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### A STUDY ON TRANSPORTATION AND ECONOMIC DEVELOPMENT IN INDIA

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#### **Abstract:**

The development of transportation systems is embedded within the scale and context in which they take place; from the local to the global and from environmental, historical, technological and economic perspectives. Development can be defined as improving the welfare of a society through appropriate social, political and economic conditions. The expected outcomes are quantitative and qualitative improvements in human capital as well as physical capital such as infrastructures, utilities, transport, and telecommunications. Creation of road transport infrastructure, through its direct and indirect effects, has a bearing on sustainability of growth and overall development of a country. It provides knowledge spillovers resulting from the whole agglomerated area via network dynamic externalities.

**Keywords:** *Economic importance of transportation, Economic opportunities, Economic returns of transport investments, Transportation of economic factors, Overall growth infrastructure.*

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## Introduction

The development of transportation systems takes place in a socioeconomic context. While development policies and strategies tend to focus on physical capital, recent years have seen a better balance by including human capital issues. Irrespective of the relative importance of physical Vs human capital, development cannot occur without both interacting as infrastructures cannot remain effective without proper operations and maintenance while economic activities cannot take place without an infrastructure base. The highly transactional and service-oriented functions of many transport activities underline the complex relationship between its physical and human capital needs. For instance, effective logistics rely on infrastructures and managerial expertise.

Creation of road transport infrastructure, through its direct and indirect effects, has a bearing on sustainability of growth and overall development of a country. Apart from improving connectivity, the development of roads can open up hitherto unconnected regions to trade and investment and step up access to goods, services and employment opportunities. This is reinforced by the fact that spending on infrastructure has large multiplier effects. In the long run this is achieved by getting higher returns from private investments, but only if this effect is greater than the negative impact of the increased tax rates needed to pay for it. The conventional theoretical models on infrastructure use “black box” models of exogenous and endogenous growth which simply assume a positive effect of infrastructure on macroeconomic aggregates. The efficient transportation reduces costs in many

economic sectors, while inefficient transportation increases these costs. In addition, the impacts of transportation are not always intended and can have unforeseen or unintended consequences. For instance, congestion is often an unintended consequence in the provision of free or low-cost transport infrastructure to the users. However, congestion is also an indication of a growing economy where capacity and infrastructure have difficulties keeping up with the rising mobility demands. Transport carriers an important social and environmental load, which cannot be neglected.

## The Economic Importance of Transportation

### (a) Core:

The most fundamental impacts of transportation-related to the physical capacity to convey passengers and goods and the associated costs to support this mobility. This involves the setting of routes enabling new or existing interactions between economic entities.

### (b) Operational:

The improvement in the time performance, notably in terms of reliability, as well as reduced loss or damage. This implies a better utilization level of existing transportation assets benefiting its users as passengers and freight are conveyed more rapidly and with fewer delays.

### (c) Geographical:

Access to a wider market base where economies of scale in production, distribution, and consumption can be improved. Increases in productivity from the

access to a larger and more diverse base of inputs (raw materials, parts, energy or labour) and broader markets for diverse outputs (intermediate and finished goods). Another important geographical impact concerns the influence of transport on the location of activities and its impacts on land values.

The economic importance of the transportation industry can thus be assessed from a macroeconomic and microeconomic perspective.

**(d) Macroeconomic Level:**

The transportation and the mobility it confers are linked to a level of output, employment, and income within a national economy. In many developed countries, transportation accounts between 6% and 12% of the GDP. Looking at a more comprehensive level to include logistics costs, such costs can account between 6% and 25% of the GDP. Further, the value of all transportation assets, including infrastructures and vehicles, can easily account for half the GDP of and advanced economy.

**(e) Micro economic Level:**

The importance of transportation for specific parts of the economy, transportation is linked to producer, consumer and distribution costs. The importance of specific transport activities and infrastructure can thus be assessed for each sector of the economy. Usually, higher income levels are associated with a greater share of

transportation in consumption expenses. Transportation accounts on average between 10% and 15% of household expenditures, while it accounts for around 4% of the costs of each unit of output in manufacturing, but this figure varies greatly according to sub-sectors.

**Transportation and Economic Opportunities**

**(a) Seaports**

Technological and commercial developments have incited a greater reliance on the oceans as an economic and circulation space. Seaports were associated with the early stages of European expansion from the 16<sup>th</sup> to 18<sup>th</sup> centuries, commonly known as the age of exploration. They supported the early development of international trade through colonial empires but were constrained by limited inland access. Later in the industrial revolution, many ports became important heavy industrial platforms. The globalization and containerization, seaports increased their importance as a support to international trade and global supply chains. Simple economies are usually associated with bulk cargoes while complex economies generate more containerized flows.

