

adopting a holistic approach to the management of international supply chains places an additional burden on the management. However, that is the only way to manage international marketing logistics successfully.

2.11 KEY WORDS

Cost trade offs : It is the recognition that cost patterns of various activities of the firm sometimes display characteristics that put them in economic conflict with one another, and involves balancing the conflicting costs.

Leveraging logistics : Use of logistics for providing a distinctive and competitive advantage.

On-schedule delivery : Delivery goods strictly in accordance with the time schedule provided by the customer.

Order cycle time : It refers to the elapsed time between the customer conveying the need and the fulfillment of that need i.e., receiving the supply.

Strategic logistics planning : It refers to the identification of business goals in terms of customer-service level to be achieved and building up an integrated framework of strategies for each link of the logistics system.

Trade zones : Areas earmarked from production and logistics activities for international trade with good amount of freedom from custom formalities and controls.

Total cost concept : It is the recognition that conflicting costs should be examined collectively and use the total cost of all logistics activities taken together while choosing the course of action in respect of the physical distribution of products.

Total system concept : It is an approach to managing the physical distribution system of products in its total form as a system consisting of several interconnected tasks operating together to achieve the given objectives.

2.12 ANSWERS TO CHECK YOUR PROGRESS

- A 4 (i) True (ii) False (iii) True (iv) False (v) False
B 3 (i) not possible (ii) helps (iii) total cost (iv) integration (v) collectively
C 3 (i) True (ii) True (iii) False (iv) True (v) False (vi) True

2.13 TERMINAL QUESTIONS

1. "Meeting distribution demands of customers is the key requirement for the successful operation of a distribution system." Elaborate on this statement and discuss the various customer service considerations.
2. What are the major aspects of strategic logistics planning? Explain these aspects and enumerate the factors that influence logistics planning
3. What are the three important concepts relevant to logistics management by an organization? Explain them briefly and state which one you regard as the best approach and why?
4. Discuss the various environmental aspects which an organization engaged in foreign trade has to reckon with and clarify their impact on logistics system.
5. "Objectives and policies for functioning of the supply chain are usually in conflict both within and across operational units." Amplify this statement and explain how can they be balanced in order to build up an integrative logistics system.

UNIT 3 INLAND TRANSPORT IN OVERSEAS TRADE LOGISTICS

Structure

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- 3.2 Road Transport
 - 3.2.1 Road System
 - 3.2.2 Role of Road Transport in Movement of Export and Import Cargoes
 - 3.2.3 Limitations of Road Transport System
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- 3.3 Rail Transport
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3.0 OBJECTIVES

After studying the unit, you should be able to:

- explain the importance of inland transport in providing origin-destination linkages
- identify various sub-systems of inland transport
- describe the importance and working of road transport in India
- explain the role of Indian Railways in movement of export-import cargo
- outline the constraints faced by inland water transport in India and its future prospects
- explain the organization of civil aviation in India and the role of Indian Airlines in movement of export-import cargo
- define multimodalism and its working in India
- identify factors influencing the choice of mode of inland transportation.

3.1 INTRODUCTION

The importance of inland transport has to be viewed in the context of movement of goods traffic from origin to ultimate destination. The firms engaged in international trading operations are, by and large, not located in the vicinity of ports but are usually scattered over different parts of the country. For getting the supplies of inputs like machinery, components, parts, consumable stores and spares required for export production and subsequently for the delivery of finished products at the ports of loading, the trading community has to make use of inland transport or hinterland comprising various sub-systems viz., road transport, rail transport, inland water transport, air transport and multi-modal transport. In this unit, you will learn about the working of these sub-systems in relation to the movement of freight traffic in India and the constraints involved therein.

3.2 ROAD TRANSPORT

The road transport in India has made rapid progress in the post independence era. From a most rudimentary road network of 0.4 million kms. about four decades back, the total length of roads in the country as on 31 March, 1996 reached 3.32 million kms. Similarly, the vehicular traffic has also witnessed a spectacular growth, the number of trucks alone increased from 82,000 in 1950-51 to over 1.6 million in 1996. Thus, the road transport today occupies a place of dominance along with the rail transport as a mode of inland transport. In fact, it has made inroads into the rail transport over the period by improving its share in the carriage of both freight and passenger traffic. From a share of merely 11 per cent in the carriage of total freight in 1951, the road transport now accounts for about 60 per cent of the total freight movement in the country. Likewise, the share of road transport in passenger movement has increased from 26 per cent in 1951 to 80 per cent as at present. Of late, there has been a noticeable shift towards the production of low volume high value goods which is likely to give a further boost to the demand for road transport.

3.2.1 Road System

The road system in India can be broadly divided into the following five categories:

- 1 National Highways
- 2 State Highways
- 3 Major District Roads
- 4 Other District Roads
- 5 Rural Roads

National highways, with a total length of 34,000 kms., accounts for a meagre share of 2 per cent in the total road length but it plays a significant role in the movement of freight traffic with a contribution of about 40 per cent in the total freight movement in the country.

