ECONOMIC ISSUES OF PUBLIC TRANSPORT IN SRI LANKA

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This paper is one of the 18 papers, published under a special series of publications by the Sri Lanka Economic Association (SLEA) with financial assistance from the United States Agency for International Development (USAID). The objective of these publications is to provide economic literature on current and topical themes on the economy of Sri Lanka to a broad audience that is interested in economic issues, but has little or no background in theoretical economics, while maintaining high analytical standards. Hence, the papers have been written in simple language avoiding the use of sophisticated technical terms, mathematical equations and models etc. which are normally found in economic literature.

ECONOMIC ISSUES OF PUBLIC TRANSPORT IN SRI LANKA*

In Sri Lanka, as in many other developing countries the passenger transport sector has had a considerable bias towards State management and ownership. Particularly since 1977 the role of public transport has become more significant due to the rapid expansion of the economy followed by the relaxation of stringent controls and restrictions on economic activity that existed for nearly two decades. This change resulted in a sharp increase in the demand for both passenger and freight transport.

Transport has an impact on all forms of economic activity and it influences the pattern of life of the people, particularly those in low income groups who are without access to private modes of transport. In view of this, issues relating to public transport invariably receive special attention in the formulation of economic policy, which at present emphasizes rapid economic growth, while ensuring greater benefits to the poor.

In general, the transport sector constitutes all transportation facilities and organisations including infra-structure such as roads, railway tracks, terminals, ports and airports, vehicles such as road vehicles, railway motive power and rolling stock, aircraft and

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ships, and the maintenance and operation of these within the country. One clear division within this broad framework is the distinction between public and private transport.

Irrespective of whether State owned or Privately owned, public transport, may be defined as any transport activity where the services are available for use by the general public. Any form of transport which is not available for public use, is generally treated as private transport. This paper will concentrate only on public transport and will attempt to analyse relevant economic issues.

Some macro-economic indicators can be used to measure the significance of transport in an economy. These indicators include,

(a) the contribution by the transport sector to the national product,

(b) the transport sector share of private consumption expenditure,

(c) the proportion of government expenditure on transport; and

(d) the proportion of transport expenditure in total household expenditure

In National Income Accounting, the transport sector is considered together with communication and storage services. Table 1.1 shows that transport, storage and communication services together account for a sizeable proportion i.e. approximately 11 per cent of the Gross Domestic Product (G.D.P.) of Sri Lanka.

Table 1.1

Contribution of Transport, Communication and Storage in the G. D. P. at Current Factor Cost Prices (Rs. million)

	1977	1982	1987	1991
1. G. D. P. (Rs. million)	34,933	94,679	177,731	339,058
2. Transport, Storage and Communication (Rs. million)	2,723	10,666	18,663	34,870
3. (2) as (%) of (1)	7.8	11.3	10.5	10.3

Source: Central Bank of Sri Lanka, Annual Reports.

The other relevant macro-economic indicators such as the transport sector shares in total private consumption and total public expenditure are given in Tables 1.2 and 1.3 respectively.

Table 1.2

Private Consumption Expenditure on Transport at Current Market Prices (Rs. million)

	1977	1982	1987	1991
1. Total Private Consumption (Rs. million)	26,698	79,226	151,949	289,528
2. Private Consumption Expenditure on Transport (Rs. million)	1,403	5,190	10,295	13,852
3. (2) as a % of (1)	5.3	6.6	6.8	4.8

Source: Central Bank of Sri Lanka, Annual Reports.

According to Table 1.2, approximately 5 per cent of the private consumption expenditure is on transport.

However, large variations in this proportion may be found in the expenditure patterns of individual consumers e.g. a middle level income earner using a private mode of transport may be spending a much higher share of his budget on transport while another idividual whose pattern of life is very seldom associated with travel, would be spending a much smaller proportion of his budget on transport.

Table 1.3

Government Expenditure on Transport (Rs. million)

	1977	1982	1987	1991
1. Total Government Expenditure	8,812.8	37,900.0	85,436.0	143,063.0
2. Government Expenditure on Transport	271.3	2,386.0	5,063.2	8,550.1
3. (2) as a % of (1)	3.1	6.3	5.9	6.0

Source: Central Bank of Sri Lanka, Annual Reports.

The high transport cost faced by low income earners has been discussed widely through media and at public fora. It has been brought to light on many such occasions that a sizeable proportion of their household budget is spent on transport.

Although transport is a vital component of any economic activity, it is difficult to elicit from any of the above macro-economic indicators, a simple figure to represent its great importance within the economy. Transport inputs are included in undistinguished forms in the output of so many other sectors. Therefore, most of the economic indicators tend to understate the significance of the transport sector contribution in economic activity.

