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# MATERIALS MANAGEMENT REVIEW



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## MOU BETWEEN CRIMM & NORTHERN UNIVERSITY



MR. H.K.SHARMA, NATIONAL PRESIDENT-IIMM, PROF. DR. ABU YOUSUF MD. ABDULLAH, CHAIRMAN, NORTHERN UNIVERSITY BANGLADESH AND PROF. DR. GOUTAM SENGUPTA, VICE CHANCELLOR- TIU WB & JOINT CHAIRMAN CRIMM SIGNED MEMORANDUM OF UNDERSTANDING (MOU) BETWEEN CRIMM AND NORTHERN UNIVERSITY BANGLADESH TO PROMOTE COLLABORATIVE RESEARCH IN LOGISTICS AND SUPPLY CHAIN MANAGEMENT ON 18TH JUNE 2023 AT BANGLADESH IN THE PRESENCE OF DR. MASHIUR RAHMAN, ADVISOR ECONOMIC AFFAIRS TO THE PM OF BANGLADESH, MR. G.K. SINGH, FORMER NATIONAL PRESIDENT-IIMM, PROF. DR. ANWAR HOSSAIN, VICE CHANCELLOR-NORTHERN UNIVERSITY BANGLADESH AND PROF. DR. NAZRUL ISLAM, PRO-VICE CHANCELLOR- NORTHERN UNIVERSITY BANGLADESH.

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## *From the Desk of Chief Editor & National President*



Indian economy is showing strong resilience to external shocks and is well on its way to become USD 5 Trillion economy by 2025. As per report from World Bank, the Indian economy is likely to grow at 6.3%. Warehousing, Industrial and logistics sectors are projected to be crucial in maintaining this growth rate on annual basis and realizing the dream of \$ 5 Trillion economy by 2025.

Though warehousing has been critical to success of supply chain but, it was never been in forefront and have always remained in isolation until 2020, the period of multiple lockdowns. The two industries which gained significantly from these lockdowns are warehousing and logistics industry thereby increasing their share from 2% in 2020 to 20% in 2021. Because of the growing digitalisation and shift from discretionary to essential internet buying during the COVID-19 epidemic, the e-commerce industry flourished thereby creating lot of warehouses to meet the growing demand of consumers.

The Indian warehousing market poses a great future for business entities and is estimated to grow to \$ 34.99 billion at a CAGR of 15.64% from 2022 to 2027. The key players are 3PL (third-party logistics) service providers and e-commerce enterprises, which are expanding their network into tier 2 and 3 cities and subsequently increasing their proportion of secondary marketplaces. Modern warehouse facilities and technology-driven solutions have changed the warehousing sector in India in recent years. Businesses are transitioning to a hub-and-spoke model while also implementing technology to simplify operations, with an eye on the larger picture of ease, efficiency, and sustainability.

Warehouse management costs account for a significant portion of overall logistics costs in companies and to further reduce this warehousing cost, Government has introduced warehousing policy which will emphasise more on creating exclusive warehousing zones through public-private partnerships so as to reduce transportation and logistics costs and accelerate growth. The government will invest US\$ 91.38 billion (Rs. 7.5 lakh crore) in infrastructure, logistics development, and multi-modal connectivity in FY23. Reforms such as GST and e-way bills are fostering industrial growth, consolidation, and efficiency.

As said earlier, warehousing and logistics industry in India are rapidly growing sectors having immense potential to contribute in the country's economy. Despite some challenges, the sector is well-positioned for long-term growth and presents exciting opportunities for investors and businesses. Moreover, with the increasing adoption of technology and the government's push for a digital economy, there is also significant potential for logistics players to leverage data analytics, artificial intelligence, and machine learning to improve operational efficiency and enhance customer experience.

CRIMM has opened a centre of Excellence in Dhaka in association with Northern University of Bangladesh. Dr. Mashiur Rahman, Advisor, Economic Affairs to Prime Minister of Bangladesh was also present on the occasion and wished that the opening of Centre of Excellence in SCM in Dhaka will help in understanding supply chain management better and help in growth of Indo-Bangladesh relations. Centre of Excellence in SCM will foster growth of research activities of CRIMM and growth of Professional supply chain management in Bangladesh.

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# LEAN WAREHOUSE CONCEPTS & BEST PRACTICES

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**Introduction :** Lean is a way of thinking about **Creating Needed Value with Fewer Resources and Less Waste** through a more organized, optimized and improved productive environment and manage tasks systematically and efficiently.

Lean principles help identify the **Non-Value-Added Components (wastes)** and work to **Eliminate** or **Reduce** them as much as possible.

When we talk about **Lean Warehousing**, it means **Managing a Warehouse Optimally** with the focus on **Eliminating Inefficient Processes** and **Removing all the Resources & Efforts** that do **Not Yield Positive Results** in the **Warehousing Operations or Processes**. This will help in **Improving Warehouse Operations**, **Smoothing the Flow of Goods**, **Maximizing Returns** and **Reducing Costs**.

In this Article we shall Discuss about **"Lean Warehouse Concepts & Best Practices"**

**Key Words:** Lean, 3M, 8 Wastes, Lean Warehouse, 5 / 6 S, Kaizen, Kanban, JIT, VSM

## What is Warehouse?

Now, let's first Discuss about Warehouse.

**Warehouse** is Defined as **"a Planned Space or Designated Location for the Efficient storage and handling of goods and materials which are coming in and going out."**

Raw Materials and Inputs from Suppliers or Finished Goods from Manufacturing Operations come into the warehouse, the information then is collated for its storage and where goods have to go, and communicated down the distribution chain to the customer.

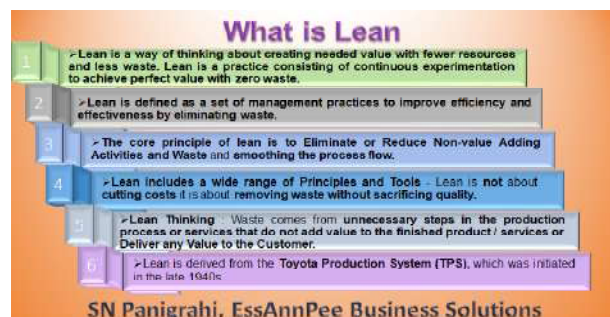
**Warehousing** can be defined as a **Process of Managing Receipt, Storage in Safe Custody of Goods and onward Distribution** on a Large Volumes in a Warehouse, Godown or any such Facility and involves **all it's Related Functions** like Processing, Packing, Re-Packing, Grading & Branding, Coding, Storing, Tracking / Retrieving for further Distributing to Various Distribution Centre's & Customer Places as Required including Documentation & Communication. Warehousing is to **Ensure Smooth and Regular Flow of Goods** or other Materials and **Avoid any Shortage or Excess of Stocks**.



## What is Lean?

**Lean** is a way of thinking about **creating needed value with fewer resources and less waste**. Lean is a practice consisting of continuous experimentation to achieve perfect value with zero waste. Lean is defined as a set of management practices to improve efficiency and effectiveness by eliminating waste. **The core principle of lean is to Eliminate or Reduce Non-value Adding Activities and Waste and Smoothing the Process Flow.**

Lean includes a wide range of Principles and Tools - Lean is not about cutting costs it is about **removing waste without sacrificing quality**. Lean Thinking based on notion that **Waste** comes from **unnecessary steps in the Production Process or Services that do Not Add Value to the Finished Product / Services or Deliver any Value to the Customer**. Lean originated in Japan and is derived from the **Toyota Production System (TPS)**, which was initiated in the late 1940s. It was created by Toyota's engineer and head of production, **Taiichi Ohno**, in the period after World War II. Taiichi introduced Lean in the Toyota Production System (TPS). The aim is to **Eliminate Waste** and deliver value to the customer by using pull-based systems.

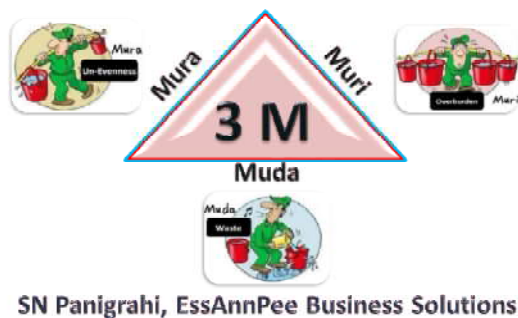


## Why Reduction / Elimination of Waste?

**Waste** means Any Activity or Features that **Doesn't Add Value** to the Product or Service, **from the Customer's Point of View or from Business Perspective**.

The main reason companies look to implement Lean Concepts & Strategies for eliminating all aspects of the process that **Add No Value from the Customer's or Business Perspective** is to **Improve Efficiency, Effectiveness, Reduce their Expenses and Maximize Profits** so that they can be more Competitive, and therefore more Successful.

**3M – Model of Lean** : Toyota has developed its production system for achieving the complete elimination of all waste in pursuit of the most efficient methods. These wastes are categorized as 3 M- namely **Muda (waste), Muri (overburden) and Mura (unevenness)** - are Japanese terms that refer to the three categories of waste found in a business.



**MUDA** is a Japanese word, which means **"Waste"**. Muda are Non-Value Added (NVA) activities in the workplace. NVAs add cost, effort and time but add no value to the product or service. There are Eight Types of Wastes (7 defined by **Taiichi Ohno of Toyota** + 'non utilized skills') which shall be discussed further.

**MURA** means in Japan, **unevenness, non-uniformity, and irregularity**. Mura is the reason for the existence of any of the seven wastes. In other words, Mura drives and leads to Muda.

**MURI** in Japan, means **overburden, beyond one's power, excessiveness, impossible or unreasonableness**. Muri can result from Mura and in some cases be caused by excessive removal of Muda (waste) from the process.

### 8 Wastes of Lean : DOWN TIME

The 8 wastes of lean can be remembered by using the acronym, **"DOWN TIME"**, which stands for: **Defects, Overproduction, Waiting, Non-utilized talent, Transportation, Inventory, Motion, Excess Processing**.



### Lean Warehousing:

**Lean Warehousing** is a holistic approach with focus on Eliminating all efforts and investments that do Not yield Positive Results and Value Addition in Warehouse. The idea behind Lean Warehousing is to **Add Value with Zero Waste** and without adding the Inventory. Let's now discuss what are the 8 Wastes in Warehousing.

### 8 Wastes in Warehousing:

**Defects:** Defects Means any **Imperfection, Deficiency, Flaw, Weakness, Wrong Doing, Any Deviation from the Requirement, Limitation or undesired outcome (Defective)** within a Product, Service or Process, Faulty Forecast, Faulty Planning & Estimates etc. These are the Efforts Caused by Rework, Scrap & Incorrect Information.

**Examples in Warehousing:** Wrong Pickup, Wrong Delivery, Wrong Placing or Storing, Mis-labelling or Coding, Damage During Storage, Wrong or Improper Packing, Pilferage, Mismatch of Inventory, Scraping, Reworking, Defective Documentation & Data Entry, Incorrect Information etc.

**Over-production:** **Overproduction** is the act of producing more than needed or before it is needed.

- Ø **Making something too soon,**
- Ø **Making too much of something (greater Volumes), or**
- Ø **Making something faster than is needed.**

It unnecessarily **consumes time, effort, money, materials and resources** that could have been better spent elsewhere, leaving your organization with the burden and logistics of dealing with **excess inventory**.

**Examples in Warehousing:** Receiving or Delivering or Filling an Order Before it is Needed, Ordering or Keeping Excess Inventory, Packing & Keeping Ready much before Needed, Use of Very Large Size Packing than Required etc.

**Waiting:** **Waiting** means Time Wasted for the Next

Process to Occur and involves **Delays to Process Steps**, often Extending Customer Lead Time. **Waiting Leads to Costs that are Not Adding Value at the Current Date.**

**Examples in Warehousing :** Waiting for Receipts, Operator waiting for the Next Pick Ticket, Equipment or Forklift or Vehicle Waiting for an Operator or for Loading, Process in Queue, Order waiting for Packing or Documentations / Invoicing

**Non-Utilization of Talent: Not fully utilizing or Underutilizing the Talent**, skills and knowledge of Resources represents the largest & Costly Waste of talent present in many organizations.

**Examples in Warehousing:** Engaging Highly Qualified & Creative Resource in Low grade Jobs or Clerical or Routine Assignments, Idle or Excess Manpower Engaged.

**Transportation: Transportation Waste** deals with **Unnecessary or Extra Movement** of Products that is **Not Directly Associated with the Value Adding Process.**

**Examples in Warehousing:** Transport waste can include the movement of Raw Materials, Tools, Inventory, Equipment or End Products more than is absolutely necessary, Wrong Route or Wrong Mode of Transportation Resulting in Extra Millage Movement, Reverse Logics - Wrong Receipt or Delivery & Return of Goods.

**Inventory: Inventory** or Stock Refers to the **Goods and Materials that a Business Holds** in the form of Raw Materials / Inputs, Work In Progress (WIP) and Finished Goods. Having excess products and materials that are not currently being Required are Real Waste. These are Money that has been tied up into the material not moving – used or sold. These result in a massive drain on the cash flow.

**Examples in Warehousing :** Excess Inventory – More than Required; Capital Goods not in use or Obsolete Items / SKUs Kept in Inventory.

**Motion: Unnecessary movement by People that does not add value.**

**Examples in Warehousing :** Walking around to Find the Goods or Set the Processes; Reaching; Lifting; Lowering; Bending; Stretching or otherwise unnecessary moving. Reaching repeatedly for a tool to use during a task, excessive walking to reach a work area, walking within the work area during the operations.

**Excess-Processing: Excess Processing** is **adding more value to a product than the customer actually requires**; More work or higher-quality than is required by the customer. Excess processing might be **extra steps in a**

**process, unnecessary customization, inefficient routings** and other things not necessary or valued by the customer.

**Examples in Warehousing:** Extra Packaging or Labeling; Multiple Markings; Over polishing an area that does not require it; Producing more detailed reports than necessary; Specifying the Product Tolerances that are too tight; Prescribing Higher Quality than Required.

**Waste Identification & Elimination Process :** As we discussed above some of examples of Warehouse Wastes, their actual Identification in Practical Situations is essential. We may adopt the below process with steps of 8 wastes of Lean from impacting the work flow & productivity of the Warehouse Operations:

Define, Identify, Prevent, Reduce, Eliminate and Continuously Improve.



**Lean Warehouse Principles & Good Practices:** Lean Warehousing Principles are aimed at Addressing Inefficiencies & Inconsistencies of the Warehouse Operations by Adopting and Following Good Practices like **5S, Kaizen, Kanban, JIT, Value Stream Mapping**.





**LEAN 5S : LEAN 5S** refers to five Japanese terms that describe the steps in the 5S system for visual management. The Japanese terms are **Seiri (Sort), Seiton (Set in Order), Seiso (Shine), Seiketsu (Standardize) and Shitsuke (Sustain)**. The goal of 5S is to Improve Warehouse Cleanliness, Better Space Utilization, Operational Efficiency & Work Flow, Waste Elimination, Reduced Inventory. If 5S is used properly, it can make processes safer and more productive.

Addition of a 6th "S" : The 6th "S" stands for **Safety**.

**Kaizen** : Kaizen is a Japanese term meaning change for the better or continuous improvement. As a Philosophy, kaizen promotes a **mindset** where **small incremental changes create an impact over time**. In warehousing, Kaizen generally involves Creative Thinking to Improve Warehouse Operations & Processes to Reduce Costs, Save Time, Work Place Safety, Avoid Errors, and Build Better Inventory Management.

**Kanban** : The Japanese word "kanban", meaning "visual board" or a "sign" is a scheduling system for Lean Practices. Kanban method used in warehouses, where Materials are Received, Delivered, Replenished, or Processed only as needed. It used to track the inventory levels and re-ordering needs as well.

**JIT (Just in Time)** : Just-in-time, or JIT, is **an inventory management method in which goods are received from suppliers only as they are needed**. The main objective of this method is to reduce inventory holding costs and increase inventory turnover. It **aligns raw-material orders from suppliers directly with production schedules**.

**Value Stream Mapping (VSM) : Value Stream Mapping (VSM)** is a **Visual Diagramming tool** which **captures the Value Added & Non-Value Added Activities (Wastes)**. The use of value stream in warehouse mapping process is to visualize the Flow of Activities, Analyze and Improve all the steps in a Warehouse Processes. **VSM helps to identify and eliminate process waste within the Warehouse**.

#### **Why Implement Lean Warehousing?**

Below are some of the **Advantages & Benefits of Lean Warehousing** :

- Ø **Efficient & Optimal utilization of the Floor (Warehouse) Space through proper Storage of Inventory.**
- Ø **Creates and Sustains an Efficient, Effective, Clean & Safe Workplace.**
- Ø **Higher Perfect Order Rate - Reduced Order Processing Time through the use of Standard Operating Procedures.**

- Ø **Able to Handle Customer Demands of Shorter Lead Times, Faster & Urgent Deliveries; Seasonal Fluctuations, Variations in the Volume & Peak Demands; Proper Distribution of SKUs & Manage Multiple Delivery Channels.**
- Ø **Reduced Operational Costs by Eliminating Inefficient Processes (like Inventory Handling) & Improving Operational Efficiencies.**
- Ø **Improves the Financial Health of the Company.**
- Ø **Better Manage an ever-increasing number of SKUs and a large inventory through Optimal Inventory Management - sorting and organizing functions**
- Ø **Improves Working Conditions – Employee Satisfaction, Boosts Employee Morale & Reduces Employee Turnover.**
- Ø **Aims at Optimization and hence promotes Continuous Improvement**

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# MULTI-LEVEL WAREHOUSING – THE NEW SOLUTION OF STORAGE

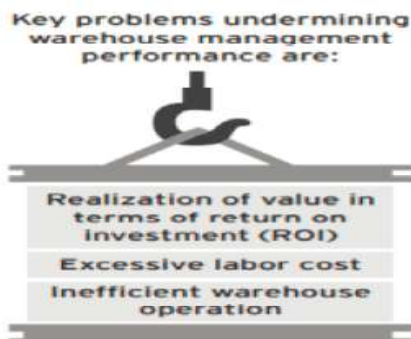
SAMPAD RATH, CO-AUTHOR: PRIYESH MISHRA

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**T**oday logistics cost in India represents 13-17% of the Gross Domestic Product (GDP) which is about twofold (6-9%) to the logistics cost to GDP proportion in created nations, for example, the US, Hong Kong, and France. A significant part of the greater expense could be credited to the nonattendance of proficient multi-purpose and multimodal transport frameworks. Besides, warehousing which represents around 25% of the logistics cost has additionally been confronting significant difficulties. This further added to the logistics cost borne by the end-clients and different partners.

Prior, the motivating forces to enter India's warehousing segment was insignificant for composed players, as the occupiers themselves were substance to draw in with periphery accomplices offering minimal effort choices with a system of little storerooms close to factory setup. Various state and local level assessments made it reasonable for organizations to keep up a little warehouse in each state.

Further, this restricted the attention to computerization and higher throughput. This demeanour of occupiers of wanting to save money on costs as their sole goal is evolving. There has been steady progress in the mentality of occupiers to utilize the administrations offered by sorted out portions. Plenty of variables is driving this rush of progress, for example, a prerequisite from consistence controllers (in the event of the pharma business), quality consistency affirmation required by customers/controllers, legal punishments on rebellious warehousing offices, economies of scale being accomplished through bigger distribution centres, wellbeing and security of products, productivity in activities, speedier turnarounds, a requirement for effective warehousing plans, and the approach of web-based business and other global organizations that like to involve just protest offices.



## MULTI-LEVEL WAREHOUSING: THE NEW SOLUTION

Multi-level warehouses inside the city cut off points on Indian land could be the next large thing in a market which at present is greatly impacted by the coronavirus pandemic. The impulses of quicker online business development in a post-pandemic world can launch interest for tech-empowered multi-storey warehousing. Such arrangements are currently followed in South Asian nations, for example, Hong Kong, Singapore, South Korea, and Tokyo. As of now, distribution centers in the main Indian urban areas are to a great extent confined to the city peripheries and a long way from the bigger client base.

COVID-19 has just underscored the significance of web-based business in the continuous lockdown. With an unsure post-pandemic future approaching over the retail segment, retail players may now require staggered distribution centres inside city cut off points to support urban areas. Other than encouraging greatest land use in urban areas like Mumbai, multi-storey warehousing can help organizations to diminish transportation costs and improve conveyance time – the keys to progress for most retail organizations. With innovation as a key empowering influence, such alternatives can supplant various single-storey distribution centres on the city peripheries and in this way save money on by and large operational and inhabitation costs.

Today, the quick conveyance is a pivotal prerequisite for the consistent omnichannel methodology of web-based business players. The aftermath of the coronavirus pandemic can surpass the current lockdown and social distancing may turn into the new ordinary, at any rate over the mid-term. In such a market situation, retailers will be feeling the squeeze to make sure about warehousing areas near their client base. The essential interest for warehousing is presently thought around top urban communities like Delhi NCR, Mumbai, Bengaluru, Chennai, and Pune. Because of its location and dispersion advantage, Kolkata has likewise developed as a warehousing and coordination centre point in the east.

Multi-storey warehouses of five or more stories with tech-enabled loading on every floor are the next logical move. Changing from customary warehousing to multi-storey warehousing can help spare essentially in rental rates. Additionally, a solitary united warehouse practice can impressively spare transportation costs by improving the dissemination in prime coordination

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areas. The land limitation is developing in nations, for example, Hong Kong, Singapore, Tokyo, and South Korea brought about increment in asking rental rates. The warehousing market in these nations is the costliest in Asia with the most noteworthy rental rates; presently the rental rates show a development pace of 2-2.5 percent of CAGR Y-o-Y.

Because of higher land costs and less land accessibility in these nations, buying another mechanical region is multiple times higher contrasted with other Asian nations. Likewise, with numerous organizations battling to fulfil the need from thickly populated urban communities in these nations, conventional warehousing has become a costlier practice.

Which businesses can receive multi-story warehousing practice?

Food and drink, synthetic compounds, excellence, and restorative, individual items, retail, and web-based business ventures are regularly rehearsing multi-story warehouse techniques with a worked to-suit commitment model.

What are the significant money-saving advantages in multi-story distribution center practice over customary warehouse practice?

Rental expenses can be set aside to 20-30 percent in significant expense areas, for example, Hong Kong,

Singapore, Japan, and South Korea since the multi-story warehouse rental rates are lower contrasted with customary distribution centre sorts. Transportation expenses can likewise be spared if these distribution centres are situated in urban districts.

How multi-story practice will profit acquisition associations?

While working in land imperative territories, acquirement supervisors regularly pay high leases and the capacity of the items may include different distribution centres in a similar district. A multi-story practice with worked to-suit commitment model empowers obtainment associations to solidify the capacity of products in a single area for a lower lease and higher stockpiling limit. Is it possible in India?

As far as what we can see from the current scenario, rather than going for multi-layer warehousing, the vertical expansion will be more favorable concerning present infrastructure. Most of the warehouses are operating on assemble to order systems for which vertical expansion is a more cost-effective method. The cost of acquiring land in India is much lower than in other countries. But no doubt with growing population and space crunch, this system can make its way into the Indian eco-system.

Source: [sourcingandsupplychain.com](http://sourcingandsupplychain.com)

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## 2023 TO BE THE YEAR OF DEMOCRATISATION OF WAREHOUSING IN INDIA

SHRINIVAS RAO, CEO, VESTIAN

**A**s we look forward to 2023, the warehousing sector is poised to follow a steep growth curve, attracting significant investments from across the globe, and democratising the sector by increasing the involvement of small developers, landowners, and expansion in smaller cities of the country.

India is emerging as a key centrepiece of global trade; one of the underlying pillars driving this growth is the burgeoning warehousing industry in the country. As per the Investment Information and Credit Rating Agency of India Limited (ICRA) estimates, the warehousing sector is projected to develop at a CAGR of 10.5% through 2025 after growing at a CAGR of 7.8% over the past five years.

The pandemic not only brought the warehousing and logistics sector into the limelight, but also led to it

being recognised as an 'essential services' sector - one of the crucial lifelines that the country was reliant on during the challenging period. Consequently, companies across sectors, such as third-party logistics, engineering and manufacturing, and the rapidly growing e-commerce sector have made significant investments in the warehousing industry.

Vestian's warehousing report states that the seven key cities of the country saw around 7.55 million square feet of total warehousing and logistics space leased during the period Q3 2022, bringing up the January-September warehousing absorption to 20.71 million sqft. While third party logistics led the absorption with 43% share, it was followed by engineering and manufacturing and e-commerce with 24% and 16%, respectively. Given the momentum, warehousing absorption for 2022 is estimated to be



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pegged at around 33 million sqft.