The Central Government is constitutionally responsible for the development and maintenance of national highways, and the responsibility for other roads lies with the respective state governments who are empowered to enact legislation governing various aspects of roads. In the case of national highways, the Ministry of Surface Transport (MOST), Govt. Of India, has the overall responsibility which includes their planning, budgeting and standardization. However, the Government has, under an Act of Parliament in 1988, established the National Highway Authority of India (NHAI) as a single agency for developing and managing national highways.

3.2.2 Role of Road Transport in Movement of Export And Import Cargoes

The increasing use of road transport as a sub-system for the movement of export and import cargoes is due to its operational flexibility in providing door-to-door service. Its other outstanding features are: (i) speed, (ii) reliability, and (iii) relatively less stringent packaging

norms. Moreover, the element of personalised service to the users has added another dimension to its increasing acceptance.

Because of its capability to provide origin-destination linkages, especially within the national boundaries, the shippers (exporters and importers), located at hinterland centres, have put greater reliance on such a sub-system despite higher freight rates involved. This is more applicable in the case of export consignments where the shippers are committed to the delivery schedules as per terms of the export sales contract. However, the precise data on total quantum of export and import movement by road transport are not available. But, it can be safely assumed that the break-bulk cargo of medium to high value, by and large, moves by this sub-system.

The role of road transport in the international logistics needs to be viewed in the context of the technological developments that are taking place in the transport sector in general, and the introduction of containerization in particular. Indian exporters, particularly the small ones, have yet to be benefited to any reasonable extent by this sub-system. This is largely due to the sluggishness in the infrastructural development specially for the export trade sector. Moreover, the inadequacy of Inland Container Depots (ICDs) and Container Freight Stations (CFSs) near the cargo generating centers in the hinterland has been resulting in minimal penetration of container technology at the doorstep of small exporters.

Whereas in the industrially advanced countries a major share of transportation of containers from up-country centers to gateway ports, and vice-versa, is effected mainly by road transport, the movement of such traffic by roads in India is inhibited due to lack of appropriate inland infrastructure. However, this cannot be allowed to continue for long if the export of containerised cargo has to be effected speedily.

3.2.3 Limitations of Road Transport System

Road transport in India is beset with a number of problems and deficiencies. Major carriers of high volume traffic in the country are national and state highways, but such roads are utterly inadequate to cope up with increasing demand from the vehicular traffic. The limitations are: (i) single road width, (ii) poor riding quality, and (iii) weak and narrow culverts and bridges which cause reduced speeds, greater traffic hazards, greater number of accidents and high cost of operation. Detention of commercial vehicles at octroi posts and check posts further aggravates the problems, besides loss of time and increased fuel cost. Another problem on our highways is that vehicles stop haphazardly blocking part of the road, and in case of accidents, the vehicles remain on the road for a considerably long time. Consequently, traffic movement on highways is characterised by frequent stopovers, jams, parking on pavements and shoulders, etc. causing abnormal delays in journey time and making travel hazardous.

3.2.4 Expansion of Road Network and Modernisation of Fleet

To cope up with the increasing road traffic needs, a proper development strategy for roads needs to be drawn wherein priority has to be given to building new bridges and reconstruction of weak and distressed bridges. The other measures, required for faster movement of traffic, include four laning of national highways, construction of bypasses in the urban areas where normally traffic congestion is on the high side, and upgradation and proper maintenance of existing roads. However, resource constraint has been one of the major issues for road building in India. Right from the beginning of planning era, road sector has been funded through allocation of funds in the successive Five Year Plans. But, looking at the requirement of rapid expansion and upgradation in road sector, it is incumbent to look for the alternative sources of financing. Private sector participation in road building is being viewed as one of the promising alternatives. For this purpose, the Government has come out with various types of investment schemes like BOT, BOOT, BOO, BOLT, etc.

Vehicle fleet modernisation programme is also very important to cope with the increasing volume of traffic. The existing two-axle and six-wheel trucks need to be replaced by multi-axle and multi-wheel vehicles, as many developed countries have already gone for such system. In road transport, transportation cost comprises mainly the vehicle operation cost which is around 95-97 per cent. It is very likely that improvement in road sector will not only bring about considerable saving in vehicle operation cost but also result in other multifarious advantages.

Fleet modernisation programme is also incumbent due to increasing requirement of multimodal transportation system used in case of import and export of ISO containers. This calls for taking up necessary steps, on priority basis, for manufacturing truck trailers capable of carrying loaded containers on long hauls safely and removing hurdles imposed in the smooth movement of traffic by octroi and checkpost barriers.

Check Your Progress A

1. Enumerate the limitations of road transport in India.

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2. Fill in the blanks.

