

TRANSPORT STRATEGIES IN DEVELOPING COUNTRIES

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The primary objective of a national transport policy in most countries is to enable the movement of people and goods at minimum costs with established levels of safety and convenience and with minimum pollution and energy expenditures. Transportation, as a basic infrastructure, is a pre-requisite and a necessary input to the functioning of many productive activities. 1. It is one of factors which shapes the spatial distribution of the economic, social and political linkages within a country. Most importantly, it has a permissive effect on economic development in that it is necessary but not a sufficient condition for initiating and sustaining development. The purpose of this article is to analyze a set of transport strategies which are aimed at development. This analysis will focus on the applications of these strategies in developing countries. 2 The article concludes with a suggested transport strategy for developing countries.

SHARE OF TRANSPORT

Most developing countries have adopted policies for improving the capacity of their transportation systems. 3 Although there is no "grand rule" for the proper allocation of resources to transportation investments, the magnitude of the transportation share from total public investments varies from one country to another. This share depends on the country's level of development, its economic and social institutions, the location of its resources and settlements, and other factors. 4 Some believe that this share is relatively the same for most countries and that it varies between 20 to 25 percent. 5 Others argue that the share is a complex function consisting of many factors and that it varies with time tending to be high in the early phases of development. 6

Simon Kuznets arranged data on public transportation investment from 17 countries between 1951-57 in three groups according

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to national income per capita. 7 Table 1 gives a summary of this data. He found the average share of transportation investments from total public investments to be almost identical for the three groups ranging from 14.9 to 15.3 percent. The range within each group, however, was high.

Table 1
Share of Transport Investments
(1951 — 1957)

A Country's Income Per Capita	Percentage of Transport Share
Below \$160	15.3
\$160 — \$500	15.2
Over \$500	14.9

Sources: Simon Kuznets, "Quantitative Aspects of Economic Growth of Nations", *Economic Development and Cultural Change*, Vol. III, No. 4, Part II (July 1960), pp. 37 - 38.

Drazan Bejakavic examined the same question using data from 45 countries. He arranged his data in five groups also according to national income per capita and for investments in transportation after World War II. The last group included only the socialist countries. 8 Table II gives a summary of his data. 9 Bejakavic found the difference in the average transport shares among the five groups to be much larger. The range within each group, however, was less than the ones indicated in Kuznets' study.

Table II
Share of Transport Investments
After World War II

A Country's Income per Capita	Percentage of Transport Share
Below \$100	27
\$100 — \$200	15
\$200 — \$500	19
Over \$500	9
Socialist Countries	12

Sources : Drazen Bejakavic, "The Share of Transport and Communications in Total Investment", *Journal of Transport Economics and Policy*, Vol. IV, No. 3. (September 1970), pp. 337-343.

Both authors suggest that the share of transportation investments from total public investments is a substantial one. Their quantitative analysis, however, ignores the nature and the type of these investments. On the one hand, these investments can be directed toward the construction of a primary transportation network with the aim of improving the general level of accessibility of human settlements. On the other hand, these investments could be more directed toward the development of new transportation modes or the modernization of existing ones. It is suggested that the first case is more descriptive of the case of many developing countries. The relationship between these two types of transportation investments is not an exclusive one. Rather, this relationship reflects the multiple roles that transportation plays in the economic well-being of countries.

ALTERNATIVE TRANSPORT STRATEGIES

A transport strategy represents an approach adopted by a government for planning, operating and maintaining a transport system. It represents an extension of a developmental strategy, and its ultimate function is to minimize the spatial friction that separates the locations of different activities.

A transport strategy in a developing country plays two important roles. The first role can be described as a passive one. It relates mainly to satisfying increasing transportation demands by improving the capacity of a transportation system, and its approach is behavioral in nature in that it attempts to find a proper resolution to a specific transport problem. 10 The second role is a dynamic one. It is more of a policy variable that can be used with other policy variables in order to generate long-range alternative programs aimed at attaining some desirable ends. These two roles are envisioned to be complementary to each other. Realignment of the spatial distributions of activities, for examples, tends to be gradual and as such making the dynamic aspects of transportation planning longer in range than the passive ones. Further, solutions that may seem satisfactory from the standpoint of transportation do not necessarily mean that they are also satisfactory for development as a whole. Two transport strategies, namely : unbalanced and balanced transport strategies, 11 that consider either one or both of these roles of transportation investments are discussed below.

