

ROLE OF ROAD TRANSPORTATION IN  
ECONOMIC DEVELOPMENT OF UNDERDEVELOPED COUNTRIES

by

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## CHAPTER I

### INTRODUCTION

#### I. STATEMENT OF THE PROBLEM.

Throughout history, transportation has played a vital role in the social, political and economic development of nations. Transportation provides the necessary means of marketing agricultural products, gaining access to mineral resources, developing and expanding industry and trade, conducting health, education and welfare programs, and exchanging cultural ideas.

Transportation over much of the earth and for most people is still quite primitive. The shipment of agricultural products is often delayed for months because of bad weather, poor facilities and inadequate capacity to meet seasonal peaks of demand. Many countries are isolated for long periods each year and suffer heavy economic and social burdens as a consequence. These are some of the examples which indicate that there is a relationship between inadequate transportation and poverty. Wilfred Owen has described this in the following words:

There is a definite relation between immobility and poverty. Countries with low standard of living are characteristically countries with inadequate methods of moving. The reason for this relationship is obvious. Transportation is an essential ingredient of almost every thing man does to supply himself with the necessities of life.<sup>1</sup>

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<sup>1</sup>Wilfred Owen, Transport Technology and Economic Development, in Transportation, Science, Technology, and Development, Vol V, U. S. papers prepared for the U. N. Conference on the Application of Science and Technology for the Benefit of the Less Developed Areas (U. S. Government Printing Office 1963), p. 14, cited hereinafter as Transportation.

In every country the level of the economy is directly proportional to the development of transportation. In the United States, for example, for a number of years every dollar of Gross National Product (in 1947) prices has meant the movement of some four ton-miles of intercity freight. This close relationship is due to the fact that most economic activities are possible only if transportation is available for their realization.<sup>2</sup> This applies to other countries at different levels of development. In France, for example, there were 136 Kilometers of improved road for each 100 square Kilometers of land area as compared with only 5 to 100 in Indonesia.

Rail, water, road and air transportation of both passenger and freight constitute an integral part of the economic life of any country. Each has a definite sphere of influence. There is a need to explore which mode of transportation is best suited for the economic development of underdeveloped countries.

The problem in underdeveloped countries is not only to provide a better means of transportation, but is to develop that transportation mode which will connect widely scattered rural communities and open up new areas for development so as to widen the domestic market and perform the diverse types of transportation functions related to the processes of industrialization and economic growth. Only a highway system along with its secondary roads network can meet these requirements.

## II. PURPOSE AND SCOPE OF THE STUDY

Different transportation modes contribute in varying ways and degrees to the economic development of a country and these variations must be

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<sup>2</sup>Wilfred Owen, Transportation and Economic Development, American Economic Review, Vol. 49 (May 1959), p. 180.

given important weight in guiding the relative development of different transportation technologies.

This thesis assumes that the development of road transportation is of fundamental importance in stimulating the economic development of the underdeveloped countries. It will attempt to prove that road and highway transportation plays a key role in the economic development of underdeveloped countries. It is based on the promise that underdeveloped countries are very inadequately supplied with roads.

### III. LIMITATIONS OF STUDY

The study is limited to a survey of the literature with the selection of West Pakistan for analysis. This study does not consider the specifications, design or cost of construction of roads and highways.

### IV. ORGANIZATION OF STUDY

Chapter II of this study is devoted to an examination of the nature and extent of underdevelopment of the present day world and the problems which are associated with the promotion of economic development in the developing countries.

Chapter III is concerned with the comparison of different modes of transport. It further attempts to show that highway transport is an important stimulus to economic development in underdeveloped countries.

Chapter IV explores the position of agriculture in the economy of developing countries and then discusses the importance of road transportation in the development of agriculture.

Chapter V analyzes the development of road and highway transportation in West Pakistan. The experience of West Pakistan illustrates the problems and potentials of the planning process for economic development. It would

be an error to imply that every developing country needs to follow the same procedures, or that it would be equipped to do so. Nor is it suggested that the procedures themselves have been wholly successful. But it does indicate an approach from which all countries can learn something useful.

Chapter VI of the study undertakes to explain the administrative set up of the Buildings and Roads Department of West Pakistan. It further explores the defects in the basic structure of the organization which are responsible for the slow progress of the development of roads. Reorganization of Buildings and Roads Department has been proposed. And finally, Chapter VII discusses the summary and conclusion of this study.

## CHAPTER II

### ECONOMIC DEVELOPMENT AND UNDERDEVELOPED COUNTRIES

Before we embark upon the study of road and highway transportation in the economic development of underdeveloped countries, it will be worth while to have a general idea of the nature and extent of underdevelopment of the present day world and the problems which are associated with the promotion of economic development and the growth of the developing countries.

No single definition of economic development is entirely satisfactory. There is a tendency to use economic development, economic growth and secular change interchangeably. It may be possible to draw a distinction among these terms but in this discussion we have used them synonymously.

Economic development has been defined as the process whereby the real national income or real per capita income increases over a long period of time.<sup>1</sup> Commenting on this definition Brand says that neither of these definitions require any improvement in the level of consumption of the majority of the population. He feels that an essential condition of economic development should be an improvement in the material well being for as large as possible a segment of the population. We also agree with Brand.<sup>2</sup>

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<sup>1</sup>Geral M. Meir and Robert E. Baldwin; Economic Development (New York:John Wiley & Sons, 1957), pp. 2-4.

<sup>2</sup>W. Brand, The Struggle for a Higher Standard of Living (Glencoe-Illinois:The Free Press, 1958), p. 5.

According to H. S. Buchanan and H. S. Ellis:

Economic development means developing the real income potentialities of the underdeveloped areas by means of investment to effect these changes and to augment those production resources which promise to raise real income per person.<sup>3</sup>

The emphasis in this discussion is to identify economic development with those changes and investments which increase real per capita income and also provide the masses with a larger quantity of goods and services.

#### I. NATURE AND EXTENT OF UNDERDEVELOPMENT

What is an underdeveloped country. The world consists of poor countries along side of rich. The words underdeveloped and developed are substituted for poor and rich and each of these is then defined in terms of economic performance.

According to Krause:

An underdeveloped country can be defined as one that, on the average, affords its inhabitants an end product of consumption and material well being inferior to that being provided in developed countries, conversely a developed country becomes one that affords an economic end product superior to that of underdeveloped countries.<sup>4</sup>

No accurate and entirely satisfactory measure exists to have a comparative idea of the extent of underdevelopment in the various countries of the world. There are various indicators, however, from which we may judge the level of material living in various parts of the world. The most commonly used measure is per capita income which is arrived at by

<sup>4</sup>Walter Krause, Economic Development (San Francisco:Wadsworth Publishing Company, 1961), p. 6.

dividing the value of the total national product during the particular year or the period by the number of persons living in the country concerned.

In using the words underdeveloped and developed for any particular country one should bear two essential factors in mind. First, the term underdeveloped implies relative status. An underdeveloped country is one that is economically poor compared with other countries. Second, the term underdeveloped is used arbitrarily. One rule of thumb is to regard as underdeveloped any country whose per capita income is no greater than one-fourth that of the highest income country. For example, according to Higgins:

In general, underdeveloped countries in this sense are those with per capita incomes less than one-quarter of the United States or roughly less than \$500 per year.<sup>5</sup>

Consciousness of Underdevelopment. Since time-immemorial, the vast majority of mankind has always existed at a very low living standard. Perhaps the average common man even in present underdeveloped countries enjoys a better material existence and a higher sense of self respect and freedom than his ancestors did only a few centuries back. What is new at the present time is the general realization of this state of poverty in comparison with the people of the more advanced countries. This consciousness has become more marked and widespread due to: (1) Development of more efficient and more comprehensive means of transportation and communications which have brought the people of the total world much closer than they ever have been; (2) A large proportion

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<sup>5</sup>Benjamin Higgins, Economic Development (N. York: Norton and Company, 1959), p. 6.

of people have become literate and hence more receptive of the new ideas about what life can give under the new conditions, (3) After World War II a large number of countries got independence from colonial powers. These nations realize that to maintain their independence and status in comity of nations they must develop their resources to the fullest extent. (4) The present day conflict of ideologies between the communist and non-communist countries is also helping the underdeveloped countries in their development efforts. (5) The existence of United Nations has also provided machinery for getting information, a forum for discussion of problems and helping them with different ways.

All the above mentioned forces and factors have thus brought a revolution of rising expectation among the hitherto underprivileged masses. They have realized that poverty is man made and not God made and can be eliminated with sustained and planned effort.

Basic Characteristics of Underdeveloped Countries. Examination of statistics pertaining to underdeveloped countries reveals that there is indeed a correlation between national poverty and other features of the country's economic and social organization. Given the large number of countries concerned, it becomes difficult to make good generalizations. However, in general, there are some characteristics common to the majority of the underdeveloped areas. Professor Leibenstein classified these characteristics into four major categories.<sup>6</sup> (1) Economic (2) Demographic and Health (3) Technological and (4) Cultural-Political. He described them in the following manner.

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<sup>6</sup>Harvey Leibenstein; Economic Backwardness and Growth (New York: John Wiley and Sons, 1957), pp. 40-41.

(1) Under economic characteristics he included, among others; a high proportion of the population in agriculture (70 - 90 percent); disguised unemployment; little capital per head; practically zero savings for the mass of the population; high proportion of expenditures on food; low volume of trade per capita; poor credit facilities; and, poor housing.

(2) Under demographic features he included high fertility and mortality rates, dietary deficiencies, poor health, and inadequate sanitation.

(3) Under technological he included low land productivity, crude technology and inefficient communications and transportation.

(4) Under cultural and political characteristics he included high degree of illiteracy, prevalence of child labor, absence of middle class, traditional values, and an inferior status for women.

Walter Krause gave the following features as common to the under-developed countries;<sup>7</sup> (1) Low income (2) Low well being (3) Raw material producers and (4) Poor man power utilization.

