex solutions from third-party logistics service partners.

Another aspect of creation of end-to-end integration is the creation of performance standards for adherence that are achievable and acceptable to the diverse set of logistics service providers and other stakeholders.

¹In 2016 Avvashya CCI Logistics was established based on a merger between the warehousing and CCFF divisions of CCI logistics and the cargo logistics division of Allcargo Logistics and Hindustan Cargo.

Integration of Infrastructure (Multimodal transportation)

A prerequisite for service integration is the development of a robust multimodal infrastructure network that will enable the use of different modes of transportation to seamlessly transfer cargo. Such a transport network would ensure that freight is channeled through the most efficient mode for faster, safer, cost-effective and pollution-free movement. This would be driven primarily through the development of multimodal logistics parks, streamlined economic corridor routes for efficient freight movement, and intermodal stations to connect various transportation modes.

Transport modes in India, typically operate as isolated entities, with a skewed modal mix that relies heavily (about 60%) on the already congested road transportation². The Indian coastline and river network has historically remained under-used, even though it is energy-efficient, eco-friendly and reduces logistics costs. Cost for coastal shipping is INR 0.15-0.2 per tonne km compared to INR 1.5 for railways and INR 2.5 for road. Addressing these anomalies alone provides a huge potential to lower logistics cost in the economy by INR 21,000-27,000 Cr by 2025.

The Eastern Dedicated Rail Freight Corridor (1,856 km) and Western Corridor (1,504 km) projects are under implementation. Once operational, they will strengthen India's present rail infrastructure to carry freight many times over, possibly leading to a reduction in cost of transportation. The government has also announced the Sagarmala Program which focuses on development along four thematic areas — port modernization & new port development, port connectivity, port led industrialization and coastal community development.

Large lumpy investment in logistics infrastructure with high gestation periods — for instance in rail track, port sub-structure, among others — should remain a state responsibility given that the private sector has not shown any appetite for it. The baton should shift through the penumbral area between the public and the private towards greater private investment through a range of appropriately structured models including PPP. In fact more private sector participation will likely follow as the investment requirement increasingly shifts towards smaller and service-focused infrastructure. The logistics industry in comparison has a modest financing need; it mainly requires working capital funding. Therefore, it can get by without any, or minimal, state support.

To ensure seamless flow across physical infrastructure, intermodal transfers should be efficient. Terminal infrastructure, comprising multimodal logistics parks (MMLPs), inland container depots (ICDs), container freight stations (CFSs)/ private freight terminals (PFTs), ports, and airports should be designed with cargo specificity and operational requirements in mind. Such terminals lead to a break in the logistics chain and therefore impede the flow. Hence their presence in the chain is justified only when they either add value to the shipment or meet a regulatory requirement.

Multimodal infrastructure is often incorrectly assessed without considering the first and last mile. This can be the stumbling block in the end-to-end chain. Port and inland terminal/warehouse connectivity can be a part of the terminal plan, but the state needs to step in where land and other regulatory impediments arise. The location of terminals is its master key to success and its efficacy rests on good connectivity to the network.



²India Integrated and Transport and Logistics Summit 2017, PIB India



Integrated Digital Platform

Another important aspect of integrated end-to-end logistics is digital integration. A single stakeholder visibility across the chain is generally limited to his own part, or sometimes to related domains too; but a complete end-to-end view is possible only through such a platform. For a stakeholder to become its inherent part, the benefits of such association must be clearly visible to him.

The objective of a common digital platform is to enable seamless flow of information across various service

providers and modes of transport. Such a platform should ideally be able to integrate all documentation related to the cargo flow, provide cargo visibility through track-and-trace, facilitate a seamless information flow and link the chain to invoice and payment points. The state has to play a role in this whole process. It cannot just be an enabler of digitalization across the board, but it can also address potential pain points for various stakeholders and even promote awareness among the stakeholders.



