Review of Ancient Transportation Methods and Modern Methods in India

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DOI: https://doi.org/10.51244/IJRSI.2025.12050002

Received: 06 May 2025; Accepted: 12 May 2025; Published: 27 May 2025

ABSTRACT

Geographical considerations, technological developments, and socioeconomic demands have all had a major impact on India's transportation infrastructure over time. India used a range of ancient modes of transportation before to the invention of contemporary motorized vehicles, many of which are still in use today in rural areas. India's modern transportation infrastructure is varied and dynamic, created to accommodate the country's expanding urbanization, economic growth, and sizable and expanding population. Roads, railroads, airplanes, and canals are all essential components of India's transportation network, which links the nation. Although infrastructure, technology, and services have advanced significantly over the last few decades, problems like traffic, pollution, and accessibility still exist. An outline of India's main transportation options may be found below.

Keywords: Transportation modes,

INTRODUCTION

India has a lengthy history of transportation networks that have developed over millennia, and the nation has a rich and varied cultural legacy. India's conventional transportation system is ingrained in its historical, cultural, and physical settings and is crucial to the nation's progress. India has one of the largest road networks in the world, with a total length of over 6.2 million kilometres, consisting of national highways, state highways, rural roads, and urban roads.

EVOLUTION OF TRADITIONAL TRANSPORTATION SYSTEMS IN INDIA

Ancient Period

- Foot Travel and Animal-Driven Transportation: In India, foot travel was the first mode of transportation. In different sections of the country, people would walk, and animals like horses, camels, and elephants were employed for transportation.
- Use of Chariots and Carts: Chariots were frequently employed in ancient India for both transportation and combat. These were hauled by horses, while commodities were transported on carts driven by oxen or bullocks.
- River and Sea Routes: Waterways have always been crucial to transportation because of India's huge river systems and long coastline. Across rivers and the sea, people and commodities were frequently transported by boats, ferries, and ships.

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue V May 2025

Medieval Period

- The Mughal and Maratha Empires' Roles: The Mughal Empire in particular saw the construction of clean roads and traveler rest areas, or Sarai. Long-distance overland transportation was enhanced by the construction of the Grand Trunk Road, which ran from Bengal to the northwest border.
- Bullock and Camel Carts: During the Middle Ages, camel caravans were essential for moving cargo over deserts and to far-flung areas of the subcontinent, particularly in dry areas like Rajasthan.

Colonial Period

- Railways: In the middle of the 19th century, the British colonial government established the railway network in India, which completely changed how people traveled throughout the subcontinent. Traditional modes of transportation persisted, especially in rural and semi-urban areas, despite the substantial changes brought about by the railways.
- Tongas and Rickshaws: For short-distance transportation in cities, tongas (horse-drawn carriages) and rickshaws eventually emerged as the most popular options.

TYPES OF TRADITIONAL TRANSPORTATION SYSTEMS IN INDIA

Animal-Pulled Vehicles

Bullock Carts: Used for generations to move firewood, vegetables, and grain, bullock carts are the most common type of traditional transportation in rural India.

Camel Carts: In dry areas where other modes of transportation might not be appropriate, camels are employed to move products, especially in Rajasthan and Gujarat.

Horse-drawn Carts: Historically, horses have been utilized to move people and commodities throughout India, especially in the North and the West.

Water Transport

Boats and Ferries: With India's vast river systems and coastline, water transport was and continues to be vital. In Kerala, for example, traditional wooden boats are used for transporting people and goods through the backwaters.

Houseboats: In regions like Kashmir and Kerala, houseboats serve as both transportation and accommodation.

Human-Pulled Vehicles

Rickshaws: In many Indian towns, human-powered rickshaws—mostly bike rickshaws—remain a familiar sight. For many city dwellers, these rickshaws offer an inexpensive form of transportation for short-distance trips.

Palanquins and Palkis: Prior to the widespread use of motorized transportation, the aristocracy and nobility utilized palanquins—carried by either men or animals—to travel great distances, especially in hilly areas.

Elephants: Elephants have long been employed for heavy lifting and cargo transportation in several parts of India, especially in the northeast and mountainous areas. Additionally, elephants were utilized in regal and religious processions.

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue V May 2025

Significance of Traditional Transportation

Cultural and Social Significance: In India, traditional modes of transportation hold great cultural and social importance. Numerous religious rites, festivals, and rituals are connected to certain modes of transportation. Elephants, for instance, are important to Tamil Nadu and Kerala temple celebrations.

Economic Importance: For centuries, the foundation of rural trade was made up of camels, bullock carts, and other animal-drawn vehicles, particularly for the transportation of agricultural products. Bulk cargo transportation still relies heavily on water, particularly in areas like Kerala and the Sundarbans.

Environmental Sustainability: Because they rely on human labor, animals, or natural resources like wind and water, traditional transportation systems are frequently more environmentally friendly than contemporary ones.

CHALLENGES FACED BY TRADITIONAL TRANSPORTATION SYSTEMS

Decline in Use: Traditional modes of transportation, especially in metropolitan areas, have become less common as a result of the widespread availability of mechanical transit, such as buses, trucks, cars, and trains. These contemporary forms of transportation provide options that are quicker, more effective, and require less work.