## II. PROCESS OF ECONOMIC DEVELOPMENT

Economic development is not a simple process but is highly complicated and involves many social, political and economic elements.<sup>8</sup> These elements are briefly described below:

Social elements. Economic development requires a favorable social environment which implies several things. First, there must be a desire

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<sup>7</sup>Walter Krause, Economic Development (San Francisco:Wadsworth Publishing Company, Inc., 1961), pp. 10-12.

<sup>8</sup>S. M. Akhtar, Pakistan a Developing Economy (Lahore:Publishers United, 1966), p. 5.

on the part of the people of the country concerned for material improvement. Secondly, there must be a realization that it is possible to achieve such an improvement. And thirdly, they must realize that it is for their own good. Economic development requires that the attitudes and institutions of the people must be flexible enough to change with the needs of the time.

Political elements. Political stability is the most important factor. Frequent changes in government and governmental policies are inimical for economic development. The Government has to be strong, honest and interested in the welfare of the people. Unfortunately, governments in underdeveloped countries are not strong conscientious.

Economic factors. Economic growth implies long run or secular increases in per capita productivity resulting in the increase in per capita income. Economic growth, as an increase in productivity, is the function of the following basic elements.:

- (i) Quantity and quality of natural resources.
- (ii) Quantity and quality of labor force and incentives available for work.
- (iii) Quantity and quality of the capital stock available or potentially available.
- (iv) The state of technology.

Promotion of economic growth, therefore, implies mobilization of the human and material resources of the country through:

- (a) Promoting capital accumulation by mobilizing domestic savings and supplementing them if necessary, from external sources.
- (b) Improving the health, education, and skills of the population as labor force.

- (c) increase in technological knowledge through research and foreign technical assistance.
- (d) improving the institutional and organizational frame-work.

It is not difficult to see that all these factors are interrelated and act and react on each other. The most important and the most difficult problem is that of the start. An initial increase in per capita income brought about in whatever manner, makes further increases easier.

The most important and strategic factor for economic development is capital formation. Capital consists of buildings, equipment and stocks of commodities, which can be used for producing further goods and services. Capital formation requires that an adequate proportion of national income must be saved and reinvested for further increase in national income.

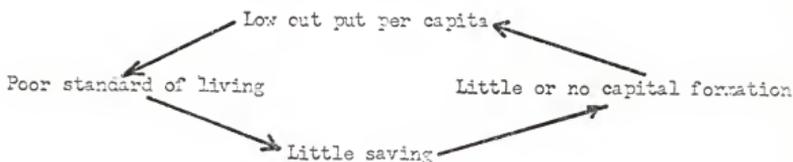
### III. OBSTACLES TO ECONOMIC DEVELOPMENT

As assured fact, in any event, is that development does not proceed free of hinderances. Following are some of the basic obstacles which are found in varying degrees in underdeveloped countries:

Blockage through vicious circle. The core obstacles confronting underdeveloped countries in attempt to promote development involves vicious circles as a consequence of which status-quo poses resistance to alteration for the better. It is sometimes said that in underdeveloped countries it is impossible to attain high rates of saving and investment because of the existance of a "vicious circle of poverty." People are poor; their savings are low, the ability to undertake and sustain investment is low, consequently per capita out put remains low, and people continue to be

poor. The following diagram explains that poor countries save and invest a smaller portion of their total output than do well to do industrial countries.<sup>1</sup>

Typical Vicious Circle of Poverty



A poor country will face many "vicious circles of poverty" comparable to the above. Accordingly an initial task in attempts to promote development is to discover which vicious circles are the basic causes of the other and to determine how these vicious circles can be dealt with.

Inadequacy of natural resources. No country in the world possesses all the resources in the necessary quantities and qualities. But a fair degree of resource base is needed to start and maintain the process of economic growth.

The major roles that natural resources play in economic development are that they (a) are used as raw materials or sources of power and fuel, (b) determine location of industry, and (c) determine what can be produced and how.

The role of natural resources, however, is secondary to the role of the human factor. If the human factor is adequate and efficient, inadequacies of particular natural resources can be made up by (i) imports, (ii) better organization and technology and (iii) substitution of what is available for what is not available. Many countries have shown

<sup>1</sup>Richard T. Gill, Economic Development Past and Present (New Jersey: Prentice-Hall Inc., 1965), p. 28.

remarkable economic development without any abundance of natural resources eg Japan and Israel.

Weak Public Administration. The process of development places certain positive responsibilities upon government and upon governmental personnel. Public administration, generally, tends to be of low calibre. The fact that in the typical underdeveloped country a high proportion of governmental personnel, at all strata, is somewhat unskilled and unpracticed poses a handicap.

Labor Resources. Deficiencies are apparent in the labor forces of the underdeveloped countries, and act as an impediment to development. Labor has both quantitative and qualitative aspects. The problem in many underdeveloped countries is of population pressure which leads to unemployment and underemployment. Here the problem may be of slowing down the growth rate of population in order to adjust it to the possible growth rate of the economy.

The second problem is that of the quality and the skills of the population. Virtually the entire labor force of the typical country is unskilled, all but completely lacking in training in modern production methods or in utilization of modern machinery.<sup>9</sup> The situation is especially important when industrial development is at issue. The people of most underdeveloped countries suffer malnutrition. The incidence of disease and ill health is high. Moreover, there is universal illiteracy and ignorance. All this leads to low efficiency and low productivity.

Low Volume of Saving. A major obstacle to economic development exists in the low volume of saving found in underdeveloped countries. The problem is how to increase saving when income is so low. A certain

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<sup>9</sup>Walter Krause, Economic Development (San Francisco:Wadsworth Publishing Company, 1961), p. 54.

amount of saving is possible even in a very poor society. Stable monetary conditions and confidence in the government and its policies are preconditions for promoting the savings habit among the people. Not only is the volume of saving low, but much of what is saved tends not to remain within the countries of origin. Numerous moneyed nationals within underdeveloped countries are prone to move their capital to developed countries, in large part because they feel their holdings will be safer there.

Limited Markets. Even when all the difficulties, mentioned above, are conquered and an increase in output becomes technically possible, the resultant capacity may not constitute a boon. Expansion of output in underdeveloped countries frequently proves difficult, or troublesome, simply because of insufficiencies of market demand. Market limitations are primarily the result of the low per capita income of the people and to some extent of the absence of adequate transport facilities.

## CHAPTER III

### ROADS AND OTHER MODES OF TRANSPORT

Different modes of transport exist in developing countries today. There are four modes of transport that figure prominently in the movement of passenger and freight. These are (1) railroad transportation, (2) transportation by water, (3) air transportation, and (4) road transportation. Each has a definite sphere of operation. In choosing the appropriate mode of transport, countries should be guided by consideration of the maximum dynamic qualities they offer and the high mobility they provide.

#### I. RAILROAD TRANSPORTATION

In the absence of water transport, railway provides the most economical way of carrying heavy bulk materials long distances, and in many countries the railway system is the principal method of mechanical movement. Many of the underdeveloped countries, which were either under colonial rule or under western influence, like India and Pakistan, have extensive railway networks.<sup>1</sup>

The speed of railways is greater than that of motor or any mode of surface transport but this advantage is somewhat lost due to terminal, transshipment and other delays. While discussing the advantages of railways Bigham reported:

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<sup>1</sup>Wilfred Owen, Strategy for Mobility (Washington: Brookings Institution, 1964), p. 93.

These advantages of the railroad tend to be neutralized by the time and cost of terminal operations. Cars must be loaded and assembled at origin, reassembled at intermediate points and disassembled and unloaded at destinations.<sup>2</sup>

But on a long journey the greater speed of railway can to a large extent make up for such delays and consequently journeys can be performed in less time by railway than by mechanical road vehicle. Railroads are, therefore, best suited for long hauls of carload quantities of bulk products which are low in value in relation to their weight and the freight charges. Thus, railroads are low cost agencies for the shipment of items such as coal, sand, ground minerals, agriculture and forest products.<sup>3</sup> As regards less than carload shipments railways suffer a loss when they carry small consignments of one or two or less. The rail loss in carrying less than carload traffic in the United States is estimated at 100 million dollars per annum.<sup>4</sup>

With this discussion, it is now possible to distinguish certain minimum requirements which need to be met before the building of a railway can normally be justified. There should be a basic flow of bulk commodities and a minimum total traffic flow. There must be some variations according to local circumstances, but a rule of thumb is that a railway needs 1000 tons per mile per day and, in newly developing countries, there are only a limited number of routes that can be

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<sup>2</sup>Truman C. Bigham, Transportation Principles and Problems. (McGraw-Hill Book Company, 1964), p. 81.

<sup>3</sup>William J. Stanton, Fundamentals of Marketing (New York: McGraw-Hill Book Company, 1964), p. 402.

<sup>4</sup>United Nations, Economic Commission for Asia and the Far East, Transport Development (New York: December 1960), Vol XI No: 3, p. 23.

expected to carry this much traffic.<sup>5</sup> The minimum length for the trunk haul should be about 80 km (though this should be shortened for regular flows of very large consignments of bulk traffic such as the output of a coal mine or iron ore mine).<sup>6</sup>

There is no doubt that the extensive railway networks with which many underdeveloped countries have been endowed will continue to serve vitally important transportation needs. However in many instances these railroads were built in earlier generations for the main purpose of moving massive traffic (for example, minerals and bulky agricultural products) to the sea for export. They are frequently quite ill suited to provide the much more complicated and diversified services which come to be needed as the economic development of the country proceeds. This economic development involves a much greater interchange of goods and persons within the country itself, and lateral lines of communications become prominent in relation to the existing trunk routes to the sea. Railways are not flexible because they can go only where the track is laid. For these reasons, a heavy emphasis is being placed on new roads and highway construction in developing countries.