Industry speaks

- Multimodal networks are an important issue for infrastructure developers. Government initiatives like the Sagarmala program, Inland Waterways program and coastal shipping will provide the much-needed fillip to infrastructure development in the country.
- There is a wide spectrum of players in the sector ranging from the very small exporters and importers, to medium-sized and large traders to MNCs. It is debateable if the integrated end-to-end logistics being envisaged is compatible with the offerings of the small trader. How a trader with small ticket size consignments could be integrated into the supply chain needs attention. It is important to recognize target segments for whom logistics solutions are being designed.
- There exist glaring gaps in terms of capabilities of LSPs to provide service across the logistics chain. There is a need for specialized expertise in the field to standardize processes, and soft issues like skilled manpower for logistics need to be prioritised.
- The contribution of new age startups, which are technologically more agile, is significant. In India, there is a need to bring in focus on more digitized platforms that allow for integration between modes of transportation, as well as between users and third-party service providers to harness efficiencies.
- Finally, LSPs need to evolve to as a category of 'Logistics Solution Providers' and go beyond just being 'logistics service providers' to provide integrated end-to-end solutions. They must be trained to not just sell their own service, but also provide the most efficient and customised solutions, regardless of the trader's consignment size, in order to realise the potential of "Integrated-end-to-end logistics".

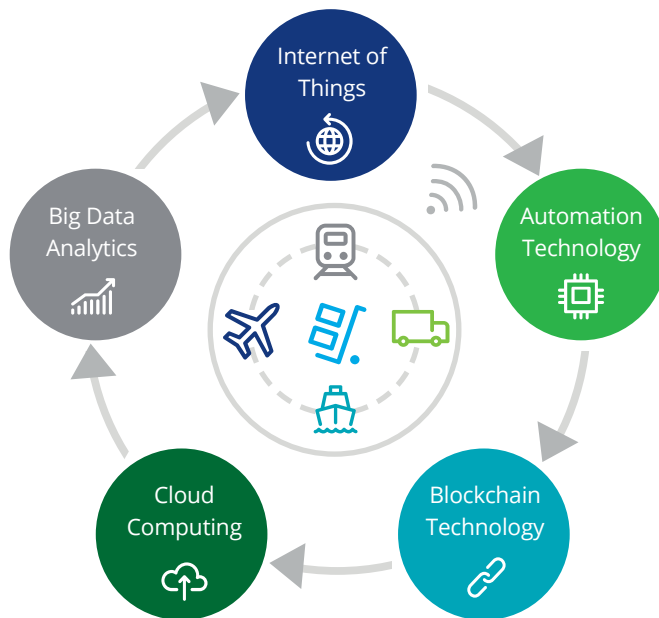


4. Forward movement towards the fourth industrial revolution - Adoption of digital technologies

In the current era of digital transformation, several technological disruptions have come together to create powerful tools that are reshaping industries across the globe. As various industries, such as retail with close links to logistics, are being redefined by digital technology, it is inevitable for such disruption to also revolutionize the logistics sector.

Digital transformation has the potential to have far-reaching payoffs for a leaner and smarter logistics by ensuring smoother interface among logistics stakeholders for seamless delivery. According to the World Economic Forum (2016)³, digital transformation of the logistics sector could translate into value of \$1.5 trillion for players in the logistics sector and an additional \$2.4 trillion worth of societal benefits by 2025.

³World Economic Forum (2016), 'Digital Transformation of Industries: Logistics Industry'

Figure 2: Digital technologies that are reshaping the logistics space

Countries like Germany, Singapore, Hong Kong and USA, all of which possess more sophisticated logistics ecosystems have gone on to showcase how digital transformation has benefited their entire logistics value chain, including warehousing operations, freight transportation, and last-mile delivery. As a result, these countries have consistently ranked higher than India in the World Bank's Logistics Performance Index.

Multiple digital technologies can potentially impact different activities across the entire logistics value chain to bring in operational efficiencies, maintain cargo safety, enhance customer interface, revamp business models and bring about rationalization of logistics costs. These technologies have been depicted in figure 2.

As is being witnessed across the globe, applying these digital technologies to logistics operations in the Indian context may help improve the performance and efficiency of the sector in the following ways:

Internet of Things (IoT)

IoT is the networked connection of physical objects that can help capture information for generating new insights and adding value to business. It presents a unique technology transition and can enable the logistics ecosystem in India in the following ways:

- **Predictive diagnosis and monitoring performance:**

IoT may be used to monitor the status of assets in real time throughout the value chain. In several countries, advanced sensors are being used to monitor and detect risks pertaining to breakdowns, helping avoid process delays and fatal accidents. For instance, Union Pacific, the largest railroad in the United States operating around 8,500 locomotives that haul freight over 32,100 route-miles of track in 23 states, uses IoT to predict equipment and component failures. Acoustic and visual sensors are embedded in the tracks to monitor the condition of train wheels. This has reduced bearing-related derailments that can result in costly delays and up to \$40 million in damages per incident for Union Pacific (DHL and Cisco, 2015)⁴.