**Right time to bet on Indian warehousing :** India, the seventh largest country in the world, holds a key potential to be developed as a warehousing hub, given the presence of contiguous land parcels for such developments. Over the past decade, with the emergence of e-commerce, introduction of the Goods and Services Tax, and the National Logistics Policy, along with permitting 100% Foreign Direct Investment (FDI) in the sector, warehousing today is witnessing increased traction among investors. Industry reports state that the warehousing and logistics sector requires at least \$20 billion of fresh investments by 2030 to develop incremental warehousing spaces - opening up immense opportunities for investors. In 2022 alone, the sector raised investments in the range of around \$1.3-\$1.5 billion, indicating strong investor interest. Thus, even as the returns on investment in other sectors drop due to recessionary fears, India and the warehousing growth story are a bright spot on the horizon.

**Democratisation of the industry :** Unlike Western countries where a single farmer or individual owns large tracts of land, land holding in India is quite fragmented, hence, acquisition of land used to be a challenge. However, with landowners understanding the importance of the warehousing industry in creating shared value for everyone, and the emergence of aggregators in the real estate sector, the warehousing sector in the country is on its way to democratisation. This has led to the emergence of small landowners as developers and creation of new opportunities for small businesses across regions.

Narsapura in Karnataka, for instance, houses some of the biggest warehousing units for logistics and supply chain management service providers, automobile, apparel, and retail companies; and has caught the attention of warehouse developers and investors from across the country. This growth has been on the back of consolidation of land parcels, which enabled developers and investors to make big bets on the warehousing market to support the fledgling industry in the region. This has also led to unlocking of large land parcels, enabling the industry to set up large industries.

**Warehousing forays into Tier II cities :** The sector has expanded its wings into Tier II cities across the country. Cities like Lucknow, Raipur and Baroda are

registering a huge growth in demand for new-age internet commerce-led services, driving demand for warehouses, and creating opportunities to build proper storage facilities, ease transportation and logistics costs, reduce traffic congestion, and improve infrastructure. These cities have been witnessing warehousing space absorption of 100,000 to 200,000 sqft from an earlier figure of less than 50,000 sqft. This will lead to the creation of an ecosystem of allied services, which will drive entrepreneurship, employment, and economic activity in these cities. This will also lead to a reorganisation of the warehousing market in these regions and drive the creation of quality properties and better services for occupiers.

**Rise of large warehouses in India :** The year 2022 witnessed the rise of large warehouses in India, measuring up to 10 lakh square feet which otherwise hovered in the range of 3-5 lakh square feet. This is a testament to the increasing trust of occupiers, developers, and investors in the growth journey of the sector. Similarly, the average size of Grade-A warehouses also saw an increase in 2022 and the industry will continue to see an upward trend.

The emergence of large warehouses will also drive automation within the facilities, thereby bringing efficiency in operations and reducing costs. From long conveyor belts to robotics, it will also lead to upskilling of the warehousing workforce, which will prepare the sector for the next phase of rapid growth.

As these trends pan out in 2023, government interventions will play a pivotal role in fast tracking this growth journey and help reduce logistics cost. According to National Logistics Policy, India's logistics cost is estimated to be around 14% of the GDP, which the government is looking to bring down to 8-9% through such interventions.

It is also important to note that there are concerted efforts from governments, both at Central and State level, which will be crucial for the growth of the sector. Thus, with proactive steps being undertaken, from single-window approval policy to incentives for setting up warehouses, to development of logistics infrastructure, the warehousing industry is poised for stellar growth.

Source: [www.nbmcw.com](http://www.nbmcw.com) February 2023

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## GRADE A WAREHOUSING BOOM IN TIER II & III CITIES

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**D**emand for similar facilities in India is likely to grow at a compound annual growth rate of 25-30 per cent over the next five years. With close to 10 million square feet in tier II and III cities, they collectively witnessed 17.4 per cent year-on-year growth in industrial and warehousing absorption, driven by e-commerce, retail and third-party logistics companies.

With a rise in e-commerce, automotive, retail, manufacturing segments and 3PL providers safeguarding 100 per cent efficacy of business operations, the Indian warehousing sector is witnessing an unprecedented demand. This has triggered huge potential for Grade A facilities not only in metro cities, but also in tier II and III cities. The sectors that drove the maximum absorption in 2022 were 3PL and e-commerce (52 per cent), followed by manufacturing (16 per cent) and retail sectors (13 per cent).

Development of industrial, and dedicated freight corridors (DFCs) and assigning infrastructure status to the logistics sector have fuelled growth and investments into Grade A warehousing facilities.

Considering the demand and changing consumer preferences, the industry understands the relevance and need for Grade A warehouses that are user-friendly, fully automated, and on par with the global standards.

Catering to the current businesses' needs fuelled by growth in e-commerce and retail, modern grade-A warehousing facilities are emerging as the most preferred choice for the users.

According to reports, from the past few years, the share of Grade A stock has risen from 34 per cent in 2017 to 50 per cent in Q1 of 2023, crossing the mark of 165 million sq. ft. owing to institutional developers and regional developers expanding their inventories in India. Organized developers are developing Grade A warehouses as these facilities offer an additional 50 per cent floor-load capacity, 40 per cent operational efficiency, efficient material handling space, safety, and security.

Grade A facilities have 25 per cent lesser rentals/pallet position as compared to Grade B warehouses, built in accordance with global standards, have extra height, high-performance flooring systems, and armed with Artificial Intelligence (AI) and various advanced technology such as Automatic Identification and Data Collection (AIDC), Automated Storage and Retrieval Systems (ASRS), and QR codes to ensure faster processing. These spaces offer a plethora of benefits via green integration, mechanized MHEs, fire safety

protocols, sufficient docking stations and ample space for parking, and vehicular movement.

With Grade A warehouses, the companies can align their operational requirements, while having flexibility as they fulfil critical business objectives. Metros are the preferred locations for warehousing, but the demand for Grade A facilities is growing in urban and rural centres. In fact, smaller towns are now emerging as the new consumption centres.

Experts said firms prefer to stock their inventories close to the demand centres such as Ludhiana, Patna, Varanasi, Jaipur, Lucknow, Indore, Nagpur, Bhubaneswar, Madurai, Coimbatore, Kochi are driving major logistics service demand. According to a report by Confederation of Real Estate Developers' Association of India (CREDAI), the demand for Grade A warehousing facilities in India is likely to grow at a CAGR of 25-30 per cent over the next five years. Investors and businesses are rushing towards investing in Grade A warehousing facilities that offer easy expandability options, located as they are close to transport hubs, and connected to state and national highways.

**Tier II & III cities are preferred locations :** As per latest data from Savills India, the country witnessed industrial and warehouse absorption of 46 million sq. ft. in 2022, of which 36 million sq. ft. belonged to tier I cities. Close to 10 million sq. ft. belonged to tier II and III cities. These cities witnessed 17.4 per cent YoY growth in industrial and warehousing absorption, driven by e-commerce, retail and 3PL firms. These cities included Ludhiana, Hubli, Guwahati, Patna, Jaipur, Varanasi, Lucknow, Indore, Nagpur, Rajpura, Bhubaneswar, Hosur, Madurai, Kochi, and Ernakulam, stated the Savills India report. Among the major cities in India, Delhi-NCR led the pack with the highest industrial and warehouse land absorption in 2022 at 16 per cent followed by Mumbai at 14 per cent. Pune and Bengaluru saw absorptions at 13 per cent and 12 per cent, respectively, while tier II and tier III cities accounted for 22 per cent, Savills shared.

CARGOTALK spoke to experts to discuss more on growing warehousing segment in tier II and III cities and Grade A warehouses becoming more prominent and promising to do business in the coming years.

Automation, technology & AI are game changers  
KrutiJobanputra, Director, JW Ventures

**Factors bolstering demand :** Today, India is one of the fastest growing economies and one of the largest consumption markets in the world. With increased consumption and demand patterns across various

sectors, warehousing space in India is booming. The number of international firms and brands coming into the Indian market have doubled in the past five years.

Growth and expectations, government intervention, modern policies, transport, infrastructure, and tech growth are key drivers of the booming demand in India.

**Superior warehousing infrastructure :** Infrastructure is the chain that interconnects different links or modes of transport—air, sea, and land—into one process that ensures an efficient and cost-effective door-to-door movement of goods. Infrastructure in the country has a still a long way to go before we can call ourselves a developed country, but in the past five years the development has surely picked up pace.

**Preferred locations for Grade A facilities :** The Union government is working towards connecting the both rural as well as the urban areas. We can find warehouses are burgeoning across the length and breadth of the country, but prominent tier II locations are Delhi NCR, Mumbai (Near Panvel/JNPT), Chennai, and Gujarat, where businesses stock their cargo consignments.

**Advancements and innovations :** Automation, technology, and AI are the game changers. Automated machines have replaced manual processes. The result is improved efficiency and productivity. In general, warehouses have become more automated and technologically advanced. The government would introduce a warehousing policy to help reduce transportation and logistics costs. It aims to lay roadmap for developing exclusive warehousing zones through PPP.

Multimodal transport key to boost logistics  
Huafted Nasarwanji, Chief Commercial Officer, Gati

**Factors bolstering demand warehouses :** The expansion of e-commerce, emergence of 3PL segment, growth of organised retail among other sectors are factors driving demand for Grade A warehouses in India. Since third party logistics has turned out to drive demand, more companies are opting for third party logistics services to concentrate on their core operations. The focus is to make the country a global manufacturing hub by boosting infrastructure and connectivity in the form of the National Logistics Policy (NLP) and the Prime Minister's Gati Shakti (PMGS) will intensify demand for Grade A warehousing facilities.

**Superior warehousing infrastructure :** Efficient TAT at ports, throughput at warehouses, and intermodal connectivity are vital to build a superior multimodal transportation ecosystem. Multimodal transportation is key to enhance logistics performance. The government's focus on developing DFCs, ports, and highways have paved the way for a better logistics infrastructure. The PMGS is a game changer for building robust multimodal connectivity.

**Preferred locations for Grade A facilities :** The demand for Grade A facilities is increasing in tier II and III cities. Firms prefer to stock their inventories close to the demand centres to Patna, Jaipur, Lucknow, Varanasi, Indore, Nagpur, Bhubaneswar, Madurai, Coimbatore, and Kochi.

Manufacturing, retail & 3PL propel growth

Anshul Singhal, Managing Director, Welspun One Logistics Parks

### Factors bolstering demand for Grade 'A' warehousing

- One of the demand drivers of Grade A warehouses is the complexity of businesses, which boosts a need for resilient structure, immune to global supply chain disruptions
- Grade A facilities provide businesses the opportunity to scale up without structural changes. This requirement is in line with the need for premium infrastructure in India
- e-commerce growth has led to a surge in demand for efficient and technologically advanced warehousing solutions
- The development of organized retail and manufacturing sectors have pushed the need for warehousing facilities that meet their diverse requirements
- Make in India and Digital India initiatives have created a conducive environment for businesses, fuelling demand for Grade A warehouses in India
- GST led to consolidation of warehouses and need for better-equipped facilities. This has resulted in operational efficiency and cost savings of businesses
- Emphasis is on improving supply chain efficiencies and minimising transportation costs owing to its impact on overall logistic costs. This has resulted in the need for strategically located and well-connected warehouses.

**Superior warehousing infrastructure :** With respect to cargo storage and handling, the warehousing infrastructure is still in its nascent stage with Grade A warehousing focused on Delhi, Kolkata, Mumbai, Pune, Ahmedabad, Hyderabad, and Chennai. While other cargo storage facilities must be developed, port-related cargo storage is focused on CFS facilities. Multimodal transportation is yet to gain a foothold in the country. While the railways continue to transport bulk and liquid cargo, road transport ferries all other cargo

**Preferred locations for Grade A facilities :** The industry's dynamics focused on not only on tier I cities, but also on smaller cities and hinterland regions. This trend may continue to persist in the longer term. As per Savills India report, out of industrial and warehouse absorption of 46 million sq. ft., 36 million sq. ft. belonged to tier I cities, while 10 million sq. ft. belong to tier II and III cities such as Ludhiana, Guwahati, Patna, Jaipur, Varanasi, Lucknow, Indore and the like.

Sustainability, energy efficiency lead the way

Daljit Singh, Head, Business Development & CRM, NDR Warehousing  
Factors hiking demand for warehousing

Warehousing is an integral part of a supply chain. Favourable policies, Goods and Services Tax (GST), Make



in India, industrial corridors are important components for infrastructure in the logistics sector. e-commerce, manufacturing, and retail among other sectors fuel demand for Grade A warehouses.

The increase in demand is attributed to several reasons, including high operational efficiency, proper infrastructure along with amenities to warehouse workers, energy efficiency, implementation of health and safety regulations, and automation requirement among others for seamless cargo movement.

**Superior warehousing infrastructure :** India has come a long way in terms of infrastructure—cargo storage, handling, and multimodal transportation. With the implementation of automation, digitization, use of material handling equipment, the government is focused on bringing down logistics costs to 9 per cent and improve the logistics performance index to be among the top 25 globally and has released a set of handbooks on the warehousing standards.

Metropolitan cities are the first choice for organised developers to set up Grade A warehouses. Tier I cities account for 70 per cent of supply, while tier II accounts for 30 per cent. There is a growing demand for Grade A warehousing in tier II cities. With the push of e-commerce, rise of disposable income and penetration of mobiles in tier III cities will see a demand of Grade A warehouses.

Industrial & air freight corridors to boost growth

Chandranath Dey, India Head, Operations, Business Development, Industrial Consulting & Integrated Logistics, India, JLL

#### Factors bolstering demand

- Rise of 3PL providers: As the 3PL industry continues to grow in India contributing 35 per cent of the net demand in Q1 of 2023, the demand for Grade A warehousing facilities increases further. This trend is driven by the preference among businesses for outsourcing non-core activities such as warehousing and distribution, to specialized service providers who can offer efficiency and cost-effectiveness.
- e-commerce growth: Last year, India had 0.93 billion internet users. The user base is likely to reach 1.3 billion by 2030. Internet penetration in India grew from 4 per cent in 2007 to 47 per cent in 2021. Rising internet penetration, expansion of 4G, 5G network and increasing consumer wealth may assist the e-commerce industry to reach US\$ 350 billion by 2030.
- Rise in organized retail and omni-channel retailing: The growth of organized retail from 6 per cent of absorption in 2017 to 15 per cent in Q1 of 2023 has led to an increase in demand of warehousing facilities to manage large volumes of inventory and support just-in-time delivery. Omni-channel retailing will reduce inventory holding costs, operating costs, and real estate costs, while increasing brand prominence and consumer base across India.

#### Superior warehousing infrastructure

In recent years, India has improved the capacity of its ports and airports. The development of DFCs and Delhi-Mumbai Industrial Corridor will boost efficiency of cargo transportation across India. The government has announced initiatives such as multimodal transportation infrastructure, including MMLPs development, NLP.

e-commerce, 3PL, FMCG fuel demand for storage

Arpit Mehrotra, Managing Director, Office Services, South India & Head, Flex, India, Colliers

#### Factors bolstering demand

1. Led by robust demand from 3PL operators, Q1 of 2023 saw the highest industrial and warehousing leasing compared to the previous eight quarters in top five cities, which rose by 11 per cent year-on-year.
2. With increasing consumption in metro cities, demand for retail and FMCG sectors saw a three-fold growth YoY, as they expanded their footprint in larger markets, leading to heightened demand for Grade A warehousing facilities.
3. Grade A facilities with advanced technology, provide occupiers benefits such as increased efficiency, improved inventory management and security, which will surge demand for quality warehouses. Led by such benefits, the occupiers are opting for such facilities to gain a competitive edge.
4. With an increased demand for q-commerce, the focus on expansion of dark stores/fulfilment centres have increased. Rise in the number of dark stores will lead to higher scale of operations that will bolster demand for hub warehouses.

**Superior warehousing infra :** The NLP will transform the sector digitally by implementing an integrated digital logistics system. Many city hubs are likely to be built during the year and beyond. The proposed DESH Bill may promote domestic manufacturing through development hubs. MMLPs will reduce cost involved in movement of freight, generating more demand.

While urban cities have been the developers' preferred locations, tier II and III cities have been gaining traction over the past few years to set up Grade A facilities. Cities such as Jaipur, Indore, Vizag, and Coimbatore are the preferred spots for developers.

Quality Grade A warehouses need of the hour

Ashok Gupta, MD, IRC Group

#### Factors bolstering demand

- Growth in e-commerce: This has led to an increase in demand for quality warehousing facilities that can manage large volumes of goods. Grade A warehouses, with modern technology and infrastructure, are better equipped to meet this demand.

- **Infrastructure development:** The development of infrastructure such as highways, expressways, and railways, have made it easier for goods to be transported across the country. This led to demand for warehousing facilities at strategic locations, which can function as distribution hubs.
- **Government initiatives:** Implementation of the GST and the development of MMLPs.
- **Increasing focus on efficiency:** With an emphasis on reducing supply chain costs and improving efficiency, companies are increasingly investing in ASRS and real-time inventory tracking systems. Grade A warehouses are designed to meet these requirements.
- **Demand for quality:** Companies are demanding high-quality warehousing facilities that meet global standards in terms of safety, security, and sustainability. Grade A warehouses—with modern infrastructure, efficient layouts, and compliance with international standards—can meet these requirements.

**Preferred locations for Grade A facilities :** Locations for smart, automated, and Grade A facilities depend on the specific needs of a company. Urban cities tend to have better infrastructure and transportation links, which makes it easier to move goods in and out of the city. Since land costs and operating costs are higher in urban areas, they make it more expensive to operate a warehouse distribution centre. The tier II and III cities offer cost advantages in terms of real estate and labour costs, but infrastructure and transportation links may not be like the ones in the urban cities. Firms looking to set up smart, automated, and Grade A facilities will need to consider factors such as transportation links, availability of skilled labour, local regulations that leverage logistics.

- **Automation:** ASRS and robotics are put to good use for improving efficiency and reducing labour costs.
- **Use of Internet of Things and Data Analytics:** IoT and Data Analytics are utilized to optimize warehouse operations and improve inventory management.

Maximizing throughput, supply chain profitability

Deepak Tiwari, COO, KSH Logistics

**Factors bolstering demand :** While growth of e-commerce, increasing demand for just-in-time inventory, VMI, and a shift towards omnichannel retailing are driving this movement, e-commerce, retail, FMCG have driven the need for warehouses to manage the rise in online orders and returns. Automotive, industrial and FMCD fulfil demand, reduced TAT, inventory require efficient supply chains and adaptable warehousing solutions.

Since omnichannel retailing requires retailers have inventory available for purchase in-store, online, and through other channels, the demand for strategically located and well-equipped warehouses has increased.

They have contributed to a rise in demand for Grade A warehouses all over the country. We have built quality Grade A facilities designed to maximize throughput and boost supply chain profitability. We have Grade A facilities in Pune, Bhiwandi, and we are steadily expanding to Delhi NCR, Ahmedabad, Hyderabad, Bengaluru, Chennai, among others.

**Superior warehousing infrastructure :** While policies such as NLP, development of MMLPs and transportation, more Grade A warehouses are coming up and urban cities are the preferred choice due to their proximity to major markets, airports, and seaports, the development of infrastructure in tier II and III cities such as Nagpur, Ahmedabad, Hyderabad are becoming more appealing.

Shared facilities to reduce costs & improve efficiency

RaajaKanwar, CMD, Apollo International and Apollo Supply Chain

**Factors bolstering demand :** Location and connectivity: There is a need for industrial and warehousing solutions offering easy expandability options, in proximity to transport hubs, and connected to state and NHs. This need arises due to limited space within the existing parks, which force businesses to settle for alternate locations far from the city.

**Unlocking enhanced service levels:** Grade A vertical warehouses are revolutionizing warehousing and logistics by condensing storage and throughput into constrained urban locations. They provide a compelling solution for firms seeking world-class facilities and operational excellence, despite space constraints. These facilities have better air circulation and natural lighting, which enables additional savings on electricity costs. The insulation in Grade A warehouses keeps the temperature lower by 3-4°C, leading to further cost savings.

**Vertical storage:** Developers are building taller warehouses in response to growing needs for Grade A warehouses in areas where space is at a premium. These facilities offer operational efficiency to organizations of all types and are designed with improved floor quality and extra height to enable the use of vertical storage solutions.

**Superior warehousing infrastructure :** Progressive policy initiatives, such as the NLP, PMGS, Bharatamala, and Sagarmala are providing support to the logistics industry in India, promoting integrated logistics and multimodal connectivity. Greenfield expressways are allowing access to large land banks for backing infra for multimodal logistic hubs.

As a result, the facilities can be set up outside city centres, reducing pollution and traffic congestion, while enhancing supply chain efficiency. However, one of the main challenges of the warehousing and contract logistic sector is the costs involved.

Rise in facilities near hubs, NHs in tier II & III cities

VikasChoudaha, Senior Vice President & Business Head, Godrej Storage Solutions

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**Factors bolstering demand :** Indian logistics sector is evolving at an unprecedented pace with infrastructure development and technological advancements driving the growth of the industry. The demand for Grade A facilities across India are thanks to the rise of e-commerce, growth of 3PL, adoption of automation and digital technologies, and efficient supply chain management. More than 60 per cent of volumes transacted over the past two years were of Grade A warehouses and this segment is poised to grow at the rate of 15 per cent.

Today, the focus area in warehousing is to improve productivity and efficiency. Integrated automation and robotics facilitate efficient picking, movement and storing with speed and accuracy. Though such systems come at a higher cost of adoption and implementation, they pay off in longer run. We at Godrej Storage Solutions provide tailor-made warehousing solutions , which are efficient, sustainable, and suitable for complex operation.

**Preferred locations for Grade A facilities :** Warehouses must be located, and equipped with advanced technology to ensure faster order fulfilment. Focus on developing MMLPs and improving connectivity between cities has enhanced logistics efficiency. The most preferred locations for Grade A warehouses are dense near urban cities due to accessibility, availability of skilled labour, and technology among others.

Firms adopting practices to reduce CO2 footprint

Rajesh Jaggi, Vice Chairman, Real Estate, TheEverstone Group

**Factors bolstering demand :** India has witnessed growth in e-commerce, 3PL and manufacturing activities over the past few years. With increasing consumer demand for faster deliverables, warehousing space requirements of e-commerce players continue to rise, which has fuelled the demand for Grade A facilities. To meet this demand, real estate developers are diversifying their portfolios by building in-city warehouses and adding dark storage facilities and built-to-suit models in tier II and III markets to support last-mile deliveries (LMDs).

Foreign investments in the sector have established the importance of warehouse facilities across India. The Centre has focused on ramping up logistics infra by through the NLP and the PMGS, which played an important role in driving interest in Grade A warehousing.

**Superior warehousing infrastructure :** IndoSpace has invested in creating world class infrastructure for warehousing and logistics sector and supports India's transition towards achieving this goal. Retail digitalization has led to emerging consumption hubs in Ludhiana, Siliguri, Patna, Jaipur, Indore, Nagpur, Vadodara, Vizag, and Kochi. In comparison to tier I cities, tier II and III cities have more land to set up industrial parks. These cities reflect a need for urban warehousing and transformation in the manufacturing sector. We have launched parks in tier II and III locations, including Rajpura, Sri City and Coimbatore.

**Advancements and innovations :** For smart operations, the sector is adopting IoT along with robotics and automation. The industry has started integrating sustainability into its SOPs. Companies are adopting practices to reduce their carbon footprint without affecting operating costs.

Tier II & III cities gain notice due to lower costs

Ronak Shah, Executive Director, V-Trans India Ltd, CEO, V-Logis

**Factors bolstering demand :** The increased demand for Grade A warehouses were driven by growth of e-commerce, which require facilities capable of managing high volumes and fast-paced operations. Modern design and technology make Grade A warehouses suited for this purpose. Infra development, such as improved connectivity and MMLPs, have made Grade A facilities appealing for businesses aiming to distribute goods across multiple locations. The combination of e-commerce growth, enhanced infrastructure, and efficiency and cost-effectiveness of Grade A warehouses has contributed to the surge in demand. The government support in the form of incentives has stimulated the industry's expansion.

**Superior warehousing infrastructure :** India has climbed six places on the World Bank's Logistic Performance Index 2023 to the 38th position out of 139 nations because of PMGS and the NLP on enhancing logistics services in India. The country's infrastructure for cargo storage, handling, and multimodal transportation has improved with upgraded ports, airports, and DFCs. Preferred locations for smart, automated, and Grade A facilities depend on demand, accessibility, and proximity to markets. Tier II and III cities are gaining attention due to lower costs and government support. Locations vary based on industry needs, supply chains, and policies.

**Advancements and innovations :** India's warehousing has undergone transformation, evolving from unorganized structures to an asset class. COVID has tested the supply chain model. e-commerce and 3PL players have contributed to the growing demand for warehouses. The rise of Grade A facilities, in-city warehouses, and automation solutions has shaped the sector.