## II. TRANSPORTATION BY WATER

Inland waterways have been an important element in the growth of nearly all nations. In some areas, the use of inland waterways from the earliest times has been the prime if not the only means of moving

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<sup>5</sup>Wilfred Owens, Strategy for Mobility (Washington: Brookings Institution 1964), p. 96.

<sup>6</sup>Ibid., p. 32.

people and goods.<sup>7</sup> The attraction of water transport lies in the fact that waterways are provided by nature, and they furnish a ready made artery of commerce that needs only to be protected from sifting and properly marked for safe navigation.<sup>8</sup>

For the newly developing nations who are in the early stages of development, water transport is a cheaper system as compared to other forms of inland transport. The reasons given by Wilfred Owen are as follows:

In early stages of development, low income countries are predominantly producers of staple commodities with a low market value. The difference between this value and the cost of production is small, which means that the amount of transport cost that can be covered is also small. Economical methods of transport are important, therefore if a nation is to produce and move such products as wheat, Jute, rice, palm kernels, ground nuts, coffee or bananas, unprocessed minerals and forest products will likewise be able to bear only relatively small transport charges.<sup>9</sup>

Water transport is one of the oldest methods of moving goods and men. It is cheap because it involves very little overhead expenditures in the form of permanent ways, signals, stations, road construction etc. It is especially useful for carrying bulky commodities like coal, timber etc. Water transportation, particularly inland waterways, operates under certain disadvantages which make the service less attractive. In the first place, the waterways can reach directly only a portion of the

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<sup>7</sup>Frater Dodge and Philip, Harbors Marine Terminals and Waterways, in Transportation, Science, Technology and Development, Vol V, U. S. papers for the United Nations Conference on the Application of Science and Technology for the Benefit of the Less Developed Areas (U. S. Government Printing Office, 1963), p. 95, cited hereinafter as Transportation.

<sup>8</sup>Wilfred Owen, Strategy for Mobility (Washington, Brookings Institutions 1964), p. 91.

<sup>9</sup>Ibid., p. 90.

land of the country. Rivers and lakes are confined to fixed locations; and canals have to seek reasonably level routes in order to avoid prohibitive cost. It follows that water carriers either cannot participate in shipments, or they can participate only at the added expense of transshipment. Philip Locklin describes this as follows:

When freight traffic originates at points which are not on waterways a transfer of freight from trucks or freight cars to boats or barges is necessary if use is to be made of the waterway. This often absorbs the saving made by the lower costs of water transportation. The same difficulty is encountered if industries are not located at waterfront and must haul goods to and from the waterway. Rail service, on the other hand, extends to the industrial plant of the consignor or consignee if siding connections with the railroad are provided.<sup>10</sup>

In the second place, on the line haul, water transportation is normally slower than rail. At high speeds the friction of the water becomes excessive; on canals much time is required in passing through locks. A third handicap of the waterways is susceptibility to variations in the weather which causes great costs of maintenance and frequent interruptions to traffic.

### III. AIR TRANSPORTATION

In the areas where road, railroad and waterway transportation are well developed, air transport is applied primarily to the movement of passengers and very high priority cargo. Low value items move exclusively by low cost surfact transport. The availability of air services

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<sup>10</sup>Philip Locklin, Economics of Transportation (Home Wood Illinois, Richard D. Irwin; 1960), p. 721.

may make it possible to move perishables to market that would otherwise spoil but currently less than one percent of perishable cargo moves by air.<sup>11</sup>

In areas where surface transportation networks are not well developed air transport can be applied advantageously to move cargo and passengers to low cost transport media and also in direct carriage of perishables' cargo.<sup>12</sup>

The most obvious advantage of air transport is its speed but this is achieved only at high cost. Aircraft design and construction together with the supporting ground equipment is most complex and despite enormous strides over the post war period, the carrying capacity of the aeroplane is small in comparison with the railway train or the ocean going liner. In terms of capacity it is not a great deal larger than the more sizeable road vehicles and neither the initial cost nor the running cost bear comparison.

Air transport has the advantage of providing unbroken journeys over land and sea. Topographical hinderances like high mountains and deep seas only make for higher and longer flights but they don't hinder air transport in the same way as they may hamper construction of railways and roads.<sup>13</sup>

Aircraft require a considerable length of runway for take-off and touch-down and, therefore, air terminals cannot conveniently be placed in the immediate vicinity of large towns. It follows that there must

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<sup>11</sup> Philip R. Carlson, *Application of Air Cargo Transport to Feeder Operations in Less Developed Areas, Transportation* (Washington U. S. Government Printing Office, 1963), p. 68.

<sup>12</sup> *Ibid.*, p. 68.

<sup>13</sup> J. Johnson, *The Economics of Indian Rail Transport* (Bombay: Allied Publishers, 1963), p. 290.

sometimes be a lengthy journey by surfact transport between the town centre and the airport, which is time consuming and the portion of air travel must be of sufficient length to make the over-all journey time competitive with more direct travel by surface transport throughout. For this reason, air transport seldom offers advantage for distances less than 100 miles.<sup>14</sup>

To sum up, it may be said that air services cannot be used in all circumstances and by all people. The cost of operation is highest as compared to sea, road or railways. The air fare is usually higher than railway fare. Only very high grade goods can be carried by air transport. Low grade heavy goods cannot be carried by airways. Loading and unloading of freight and passenger cannot take place just anywhere because it is not possible for an aeroplane to land at any location or type of ground. The construction of the aerodrome itself requires a very heavy initial expenditure and considerable maintenance cost.

#### IV. ROAD TRANSPORTATION

In the last few decades a universal trend has developed toward increased road transport. Wilfred Owen gives the following three reasons for this:

First the economy and reliability of road transport have increased very rapidly in recent years as better roads and improved vehicle performance have revolutionized over land transport. Second, on many routes with light traffic this is the only feasible method of mechanized transport. Third, as the pace of economic development quickens, the importance of transport costs declines, and there is greater concern for improved service.<sup>15</sup>

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<sup>14</sup>R. W. Faulks, Elements of Transport (London Ian Allan, 1965), p. 10.

<sup>15</sup>Wilfred Owen, Strategy for Mobility (Washington: Brookings Institution, 1966), pp. 98-99.

Based on experience in the United States, indexes for the Gross National Product and for highway travel demonstrate that an overall relationship exists between highway transportation and the economy even where there are other extensive forms of transportation.<sup>16</sup> The following table\* shows the distribution of intensity freight traffic and G.N.P. in U. S.

Carrier	Ton Miles 1961	Per Centage of total 1961	Per Centage of total 1950	Per Centage of total 1940	Per Centage of total 1930
Railroads	572,000	43.3	56.2	61.3	74.3
Great Lakes	99,000	6.8	10.5	15.5	14.8
Rivers and Canals	125,000	9.5	4.9	3.6	1.7
Motor trucks	299,000	22.6	16.3	10.0	3.9
Oil Pipe- line	234,000	17.7	12.1	9.6	5.3
Air Carriers	850	0.1	--	--	--
<b>Total</b>	<b>1,320,850</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>
G.N.P. in 1963 prices in Billion of dollars		531.2	373.9	242.0	194.6

(1) William J. Stanton, *Fundamentals of Marketing* (N. York: McGraw-Hill Book Company, 1964), p. 403. (2) Joint Committee Print, 1964, Supplement to Economic Indicator (Washington: U. S. Government Printing Office, 1964).

The great advantage of motor transport over the other forms is the wide geographical coverage afforded by the highway system. Road vehicles

<sup>16</sup> Rex M. Whitton, *Highway Planning and Programming in the Economy*, Transportation (Washington, U. S. Government Printing Office, 1963), p. 46.

are not tied down to any particular route, like the railway, and penetrate almost everywhere. The length of the road network is usually far greater than that of the railways. The United States, for example, has ten times more miles of improved roads than railways.<sup>17</sup>

Another advantage of the road transport over other forms is the physical possibility of it being able to provide a door to door facility. In his book, The Principles of Inland Transportation, Dagget Stuart states:

Thus in many instances the truck has easier access to the points of origin and destination of shipments than has the railroad car. This is essentially because the road mileage of the country reaches more places than does the railroad mileage. It follows that a trucker can, more often than a railroad, pick up consignments at the place of business of the shipper, and deliver them to the place of business of consignee.<sup>18</sup>

Roads are the only suitable means of transport for the country side in the development of agriculture and other rural industries. Rex Whitton discusses the improvement of rural highway in the following words:

Rural highways improvements foster advantageous changes in use of available land including (a) more extensive or intensive cultivation to satisfy more markets in easy range; (b) greater variety in crops and livestock products to take advantage of increased marketing radius for perishable commodities; (c) economics in harvesting and marketing from availability of migratory day haul labor, harvesting machinery and commercial product services; and conversion of non farm use at urban fringes or near highway interchanges where opportunities for commercial or residential development will be created.<sup>19</sup>

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<sup>17</sup>Wilfred Owen, Strategy for Mobility (Washington: Brookings Institution 1964) p. 100.

<sup>18</sup>Stuart Dagget, Principles of Inland Transportation (New York: Harper and Brothers 1955) p. 93.

<sup>19</sup>Rex W. Whitton, Highway Planning and Programming in the Economy, Transportation (Washington: U. S. Printing Office 1963), p. 46.

As compared with railways, road haulage possesses distinct advantages for the transport of moderate load where distances involved are short. The optimum weight of consignment by road (which will just fill a lorry) will vary with the carrying capacity of the lorries used but will of course be very much smaller than a train load. Roads will be at a relative advantage for consignments in the 0.15 to 4.0 tons weight range as these can be amalgamated on a lorry.<sup>20</sup>

For short distances the cheapest way to ship freight is usually by truck. Hoover discusses the relation of transfer cost to length of haul in the following words:

Agencies with relatively low terminal cost and high line cost have an advantage for shorter hauls where as agencies involving high terminal and pick up and delivery expenses and low line haul costs are in a position to compete more effectively for the longer haul business.