- i) The road transport accounts for per cent of the total freight movement in India.
- ii) The increasing use of road transport as a sub-system for the movement of export-import cargoes is due to its in providing door to door service.
- iii) The movement of container traffic by roads in India is inhibited due to lack of appropriate infrastructure.
- iv) constraint has been the major issue for road building in India.
- v) Fleet modernisation programme is also necessary because of increasing requirement of transportation.

3.3 RAIL TRANSPORT

Among the various modes of inland transportation in the organised sector, rail transport constitutes the most important element of the transportation network in India. The role of Indian Railways as a part of the national infrastructure in linking the important locations of trade and industry has been of paramount significance. Having made a modest beginning in 1953, Indian Railways today has grown into the largest rail network in Asia and the second largest net work in the world under a single management. It consists of 7,068 stations and 1,08,513 kms. of total track running about 11,000 trains round the clock, transporting goods and people over a massive stretch of about 63,000 route kilometers with a fleet of 7,206 locomotives, 3,47,208 passenger vehicles, 5,302 other coaching vehicles and 2,63,981 wagons as on 31 March, 1998.

Over the years, Indian Railways have given a fillip to industrial growth and development of trade by providing the necessary transport linkages to innumerable sources of raw materials, industrial centres and markets within the country. Indian Railways have also been playing a facilitating role in the movement of export and import trade to and from the port towns to hinterland centers, and vice versa. In view of this, the railways are considered to be the main artery of inland transport in India.

3.3.1 Freight Traffic

There has been a phenomenal growth in the freight traffic movement by the railways since the beginning of the planning era. The originating revenue earning freight traffic during this period increased from 73 million tonnes in 1950-51 to 409 million tonnes in 1996-97. The importance of railways in the national infrastructure, particularly as a mode of inland transport, can be judged from the fact that about 90 per cent of the movement of major products like coal, iron ore, cement, foodgrains, fertilisers and POL products takes place by this mode of transport. Table 3.1 gives the details of composition of the railways freight traffic.

Table 3.1: Composition Of Railways Freight Traffic

	(million tonnes)		
	1995-96	1996-97	1997-98 (April-Feb.)
Coal	184.4	198.2	188.4
Raw materials for steel plants (excluding coal)	38.9	38.6	34.6
Pig iron & finished steel	12.1	11.8	10.6
Iron ore for export	10.2	10.3	10.9
Cement	32.1	34.1	32.3
Foodgrains	24.9	29.8	24.1
Fertilisers	23.7	21.2	24.3
POL	28.9	28.5	27.8
Sub-Total	355.2 (90.9)	372.5 (91.4)	353.0 (92.5)
Other goods	35.5	36.5	34.4
Total	390.7	409.0	387.4

From Table 3.1 it may be observed that Indian Railways are the carriers of primarily low value and low rated, but essential bulk commodities, like iron ore, coal, lime stone, cement, etc. and also essential commodities of mass consumption such as foodgrains, salt for edible use, sugarcane, edible oils, fodder, etc. Broadly speaking, the freight traffic carried by railways may be classified into the following three categories :

- 1 Bulk commodities moving in full train loads or wagon loads,
- 2 General goods categorised as 'other goods',
- 3 Containerised cargo

In view of the preponderance of bulk commodities in the originating traffic, the share of such commodities in the railways revenue earnings from freight is quite high. The general goods, categorised as 'other goods', normally comprise manufactured goods of high value. For the movement of such goods, usually there is preference for road transport due to certain inherent advantages offered by road transport operations. The railways also operate container services. Such services are of two types : (1) domestic container service for intermodal transport of domestic cargo in 4.5 and 5 tonnes capacity, and (2) ISO containers for the development of multimodal transport between gateway ports and inland locations.

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3.3.2 Export-Import Traffic

As stated earlier, the railways have a major role in the transportation of bulk cargoes in India. The commodities of bulk nature moving for export to ports from hinterland centres comprise iron ore, manganese ore, barytes, cement, coal, salt, sugar, foodgrains, etc., while on the import side, the main commodities are POL, fertilisers, edible oils, coal, newsprint, etc.