⁴DHL and Cisco (2015), 'Internet of Things in Logistics'



International Case Study

The Port of Hamburg is the second-busiest container port in Europe. It is an important trade corridor connecting Eastern Europe to Germany and the rest of the world. However, given its location in an urban area, which imposes restrictions on capacity increase, the only way the port can handle growing traffic of shipments, is through smarter and efficient operations.

The Hamburg Port Authority, which is responsible for port development operations has undertaken one of the most comprehensive IoT initiatives ever seen in the logistics industry.

The Authority collaborated with a number of companies to develop the 'smartPort Logistics' technology platform, which is being used for predictive and preventive maintenance. Operators receive mobile alerts on a real-time basis regarding any malfunction of an infrastructure facility within the port area, which can be resolved before it causes any damage to life and property

Source: Banker (2016)⁵

- **Providing visibility for in-transit carriers:** Additionally, IoT, which includes Global Positioning System (GPS) and Radio-frequency Identification (RFID) systems, is being used to provide logistics carriers with real-time information on key location stats. This has helped make the logistics ecosystem more responsive. While on the one hand this provides greater

control to service providers to predict delivery times and improve asset utilization, it also enables customers to track and trace their consignment on a real-time basis.

Automation

Automation technology in the logistics sector allows the use of control systems for operating machinery, processes, vehicles, vessels, and aircraft through the use of artificial intelligence. From the use of robots to self-driven vehicle and drones, automation technology can be adopted in the logistics sector for:

- **Reducing manual intervention to bring down costs:** Artificial intelligence (AI) can help automate business processes to reduce/eliminate manual interventions for freight handling, to improve quality, speed up processes and subsequently bring down logistics costs. Almost two-thirds of the logistics costs are hidden, which is attributable to theft and pilferage of cargo, and holding of inventory. Therefore, automating processes may help in eliminating hidden costs, bringing down the overall high logistics cost in India. Additionally, reducing manual intervention may also help speed up inspection by regulatory agencies, ensuring minimum handling damage and reducing the inventory holding time.

Blockchain Technology

It can be used to create common networks among entities unwilling to share information, without compromising on the integrity of the data. This technology becomes especially relevant in the Indian context, given the fragmented nature of the sector and lack of common platforms to exchange information. It may be used for:

⁵Banker, S (2016), 'The Hamburg Port Authority's Impressive IoT Project', Forbes



International Case Study

The Qingdao New Qianwan Automatic Container Terminal at the eastern port of Qingdao, China, has become the first fully-automated port of Asia controlled by artificial intelligence. Through laser scanning and positioning, the facilities at the terminal are able to locate the four corners of each container and then accurately pick and load them onto driverless electric-powered trucks, who operate on digitally controlled routes. By eliminating manual intervention, the automated terminal has been able to reduce labour costs by up to 70% and increase efficiency by 30%.

Source: Yun (2017)⁶

- **Synchronizing multi-party logistics value chain:** Blockchain technology can be used to align processes seamlessly from one point of the logistics value chain to another by eliminating the need for duplicity of documentation processes. This, in turn, would also reduce the risk of errors creeping into the system due to manual data entry at several points across the value chain. It would also act as a catalyst for achieving an integrated end-to-end logistics system. For instance, Belgium's Port of Antwerp has initiated the process of using the blockchain technology to streamline its terminal's container operations. The aim is to pace up interactions between port customers, including carriers, terminals, freight forwarders, hauliers, drivers, shippers, among others, by cutting

down on multiple interactions between these parties and also preventing data manipulation (Zhao, 2017)⁷.

Cloud Computing

Cloud technology refers to the universal, and convenient access to a shared pool of networks, storage, servers and applications that can be accessed through the web. This technology can help the Indian logistics sector by:

- **Optimizing asset utilization:** As logistics in the country aims towards becoming leaner, optimizing asset utilization is important to enhance operational efficiency. The Indian road transportation sector remains
- highly fragmented and often the vehicle fleet either lies idle or returns empty after transporting the freight. Cloud computing can help service providers use assets more efficiently by collaborating with each other to share fleets and networks. Sharing information on cloud-based platforms in real time can help service providers coordinate and collaborate for the pick-up and delivery of freight. This will not only reduce the idle time of their fleet but also make the delivery ecosystem more efficient.
- **Enabling storage and easy access of data:** With cloud technology that enables the easy storage of vast amounts of data without the need for physical servers or hard drives, logistics service providers can easily access information from anywhere. This will give flexibility to service providers to exercise control over critical processes that require round-the-clock monitoring from anywhere.