For short distances the cheapest way to ship freight is usually by truck, which has however a comparatively rapid rate of increase of cost with distance.<sup>21</sup>

Many of the same cost and service factors that govern the selection of freight hauling methods pertain to the movement of people.

It is evident from the foregoing analysis that road transportation provides an ideal means of connecting widely scattered rural communities, opening up new areas of development, widening the domestic market and performing the diverse types of transport functions related to the processes of industrialization and economic growth. The World Bank also considers that highway development is of fundamental importance in stimulating the economic development of the underdeveloped countries.

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<sup>20</sup>United Nations; Economic Bulletin for Asia and the Far East; (New York Dec. 1960), Vol. XI.63, p. 23.

<sup>21</sup>Edgar M. Hoover, The Location of Economic Activity (New York: McGraw Hill Book Company, 1946) p. 19.

This is evident from the fact that in about a half year period after February 1961 the World Bank has extended loans for highway construction, improvement and maintenance amounting to \$356 million dollars, a sum only slightly less than the total amount of highway loans extended by the Bank during its previous ten years activity in this field.<sup>22</sup>

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<sup>22</sup>J. Burke Knapp, The Place of Highways in Economic Development, Road International (London - April 1963) p. 1.

## CHAPTER IV

### RELATION OF TRANSPORTATION TO AGRICULTURE

We have devoted special attention to the agrarian sector of the economy because such a large part of the population of the underdeveloped countries derives its livelihood from it. In underdeveloped countries transport policy makers have given much emphasis to transport requirements for industry. As a result, attention and resources have been diverted from the task of providing transportation for agriculture. The fact remains that this aspect of the transport problem, especially the transporting of food, is proving to be both more difficult and more urgent.

#### I. THE IMPORTANCE OF AGRICULTURE IN ECONOMIC DEVELOPMENT

Agriculture constitutes the predominant sector of the economy of underdeveloped countries. The need for food and the extremely low level of efficiency in agricultural production demand that most of the labor force and land resources in low income countries be engaged in agriculture. In early stages of development, it contributes 50 percent or more to national income and gives employment to 60 to 80 percent of the civilian labor force.<sup>1</sup> The majority of the population in underdeveloped countries live in rural areas and most of this population is directly or indirectly dependent on agriculture for its livelihood. The development of agriculture is thus the sine qua non for the development of the country's entire economy. The prosperity and stability of the agriculture is the

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<sup>1</sup>John W. Mellor, The Economics of Agricultural Development (New York: Cornell University Press, 1966), p. 4.

foundation of the prosperity and stability of the country's entire economy.

The contributions of agriculture to economic development of a country have been summarized by Bruce F. Johnston and Mellor in the following five propositions:<sup>2</sup>

- (1) Economic development is characterized by a substantial increase in demand for agricultural products, and failure to expand food supplies in pace with the growth of demand can seriously impede economic growth.
- (2) Expansion of exports of agricultural products may be one of the most promising means of increasing income and foreign exchange earnings, particularly in the earlier stages of development.
- (3) The labor force for manufacturing and other expanding sectors of economy must be drawn mainly from agriculture.
- (4) Agriculture, as the dominant sector of an underdeveloped economy, can and should make a net contribution to the capital required for overhead investment and expansion of secondary industry.
- (5) Rising net cash incomes of the farm population may be important as a stimulus to industrial expansion.

From the foregoing it will be seen that the rapid growth of agriculture will permit the unhampered expansion of other sectors which depend on agricultural demands. It is difficult to over state the importance of agricultural growth for determining the potential of the entire economy.

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<sup>2</sup>Bruce F. Johnston and John W. Mellor, *Role of Agriculture in Economic Development*, *American Economic Review*, Vol. 51, No. 4, Sept 1961, pp. 571-72.

## II. THE GENERAL IMPORTANCE OF TRANSPORTATION TO AGRICULTURE

The means of transport are an indispensable pre-requisite for development of the agriculture sector. While discussing the marketing institutions, Mellor stated the importance of transportation as follows:

Readily available, efficient transportation has been shown to be important to several aspects of adequate market performance. Poor and expensive transportation increases marketing costs in a number of ways with some of the effects having a very substantial absolute and percentage effect.<sup>3</sup>

The raw material and food stuff produced in the country side are to be transported to the required places and the manufactured goods produced in the factories located in the cities and other goods not produced in the rural areas to be sent to villages. There should also be a good means of transport for the supply of all the material required from outside for agricultural development such as fertilizers, good quality of seeds and suitable implements.

The development of cottage and small scale industries, which are required to supplement the income of the rural people from agriculture, also depends on an efficient means of transport which may be required for the supply of raw materials and appliances and the transport of goods produced by such industries to the required places. Thus the development of the rural areas, which leads to an increase in income and hence an improvement in the standard of living of rural people, depends to a very large extent on an efficient means of transport.

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<sup>3</sup>John W. Mellor, The Economics of Agricultural Development (New York: Cornell University Press, 1966), p. 340.

### III. THE SPECIAL RELATION OF ROADS TO AGRICULTURE

This brings us to the question: which is the most suitable means of transport for this purpose? Air ways are out of the question, as they are very expensive. Only very high grade goods can be carried by air ways. Similarly the construction and maintenance of canals is also very expensive and they cannot be used extensively for connecting different areas in the interior of the country especially when many engineering difficulties arise due to topographical factors. Water ways can reach only a portion of the land of the country. There are numerous widely scattered rural communities in underdeveloped countries. For example, in India there are 500,000 villages. Each and every village cannot be connected by rail with the market place nearby due to the prohibitive cost. Roads are the only suitable means of transport for the country side in the interest of the development of agriculture. They can easily be constructed and are cheaply and conveniently manageable.

### IV. THE INCREASING REQUIREMENT OF FOOD

The basic requirement in underdeveloped areas is food. One way of obtaining more food is to grow more within the country; another is to industrialize and obtain food in exchange for industrial products. For underdeveloped areas as a whole the latter possibility appears to be of quite limited importance.<sup>4</sup>

The requirement of food is increasing annually with the increase in population. The number of people to be fed in the year 2000 will be roughly double of what it is today. The United Nations estimates that as

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<sup>4</sup>Henry H. Villard, Economic Development (New York:Rinehart and Company, 1959), p. 197.

early as 1980 the annual food grain requirements of the developing countries alone will jump from 470 million tons in 1960 to 767 million tons.<sup>5</sup> It is no longer possible to produce more food simply by expanding the area under cultivation. The supply of virgin land is disappearing, and major increases in out-put can be accomplished only from high yields per acre. To accomplish more production per acre pre-supposes an improved system of transportation, because adequate inputs of fertilizer, seed, machinery, and other ingredients of intensive agriculture are required. While many factors contribute to higher agricultural yields, the use of commercial fertilizer is probably the factor most effective. The effects of fertilizer can be realized only if adequate facilities make it possible that fertilizers reach the cultivator at the right time. This means roads, vehicles and a network of distribution centers in rural areas, within easy reach of the farmer. In underdeveloped countries the lack of such facilities precludes the general use of fertilizers as well as the adoption of other technological innovations. Wilfred Owen discusses this problem in the following words:

In India farmers using modern technology are nearly all within a mile or mile and a half of some sort of reasonably good road. Very few farmers farther than this are using modern methods. Without discounting the many other factors involved in persuading villagers to use modern technology, there is a definite relationship between proximity to a road and the rate of change. Since three-fourths of the villages of India are more than a mile and a half from a road (Table 4), it appears that under present access conditions, any hope of raising productivity in Indian agriculture may be limited to around one quarter of the total farm population. Without improved roads, it appears that most agricultural development efforts will not succeed.<sup>6</sup>

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<sup>5</sup>Wilfred Owen, Road Transportation and Food Production, High Way Research Record No: 125, 1966, p. 1.

<sup>6</sup>Ibid., p. 4.

TABLE 4

PERCENTAGE DISTRIBUTION OF VILLAGES BY DISTANCE  
FROM THE NEAREST HARD-SURFACE ROAD IN INDIA, 1958-59

Distance	Percentage of Villages
Within village	10.9
Up to 1 1/2 miles	18.2
Between 1 1/2 and 3 1/2 miles	20.7
Between 3 1/2 and 5 1/2 miles	12.3
Between 5 1/2 and 10 1/2 miles	15.9
Between 10 1/2 and 20 miles	9.6
Above 20 miles	7.8
Information not available	4.6
Total	<u>100.0</u>

In spite of the heavy investments in the agricultural sectors, both India and Pakistan are encountering grave difficulties. Imports of food are costing \$500 million to India and \$80 million to Pakistan.<sup>7</sup> This has reduced the quantity of foreign exchange available for industrialization. The production of food is the number one problem of these countries. Yet the rural areas of these countries are virtually isolated from the rest of the economy, with the result that neither farm supplies nor new ideas can move to where they are needed. This is evidenced from the fact that only 11 percent of Indias' 500,000 villages are connected with

<sup>7</sup>William Brando, Rural Industrialization for Agriculture Development, Journal of Farm Economics, Vol. 41, December 1959.

the rest of the country by an all weather road. Seventeen percent of these villages are more than 10 miles from all weather roads. One out of every three villages is more than 5 miles from a dependable road construction.<sup>8</sup>

#### V. A PROGRAM OF DEVELOPMENT OF RURAL ROADS.

The objective of a development program of roads in underdeveloped countries should be to connect all villages with an all weather road. Villages that are simply brought nearer to an all weather road, rather than connected with it, are hardly in a better position to help increase the production and marketing of food and the distribution of goods.

It is quite obvious that roads and highways in the country side cannot be built by the government alone. In the United Kingdom and the United States, even the highways were mainly constructed by non-public institutions, not to speak of country roads in the days when these countries were in a state of transition from underdevelopment to development. It is for the people of the area concerned to take necessary steps in the matter. An initiative has to be taken by the government to provide some funds for this purpose. The remaining funds may be contributed voluntarily, therefore monetary expenses would be incurred mostly in the purchase of equipment, materials and land required for the purpose. The required amount may be contributed on voluntary basis and by the government as an assistance for these projects out of the allocations earmarked for such projects in the development plans.