Reliance on Weather and Geography: A lot of conventional modes of transportation, especially boats and vehicles pulled by animals, rely on favorable weather and geographic circumstances. For instance, in some areas, flooded rivers during the monsoon season make it impossible to utilize boats efficiently.

Animal Welfare Issues: The usage of horses and bullocks for transportation in cities has sparked worries about animal abuse and the physical stress these animals endure. Policies have been put in place in several cities to limit or control

TYPES OF MODERN TRANSPORTATION SYSTEMS IN INDIA

Road Transport

National Highways (NH): These are important routes that link states and large cities. The government has been actively modernizing and growing the NH network in recent years as part of the Bharatmala Pariyojana, a major highway development initiative meant to increase road connectivity.

Expressways: In an effort to shorten travel times and improve traffic flow, there has been a surge in the building of expressways, including the Yamuna Expressway, Delhi-Mumbai Expressway, and Eastern Peripheral Expressway

Public Transportation (Buses, Taxis, and Rickshaws): In both urban and rural locations, buses—both state-run and privately operated—remain the most popular mode of public transportation. In cities, taxis and autorickshaws are also frequently utilized for shorter distances. In large cities like Bengaluru, Delhi, and Mumbai, ride-sharing services

Rail Transportation

With more than 7,300 stations and more than 67,000 kilometers of track, India has one of the biggest railway networks in the world. In order to move people and goods throughout the nation, railroads are essential.

Indian Railways: One significant public sector enterprise is the Indian Railways (IR), which is operated by the state. It connects cities, towns, and rural areas with around 13,000 passenger trains every day. To

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue V May 2025

increase the efficiency of travel between large cities, high-speed trains like the Vande Bharat Express are being introduced.

Metro Systems: In big cities, urban metro systems are becoming more and more common. Mumbai, Bengaluru, Chennai, Kolkata, Hyderabad, and other cities have also started their metro networks, with Delhi Metro being one of the most developed and extensive in the nation.

Air Travel

With more airports and domestic flights, India's aviation industry has grown quickly during the past few decades. For long-distance domestic travel, air travel is especially common.

India boasts more than 130 airports, including important international hubs such as Netaji Subhas Chandra Bose International Airport (Kolkata), Indira Gandhi International Airport (Delhi), Kempegowda International Airport (Bengaluru), and Chhatrapati Shivaji Maharaj International Airport (Mumbai). Through the UDAN (Ude Desh ka Aam Nagrik) program, the government is also attempting to increase regional connectivity by lowering the cost of air travel and making it more accessible to smaller cities and villages.

Domestic Airlines: IndiGo, Air India, SpiceJet, GoAir, and Akasa Air are just a few of the full-service and low-cost airlines that operate in India.

Transport via Water

In India, water transportation is a largely underutilized but expanding industry. It encompasses both coastal shipping and inland water transportation (IWT).

Shipping and Ports: Major ports including Mumbai, Chennai, Kolkata, Jawaharlal Nehru Port, and Mangalore facilitate trade and commerce along India's expansive 7,500-kilometer coastline. A government project called the Sagarmala Project aims to upgrade India's ports, lower logistical costs, and encourage coastal trade.

Inland Waterways: To move freight, the government is creating the National Waterway System. Among the notable inland waterways under development are National Waterway 1 (the Ganga-Bhagirathi-Hooghly river system) and National Waterway 2 (the Brahmaputra river). The goal of the Jal Marg Vikas Project is to establish river transportation as a practical means of moving freight throughout the nation.

Innovations in Public Transportation

India is also adopting cutting-edge urban mobility transportation technology, such as:

Electric Buses: To lessen urban air pollution, a number of cities have started implementing electric buses. Public transportation networks in cities like Bengaluru and Delhi are attempting to incorporate a larger fleet of electric buses.

Bike Sharing: To offer an environmentally sustainable substitute for short-distance transportation, bike-sharing programs are being implemented in a few cities, including Delhi, Bengaluru, and Pune.

Smart Transportation and the Hyperloop: India is investigating cutting-edge transit technology like the Hyperloop, a high-speed transit network with planned routes connecting cities like Pune and Mumbai. Research is also being done on smart transportation options including driverless cars and linked traffic control systems.

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue V May 2025

Challenges and Future Outlook

With its long history and cultural significance, India's traditional transportation system is a vital component of both the rural and urban fabric of the nation. Even though the way people and things are transported around the country has changed significantly due to modern technology, traditional ways are still essential, particularly in rural and distant places. Maintaining cultural heritage and creating a more equitable and sustainable transportation paradigm for the future both depend on preserving these ancient systems while incorporating them with contemporary innovations.

Even though India's transportation system has advanced significantly in terms of modernization, there are still a number of obstacles to overcome, such as:

Traffic Congestion: This persistent problem, which leads to delays and pollution, is particularly problematic in metro areas.

Infrastructure Gaps: Although many cities and regions have seen improvements in their infrastructure, some still lack effective transportation systems, especially in rural India.

Sustainability and Pollution: India's expanding transportation industry greatly increases air pollution, which causes environmental damage and health issues. The government has made switching to cleaner fuels, electric cars, and environmentally friendly public transportation a to p goal.

Safety and Accidents: India has one of the highest rates of traffic accidents in the world, raising concerns about road safety. Improvements are being made to the infrastructure and laws pertaining to road safety.

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