**(b) Rivers and Canals**

River trade has prevailed through history and even canals were built where no significant altitude change existed since lock technology was rudimentary. The first stage of the industrial revolution in the late 18<sup>th</sup> and early 19<sup>th</sup> centuries was linked with the development of canal systems with locks in Western Europe and North America, mainly to transport heavy goods. This permitted the development of

rudimentary and constrained inland distribution systems, many of which are still used today.

**(c) Railways**

The second stage of the industrial revolution in the 19<sup>th</sup> century was linked with the development and implementation of rail systems enabling more flexible and high capacity inland transportation systems. This opened substantial economic and social opportunities through the extraction of resources, the settlement of regions and the growing mobility of freight and passengers.

**(d) Roads**

The 20<sup>th</sup> century saw the rapid development of comprehensive road transportation systems, such as national highway systems and of automobile manufacturing as a major economic sector. Individual transportation became widely available to mid-income social classes, particularly after the Second World War. This was associated with significant economic opportunities to service industrial and commercial markets with reliable door-to-door deliveries. The automobile also permitted new forms of social opportunities, particularly with suburbanization. This table clearly explain the road transports.

Types of Road	Length
Expressways	1206 Km (749m)
National Highways	79,116 Km
State Highways	1,55,716 Km
District & Rural Roads	44,55,010 Km
<b>Total Length</b>	<b>46,89,842 Km (Approx.)</b>

**(e) Airways and Information technologies**

The second half of the 20<sup>th</sup> century saw the development of global air and telecommunication networks in

conjunction with economic globalization. New organizational and managerial forms became possible, especially in the rapidly developing realm of logistics and supply chain management. Although maritime transportation is the physical linchpin of globalization, air transportation and IT support the accelerated mobility of passengers, specialized cargoes and their associated information flows. This table clearly explain the paved and unpaved runways of airports.

Length of Runways	Paved Runways	Unpaved Runways
3047 m (10,000ft) or more	21	1
2,483 to 3,047 m (8000 to 10,000 ft.)	59	3
1,524 to 2,438 m (5000 to 8000 ft.)	76	6
914 to 1,524 m (3000 to 5000 ft.)	82	38
Under 914 m (3000 ft.)	14	45
Total	253	93

**Economic Returns of Transport Investments**

A common expectation is that transport investments will generate economic returns, which in the long run should justify the initial capital commitment. Like most infrastructure projects, transportation infrastructure can generate a 5 to 20% annual return on the capital invested, with such figures often used to promote and justify investments. A common fallacy is assuming that additional transport investments will have a similar multiplying effect than the initial investments had, which can lead to capital misallocation. The most common reasons for the declining marginal returns of transport investments are as follows:

**(a) High accumulation of existing infrastructure**

There is a high level of accessibility and where transportation networks that are already extensive, further investments usually result in marginal improvements. This means that the economic impacts of transport investments tend to be significant when infrastructure were previously lacking and tend to be marginal when an extensive network is already present. Additional investments can thus have a limited impact outside convenience.

**(b) Economic Changes**

As economies develop, their function tends to shift from the primary advanced manufacturing, distribution and services. These sectors rely on different transport systems and capabilities. While an economy depending on manufacturing will rely on road, rail and port infrastructures, a service economy is more oriented towards the efficiency of logistics and urban transportation. In all cases transport infrastructure are important, but their relative importance in supporting the economy may shift.

**(c) Clustering**

The clustering and agglomeration, several locations develop advantages that cannot be readily reversed through improvements in accessibility. Transportation can be a factor of concentration and dispersion depending on the context and the level of development. Less accessible regions thus do not necessarily benefit from transport investments if they are embedded in a system of unequal relations.

**Transportation of Economic Factor**

The contemporary trends have underlined that economic development has

become less dependent on relations with the environment resources and more dependent on relations across space. While resources remain the foundation of economic activities, the commoditization of the economy has been linked with higher levels of material flows of all kinds. This is particularly the case for multinational firms that can benefit from transport improvement in two significant markets are as follows.

**(1) Commodity market**

The improvement in the efficiency with which firms have access to raw materials and parts as well as to their respective customers. Thus, transportation expands opportunities to acquire and sell a variety of commodities necessary for industrial and manufacturing systems.

**(2) Labour market**

The improvement in access to labour and a reduction in access costs, mainly by improved commuting (local scale) or the use of lower-cost labour (global scale).