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<sup>8</sup> Wilfred Owen, Road Transportation and Food Production, Highway Research Record No: 125, 1966, p. 1.

The rural works program of East Pakistan is cited as a good example of combining Public Works Program and agriculture development. Rural Works Program was financed by the Department of Agriculture. New roads were selected for labor intensive construction by the villagers. The roads were of a low type design, adequate for marketing crops by rickshaw and bullock carts, rather than by head loading. The result was an 80 percent reduction in transport costs that increased the price realized by the farmer by more than one rupee (21 cents) per maund (82 lbs) of paddy. The physical accomplishments from 1961-64 included the improvements or construction of 24,000 miles of village to market roads and more than 700 miles of asphalt roads. Work was also done on 5400 bridges and culverts and on 6,000 miles of drainage canals.<sup>9</sup>

Thus roads and agriculture act and react on each other for development purposes. Roads and highways may lead to the development of agriculture by transporting the agricultural produce to the market places for receiving reasonable prices to the producers, supplying fertilizers, good quality of seeds and implements and transporting other articles not produced in the villages.

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<sup>9</sup>Ibid., p. 6.

## CHAPTER V

### DEVELOPMENT OF ROAD AND HIGHWAY TRANSPORTATION IN WEST PAKISTAN

West Pakistan covers 310,403 square miles which is nearly 85 percent of the Country's total area. Much of the region consists of sparsely inhabited barren plains and deserts. The estimated population in 1961 was 42.8 million which is about 45.8 percent of the country's total population, with a density of population of 138 persons per square mile.<sup>1</sup> Railways and roads play a dominant role in the economy of West Pakistan. We propose to study the state of development of road transportation in West Pakistan in this chapter.

#### I. PROGRESS BEFORE PARTITION

The development of roads in India was very slow which may be gauged from the fact that India increased her road mileage in forty-five years (1900 - 1945) by as much as the U. S. did in one and a half years. Sixty seven percent of all the roads built in India during this period were unmetalled whereas all the American roads were metalled.<sup>2</sup>

Despite the development of roads for about one hundred years, the roads of the Indian Sub-Continent were far from adequate at the time of Partition (1947). The table\* below compares the area, population and road mileage of some highly developed countries with that of India and Pakistan as it existed in 1947.

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<sup>1</sup>Pakistan Affairs (Washington: March 1968), Vol XXI, No. 3, p. 1.

<sup>2</sup>S. M. Akhtar, Pakistan a Developing Economy (Lahore; Publishers United, 1967), p. 213.

Countries	Total Population (Millions)	Area Square Miles (1000)	Road Mileage	Mileage per 100 Square Miles of Territory	Mileage per 100,000 inhabitants
U.S.A.	132	3,027	3,009,000	100	2,270
U. K.	46	89	179,290	202	390
France	42	213	405,028	190	900
Indian Areas	319	1,247	239,061	19	75
Pakistan Areas	71	363	54,913	15	79

<sup>2</sup>S. M. Akhtar, Pakistan a Developing Economy (Lahore: Publishers United, 1967), p. 215.

## II. PROGRESS SINCE INDEPENDENCE

Because of well known political and economic reasons, the British rulers encouraged the development of railways as the most important single means of quick and long distance transportation in India. Naturally, after independence a major part of the total investment in transportation was directed towards the replacement and modernization of railways. For example, the total investment in railways was 1,704 million Rupees during 1960-65 as against 858 million Rupees on roads.<sup>3</sup>

However, it was realized immediately after independence that Pakistan's share in roads and highways was extremely inadequate for an independent and a developing country. The total road mileage of the sub-continent was about 295,000 miles. Of this 95,000 miles were superior surface and metalled roads and about 200,000 miles were unmetalled. Pakistan's

<sup>3</sup>Government of Pakistan, Department of Films and Publications, Transportation and Communications in Pakistan (Karachi: Saifee Printers), p. 14.

share was about 20 percent of the total road and highway mileage, i.e. 58,000 miles. But her share in metalled and superior roads and highways was less than 10 percent or about 8,000 miles. She had, however, almost 25 percent of the unmetalled roads.<sup>4</sup> Pakistan's share of good roads was thus very inadequate.

The various provinces of West Pakistan, as they existed at the time of partition, were (and are) unequally provided with road facilities. Punjab had the maximum share. After Punjab came N.W.F.P. (north West Frontier Province) where roads had been built for strategic reasons by the British. Most of the roads in Sind were (and are) unmetalled (Katcha). Unmetalled or Katcha roads which were over 85 percent of the total in all Pakistan and about 95 percent in the case of Sind are useless for motor traffic and are reliable only in certain times of the year.

Classification of Roads and Highways. Roads and Highways in West Pakistan may be classified into (i) National Highways (ii) Provincial Highways (iii) District roads and (iv) Village Roads.

The National Highway connects large towns and ports. The Provincial Highways are the main arteries of commerce within each province and are connected with the National Highways. The district roads connect the producing centres in the districts with the highways and railway stations. The village roads are mostly unmetalled or Katcha tracks connecting villages among themselves. In addition there are municipal roads which are under the jurisdictions of municipal bodies.

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<sup>4</sup>S. M. Akhter, Pakistan a Developing Economy (Lahore: Publishers United, 1967), p. 215.

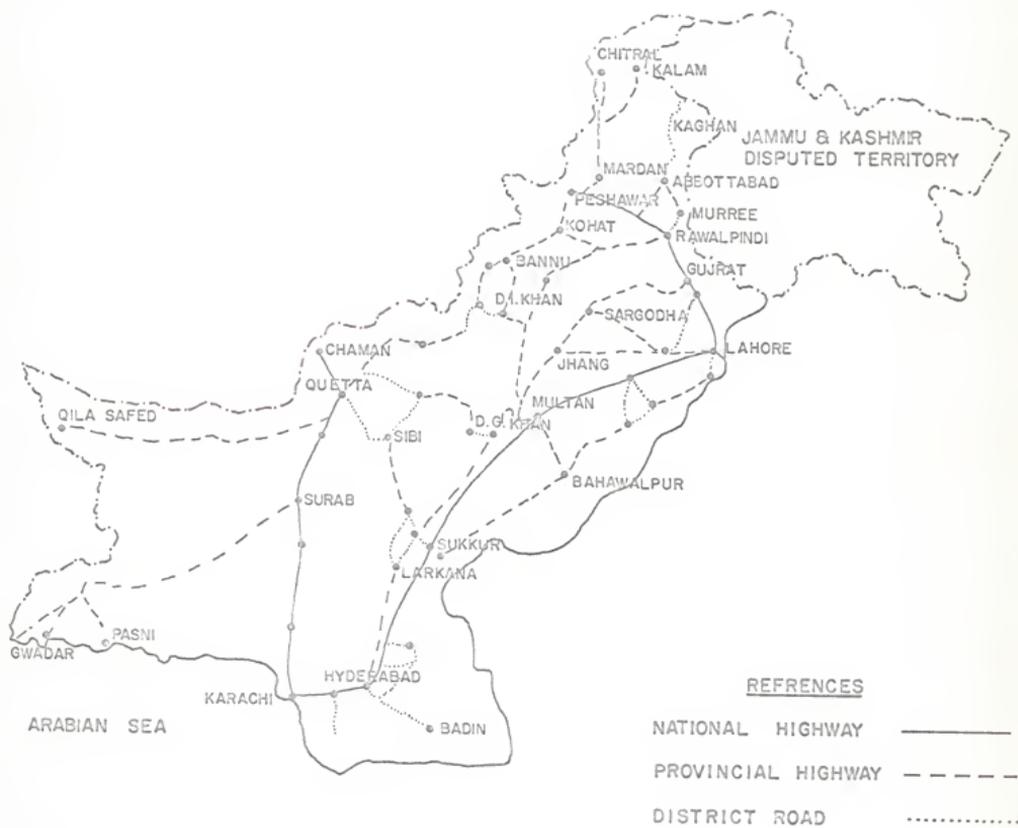
The Main Highways: The main highways of West Pakistan are briefly described below:<sup>5</sup>

- (a) The Grand Trunk Road connects North West Frontier with Bengal. The section that lies in Pakistan starts from Landikotal at the far end of the Khyber Pass and passing through Peshawar, Rawalpindi and Lahore terminates at Wagah on the Indo-Pakistan Border - a total of 292 miles.
- (b) The Second Trunk Road connects Lahore with Karachi. It has a total mileage of 783. It has a great commercial importance because it connects the port of Karachi with the rich agricultural region of West Pakistan.
- (c) The Third Trunk Road connects Lahore with Quetta and Chaman. Between Lahore and Multan, however, it coincides with the Second Trunk Road mentioned above. It has a total mileage of 672.
- (d) Peshawar Boston Road connects Peshawar with Baluchistan and has a total mileage of 445.
- (e) Karachi Quetta Road connects Karachi with Quetta and is 450 miles. It serves traffic between Baluchistan and the southern parts of Afghanistan and Iran.
- (f) Dera Ismail Khan - Shikarpure Road connects the former province of North West Frontier with the Lower Indus Valley passing through D. I. Khan and Shikarpure. This road has considerable importance for local trade.

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<sup>5</sup>Ibid., p. 217.

## MAIN ROADS AND HIGHWAYS IN WEST PAKISTAN



In addition to the main highways mentioned above there are a large number of feeder roads totaling about 45,000 miles which are mostly unmetalled or Katcha (without any firm base).