⁶Yun, G (2017), 'Ghost port': Asia's first fully-automated port begins operations in Qingdao', CGTN

⁷Zhao, W (2017), 'Europe's Second Largest Port Launches Blockchain Logistics Pilot', Coindesk

Big Data Analytics

Big data analytics, another element of the digital revolution, enables number crunching and 'sense-making' of complex data sets that are captured through 'smart' devices and stored across servers and networks. It can be employed by various logistics players for:

- **Driving future strategy:** Analytics can be applied to the entire logistics value chain to identify improvement opportunities and achieve operational efficiencies in the country's logistics framework. For instance, GE's analytics platform, Predix⁸, or Cisco's Unified Computing System (UCS) Integrated Infrastructure for Big Data⁹ can be used to manage and implement complex statistical analysis, data mining, and retrieval processes for big data that help identify key insights and trends. This analysis can then be used to develop algorithms and estimate the remaining useful life of assets, identify areas of operational inefficiencies, eliminate redundant costs and drive future strategy.

An expanding digital consumer base coupled with inadequate and ill-planned infrastructure facilities has left India trapped between growing demand for logistics services on the one end and a fragmented logistics services market on the other. Already some experiments are being made for adopting digital technologies in the country. But given the potential for significantly higher value to be created for the Indian economy, the sector cannot benefit much until a concentrated and collaborative effort is made by each stakeholder, including infrastructure providers, terminal operators, logistics service providers and technology companies.

⁸Predix (2016), 'Predix Architecture and Services', General Electric

⁹Cisco (2016), 'Cisco UCS Integrated Infrastructure for Big Data and Analytics', Solution Brief