Warehouse clusters make it big in smaller cities

Lakshmanan S, Chief Operating Officer, Ecom Fulfilment Services

**Factors bolstering demand**

- e-commerce boom: A significant factor driving the need for Grade A storage facilities has been the growth of the e-commerce industry in India. Companies require warehouses to manage storage, order fulfilment, and delivery to keep up with the growing customer demand for online shopping.
- Infrastructure development: India has made advancements in infrastructure, building new motorways, exclusive freight lanes, and better connectivity.



- Supply chain optimisation: To increase operational effectiveness and cut costs, businesses are implementing cutting-edge supply chain management techniques.
- Government programs: Make in India campaign, the creation of specific logistics parks, and the National Logistics Policy initiatives are designed to improve trade facilitation, lower logistical expenses, and draw FDI into the industry.
- Shifting consumer behaviour: Customers want quicker shipping times, improved product availability, and hassle-free returns.
- 3PL industry growth: To service clients, companies outsource their storage and distribution operations to 3PL providers, who require well-equipped facilities that are strategically positioned.

**Superior warehousing infrastructure :** India's infra for cargo storage, handling and multimodal transportation is moderate and requires improvement. The demand for Grade-A warehousing by e-commerce firms in smaller cities has increased and is likely to gain greater traction, as the e-commerce players stress on stocking an array of inventories near customer locations.

Leveraging data analysis to optimize decision-making

Nikhil Agarwal, President, CJ DARCL Logistics Ltd.

**Factors bolstering demand :** The paradigm shift from traditional ways of buying to digital conversion has driven demand for logistics and warehousing. The demand side of the market is witnessing an increase in e-commerce occupiers and an emphasis on secondary cities. The supply side is characterized by the involvement of institutional players and the availability of large, top-notch, grade A warehouse facilities. The economy's expansion and positive industrial advancements have motivated MNCs to set up their manufacturing centres in key locations in India. As India strives to set itself up as a global manufacturing hub, the market has attracted interest from both global and domestic institutional investors. The new manufacturing units under Make in India initiative has also motivated new players to enter the market.

**Superior warehousing infrastructure :** One approach to drive revenue and growth involves optimizing utilization of warehouses. Strategic development entails determining the optimal number and location of warehouses that can best serve the organization's customers. Before considering location, however, it is essential for an organization to comprehend the purpose of its warehouses and the desired timeframe.

If an organization loses sight of its objectives, its distribution strategy may become fragmented. India's infrastructure for cargo storage, handling, and multimodal transportation has seen improvements, but still has many challenges.

Cargo storage, modern warehouse facilities with advanced systems are available in major cities and industrial hubs. Efforts have been made to upgrade ports, airports, and roadways for smoother cargo

handling.

Short delivery timelines lead to Grade A warehousing

Vineet Agarwal, MD, TCI

**Factors bolstering demand :** COVID has necessitated a shift towards digitization and contactless operations. As consumers went from traditional to online shopping, D2C, and quick commerce brands started revolutionizing the concept of doorstep deliveries.

With ever shortening delivery timelines, the need for easy storage, retrieval-based dark warehouses, and Points of Distribution increased. Hence, the rise in demand for modern warehouses near the point of consumption in urban cities. This phenomenon is spreading to tier II cities.

Many e-commerce categories such as retail, grocery, pharmacy, and food delivery may grow even further. As India goes on to become a US\$5 trillion economy, volumes of production and manufacturing will grow. The support ecosystem around cargo clusters, distribution parks and the inherent operational efficiencies due to economies of scale will drive many companies to opt for larger warehouses. Warehousing capacity discussions with buyers are evolving from per square feet capacities to per cubic feet-based metrics—leading to larger warehouses. The need for reduction in CO2 footprint has increased adoption of green warehousing, thereby adding to the demand for Grade A warehouses in India.

**Superior infrastructure:** The shift towards modern and compliant warehousing is commendable considering there is no designated area demarcated for warehousing in cities. Having said that, this rating is bound to change soon, due to the fast-changing infra dynamics in India.

In the recent World Bank report for LPI 2023, India jumped six places to be on 38th rank out of 139 nations, reflecting the country's growth story. It is a proof the world recognizes India, as a nation that is improving on all fronts at a phenomenal pace. With continuous investment by the Union government in projects such as Bharatmala Pariyojana, MMLPs, DFCs, Sagarmala and Inland waterways, the focus on creating world class infrastructure facilities is evident. This will continue to help LSPs like us to reduce the TAT and trim needless costs. Thereby, playing a pivotal role in strengthening country's logistics value chain.

**Preferred locations :** Top eight urban cities have the highest number of smart, automated, and Grade-A warehouses. Soon there will be an increase in demand of the smart facilities in tier II and III cities due to internet penetration, which has led to e-commerce boom, D2C, and food delivery. From retail, electronics, agriculture products to pharma, Grade A facilities in tier II and III cities, in the coming years, it will cater to the increased demand.

Source: cargotalk.in

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# INTELLECTUAL PROPERTY RIGHTS – AN OVERVIEW

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**Introduction :** The importance of intellectual property in India is well established at all levels- statutory, administrative and judicial. The importance of intellectual property in Indian Railways can be realized from the fact that all types of intellectual property rights e.g. copy rights, trade mark, industrial designs and patents have been in force in one or the other areas of Railways working. It is well known fact that most of the drawings and designs of coaches, wagons, locomotives and their spare parts, passenger reservation system allowing ticket booking on internet, e-procurement employing electronic Reverse auction and SkyBus related patents of Konkan Railway Corporation fall under the ambit of intellectual property rights

Indian Railways, the prime movers of the nation, have the distinction of being one of the largest railway systems in the world under a single management. Over two decades or so, after computerization of passenger reservation system all over Indian Railways followed by computerization of Materials management activities by introduction of Materials management information system in five modules viz. Purchase, Warehousing, Scrap Disposal, Inventory Control and Uniform Supply, there has been consistent efforts for having secured information system that should make information available to all authorized users.

The most talked about procurement system world over as well as in India is e-procurement while adopting online Reverse auction. Accordingly Indian Railways gone ahead in implementing (MMIS), thereby computerizing entire database and procurement activities on all zonal Railways and Production units. The online passenger reservation system (PRS) has been graded as one of the robust, efficient and best computerized network in the country. It was developed in association with M/s CMC Ltd., and the contract was concluded by Railways with a condition that no copy right of software developed is violated. M/s CMC was invited for development of MMIS in Materials Management department on Indian Railways.

All zonal Railways and Production Units have computerized their purchase function by introducing Materials management information system (MMIS). This has really brought transparency and efficiency in the purchase activities. The inventory management activities in the depot are also being done on MMIS. The data transfer between purchase office and depot is on real time basis.

**2.0 Reverse Auction – Online e-procurement :** Reverse Auction is a tool used for efficient online procurement

for goods and services in more transparent manner while using internet.

A fundamental equation on Reverse Auctions is as under:

***1 Buyer + Many Suppliers + Interactive Bidding = Reduced Purchasing Costs and Streamlined Procurement***

Over a decade or so, online reverse auction have gained lot of importance in the area of e-procurement more so due to faster internet services available across the globe. Different new concepts and software solutions in the fields of e-sourcing do promise extensive cost saving opportunities. The decision to use this tool has to be taken in concurrence with the sourcing strategy, because these tools support the procurement process in different stages of market transactions and change the traditional way of doing business. Electronic reverse auctions is such sourcing tool.

An auction is a market institution determining resource allocation and prices on the basis of bids from the market participants. Traditionally the seller initiates an auction to allow the interested buyers to bid for item for sale. In a Reverse Auction, however the roles are reversed. Here the buyer initiates the process articulating his demand. Possible suppliers undercut each other trying to get the contract. The success of Reverse Auction is often seen as an increase in productivity within the procurement function. Online reverse auctions are therefore an ideal way for buyers to reduce purchasing costs and streamline procurement when purchasing capital equipment, materials and services from suppliers around the world.

For working of online reverse auctions, the Buying Company initiates the auction by sending out purchasing specifications detail what it wants to buy. Suppliers compete against each other in Web-based, real-time auctions to win the business, driving down the price in the process. Online Reverse Auction is conducted while using internet as media. The most important aspect for successful reverse auction would be to have security of information and relevant intellectual property right on the internet.

**2.1 Protective Mechanism in Reverse Auction :** Firms considering entering into government contracts are required to keep in mind the following:

- I. They have to pay special attention to the Patent Rights Clause in the government contract, and to ensure that there are no special protections or modifications that are especially favorable to the

government

- II. They have to engage in thorough record keeping of inventions not created or reduced to practice during the government contract to defend against allegation that they were invented during contract
- III. They should be aware that disclosure obligations apply to all projects funded in any part by government money and also to be careful about accepting government funds.
- IV. They have to carefully label all data and ideas protected by pre-existing rights.
- V. They have to fully document conception and reduction to practice of inventions.
- VI. They should be careful of submitting invoices/ bills for materials supplied

For having proper Reverse Auction system, there is a need for proper information security involving confidentiality, integrity, availability, traceability. Continuous security process should be in place to manage information flow. In order to counter information security threats, Railways have effective information security management system based on PDCA (Plan-Do-Check-Act) cycle.

**3.0 Global Scenario :** Globally, there are over hundred business to business (B2B) exchanges or e-marketplaces for conducting Reverse auctions. Some of these including Covisint (Automotives), Chemwatch (Chemicals), Neoforma (Medical Goods), Ariba Inc., Freemarkets Inc. and iPlanet, are leading vendors in e-Procurement applications. In Australia Freemarkets.com is the leading vendor in online auctions and they have started operations in India over since last 4 to 5 years. In India, M/s Wipro Ltd. under O1MARKET is doing e-procurement while employing Reverse Auction system for private and public sector organizations

Intellectual property rights exist on the Internet. Indian Railways need to protect their intellectual property rights so they do not inadvertently forfeit or otherwise lose any rights in connection with their Internet activities. Conversely, e-procurement and other Internet users need to appreciate the existence of third-party intellectual property rights and possible liability resulting from the infringement, misappropriation or violation of these third-party rights. Intellectual property is the web's war zone. Whole industries have their futures dependent on the outcomes of these intellectual property battles. These intellectual property considerations involve copyright, patent, trademark and trade secret law to one extent or another. Probably the most misunderstood intellectual property law risk concerns the copyright laws. Many information products and other materials available from websites are protected by copyright. This is the case irrespective of whether the materials actually bear a copyright notice. Copying is inherent in the nature of the Internet medium and pervades virtually every activity such as browsing, linking, caching, accessing information and operation of an online service. Since copyright vest automatically in the author by operation of law from the moment of creation and fixation in tangible media,

the author of the materials has a copyright in and to the materials without regard to whether copyright was sought and irrespective of whether the materials include a copyright notice.

Indian Railways should take advantage of the tools that are available today to mark their proprietary content with electronic fingerprints and monitor cyberspace with software agents and bots to determine whether their intellectual property rights are being infringed or abused.

**4.0 Patents :** Creators can be given the right to prevent others from using their inventions, designs or other creations — and to use that right to negotiate payment in return for others using them. These are “intellectual property rights”. They take a number of forms. For example books, paintings and films come under copyright; inventions can be patented; brand names and product logos can be registered as trademarks; and so on. Governments have given creators these rights as an incentive to produce something tangible that will benefit society as a whole.

The extent of protection and enforcement of these rights varied widely around the world; as intellectual property became more important in trade, these differences became a source of tension in international economic relations. New internationally-agreed trade rules for intellectual property rights were seen as a way to introduce more order and predictability, and for disputes to be settled more systematically.

**4.1 : Basic Obligations** The basic obligation in the area of patents is that, invention in all branches of technology whether products or processes shall be patentable if they meet the three tests of being new involving an inventive step and being capable of industrial application

The agreement on patent protection must be available for inventions for at least 20 years. Patent protection must be available for both products and processes, in almost all fields of technology. Governments can refuse to issue a patent for an invention if its commercial exploitation is prohibited for reasons of public order or morality. If a patent is issued for a production process, then the rights must extend to the product directly obtained from the process. Under certain conditions alleged infringers may be ordered by a court to prove that they have not used the patented process.

**4.2 : General Guidelines on Patents** Government contractors should take care to note their obligations under the Patent Rights Clause that is included in many government contracts. The disclosure and ownership terms apply in contracts partially or fully funded by the government. The clause defines “subject inventions” as those inventions “conceived or first actually reduced to practice in the performance of work under this contract.” This is a broad definition that potentially covers inventions conceived prior to the contract, but reduced to practice during the contract.

It also potentially covers inventions that the inventor would otherwise not patent. The inventor may choose to retain the rights and title to the invention. If the inventor chooses to retain title, the government is

entitled to a “nonexclusive, nontransferable, irrevocable, paid-up license to practice or have practiced for or on behalf of the United States the subject invention throughout the world.” In order to retain this option, however, the contractor must comply with the disclosure requirements. The inventor must disclose the invention to the government agency within 2 months of disclosing the invention to the Contractor personnel responsible for patent matters. The disclosure must be written, and must specify the inventors, the contract under which it was invented, and any publications describing the invention. The disclosure must be “sufficiently complete in technical detail to convey a clear understanding to the extent known at the time of the disclosure, of the nature, purpose, operation, and the physical, chemical, biological or electrical characteristics of the invention.”

### 4.3 : Patents of Konkan Railway

**4.3.1 : Skybus Related Patent :** Konkan Railway Corporation (KRC) conducted the test-run in March, 2004 on its ambitious Skybus at Goa. The US patents authority has granted two more Skybus related patent applications that were filed in 2001 and 2002 by KRC. The first patent No. 6688235 is for a ‘Suspended Coach Transportation System’ which covers the Skybus structure with its long hollow coach suspended on rails and supported by concrete pillars, to provide high capacity suspended lateral transportation. The second is for the safety mechanism for the Skybus (No. 6679184) and is called a derailment arrester. It covers the method and apparatus needed to clear an immobilized and derailed suspended coach, to improve safety levels in the suspended coach system and to control damage in case of collision to coaches.

The Sky Bus Metro, a unique technology for Urban Mass Transportation, is highly eco-friendly and cost-effective compared to other modes of transport in urban areas. The self-stabilizing track has been hailed as another landmark technology of Konkan Railway. It would make the railway track virtually maintenance-free and lay the foundation for a “faster, safer, economical and smoother rail transport”.

**4.3.2 : Anti-Collision Device (ACD)** Another success of Konkan Railway in the area of product patent has been in the development of Anti-Collision Device (ACD). They have been granted patent No. 198166 with effect from September, 1999 for ACD in South Africa and applications have been filed in US, EU countries and Asian countries for getting patent. Konkan Railway have been awarded contract for installation of network of ACD on Rajdhani route of North east frontier Railway.

In addition to giving protection against collisions at high speeds between two ACD fitted entities, it also provides additional safety features in train operations, such as detection of train parting, train actuated warning to road users at level crossings of the railway track. Indian railways have included the ACD as an accepted safety system.

**5.0 : Property Marks :** Property marks as per the Indian Patent Code Sec 479 is a mark used for denoting that movable property belongs to a particular person/ organization. It means that marking any property or

goods, or any case, package or receptacle containing goods, or using any case, package or receptacle with any mark thereon. The marks used by Indian Railways on their goods may be termed as property mark for the purpose of easy identification of the owner. In order to ensure effective security of goods belonging to Railways, each good to be purchased should wear Indian/ Zonal Railway logo and such terms and condition is invariably put in all purchase contracts. Certain Railway goods coming in public contacts are Linen items supplied to passengers traveling in AC classes, crockery and cutlery items, looking mirrors and stationary items etc. These items should be embossed with the property marks so as to avoid pilferage and misuse.

**6.0 : Industrial Designs** Obligations envisaged in respect of industrial designs are that independently created designs that are new or original shall be protected. Individual governments have been given the option to exclude from protection, designs dictated by technical or functional considerations, as against aesthetic consideration which constitutes the coverage of industrial designs. The right accruing to the right holder is the right to prevent third parties not having his consent from making, selling or importing articles bearing or embodying a design, which is a copy or substantially a copy of the protected design when such acts are undertaken for commercial purposes. The duration of protection is to be not less than 10 years.

As per the policy Indian Railways have been getting imported goods substituted with indigenously developed parts/ components from Indian manufacturers who in fact got such item patented for future purchases by railways from such a sole source. One of such component, **“self steering device for Indian Railways ride control wagon bogies” has been developed by M/s Rawats International Pvt. Ltd and patented under patent No. 185343.** The major problem with such patented components is that competition is killed and suppliers do take advantage of monopoly of such products.

**7.0 : Conclusions** E-procurement while employing Reverse Auction is a recent phenomena in India but it is gaining lot of popularity due to cost reduction, shortening of procurement cycle time and the ease of participation by suppliers in bidding from their workplace as well as transparency associated in the system. E-procurement is very popular in several parts of Europe, USA and other advanced countries. However, it has grown tremendously over the past five years despite several hindrances.

In view of large expenditure of the order of Rs. 50,000 crores on annual procurement of materials by Indian Railways; there is huge potential for e-procurement happening in big way while employing Reverse Auction system. Accordingly there would be lot of cost saving in procurement of materials and services, reduction of procurement cycle time and better inventory control for Indian Railways.

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## WAREHOUSING AND LOGISTICS SECTOR IN INDIA

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The warehousing, industrial, and logistics (WIL) sectors are projected to be crucial for attaining India's vision of being a US\$ 5 trillion economy by FY25. The warehouse and logistics industry has benefited the most from the COVID-19 epidemic, increasing its share from 2% in 2020 to 20% in 2021. Because of the growing shift from discretionary to essential internet buying during the COVID-19 epidemic, the e-commerce industry became more appealing and attractive.

The expansion of this industry is likely to be aided by a robust economy, government efforts to improve infrastructure, and a favourable business environment. Increasing consumerism and a huge consumer base are fostering the growth of retail and e-commerce in India. The Indian retail sector's market size is predicted to increase at a CAGR of 9% between 2019 and 2030, totalling more than US\$ 1.8 trillion.

Large international funds and corporations have invested in warehousing developers and operators to grow their reach and geographical footprint, which are the sector's key differentiators. The Government of India has taken many initiatives to strengthen the sector's infrastructure, including the establishment of dedicated freight corridors and the extension of road and rail networks, to improve connectivity and decrease travel times.

Another critical governmental intervention has been the sector's digital transformation, projects such as Digital India, Bharat Net, and the National Logistics Portal would aid in the industry's digitization. Furthermore, the government has announced the establishment of logistics parks and warehouses across the country to provide appropriate storage facilities for enterprises. The warehouse sector has grown rapidly in recent years, fuelled by the expansion of e-commerce, solid infrastructure, the adoption of GST, and the advent of organized retail. The recently implemented National Logistics Policy intends to reduce India's logistics costs from the double digits of GDP to the single digits by 2030.

**Overview of the Logistics Industry :** The Indian logistics industry is growing, due to a flourishing e-

commerce market and technological advancement. The logistics sector in India is predicted to account for 14.4% of the GDP. The industry has progressed from a transportation and storage-focused activity to a specialised function that now encompasses end-to-end product planning and management, value-added services for last-mile delivery, predictive planning, and analytics, among other things.

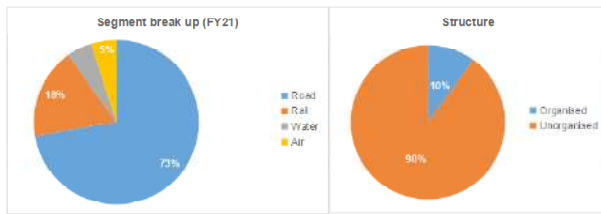
One of the key drivers of this expansion is projected to be the rise of India's logistics industry, which employs 22 million people and serves as the backbone for various businesses. The logistics sector in India was valued at US\$ 250 billion in 2021, with the market predicted to increase to an astounding US\$ 380 billion by 2025, at a healthy 10%-12% year-on-year growth rate. Moreover, the government is planning to reduce the logistics and supply chain cost in India from 13-14% to 10% of the GDP as per industry standards.

The industry is crucial for the efficient movement of products and services across the nation and in the global markets. The logistics business is highly fragmented and has over 1,000 active participants, including major local players, worldwide industry leaders, the express division of the government postal service, and rising start-ups that focus on e-commerce delivery. The industry includes transportation, warehousing, and value-added services like packaging, labelling, and inventory management.

With the advent of technology-driven solutions such as transportation management systems (TMS) and warehouse management systems, India's logistics industry has witnessed tremendous development in recent years (WMS). These solutions have assisted logistics firms in increasing operational efficiency, lowering costs, and improving customer service.

As depicted in the below pie chart (left), representing the segment-wise breakup of the logistics sector in FY21. Roads have the largest percentage share of 73% followed by rail (18%), water (5%) and air (5%).

The below pie chart (right) represents the fragmented structure of the Indian logistics industry.



*Source: KPMG Report*

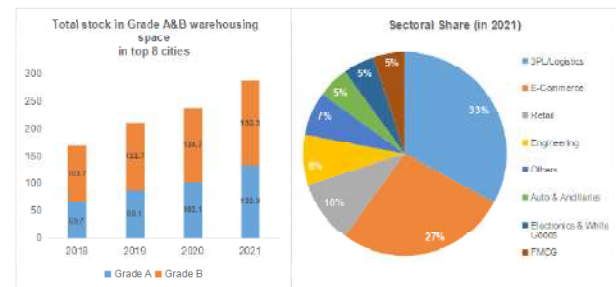
**Overview of the Warehousing Industry :** A warehouse is an essential component of corporate infrastructure and one of the primary enablers in the global supply chain. The Indian warehousing market is predicted to reach US\$ 34.99 billion (Rs. 2,872.10 billion), expanding at a CAGR of 15.64% from 2022 to 2027. Modern warehouse facilities and technology-driven solutions have changed the warehousing sector in India in recent years. With increased demand and supply throughout the years, the Indian warehousing industry is gaining traction. The key players are third-party logistics (third-party logistics) and e-commerce enterprises, which are growing into tier 2 and 3 cities and eventually increasing their proportion of secondary marketplaces. Businesses are transitioning to a hub-and-spoke model while also implementing technology to simplify operations, with an eye on the larger picture of ease, efficiency, and sustainability.

Grade A warehouses are modernized buildings created specifically to meet the needs of warehouse logistics. They feature the most up-to-date technology, superior building materials, a prime location, and a convenient traffic interchange. Grade B objects are outdated buildings that must be rebuilt to satisfy modern warehouse logistics standards.

As depicted in the below chart, India saw a 21% year-over-year increase in the total stock of Grade A and B warehouse space in the top eight cities in 2021. The total warehousing capacity is expected to be 287 million square feet by the end of 2021, up from 238 million square feet the previous year. Grade A stock in India was 134 million square feet, representing a 5-year CAGR of 29.9%. Among the eight major cities, the three largest cities in the country, including Delhi NCR, Mumbai, and Bengaluru, contribute more than half of the warehousing stock.

As demonstrated in the below pie chart, 3PL/Logistics has remained the top segment in terms of warehouse space demand for the last five years. Various e-commerce areas, including retail, groceries, pharmacy, and food delivery, are likely to grow substantially as consumers shifted their purchasing

habits from offline to online. COVID-19 has increased eCommerce adoption, increasing demand for online delivery of both essential and non-essential commodities. While the share of manufacturing demand from the Auto & Ancillaries and Engineering sectors has declined during the epidemic, demand from other consumption-based sectors such as Retail and FMCG has increased.



*Source: Assocham*

## Key Industry Drivers

- **Government initiatives :** The government's warehousing policy focuses on creating exclusive warehousing zones through public-private partnerships in order to reduce transportation and logistics costs and accelerate growth. The government will invest US\$ 91.38 billion (Rs. 7.5 lakh crore) in infrastructure, logistics development, and multi-modal connectivity in FY23. Reforms such as GST and e-way bills are fostering industrial growth, consolidation, and efficiency. The introduction of free trade logistics parks and warehousing zones.
- **Global manufacturing shift :** Demand for warehouse alternatives and logistics services has increased as a result of international firms relocating their manufacturing focus to India. The Production Linked Incentive (PLI) scheme is increasing domestic production and, as a result, increasing demand for industrial space and warehousing.
- **New-age startups :** The emergence of new-age tech logistics startups that are aggressively infiltrating this market and producing competing products. Several new businesses are entering the B2B market, driven by manufacturing. New players are introducing more technology and digital systems to boost productivity, resulting in overall industry growth.
- **Technology advancement :** Solutions based on modern technology are opening up chances for

solution expansion throughout the entire value chain. Warehouses are being designed and integrated with technologies such as the Internet of Things (IoT), robotics, and artificial intelligence (AI).