Unbalanced Transport Strategy

An unbalanced transport strategy, as the name implies, relaxes the commonly held precept of equilibrium between transport demand and transport supply. The unbalanced nature of this strategy can be viewed in two ways. The first emphasizes an overcapitalization in transport capacity, where transport supply exceeds transport demands. The second stresses undercapitalization in transport capacity, where investments are made only when the transport sector starts acting as a bottleneck for future development.

Overcapitalization in Transport. The strategy of overcapitalization in transport originated with the belief that once a transport investment is made, productive investments will follow : that is, investments in transportation can initiate economic development. The most common example cited as a proof of this belief is the role played by railway during the nineteenth century in many industrial countries.

Overcapitalization in transport, be it in railways or any other mode, means less investment in directly productive activities and necessary services. Two recent examples from developing countries show what happens when a country makes an extraordinary commitment of scarce resources for improving its transport system.

The task of overcoming transport barriers in Colombia absorbed a large share of public expenditures for a few years. The transport share of total public investments by all governmental units amounted to 41 percent in 1959 as compared to 12 percent for housing, 10 percent for agriculture, 2 percent for industry, 3 percent for education, and only 1 percent for health services. 12

Another example of the big push in transport is provided by the experience of Turkey. During the period between 1948 and 1957 half of all investments made by the national government was in transport and communication. This is compared to 28 percent in agriculture, 13 percent in other public works, and 7 percent in industry, power and mining. 13.

The dilemma presented by overcapitalization in transport is that although transport is necessary for linking activities and settlements to each other, it is by no means sufficient for "triggering" economic development. Thus, singleminded attention to transport is not a prescription for initiating economic development.

Undercapitalization in Transport. The inadequate transportation systems in many developing countries reflect the insignificant attention that the transport sector received during the colonial era. These countries were considered as a source of primary goods and as a market for the finished products of industrial countries. Investments in basic infrastructure, as in transport, were made with these purposes in mind.

Undercapitalization in transportation capacity also indicates the secondary importance placed on transport and the assumption that transport is a means and not an end by itself; that is, investments to increase the capacity of a transportation system are made as a response to existing rather than latent traffic demands. Such expansions become necessary when deficiencies in the transport sector start hindering development and also when the costs of congestion drain the potential growth of other sectors in the economy.

The prime example of a strategy of undercapitalization in transport is offered by the experiences of Russia and other socialist countries. 14 Such strategy was an outgrowth of the industrial location policy enunciated by the Soviets during the mid 1920's. The two major precepts of this policy were to locate industry more evenly among the different regions of the country and to move it closer to the sources of fuel, raw materials, and markets. 15 The transport share of national funding was drastically cut in favour of other sectors, especially industry.

A strategy of undercapitalization in transport assumes that since it is difficult to predict future activities in time and space, the main function of a transport strategy, then, is to identify major bottlenecks and to alleviate them as efficiently as possible. The trade-off here is between the certainty of transport demands and tolerable levels of congestion. This deemphasis of transport shows that large-scale, expensive transport facilities need not be laid down before industry and agriculture begin to grow.

The lessons from the experiences of various countries suggest that undercapitalization in transport should not be equated to mean the neglect of this important sector. The low levels of mobility and accessibility present in most developing countries reflect the years of neglect that these countries experienced during the colonial era. The transport experiences of socialist countries indicate that transportation investments are concomitant with, and not a pre-condition for, economic development. It also suggests that since transport demands are derived demands, ¹⁶ a transport strategy should be an integral part of a development strategy. Consequently, one has to look beyond the transport sector in order to account for inter-sectoral transport dependencies and possibilities for substituting transport needs by proper locational policies. One has also to account for the complementary nature of the various transportation modes to minimize spatial friction.

Balanced Transport Strategy

A balanced transport strategy attempts to establish an equilibrium between transport demands and transport supply. Transportation investments are only made according to the levels of existing and forecasted transportation demands, and their timing is phased to correspond to the rate of traffic growth. This strategy implies neither a spatial balance among the different regions of a country nor a balance of investment among the various modes.