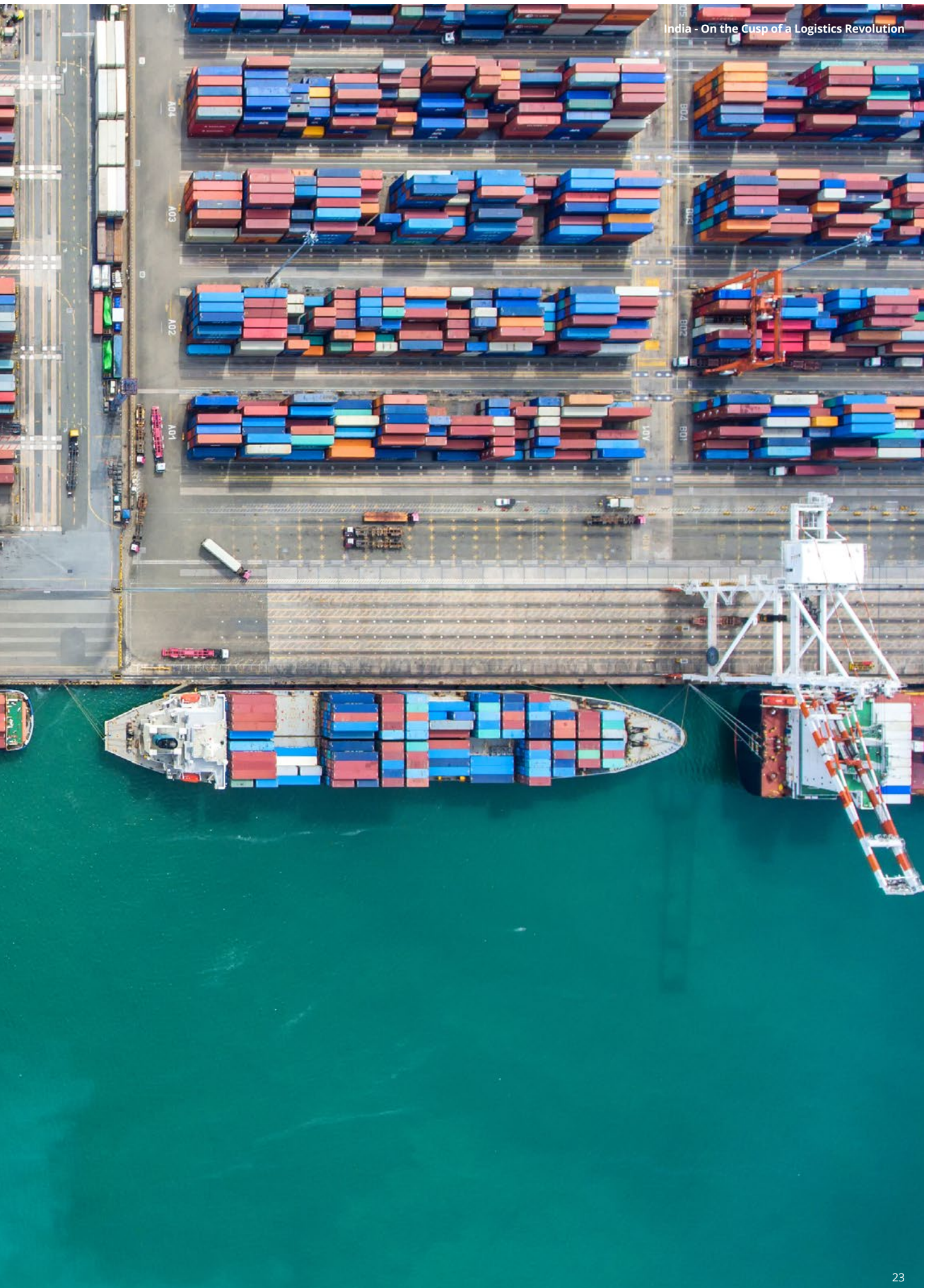


Industry speaks

Digitalization and adoption of future technologies to increase operational efficiencies and reduce costs in the Indian logistics sector was a prominent theme industry speakers discussed during the conference. Right from global examples of technology use to digital initiatives being undertaken in India to make logistics leaner, several points were raised to highlight the need for investing in digital technologies. Some of the key highlights from the conference have been summarized below:

- Globally, digitalization in several forms has been adopted in transportation and warehousing of goods and to this end logistics service providers have made significant investments in adopting new technologies.
- With changing times, it becomes important for logistics players in India to invest in adopting and upgrading technologies and reinventing processes to make them smarter and efficient.
- Block chain for logistics is going to be a game changer. It was primarily envisaged for the banking sector, but it can also be used to ensure visibility of each transaction for every stakeholder in the logistics sector.
- Not just that, the rise of robotics and artificial intelligence is also redefining the logistics industry globally as it minimizes human intervention, enhances quality and reduces cost.
- India does not lag far behind in adopting digital transformation initiatives in the sector. For instance, the market has started experimenting with using anti-collision devices, which are being used to monitor the movement of new age trucks and alert the driver in case of a possibility of an accident/breakdown.
- Additionally, players have begun to make use of digital technologies for predictive analysis, wherein a transport operator is able to plan optimum utilization of its vehicle fleet. Hence, an operator is able to plan in advance how much cargo load should be kept ready in the hub so that its truck does not have to return empty after delivering cargo at the destination. Also, in case the cargo load in the hub is low, artificial intelligence can be leveraged to identify other nearby points for the pick-up of additional cargo load.
- The logistics sector is likely to adopt increased automation of processes through the launch of robotics and artificial intelligence in transportation and warehouse management, thereby reducing reliance on human intervention.







5. Strategy to Implementation – A cohesive national logistics policy / blueprint

In order to make the Indian logistics sector globally competitive an all-encompassing solution is needed instead of a piecemeal approach. To achieve this, the state can put in place a comprehensive national logistics policy for a larger and holistic improvement in the sector. An integrated logistics policy has recently been announced,

with a focus mainly on development of integrated transport infrastructure. A national logistics policy must go well beyond.