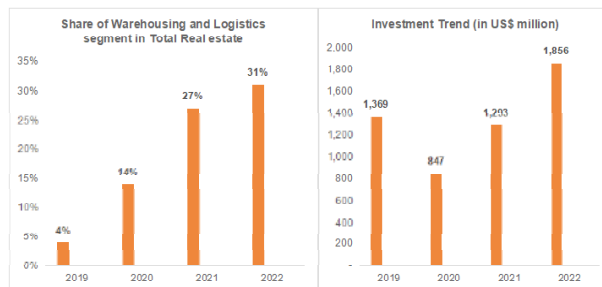
- **Flourishing e-commerce** : An increase in e-commerce leads to expanded operations to meet increased demand. Consumer behaviour is changing, and they are demanding convenience through last-mile connectivity, ease of returns, and other value-added services. The expansion of Direct-to-Consumer (D2C) brands demanding end-to-end logistics services. Omni-channel retailing increases the need for several warehouses to serve end users.

**Investment Trends** : Foreign corporations are actively investing in India's logistics infrastructure to capitalize on the country's strategic location, trained labour, and improved business environment. The development of industrial and logistics parks, as well as data centres, is a new bright spot on the Indian real estate heatmap. In 2022, these two segments received US\$ 1.8 billion in Private Equity (PE)/ Venture Capitalist (VC) investments, representing a 29% increase year on year.

The industry garnered investments worth US\$ 1 billion (Rs. 8,257 crore) at the beginning of 2022. The logistics and industrial industries' quarterly average investment was around 1.3 times more in 2021 than it was in 2021 when it was US\$ 335.69 million (Rs. 2,755) crore. Over the last four years (2019-2022), the warehouse and logistics sector has received a total institutional investment of US\$ 5.4 billion, with 2022 accounting for a major 35% portion.

Warehouse investment accounted for the second greatest percentage of institutional real estate investment in both 2021 and 2022, accounting for 27% and 31%, respectively, outperforming other asset classes such as residential and retail.

During the four-year period 2019-2022, the western area of the country - led by Mumbai, Pune, and Becharji, (a tiny town in Gujarat) - witnessed the second-greatest institutional investment in warehousing, accounting for 35% of total investment in the industry, demonstrating the increased confidence that investors have in the nation's Tier II cities.



**Source:** Federation of Indian Chambers of Commerce & Industry (FICCI)

The year 2022, in particular, had a spectacular 44% YoY increase, owing mostly to a US\$ 1 billion contract between Lodha Group, CDPO, and Bain Capital.

Investor	Partner/Developer	Location	Amount (in US\$ million)	Year
Blackstone	Hiranandani Greenbase	Multiple cities	351	2019
Blackstone	Alticargo Logistics Industrial Parks	Multiple cities	53.5	2020
IndoSpace	KSH infra	Pune	134.5	2021
InvestCorp Group	NDR Warehousing	Multiple cities	55	2022
CDPO, Bain Capital	Lodha Group	Multiple cities	1000	2022

**Source:** Federation of Indian Chambers of Commerce & Industry (FICCI)

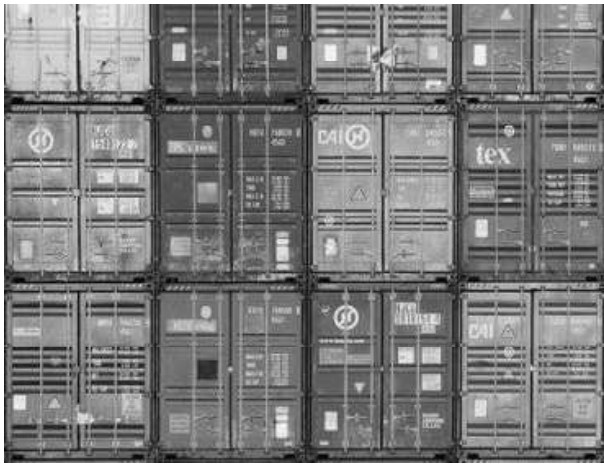
**Road Ahead** : The warehousing and logistics industry in India is a dynamic and rapidly growing sector that is expected to play an increasingly important role in the country's economy. Despite some challenges, the sector is well-positioned for long-term growth and presents exciting opportunities for investors and businesses. With the government's focus on improving infrastructure and the rise of e-commerce, the sector is expected to be a key driver of economic growth in the country. Moreover, with the increasing adoption of technology and the government's push for a digital economy, there is also significant potential for logistics players to leverage data analytics, artificial intelligence, and machine learning to improve operational efficiency and enhance customer experience. There are also opportunities for foreign investment as international companies look to tap into India's growing logistics market. The government has made it easier for foreign companies to invest in the sector by allowing 100% foreign direct investment in logistics parks and warehouses.

Source: IBEF

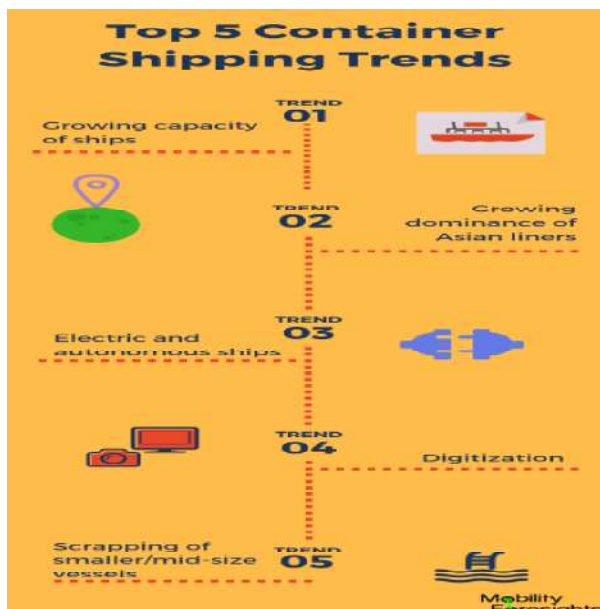


## 5 IMPORTANT CONTAINER SHIPPING MARKET TRENDS YOU MUST KNOW

*Container shipping market growth container shipping market news container shipping market report container shipping market size container shipping market trends global container shipping market*



**5 Important Container Shipping Market Trends You Must Know :** The container shipping industry is undergoing structural changes in almost all segments of the industry, which will have a very long-lasting impact on a global scale. Amidst all the noise, we have filtered five major trends in this market.



**1. Growing capacity of ships :** The largest container vessels on order have multiplied by more than six times in past four decades and they will continue to go up by more than 10% till 2020. The continuous rise in ship sizes is proportional to the growth of globalization in the last four decades. It also testifies the rise of containerization at the cost of bulk shipping, and carriers' need for greater economies of scale to improve their profitability in the market

**2. Growing dominance of the Asian liners :** It is expected that the Chinese and Japanese carriers will play a more dominant role in the container shipping industry going forward. The integration of China Cosco and CSCL into COSCO Shipping has resulted in a combined market share of 8% in global container shipping and it has become the fourth largest carrier globally. The merger of the container shipping segments of Japanese carriers NYK, MOL and K-Line will catapult them to the 6th largest carrier ranking with a combined market share of nearly 7%. Evergreen, Yang Ming, OOIL and Hyundai Merchant Marine are ranked 7th, 8th, 9th and 10th largest with market shares of 5%, 3%, 3%, and 2% respectively

**3. Electric and autonomous ships becoming a reality :** Like Passenger cars and truck business, the marine industry is also not too far from the autonomous and electric wave. There has been a consistent increase in demand for alternative propulsion systems which not only improve the overall efficiency of the ship but also reduce carbon footprint. The innovators in the shipping industry are doing all they can to find a solution to this menace. Among all the options presently available at hand in marine propulsion, electric propulsion system seems to have a promising future. In 2017, Port-Liner announced it is building two giant all-electric ships to transport cargo primarily within Europe.

Yara(a Norwegian company) has teamed up with Kongsberg to build the world's first all-electric and autonomous container ship, which is set to hit the sea in 2018. The hi-tech container ship, named YaraBirkeland, will serve regional hauling. It will first operate as a manned vessel in 2018, become a remotely operated one in 2019 and completely autonomous by 2020. The most important benefit of the new operation comes from a major reduction in NOx and CO2 emissions as it will replace more than 40,000 truck journeys a year with this, all-electric shipping.

**4. Digitization :** Digitization could offer a reliable solution to the ailing industry in improving their overall

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profitability. Many shipping carriers struggle to understand their actual costs because they operate on old information technology systems that are difficult to integrate with every operation.[\* File contains invalid data | In-line.JPG \*] Those outdated systems often give incorrect route costs, which can have dire consequences on market-specific operating costs. Because of this, there have been major advances in the tools and techniques required to capture, store, and analyse heaps of data sets and draw meaningful insights. A centralized and predictive digital system that can pull data together and then track profitability in real time, can help the management of shipping companies make intelligent and informed decisions. The good point is, developing a system of that sort is not as resource and capital intensive as it used to be.

**5.Scraping of smaller/mid-sized vessels :** The global container shipping fleet is still relatively young at 10.5

years. Only 4% of the global fleet is more than 20 years old and approaching the natural age of being scrapped. The natural rate of vessel demolition is likely to be around 2% per year, especially if fuel prices remain low. This level of natural scrapping will not be sufficient to offset the industry oversupply unless the global container shipping demand growth picks up to +4% and above. The natural rate of vessel scrapping is insufficient to offset the industry oversupply. To overcome this problem, the global carrier companies which now operate a good number of larger sized vessels are scrapping off their old smaller size ships.

The above information has been sourced from our report titled **"Global Container Shipping Market 2017-2022"**.

Source: [mobilityforesights.com](http://mobilityforesights.com)

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## EKART LAUNCHES 'WAREHOUSING AS A SERVICE' FOR BRANDS OF ALL SIZES

**E**kart will now make its warehouses across the country available to brands, manufacturers, retailers, and SMEs as a part of its vision to become a 4PL (fourth-party logistics) player in the country. ***The initiative will enable brands of all sizes, manufacturers, and retailers from across industries to leverage Ekart's technologically advanced fulfillment centers for flexible, affordable, and scalable inventory storage solutions.***

***The end-to-end warehousing services by Ekart will include ready-to-use best-in-class warehousing space, order management, integrated logistics, and inventory management further helping brands scale their business.*** Ekart will also offer specialized facilities such as temperature-controlled storage and storage for high-value inventory for businesses in need of these requirements.

Ekart has a pan India supply chain network spread across more than 20 million sq feet. To begin with, it will offer four dedicated sites across Bilaspur in Haryana, Malur in Karnataka, Saidham in Mumbai, and Uluberia (West Bengal), as well as 17 shared sites across India to businesses of all sizes. ***The expansive warehouses will ease the fulfillment process of orders for customers by helping reduce the transit time and better delivery speed. The state-of-the-art, Grade-A fulfillment centers are equipped to facilitate the safe and speedy delivery of orders.*** Ekart's capability to handle 80+ product categories will also now be available to the brands.

Mani Bhushan, CBO at Ekart, said, ***"Ekart today is one***

***of the largest supply chain companies in the country, and we are committed to helping businesses reach scale. Today a majority of businesses across industries including manufacturing, D2C, and consumer electronics have a pain point of not being able to find Grade A warehousing and dealing with multiple partners for operations. We want to leverage our operations, infrastructure, and technology capabilities to provide ease of doing business while also reducing the cost of doing business and further strengthening and streamlining the nation's supply chain ecosystem. We are positive that our deep understanding of the value chain will not only ease last-mile delivery for our partners but also help them focus on their core strengths, thus contributing to the larger economy."***

***With the introduction of Ekart's warehousing services for brands and businesses, brands will be able to leverage cutting-edge technology such as – Automated Storage and Retrieval System, Multi-Tier Shelving, Cross Belt Sorters, Spiral Conveyors, Smart picking to minimize dispatch failures.***

***Ekart offers brands, platforms, and businesses end-to-end supply chain and inventory management, including distribution, and aggregation of products.*** Today it has a vast network of fulfillment and sortation centers, and thousands of delivery hubs. It delivers over 120 million packages every month across all serviceable pin codes.

Source : INDIAN RETAILER BUREAU

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# MANAGING REVERSE FLOWS IN SUPPLY CHAINS – ISSUES AND CONCERNS

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**Abstract :** Managing reverse flow in the supply brings lot of challenges to supply chain managers. This paper explores the importance of reverse flows, types of reverse flows, issues and concerns. The author has classified different types of product recalls by citing automobile, and packaged food product recalls. The traditional and reverse logistics have been illustrated. The reverse flow and reverse logistics have been discussed. The key components of reverse flow in supply chains, types of reverse flows, issues and concerns are discussed. The importances of total quality management (TQM) concepts in operations are also discussed.

**Keywords:** Product recalls, reverse flow, logistics, supply chains

**Introduction :** The supply chain encompasses all activities associated with the transformation (conversion) of goods from raw material stage to final stage, when the goods and services reach the end customer. The key components of any supply chain include supply chain planning, design and control flow of materials, information, money transfer, risk transfer and value / title transfer.

The Supply Chain Operations Reference (SCOR) model is unique in that it links business processes, performance metrics, practices and people skills into a unified structure. It is hierarchical in nature, interactive and interlinked ([www.apics.org](http://www.apics.org)).

Figure 1 depicts SCOR Model. SCOR is based 5 distinctive management process components. The process components includes: plan, source, make, deliver and return. SCOR is a process reference model that provides a language for communicating among supply chain partners. SCOR contains 3 levels of process details. Viz i. Top Level (Process Types), ii. Configuration Level (Process categories and iii. Process Element Level (Decompose Processes). Each basic supply chain is 'Chain of Source, Make, Deliver and Return execution process.



**Figure 1: SCOR Model**

Table 1 describes the scope of SCM processes components. In this study only the reverse flow in the supply chains has been studied.

**Table 1 Scope of SCOR Processes**

Process	
Components	Scope
Plan	Demand / Supply Planning and Management.
Source	Sourcing Stocked, Make-to-Order and Engineer – to- Order product.
Make	Make-to-Stock, Make-to- Order, and Engineer- to- Order production execution.
Deliver	Order, warehouse, Transportation and Installation management for stocked, Make-to-order and Engineer- to- Order product.
Return/Recall	Return of Raw Materials ( to supplier), and Receipt of Return of finished goods(from customer) including defective products, MRO products and Excess products.

**Meaning of Product Recall :** A product is the process of retrieving and replacing defective goods for consumers. When a company issues a recall, the company or manufacturer absorbs the cost of replacing and fixing defective product. For big companies, the costs of repairing faulty merchandize

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can accumulate to multi-billion dollar losses. Product recalls, generally affects the cash flow and brand recognition- generally cannot sustain the financial losses and brand degradation associated with a product recall (NADA, 2019).

### Types of Product Recall

Product recalls are classified into three important types: They are i. Voluntary recall, ii. Involuntary recall and iii. After investigation of Regulator / Agency (NHTSA, FSSAI etc) recall.

- i. Voluntary Recall / Proactive Recall: Includes recalling products for wrong color painting, plating etc which are minor in nature. This recall will have least/ lowest financial impact to company's business results. Example: Travel mugs by IKEA.
- ii. Involuntary Recall: As a result of an agency (NHTSA in USA). The agency after their investigation will file a lawsuit to drive the product recall. Example: Automobile cars recall by GM, Honda Motors, Toyota Motors Maruti Suzuki India Ltd., and Ford Motors.
- iii. After Investigation of Agency, commencing the product. This results huge fine / loss on the OEM. Example: MAGGI Two Minutes Noodle by Nestle.

### Case Study 1: MAGGI 2 Minutes Noodle by Nestle :

Food Safety & Standards Authority of India (FSSAI) asked Nestle to recall Maggi noodles as the Maggi sample contained high level of lead and monosodium glutamate (MSG) beyond its prescribed limits. Quality issue started span out of control. Finally, Nestle left with little choice but to recall the popular noodles from the market. The Executive Vice President (Supply Chain), at Nestle India told to lead the recall process. The team collected 38,000 tons of Maggi noodles from retail stores and destroyed them by first crushing the noodles and then mixing them with fuel and burning in incinerators at 11 cement plants across the country (worth of \$50 millions). The entire recall process is huge and complex task. All their plants were closed for 6 months; suppliers keeping large volume of Work-in-Process Inventory (Maida etc) could not be used. More number of people becomes jobless in their plants as well as their supply side. Huge loss to the Nestle in terms of business & profit loss, decline in market share, degradation of brand value and shift in customers loyalty.

**Case Study 2: Case Study: Automobile Cars by OEMs**  
: Recently, car manufacturers Toyota Motors(TM),

General Motors (GM), Honda Motors (HM), and Ford Motors have suffered the embarrassing consequence of product recalls.

Toyota recent stream of gas pedal recalls resulted in a \$ 2 billion loss consisting of repair expenses and lost sale. In conjunction with the financial crisis, Toyota's stock prices dropped more than 20% or \$ 35 billion (event based performance). Both Honda and Toyota have both issued recall over three different Airbags (Takata Airbags) affecting more than 6 lakh vehicles worldwide. In Canada alone, the recalls affect more than 7 lakh cars. The affected models are Acura CL, Acura EL, Acura TL, Acura MDX, Honda Accord, Honda Civic, CR-Vs and Honda Odyssey models from 1997 to 2003 ( Voluntary Recall).

Meanwhile, Toyota has also issued two separate recalls of its own. The first one involves Takata Airbags and the second recall also related to Airbags issue. More than 4.24 lakh vehicles are involved in Canada. Collision Repair Magazine reported that United States regulator have been investigating this particular issue , as reports claim that as many as eight people have died when their airbags failed to inflate.

Ford Motors is recalling a total of about 50,000 vehicles in Canada due to electrical issue. Ford also recalled the same vehicles in the United States for switch issues.

General Motors has issued recall during 2016 for more than 4 lakh cars. The company has also spent more than \$300 million against the subject product recalls. The company also disbursed millions towards the insurance claims for death / major injuries (Sengottuvelu, 2015).

Maruti Suzuki Maruti Suzuki India Limited today announced to proactively undertake a recall of some petrol variants of Ciaz, Ertiga, Vitara Brezza, S-Cross and XL6. This is to inspect for a possible defect in 181,754 units of these models manufactured from 4th May 2018 to 27th October 2020. Recall campaigns are undertaken globally to rectify faults that may be potential safety defects.

In the interest of customers, Maruti Suzuki has decided to voluntarily recall the affected vehicles for inspection/replacement of Motor Generator Unit, free of cost. Affected vehicle owners would be receiving a communication from Maruti Suzuki authorized workshops. The replacement of the affected part shall start from the first week of November 2021. Till then, customers are requested

to avoid driving in water logged areas and direct water spray on electrical/electronic parts in vehicle (Voluntary Recall).

Reverse flow is another term for reverse logistics in the supply chain. This includes planning, implementing and controlling the efficient inbound flow, as well as the storage of goods and related information to recover value or proper disposal.

It's the series of activities required to retrieve a used product from a customer and either dispose of it or reuse it. And for a growing number of manufacturers, in industries ranging from carpets to computers, reverse supply chains are becoming an essential part of business (Daniel & Luk, 2002).

In some cases, companies are being forced to set up reverse supply chains because of environmental regulations or consumer pressures. Beginning in 2003, for example, European Union legislation will require tire manufacturers operating in Europe to arrange for the recycling of one used tire for every new tire they sell. In other cases, companies are taking the initiative, seeing opportunities to reduce their operating costs by reusing products or components. Bosch, for instance, has built a successful business selling power hand tools that have been remanufactured.

In general, the companies that have been most successful with their reverse supply chains are those that closely coordinate them with their forward supply chains, creating what we call a closed-loop system. For example, they make product design and manufacturing decisions with eventual recycling and reconditioning in mind. Bosch is a good example.

### Reverse Logistics vs. Traditional Logistics

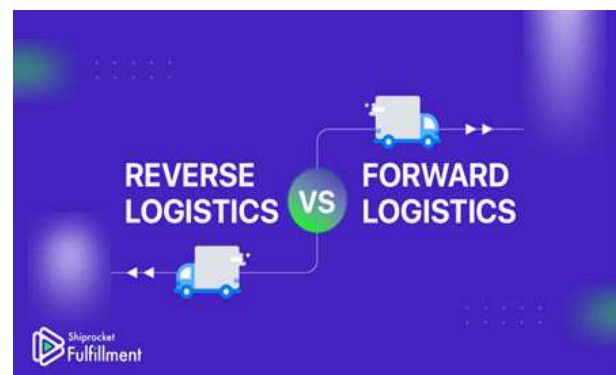
Traditional product flow starts with suppliers and moves on to a factory or distributor. From there, the goods go to retailers and customers (Forward logistics). Thus, while forward logistics is the movement of products from the manufacturing unit or warehousing unit to the consumer, reverse logistics is the movement of goods back from the consumer to the warehousing unit

Reverse logistics management starts at the consumer and, moving in the opposite direction, returns products to any point along the supply chain. In reverse logistics, goods move from the end consumer back to the seller or manufacturer. The most common example of reverse logistics is when a consumer returns a purchased item for a refund. The returned

products may be resold or disposed of permanently. Figure 2 shows the difference between forward logistics and reverse logistics.

Products can be returned for various reasons, such as product recalls, product damage, lack of demand and customer dissatisfaction. The challenges associated with reverse logistics can be complicated by the fact that returned products often move in small quantities and may move outside forward distribution channels (Murphy & Knemeyer, 2019).

In addition, reverse logistics can be four to five times more expensive than forward logistics and the reverse logistics process can take 12 times as many steps, i.e., assessing the returned product and repairing the returned product as the forward logistics process (Murphy & Knemeyer, 2019).



**Figure 2: Forward and Reverse Logistics**

### Product Recalls Vs Reverse Flow in Supply Chains:

A product recall is a request to return a product after the discovery of safety issues or product defects that might endanger the consumer or put the maker/seller at risk of legal action. The recall is an effort to limit liability for corporate negligence which can cause significant legal costs due to releasing to the consumer a product that could endanger someone's life and the economic loss resulting from unwanted publicity. Recalls are the first process which comes to our mind about reverse logistics.

But, there are many other processes which are covered by reverse logistics concept. Seasonal products, end of life programs, parts and repairs are other examples. Gencer and Akkucuk (2015) report different examples about reverse logistics. The same report also classifies reverse logistics activities into different categories, each with their own unique challenges and opportunities

### Reverse Logistics Vs Reverse Flow in Supply Chains

: In reverse logistics, goods move from the end consumer back to the seller or manufacturer. The most common example of reverse logistics is when a consumer returns a purchased item for a refund. The returned products may be resold or disposed of permanently

Consumers purchase iPhones and enjoy the product until they want to upgrade their product. When consumers return to a store to buy the latest model, Apple offers consumers discounts on a new product if they turn in their old product. Apple then collects the old models and brings the products back to their factories. Reverse supply chain refers to the movement of goods from customer to vendor or at least one step backward up the supply chain. Returning an electric motor from a commercial supply house back to the manufacturer because of a packaging defect is an example of reverse logistics that doesn't involve the end user.

**Key components in reverse supply chains:** The key components in reverse supply chains are: Production acquisition, reverse logistics, inspection and disposition, reconditioning and distribution & sales.

#### Types of Reverse Flow in Supply Chains

- i. Products that have failed, but can be repaired or reconditioned.
- ii. Products that are sold, obsolete, but still have some salvage value.
- iii. Products that are unsold from retailers due to overstock.
- iv. Products being recalled due to a safety or quality defect that may be repaired or salvaged.
- v. Products needing 'pull and replace' repair before being put back in service.
- vi. Products that can be recycled such as pallets, containers, computer printers cartridges.
- vii. Products or parts that can be remanufactured and resold.
- viii. Scrap metal that can be recovered and used as a raw material for further manufacturing.

#### Key issues and concerns

- i. Logistics cost of returns is very high due to the uneven size, damages and generally poorer condition of packaging.
- ii. Retailers lose 3 to 5 percent of gross sales to returns.
- iii. Internet sales (online sales) are high compared to store sale returns.
- iv. In the reverse flow of products in supply chains

require lot of additional documents like inspection reports, not for sale certificate, insurance assessment report in case of transit damages etc.

- v. Re-exporting the products to OEMs for rectification / repair takes lot of time.
- vi. Repackaging requires additional resources like packing materials etc.
- vii. Sometimes, the buyer and seller will get into argument mode and further to legal litigations. This spoils the supplier and buyer relationship.

**Conclusion :** Product recalls, generally affects the cash flow and brand equity. Small firms cannot sustain the financial losses and brand degradation associated with a product recall. Most of product recalls are related to poor design, wrong material usage, not compliance to standards / specifications, wrong process including under processing or over processing. So, it is connected to quality of the final product. It is found that total quality cost consisting of appraisal costs, prevention costs, failure costs including internal failure and external failure. Total quality cost amounts to 100%, out of which appraisal costs constitutes 15 -20%, prevention costs 25 – 30% and failure costs works out to 50-60%. Therefore, it is important that OEMs should move from 'fire fighting' to total quality management (TQM) approach (prevention in quality management). All entities in the supply chain should focus on total quality management principles. Every company should have a products recall policy and the most priority should be given for this.