Although there are difficulties in measuring the significance and magnitude of transport inputs in an economy, it is possible to discuss the above macro-economic indicators in relation to the performance of the economy within the present policy framework. This would enable us to make some useful observations. In addition to a higher transport sector share of the GDP and increased government expenditure on transport in recent years, public investment envisaged in this sector accounts for 14 per cent and 18 per cent of the total public investment in 1988 - 1992 and 1989 - 1993 programme periods respectively.

The close relationship between economic activity and transport was evident from the upsurge in the demand for transport following the liberalisation of the economy since 1977. Between 1981 and 1985, transport output increased at an annual growth rate of 7.7 per cent as compared to a growth of the GDP at 5.5 per cent. There has been a phenomenal growth in the vehicle stock of both freight and passenger transport types since late 1977 due to liberalisation of imports. During the period 1977 to 1991 the vehicle population in Sri Lanka more than trebled. The sluggish growth in the economy in the late 1980's was partly an outcome of interruptions that were caused to the transport system by civil disturbances that prevailed. Sound transport policies and practices are therefore, a catalyst for economic growth.

Issues in the transport sector can be examined at different levels from different points of view. Of

these different alternatives, a simple and convenient approach is to examine the economic issues of public transport from the operators', users' and national perspectives.

2. Issues at Operators' Level:

The transport problems at the micro level constitute, among other things the issues associated with the provision of services. These are usually identified as problems encountered by operators who are responsible for the provision of services

2.1 Peak Demand:

Peak demand which occurs due to heavy movement of traffic in one direction is a usual characteristic associated particularly with public transport. This behaviour of traffic can be observed by time of day, day of week and by season. Peaking of traffic necessarily results from the derived demand for transport, i. e. - the demand for transport depends on the demand for other goods and services which require transport inputs to produce.

Bus and railway operators have been criticised mainly because of their inability to meet the demand in the peak periods. Clearly, for the operator to run his vehicle in the peak is more costly than during off-peak hours. One solution to this problem would be to reduce the concentration of the peak. However, this alternative is beyond the operator's control. The options that were available in Sri Lanka to overcome this problem, included staggered working hours for public and private sector employees and school and shop opening and closing times. In spite of adopting

these measures, a heavy demand continued to persist due to the concentration of shops, offices, factories, schools and hospitals within city limits, thus exerting pressure on the urban transport system during peak hours. In recent years, certain steps have been taken by the government to decentralise public administration with the objective of reducing the prevailing urban congestion. Private investors are being encouraged to locate their factories in rural areas, as part of the new development strategy. This policy will have a favourable impact on the urban transport network by reducing congestion and the growth of traffic in urban areas. Heavy seasonal traffic flows occur mainly during festival times, but the strain on the operators on these occasions is not as severe as in the daily peak.

2.1.1 Peak Demand and Costing and Pricing of Services:

Peak demand causes problems in scheduling services. A much larger number of vehicles is required to cope with the peak demand than the number required to operate in the off-peak. This excess of peak vehicles has to be kept idle in the off-peak hours when the demand is low, resulting in under-utilization of capacity. This causes problems to the operators because they have to incur additional costs on account of additional vehicles required to meet the peak demand and the wages of excess vehicle crews who are under-employed because the number of vehicles operated in the off-peak is lower. Thus at the margin, it becomes more costly for the operator to operate an additional vehicle in the peak than in the off-peak. It should however be pointed out that

the higher marginal cost (extra cost of operating one more vehicle) in the peak is essentially a problem for large operators.

It can be argued that the relatively lower financial viability of large operators (fleet owners) as compared to that of single vehicle or small fleet operators is a phenomenon associated with higher marginal cost in the peak. In a system which is not properly organized and inadequately monitored, it is possible for small fleet owners to operate only in the peak and keep away from operating in the off-peak. The single and small operators are not confronted with the constraint of higher marginal cost in the peak, unlike large operators, and in fact, for the operators of the former category, it is profitable to confine themselves only to the peak operation. The non-availability of a sufficient number of buses in the off-peak, resulting in low service frequency, is due to the low revenue generating potential of small and single vehicle operators in the off-peak.

The higher marginal cost of peak operation impinges on the pricing of services. If the principle followed in pricing is to set the passenger fares equal to marginal cost of supplying the services then the pricing decisions will lead to a higher fare in the peak and a lower fare in the off-peak. This discriminatory pricing policy is not in practice in Sri Lanka. Operators in Sri Lanka have always followed an average cost basis for setting fares, and this policy has led to misallocation of resources. In some countries, higher fares in the peak are imposed in the form of surcharges and lower fares in the off-peak as discounts. A higher fare in the peak will discourage optional

travel in congested hours and discounted fares will encourage optional travel in the off-peak When there is underutilisation of vehicles in the off-peak where marginal cost of carrying an additional passenger is zero, a bargain (discount) fare enables the operator to fill empty seats and collect more revenue. A discriminatory fares structure between the peak and off-peak will on the one hand, ensures more efficient allocation of resources and on the other, it will lead to a greater financial viability of individual operators.