There has been a growth in ISO container cargo handling at the Indian ports in recent years, rising from 3.1 million tonnes in 1985-86 to over 20.6 million tonnes in 1996-97. Obviously, the number of containers handled at ports has gone upto 16.98 lakh and the movement thereof to hinterland centres have also increased during the corresponding period. Railways, therefore, have an important role to play through a number of Inland Container Depots (ICDs) and Container Freight Stations (CFSs) set up at several places in the country. Initially, the railways made a beginning by setting up ICDs as pilot projects at seven locations, namely, Bangalore, New Delhi, Guntur, Anaparti, Coimbatore, Guwahati and Ludhiana. Subsequently, in 1988, with the establishment of Container Corporation of India Ltd. (CONCOR) as a public sector undertaking under the Ministry of Railways, with the objective of improving the quality of freight services in the close coordination with other concerned Government agencies, involved in multi-modal transport of goods, ICDs and CFSs facilities have been set up at a number of other centres in the country by CONCOR. Even the private sector is being encouraged by the Government to establish such facilities at different growth centres. Thus, right from the time the first ICD was set up by Railways in 1981 at Bangalore for the movement of ISO containers, both import and export, to and fro to hinterland centres, railways have assumed a dominating role. Over the period, there has been tremendous growth in the movement of ISO containers from the ports to the hinterland centers, and vice versa, as may be seen from the Table 3.2.

Table 3.2 : ISO Container Traffic Handled by Railways Through ICDs

Year	No. of TEUs
1981-82	229
1991-92	108,277
1992-93	155,585
1993-94	237,160
1994-95	285,000
1996-97	703,542
1997-98	721,719

CONCOR is also setting up the an ICD at Dadri near Delhi, with a capacity of 5,00,000 TEUs per annum. This would serve as a major collection and distribution center, as and when commissioned.

3.3.3 Projections Of Railway's Revenue Earning Freight Traffic

The Railway's revenue earning freight traffic projections for 1997-98 has been fixed at 440 million tonnes, and the same is expected to go upto 660 million tonnes by the end 2000 AD.

In the recent past, the traffic throughput at Indian ports has shown a remarkable growth, rising from 107.8 million tonnes in 1984-85 to 227.3 million tonnes in 1996-97. While the bulk commodities continue to dominate the traffic at ports, the growth of container traffic has also been registering a continuous increase, as mentioned earlier, and the same is primarily due to rising demand for shipment of general cargo in containers. For the movement of bulk traffic, railways will continue playing a significant role and their contribution will be substantial in the coming years.

3.3.4 Modernisation Programme

Indian Railways are a service organisation operating on commercial lines. The main objective of railways has been to develop the transport infrastructure for carrying the projected quantum of traffic and also to meet the developmental requirements of the country's economy. With a view to meeting the successive increase in the movement of freight traffic, the railways have already initiated certain programmes for augmenting the line and rolling stock capacity. Electrification of routes, gradual replacement of steam engines by diesel and electric engines in areas of heavy traffic density, introduction of special Box N wagons with higher payload capacity in replacement of 4 wheeler wagons, introduction of freight operation information system (FOIS), computerised freight booking, etc. are some of such measures already initiated by railways.

The Railways have also taken up certain measures to arrest the diversion of traffic to road by introducing customer-oriented services like Quick Transport Service (QTS) and Speed Link Express Trains for the movement of general goods traffic from Delhi, Kolkata, Mumbai and Chennai. The Railways are also contemplating to introduce road-trailers or truck-trailer units that can piggy back on flat railway wagons. For facilitating the movement of containers, 'Liner Specials' have been introduced between ports and ICDs at Chennai-Delhi, Chennai-Bangalore, Mumbai-Bangalore, Delhi-Kolkata and Chennai-Cochin routes. Such services take lesser haulage time and are supposed to be faster than the lorry transport.

For taking up the various types of modernisation programmes, resources requirement of railways have become too huge to be met through internal sources and conventional market borrowings alone. To achieve the above objective, besides resorting to market borrowings, a beginning has been made by allowing private sector participation in selected railways projects/activities through schemes like Build-Own-Lease-Transfer (BOLT) and Own-Your-Wagon-Scheme (OYWS). Total wagons under OYWS were 10,500 by the end of August 1996, and it is expected that railways would require 25,000-30,000 wagons per annum during the Ninth Plan period.

3.3.5 Some Important Observations

The role of railways in foreign trade sector, particularly exports, is marginal as it is restricted to the carriage of bulk items like iron ore, coal, cement, fertilizer, foodgrains, petroleum products and raw materials for industries. Very little of general merchandise for exports to gateway ports is entrusted to railways despite the establishment of ICDs and CFSs at a number of growth centres in the hinterland from where road transport does not have much of cargo movement to ports. The causes responsible for the general reluctance on the part of the trading community in deploying the services of the railways for the transportation of manufactured/semi-manufactured goods are not far to seek. In fact, the railways are themselves responsible for this situation. Export traffic, because of its sensitivity, particularly in terms of commercial commitments to foreign buyers, has to be treated on a different footing from other goods traffic meant for movement within the country. The railways in our country have generally been found to be wanting in terms of adherence to delivery schedules, safety and security of cargo, personalised service, etc. Perennial shortage of wagons and lack of availability of special types of wagons for the carriage of some products such as scooters, special category machine tools, leather goods, etc. are continuing irritants in the physical distribution of export traffic. Some of the railway yards do not have proper facilities for loading of heavy cargoes. Absence of proper communication system in the event of detachment of wagons from rakes due to operational problems cause irretrievable repercussions on export consignments missing their sailing schedules.