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# INDIA'S BOOMING WAREHOUSE MARKET: TRACING THE GROWTH STORY AND OPPORTUNITIES

**SANDEEP CHANDA, MANAGING DIRECTOR INDIA, PANATTONI**

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**T**he warehouse is a fundamental part of business infrastructure and is one of the key enablers in the global supply chain. India's warehousing sector has seen a tremendous change over the decades from being unorganized godown structures to getting recognized as a prominent asset class. While the sector was witnessing growth on the back of India's burgeoning consumer market, a boom in organized retail, changing consumer behaviors, and regulatory measures, the pandemic also was a true test of this supply chain model - this model proved resilient and efficient in handling surging demand across the country when the whole nation was under a lockdown. The pandemic thus resulted in the improvisation of the supply chain with last-mile delivery, in-city distribution, and various other hybrid models. All these required a modern warehouse which is now a focus area for developers as well as occupiers. According to 'Research and Markets', India's warehousing market is expected to reach INR 2,872.10 bn by 2027, expanding at a CAGR of ~15.64% during 2022-2027.

Following the evolving needs, the e-commerce sector has emerged as the largest beneficiary, where everything is available at a click, right from discretionary to essentials. Given the high convenience, availability of variety, and secured online payments, there has been a perceptible boost in e-commerce which has further facilitated warehouse demands. In addition, with companies realizing the need for an expert to manage their supply chain leaving them to focus on their core activities, 3PL players continue to be major occupiers of the warehousing space. A Credai-Anarock report titled 'India Warehousing: A Sunrise Sector' highlights that 3PL has the highest warehouse leasing space share at 42% across 7 cities, followed by e-commerce at 18% share.

Considering friendly business policies, industrial developments, and economic tailwinds, the Indian manufacturing sector too is buoyant. India's quest to become a global manufacturing hub has thus garnered huge interest in the warehouse market from global and domestic institutional investors. Major global funds have invested with warehousing developers and operators to expand their reach and regional footprint. Apart from manufacturing, sectors like organized retail, automotive, IT, cold storage, telecommunications, and pharmaceuticals/life sciences have also evolved drastically, driving up strong demand leading to organic growth of the warehousing sector.

Fulfilling the necessary requisites, there is a preferential upsurge in Grade A warehousing facilities. This transformation towards sophisticated state-of-the-art warehousing has increased the average size of Grade A warehouses by 2x in India. According to Knight Frank's 'India Warehousing Market Report 2022', the rising trend of Grade A development continued in FY22 with developers focusing on higher grade park development compliant with contemporary norms and the higher throughput requirements of businesses today.

Furthermore, the rising wave of consumerism has moved beyond tier 1 markets and is evident in tier 2 & 3 cities as well, given the increased internet penetration, rising disposable incomes, a young, educated population, and a

desire for a higher standard of living. Hence, for rapid deliveries to end users, businesses are moving closer to the consumption centers and in-city warehouse space is gaining importance.

The sector also has the potential to shift towards the multi-storey warehousing on the back of the increasing demand from the e-commerce sector to be located close to their consumer base and to efficiently utilize the land area. For further optimizing efficiency and catering to present-day business requirements, smart warehouses integrated with technology and automation are witnessing a boom in demand. Automation systems like conveyors, auto-packaging & labelling, intelligent lighting systems enables warehouses to be managed efficiently and effectively. Digital as well as physical process automation like warehouse management system, mobile scanning devices, digital barcoding and RFID, IoT Sensors, etc. collectively improve operations and minimize human error.

With India announcing its net-zero targets and sustainability becoming increasingly important, integrating green logistics and green channels for supply chain management into warehousing is crucial. Along with meeting the environmental, social & governance commitments, projects that meet ESG standards are experiencing easier planning processes, tenant retention, investor trust, and an extra edge over their competitors. Thus, developers are considering ESG parameters at the time of the master planning, designing, and construction stage to avoid higher costs for future revamping.

Furthermore, the government propulsions with the 'Make in India' initiative along with systematic reforms like the GST rollout, tax benefits to FDI investments, accordance of infrastructure status to the sector, and focus on multi-modal logistics parks have made investors keen to explore and invest in this asset class. The recently announced National Logistics Policy also seeks to complement the PM Gati Shakti National Master Plan and proposes a framework to ensure faster first and last-mile connectivity, reduce costs, and increase global competitiveness. The unified and digitized approach will not only usher efficiency in logistics operations but also pave inroads for investments.

Looking at the tremendous expansion, India will need to create adequate supply to meet an absorption of ~223 MSF of Grade-A warehousing demand over the next 3 years, as stated in a Credai-Anarock report. The report also mentions that this will require an equity investment of ~USD 3.8 bn to support this scale of development. Currently, the sector has dry powder of USD 900 mn from existing commitments - this signifies a latent investment opportunity of further USD 2.8 bn in warehousing in the near future.

With this enormous potential due to the growing demand coupled with government's policy push, the sector is undoubtedly at an inflection point and will play a significant role in achieving India's vision of becoming a USD 5 trillion economy by FY25.

Source: [timesofindia.indiatimes.com](https://timesofindia.indiatimes.com)

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# HOW ARE WAREHOUSING COMPANIES IN INDIA PAVING THE WAY FOR SUSTAINABLE LOGISTICS?

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**S**ustainable logistics has become increasingly important in recent years due to the negative impact of logistics activities on the environment. **Warehousing companies in Kolkata** and other cities in India are taking proactive measures towards sustainable logistics, including **warehouse in Dhulagarh**, and **3PL logistics companies in Bangalore**, and this article will explore their efforts in detail.

**Implementing Green Technology : Warehousing companies in Kolkata** and other cities in India, like the **warehouse in Dhulagarh**, are increasingly implementing green technology in their operations. Green technology refers to technology that reduces environmental impact by minimizing the use of energy, water, and other resources. One of the most common green technologies used in warehousing is solar panels, which generate clean energy and reduce reliance on non-renewable sources. For example, **warehousing companies in Kolkata** have installed solar panels on their roofs, including the **warehouse in Dhulagarh**. Another popular technology is energy-efficient lighting, which not only reduces energy consumption but also reduces heat generation, leading to lower cooling costs. 3PL logistics companies are also adopting similar green technologies to reduce their carbon footprint.

**Eco-Friendly Packaging :** Eco-friendly packaging is another important aspect of sustainable logistics. **Warehousing companies in Kolkata**, including the **warehouse in Dhulagarh**, are increasingly adopting eco-friendly packaging materials such as biodegradable plastics, paper, and cardboard. These materials not only reduce waste but also reduce the carbon footprint of logistics activities. A specific example of this is Mumbai-based warehousing company, Express Roadways Pvt. Ltd., which has eliminated the use of single-use plastic in its operations. Warehousing companies in India are also following suit and promoting eco-friendly packaging in their operations.

**Waste Management :** Waste management is an essential component of sustainable logistics, and warehousing companies in India, including the **warehouse in Dhulagarh**, and **3PL logistics companies in Bangalore** are taking steps to reduce waste and promote recycling. One of the ways this is achieved is through the implementation of waste segregation and disposal programs. These programs ensure that waste is disposed of in an environmentally responsible manner, with waste being separated into different categories such as organic, recyclable, and hazardous waste. **Warehousing companies in Kolkata** and other cities in India are also adopting composting, where organic waste is converted into compost that can be used for gardening or farming.

**Collaborative Efforts Towards Sustainability :** Warehousing companies and 3PL logistics companies

**in Bangalore** are collaborating with other stakeholders in the logistics industry towards sustainable logistics. One example of this is the partnership between Flipkart and Mahindra Logistics, where the two companies are working together to reduce their carbon footprint by adopting electric vehicles for logistics operations. Another example is the collaboration between Mahindra Logistics and the Indian Railways, where the two entities are working towards reducing road transportation by increasing the use of railways for logistics activities.

**Government Policies and Regulations:** The Indian government has introduced several policies and regulations aimed at promoting sustainable logistics. For instance, the Ministry of Environment, Forest, and Climate Change has implemented the "Extended Producer Responsibility" policy, which requires manufacturers and importers of goods to be responsible for the disposal of their products. In addition, the Ministry of Road Transport and Highways has introduced fuel efficiency standards for commercial vehicles, which encourage the use of fuel-efficient vehicles for logistics activities. Warehousing companies are adapting to these policies and regulations to ensure compliance and promote sustainable logistics practices.

**Future of Sustainable Logistics in India :** Sustainable logistics is not only important for the environment but also for the growth of the logistics industry in India. **Warehousing companies in Kolkata** and **3PL logistics companies in Bangalore** are at the forefront of sustainable logistics, and their efforts are likely to set a precedent for the rest of the industry. By adopting green technology, promoting eco-friendly packaging, implementing waste management programs, collaborating with other stakeholders, and complying with government policies and regulations, these companies are paving the way for a more sustainable future.

**Conclusion : Warehousing companies in Kolkata**, including the **warehouse in Dhulagarh**, and **3PL logistics companies in Bangalore** are taking significant steps towards sustainable logistics. Their efforts towards green technology, eco-friendly packaging, waste management, collaborative efforts, and compliance with government policies and regulations are commendable. These companies are leading the way towards a more sustainable future for the logistics industry in India and serve as an inspiration for other companies in the industry. With more and more companies adopting sustainable logistics practices, we can hope for a better future for the environment and the logistics industry in India.

Source: [expressroadways.in](http://expressroadways.in)

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# INDIAN WAREHOUSING INDUSTRY SEES RAPID SURGE IN WAREHOUSE RENTS IN 2023

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India's Warehousing Industry has seen manifold evolution from an unorganized sector to the full-fledged operational sector of the national economy. As this sector is playing the essential role in keeping a steady drive of the supply chain of businesses, the demand for warehouses has been witnessing a healthy incline. The development of **3PL** companies, a supported expansion in demand driven by expediting the manufacturing venture and forceful rise in ecommerce business have all led to rising warehousing rental in India's logistics industry. According to the survey conducted by JLL India in the year 2022, the Indian Warehousing segment is expected to record the highest ever absorption this year. Remarkably, the sector has recognized itself as one of the most resilient asset classes. The scaling in warehouse rental has impelled the country's metropolitan cities including Mumbai, Bangalore, Delhi NCR into the list of top 10 logistics markets of Asia Pacific region.

## **Mumbai Tops the List of Asia Pacific Locale**

As far as annual rental rise in these urban cities, Mumbai came in the 6th Spot on Asia Pacific Locale. The city's warehouse rental rates in 2022 enhanced by **9.3%** from a year earlier, as per information published in Knight Candid India. In the year **2023**, an extra 1.1 million square feet of warehousing space is expected to open up in the Mumbai region. The Indian warehousing market has seen a sound ascent in rentals on the rear of vigorous development in demand during the year. The manufacturing and 3PL area were the significant developments in demand during the year. The manufacturing and 3PL areas were the significant development drivers in 2022 and ought to support energy in 2023 too.

## **Bangalore Positioned Eighth in Warehousing Rents**

The warehousing market will probably answer the expanded base level assumption from the occupiers as well as a growth perspective for demand, which will cause the strong lease development seen in 2022 across all business sectors following stagnation. The Crumbling opinions brought about bad rental development, which has been interesting since the pandemic. Excessive loan fees and inflation are elevating organizations to reevaluate or solidify their stock. On the potential front, The industry glimpsed the solid demand for cold chain offices, particularly in Asia Pacific,

as buyers keep on leaning ecommerce platforms. Close by the deficiency of value supply, logistics rents are as yet expected to fill in 2023, though restrained. Among other Indian urban communities, Bangalore positioned eighth in the Asia-Pacific logistics markets in view of yearly rental development.

## **Rental Cost in Delhi rises by 6.4 Percent**

As per the survey published in leading daily in 2022, the rental costs in the city expanded by 6.4%. In 2023, an extra 0.5 million square feet of warehouse space is expected to open up in the city. With a 5.9% increment in month to month rentals, Delhi-NCR was positioned 10th in the district. In 2023, an extra 1.1 million square feet of warehousing space is expected to be made accessible in the city. The standpoint for rentals is great for each of the three Indian urban communities in 2023. in the next few years, it is guessed that the warehousing and logistics area of the housing market, which has shown to be generally versatile to the shudders of Coronavirus, will proceed to develop and draw greater speculation.

A good regulatory climate, upheld by the government through changes and strategy, has started to increase foundation spending in India, which has expanded demand for present day warehousing in general. Because of the forceful development of ecommerce business and the ascent of 3PL firms, the warehousing area is expected to record the most noteworthy truly warehousing adaptation this year.

Owing to consumption shifts, infrastructural developments, and increased internet penetration, e-commerce players are redesigning the supply chain with a greater emphasis on last-mile deliveries and are moving closer to consumption centers. As the business models shift towards quicker deliveries, the demand for in-city warehouses is also witnessing a rise. Companies have understood the importance of having a real-time pulse of the market and are investing in Grade A warehousing facilities in smaller cities. This has helped them cater to the rapidly increasing customer base in tier 2 and 3 cities as well.

Source: linkedin.com

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# 'MAKE IN INDIA' TO DRIVE WAREHOUSING DEMAND IN THE COUNTRY

**ABHIJIT VERMA, FOUNDER & MANAGING DIRECTOR,  
AVINYA LOGISTICS & INDUSTRIAL PARKS.**

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**B**y virtue of possessing the seventh largest landmass in the world with abundant natural resources and links to some of the oldest and most modern supply chains, India is on the path to becoming the manufacturing engine of the globe. This spells a huge opportunity for domestic and global giants who now view India as the new epicentre of their global operations. Initiatives such as Make-in-India, Digital India, Smart Cities and Production Linked Incentive Scheme, the rise of Internet commerce and the implementation of the Goods and Services Tax (GST) have further opened up opportunities for manufacturing in India.

To ensure the success of Make in India, a robust warehousing and logistics infrastructure becomes imperative to create a thriving manufacturing sector. This allows fast and seamless movement of goods across the country while ensuring their quality remains intact with the presence of a modern warehousing infrastructure in India. According to an industry report, the Indian warehousing market pegged at Rs 1,206.03 billion in 2021, is expected to grow to Rs 2,872.10 billion by 2027, expanding at a CAGR of 15.64%.

From godowns to warehouses: The transformation of Indian warehousing industry Till a few decades ago, Indian businesses solely relied on traditional storage infrastructure known as Godowns for all perishable and non-perishable items which led to a loss in the quality of products and a delay in product movement. The E-commerce revolution since the early 2000s along with evolving government policies led to a significant increase in the demand for modern tech-enabled warehousing infrastructure in the country to enable faster movement of goods for customer delight and a reduction in logistics costs for the companies. From smaller warehouses of under 50,000 square feet, today there are large warehouses or fulfilment centres ranging from 1.5 lakh square feet to 5 lakh square feet and even going up to 10 lakh square feet, signalling the ushering of large warehouses in the country.

The transformation has not just happened on the infrastructure front but also on the technology front with innovations happening on inbound, quality check, packaging and processing of the product. These have been complemented by the introduction of long conveyor belts, and automated robotic systems where man and machine work together. This is enabling

greater efficiencies in operations which are bringing goodness across the value chain for companies and customers alike. While the customer is receiving its shipment faster, companies are able to reduce their logistics, and overhead costs and bring fiscal discipline.

Furthermore, this is creating numerous employment and entrepreneurship opportunities across the country with the growing demand for trained workforce, technology providers and allied services providers such as trucking, security, food and beverage partners. This also assumes significance as the development of this infrastructure is occurring in the city outskirts which is driving increased economic activity for the local residents and transforming the region.

Landowners turn developers with the warehousing revolution The large-scale development of modern, tech-enabled warehousing in India is not easy to fulfil due to the lack of industry expertise and fragmented land ownership across the country which resides with small, medium and large landowners. With a majority of the land being agricultural, the average land holding in India is 1.1 hectares and it becomes important to empower all small landlords and aggregators across the country to become entrepreneurs through the development of quality warehousing infrastructure. This will play a pivotal role in further expanding the burgeoning warehousing infrastructure development in the country which is currently limited to the top 8-10 cities only.

Furthermore, it will enable local landlords and aggregators to acquire the necessary skill sets and knowledge to attract the right clients and make the right use of their real estate assets as India looks forward to becoming a \$5 trillion economy. This, complemented by the rise of industrial and warehousing consulting firms in India bodes well for this fast-emerging sector. As we look forward to the next decade of India's rapid growth, the role of warehousing will be extremely important to support emerging sectors while enabling established industries to bring efficiencies in their operations.

The views and opinions expressed in this article are those of the author and do not necessarily reflect the views of Indian Transport & Logistics News.

**Source:** [www.itln.in](http://www.itln.in)

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## TECHNOLOGY TRENDS IN WAREHOUSING IN 2023

SUDEEP MEHROTRA, MD  
ALVAREZ & MARSAL

Consumption patterns are rapidly evolving across the globe. As a result of these changes, the warehousing industry is witnessing the emergence of newer trends and ways warehouses operate, including processes like storage, picking, packaging, and shipping. To that end, the warehousing sector must quickly adapt to keep up with the increasing demand for a robust supply chain. Let us look at some of these trends and technology upgrades that players in the warehousing sector must adopt to stay relevant.

**Multi-user warehousing:** As opposed to traditional models of single-client or built-to-suit warehousing, companies are now shifting towards multi-user warehousing. The flexibility offered by multi-user facilities helps split operational and labor costs between all tenants – reducing the company's expenses on these accounts. This also allows tenants to sign more flexible, shorter-term contracts as opposed to single-tenant warehouses that usually enter into multiple-year leases.

**Rise in the B2C channel:** With more customers using ecommerce platforms to make purchases, warehouses are having to adapt to multi-channel inventory management. They must now manage B2C along with B2B inventory, thus acting as more than just middlemen between wholesalers and retailers. For B2B clients, warehouses deliver a large amount of inventory to a single or a few locations. With retail ecommerce, they need to ship smaller lots to a large number of residences. With same-day delivery becoming popular, the need for velocity has risen. Due to these changes, warehouses are finding the need for suitable management systems for these complex picking and shipping patterns.

**Adopting verticalization in storage:** Warehouses in large cities and metros must deal with elevated cost of real estate. Increased business means the need for more space. Creating vertical storage with the help of racks and vertical carousels can solve this problem. This also contributes to building economies of scale. Warehouses now understand the need to upskill their workers, signaling the end of cheap labor and making better ergonomic sense.

**Optimizing energy usage:** Finally, with rising energy costs eating into margins, optimizing energy usage becomes important. Modernizing traditional equipment, although a big capital investment upfront, can not only help optimize energy use but also make operations more efficient. Imminent climate change has forced warehouses to look at sustainable solutions like skylights to utilize natural light and roof-top solar panels.

With the rise of these trends, technology in warehousing is seeing changes in three key areas:

**Digital/IT:** Warehouses must be equipped with reliable warehouse management systems, capable of interacting with multiple enterprise resource planners. This will help optimize the warehouse layout depending on the flow of

inventory. Increased flexibility is important here, with storage and other areas of a warehouse readapting to changing client demands.

There is a greater need to increase warehouse visibility. With customers expecting faster deliveries, it is crucial to know exactly where a product is from the time of unloading to when it is shipped. WMS can provide real time quality data, helping raise visibility.

Tools to forecast demand accurately can help in better managing inventory and planning production cycles so that a rise in demand for a product can be met adequately without letting excess inventory sit on shelves. Inventory may be classified as raw material or finished goods, with bar codes and RFID tags increasing inventory visibility and control. Improved pick accuracy also makes warehouse operations more efficient.

**Automation:** The process of picking can be made much easier if it is aided by automation. As per industry estimates, cobots or collaborative robots can increase picking speed by 2x-3x. Robots don't need breaks, can be integrated into the WMS and if one malfunctions, it can be replaced without hindering operations. Automated storage and retrieval systems can also help make warehouses smarter.

Wearable technology is becoming popular as it quickens processes and increases accuracy. Wearable computers with sensors make picking less cumbersome. Smart glasses can make navigation easier for workers while picking products, and voice headsets operating on voice command can pick the required products without the need to scan labels.

**IoT and AI:** Smart warehouses install sensors in every area of the warehouse that help process control systems analyze different processes and check for possible fluctuations. Managers usually preset parameters for each process in these systems; any anomaly in action can then be flagged and corrected.

Warehouses are also leveraging video analytics to monitor the behavior and flow of workers and machinery. Video analytics can be used to implement safety measures in the warehouse where suspicious behavior such as loitering in restricted areas can be flagged. It can also be used to measure the flow of people in certain areas of the warehouse at certain times and help in smoothening out processes.

In conclusion, future-ready warehouse operators keep up with the competition by implementing new technologies that cut costs, increase efficiency, enhance agility, and increase profits.

Source: [www.constructionweekonline.in](http://www.constructionweekonline.in)

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# THE IMPORTANCE OF DARK STORES FOR THE ECOMMERCE INDUSTRY

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**I**ntroduction: In today's fast-paced digital world, the eCommerce industry continues to thrive, revolutionizing the way we shop. One key innovation that has gained significant importance is the concept of dark stores. Dark stores, also known as ghost stores or micro-fulfillment centers, are dedicated warehouses or physical stores that solely cater to online order fulfillment. In this blog, we will explore the growing significance of dark stores and their impact on the eCommerce industry.

## Dark Stores Impact on Ecommerce Industry



**Enhanced Order Fulfillment Efficiency:** Dark stores play a pivotal role in enhancing order fulfillment efficiency for eCommerce businesses. By operating exclusively for online orders, dark stores eliminate the challenges associated with managing inventory for both physical stores and digital platforms. Dedicated staff can focus solely on picking, packing, and shipping orders, leading

to streamlined processes and quicker delivery times. Dark stores are strategically located in urban areas, ensuring proximity to the customer base, which facilitates faster order processing and enables same-day or next-day deliveries, boosting customer satisfaction. It is important to note that dark stores are not accessible to the general public and are often not accessible to anyone but those who work in these dark stores.

**Optimized Inventory Management:** Another crucial aspect of dark stores is their ability to optimize inventory management. Unlike traditional retail stores, dark stores can be designed solely based on order volumes and patterns, allowing for efficient storage and organization of products. With accurate real-time inventory tracking systems in place, eCommerce businesses can prevent stockouts and overstocks, reducing operational costs and maximizing revenue. Additionally, dark stores can leverage data analytics to identify popular products and adjust inventory levels accordingly, further enhancing operational efficiency.

**Seamless Click-and-Collect Experience:** Dark stores also help in ensuring a seamless click-and-collect experience,, which has gained immense popularity among consumers particularly with Quick Commerce, where orders are delivered in as few as ten minutes. Orders can be scheduled for delivery within a preferred delivery time frame that is set by the customer.

**Conclusion:** Dark stores have revolutionized the turnaround time of fulfillment of orders from what used to be a next day delivery to what is now 30 minutes or less in Quick Commerce and delivery within a defined time frame preferred by the customer. Dark stores have contributed to the growth of same day delivery and Quick Commerce, particularly in the urban centers, where the customers would like their products delivered quickly and have access to items they need day to day or on demand around their busy schedules. In a dynamic eCommerce landscape, newer models for fulfillment using models such as Dark Stores help retailers and brands to reach the customers faster and in a time frame that they prefer leading to expansion of online sales.

Source: [www.vinculumgroup.com](http://www.vinculumgroup.com)

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# TOWARDS A STRONG LOGISTICS & WAREHOUSING ECOSYSTEM

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*The policy reform initiatives like PM Gati Shakti Programme to boost road and rail freight and Atmanirbhar Bharat Programme to provide impetus to manufacturing, are contributing to the promising growth of the Logistics sector. The National Logistics Policy (NLP) launched in 2022 is helping to create a tech-savvy, integrated and cost-efficient eco-system to ensure quick last-mile delivery and bring down logistics costs in line with the global standards.*

**T**he success of the logistics growth story is clearly evident from the World Bank's latest Logistics Performance Index where India has moved up six places to occupy the 38th ranking, with average dwelling time for containers reduced to 3 days, at par with Singapore and much better than some of the industrialised countries.

The Industrial & Logistics (I&L) sector has recorded the second highest leasing activity after 2019 with 31.6 msf of space take-up in 2022 and 8% YoY growth, despite global headwinds. According to a CBRE report, half of the annual space take-up is driven by 3PL players, while the engineering and manufacturing segment has clocked a space pick up share of 16%. The space take-up was dominated by small-sized transactions of less than 50,000 sqft, having a share of 40%. With sustained demand for investment grade assets, rental values also went up significantly. In 2023, project completions are expected to exceed the 2022 levels to be in line with space take-up during that year.