2.2 Nature of Supply:

The output produced by a transport operator is the volume of services produced by him and this is usually measured in terms of the distance operated. In the case of a passenger transport operator, the measure is either the number of vehicle kilometers or seat kilometers operated. The output produced by a freight transporter is measured by either the vehicle kilometerage or ton kilometerage operated.

Both passenger and freight operators are confronted with lumpiness of supply resulting in under utilised capacity. If, for example a bus which has a capacity to carry 50 passengers is operated from point A to point B, it is not possible to predict in advance, how much of its capacity will be utilised until the journey is completed. The vehicle does not normally begin its journey with all 50 passengers on board. There is also no assurance that all 50 passengers will make the full trip all the way from point A to point B. Theoretically speaking, in transport, the production and consumption of output should take place simultaneously in order to ensure most efficient

use of resources. If the consumption of transport services does not take place simultaneously with its production, the output produced perishes. Because of non-storability of services the operators attempt to collect as many passengers as possible in order to maximise their revenue. This situation is clearly evident in Sri Lanka, mostly in the private omnibus service. Although the operators appear to believe that the unwarranted actions they resort to are justifiable from their point of view, any such action is very often associated with high costs to the society.

2.3 Incomparability of Service Supplied with Service Demanded:

The operators of transport services are always confronted with a problem of matching the services they supply with the demand they face. The unit of measurement of supply is not the same as the unit of measurement of demand in most service activities and as far as this principle is concerned transport is no exception, This problem is more critical in passenger transport where there is more uncertainity with regard to the level of utilisation of services. The services supplied by a passenger transport operator is usually measured by operated kilometers while the services are demanded in units of passenger kilometers.

The load factor gives some indication of the level of utilisation of the services supplied. However, it does not indicate the quality of service and the frequency at which services were provided. A good example of higher service frequency, improved quality of service and a more efficient way of approaching the problems

associated with demand for and supply of, stage carriage service is the minibus service in Kuala Lumpur, Malaysia. A study conducted by Professor Allan Walters on this minibus service concludes that the introduction of minibuses increased the service frequency, thereby resulting in overall improvement in the urban bus transport system.

Similar studies are not available on urban transport in Sri Lanka. However, according to traffic surveys conducted in Sri Lanka the introduction of private omnibuses resulted in a sharp increase in the frequency of service in most urban and inter-urban routes. However, it is difficult to conclude that there was an accompanying reduction in passenger travel times. The passenger waiting times and walking times would have decreased but any such reduction may have been negated by increased in-vehicle times, due to very low speed levels and long waiting times experienced at bus stops in order to collect more passengers.

2.4 Uneconomic Routes and Cross Subsidisation:

It is necessary for operators to identify the financial viability of their operation on each route. This is possible only if a comprehensive accounting system which provides service or route-wise costs and earnings is maintained. In a study conducted by the Sri Lanka Transport Board (SLTB) in 1986, it was found that a large number of routes were commercially unremunerative. In this study, it was also found that the inter-urban routes were profitable, while almost all rural routes were uneconomic to operate.

In route-wise or service-wise costing, one major impediment is the existence of joint and common cost elements. In estimating the cost of a trip from point A to point B, the cost of both outward and inward journeys must be taken into account. If the traffic is only in one direction, the vehicle will run empty on its return trip. On such occasions, the cost of carrying the load must include the cost of running empty on the return trip. This is a usual feature in the road haulage industry and even in passenger transport, seasonal peak demand involves a lot of empty running. The existence of common costs is more significant in rail transport. The use of the track, stations and signalling system is common to all the services for which these facilities are used. Some interesting observations can be made with regard to the closure of cartain services by the Sri Lanka Railways (SLR) in the past. When a service between two stations on a particular route was closed down, the avoidable component of costs of this decision was limited only to a part of its operating costs. The costs of infra-structure and its maintenance such as that of the track and signalling system, stations and staff remained in order to cater to other services which continued to operate. Thus the cost reduction resulting from a closure of a service was minimal.

2.5 Issues Associated with Operator Organisation:

A wide range of organisational structures of operators can be seen in Sri Lanka. For convenience, this analysis will deal only with passenger and freight modes of domestic transport.

The public road passenger transport service comprises a large number of operators. The two distinct categories are (a) private omnibus operators and (b)

peoplised bus companies. Although the number of omnibuses registered with the Department of Private Omnibus Transport was only 12,398 as at end of June 1992, there was a large number of unregistered operators making a total of about 14,000 operators of public passenger transport, with a total fleet of about 15,000 buses. The number of peoplised bus companies stood at 81 as at end of September 1992. These peoplised bus companies, which were created as part of the state policy of privatisation of public enterprises, inherited the capital investment, vehicles and staff of the Regional Transport Boards (RTBs).