There are certain regions in West Pakistan which are very inadequately supplied with roads and highways. For example, the former Sind region. In this region metalled roads and highways are very inadequate and unmetalled or Katcha roads (without any firm base) and in many cases mere winding tracks over which even bullock carts pass with difficulty during the rainy season. The cultivators find difficulty in marketing their produce. For this reason a long chain of middlemen has emerged which has deprived the cultivator of his legitimate profits. During the rainy season it becomes difficult for the village folk to get supplies from the neighboring towns. Village industries also find it difficult to obtain raw material and to sell their products.

### III. ROAD AND HIGHWAY DEVELOPMENT PROGRAMS

The maintenance and construction of roads and highways is primarily the responsibility of the Provincial Government. The Central Government, however, has been taking keen interest in road development because of its' importance for the national economy. To improve the country's roads and highways, a Central Road Fund was created in 1949 out of a portion of the customs and excise duty on motor fuel, excluding aviation fuel. Eighty-five percent of this fund is allocated to the Provincial Governments, States etc., according to an agreed upon formula based on area. The remaining 15 percent is retained as a central reserve for research and special grants in aid to other projects connected with roads etc. Grants are also made from the Fund for Roads and Highways of National

importance, a special fund set up in 1952 out of Central Revenues. This Fund provides the Central Government's 50 percent share in the cost of constructing and improving certain specified arterial roads.<sup>6</sup>

First Five Year Plan (1955-60). By 1955 as many as 2,850 miles of high type surface roads and highways had been constructed in the country, bringing the total length of high type roads to 9,000 miles. But further development was considered necessary especially to build roads and highways in neglected areas, to improve village roads, and to complete the works in progress or on which progress had been interrupted after partial execution.<sup>7</sup>

The plan provided 195 million Rupees for the construction or improvements of 2,725 miles of roads and highways in West Pakistan. The plan laid down the following priorities in carrying the program.

- (1) Maintenance of existing roads and highways was to have a prior claim on these resources since it would be unwise to build new roads and highways while the existing ones are allowed to deteriorate.
- (2) High priority was to be given to the building of unmetalled roads linking villages together and connecting them with the main roads and highway systems. These roads were to be constructed with local labor by local communities, under the Village AID Program, but 10 million Rupees were provided as assistance to such efforts.

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<sup>6</sup>Government of Pakistan, Pakistan Basic Facts 1965-66 (RAWALPINDI: 1966), p. 54.

<sup>7</sup>Government of Pakistan, The First Five Year Plan 1955-60 (Karachi: Government of Pakistan Press, 1958), p. 50.

About 2,000 miles were expected to be constructed with the help of these provisions.

- (3) High priority was to be given to completion of roads and highways already underway and to roads in the underdeveloped areas.

Given the above mentioned priorities, the plan provided for a number of highways to open up the less developed areas of West Pakistan.

Rail and road transport made good progress, in terms of handling of the passenger and freight traffic in West Pakistan. The following table gives the year by year, picture of passenger and freight traffic handled by railway and roads during the first plan period:\*

Years	Railways		Roads	
	Passenger miles in millions	Freight ton-miles in millions	Passenger miles in millions	Freight ton-miles in millions
1955-56	4366	2826	2664	382
1956-57	4409	2874	3045	427
1957-58	4801	3174	3389	499
1958-59	5107	3362	3920	632
1959-60	5147	3531	4253	709

\*Govt Of Pakistan, Department of Films and Publications, Transportation and Communications in Pakistan (Karachi: Saifee Printers), p. 14.

Pakistan Industrial Credits and Investment Cooperation, Market for Buses and Trucks in Pakistan.

It will be soon that the increase in railway passenger miles during this period was 18 percent and that of roads and highways passenger miles was about 60 percent. The rail freight ton miles increased by 25 percent and the growth of road and highway ton miles was 86 percent. The above analysis also points out that there was a very close competition between rail and road as regards passenger traffic. However, freight traffic still depended heavily on the railway inspite of the appreciable percentage increase in the road ton-miles during the plan period.

The Second Five Year Plan (1960 - 65). Compared with the first plan, relatively larger sums were allocated to road and highway transport, reflecting particularly the need for improvement in rural areas in order to accelerate agriculture development.<sup>8</sup> Of the total allocation of 570 million Rupees each province was allocated 260 million Rupees. The balance of 50 million Rupees was kept for Karachi and special areas.

The Program for West Pakistan included projects in progress for completion, construction of 800 miles of new roads and highways and improvements of 1,100 miles of existing roads and highways. A major part of the program consisted of roads and highways to open up bannage areas and attention was also paid to roads linking villages with highways.

The progress of roads and highways in West Pakistan is shown in the following table.

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<sup>8</sup>Planning Commission, The Second Five Year Plan (Govt of Pakistan, 1960), p. 16.

Road Mileage in West Pakistan (Under Provincial Govt only)

Year	High Type	Low Type	Total
1951	6,150	10,176	16,326
1955	7,980	11,122	19,102
1960	8,772	10,404	19,760
1964	10,075	11,823	21,898

Source: S. M. Akhter, Pakistan a Developing Economy (Lahore: United Publishers, 1967), p. 224.

The performance of road transport, in terms of actual handling of passenger and freight was again very significant. The following table depicts the year by year passenger and freight traffic for both the modes:\*

Years	Railways		Roads	
	Passenger miles in millions	Freight ton-miles in millions	Passenger miles in millions	Freight ton-miles in millions
1960-61	5590	3814	4521	857
1961-62	5716	4129	5160	1077
1962-63	5542	3984	5493	1243
1963-64	5932	4186	N.A.	N.A.
1964-65	N.A.	N.A.	7140	2040

\* Govt of Pakistan, Department of Films and Publications, Transportation and Communications in Pakistan (Karachi: Saifee Printers), p. 14.

Pakistan Industrial Credit and Investment Cooperation,  
Market for Buses and Trucks in Pakistan.

It will be seen that passenger-miles and ton-miles of roads and highways showed an increase of 58 percent and 138 percent respectively during the second plan period. The increase in railway passenger-miles and ton-miles during the same period showed an increase of 6 percent and 9.5 percent respectively.

The analysis given in the foregoing paragraphs suggests that there is a future trend of shift in passenger and freight traffic from railways towards roads. It is interesting that competition between railways and roads is becoming very intense in the carrying of passengers.

The Third Five Year Plan (1965 - 70). The Third Five Year Plan provided 2070 million Rupees for road and highway development. Of this 900 million Rupees are allocated to West Pakistan. As regards maintenance, efforts will be made to provide adequate funds on a regular basis:

The Third Five Year Plan's road program aims at the following:

- (a) Strengthening and expansion of existing road and highway networks;
- (b) Building up a stream of super-highway; and
- (c) Construction of secondary and feeder roads to meet the needs of short distance light traffic in rural areas and newly developing regions of the country.

Growth of Commercial Vehicles. Since independence there has been a rapid increase in the number of commercial vehicles. They increased from 14,000 in 1948 to 47,000 in 1963; an increase of 230 percent.<sup>9</sup> With the urbanization and developmental activities in the country, the demand for city transport as well as for commercial highway transports has increased. This in turn has brought about many problems of traffic safety

<sup>9</sup>United Nations; Economic Bulletin for Asia and the Far East (New York: 1961-62), Vol 12-13, p. 138.

and control of routes and service. The government has adopted a policy of running public buses under the statutory body to serve as models for the private bus services, as well as to meet the urgent demand for road transport in rapidly growing cities in the country under proper rules and regulations laid down by the Government to ensure regularity, economy, comfort and convenience for the public.

Some Concluding Remarks. The development of roads and highways in West Pakistan has not kept pace with the road and highway transport demand which has been rapidly increasing. Actually, no exclusive attention was given to the planning of roads and highways because the rail transport, which was very organized was taking on a major share of handling transport requirements. Road and highway development took place not on the basis of set plans, but according to local demands and needs.

The present position in Pakistan suggests that the country: (a) must increase considerably the mileage of metalled roads which is very insufficient (b) must pay special attention to rural areas where road facilities are especially unsatisfactory, and (c) must construct new roads and highways with a view on the economic needs of the nation.

CHAPTER VI  
ADMINISTRATIVE REORGANIZATION OF WEST PAKISTAN  
BUILDINGS AND ROADS DEPARTMENT

The administrative system in Pakistan is founded on the principle that policy and administration are divisible and that the secretariate is concerned with the former and program departments exclusively with the latter. There is, despite some modifications, the continuing division between the secretariate and the Public Works Departments, Buildings and Roads.

The defects as well as the merits of the existing administrative system of Buildings and Roads Department stem largely from the fact that it is a heritage from the colonial system. Under the stress of social and economic change, some alterations have been made in this system during the last decade, but, fundamentally and broadly, the methods, the outlook, and the procedures followed by the Buildings and Road Department remained unchanged. It needs to be reformed in quality and organization. We propose to discuss here the administrative set-up of the Buildings and Roads Department and suggest some organizational improvements which we feel necessary for the efficient working of the department.

I. ADMINISTRATIVE SET-UP (PAST AND PRESENT)

Before Unification of Four Provinces and States of Pakistan (Pre-Unit) Before October 1955. Various Chief Engineers in the Integrated Provinces and States were "Heads of Departments" in their respective provincial

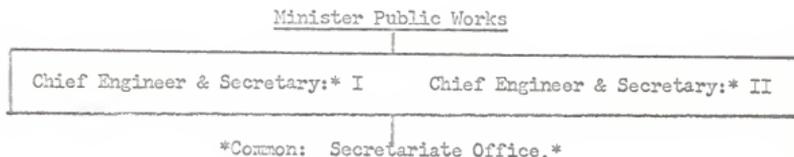
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<sup>1</sup>Cuthenie S. Birkhead, Administrative Problem in Pakistan (New York: Syracuse University Press, 1966), p. 10.