The funding boost to the sector is also contributing to its significant growth, with logistics-focused funding giving a big push. Recently, Welspun One Logistics Parks (WOLP), the logistics fund and development management platform of the Welspun Group, achieved the first close (Rs 500 crore) of its second AIF Fund, targeted to raise Rs 2,000 crore. JSW Infra, a commercial port operator with installed cargo capacity of 153.43 million tonnes per annum, is coming up with a Rs 2,800 crore IPO to fund

expansion plans. According to Red Seer, the direct logistics spending is expected to achieve a 9-11% CAGR of USD 365 billion by 2025-26, up from USD 216 billion in 2019-20.

Technology adoption will be a key to the high growth of logistics as NLP is promoting tech adoption, and logistics firms are betting big on technology. A study by HERE Tech (a mapping and location tech company) reveals that one-third of logistics firms plan to invest in drones, 31% in cloud computing and 30% in Internet of Things and in blockchain. About 51% of logistics companies want to invest in a logistics asset tracking solution aimed at highlighting areas of inefficiencies for reducing costs, and 49% want to ensure competitive advantage. Investments in future technologies, while giving a competitive advantage and improving operational efficiency, will increase the revenues of companies.

As the Indian government focuses big time on infrastructure connectivity through road, rail, air and waterways, the logistics sector is going to benefit immensely. The National Rail Plan aims to boost rail share in freight movement to 44% during the next 25 years, up from 25% in 2022. In FY23, railways invested Rs 1 trillion in augmenting capacity of the network, including commissioning of new lines and doubling/multi-tracking of 5243 kms of track. As per ICRA, road logistics will get a high single digit boost in FY 24. About 200 kms of critical infra gap projects for port connectivity via roads are going to be executed in FY2023-24. As many as 60 road and 42 rail projects have been identified as critical infra gap projects. Domestic air cargo business is seeing an upsurge as airlines are expanding capacity and seeking global partnerships. The government is also developing 23 river systems for cheaper cargo movement.

The flagship Atmanirbhar Programme of the Government with PLI incentives is giving a push to manufacturing, and in turn boosting logistics. The Uttar Pradesh Government has launched an

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ambitious programme to develop manufacturing and logistics clusters spread over 600 acres, flanking expressway projects. Bigger players like Gati are making most of the Atmanirbhar Bharat Programme to realize their ambitious growth plan. More than half a dozen Multi Modal Logistics Parks (MMLPs) will be bid out in the current financial year at a private investment of up to Rs ~6000 crore to give a major boost to the logistics sector. Another Rs 75,000 crore has been allocated for 100 critical infra projects for priority development in FY 24 under the PM Gati Shakti Master Plan.

It may be noted that as per CII estimates, the higher logistics cost is causing a competitiveness gap of USD 180 billion for India and this is likely to rise to USD 500 billion by 2030. According to HSBC report, high logistics costs and other bottlenecks accounted for half of the slowdown in the country's exports. In this backdrop, all the mega policy initiatives of the Government will help realize the NLP goal of bringing down logistics costs from 13-14% of GDP to a single digit (preferably 7-8%), And this new high growth ecosystem of logistics will give a big boost to the economy.

**Sridhar Narayan, Group Director & CEO, Infrastructure, Hiranandani Group**

I see a large growth not just in logistics but also industrial real estate due to the heightened manufacturing activity. Foreign companies will be moving to India to make it a manufacturing hub which will provide a big push to logistics and warehousing. New consumption centres are emerging in Tier 2-3 centres. However, for cluster development of industrial parks, we have to bring down logistics costs from double digit to single digit. Besides land cost, aggregation and land contiguity pose a challenge. A policy push is needed in the form of land acquisition by the Government and re-issue this land for warehousing and industrial hubs to manage costs and promote ease of doing business for investors.

Today, customers want the best of warehousing but at a low cost. They are paying godown rates for modern warehousing. As the biggest logistics cost (70%) is transportation, people are using the hub-and-spoke model and in-city warehousing. The way forward is to innovate. Considering that land cost is as high as Rs 2.5 crore per acre, technology can play a big role to help reduce the cost and increase

revenue. In fact, technology coupled with design solutions is the key. We are looking at warehousing not just as a pure real estate play, but as warehousing assets.

**Ejaz Nathan, VP & National Head leasing Solutions, Welspun One Logistics Parks**

Talking of dynamics of logistics and warehousing, supply is not matching absorption in warehousing. Land challenge is high but if developers choose the right land, 60% of their problem will be solved. The most important thing about warehousing is location. Access to land, size, shape, and the ecosystem around it hold significance.

Today, the increase in land and construction cost is a reality. The key is how we understand the whole business of logistics and warehousing and meet challenges on the end cost. At Welspun, we do not have a square footage approach, rather, we go by understanding the requirements of clients and educating them about cost-effective solutions.

Right product at the right price in the right market is the key. Also, we have to choose the right clients who are prepared to pay higher rentals for quality assets. We fetch 25% higher rentals. Today, Bhiwandi, Lucknow, Bhavnagar markets are commanding higher rentals. The market is seeing a trend for bigger warehouses of 3 lakh sqft in size compared to the earlier trend of warehouses of 1-1.5 lakh sqft.

**Avnish Sharma, Partner-Real Estate, Khaitan& Company**

From the perspective of capital, in 2006, very few players were looking at warehousing as they were risk averse. But for the last 7-8 years, logistics and warehousing has emerged as the second highest investment segment in real estate. Majority of the investment is coming in equity because of infrastructure status - majorly to buy land and also as construction finance.

Despite land acquisition challenges being there, warehousing holds promise. Execution risk is less compared to residential and commercial real estate. Moreover, there is a dearth of Class A warehousing and only a few players like Indospace are there.

Source: [www.nbmcw.com](http://www.nbmcw.com)

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## WAREHOUSES OF THE FUTURE: KEY DRIVERS AND DEVELOPMENTS IN THE LOGISTICS SECTOR IN INDIA

BUSINESS DEVELOPMENT, LOGISTICS AND INDUSTRIAL, JLL

The Indian warehousing sector has come a long way from the “Godown Era” to world-class state-of-the-art warehouses of the future. Despite the external risks and adverse conditions posed by Covid-19, socio-political risks and supply chain recalibration, warehousing in India has emerged a clear winner. A glimpse of the status of warehousing in the country...

**Supply update :** Supply coverage in the top eight cities in 2022 has reached around 330 million sq. ft, and is projected to cross 470 million sq. ft by 2025. Grade A warehousing supply/stock is taking centre stage, with the current stock standing at 161 million sq. ft in 2022, up from 47 million sq. ft in 2016, registering a compound annual growth rate of 28 per cent since 2016. Additionally, diminishing vacancies of Grade A warehouses to 6.6 per cent is a clear indication of tenants going in for high-class/ Grade A warehousing.

**Warehousing in major cities :** At 81 million sq. ft, Delhi-NCR accounts for a major share of the country's warehousing supply – almost 25 per cent placing it among the top eight cities. Mumbai has the second highest supply with 59 million sq. ft. However, Grade A vacancies in the cities are among the lowest in the country. Bengaluru is the third largest market with 42 million sq. ft of supply and the lowest vacancy at 2 per cent in Grade A spaces. Pune and Chennai have a dominance of Grade A spaces, driven by light manufacturing, apart from warehousing. Kolkata serves as the major hub in eastern India with 31 million sq. ft of warehouse space. Hyderabad and Ahmedabad together offer a supply of 41 million sq. ft.

**Demand update :** The top eight cities in India hit an all-time high demand/net absorption of 41 million sq. ft in 2022, indicating the V-shaped recovery post Covid-19. Tenant preference for Grade A warehouses has been rising, with 68 per cent of the net absorption attributed to it. Gross absorption in 2022 stood at 49 million sq. ft, which is inclusive of net absorption, renewals in existing spaces, churnings and vacated spaces.

**Sectoral absorption :** The top three sectors to grab space in 2022 were third-party logistics (3PL) (43 per cent), auto and engineering (20 per cent), and fast-moving consumer goods (FMCG) and retail (16 per cent), adding to almost 80 per cent of the annual take-up. 3PL companies took up the majority share in the warehousing space, with 43 per cent in 2022, up from 31 per cent in 2021. E-commerce companies have been in slow mode in 2022, down to 4 per cent in 2022 against 25 per cent in 2021 as most of them have been focusing on increasing efficiency within their existing warehouses. Auto and engineering companies were a saving grace, driven by strong manufacturing tailwinds with almost 20 per cent of deals, up from 13 per cent

in 2021. FMCG and retail companies maintained their position with a 16 per cent share of all transactions.

A few of the notable transactions in 2022 in which JLL played a role include India's largest warehousing deal of the year involving 1.1 million sq. ft with Skechers; 0.68 million sq. ft with Microplastics, India's largest toy manufacturing plant located in Hosur, Tamil Nadu; followed by 0.32 million sq. ft with HTL in a furniture manufacturing deal in Pune; 0.12 million sq. ft for the company's entry in Kolkata/east India; 0.25 million sq. ft for a warehouse in Bhiwandi, Mumbai for Maersk; 0.2 million sq. ft with Simple Energy, an electronics two-wheeler manufacturing plant in Hosur; and 0.09 million sq. ft with Veco Precision for manufacturing of micro-precision equipment in Pune.

**Rental scenario:** In India, average rentals for Grade A warehouses in the top eight cities stood at Rs 23 per sq. ft per month. The year-on-year growth rate for 2022 was 9 per cent. Similarly, the average rentals for Grade B warehouses in the top eight cities stood at Rs 19 per sq. ft per month. The 2022 y-o-y growth rate for Grade B was 7 per cent.

**Emerging trends :** The few growth drivers defining the warehousing sector in India include built manufacturing leasing becoming an easy entry route for non-polluting manufacturing with 15-20 million sq. ft of manufacturing leasing in 2021 and 2022. As per a JLL study, this is due to rents/pallet position in Grade A being approximately 25 per cent less than Grade B.

Technology adoption is another growth driver. Investments in technology are now considered “good cost”. Investments in India are taking place for automated storage and retrieval systems, automated conveyor systems and automated sortation systems. Environmental, social and governance norms and sustainability is charting a new course for warehousing in India. ESG is being considered to minimise carbon emissions. Sustainable construction materials are being explored for interiors, cool roofing and solar panels for exteriors, and wastewater treatment plants and rainwater harvesting for infrastructure.

**Highlights of 2022 :** The major developments of 2022 include the introduction of the National Logistics Policy. Meanwhile, the most active manufacturing sectors during the year were electric vehicles, renewables, electronics, and semiconductors. The year also featured production-linked incentives worth \$30 billion, triggering manufacturing transactions, along with increased warehouse space outsourcing to 3PL.

Source: indianinfrastructure.com



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# HOW TO KEEP YOUR WAREHOUSE ORGANIZED

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**W**arehouse organization can often feel like an ongoing struggle. But tidy and well-organized warehouses make the entire process of receiving products, storing them, picking and packing items, and then shipping them to customers more efficient.

Unfortunately, organizing your warehouse operations and keeping them that way can be easier said than done. Each decision you make should optimize your existing space, boost productivity, deliver a better customer experience, and align with your business goals. Here are some tips for keeping your warehouse organized that you can implement.

## General Warehouse Organization



**1. Keep your warehouse clean.** : Set aside time in every shift to clean work areas. This should be part of every worker's job description. You should also designate time for organization and deep cleaning activities each week or month.

**2. Consider using lean inventory.** : When you adopt a lean inventory system, you only have the products you need to fulfill orders on hand. However, make sure you take into consideration any supply chain issues before implementing major changes.

**3. Reduce clutter.** : No matter what type of inventory system you use, get rid of the clutter in your warehouse. Products and debris in the aisles can be safety hazards, reduce morale, and lead to massive inefficiency.

**4. Assess space and shelf utilization.** : Understand the ways your warehouse is using its space so that you can make improvements. Specifically, how are containers and shelves being utilized as they relate to the various traffic patterns throughout the building?

## Warehouse Layout

**5. Reevaluate your warehouse design.** :



If your business is growing, as most that handle online sales are, it's probably a good idea to reevaluate your warehouse design frequently. This is because what worked last year at a certain volume may no longer be efficient. You will need to revise your processes and space requirements as you grow.

**6. Prioritize your SKUs.** : Your most popular SKUs should be in easy-to-reach physical locations to reduce unnecessary work. Going along with the last recommendation, you'll want to reassess this often. Popular products can change frequently and shift with the seasons.

**7. Eliminate traffic barriers.** : Is there anything in your warehouse that is a constant barrier to shipping, receiving, or other activities? Aisles shouldn't be holding or staging areas or places to leave malfunctioning equipment.

**8. Maximize your available space.** : Rather than look around for a larger warehouse, explore ways to make better use of the space you already have. Most warehouses fail to properly use their vertical space. Adding a mezzanine or taller storage shelves can significantly add to your available space. You can also use different types of storage units, such as pallet racks and bins.

## Warehouse Technology and Labeling

**9. Leverage warehouse technology** : Most of today's warehouses are using technology solutions to gain efficiencies and a competitive edge. These solutions also help keep your warehouse organized. The best place to start is with a warehouse management system (WMS). You can then add other technology such as RFID tags and automation solutions.

**10. Use a smart labeling system.** : Manually counting inventory or warehouse assets isn't efficient. And



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barcode systems have a lot of limitations. If you want to have the simplest and most efficient labeling system possible, consider implementing RFID tags.



**11. Control your inventory.:** If you can't control your inventory, your warehouse is going to be a mess. You can accomplish this through a combination of using the right warehouse layout, a WMS, better processes, RFID tags, and some warehouse automation tools.

**12. Invest in warehouse signage. :** Once you organize your warehouse, make it simple to navigate with clear signage. Mark the aisles, shelving, rows, and various sections of your warehouse. Create a map so that it is easier to place things where they belong.

### Warehouse Receiving



**13. Plan your receiving area.**

Receiving is a vital part of your warehouse operations. A lot of errors can happen in this part of the business. To avoid problems, plan your physical space wisely. Make sure there is plenty of space to account for all of the truckloads of inventory your warehouse will receive.

**14. Create receiving policies and procedures.**

Your receiving area is a place where injuries can happen, and people can abscond with products. Create some strict receiving policies and procedures with regards to cleanliness, tidiness, and security. And then train your staff on them.

**15. Set aside a space for reverse logistics.**

Remember that you will also have a percentage of your sold products come back into the warehouse through returns, recalls, and recycling programs. If you don't set aside a staging area for reverse logistics, you can create some backlogs and wasted space.

### Warehouse Picking

**16. Make bins easier to access.**



If workers struggle to access storage bins, the picking process will take much longer to complete. In addition, there may also be an increased risk of injury if bins are awkward and hard to reach. Design your bins so that they are simple to see inside.

**17. Reduce travel time.**

Travel time inside your warehouse can easily account for 50% or more of a worker's order picking activities. By using cluster and batch order picking strategies, you can reduce some of that walking. When smaller orders are combined, a worker can handle those in a single trip.

**18. Invest in Warehouse Automation.**

When workers have to travel back and forth to a central location and handle tons of paper, things are likely to get cluttered and possibly confused. Errors will be more common due to employee fatigue, and customer satisfaction will suffer. One solution is to use picking automation solutions, such as wireless headsets and mobile carts. Workers will get order instructions via voice technology, and the system will update in real-time as the products are pulled from shelves.

Warehouses play a vital role in the supply chain. An efficient and lean warehouse will keep your business running more efficiently and provide a better customer experience. With a combination of technology solutions and better processes, your business will realize improved overall results.

Source: [www.newcastlesys.com](http://www.newcastlesys.com)

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# INDIA'S WAREHOUSING SECTOR CHECKS INTO THE FAST LANE

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**B**uoyed by the e-commerce sector and the growth of the Indian industry, warehousing in India has undergone a metamorphosis. With technological advancements, consolidation, government support, newer business models, and investment coming into the space post the pandemic, the sector may well be set for a dream run for the next five years.

Warehousing is a crucial part of the supply chain for businesses that are engaged in manufacturing, importing, exporting, and transporting of physical goods. From being mere holding places of stock or low-grade godowns, warehouses have metamorphosed into smart buildings replete with insulation, ventilation, climate-proofing, surveillance and standard safety procedures, and IT infrastructure.

From a largely unorganized, asset-heavy industry, warehousing has also undergone an evolution in India, especially after a multitude of factors like the expansion of pharmaceutical, e-commerce, and manufacturing sectors. Some growth can also be attributed to favorable government policies in recent years and an increase in the spate of institutional investments.

However, the unavailability of land, the high acquisition cost for land, and the lack of adequate warehouse infrastructure in the country are some drawbacks apart from the perennial power shortage crisis in India. As the industry expands, its growth is also set to be propelled by technological advancements like automation, robotics, and digitization. Incidentally, the Coronavirus pandemic which broke out in 2020 has only managed to accelerate the pace of development, investments, and technological advancement in the warehousing sector. However, Covid-19 and the resulting global supply chain crisis and fuel prices which impacted industries across the world have also caused a significant shift in construction costs, resulting in slightly higher material costs and supply chain disruptions leading to an increase in costs.

The pandemic and the ensuing e-commerce wave which made consumers move towards online shopping from discretionary to essentials ensured that warehousing and logistics emerged as the most preferred real estate asset class for institutional investors who chose them over commercial office segments that were traditionally more favored. Up until 2020, the warehousing market in India was valued at Rs 1050 billion in 2020. The segment reportedly attracted an all-time high of \$743 million (more than Rs 5,500 crore) in investments, accounting for more than half of the \$1.36 billion attracted during the second quarter of 2021.

## BY THE NUMBERS

Global property consultancy Knight Frank India in their India Warehousing Market Report 2021 estimated that the annual warehousing transactions for the top eight Indian cities (primary markets) will grow at a compound annual growth rate (CAGR) of 19% to 76.2 mnsqft (7.08 mnsq m) by the financial year (FY) 2026 from 31.7 mnsqft (2.95 mnsq m) in FY 2021. As per the projections shared by the consultancy for the next 5 years (FY 2022 – FY 2026), the e-commerce segment is expected to take up significant space estimated to be 98 mnsqft (9.1 mnsq m) approximately registering an increase of 165% from the preceding period of FY 2017 – 2021.

Third-Party Logistics (3PL) and other sector companies are expected to take up 56% (83 mnsqft) and 43% (53 mnsqft) more space respectively, over the same reference period. While the warehousing industry in India is currently centered around Tier-1 cities like Mumbai, Kolkata, Bengaluru, Chennai, Delhi-NCR, Pune, and Hyderabad but with rising demand from e-commerce and quick commerce, it looks like tier 2 and 3 cities are also seeing some of this growth now. As per the report, warehousing demand in secondary markets has grown 31 percent y-o-y compared to a 23 percent y-o-y de-growth for primary markets, in FY 2021. Among the secondary markets, Indore and Jaipur noted exponential growth of 306 percent and 219 percent respectively in FY 2021.

A significant development in the April-June 2021 period was the \$700 million deal in May when private equity major Blackstone announced the acquisition of Embassy Industrial Parks, a JV of Warburg Pincus and Embassy that controls 22 million sqft of Grade-A warehousing in major industrial hubs including Bangalore and Delhi. Earlier this April, FM Logistic, a French third-party logistics (3PL) company, opened its first owned multi-client facility in Farrukhnagar, Haryana, which is part of the \$150 million investment plan it announced in March 2019. Later in May 2022, leading Indian real estate developer Lodha announced a \$1 billion 'Green Digital Infrastructure Partnership' with real estate industry leader Ivanhoe Cambridge and global private investment firm Bain Capital. Their first project is a 110-acre logistics and industrial park development at Palava, Mumbai.

## EMERGING TRENDS IN WAREHOUSING SPURT IN GRADE A FACILITIES

In its April report earlier this year, Savills India estimated that in the first quarter of 2022, Mumbai and Kolkata witnessed the highest construction costs at Rs 2,115 per sq. ft. for grade-A warehousing space and Rs 3,295 per sq. ft. for a general manufacturing

facility. This was followed by Pune which saw the costs at Rs 2,100 and Rs 3,265 per sq. ft. respectively. Construction costs have increased due to rising material prices such as crude oil, steel, aluminum, cement, labour, equipment rental costs, and costs of plumbing and fixtures. Additionally, Covid-19 has caused a significant shift in construction costs, resulting in slightly higher material costs and supply chain disruptions. When compared to its international counterparts, general manufacturing in Indian cities range from \$ 453- \$465 per sq. m whereas for Grade-A warehousing it ranges from \$291-\$299 per sq. m as of Q1 2022.

"The government is also planning to introduce a warehousing policy to help ease transportation and logistics costs. It aims to lay the roadmap for developing exclusive warehousing zones through public-private partnerships." Sundaresan Vaidyanathan, Welspun One Logistics Parks Srinivas N, Managing Director, Industrial and Logistics, Savills India said in a release, "Industrial and warehousing is one of the most resilient segments in India. The demand for industrial and warehousing facilities is expected to remain unscathed in the long term. We expect construction costs for industrial and warehousing projects to increase in 2022. However, the magnitude of growth is dependent on material costs, labour, equipment rental costs, interest rates, and other related costs."

### ON-DEMAND WAREHOUSING

With India's warehousing sector gradually picking up pace with massive investments, the on-demand warehousing segment seems to be growing. "Everyone is moving to the D2C model and to facilitate quick deliveries, on-demand warehousing is a must. To facilitate the consumers on time or rather before time, everyone has started adopting micro warehousing models too," Harshad Vagdoda, Head of Innovations & New Engineering, Vinculum Group told Indian Transport & Logistics News (ITLN).

There is a move towards built to suit model of warehouses says Abhijit Verma, Executive Director and CEO of Avigna Group who told ITLN, "The changing technical specifications of the client, be it in the size of the boxes due to increasing total square feet requirement from 40K on an average up to 8 lakh square feet or the height requirements changing from 8 meters to 14 meters are some of the reasons for the insistent demands towards the creation of a more 'built-to-suit' model of warehouses from the previous ready-to-move models are some of the big changes at the top of my mind."

Varun Gada, Director of Contract Logistics at the Liladhar Pasoo (LP) Group told ITLN, "E-commerce majorly supported the metros during the pandemic and during that time a lot of start-ups like Zepto, PharmEasy grew along with the advent of many dark stores. The backbone of everyone's operations is the warehouse and these players are investing a lot into automation and robotics because they need to process a large number of orders and a smaller number of orders in lesser time. And they have the deep pockets to fund the entire automation and still work at a nominal fee to acquire market share. Most of these are also asset-

light as they need to keep moving their warehouses on the basis of demand."

"Everyone is moving to the D2C model and to facilitate quick deliveries, on-demand warehousing is a must. To facilitate the consumers on time or rather before time, everyone has started adopting micro warehousing models too." Harshad Vagdoda, Vinculum Group

### PUSH FOR 3PL WAREHOUSING

The 3PL sector is likely to retain a large market share even as e-commerce and other sectors continue to outsource their warehousing and logistics requirements to them.

Ronak Shah, Executive Director, V-Trans (India) Ltd., V-Trans (India) said, "Companies are now focusing on core business products to regain the economic dip they faced and are preferring to outsource warehousing operations. This will create a huge opportunity for third-party logistics (3PL) companies that can provide them with complete logistics solutions and the scale to grow. The uncertainty due to the Covid-19 pandemic and the focus of companies on regaining the market will further push the development of the 3PL segment. The development of outsourcing will result in increased demand and growth for the warehousing industry."