2.5.1 Peoplised Bus Services:

The RTBs continued to suffer increasingly heavy losses and the creation of smaller units of operation under the peoplisation programme was expected to improve the operational efficiency and finacnial viability of the state owned bus services. A higher level of labour productivity is expected as the workers were to be given the opportunity to participate in decision making. The management will be elected by employees and in order to enable this 50 per cent of the shares of these companies was allocated to employees initially. After a period of 3 years, the balance 50 per cent of the shares will also be transferred to employees who will ultimately become the sole owners of the companies. The reduced size of the operating units has shown some encouraging results but, overall, it is quite premature to comment on the performance of this programme.

A break-down of revenue and expenditure per operated kilometer shown in Table 2.5. (a) provides some useful information on factors that contributed

to the adverse operational performance of the state owned bus service. In real terms, both the operating and overhead costs increased while revenue per kilometer decreased, resulting in a deterioration of the financial performance.

Table 2.5. (a)

Financial Results of SLTB and R T B s.
(Rs. per km at 1976 constant prices)

	1976	1980	1985
Revenues			
Passenger Fares	1.768	1.880	1.729
Luggage Receipts	0.017	0.017	0.018
Mail & Newspapers	0.007	0.003	0.005
Special Hires	0.017	0.008	0.035
Total Operating Revenues	1.809	1.908	1.787
SLTB Revenue		0.163	0.004
Reimbursements & other	0.024	0.149	0.319
Total Revenues	1.833	2.220	2.110
Operating Costs			
Salaries & Wages	0.615	0.649	0.747
Fuel	0.322	0.680	0.792
Spares, Batteries & Tools	0.319	0.399	0.284
Tyres & Tubes	0.172	0.235	0.176
Oil & Lubricants	0.043	0.041	0.058
Other Expenses	0.053	0.051	0.097
Total Operating Costs	1.524	2.064	2.154
Operating Profit (Loss)	0.309	0.156	(0.044)
Non-Operating Costs			
Establishment Expenses	0.150	0.193	0.263
Depreciation	0.128	0.218	0.094
Bonuses	0.016	0.011	0.008
Interest	0.022	0.011	0.022
Total Non-operating Costs	0.316	0.433	0.387
Overall deposit/loss	0.007	(0.277)	(0.431)

Source: Report of the Sri Lanka Transport Sector Planning Study, 1986

The unfavourable trends in costs and revenues of the state owned bus services may be attributed to adverse effects of increased competition from private operators, running on unremunerative routes, concessionary fares and poor financial management. Most of these problems are expected to be overcome with the new reforms being introduced and when most peoplised ventures are fully operational. The new units are expected to operate with reduced staff levels and increased productivity, on a self supporting commercial basis. However, it is unfair to hold the management of these ventures responsible unless they are free from outside interference, necessary authority is delegated for independent decision making and initial resources required for working capital and investment are made available.

2.5.2 Private Omnibus Service:

The organisation of the private sector bus passenger transport service is characterised by a large number of operators with a single vehicle or very small fleets. At present the total fleet strength of the system is around 15000 available effective vehicles, of which, about 35 per cent is based within the Colombo district.

Initially the private operators were required to obtain route permits from the SLTB and they were not allowed to compete with RTB services. The private buses were expected to operate on cross-country and feeder routes supplementing the State owned services. No overloading was allowed, but operators were free to charge their own fares. These stringent regulations were relaxed subsequently and the private operators were further motivated by a generous

package of incentives, which include low import duties and other tax concessions (e.g. a lumpsum depreciation facility) offered by the government.

A major issue confronted by the private operators was the financing of the purchase of buses. Most lending agencies were reluctant to lend to this sector for fear of non viability and uncertainity which could result in recovery problems. The investors on buses were compelled to borrow from finance companies and various non-institutional sources at very high rates of interest. In most instances the interest was levied on the initial capital and not on the reducing balance, thus charging an effective rate of interest which was much higher than the stated rate of interest. It was revealed in a study that the effective rate of interest was as high as 72 per cent per annum in the early 1980's. However, this situation changed substantially for the better towards the late 1980's, mainly due to government intervention. At present finances are made available to private operators for purchase of buses at a considerably low rate of interest through the National Development Bank [NDB]. A line of credit on favourable terms, supported by the fourth Small and Medium Industries [SMI] project of the International Development Association [IDA] has been made available for this purpose.

As required by the Private Omnibus Service Act No. 44 of 1983, private bus operators are organised into District Operators' Associations. To co-ordinate the activities of the District Associations, a Federation of Private Omnibus Operators' Associations has been organised as a corporate body constituted under the

same legislation. However, the capacity of these organisations to represent the member operators is limited due to some legal snags. Further, these operator organisations do not have the required resources to provide infra-structure such as terminal facilities, passenger shelters etc., and in most parts of the country, private operators share some of these facilities owned by peoplised bus services.