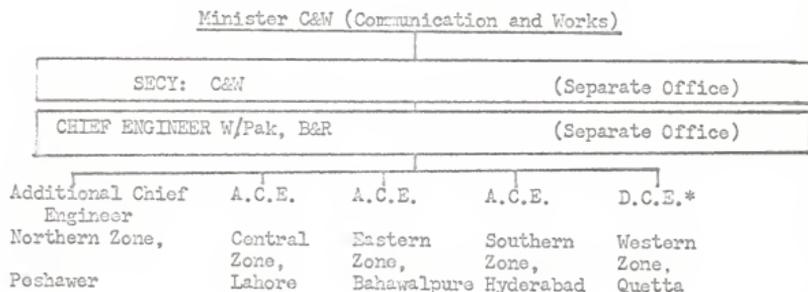
administration and were also ex-officio Secretaries to Government in the Buildings and Roads Department. This arrangement had been in force from practically the very inception of the Department. In Punjab and Sind there was more than one Chief Engineer and the Secretary in the B&R Department and their work was effectively co-ordinated in the combined Secretariate office as indicated in the diagram below.

(Typical Pre-Unification B&R Set Up) (Before Oct '55)

Punjab (Buildings And Roads)



After: Unification of four Provinces and States of West Pakistan in October 1955 (One Unit). The following set-up was approved:



Deficiencies and disadvantages of the set-up on formation of one unit. The Pre-Unit Chief Engineers, who were Heads of Departments and Secretaries had direct contact with the Central Government and other

\*Deputy Chief Engineer

Departments and the administrative procedures, decisions and sanctions were expeditious and there was no long time lag in putting into effect governmental policies and directives. Any reference received from the Superintending Engineers who were Divisional level Administrative Officers, was examined, dealt with and disposed of in the one office of the Chief Engineer and Secretary. With the set up introduced on one unit a case had to pass through lengthy channels, first in the Additional Chief Engineer's office and then it was examined de-novo when a "reference was made from the ACE: office to the C.E.W/Pak office and when after having been "through the C.E.W/Pak office the case wound its way to the separate Secretary's office, it was again dealt with ab-initio through various hands, in the Secretariate before it was passed on to the Finance Department or disposed of and came back through the same lengthy way. The channel of disposal had thus become lengthy and the Administrative work in the B&R had become much more slow and sluggish then pre-unit due to

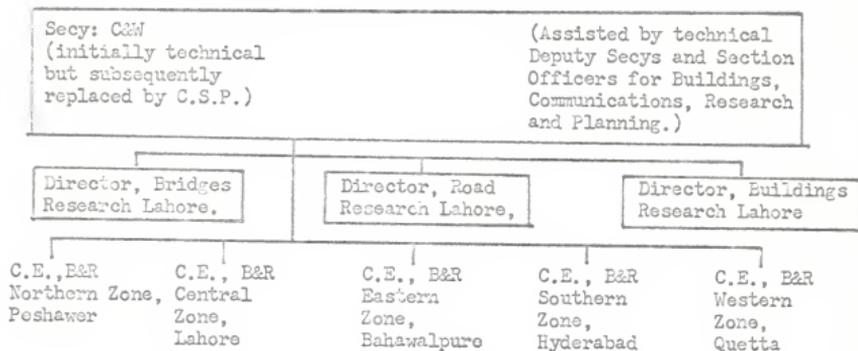
- (a) the defective set up and,
- (b) the lack of adequate powers.

Present Set-Up. During the trial of one unit set up, delays, difficulties and serious bottlenecks were often experienced in the working of the Department and in spite of personal attention given in the urgent cases it was felt that the crossing of so many channels as existed in the set-up invariably involved considerable delay and time to get decisions and sanctions, etc.

In 1961 the Provincial Re-organization Committee was set up to review the one unit set up and to recommend sufficient delegation of

Powers. This committee recommended the following set up which was approved by the West Pakistan Government and enforced with the effect from May 1962.

Minister C&W



The Public Works Department has divided West Pakistan into five regions. Each region is headed by a Chief Engineer. He is intended to exercise wide powers of supervision and control over the working of all circles within his region. He will thus perform co-ordinating functions at a higher level and over a larger geographical area.

Each region is divided into 4 to 7 circles, each headed by a Superintending Engineer, each circle, in turn, is divided into divisions headed by an Executive Engineer, at the executive level, who prepares plans and estimates, invites tenders, awards contracts, reviews contractor performance and makes payments. They are responsible for the construction and maintenance of all buildings and roads in their areas. Each divisional area is divided into three or four Sub-Divisions under the control of Sub-Divisional Officers. Work in the Sub-Division, in turn, is divided among three or four overseers.

For the survey, planning and design of major highway and bridge projects (aided projects financed from World Bank loans, etc.), a nucleus Highway Organisation headed by a Chief Engineer was created in 1963. This organization functions directly under the secretariate. The Directorates of Bridges and Road Research previously functioning under the direct control of communication and works (C&W) Department are placed under the Chief Engineer Highway Organization. The construction and maintenance of other roads remained entrusted to the Regional Chief Engineer B&R.

## II. SOME SUGGESTED IMPROVEMENTS.

The changes in the administrative set up of Buildings and Roads Department, mentioned in the foregoing paragraphs, were actually made in the interest of political or administrative expediency. These changes were not a reflection of the need for flexibility in keeping with the dynamic nature of development, but were merely superficial changes in the super structure which left the basic structure unaffected. The organization is in fact quite rigid. The proposals outlined below should be followed for the efficient working of the department.

Working Procedures: The current procedures were devised for the undivided India with the main purpose of guaranteeing that no decision of more than minor significance would be taken at a sub-ordinate level and that any decision at a higher level should be reached only after the most thorough deliberation and cross checking.

The present system tends to produce irresponsibility in the administration. While most decisions move upward, many are disposed of by junior officers lacking experience, maturity or knowledge of the technical subjects with which they are dealing. By sitting in judgment on senior

and mature specialist officers they often create frustration and resentment. The imposition of administrative judgment over technical proposals often result in the substitution of an unqualified and irresponsible decision for an informed one.

We recommend that the present system be replaced by a system of straight-line organization and broad delegation of authority with staff officers firmly and unequivocally removed from the line of command.

Administrative Organization: In order to prepare for expansion of road and highway program and to provide effective structure for the introduction of operational improvements, their organization of the Buildings and Roads Department is considered necessary. Under the present set up when a reference is made from the Executive Engineer's Office it has to pass through lengthy channels; first it is sent to the Superintending Engineer's Office, then it is examined in the Chief Engineer's Office and then it is passed on to the Secretary's Office.

The Executive Engineers are themselves senior officers and it seems unnecessary that there should be a Superintending Engineer to advise them on technical aspects. We propose that the post of Superintending Engineer be abolished. The Executive Engineer should function directly under the Chief Engineer. They should be given more administrative and financial powers so that government policies and decisions are implemented efficiently, effectively and expeditiously. The proposed set up of Buildings and Roads Department is shown in the attached diagram.

Status of Engineers: Engineer has not yet received the recognition due to him in the public administration of the country. He does not occupy the same status in policy formulation as a general administrator, but this is no reason why this should carry with it a generally disadvan-

tageous position in terms of pay, prospects and official ranking. This invidious distinction leads to the diversion of some of the talented engineers to non-technical jobs.

With the national problem of economic and industrial development, the demand for engineers will expand and the market value will increase. Unless they are accorded proper status and emoluments, they will not be able to give of their best to the state and tensions within the service ranks will grow.

We therefore recommend that equality of treatment should be brought about between the engineering and non-engineering services. In addition engineers who show special talent for administration should be eligible for promotion to any pool of administrative leaders.

Rating Systems: The present evaluation system consists of rating the individual on aspects of his personality, such as industry, initiative, intelligence, dependability, courtesy, cooperation and tact. The subordinates are given adjective rating by their superiors such as "Excellent," "Very Good," "Good," "Fair" and "Unsatisfactory."

We would suggest that the present periodic confidential reports, which tend to be subjective, over simplified and often superficial be supplemented by a modern performance rating system. Under this kind of system, the employee is rated not on his personality traits, but on his performance in carrying out different tasks in his jobs.<sup>2</sup> For example, an Assistant Engineer should be rated on the basis of progress and quality of road and highway work done under his supervision during the specified period of time. Performance rating reports should be available at periodic intervals.

<sup>2</sup> Felix A. Muro, *Modern Public Administration* (N. York: Harper & Row Publishers, 1965), p. 349.

**Promotion.** The quality of the promotions in the department is not very high. The traditional practice of seniority is followed and the man having the longest service is promoted first. As a result it is often the mediocre employee who is promoted.

Annual increments and promotions to higher grades in the Ordinary Course in accordance with seniority and normal performances are undoubtedly indispensable as a general incentive. But promotion to the post of Executive Engineer and to other higher posts, which carry special responsibilities, emoluments and further openings, should invariably be on the basis of merit, judged by a performance rating system, and not merely by the superficial impressions recorded in confidential reports. Seniority should also receive consideration, but only secondary.

**Corruption:** The standard of integrity has deteriorated in recent years. Corruption in the Public Works Department, particularly at lower levels, is highly regrettable, but it is not peculiar to Pakistan. Wherever need and opportunity co-exist there will be people who will take advantage of the situation. Since the need and the opportunities are greater in developing countries, corruption is more rampant. Added to this is the illiteracy and the ignorance of the general mass of the people.

Corruption thrives where there is a failure to enforce compliance with the rules and regulations, to watch expeditious disposal of cases and to ensure proper dealings with the public. We feel that it is quite possible to devise administrative measures for an independent review of the disposal of business to prevent delays. Repeated delays should be treated as a good ground for severe disciplinary measures amounting to dismissal.

## CHAPTER VII

### SUMMARY AND CONCLUSION

The present study has focused on roads and highway transportation because of its apparent significance in the process of economic development. An effective road and highway transportation is a necessary condition for rapid economic growth. It serves to link all the sections of the economy together, and has a profound influence on the achievements in almost every sphere of national life. In the context of national development, roads and highway facilities play a fundamental role in expanding the domestic markets and making possible an increased level of economic and social activities.