Somehow, the above policies of railways with regard to freight bookings for exports, especially the general merchandise, have not found much favour with the exporting community. Although the Indian railways have a policy of according preference to export traffic with priority allotment of wagons but, for all intents and purposes, the preference works in favour of train-load or full rake cargo, to the disadvantage of small exporters whose cargo is usually less than wagon loads (LWL). In fact, the railways, with their vast network, can play a vital role in the development of multimodal transport by linking the entire transport system for movement of export-import cargo. But, in order to serve the interest of foreign trade better, greater attention has to be paid to the provision of rail transport services commensurate with the expanding and exacting requirements of the export trade sector.

Check Your Progress B

- 1 Enumerate the commodities of import-export trade that usually move by Indian Railways
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- 2 State briefly the progress made by Indian Railways in handling ISO containers.
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- 3 What type of modernisation schemes have been initiated by Indian Railways?
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- 4 State whether the following statements are True or False.
 - i) Indian Railways is the largest rail network in Asia and the second largest in the world under a single management.
 - ii) For movement of general goods, normally comprising high value manufactured goods, there is preference for rail transport.
 - iii) With the establishment of CONCOR, ICD and CFS facilities have been set up at Anaparti, Guntur and Ludhiana.
 - iv) Railway's revenue earning freight traffic was expected to go up to 660 million tonnes by the end of 2000 AD.
 - v) Indian Railways itself is responsible for reluctance on the part of trading community to use its services for transportation of manufactured/semi-manufactured goods.
 - vi) Liner specials between ports and ICDs take higher haulage time and are reportedly slower than lorry transport.

3.4 WATER TRANSPORT

Water transport can be divided into two types, namely, inland water transport and ocean transport. As for the movement of goods in the hinterland, inland water transport occupies a place of significance from ancient times. The advantages of such a sub-system consisting of rivers and canals are low cost and more carrying capacity because no special tracks and surface are required for operating inland water transport, and the carrying capacity of a boat is almost six times more than its own weight. Of course, there are also some drawbacks of such a system such as circuitous routes resulting in longer time for transporting goods, slow speed and greater dependence on weather conditions.

India has about 14,500 kms. of navigable waterways which comprise rivers, canals, backwaters, creeks, etc. About 160 lakh tonnes of cargo is being moved by inland water transport (IWT) every year, as it is considered to be fuel efficient and environment friendly. For coordinated development of inland water transport in the country, the Ministry of Surface Transport (MOST) has been entrusted with the responsibility of identifying National Waterways (NW) and initiate steps for their speedy development.

3.4.1 Inland Waterways Authority Of India

The Inland Waterways Authority of India (IWAI) was set up on 27th October, 1986 under the Inland Waterways Authority of India Act, 1985. The Authority has been entrusted with the responsibility of development, maintenance and regulation of national waterways and advise the Central and the state governments on matter relating to the development of inland water transport.

The following waterways have been declared as National Waterways:

- a) Allahabad-Haldia stretch (1,620 kms.) of Ganga-Bhagirathi-Hoogly River system since October 1986, as NW-1.
- b) Sadiya-Dhubri stretch (891 Kms.) of the Brahmaputra river since September, 1988, as NW-2.
- c) Kottapuram-Kollam stretch (168 kms.) of the West Canal alongwith Champakara Canal (14 kms.) and Udyog Mandal Canal (23kms.) since February, 1993, as NW-3.

3.4.2 Central Inland Water Transport Corporation

The Central Inland Water Transport Corporation (CIWTC) was set up as a public undertaking in May 1967. It is mainly engaged in transportation of goods by inland waterways in the Ganga-Bhagirathi-Hoogly, Sunderbans and the Brahmaputra rivers. They are operating regular cargo services between Kolkata and Pandu (near Guwahati), between Kolkata and Karimganj (Assam), Kolkata-Bangladesh, and between Haldia and Patna. The Corporation is also having a shipyard called Rajabagan Dockyard in Kolkata which is engaged in the construction and repair of inland vessels and harbour crafts. A deep-sea ship repair division at Kolkata is also functioning under CIWTC.

3.4.3 Constraints Faced By Inland Water Transport

A host of factors are responsible for the slow development of inland water transport in the country, the main among them being the spatial limitation. As against the countrywide network of rail and road transport, waterways are restricted to only certain areas like Ganga in the Eastern region, Brahmaputra in the North Eastern region, Goa waterways and canals, and backwaters in Kerala, Karnataka, Andhra Pradesh and Maharashtra. Not only that, even where waterways are available, the potential has not been fully-exploited on account of various constraints. Most of the waterways suffer from navigational hazards like shallow water and narrow width during dry weather, siltation and bank erosion and inadequate vertical and horizontal clearances resulting in considerable detention enroute vis-à-vis inadequacies of infrastructural facilities in terms of proper terminal facilities.