Although the private operators are free to set their passenger fares, their decisions are largely influenced by the 'Price Leadership' of peoplised bus services which results in their charging the fares equal or close to that of the peoplised services.

Table 2.5. (b) shows a sector wise estimated average cost and revenue per seat kilometer of a private bus. The cost figures in this table, however do not include interest payments, the inclusion of which indeed would lower the surplus.

Table 2.5. (b)

Estimated Revenue and Cost
Per Seat km. of a Medium Size Private Bus
(at 1986 prices)

Type of Route	Revenue	Cost (Rs.)	Surplus/Deficit (Rs.)
Urban	0.223	0.180	0.043
Rural	0.202	0.166	0.036
Intercity	0.182	0.149	0.033

Source: Sri Lanka Transport Sector Planning Study, 1986

It may be observed that as shown in Table 2.5 (b) private omnibus operators generate a surplus, although marginally, in their operation. These financial results

may be compared with losses incurred by the State owned operators which are shown in Table 2.5 (a). The losses incurred by State owned services can be attributed to a number of factors; these include, higher overhead costs such as establishment expenses and salaries of ground staff, payment of Turnover Tax on revenue and lower earnings. With regard to the Turnover Tax, it should be mentioned that with effect from June, 1992 all passenger transport operators were exempted from payment of this tax. Some State owned services have shown substantial cost reductions after the restructuring programme was introduced.

2.5.3 The Railway Service:

In Sri Lanka the railway service has been in operation since 1864. From the early years to the late 1920's, the railway continued to enjoy favourable financial results mainly due to lack of competition from road transport, The adverse financial performance has been seen particularly since the Second World War and its commercial non-viability has become the main concern of the railway administration today.

The Sri Lanka Railway [SLR] is a government department under the Ministry of Transport & Highways. Mainly because of the traditional organizational structure the SLR is not geared for activities on a commercial basis and due to shortcomings in the non commercial oriented accounting systems and procedures, the actual financial performance of the SLR is not explicit. In fact its losses may be higher than the reported losses. In 1991, the SLR reported a loss of Rs. 455 million.

With approximately 20,000 employees, the SLR has 1450 kms. of track and over 1000 railway bridges, most of them were built over 50 years ago. The track is mostly limited to a single line except for 102 kms., of double track that extends up to Polgahawela on the main line and Wadduwa on the coast line. The effective fleet consists of about 200 diesel locomotives, 4000 wagons, 1300 coaches and 46 power sets used for commuter traffic.

The annual volume of freight traffic by rail has been around 175 million ton kms. at present. This is a substantial decrease from the level of about 270 million ton kms. in the 1970's. The main commodities transported by the SLR include cement, petroleum products, fertiliser, limestone, rice and flour which are long hauled in bulk.

Passenger traffic by rail is presently (1991) around 2.7 billion passenger kms. which is a sharp decrease from a level of about 4.1 billion passenger kms. in 1979. The SLR suffers stiff competition from road transport in both freight and passenger markets and this has resulted in losses of revenue and increases in costs. The other main factor that contributed to railway deterioration may be identified as disruptions caused to the service by civil disturbances. The government subsidies have not kept pace with the escalating operating costs and the SLR management has deferred the track maintenance work and a large proportion of locomotives and rolling stock has gone out of service for want of spare parts that have to be imported. A major improvement, in the SLR in the recent years was the introduction of 20 new diesel hydraulic trains in 1991, but in spite of this improvement total passenger traffic carried by rail in the same year decreased by 3 per cent as compared to 1990.

The operational problems arise mainly from the fact that the railway system was not modernised to suit the present requirements. The existing system was designed by the British to meet transport requirement of a different era under different circumstances. A report of a study conducted by the Transport Studies and Planning Centre (TSPC) states that 'besides competition, the SLR has also inherited the problems of being an' old 'railway system.....' The physical limitations of the system and the inherent deficiencies of rail service were brought into focus. Non-standard rail sections, excessive corrosion of rail on coastal routes, excessive wear on the sharp and continuous curves in the hill country, lack of indigenous hard timber and prevailing maintenance practices made railway maintenance very costly. Low axle loads of 16.5 tons, have prevented the use of high horsepower locomotives (over 2000 h.p) that could increase the tractive effort to the level necessary to handle economic trailing loads on steep grades. As a result, the choice of locomotives has been difficult, with the problem being compounded by the purchases often being based on the available lines of credit rather than on what was best for the railway.

The Report states further that 'with the advent of the eighties, the problems of the railway got multiplied. Industrial strife, ethnic conflict, civil unrest, acts of violence and sabotage brought in operational problems and losses of unprecedented nature. Government policy enabled private buses and lorries to enter transportation markets at very low costs. The railway in the meantime continued to be regulated and under-capitalised in attempting to solve its prob-

lems.' Likewise the TSPC report highlights some of the major problems confronted by the railway today. The SLR being a fully State owned enterprise it is incumbent upon the government to see that the railways' full potential is utilised to obtain more economic benefits to the society while ensuring its private financial viability in the present competitive environment.