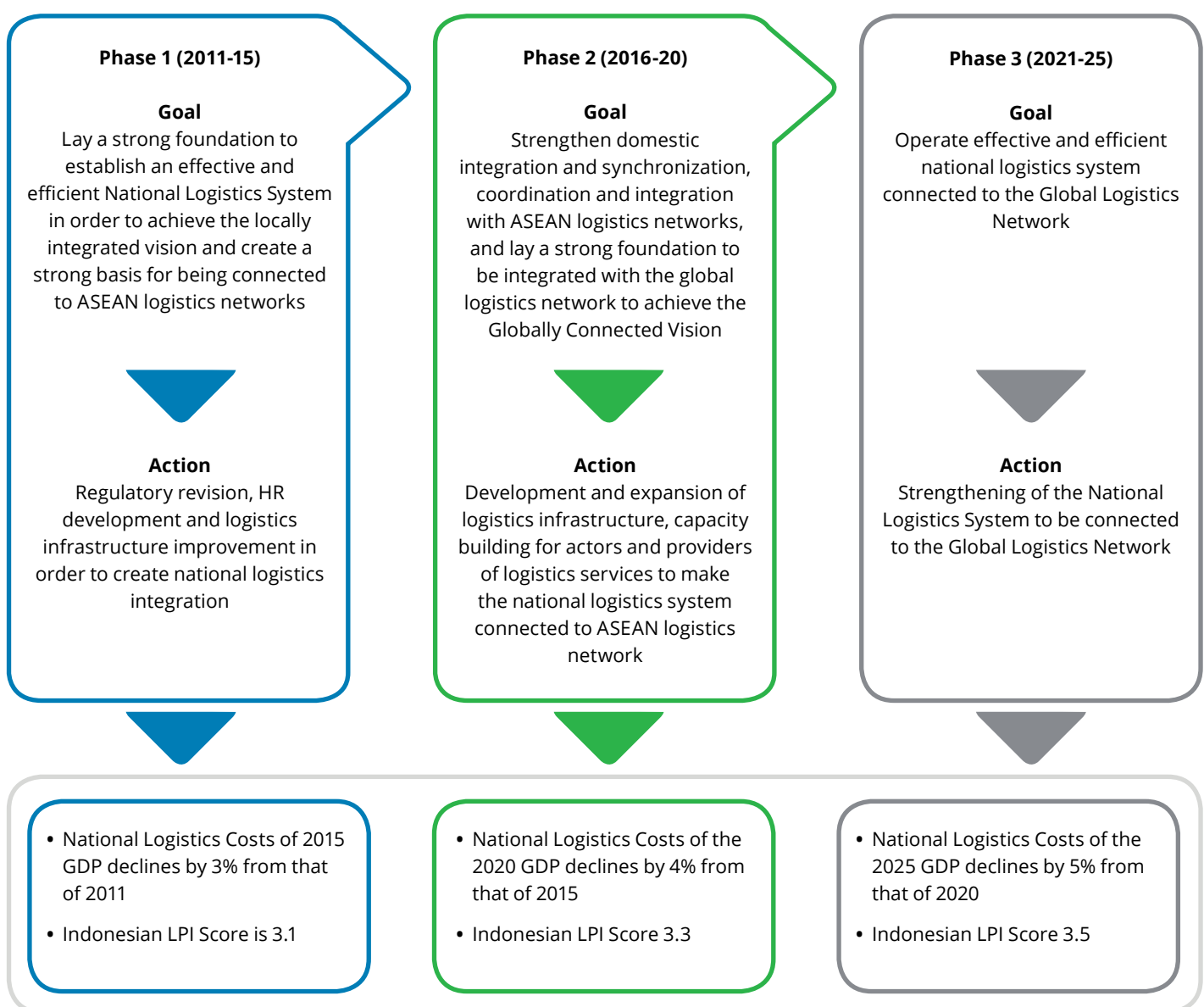
The national policy must incorporate key drivers for the sector namely integrated logistics, information technology, infrastructure, regulation, human

resources and skill development and equally important the entire stakeholder community. The policy, among others things, should focus on: a) creating a vision for the logistics sector in the long term, b) formulating action steps for achieving this vision, c) creating a conducive environment for the growth

of the logistics sector and should identify programs to address all aspects.

A number of countries have developed similar blueprints and the policy makers can learn from the experiences of such countries.