India is one of the few developing countries that allocates funds for transportation investments using a transportation planning process and according to the requirements of its development plans. ¹⁷ The emphasis in its transport strategy during the period of the first two five-year plans was on rehabilitating and expanding the railway network. This emphasis was shifted later to account for the needs of the development plan as documented by the first report of the Committee of Transport Policy and Coordination. ¹⁸

There is no all-encompassing transport strategy that is suitable for every developing country. Although these countries share a desire for development, their planning environment is not the same. Therefore, duplicating a successful transport strategy of one country in another country may prove harmful if the particulars of the planning environment are not considered. This does not mean that the lessons gained from outside experiences, whether from developed or developing countries, are not valuable. On the contrary, such experiences enrich local ones in terms of formulating a suitable transport strategy.

AN INTEGRATED TRANSPORT STRATEGY

The ultimate objective of every transport strategy is to minimize the spatial friction that separates the locations of human activities. Minimizing this friction should not be equated with supplying more and more transport capacity. Congestion on major urban highways in cities of the United States illustrates how relative immobility can result from stressing transportation, and particularly one mode, as the only cure for improving accessibility. Therefore, in order to achieve the above objective, every transport strategy should also aim at minimizing the need to travel through the use of locational policies and land-use planning.

Further, the passive and dynamic aspects of investments in transportation in developing countries dictates the need for evaluating these investments in terms of their contributions to national development planning. In other words, transportation investments should be recognized as not just passive in nature, meeting transport demands, but also dynamic in the sense that they can act as a catalyst to national development, particularly in outlying regions and in rural areas of a country. One of the distinguishing characteristics of transport networks in many developing countries is their concentration around major cities and between them. This concentration is a manifestation of the concentration of political and social institutions and the agglomeration of productive activities in the so-called primate centers.¹⁹ The transport situations in these centers are not much different from those of cities in industrial countries. Rural transport, however, is still dependent on human and animal energies,²⁰ and the accessibility to rural settlements, not to mention their accessibility to each other, is still low.

The special transport situation in developing countries suggests the need for an integrated transport strategy to guide investments in this facilitative sector. Such a strategy has to be an extension of a development strategy simply because of the internal and external dependencies associated with transport. Many developing countries are aiming for economic integration. Economic integration has more than a pure economic dimension. It includes also social, political, and environmental dimensions that are reflected in the multiplicity of goals inherent in every development plan. What this requires in terms of transport, among other things, is to replace the fragmented project-by-project and mode-by-mode approach by a strategy that accounts for the dynamic as well as the passive aspects of transportation investments.

The most common transport strategies in developing countries are the balanced and the overcapitalization-unbalanced strategies. Each, operating alone, has disadvantages. A balanced transport strategy that attempts to satisfy existing and forecasted transport demands according to established and existing behavioral relationships ignores the dynamic dimension of investments in transportation. An overcapitalization in transport strategy that is neither integrated with other investments nor coordinated within the transport sector itself is wasteful.

A combination of balanced and an overcapitalization in transport strategies, however, offers a suitable course of action for developmental purposes. A balanced transport strategy allocates for immediate and obvious transport needs, whereas an over-capitalization strategy can be utilized to bring about some of the desirable changes in the macroeconomic space of a developing country. In this way, the most urgent transport needs can be met at the same time that overall long-range development objectives are pursued.

