



Introduction









The improvement of transportation networks is closely related to urban development. In many cities worldwide including Tokyo, there are moves toward urban renewal with railway stations as the core. Playing an important role in these moves are urban transport systems.

Japan Overseas Rolling Stock Association (JORSA) has published this book to serve as a guide to introducing appropriate urban transport systems. Here "urban transport systems" include conventional heavy-rail transit and other types of transportation systems such as the automated guideway transit, monorail, light rail transit and other systems, and exclude automobiles, ships and airplanes.

This book presents distinctive features of various systems that provide remarkable service mainly in Japan, as well as the criteria for their selection, their technological descriptions, transport characteristics, and specific examples. It also discusses the points to be noted in adopting the systems and offers know-how in operating such systems continuously. JORSA sincerely hopes that this book will be read by many people concerned with urban planning, urban renewal and urban development, thereby promoting a deeper understanding of urban transport systems.



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Overview of urban transport systems



Characteristics of urban transport systems

There are various types of urban transport systems: Urban high-speed railways using heavy-rail systems that are capable of mass transportation; linear metro, monorail and other systems that carry medium volumes of passengers; and automated guideway transit (AGT), light rail transit (LRT) and other systems that are small in size yet can transport medium volumes of passengers.

In principle, urban transport systems have dedicated tracks and can therefore transport passengers punctually at high speed without being affected by traffic congestion common on roads. In addition, the unit transport volume and the transport volume per hour for railways are larger than those for automobiles. Running on dedicated tracks and management by advanced operating systems make railways an extremely safe means of transportation.

Railways occupy a small area relative to their large unit transport volume and can run on elevated tracks or underground, enabling effective land use in cities.

Urban transport systems are basically powered by electricity and as a result, have low environmental load in terms of air pollution, noise and other public nuisances. Similarly, the high efficiency of the

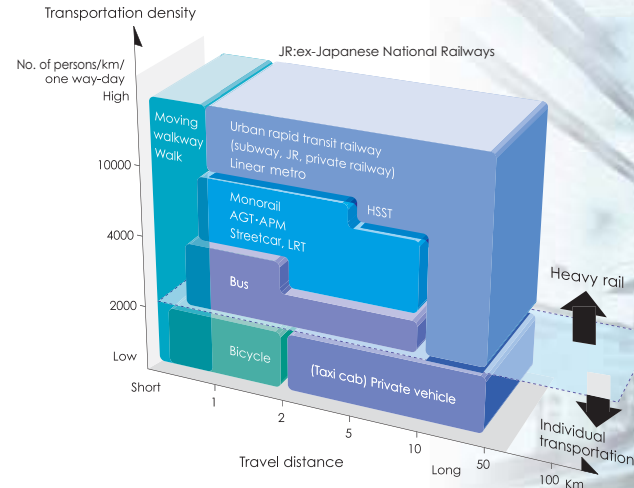
systems keeps energy consumption per person low. As described above, railways have exceptional strengths as an urban transport system. In order to make the most of urban transport systems, it is important to understand the characteristics of each system well and to choose appropriate ones that meet transport needs.

Urban public transportation constitutes an important part of the social infrastructure and is indispensable not only to commuting to and from work or school, but also to maintaining the comfortable lives of urbanites. In order to build efficient transport systems in large cities, it is important that close cooperation and clear division of roles be ensured between basic means of transportation capable of high-speed mass transportation and other means of transportation that act as feeders to complement them.

In key regional cities, the means of transportation capable of transporting medium volumes of passengers can replace mass-transit systems as the basic means of transportation. In provincial cities with a small population, AGT and LRT systems can also play a leading role in public transport systems.

The transport needs of users are not uniform and are becoming increasingly diverse on a worldwide scale. In drawing up transport plans, it has also become essential to make transport facilities barrier-free and to pay attention to the environment. In the future, it is necessary to build transport systems that meet these diverse needs of the society.

Scope of application of urban transport systems



A guide to the selection of urban transport systems

There are various types of urban transport systems including heavy rail, monorail, AGT, LRT, and HSST. In order to optimize these systems, it is important to understand their characteristics well and to choose appropriate ones that meet transport needs.

Heavy rail (surface)	Heavy rail (subway)	Linear metro	Monorail	HSST	AGT/APM	LRT
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Geographic features of system application

Basic systems for densely populated centers of large cities	○	○				
Systems for large cities with relatively low population density			○	○	○	
Access to centers of large cities and peripheral parts			○	○	○	
Access to urban districts of large cities and suburban residential areas	○			○	○	
Feeder line to terminal of mass transportation system				○	○	○
Basic systems for mid-size cities with high population density		○	○	○	○	
Basic systems for cities with widely distributed population			○	○	○	
Above-mentioned feeder system				○	○	○
Basic systems for small cities			○	○	○	○
Subsystems for small cities				○	○	○
Access to city centers and inner-city airports		○	○	○	○	
Access in airports				○	○	
Access in residential districts (newly developed housing complexes)				○	○	○