

CONTENT

PREFACE	5
MODULE 1. MULTIMODAL CARGO TRANSPORTATION ...	6
1. Multimodal transport concepts	6
1.1. Multimodalism: historical aspect.....	6
1.2. Context for multimodal transportation planning.....	9
1.3. Factors in choosing a freight or passenger mode.....	13
1.4. The transportation planning process.....	18
1.5. Evaluating transportation alternatives.....	27
2. Overview of multimodal transport systems	39
2.1. Transport mode characteristics.....	39
2.2. Technical aspect of multimodal transport.....	43
2.3. Organizational aspect of multimodal transport.....	72
3. Other freight transport	79
3.1. Maritime transport.....	79
3.2. Air transport.....	100
3.3. Road transport.....	112
3.4. Rail transport.....	124
3.5. Combined transport.....	136
4. Multimodal transportation planning	147
4.1. Conventional transportation planning.....	147
4.2. Multimodal transportation: various capabilities of different transport modes.....	151
4.3. Automobile dependency and multimodalism.....	156
4.4. Multimodal transport projects and logistics.....	162
4.5. Multimodal transport corridors.....	168
4.6. Multimodal transport documents.....	173
MODULE 2. LOGISTICS SERVICES	183
5. Logistics services system	183

5.1. Concepts of logistics and distribution.....	183
5.2. Planning for logistics.....	197
5.3. Supply chain management.....	203
5.4. Warehouse management services.....	210
5.5. Operational management logistics services.....	217
6. Strategy for freight transport logistics.....	224
6.1. Overview and performance of the world logistics sector.....	224
6.2. Logistics trends and scenarios.....	229
6.3. Performance indicators and best logistics practices.....	234
6.4. Supply chain collaboration.....	239
7. Future of transport and logistics services.....	248
7.1. Technology trends for freight transport logistics.....	248
7.2. Transport logistics forecast.....	254
7.3. Determination of future transport logistics strategies for countries.....	259
REFERENCES.....	267

MODULE 1. MULTIMODAL CARGO TRANSPORTATION

1. MULTIMODAL TRANSPORT CONCEPTS

1.1. Multimodalism: historical aspect

The demand for increased productivity and efficiency of the transport industry has been heightened as the manufacturing and service sectors adopt such logistics concepts as "just-in-time" delivery and supply chain integration, and by the shift towards a global economy, competition between supply chain versus supply chain (instead of company versus company), e-business and e-commerce. Containerization involves improving the quality of handling and transfer of general cargo in transit moving by road, rail or ship, but multimodalism integrates the modal transport function under one operator from factory door to factory door [1].

The most important recent technical developments in transport, especially ports and shipping, were containerization and unitization in the 1960s. This revolution replaced the centuries old traditional break-bulk line shipping or port with traditional jetty and labour intensive handling of cargo, by unitized or palletized transport and transfer of cargo. General cargo is transferred onto a standard unit such as a pallet and placed in a standard container [1].

Unimodal transport is The Carriage of Goods by one single mode of Transport, namely Road, Rails, Sea, Inland Waterway, Air, Space for the entire route of transport. Unimodal Transport covers the entire transport including transshipment if the second leg of transport is the same mode but in the different means of transport, such as Sea transport using feeder and mother vessel. Air transport with transshipment at hub in other country than destination is defined as Unimodal Transport as well [2].

Intermodal Transport definition by EU Commission Intermodality 1977 "A characteristic of transport system that allows at least two different modes to be used in an integrated manner in a door-to-door chain". Intermodal Transport definition by European Conference of MTO (ECMT) 2003 "The movement of goods in one and the same load unit or vehicle by successive modes of transport without handling of the goods themselves when changing modes" [2].

Concept of Intermodal Transport: a) International Transport; b) At least two modes of transport; c) No handling the goods when changing modes; d) Several Contracts of Carriage (traditional concept); e) Single Contract of Carriage but liability of carrier is based on each leg of transport at latter stage [2].

Combined Transport Definition by UNECE “Combination of means of transport where one (passive) transport means is carried by another (active) means which provides traction and consumes energy“ [2].

Combined Transport Concept: a) Combination of Modes of Transport; b) At least two modes of transport; c) Within Europe and beyond; d) Single Contract of Carriage; e) Single Operator; f) Without handling of the goods [2].

If the Carriage called for by this Bill of Lading is Combined Transport, the Carrier undertakes the performance and/or in its own name to procure performance of the Carriage from the Place of Receipt or the Port of Loading, whichever is applicable, to the Port of Discharge or the Place of Delivery, whichever is applicable, and, save as otherwise provided in this Bill of Lading, the Carrier shall be liable for loss or damage occurring during the Carriage, between the time when he receives the goods into his charge and the time of delivery [2].

Multimodal Transport Definition by UNESCAP “A transport system operated by One carrier with more than one mode of transport under the control or ownership of One Operator” [2].

Multimodal Transport definition by UNCTAD (MT Convention 1980) “International multimodal transport” means the carriage of goods by at least two different modes of transport on the basis of a multimodal transport contract from a place in one country at which the goods are taken in charge by the multimodal transport operator to a place designated for delivery situated in a different country” [2].

Multimodal Transport definition by AFAMT “International multimodal transport” means the carriage of goods by at least two different modes of transport on the basis of a multimodal transport contract from a place in one country at which the goods are taken in charge by the multimodal transport operator to a place designated for delivery situated in a different country. The operations of pick-up and delivery of goods carried out in the performance of a unimodal transport contract, as defined in such contract, shall not be considered as international multimodal transport” [2].

Multimodalism, as a tool, offers shippers a greater choice of cost control, flexibility, competition, reliability and, above all, a one-stop service. It has, on the one hand, lowered costs by enabling shippers to select combinations of