3.4.4 Future Prospects

It is a recognised fact that the movement of cargo by inland water transport is cheap and is the most suitable for low value, high volume, non-perishable bulk cargo. The Government is, therefore, promoting transportation of fertilisers, coal, cement, crude oil, petroleum products and steel through inland waterways and, in the process, decongest road and rail transport. The future of inland water transport in the country is quite bright, and this mode can help in furthering the multimodalism which is being increasingly accepted. In view of above, the projected movement of cargo by such a mode is expected to be about 20 million tonnes by the end of Ninth Plan.

Check Your Progress C

- 1 Describe the drawbacks of inland water transport.
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- 2 Name the waterways declared as National Waterways.
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- 3 State the role of IWA and CIWTC in improvement of inland water transport in India.
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3.5 AIR TRANSPORT

Air Transport is yet another mode of transport which can be used for inland movement of cargo. The advantage of speed in case of air transport certainly helps in cutting down the transit time in the hinterland movement of export cargo but, owing to higher freight cost, the use of air transport is made on selective basis, say, in case of perishable products and in case of shortage of time for shipment of cargo from the sea port.

3.5.1 Organisation of Air Transport

The Ministry of Civil Aviation and Tourism is responsible for the formulation of national policies and programmes for development and regulation of civil aviation and for devising and implementing schemes for orderly growth and expansion of civil air transport. Its functions also extend to overseeing the provision of airport facilities, air traffic services, and carriage of passengers and goods by air.

The civil aviation is structured into three distinct functional entities - regulatory, operational and infrastructural. The operational entities are : Indian Airlines (IA), Alliance Air (subsidiary of IA) and private scheduled airlines and air taxis which provide domestic air services, and Air India (AI) which provides international services. Indian Airlines also cover some neighbouring countries. Pawan Hans Limited was incorporated in 1985 to acquire and operate helicopters in the country. It has been renamed as Pawan Hans Helicopters Limited. It provides air support services to oil sector in their offshore operations and connect remote and inaccessible areas. The infrastructural facilities are provided by Airports Authority of India which came into being on 1st April, 1995 as a result of the merger of National Airports Authority (NAA) and International Airports Authority of India (AAI). It is responsible for the management of all airports (domestic and international) and civil enclaves at the defence airfields. The Directorate of Civil Aviation (DGCA) is the regulatory body responsible for regulation of airport services to/from within India, registration of civil aircrafts in India, formulation of standards of airworthiness and grant of certificates of airworthiness to and from civil aircrafts registered in India.

3.5.2 Air Services

Indian Airlines is the major domestic air carrier of the country. It operates 57 domestic stations (including Alliance Air Operations and 17 international stations in 14 countries, viz., Pakistan, Maldives, Nepal, Sri Lanka, Malaysia, Bangladesh, Thailand, Singapore, UAE, Oman, Myanmar, Kuwait, Qatar and Bahrain. For the movement of export cargo booked at air cargo complexes located at various domestic airports in the country, Indian Airlines has been providing its services either to bring the cargo to the gateway international airports or to take the same to overseas destinations located in the above mentioned countries.

At present, there are two scheduled private airlines which provide regular domestic air services along with Indian Airlines. In addition, there are 41 non-scheduled operators providing air-taxi/non-scheduled air transport services. Private operators cater to nearly 41.5% of the domestic air traffic. A new policy on domestic air transport service was approved in April, 1997 according to which the barriers to entry and exit to this sector have been removed and choice of aircraft has been completely left to the operator.

3.6 MULTI-MODAL TRANSPORT

The multi-modal transport is that system of transport where the carriage of goods is effected by at least two different modes of transport on the basis of a multi-modal transport contract from a place in one country at which the goods are taken in charge by the Multi-modal Transport Operator (MTO) to a place designated for delivery situated in a different country. In its simplest form, multi-modalism implies a single contract of carriage with a single liability regime. The idea is to ensure door-to-door delivery and to make sure that it is done on time. For the purpose, different modes of transport are used as combinations, e.g., road/rail, rail/inland waterways/sea, sea/air, sea/rail, landbridge, minibridge, etc., with a view to achieving the advantages of economy in time and transportation cost. Multi-modal transport is essential for the efficient movement of containerized cargo.

India is relatively new to multi-modal transport, as the beginning in this regard was made towards the end of 1970s. Initially, Indian railways attempted with IRS containers (4.5-5 tonnes) way back in 1966-67. The first ISO container was received in Cochin port in 1973 and the movement of ISO containers inland by rail was taken up for the first time in 1981 to the Inland Container Depot, Bangalore. There has been an unprecedented growth in the number of TEUs handled at inland centres, viz., ICDs and CFSs, over the period. The number rose from merely 229 TEUs in 1981-82 to over 7.21 lakh TEUs in 1997-98.