A feasibility study on the construction of a railway system between Matara and Kataragama has been conducted recently, Constuction work of the section of the system between Matara and Dickwella is already underway. The Matara-Kataragama Railway System is by far the largest project undertaken by any government since Independence to improve the railway system. According to the feasibilty study, this proposed railway system will contribute substantially to regional economic development mainly in the Southern Province and partly in the Sabaragamuwa and Uva Provinces. The other benefits that will result from this project will include reduced travel time and reduced cost of goods transport. However from the SLR's point of view any improvement to its present financial situation is possible only if rail passenger fares and freight rates are increased by a substantial proportion to more than compensate the rising capital and running costs. Another recent improvement in the railway system is the conversion of the narrow gauge to a broad gauge of the section up to Nugegoda on the Kelani Valley Line. This has provided a more convenient and cheaper alternative mode of transport to a large number of sub-urban

commuters at a much reduced travel time and at a lower fare, particularly in their journeys to work and back.

The electrification of the sub-urban railway has been under consideration since 1974, when the first feasibility study in this respect was conducted by Sofrirail. However, large amounts of capital investment required for the implementation of an electrification programme was a major constraint to which the successive governments could not find a solution. It has been recommended in the Sri Lanka Transportation Sector Planning Study (TSPS-1986) to improve the existing railway system with a view to expand and strengthen the urban commuter passenger transport system and to obtain the low cost benefits of bulk goods transport in which the railway has an advantage over road transport.

The SLR accounts for about 5 per cent of the total passenger traffic and its share of freight traffic is also very small due mainly to network limitations. A major disadvantage the railway has against road transport modes is that by nature the railway operator has to incur additional costs on account of its infrastructure i.e.- track and signalling system. No cost on account of track is incurred by road operators. In addition, the railway operates on a limited track network as compared to a much more extensive network of roads with a much greater accessibility. The rail freight transport has the disadvantagel of excessive loading and unloading from and to other modes and warehouses which involves additional costs.

2.5.4 Road Freight Transport:

The total number of lorries, trucks and vans of different freight carrying capacities stood at 115,889 as at end of 1991 according to the records of the Registrar of Motor Vehicles. This figure does not include a total of 23,086 trailers that were used for transport of goods mostly in the rural and estate sectors and an approximate total of 24,500 dual purpose vehicles.

However, the actual strength of the effective and available fleet and how many goods vehicles are available for public transport etc. are not known due to non-availability of detailed statistics. In the absence of disaggregated data, a reasonable approximation would be that about two thirds of the trucking fleet is privately owned, mostly by small operators. The remainder is owned by government agencies, public corporations and co-operatives for own account operation. In a survey conducted by the TSPC in 1986 it has been observed that the users i.e. importers, exporters, manufacturers and traders have found the services of truck operators satisfactory, in terms of certain quality aspects, but the hire rates charged were considered to be a little too high. Road freight transport is generally unregulated and there are no barriers to enter into the industry.

Information available on revenue and expenditure aspects of lorry operators indicate that road haulage is a profitable business activity. The financial cost (at 1991 prices) of freight transport per ton kilometer varied from Rs. 1.52 to Rs. 2 86, plus loading and

unloading expenses. The costs are adequately covered by average hire rates charged (at 1991 prices) at Rs. 5.19 and Rs. 5.70 per ton km. by small/medium and large lorries respectively.

3. Public Transport and the User:

In developing countries such as Sri Lanka, public transport affects the life of people to a much greater magnitude than in developed countries. It is a well accepted and obvious fact that in low income countries, people depend heavily on public transport to satisfy their needs of both passenger and goods transport. In recognition of this phenomenon, emphasis is laid in this paper on discussing some basic issues of public transport from the users' point of view.

In Sri Lanka, patronage of public passenger transport at present is about 85 per cent, of which the shares of road and rail are 80 and 5 per cents respectively. The balance 15 per cent of the total passenger trips are made by private modes of transport. In some very low income countries, the share of public transport is as high as 95 per cent of the total, whereas, in high income countries more trips are made by private modes of transport.

Users are mainly concerned about the availability of transport at a reasonable cost with some minimum standards in the quality of service. In passenger transport, passenger fares represent the largest component of cost to the user. Revision of bus and rail fares has been crucial and politically sensitive decisions to successive governments in the past particularly, when passenger transport remained a state monopoly. The pressure from the public and the welfare oriented

policy pursued by successive governments were the factors responsible for artificially low bus and rail fares in the past. It appears from the cost and revenue figures of both the State owned bus and railway services, that average earnings per operated kilometer were lower than the average cost per operated kilometer resulting in a substantial excess cost over revenue. Table 3.1 provides information leading to the above conclusion of a subsidised fares structure.