**Modern Infrastructure Transport System**

An efficient transport system with modern infrastructures favours many economic changes, most of them positive. The major impacts of transport on economic factors can be categorized as follows:

**(a) Geographic specialization**

The improvements in transportation and communication favour a process of geographical specialization that increases productivity and spatial interactions. An economic entity tends to produce goods and services with the most appropriate combination of capital, labour and raw materials. A region will thus tend to specialize in the production of goods

and services for which it has the greatest advantages or the least disadvantages compared to other regions as long as appropriate transport is available for trade. Through geographic specialization supported by efficient transportation, economic productivity is promoted.

**(b) Scale and scope of production**

An efficient transport system offering cost, time and reliability advantages enables goods to be transported over longer distances. This facilitates mass production through economies of scale because larger markets can be accessed. The concept of “Just-In-Time” in supply chain management has further expanded the productivity of production and distribution with benefits such as lower inventory levels and better responses to shifting market conditions. Thus, the more efficient transportation becomes, the larger of markets that can be serviced and the larger the scale of production. This results in lower unit costs.

**(c) Increased competition**

When the transport is efficient, the potential market for a given product or service increases, and so does competition. A wider array of goods and services becomes available to consumers through competition which tends to reduce costs and promote quality and innovation. Globalization has clearly been associated with a competitive environment that spans the world and enables consumers to have access to a wider range of goods and services.

**(d) Increased Land Value**

Land which adjacent or serviced by good transport services generally has greater value due to the utility it confers.

Consumers can have access to a wider range of services and retail goods while residents can have better accessibility to employment, services, and social networks, all of which transcribes in higher land value. Irrespective of if used or not, the accessibility conveyed by transportation is impacting the value of land. In some cases, due to the externalities there generate transportation activities can lower land value, particularly for residential activities. Land located near airports and highways, near noise and pollution sources, will thus be impacted by corresponding diminishing land value.

**Projected Investment Infrastructure-12<sup>th</sup> Plan (Rs.Crore at current prices)**

The investment projection for 12<sup>th</sup> plan period stands at Rs. 5574663 crore as compared to Rs. 2424277 crore during 11<sup>th</sup> plan period. The sub-sector with highest investment of 1502 thousand crores is electricity, followed by 944 thousand crore in telecommunications, 914 thousand crores in roads and bridges, 519 thousand crores in railways and 504 thousand crores in irrigation. The investment strategies along with reform policies during 11<sup>th</sup> plan period have improved the status of infrastructure in India.

	Total Eleventh Plan	Twelfth Plan Projection					Total Twelfth Plan
		2012-13	2013-14	2014- 15	2015- 16	2016- 17	
Roads & Bridges	453121	150466	164490	180415	198166	221000	914536
Railways	201237	64713	78570	96884	121699	157355	519221
MRTS( Mass Rapid Transport System)	41667	13555	17148	22298	29836	41322	124158
Airports	36311	7691	10716	15233	21959	32116	87714
Ports	44536	18661	25537	35260	49066	69256	197781
Electricity	728494	228405	259273	294274	333470	386244	1501666
Non-conventional Energy	89220	31199	42590	58125	79075	107637	318626
Oil & Gas Pipelines	62534	12211	16604	23833	36440	59845	148933
Telecommunications	384962	105949	136090	176489	230557	294814	943899
Irrigation	243497	77113	87386	99178	112506	128186	504371
Water Supply & Sanitation	120774	36569	42605	49728	58084	68333	255319
Storage	17921	4480	6444	9599	14716	23202	58441
<b>Total</b>	<b>2424277</b>	<b>751012</b>	<b>887454</b>	<b>1061316</b>	<b>1285573</b>	<b>1589308</b>	<b>5574663</b>

**Source:** Twelfth Five Year Plan (2012-2017), Volume1, Planning Commission

**Conclusion:**

The world is witnessing a rapid phase of globalisation. Societies and economies are interacting amongst themselves like never before. The world has become a global village, where anybody can reach the other part of the world in a short time physically and in almost no time virtually. Information is flowing at a speed as we see the sun rays. Therefore, the role of transport and communication is crucial in the process of globalisation. In developing countries, the transport and communication infrastructure is quite developed. But, the scenario in the developing countries is different. Although there has been huge investment in this sector, in developing countries like India, this sector is in transition. Transport also contributes to economic development through job creation and its derived economic activities. Accordingly, many direct (freighters, managers, shippers) and indirect (insurance, finance, packaging, handling, travel agencies, transit operators)

employment are associated with transport. Producers and consumers make economic decisions on products, markets, costs, location, prices which are themselves based on transport services, their availability, costs, capacity and reliability.

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