The handling of ISO containers to and from the ICDS/CFSs from ports was taken up by Indian railways from 1981 till the establishment of Container Corporation of India Ltd. (CONCOR) as a nodal agency for promoting multi-modal transport in the country in 1988. CONCOR typically provides two different types of services in containers, namely, ISO container services for carrying international cargo and DSO container services for carrying domestic cargo. The ISO containers are marine containers and in that the two most popular sizes are 20'x8'x8-1/2' (called TEUs with a maximum carrying capacity of 21.5 tonnes) and 40'x8'x8-1/2' (called FEUs with a maximum carrying capacity of 30 tonnes). These containers are used for carrying import and export cargo between the gateway ports of the country and various Inland Container Depots (ICDs), thereby relieving congestion at the ports. Whereas the DSO containers are also similar to ISO containers but are mostly owned/leased by CONCOR and are used for carrying domestic cargo.

Majority of ICDs/CFSs in the country have a rail linkage but road is also used to supplement the needs of distant locations. Some hubs like Tughlakabad in Delhi are fed by several satellite locations like Agra, Ludhiana, Panipat and Moradabad.

Container handling facilities have been developed at a large number of major ports in the country over the period and with a view to making the advantages of this technology available to the exporting community as also for ensuring the healthy growth of multimodal transport system, the Government of India passed the Multimodal Transportation of Goods Act in 1993. You will study about multi-modal transport in detail in Unit 8.

Check Your Progress D

1 Define multi-modal transport.

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2 What type of services are provided by CONCOR?

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3 State whether the following statements are True or False.

- i) Indian Airlines is only a domestic air carrier.
- ii) Use of air transport is the most common mode of transport for hinterland movement of export cargo
- iii) India is relatively new to multi-modal transport.
- iv) The first ISO container was received in Cochin Port in 1981.
- v) Most of the major ports in India do not have container handling facility.

3.7 CHOICE OF INLAND TRANSPORT MODES

There are certain products where delivery has to be within a short time either due to their being perishable in nature or because their date of delivery at the port of loading is very close. In such cases a speedier mode of transport has to be given precedence over others, irrespective of the cost involved. But, in case of other items like low value and bulk commodities, cost of carriage is the most important consideration. However, in most cases, in making the choice for a carrier, delivery time needs careful consideration and hence, it is necessary to take into account the total transit time involved plus time lost due to bad weather, and delays on the way either due to traffic jams, police barriers, octroi checkpoints, etc. The other important factors to be considered include (a) frequency, (b) reliability, (c) availability, (d) payload capacity, and (e) freight cost plus the cost of packing, documentation, insurance, etc.

3.8 LET US SUM UP

The inland transport plays a significant role in providing the origin-destination linkages to the cargo movement in the international trade. Various sub-systems used for the purpose consist of road transport, rail transport, inland water transport, air transport and multi-modal transport. Among these, road transport is considered as the most important sub-system as it provides linkages to other sub-systems besides being capable of providing services on door-to-door basis. Over the period, road transport has made rapid strides both in terms of road network and

the traffic movement. In fact, it has made inroads into the rail transport by increasing its share from 11 percent in the carriage of total freight in 1951 to about 60 percent as of now. The road system in the country is divided into five broad categories. However, from the point of view of movement of freight traffic, national highways play a significant role. The increasing use of road transport in case of export-import cargo movement is basically due to its operational flexibility, speed, reliability, and personalised services.

Keeping in view the increasing demand for road transport, a judicious development strategy is needed for road network wherein priority has to be given to the major missing bridges and reconstruction of weak and distressed bridges, four laning of national highways and construction of bypasses in the urban areas to avoid traffic congestion. This requires huge investment which the government may find difficult to arrange. Hence, various types of schemes like BOT, BOOT, BOLT, etc. have been offered to attract private sector participation in road building. Besides roads, vehicle fleet modernisation programme is also envisaged in order to cope with the increasing volume of traffic and meet the increasing requirements of multimodalism for the movement of cargo in the ISO containers.

Railways is another important sub-system in this context. Having made a modest beginning in 1953, Indian Railways have now grown into the largest rail network in Asia and second largest in the world under a single management. There has been phenomenal growth in the Railways freight traffic, increasing from 73 million tonnes in 1950-51 to 409 million tonnes in 1996-97, and the same is expected to go upto 660 million tonnes by 2000 AD. The mainstay of Railway's traffic are the bulk products, like coal, iron ore for export, cement, foodgrain, fertilisers and POL. Indian Railways also cater to the container traffic for which it provides two types of services, namely, domestic container service for intermodal transport of domestic cargo in 4.5 to 5 tonnes capacity and ISO containers for the development of multi-modal transport of containers between gateway ports and ICDs/CFSs located in the hinterland.