FOOTNOTES

1. This is why transport is a key variable in most location theories. See Walter Isard, **Location and Space Economy**. Cambridge: MIT Press, 1956; see also William Alonso, **Location and Land Use**. Cambridge: Harvard University Press, 1964.
2. The term "developing countries" is used here to denote most countries in Asia, Africa and Latin America. The analysis in this article is applicable also to the newly oil-rich countries and to economically disadvantaged regions in industrial countries.
3. See Wilfred Owen, **Strategy for Mobility**. Washington, D.C.: The Brookings Institution, 1956; and Riad G. Mahayni, **Transportation Planning in Third-World Countries: An Annotated Bibliography**. Monticello: Council of Planning Librarians, Exchange Bibliography No. 1108, August 1976.
4. For further discussion on these factors, see Riad G. Mahayni, "Spatial Integration and Transportation Planning in Third-World Countries", in Leslie S. Pollock (ed.) **Frontiers of Transportation Planning**. Washington, D.C.: The American Institute of Planners, 1975, pp. 59-80.
5. Jan Tinbergen, **The Design of Development**. Baltimore: The Johns Hopkins Press, 1958, pp. 31-32.
6. W. A. Lewis, **The Theory of Economic Growth**. London: George Allen and Union Ltd., 1956, pp. 210-211.
7. S. Kuznets, "Quantitative Aspects of Economic Growth of Nations", **Economic Development and Cultural Change**, Vol. VIII, No. 4, Part II (July 1960), pp. 37-38.
8. Drazen Bejakovic, "The Share of Transport and Communications in Total Investment", **Journal of Transport Economics and Policy**, Vol. IV, No. 3 (September 1970), pp. 337-343.
9. The author combined the share of investments in communications with transportation in his analysis.
10. For a review of such behavioral models see Gary Fromm (ed.) **Transport Investments and Economic Development**. Washington, D.C.: The Brookings Institution, 1965 and Roger L. Creighton, **Urban Transportation Planning**. Urbana University of Illinois Press, 1970.
11. The terms unbalanced and balanced are borrowed from two leading regional economic growth theories. See Albert O. Hirschman, **The Strategy of Economic Development**. New Haven: Yale University Press, 1958, and Ragner Nurkse, **Problems of Capital Formation in Underdeveloped Countries and Patterns of Trade and Development**. New York: Oxford University Press, 1967.

12. Wilfred Owen, **Strategy for Mobility**. op. cit., p. 40.
13. Ibid, p. 42.
14. See Holland Hunter, **Soviet Transport Policy**. Cambridge: Harvard University Press, 1957. See also Jan S. Pryloyla, "Transportation in Communist China", **Land Economics**, Vol. XLII, No. 3 (August 1966), pp. 268-281.
15. See Holland Hunter, **Soviet Transport Experience: The Lessons for Other Countries**. Washington, D.C.: The Brookings Institution, 1968, pp. 1-32.
16. Transport is not really a sector like the industrial or the agricultural sectors. It is a facilitative sector that connects different economic activities to each other. As such, transport, as an economic good, is rarely pursued for its own sake. It is always serving other purposes and goals.
17. For examples of such a process, see Hans A. Adler, **Sector and Project Planning in Transportation**. Baltimore: The Johns Hopkins Press, 1965, and John R. Meyer (ed.), **Techniques of Transport Planning, Vol. II: System Analysis and Simulation Models**. Washington, D.C.: The Brookings Institution, 1971.
18. See Government of India, Planning Commission, Committee on Transport Policy and Coordination, **Final Report**, 1966.
19. See for example William Alonso, "Urban and Regional Imbalances in Economic Development", **Economic Development and Cultural Change**, Vol. 28, No. 2, January 1970, pp. 204-218; Walter Stohr and Paul Pederson, "Economic Integration and the Spatial Development of South America", **American Behavioral Scientist**, Vol. 12, No. 5, May-June 1969, pp. 2-12.
20. See Labh S. Sachdev and R. G. Hennes, "Planning Rural Highways in India", **Traffic Quarterly**, Vol. 23, No. 4, October 1969, pp. 573-586.

استراتيجيات المواصلات في الدول النامية

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تهدف هذه الدراسة الى تحليل مجموعة من الاستراتيجيات الخاصة بالمواصلات وبالذات لتلبية احتياجات التنمية . ويشير المؤلف الى ان استراتيجية المواصلات تلعب دورين بارزين :

اولهما ، تحقيق الاكتفاء في الطلبات الخاصة بالمواصلات وذلك عبر تحسين قدرة المواصلات .

وثانيهما ، ان استراتيجية المواصلات — علاوة على متغيرات أخرى ضرورية — تولد امكانية للتقدم على المدى البعيد .

كذلك يصف المؤلف الاستراتيجيات التي هي موضع الاستعمال الآن على أساس أنها اما استراتيجيات غير متوازنة او متوازنة ، ويخلص الى ضرورة ايجاد استراتيجية بديلة تمتاز بتخطي النواقص القائمة حاليا . وهذا أمر يساعد في ارساء قواعد أساسية للنمو الاقتصادي في البلدان النامية بحيث يلبي الاحتياجات الخاصة بالتنمية سواء كانت هذه احتياجات قصيرة أو بعيدة المدى .