Illustrative example - National Logistics Blueprint in Indonesia

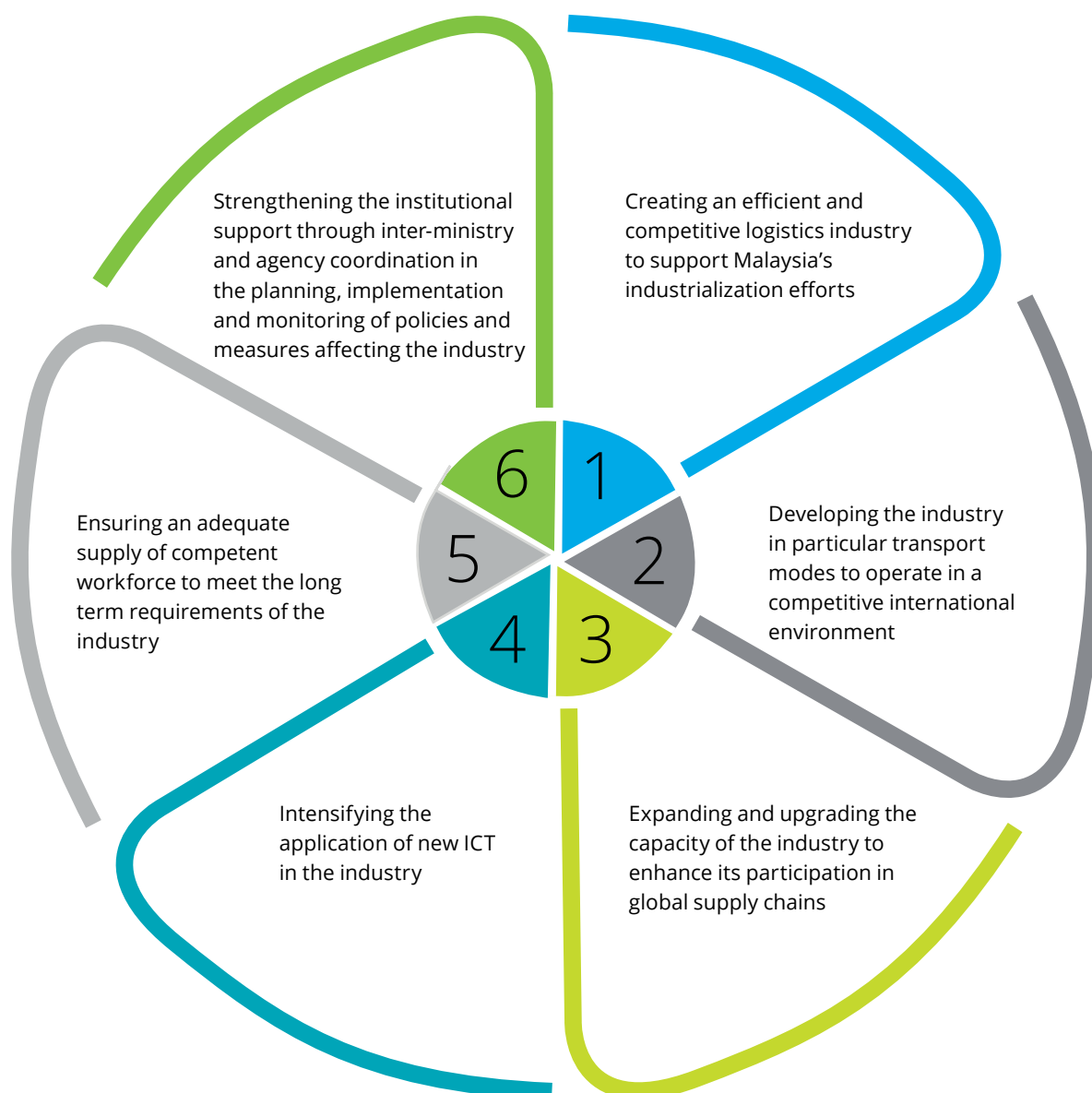


Source: Development of National Logistics System Framework¹⁰

¹⁰Ministry for Economic Affairs, Indonesia (2013), 'Development of National Logistics System Framework', presentation by Coordinating Minister at Regional Seminar on Development of Efficient and Effective Logistics Systems

Illustrative example - National Logistics Plan 2006-20, Malaysia

The national logistics plan developed by Malaysia set out targets / goals for the logistics sector, considering the expected increase in trade – in terms of million tonnes of total marine cargo, air cargo trade and cargo volume by rail freight from 2005 to 2020. The targets were planned to be achieved by focus on six strategic focus areas:



Source: Third Industrial Master Plan (IMP3) 2006 – 2020¹¹

While the State will take the lead in putting the policy in place, it is the responsibility of other stakeholders to contribute to the framing and implementation of this blueprint. Scoping and governance of the policy would be crucial for its successful implementation.

ASSOCHAM, as a premier industry chamber, can support various stakeholders in contributing to the formulation and implementation of this key initiative.

¹¹Ministry of International Trade and Industry, (2006), 'Third Industrial Master Plan (IMP3) 2006 – 2020', Government of Malaysia



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