It is evident, however, that in under-developed countries the web of communications does not extend beyond major cities and main inter-city routes. There are still vast rural areas which are virtually isolated from the rest of the economy.

Because of well-known political and economic reasons, the colonial governments encouraged the development of railways as the most important single means of quick and long distance transportation in under-developed countries. An examination of the roads and highway transportation in West Pakistan has revealed that the economic development effort has suffered from the lack of adequate roads and highway transportation. This is because the transportation system that the country inherited at Independence, was not geared to serve the development needs of the new country, but needed considerable repairs and improvements.

The administrative set up of the Buildings and Roads Department of West Pakistan has been discussed in detail. The defects of the existing

system stem largely from the fact that it is a heritage from a colonial power. This system does not meet the requirements of a modern national government pursuing programs in which quick and decisive action is called for from day to day on highly technical problems. The channel of disposal of cases is extremely lengthy, which causes considerable delay in obtaining decisions and sanctions, etc. The need is to cut short these channels so that government policies are implemented efficiently, effectively and expeditiously. The persons responsible for development programs need to be given wide administrative and financial powers. With this view in mind we have proposed that the post of Superintending Engineer in the Buildings and Roads Department of West Pakistan be abolished and that the Executive Engineer be given more administrative and financial powers.

An economic development plan is the sum and product of its parts - each sector is dependent on every other sector, and all sectors as a whole depend on each other. Thus the transport sector must be devised concurrently with other development sectors which transport is designed to support and promote. However, it must also be structured partly from particular economic, political and social facts and directions of the country's economy.

The principal obstacle to decision making in under-developed countries is that each segment of the transport system is separately provided and programmed. The result is that transport alternatives may never enter into consideration when investments are being planned. The situation calls for overhauling transport administration and planning procedures to permit a total transport approach in the content of economic development effort as a whole. Thus the chief needs in under-developed countries are linking economic development plans with transport plans.

In discussing the role of roads and highway transportation in the economic development of under-developed countries, little or no attention has been paid in this study to the specifications, design or cost of construction of roads. Further research on this aspect of transportation problem has been left to others. It is sometimes difficult to realize that transport in the more developed parts of the world was once no better than it is in most under-developed countries. It is therefore suggested that further research may be undertaken in order to understand as to how the developed nations set about the task of breaking the transport barrier to achieve the mobility they now enjoy.

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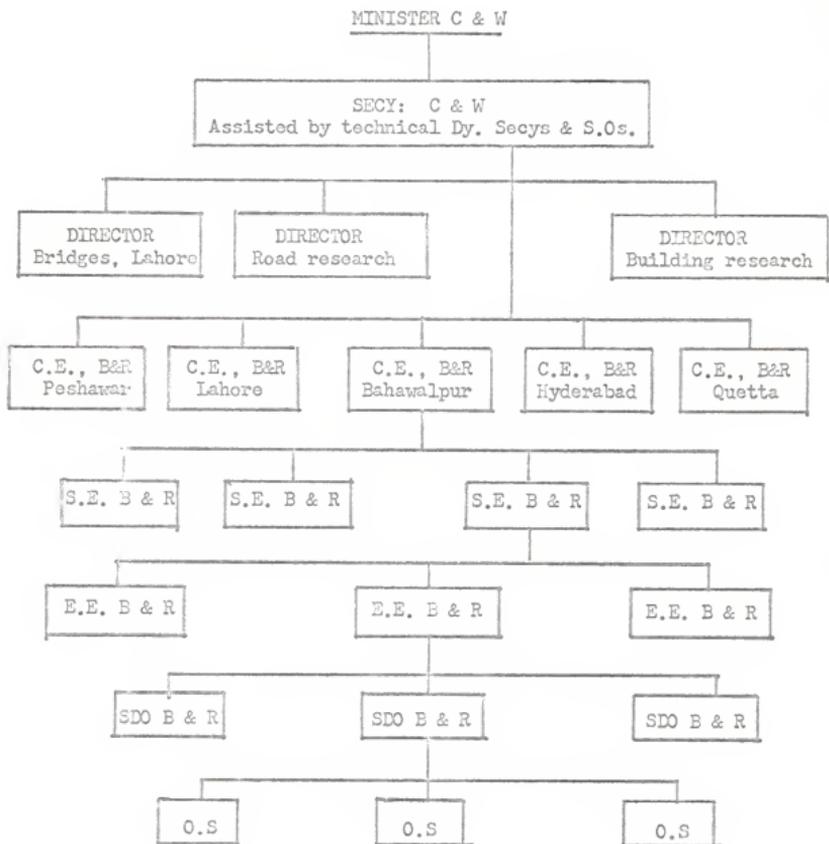
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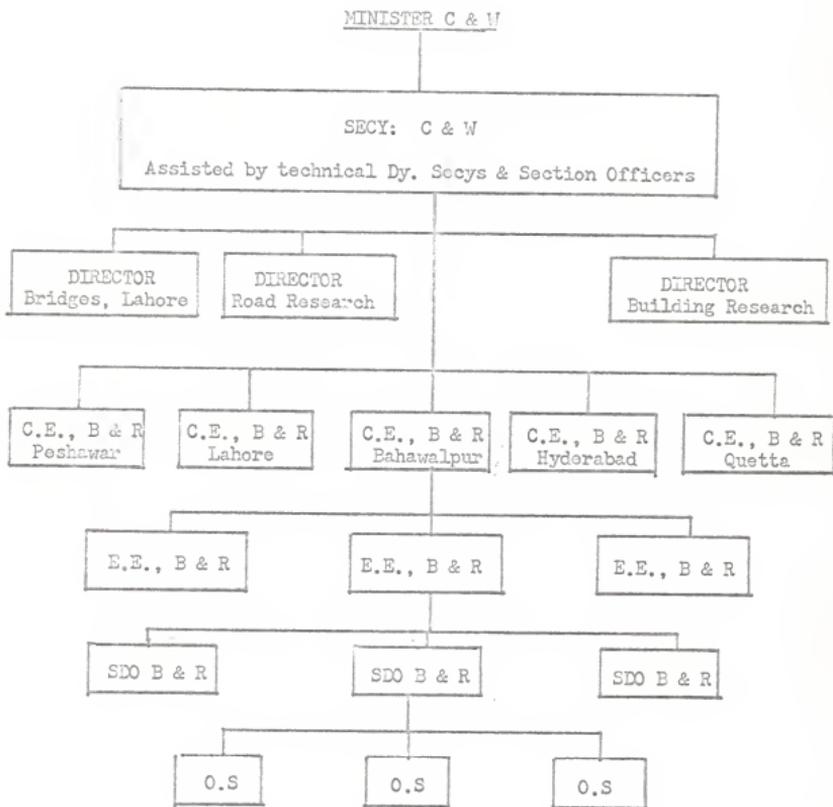
TYPICAL WEST PAKISTAN B & R SET-UP AS IT STOOD IN MAY 1962



KEY TO THE ABBREVIATIONS

B & R = Buildings and Roads  
 C.E. = Chief Engineer  
 O.S. = Overseer  
 S.Os. = Section Officers  
 Secy = Secretary

C & W = Communication and Works  
 Dy. Secys = Deputy Secretary  
 E.E. = Executive Engineer  
 SDO = Sub-Divisional Officer

PROPOSED TYPICAL WEST PAKISTAN B & R SET-UPKEY TO THE ABBREVIATIONS

B&R = Buildings and Roads  
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ROLE OF ROAD TRANSPORTATION IN  
ECONOMIC DEVELOPMENT OF UNDERDEVELOPED COUNTRIES

by

AHMAD SAGHIR KHAN

B.E.(CIVIL), Karachi University, West Pakistan, 1956.

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AN ABSTRACT OF A MASTER'S THESIS

submitted in partial fulfillment of the

requirements for the degree

MASTER OF REGIONAL AND COMMUNITY PLANNING

Interdepartmental Program in Regional and  
Community Planning

KANSAS STATE UNIVERSITY  
Manhattan, Kansas

1968

The main objective of this research work is to find out how road and highway transportation has helped in the economic development of the underdeveloped countries. The principal transportation systems -- railways, airways, waterways and roads -- are discussed in detail. Each has a definite sphere of influence. It is assumed in this study that road and highway transportation is an important stimulus to economic development of underdeveloped countries.

Economic development is not a simple process but is highly complicated and involves many social, political and economic elements. The nature and extent of underdevelopment in the present day world and the problems which are associated with the promotion of economic development and the growth of the developing countries are also discussed.

In this study, special attention has been given to the agrarian sector of the economy because in underdeveloped countries agriculture constitutes the predominant sector of the economy and the majority of the population lives in rural areas. The rural areas of the underdeveloped countries are virtually isolated from the rest of the economy, with the result that neither farm supplies nor new ideas can move to where they are needed. Roads have been considered as the only suitable means of transport for the country side in the interest of the development of agriculture.

This thesis involves the specific analysis of the development of road and highway transportation in West Pakistan. The development of roads and highways in West Pakistan has not kept pace with the rapidly increasing transport demand. Road and highway development took place, not on the basis of set plans, but according to local demands and needs. The experience of West Pakistan illustrates the problems and potentials of the planning process for economic development. This indicates an

approach from which other developing countries can learn something useful.

The maintenance and construction of roads in West Pakistan, as also in other underdeveloped countries, is the governmental function. The defects of the existing administrative system of Buildings and Roads Department are discussed in detail. Some improvements, which are felt necessary for the efficient working of the department, have been suggested.

Several interesting conclusions can be reached as a result of this study. The aim in the establishing of the railways by the colonial governments was to exercise an effective administrative control and to tap the available economic resources of the nation. They are quite ill suited to provide the much more complicated and diversified services which come to be needed as the economic development of the country proceeds. Road transportation provides an ideal means of connecting widely scattered rural communities, opening up new areas for development, widening the domestic market and performing the diverse types of transport functions related to the processes of industrialization and economic growth.