In order to cope with the increasing demand for traffic movement of both goods and passengers, the Railways have initiated modernisation programme by way of increasing the line and rolling stock capacity, electrification of routes, gradual replacement of steam engines by diesel and electric engines in the areas of heavy traffic density, introduction of freight information system, computerised freight bookings, etc. Besides these, various measures are being taken to arrest the diversion of traffic to road sector. Railways have also come up with many schemes for seeking private sector participation in selected projects/activities on the basis of Build-Own-Lease-Transfer (BOLT) and Own-Your-Wagon-Scheme (OYWS).

Despite having a large number of rivers and canals, movement of freight traffic by inland water transport in the country is not very high. Realising the potential and advantages of such a system, however, the Ministry of Surface Transport has been entrusted with the responsibility of developing, maintaining and regulating the national waterways and advising the Central and the State Governments on all matters pertaining to inland water transport. For this purpose, the Government of India set up the Inland Waterways Authority of India in 1986. However, the trading community is not finding much utility of this sub-system which may be due to lack of the reliability, spatial limitation, and the navigational hazards involved such as shallow water and narrow width during dry weather, siltation and bank erosion, etc. However, recognising that movement of cargo by inland water transport is cheap, the Government is promoting transportation of low value, non-perishable bulk cargo such as coal, cement, fertilisers, crude oil petroleum products and steel through inland water transport. The projected movement of cargo by this mode of transport towards the end of Ninth Plan is around 20 million tonnes.

The air transport as a mode of inland transportation of goods is considered useful as it cuts down the transit time in the hinterland movement of export cargo. For providing air services within the country, Indian Airlines is the mainstay which also provides services to 12 neighbouring countries. The movement of export cargo booked at air cargo complexes located at various domestic airports takes place by Indian airlines either to the gateway international airports or to the destinations which are serviced by it.

Under the multi-modal transport system, carriage of goods is effected by at least two modes of transport and it implies a single contract of carriage and ensures door-to-door delivery of goods in ISO containers. Though India is relatively new to multi-modal transport, there seems to be increasing acceptability of the system for the hinterland movement of export-import cargo.

This is evident from the fact that as against merely 229 TEUs handled at inland centres (ICDs/CFSs) in 1981-82, the number rose to over 7.21 lakh TEUs in 1997-98. Initially, Indian Railways were entrusted with the task of managing the ICDs and the movement of ISO containers to and fro the inland centres to ports. But, with the setting up of Container Corporation of India Ltd. (CONCOR) in 1988, the management of ICDs/CFSs and the movement of ISO containers is being looked into by CONCOR. The Government has also passed the Multimodal Transportation of Goods Act 1993 for facilitating the development of multimodalism.

In exercising the choice for a carrier for inland transport of goods, the various factors that weigh with the trading community are : speed, frequency, reliability, payload capacity and freight cost and cost of packing, insurance, etc.

3.9 KEY WORDS

BOO : Build-Operate and Own

BOLT : Build-Operate-Lease and Transfer

BOOT : Build-Operate-Own and Transfer

BOT : Build-Operate and Transfer

CFS : An international trade receiving point which serves as the satellite to inland container depots.

Containerisation : Placing the goods into container or boxes of standard sizes, e.g., ISO containers.

Hinterland : Place located quite far away from the sea ports.

ICD : A dry port where containerized cargo is aggregated and consolidated with suffering and receiving point which serves as the satellite to inland container depots.

ISO : International Standards Organisation

Multimodalism : Where two or more modes of transport are used for carriage of goods.

OYWS : Own Your Wagon Scheme.

TEUs : Twenty Foot Equivalent Units used for a 20' ISO container.

Satellite Location : Locations closer to the main facilities or which depend on the facilities created at the main locations such as ICDs.

3.10 ANSWERS TO CHECK YOUR PROGRESS

A 2 (i) 60 (ii) operational (iii) inland (iv) resource (v) multi-modal

B 4 (i) True (ii) False (iii) False (iv) True (v) True (vi) False

D 3 (i) False (ii) False (iii) True (iv) False (v) False

3.11 TERMINAL QUESTIONS

1 Discuss the role of road transport in the movement of import export cargo and outline the steps taken by the Government for the improvement of road network and fleet modernisation.

2 "Among various modes of inland transportation in the organized sector rail transport constitutes the most important element of the transportation network in India." Discuss. Also describe the role of Indian railways in the movement of ICD/container traffic.

- 3 a) Why is inland water transport rarely used for movement of export-import cargo in India? How can the situation be improved?
- b) What are the various factors taken into consideration while selecting the mode of transportation for export cargo? Explain.
- 4 Write short notes on the following.
- a) Air Services for movement of export-import cargo in India
- b) Multi-modal Transport
- c) Composition of Roadways
- d) Freight Traffic