Table 3.1.

Average Revenue and Cost per Operated km. (Rs.) 1991

Mode	Average Fare	Average Cost	Excess Cost over Revenue
State owned bus seevice	8.60	10.58	1.98
SLR	95.51	157.89	62.38

Source: Computed by the Author using the data published by the Central Bank of Sri Lanka.

The users have enjoyed further concessions on fares in terms of bus and railway season tickets. The large concessions given on school season tickets are reimbursed by the Treasury and the subsidy for operating on uneconomic routes to the RTBs amounts to Rs. 152 million, a year.

It should be noted that in so far as the choice between different modes of transport is concerned, users tend to make their decisions on the basis of 'perceived costs' rather than actual cost of the forgone alternative. For example some train travellers do not take account of the cost of additional walking and waiting times they encounter. The decisions of user

choice are important not only in understanding what services the users are likely to demand, but also in evaluating different infra-structure investment proposals.

Almost all empirical studies on modal choice have observed that the time taken for a journey is an important factor influencing the demand for travel. Users are concerned about travel times because any time saving can be strictly traded off with money costs. There are three components of travel time i. e. walking time, waiting time and in-vehicle time, which must be taken into account in determining the user accessibility.

A good starting point in valuing the time savings in travel is to relate the opportunity cost (value of the best alternative forgone) to the wage rate or the income forgone due to time spent on travel. In developing countries where wage rates are low, travel time savings tend to be less important in determining the transport sector investment proposals. However, there is evidence in feasibility studies e.g. proposed Colombo - Katunayake Express Way, Outer Colombo Circular Road (pre-feasibility), and Matara - Kataragama Railway Line that there are substantial time savings resulting from reduced travel times, the benefits of which to the users are a significant factor in determining the viability of investment proposals.

Another factor of concern to the user is the quality of service. Safety, comfort, convenience and flexibility are the usual measures of the quality

and it is almost tautological to say that people want the best possible transport service in each of these respects.

No empirical studies are available on Sri Lanka estimating the values people attach to quality factors of transport services. However, evidence available particularly, on developed countries indicate that the quality of service is valued quite highly. American and British studies of the choice of mode by commuters have suggested that the combined effect of differences of quality of service and door to door speed between private and public transport make it unlikely that any substantial diversion could be obtained from private transport even by the completely free provision of public transport in the present situation.

In general, the high value attached to the quality of service by people in developed countries suggests that quality aspects of transport need to be discussed in conjunction with income levels of the people. It is a fair conclusion to make that users in low income countries are not concerned much about safety, comfort and flexibility of service. However, there is public interest on minimum safety standards etc., but comfort and flexibility receive a relatively low significance. The fact that virtually no choice of modes is available to people in poor countries, means that the users have no claim on the quality of service. The little experience in Sri Lanka on the modal choice suggests that users make their decisions more on the basis of financial cost of travel rather than any other factor. One such occasion was the introduction of luxury buses in the early 1980's by

the RTBs with no standing passengers. This could not attract many passengers mainly because of the higher fare that was charged. There was also public criticism of a discriminated service being supplied to cater to richer commuters while there were several lapses in the provision of normal services. This service was finally abandoned due to low patronage.

Some improved aspects of the quality of service may be observed in the new Inter-City bus service introduced by private omnibus operators recently. The public patronage to this service would depend on the degree of responsiveness of the travel demand to improved quality aspects of service in spite of higher fares the users have to pay.

The heavy dependence on public transport by people necessarily requires the reliability factor to be considered as an important element of transport services. The users consider the reliability of services particularly, on the basis of whether they could reach their destinations within a reasonable period of travel time and whether a scheduled service is operated according to a pre-determined time table. The reliability factor is more important for daily commuters most of whom are expected to be present in their places of work on or before a stipulated point of time. The non-arrival of buses and trains on schedule and delays in reaching their destinations are a common feature in a poor public transport system. The great inconvenience caused to regular commuters and the loss of output that resulted in the affected sectors during the period of civil disturbances that prevailed in the late 1980's, witnessed the importance of orderliness and regularity of a well managed public transport system.

4. Objectives, Policies and Issues at National Level:

Considered within the broad framework of economic theory which is concerned with optimal allocation of scarce resources between competing ends, the policy objective of the transport-sector at the national level is concerned with the optimal allocation of available resources both as between the transport sector and other sectors and within the transport sector itself. Two distinct components can be recognized in any attempt to examine and find possible solutions to national transport problems. This distinction is between allocative efficiency and distributive equity.

Focussing of the analysis on efficiency and equity issues are of particular significance in the present context of gradual liberalisation of the economy. An important turning point of this process was the introduction of open economy policies in late 1977. These reforms were followed up with policies for further liberalisation that were brought in with the objective of converting an economy which was under stringent controls into a more market oriented one. In this process of transition, emphasis is being laid necessarily on policies which encourage more efficient allocation of resources. Also it is equally important to ensure that there will be no adverse effects on distribution of benefits among different sectors of the society.