"IoT, ROBOTICS, AND AUTOMATION The warehousing industry holds immense potential for adopting the Internet of Things (IoT), robotics, and artificial intelligence (AI) driven automation, and most businesses in warehousing and logistics are looking to grow by harnessing these new technologies. Shah added, "Self-governing vehicles, warehouse industrialization, predictive analytics, and smart roads are all examples of technologies that are becoming the new norm in today's world." The creation of 'smart sectors' where storage, processes, and operations would be done with higher accuracy, shorter time span, and lesser to no hazardous incidents, all adapting to the consistently changing demands and environment is slowly gaining traction. This has led to a spate of Indian and global start-ups that specialize in the implementation of the very technologies of drones and robotics in the warehousing sector and heavy investments are flowing into the implementation of automation through AI and robotics in India. Verma told ITLN "The incorporation of RFID, GPS, IoT, automated monitoring systems along with Co-robotics or collaborative robots with human intervention and the surging use and implementation of autonomous robotics, have contributed to the agility and efficiency of work in the warehouse, logistics, and supply chain management. We can also imply that digitalization and automation of processes and operations kept the industry safe from the impact of the pandemic, which despite witnessing restrictions be it in terms of supply chain or operations could still deliver and also recover, thereby establishing fulfillment of the prime objectives of technology that is speed, span, and scope." The implementation of automation and robotics is imperative for the future of the supply chain and especially in a post-pandemic 'Just in case' world. Companies are increasingly trying to strike a healthy balance between automation and manual intervention not only in terms of operations but also in warehouse

management. GubbaKiran, CEO of GubbaPharma Cold Storage said, "Gubba has already finalized its investments for Automated Storage and Retrieval Systems in its food and pharma facilities. By December 2022, our warehouses will be more than semi-automated. We are on the path to bringing world-class innovations to our facilities. We will incorporate a barcoding system for elevating the levels of accuracy in inventory, our ERP system is getting upgraded, and we are talking about IoT and a lot more." "We can also imply that digitalisation and automation of processes and operations kept the industry safe from the impact of the pandemic, which despite witnessing restrictions be it in terms of supply chain or operations could still deliver and also recover." Abhijit Verma, Avigna Group

**MULTIMODAL PARKS - NEXT BEST THING?** Multimodal parks provide a real big opportunity for warehouse developers as the volumes at these parks are going to be huge, and efficiency and technology support will enable better services. Planned infrastructure projects alongside multimodal logistics parks would help secure a drop in logistics costs from the current 14% to about 9%, observes SundaresanVaidyanathan, the Chief Investment Officer, Welspun One Logistics Parks.

**POLICY SUPPORT** In recent years we have seen a surge in infrastructure development through budget allocation as well as through private and foreign investments. As per Knight Frank's Warehousing Market Report, Indian Logistics' cost percentage of its GDP is nearly double the logistics cost of developed countries. The lack of efficient intermodal and multimodal transport systems could be considered a major contributor to the same. Therefore many industry players believe that the Indian government is working extensively to enhance the country's infrastructure, as it aims to reduce the logistics cost to less than 10% of its GDP, through various policy and project implementations. "Lack of efficient intermodal and multimodal transport system could be considered a major contributor to the same. Some of the notable mentions are the National Logistics Parks Policy, the inclusion of the logistics sector under Infrastructure by the Government, Bharatmala and the Sagarmala Project, Gati Shakti-National Modal Plan for Multimodal Connectivity, Delhi- Mumbai Express Highway, Dedicated Freight Corridors, Sanctioning of REITs, Establishment of Goods and Services Tax and Make in India Initiative to name a few. The creation and development of industrial corridors, port and road infrastructure, multi-modal connectivity, support through various initiatives, and digitalization are expected to attract better investments, improved quality of assets, cold storage, connectivity among major cities and industrial corridors, reducing logistic costs, time to travel, improved last-mile connectivity thereby making Indian business more attractive and competitive. The impact would not only benefit a single or related sector but would also affect and benefit multiple sectors," Verma tells ITLN. "Everyone is moving to the D2C model and to facilitate quick deliveries, on-demand warehousing is a must. To facilitate the consumers on time or rather before time, everyone has started adopting micro warehousing models too." Harshad Vagdoda, Vinculum Group Apart from systematic reforms like implementation of the GST and accordance of infrastructure status to the sector, it is

going through many positive changes. On the policy front, there have been multiple reforms aimed toward infrastructure development by the government, which is slated to work well for the sector SundaresanVaidyanathan told ITLN, "New programmes like Bharatmala and Sagarmala are some of the classic examples of the government spending on infrastructure projects. The government is also planning to introduce a warehousing policy to help ease transportation and logistics costs. It aims to lay the roadmap for developing exclusive warehousing zones through public-private partnerships." Vaidyanathan added, "We at Welspun One have recently signed an MoU with the Haryana Government with a total investment of Rs 1500 crores in the state and aim to explore the available government land parcel for building Grade A warehousing facilities across key warehousing micro-markets. Last December, we acquired 40 acres of land located on the Malur-Hosur road to set up a large-scale warehousing facility. This is the first of six projects as part of the MoU that we signed with the Government of Tamil Nadu's nodal agency to set up warehousing facilities across the region. The projects to be executed under the MoU are expected to bring indirect investments of approximately Rs 2500 crores to the state." Speaking on the new warehousing policy that is on the anvil, Ronak Shah added, "The idea is to curtail pollution and traffic congestion in major cities. The modern-day warehouses will build cold-storage chains which will be able to store all kinds of cargo. These amenities are estimated to be built in the outskirts of the cities so that large trucks transporting the cargo need not enter the city to unload their goods." **NEED FOR SKILLED WORKFORCE** Highlighting the need for a skilled workforce in a modern warehouse, Sanjay Tiwari, Co-founder of 21CC Education told ITLN "Specific product knowledge in warehousing and logistics is of the essence for employees. A box is not a box, i.e. what's inside matters as different products have different handling requirements, scanning requirements, packaging requirements, etc. With the changing and more stringent FSSAI and FDA requirements, it makes it even more important that employees understand what the composition of products is, what their sensitivity to temperature is, etc. The industry is scaling up and specializing at the same time, which is quite a challenge!" "Gubba has already finalised its investments for Automated Storage and Retrieval Systems in its food and pharma facilities. By December 2022, our warehouses will be more than semi-automated." GubbaKiran, CEO GubbaPharma Cold Storage Tiwari added, "We can help to close the skill gap by working directly with warehouse employees to skill them by using our digital platform. 21CC Education, in a tie-up with IndoSpace, has signed up more than thirty warehousing and distribution companies in Chennai, Bangalore, Mumbai, and Haryana, with a total of 7,500 employees. The 21CC content is being used to educate the frontline / blue-collar workers on the basics of logistics. We are helping DB Schenker do the on-boarding of all their new employees, using our app and content as well as DB Schenker's "day zero" module called 'Samvardhan'."

**Source :** [www.itln.in](http://www.itln.in)

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## QUIZ

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1. All are statements related to logistics. Which one among them is NOT true.
    - a) Logistics executes the collection of raw materials from suppliers and deliver finished goods to customers
    - b) Resources managed in logistics can be concluded as physical items only
    - c) Logistics function moves both tangible and intangible materials
    - d) Logistics manages the flow of resources between the point of origin and the point of consumption to meet customer requirements
  2. Five flows of economic activity is the contribution of
    - a) Forrester
    - b) Micheal Porter
    - c) Peter Drucker
    - d) Federick Taylor
  3. As per Hau Lees uncertainty framework a supply chain that shares resources are called
    - a) Efficient supply chain
    - b) Risk-hedging supply chain
    - c) Agile supply chain
    - d) Responsive supply chain
  4. Capability sourcing is a term related to the practice followed in which of the following organization
    - a) Amazon
    - b) 7-Eleven
    - c) Frito-Lay
    - d) Ikea
  5. The portion of the demand that the supply chain plans to satisfy based on the attributes the customer desires is known as
    - a) Dynamic demand
    - b) Implied demand
    - c) Modified demand
    - d) Specific demand
  6. \_\_\_\_\_ increased both opportunities and risks for supply chains.
    - a) Digitization
    - b) Collaboration
    - c) Synchronization
    - d) Globalization
  7. The philosophy of supply chain management is rooted in three inter-related concepts. Which of the following is NOT one among them.
    - a) Systems concept
    - b) Leverage concept
    - c) Total cost concept
    - d) Trade-off concept
  8. A measure of the supplier's lead time and the delivered quantity as per a supply plan is a measure of
    - a) Supplier capability
    - b) Supplier quality
    - c) Supplier reliability
    - d) Supplier assurance
  9. The use of common components in a variety of products to reduce inventory is talked as commonality of components. This concept is similar to
    - a) Standardization
    - b) Simplification
    - c) Consolidation
    - d) Aggregation
  10. One of the most common levers used in practice to deal with uncertainty in supply chain is
    - a) Inventory
    - b) Funds
    - c) Technology
    - d) People
- Sustainability Quiz Ans.**

1.	a
2.	b
3.	c
4.	d
5.	a
6.	b
7.	c
8.	d
9.	a
10.	b

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# THE GROWTH OF WAREHOUSING MARKET IN INDIA

KENISH SHAH, CO-FOUNDER, PROPRETURNS.

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**Warehousing spaces are in demand post-pandemic, and the industry has emerged as a resilient asset class**

The Indian warehousing market has garnered attention from global and domestic institutional investors over the years. In recent times, it has been on a high growth trajectory. Since the outbreak of COVID-19, the usage of **warehousing facilities** by e-commerce platforms has risen sharply as demand for goods has been at an unprecedented high, boosting the e-commerce market and warehousing space requirements alike. The organised food delivery segment has also grown because of the pandemic, augmenting cold chain warehousing space requirement. As a result, the warehousing industry has emerged as a resilient asset class and continues to show an uptrend within the real estate sector. A lot of capital is allocated to the technological infrastructure of the warehouse, to ensure automation and efficient operations.

Warehouse construction costs are much lower. As a result, the asset is a more affordable choice in the domain of commercial real estate. The occupancy rate for warehouses is also high because of their low cost. The tenants of a warehouse typically spend around nine to 15 years compared to commercial office leases, which have a lock-in period of around three to five years. A warehouse investment is, therefore, more reliable and stable.

## E-commerce expansion

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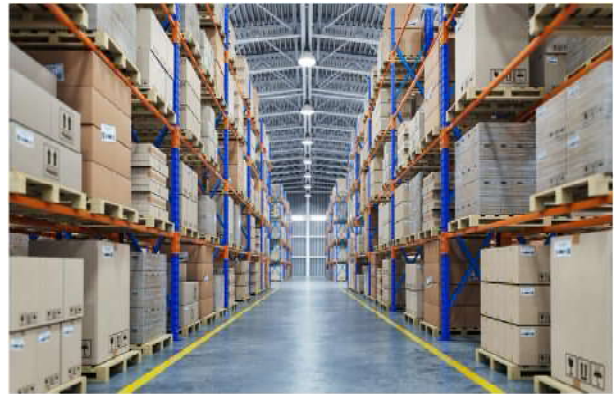
The warehousing market in India is expected to grow to <sup>1</sup> 2243.79 billion by 2026, expanding at a CAGR of 10.90%, as per the Warehousing Market in India 2022 Report published by Netscribes (India) Pvt Ltd.

The Indian **e-commerce industry** is playing a major role in this growth. Due to the pandemic-induced lockdowns, consumers started to rely on e-commerce players for the delivery of food and grocery items.

There was more focus on the same-day delivery model. Consequently, e-commerce companies are trying to stock more inventories closer to customers' locations to improve the quality of products upon delivery, and optimise efficiency. This, in turn, increases their demand for warehousing in tier-1 and tier-2 cities.

**3PL revolution** : The growth of third-party logistics is the second-largest incentive causing the rise in demand for warehouses. In 2021, the 3PL (third-party logistics) sector acquired the maximum warehousing space, succeeded by e-commerce. Due to increasing Foreign Direct Investments and relaxed policy reforms, the agriculture and manufacturing sectors will continue to

increase 3PL warehousing demand. The newer industries like e-commerce with 30 minutes and 10 minutes deliveries in the last-mile segment, telecommunications, healthcare, and IT will be other stronger driving forces for 3PL warehousing.



Warehouse construction costs are much lower. As a result, the asset is a more affordable choice in the domain of commercial real estate. | Photo Credit: Getty Images/iStockphoto

After the government introduced the Production Linked Incentive (PLI) scheme, many sectors, including food processing, mobile devices, pharmaceuticals, and automobile components, poured large investments into setting up manufacturing plants in India. The country's 'Make in India', 'Atmanirbhar Bharat', and 'Vocal for Local' campaigns have also led to a positive response with a rise in demand. Moreover, the government's Bharatmala Project focuses on establishing 35 multimodal logistics parks throughout the country, with four proposed for development in Maharashtra under the Public-Private Partnership. Such a mix of logistics operations is expected to boost the logistics and warehouse operations in the country.

**Reforms and logistics** : In addition, with India's significant policy changes, the interest of foreign investors to increase their footprint in the country by way of investments in the warehousing and logistics sectors has witnessed an uptick. Systematic reforms such as the introduction of goods and services tax (GST), tax benefits to FDI investments, interest rate cuts, and corporate tax reforms have made investors keen to explore the new industrial asset class. A minimum investment of <sup>1</sup> 2 crores is needed. Investors can buy standalone warehouses, which require higher capital allocation. They can also buy units/galas, which are demarcated areas of the warehouse (lower ticket size option).

The industrial and warehouse real estate market in India



is witnessing a steady growth and expansion and this is likely to continue. The investment is more stable in terms of the consistency of rental as opposed to office spaces. Considering the potential of online sales, many businesses are switching to omnichannel business models and scrambling for additional warehouse capacity across cities. 3PL, the government's tax benefits to FDI investments, the growth potential of e-commerce, and India's cost advantage are all driving forces attracting a sizable foreign investment into the logistics, manufacturing, and warehousing sectors.

However, whether a warehouse investment is good or bad depends on its location, the economy, the real estate investor's capacity and risk appetite.



Real estate investors who are confident in their investment should opt for direct warehouse purchases. | Photo Credit: Getty Images/iStockphoto

Source: [www.thehindu.com](http://www.thehindu.com)



## INCREASING DEMAND FOR WAREHOUSING AND LOGISTICS SPACES IN POST-LOCKDOWN INDIA

**RHITIMAN MAJUMDER**  
Co-Founder and CEO, [Pickrr.com](http://Pickrr.com)

***According to experts, warehousing and logistics spaces will bounce back the strongest in the post-lockdown period.***

The warehousing industry has seen a solid growth pattern with demand increasing by 87 per cent in 2017 and 77 per cent in 2018. The demand further increased well in 2019 and in the beginning of 2020. However, a global pandemic followed by nationwide lockdown brought many industries and activities to a halt.

The global outbreak of coronavirus has given a new direction to consumerism. People are willingly moving to ecommerce and there is a growing adaption of omnichannel distribution by many companies. To prop the business up, these organizations are finding better alternatives to overcome the increased demand in the best possible manner. They are working on increasing their workforce to fill in the gaps. But most of all, the need for warehousing and logistic spaces is growing now than ever before. With this increased demand, empty retail and wholesale spaces could expect to be renovated as warehousing and logistics spaces.

Warehouses are, as of now, confined to a state's borders and far away from their customer base. With social distancing becoming the new normal in a post lockdown world, people will be more inclined towards the need for online deliveries of essential as well as non-essential items. Thus, retailers will have to make sure their warehousing area are closer to their customers prompting faster deliveries. This might give the necessary nudge to the whole micro warehousing industry, that has been around the corner but has not

taken off, especially in India.

**ADVERTISING :** According to experts, warehousing and logistics spaces will bounce back the strongest in the post-lockdown period. In order to understand why there will be a shift in the most robust real estate vertical of India, read on further.

**The future is promising for the warehousing and logistics industry. :** Ecommerce space is in its fullest form right now with everything accessible is just one tap on your cell phone. The growing demand for warehousing and logistics spaces to store large quantities of essential items is noticeable, particularly in a country like India. In fact, this is just the beginning. The demand for more such spaces is going to increase in the coming years as experts have put it, 'the logistics and warehousing sector of India's retail space is going to get bigger in 2020 and afar.'

Warehousing in India is gradually turning into a well set up segment with probably the greatest land engineers, financial specialists becoming a part of this. Warehousing real estate of India seem to become the next massive wave of expansion with major brands and real estate investors taking interest in this fragment for profitability. A vast majority of the Indian real estate sector believes that warehousing and logistics spaces will attract a lot of business.

**Opinions expressed by Entrepreneur contributors are their own.**

Source: [entrepreneur.com](http://entrepreneur.com)



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# THE IMPORTANCE OF WAREHOUSING IN A LOGISTICS SYSTEM

ANDRA PICINCU

**W**arehousing is a requirement for most businesses that manufacture, import, export or transport goods. You might see it as an unnecessary expense, but it can actually **save you money and boost your productivity**. The customer journey doesn't end when an order is placed. A warehouse gives you better control over your inventory and ensures that customers will receive their products on time, which ultimately leads to higher profits.

## Better Inventory Management

Approximately 8 percent of small businesses don't track their inventory. About 24 percent don't have inventory at all. This often leads to late shipments, delayed order processing and poor customer experience.

Warehouses provide a **centralized location for your goods**, making it easier to track and manage your inventory. By investing in a warehouse, you'll store, ship and distribute products more efficiently. If something is out of stock, you'll know it right away and provide customers with alternative options rather than leaving them waiting for days or weeks.

## More Efficient Packing and Processing

Most warehouses **provide the equipment and supplies you need** to store, move, package and process orders from customers. Pallet racks, loading docks and packing materials are just a few to mention. This way, you'll have everything in one place, which will save you time and money.

A warehouse enables businesses to pack and grade their goods according to legal requirements and customer needs. The logistical cost is reduced, while flexibility is maximized. This type of facility can be an ideal distribution location, eliminating the need to arrange for pickup and hire employees to manage fulfillment.

## Superior Customer Service

More than 63 percent of online customers expect to know the estimated or guaranteed delivery time. Approximately 88 percent would pay more for faster delivery. In fact, delivery speed is one of the first things buyers take into consideration when choosing a shipping carrier.

As a business owner, you want to keep your

customer satisfied and engaged. If you fail to deliver their orders on time, your reputation will suffer. This can hurt your revenue and brand image.

Warehousing allows for **timely delivery and optimized distribution**, leading to increased labor productivity and greater customer satisfaction. It also **helps reduce errors and damage** in the order fulfillment process. Plus, it prevents your goods from getting lost or stolen during handling.

## Ensure Price Stabilization

The demand for goods and services varies from month to month and year to year, depending on customers' income, government policies, employment rates, climatic conditions and other factors. A warehouse allows you to **store your products for a later date** when the demand is high. This helps ensure price stabilization and reduces revenue losses.

Let's say your company manufactures and distributes sports equipment. If you offer ski accessories, you can store them in your warehouse rather than selling them for next to nothing when the cold season ends. This way, you'll maintain consistent stock levels and maximize your profits.

## Improved Risk Management

Warehousing not only protects against price fluctuations but also **provides safe storage of perishable products**. Depending on your needs and type of business, you can lease a warehouse equipped with refrigerators, freezers and optimal temperature control.

Plants, artwork, candles, food and medications are just a few examples of goods that require cold storage. A warehouse that offers this service will store your goods at the right temperature, preventing spoilage and changes in color and texture. This also helps **extend the product's shelf life** and ensures customer satisfaction.

Additionally, the products stored in warehouses are typically insured. This means that you have **higher chances to receive compensation** from your insurance company in case of damage, fire or theft.

Source: [smallbusiness.chron.com](http://smallbusiness.chron.com)

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## WAREHOUSING IN INDIA - GROWTH FACTORS DRIVING TRANSFORMATION

**ADITYA VAZIRANI, CEO,  
ROBINSONS GLOBAL LOGISTICS SOLUTIONS**

**Traditionally, one of the most ignored sectors in logistics, warehouses today have developed into sophisticated stockrooms with advanced, real-time tracking mechanisms, and other state-of-the-art facilities, which have been instrumental in shaping the modern economy.**

**W**arehousing is an important component of the Logistic value chain and plays a significant role in quality storage of goods and merchandise during the varied stages of transportation. Until a few decades ago, warehouses were mere 'holding' areas, housed in dingy or dilapidated buildings with poor light or ventilation facilities. Since then, warehousing as a sector in India has evolved manifold, with the low-grade godowns being replaced by pre-engineered structures that are insulated, ventilated and climate-proof, with round the clock surveillance, and standard safety procedures.

The Indian warehousing industry, estimated to be worth INR 561 Billion (excluding inventory carrying costs, which amount to another ~INR 4,340 billion) in 2017, is estimated to grow at 9.5% CAGR to reach INR 968 Billion by 2024. Riding high on the structured reforms wave, including the recent infrastructure status granted to logistics, and the implementation of GST, the Indian warehousing and logistics sector is estimated to attract nearly 10 Billion USD investments over the next 4-5 years. With addition of around 200 million sqft warehousing space across India, total supply is expected to nearly double by 2022, estimated JLL India. It accounts for ~5% of the Indian logistics market (excluding inventory carrying costs, which amount to another ~30%).

### **Indian Warehouse Market: Growth Drivers**

Apart from conventional storing services, warehouses in India are now equipped to provide value-added services like consolidation and breaking up of cargo, packaging, labelling, bar coding, reverse logistics, kitting etc. The growth in warehousing in India is primarily being driven by the following factors:

- **Make-In-India:** With the government thrust, there has been an accelerated growth in the manufacturing sector, particularly in areas like Textiles, Pharmaceuticals, Telecommunications, Automobiles and Food and Beverages
- **Enhanced Trade:** Apart from manufacturing, sectors like organized retail, information technology, telecommunications, and healthcare have evolved

dramatically over the last few years, driving consumption and thus a strong demand, leading to growth of warehousing

- **Superior Technology and Digital India:** With a wider internet penetration, technology enabled growth drivers like automation, real time tracking, RFID for automated data collection and stock identification are becoming increasingly popular, even in warehouses in tier 2 cities and metros. Further, the modern Warehouse Management Systems (WMS) and other IT driven solutions, help create a sophisticated and efficient warehousing network that provides integration with automatic material handling equipment, cross-docking, yard management, labour management, billing and invoicing, etc.
- **Government Policies:** With the granting of infrastructure status to the logistics segment, there has been a significant rise in investments in the warehousing sector, especially for free trade warehousing, zones (FTWZs) and logistic parks. The government policies on relaxed international trade, implementation of superior and reformed tax structures like GST have further led to the fast growth of the sector

Efficiency is the buzzword in the warehousing sector today and technology has been a key enabler to drive this and has showcased its ability to make certain skills redundant, force the aggregation of certain skills while eliminating certain low-end jobs. This has also led to a new business trend of outsourcing logistics through 3PL and 4PL players, thus driving core competency for businesses while also reducing the expenses incurred on logistics.

This paradigm shift in warehousing has two sides: customers and logistics providers. It is driving innovation and digitalisation is imminent with the advances in technology. With the introduction of robotics and complex algorithms in software used in warehouses, the complexities have increased and traditional inventory management without real time tracking is a thing of the past. It is an exciting time to be part of the industry, even though we aren't comparable to our colleagues in the West. But the gap is lessening, and the talent pool is also getting better with a large investment in education making this segment exciting.

**The Way Forward :** The warehousing industry in India is still at a nascent stage and has a long way to go before

we can match global standards and business growth. Leveraging the fast-evolving trade, infrastructure, technology, and human resources, warehousing can soon become the backbone of the logistics and modern trade in India.

**RGL's Warehousing & Distribution Solution :** Robinsons Global Logistics Solutions (RGL), an integrated warehousing and distribution solutions company, recently launched its operations independently after being spun off from its 65-year-old parent company Robinsons Cargo & Logistics (RCNL), with an aim to offer strategic solutions and create deep-rooted partnerships with its customers for the Indian market.

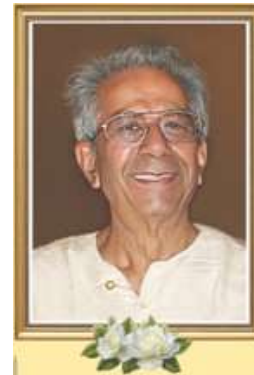
The exponential growth in the warehousing and supply chain industry in India has led to the entry of organized players in the sector, resulting in standardization of processes, introduction of IT-enabled services, and creation of structured systems and processes. However, there are still many challenges that need to be addressed. Today, logistics cost in India accounts for 13-17% of the Gross Domestic Product (GDP), which is nearly double (6-9%) the logistics cost to GDP ratio in developed countries such as the US, Hong Kong, and France. Much of the higher cost could be attributed to the absence of efficient intermodal and multimodal transport systems. Moreover, warehousing has also been facing major challenges, leading to increased logistics cost that is borne by the end-users and other stakeholders.

RGL, with over half a million square feet of warehousing space under its management, is amongst the modern and technologically enabled warehousing and distribution service providers in the country; catering largely to the exponentially growing demands of sectors like manufacturing, Retail, Infrastructure, IMPEX, and SME's and E-Commerce. Through superior technology enabled operations, RGL warehouses are governed through automated Warehouse Management Systems and implementation of Business Intelligence and Analytics. Key distribution services include Long-haul and inbound & outbound services, Last mile distribution, Reverse Logistics, Odd Dimension Cargo, Network Optimization and Route Planning.

Apart from warehousing and distribution services, the company also offers In-factory Logistics solutions that are customized to suit the needs of a vast variety of clients. Further, through efficient implementation of Single Line Feeding (SLF) process, RGL undertakes complex in-factory services like sequencing, kitting & trolley loading for Just-In-Time and Lean Manufacturing Processes for automotive and other manufacturers. In line with the company's philosophy of excellence, the SLF process is fully equipped to undertake functions like active inventory tracking on regular basis, triggering re-order flags, receipt & physical verification of materials, creating kits, trolley filling and managing high value parts, and, most importantly, ensuring that the right product is being dispatched as to avoid manufacturing stoppages.

Source: NBM&CW

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### SANTOSH KUMAR GHOSH DASTIDAR

IIMM Family is shocked, disturbed and saddened knowing sad demise of Mr. Santosh Kumar Ghosh Dastidar, Past Chairman of IIMM Kolkata Branch in the early morning on Friday, the 12<sup>th</sup> May, 2023. Late Dastidar was an accomplished professional in materials management profession, a gifted leader who toiled to the cause of Institute building at its early stage. He was a stalwart in materials management discipline and earned repute with his professional acumen and sagacity and nurtured budding professionals to their desired career progression.

IIMM Family will fondly remember invaluable contribution of Late Santosh Kumar Ghosh Dastidar in building IIMM to the noble cause of materials management profession. He will remain as a constant source of inspiration of all of us to the journey of IIMM Kolkata to excel bearing IIMM Flag. He will remain in IIMM's thought and prayers.

In this moment of loss, words are useless. A beautiful soul, full of love and compassion, ascended to heaven, away from us, but closer to the Almighty, leaving loneliness and sadness. May His soul rest in eternal peace! May the Almighty give enough strength to bear this irreparable loss to the bereaved family!

Forever in fond remembrance: IIMM Kolkata Family.

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# WHAT IOT, ANALYTICS SOLUTIONS CAN BE DEVELOPED WITH 5G IN LOGISTICS?

**MD. IMTHIAZ. CHIEF EXECUTIVE OFFICER AND CO-FOUNDER,  
RAAHOADVENT OF TECHNOLOGIES**

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**T**he 5G network carry the potential to rapidly advance economic growth for India. A quick glance around tells the viewer the growth of the country's digital economy, as payments, processes and various services become increasingly digitised, contained and accessed through smartphones and other devices operating via the internet. India's evolving commerce and trade has earned India the status of one of the fastest-growing economies in the world, and a critical player in the overall growth story has been the logistics industry.

Accounting for 14.4% of the country's GDP, logistics is considered the backbone of the economy. In a span of five years, India has improved its position, climbing 6 places in the World Bank's Logistics Performance Index (LPI), to be ranked 38th out of 139 countries. Its goal to form a part of the top 25 countries in the world could be fuelled with the help of technology adoption for India's logistics industry, as cloud computing, machine learning, artificial intelligence, IoT, big data analytics, blockchain, and other new-age technologies disrupt and herald Industry 4.0.

The new standard of cellular networks and wireless technology, with its low latency, exceptionally high speeds and broader coverage, promises the possibility of achieving higher levels of connectedness. This presents a uniquely beneficial opportunity for a highly fragmented industry such as logistics, which remains composed of over 90% of the unorganised sector, and employs a large population. Smartphone penetration over the years has spurred the growth of e-commerce, directly inducing the need for logistics efficiency. With increased penetration and adoption of 5G networks, Internet of Things (IoT), and data analytics, logistics operators stand to access and analyse significant amounts of data from transportation assets, supply chains, warehouses, fleets and remote locations.

Transportation, for instance, stands to be transformed with the adoption of 5G networks and ancillary technologies. The logistics industry in India depends heavily on roadways for transportation of domestic freight, which occurs through a diverse network of logistics companies, fleet owners and truckers. The trucking sector thus accounts for a large section of logistics, as an estimated 65% of the total freight transportation in the country occurs via roads. This includes approximately 80 lakh trucks transporting goods from one part of the country to another. 5G networks, and the benefits entailed by it have the potential to transform this industry, which is largely fragmented and opaque due to the presence of over 2

lakh brokers and intermediaries functioning between fleet owners and logistics service providers, and which has little digital penetration yet. Adoption of digital technology has risen over the past few years, as Indian startups have emerged that provide platforms that leverage technologies such as IoT, data analytics and machine learning to enable intelligent freight-matching, further providing an opportunity for shippers to access a network of fleet owners and truckers who are reliable, while equipping them with real-time data and visibility on shipments to plan and implement cost and operationally efficient strategies to become profitable.

Such truck-tech platforms can make load discovery easier for truckers, who benefit by being able to utilise their assets more effectively, that is, by ensuring reduced empty miles, lesser fuel consumption from optimised routes, and access to instant digital payments. Evolving consumer expectations around product availability and delivery are higher than ever, and there is an imminent need for the logistics industry to transform in order to meet such expectations. Interconnected devices are capable of delivering accurate, insightful data for analysis. 5G enables data sharing at a much faster, and more reliable rate.

This can further lead to improving real-time tracking and monitoring of shipments in India's logistics industry. 5G and IoT together can provide fleet owners improved bandwidth and connectivity to better engage with their assets, with information on route and weather conditions that allow for efficient planning of resources. Improved visibility into the supply chain can directly lead to optimal outcomes, unlocking efficiency and resiliency for operators. 5G and IoT can significantly enhance warehouses, ports, shop floors and factories. They can potentially enable smart inventory, tracking autonomous operations, and streamline processes. IoT devices that deploy sensor technology can be used for vehicles and packages for accurate location information and tracking. Another key feature of 5G, and its integration with IoT devices can render enhanced safety within the supply chain, by reducing the risk of lost or stolen goods.

As sensors notify logistics operators of any derailment, they are able to respond to the situation quickly and effectively. Moreover, fleet managers can monitor vehicle health, driver behaviour, payload, traffic conditions, and much more, simply by using technology. The data can be used to not only improve logistics operations, but make supply chains altogether efficient. The 5G network bears capabilities such as providing thousand times more data per area. It has the ability



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to support hundred times the number of connected devices, compared to 4G. Such advantages, among myriad others, have led to 5G roll-out across more than seventy countries, covering half of global markets and almost a third of the world's population. Logistics plays a vital role in ensuring proper functioning of a number of other industries, including healthcare, manufacturing, and others. The use of 5G and IoT can further enable real-time monitoring of equipment and vehicles, which can provide more opportunities for logistics operators and asset owners to address maintenance and safety issues. The adoption of 5G networks and other cutting-edge technologies can thus lead to creation of a larger, better connected logistics

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ecosystem. Digital freight networks can offer faster, more reliable and more efficient logistics services. The use of such technologies and a data-centric approach can therefore enable businesses to streamline operations, reduce risks, control the impact of delays, respond to disruptions with agility, and operate more sustainably.

The views and opinions expressed in this article are those of the author and do not necessarily reflect the views of Indian Transport & Logistics News.

Source : itln



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## INDIAN WAREHOUSE MARKET WITNESS HEALTHY RISE IN DEMAND

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**T**he growth of third-party logistics (3PL) companies, a sustained increase in demand driven by accelerating manufacturing investments, and aggressive e-commerce expansion have all contributed to rising warehousing rentals in India's major logistics property markets. According to the performance in 2022 and the promising outlook for 2023, the rise in rental values has propelled Indian cities like Mumbai, Bangalore, and Delhi-National Capital Region (NCR) into the list of the top 10 logistics markets in Asia Pacific...

In terms of annual rental growth among these cities, Mumbai came in sixth place in the Asia-Pacific region. The city's rental rates in 2022 increased by 9.3% from a year earlier, to Rs 22 per sqft per month, according to data from Knight Frank India. In 2023, an additional 1.1 million square feet of warehousing space is anticipated to become available in the Mumbai area. "The Indian warehousing market has seen a healthy rise in rentals on the back of robust growth in demand during the year. The manufacturing and 3PL sectors were the major growth drivers in 2022 and should sustain momentum in 2023 as well," said Shishir Baijal, CMD, Knight Frank India...

According to him, the market will likely respond to the increased base level expectations from occupiers as well as a positive outlook for demand, which will cause the healthy rent growth seen in 2022 across all markets after years of stagnation. Except for Bangkok, where rent contracted by 0.1% during the year, marking the first decrease in rent since the start of the pandemic, prime logistics rents across 17 important Asia Pacific markets were stable or rising...

With an average annual growth rate of 12.9%, Australasia continued to outperform other markets. Sydney had the highest annual growth rate in the region for rental growth at 29.6%...

"Deteriorating sentiments resulted in negative rental

growth registered for the first time since the pandemic. High interest rates and inflation are promoting companies to reassess or consolidate their inventory," said Christine Li, head of research at Knight Frank Asia-Pacific...

"On the upside, we still see strong demand for cold chain facilities, especially in Asia Pacific, as consumers continue to favour e-commerce grocery. Alongside the shortage of quality supply, logistics rents are still expected to grow in 2023, albeit tamed." Among other Indian cities, Bangalore ranked 8th in the Asia-Pacific logistics markets based on annual rental growth...

In 2022, rental prices in the city increased by 6.4% at Rs 20 per sqft per month. In 2023, an additional 0.5 million square feet of warehouse space is anticipated to become available in the city. With a 5.9% increase in monthly rentals at Rs 19 per square foot, Delhi-NCR was ranked ninth in the region. In 2023, an additional 1.1 million square feet of warehousing space is anticipated to be made available in the city. The outlook for rentals is favourable for all three Indian cities in 2023. In the coming years, it is anticipated that the warehousing and logistics sector of the real estate market, which has proven to be relatively resilient to the shocks of COVID-19, will continue to grow and draw more investment...

A favourable regulatory environment, supported by the government through reforms and policy, has begun to increase infrastructure spending in India, which has increased demand for modern warehousing as a whole. Due to the aggressive expansion of e-commerce and the rise of 3PL firms, the warehousing sector is anticipated to record the highest ever warehousing absorption this year...

Source: [www.constructionworld.in](http://www.constructionworld.in)



# BRANCH NEWS

## BANGALORE BRANCH

**17<sup>th</sup> June 2023 – CEO-CPO Meet on “Digital Transformation in Supply Chain”:** IIMM Bangalore Branch organized a CEO-CPO Meet as part of Golden Jubilee 2023 on 17<sup>th</sup> June 2023 on the Theme “**Digital Transformation in Supply Chain**” at Ramee Guest Line Hotel, Attibele, Hosur Road, Bangalore.



*Branch Chairman Dr. P. Sengottaiyan Welcoming Gathering*



*Mr. A.V. Shamasundar, Vice Chairman, introducing Speaker*



*Mr. P.M. Biddappa Introducing Speaker Mr. V. Ramachandharan*



*Power Panel Session of CEO-CPO Meet held on 17.06.2023*



*A view of Participants and Speakers Group*



*A view of participants*

Dr. P. Sengottaiyan, Branch Chairman welcomed the gathering and Mr. G. Balasubramanian, Co-Ordinator and MC presented about IIMM. Mr. P.M. Biddappa N.C. Member and Mr. A.V. Shamasundar, Vice Chairman, Introduced the Speakers and Panelists.



CEO-CPO meet started with a talk on Preparing for Digital Transformation Supply Chain” by Inaugural Speaker Mr. V. Ramachandran, Consultant-“**Digital Transformation in Supply Chain**”. Other technical session speaker Mr. Siva Ramachandran, Vice President and Asia Pacific Leader, Genpact, spoke on the technical session topic on “**Process specific allied digital interventions for sourcing and procurement**”. Mr. Ramanathan Subramanian, General Manager, IT, John Distilleries handled the session on **Intelligentization-SCM, Individual** and Mr. Ravi Singh, Senior Manager of Makerinme Technology Pvt. Ltd. spoke on the session topic **Role of Artificial Intelligence and robotics in Supply Chain and Manufacturing**.

Proceedings continued with CEO-CPO Power panel discussion “**Digital Transformation in Supply Chain**” moderated by Mr. Dr. Manohar, Senior Director, ISBR, and Chairman of Vision Group, Association of Indian Management Schools. The panelists: Dr. K. Sathianarayanan, Sr. Vice President of ABB Ltd., Mr. P.G Yogindra, Executive Director of HAL (Retd.), Mr. V. Ramachandran, Consultant, Digital Transformation, Mr. Sivaramachandharan, Vice President and Asia Pacific Leader of Genpact and Mr. Ravi Singh, Senior Manager, Makerinme Technology Pvt. Ltd. Mr. M.R. Achyuth Rao, Honorary Secretary proposed vote of thanks. About forty CEO-CPO attended the meeting and it was an excellent interactive and productive event.



## LUCKNOW BRANCH

### MINUTE TO MINUTE PROGRAMME ON 14-05-2023 :

On my behalf and on the behalf of IIMM, Lucknow branch welcome you on this fine morning for the member get- together Being held today this hotel .

I request Chairman of the Lucknow Branch to give bouquet to the national president and bring on the dais. I also request Brajesh Singh GM tata motor to join the dais. Chairmen Lucknow branch is requested to say few words.



May I also requested to national president to say few words on the occasion. It is pleasure to inform you that two student of IIMM, Lucknow branch getting gold and bronze medal on all India level. Name of the student are as under:

1. Pranjali Shukla - Gold
2. Sakshi Bajpai - Bronze



May I request to national president to give Medals to both Students. May I also request Mr. Brajesh Singh to



give memento to Mr. D. K Dubey for best faculty member. May I request Mr. Sharad Jain CEO BP engineers, Lucknow to give award as distinguished member to Mr. C.K Vishwakarma ED HAL, Lucknow



After that a beautiful presentation given by Mr. Balaji Sundarman CEO Esquire Enterprises and on team international Topic **Water recycling and Conservation with organic way with Probiotic for a sustainable future with water.**

Vote of thanks given by chairmen Lucknow Branch and ask all member for lunch.



## COCHIN BRANCH

**MATERIALS MANAGEMENT DAY CELEBRATED :** IIMM Cochin Branch has celebrated Materials Management Day to commemorate its 40th year of inception.





Mr Loknath Behera IPS, former DGP Kerala & currently MD KMRL was the chief guest. He has given away awards to Industries in Kerala who came first in large scale, medium scale & small-scale categories in the Stores Management Competition conducted to find the best functioning Warehouses.

Malayala Manorama, Apollo Tyres, OEN India, Elite Agro Specialties, Arjun Naturals, CII Guardian, Steel & Industrial Forgings were the winners in these categories.

The Chief Guest also presented the Outstanding Member Award of IIMM National President to Mr. Oommen Johnson, Founder Member & Past Chairman of IIMM Cochin Branch.

Mr Loknath Behera IPS, in his inaugural address has shared his interesting experiences in the Kerala Police Department & Kochi Metro Ltd. He praised the projects undertaken by IIMM Cochin Branch, especially the unique STORE MANAGEMENT COMPETITION which has inculcated a lot of interest among the industries in Kerala which he wished to be an eye opener for other branches also.



IIMM chairman Mr Jacob Mathew presided over the meeting . Mr P V Paulson, Vice Chairma, K S Shaji, Hon Secretary Mr T A Roby, Convener and Mr Thomas George Hon Treasurer spoke during the meeting.



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- To promote professional excellence in Materials Management towards National Prosperity through sustainable development.

### OBJECTIVE

- To secure a wider recognition of and promote the importance of efficient materials management in commercial and industrial undertakings.
- To safe guard and elevate the professional status of individuals engaged in materials management faculty.
- To constantly impart advanced professional knowledge and thus improve the skill of the person engaged in the materials management function.
- Propagate and promote among the members strict adherence to IIMM code and ethics.

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- To consider first the total interest of one's organisation in all transactions without impairing the dignity and responsibility of one's office :
- To buy without prejudice, seeking to obtain the maximum ultimate value for each rupee of expenditure.
- To subscribe and work for honesty and truth in buying and selling; to denounce all forms and manifestations of commercial bribery and to eschew anti-social practices.
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# EXECUTIVE HEALTH

## 5 TIPS FOR A HEALTHIER TOMORROW

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Our experts share simple ways to create healthy habits for the new year.

**H**ealth is always a priority heading into a new year, but amid the COVID-19 pandemic, maintaining a healthy lifestyle is more important than ever. In a **survey** asking Americans about their 2022 New Year's resolutions, one-quarter of the respondents who were making resolutions reported that they set a goal to live healthier. With wellness so front of mind, doctors, nurses, and dietitians from NewYork-Presbyterian shared with Health Matters their tips to help create healthy habits.

**1. Exercise Regularly :** Staying physically fit improves cardiovascular and muscular health and helps fight disease. Exercising also has been shown to reduce **stress** and improve your overall mood, so try to squeeze in at least 150 minutes of **moderate-intensity aerobic** exercise each week, the minimum recommended by the American Heart Association, plus at least two days of muscle-strengthening activities. "Making a daily commitment to exercise, stretch, meditate, or practice any other form of self-care may help you feel calmer and allow you to reset," says Maria Biondi, RDN, CDN, a NYPBeHealthy well-being coach at NewYork-Presbyterian Queens.

Here are some simple ways to break the exercises down into 30-minute increments, courtesy of the NYPBeHealthy wellness team:

- Take at least two 30-minute walks a week at lunchtime or plan some walking meetings.
- Do 30 minutes of strength training with a kettlebell or hand weights while watching TV.
- Jump rope for 15 minutes when you get up in the morning and again when you get home at night.
- Do squats at your desk for 10-minute increments three times per day.

In the winter months, don't be afraid to **brave the cold** for your workouts. "Exercising outdoors provides all of the physical benefits that we get from indoor exercise — cardiovascular health, strength, flexibility, and endurance — but we also get many other important benefits," says **Dr. Morgan Busko**, attending physician at NewYork-Presbyterian Lawrence Hospital.

Just being in the sun increases your body's creation of vitamin D, which protects you from a host of medical problems, says Dr. Busko, who is also an assistant professor of primary care sports at Columbia University Vagelos College of Physicians and Surgeons. And

exercising outdoors may provide a special psychological boost.

"There are studies that show that exercising in nature actually increases the levels of dopamine, serotonin, and natural endorphins that are released through the body," says Dr. Busko. "If you do the same exact workout outdoors versus indoors, you're getting a bigger dose of these neuromuscular transmitters that promote a happy mood." Outdoor exercise may also provide a better workout. "When you are outdoors, you don't realize that you're tackling hills or uneven trails, as opposed to being on a machine in the gym, where you may stay at the same resistance or level of intensity for the entire the workout," says Dr. Busko.

For people who are working from home, regular movement during the work day can also help **reduce aches and pains**. "**Motion is medicine** when it comes to spine health," says **Dr. J. Ricky Singh**, director of interventional spine at **NewYork-Presbyterian Och Spine** and vice chair and associate professor in the Department of Rehabilitation Medicine at Weill Cornell Medicine. For example, you can add 10 squats, 10 tricep dips on a solid chair, and wall pushups to your daily routine. Also, make a point to get up from your desk two or three times an hour to walk around and do light stretching, such as back bends, which will help counter being **hunched over a computer**.

**2. Eat Right :** In addition to getting enough fruits, vegetables, and whole grains throughout the day, focus on protein in the morning, says **Dr. Rekha B. Kumar**, an attending endocrinologist at NewYork-Presbyterian/Weill Cornell Medical Center and an assistant professor of medicine at Weill Cornell Medicine. Packing your breakfast with protein will keep blood sugar and some "hunger hormones" more stable throughout the day, helping to control your appetite. Egg-white omelets, Greek yogurt, and protein shakes are examples. Dr. Kumar also advises **against too much sugar**, especially in the form of high fructose corn syrup. Consuming excess sugar leads to a condition called insulin resistance, which is a precursor to type 2 diabetes, a fatty liver, and cardiovascular disease. It has also been associated with cirrhosis, neuropathy, kidney disease, general inflammation, and cancer.

**A diet with less red meat** will lead to a host of benefits if you replace the calories with whole plant foods, says **Dr. Shilpa Ravella**, a gastroenterologist at NewYork-Presbyterian/Columbia University Irving Medical Center and an assistant professor of medicine at Columbia University Vagelos College of Physicians and

Surgeons. Your blood cholesterol levels will drop, and you'll **decrease** your risk of chronic diseases, including top killers like heart disease, cancer, stroke, diabetes, and obesity.

One easy-to-follow diet that avoids red meat is the **Mediterranean diet**, a plant-based, low-carbohydrate diet that is full of "healthy" fats like nuts and seeds and is clinically proven to decrease our risk of developing heart disease, says **Dr. Altaf Pirmohamed**, site director of cardiology at NewYork-Presbyterian Lower Manhattan Hospital and assistant professor of clinical medicine at Weill Cornell Medicine. "Focus on eating vegetables cooked in olive oil and natural spices, fruits, whole grains, and healthy fats," he says.

**Dr. Alessio Pigazzi**, chief of colorectal surgery at NewYork-Presbyterian/Weill Cornell Medical Center and Weill Cornell Medicine, agrees, noting the diet's benefit to **colon health** as well. What you eat can cause inflammation in your bowels and gut, and inflammation is a predisposing factor for colorectal cancer development. Researchers have identified the main food substances that cause inflammation in the body and may contribute to an increased risk of colorectal cancer: Sugar, animal fats, and red and processed meats. There isn't one specific vegetable that is a magic cure-all for a healthy colon. It's more about eating a variety of nutritious foods and focusing on a colorful, plant-based diet. "The best diet — and I'm a little bit biased because I'm Italian — is probably a Mediterranean diet on steroids," says Dr. Pigazzi. "We need to increase the consumption of fruit, vegetables, legumes, nuts, and berries and try to keep the amount of red meat and animal fats to an absolute minimum."

Need some inspiration? Check out these healthy and delicious vegetarian **soups and stews** from Emilie Berner, chef and coordinator at NewYork-Presbyterian Hudson Valley Hospital's **Chef Peter X. Kelly Teaching Kitchen**.

**3. Get Enough Sleep :** The COVID-19 pandemic has **disrupted** many people's sleep patterns — some have even suffered from what's known as "**coronasomnia**" — but it's critical to keep a regular sleep schedule and get about **eight hours of sleep a night**, says **Dr. Daniel Barone**, a neurologist and sleep medicine expert at the Center for Sleep Medicine at NewYork-Presbyterian/Weill Cornell Medical Center and an associate professor of neurology at Weill Cornell Medicine. "Having a strong, **healthy immune system** gives us a little more of a barrier against developing a COVID infection, so it's important to prioritize sleep," says Dr. Barone.

He suggests establishing a regular bedtime and wake-up time, avoiding caffeine later in the day, turning off electronics before bedtime, setting boundaries around your media consumption, exercising regularly, avoiding naps, cutting out alcohol, and paying attention to the possible signs of sleep apnea.

**4. Protect Yourself From COVID-19 and the Flu :** "Last year's flu season was mild since many people stayed isolated due to COVID," says pediatrician and immunization expert **Dr. Melissa Stockwell**, chief of the Division of Child and Adolescent Health at NewYork-Presbyterian Morgan Stanley Children's Hospital and NewYork-Presbyterian/Columbia University Irving Medical Center. "This year we are concerned it will be a more severe season." The single best way to **protect yourself from the flu and COVID-19?** Get the vaccine for both, and the **COVID booster** if you're eligible, says Dr. Stockwell. "Studies have shown that people can get **both shots** at the same time and it won't affect their antibody response."

Fortunately, the **preventive measures for COVID-19** also apply for the flu: avoiding large crowds and gatherings, **wearing a mask**, social distancing, **frequent handwashing**, and staying at home when you feel sick. "A lot of people may be coughing and sneezing, so the likelihood of transmission is much higher when you're having active symptoms," says **Dr. Ting Ting Wong**, an attending physician and infectious disease specialist at NewYork-Presbyterian Brooklyn Methodist Hospital. "These are all preventions for COVID as well as influenza transmission."

It's especially important for pregnant women to protect themselves from the flu and COVID-19 with vaccines. Not only is the **flu shot effective and safe for the baby**, says **Dr. Laura Riley**, obstetrician and gynecologist-in-chief at NewYork-Presbyterian/Weill Cornell Medical Center, but it also protects babies who are born during flu season, which runs from October through April. Flu vaccinations given to pregnant women reduce the risk of hospitalization from influenza by about 70% for infants younger than 6 months old. As for **COVID-19**: "We do have lots of epidemiologic data which suggests that pregnancy plus COVID-19 is not a good mix," says Dr. Riley. "Pregnant women have had more admissions to the ICU, more mechanical ventilation, and more deaths, although the absolute number is low. The flip side is you've got a vaccine that works to prevent severe illness."

**5. Stick to Your Plan :** Whether you're looking to lose weight, get in better shape, stay in better touch with family and friends, quit smoking or drinking, or have another goal in mind, there are simple strategies you can adopt to **stick with your plan**, says **Dr. Gail Saltz**, a psychoanalyst and assistant attending physician at NewYork-Presbyterian/Weill Cornell Medical Center and clinical associate professor of psychiatry at Weill Cornell Medicine. She suggests:

- Own up to what needs to be changed.
- Write out your goals and corresponding action plan in weekly parts.
- Start with a journal entry of "Why?"
- Create incentives.
- Tell someone else.

Source: [healthmatters.nyp.org](https://healthmatters.nyp.org)

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