The liberalisation of imports in 1977 enabled the free import of both passenger and goods transport type vehicles. Although the removal of import controls was part of the broad liberalisation agenda, the resulting sharp increase in vehicle imports had a considerable impact on passenger and goods transport.

The impact was quicker on the freight transport sector. The most favourable economic effect on this sector was a sharp decline in lorry hire rates in spite of rapidly increasing oil prices (impact of second oil shock) that was experienced in the late 1970's and early 1980's. This experience clearly indicated that lorry hire rates remained at an artificially high level due to inadequate availability of freight vehicles in the controlled period. The transport cost component in prices of goods reduced to minimum levels as a result of increased and adequate availability of lorries for transport.

Benefits of liberalisation on the passenger transport sector was somewhat delayed until the early 1979 when the monopoly on bus passenger transport was removed. The removal of state monopoly on bus transport in 1979 and the conversion of the RTBs into smaller operating units under the government's peoplisation programme in the late 1980's put the passenger transport market on a more competitive footing. On the other hand, the rapid growth of the private omnibus service enhanced the competitiveness in the passenger market further. However, benefits of increased competitiveness to the society is necessarily associated with a proper monitoring and regulation mechanism of the activity and hence, the responsibility and role of the State are reduced to that of a regulator.

In addition to the regulatory responsibility, a further function of the state is to ensure proper co-ordination of activities among different sectors such as the operators of private omnibuses, peoplised ventures and the railway. There is a need to co-ordinate

operations on different routes and services and time tabling and scheduling of services as well as future investment plans, in order to ensure more efficient allocation of available resources. It is understood that, among other things, these activities are functions of the newly formed National Transport Commission.

The introduction of a private omnibus service and peoplisation of the RTBs are steps taken by the government in its policy direction of privatisation and increased private sector participation in economic activity. Restructuring of the state monopoly of the SLR is also under consideration. These programmes involve considerable costs to the government both in the form of direct expenditure and forgone revenue. The main sources of foregone revenue are losses due to concessions granted to private operators such as low import duties and other tax exemptions. However, in order to draw a reasonable conclusion one may compare these costs with direct subsidies provided by the government to the SLTB and SLR. Increased private sector participation has certainly enabled a large reduction in the direct subsidy to the transport sector. It is difficult to quantify or comment on revenue forgone by the government on account of concessions granted to the private omnibus service due to non-availability of data on this aspect.

In compliance with the new economic policy, the public sector share of public transport decreased sharply in recent years. Except in the case of the railways, the role of the state sector is limited to the provision of infrastructure and at present capital expenditure on trans port accounts for a sizeable share of public investment.

A good infra-structure base of which transpot is an integral part, is a pre-requisite for any direct production activity.

In the present context, the involvement of the government as an operator of any form of public transport is limited to the railway. However, public bus passenger transport was a virtual state monopoly for a period of more than two decades and even after the de-regulation of bus passenger services in 1979, state ownership remained until the peoplisation programme came into effect in 1990. The role of the state during this period was important as an operator of services as well as the provider of infra-structure. The financial commitment of both these responsibilities was a heavy burden on the government budget due to the large sums of expenditure involved.

The government subsidy to the railway is still continuing and this, together with the expenditure on construction, improvement and maintenance of roads, accounts for a substantial share of the government budget. The main sources of revenue to the governm-ent and Provincial Councils are the levies imposed under the Motor Traffic Act, import duties, turnover taxes, excise duties and revenue collected from charges levied on private operators. There is also a heavy fuel tax on the price of petrol. The other major transport fuel viz. auto diesel is sold at cost price or even less. An important issue in this connection is whether road users adequately pay for the services such as roads, bridges and other infra-structure facilities provided for their use by the government. A study on road user

charges was conducted by the Transport Studies and Planning Centre recently (1992) and its report is yet to be published.

Road user charges include taxes, licence and registration fees and import duties. Total revenue from road user charges in 1988 was estimated to be around Rs. 4.2 billion, which was more than sufficient to cover road rehabilitation and maintenance expenditure of Rs. 1.3 billion in the same year. Typically, in many countries road user charges are a source of income to finance partly the sector expenditure and partly the general expenditure.

The operational performance indicates that the costs (at 1991 prices) per passenger kilometer by rail (SLR) and road (State owned) are approximately Rs. 0.17 and Rs. 0.20 respectively. The cost by railway includes cost of operating the rolling stock, laying and maintaining of track, the signalling system and other infra-structure while that of road constitutes only its operating cost and track cost is not included. This situation places the railway operator in a disadvantageous position and further, it may be suggested that a more rational road pricing policy would ensure greater competitiveness of the railway and more importantly, an increased efficiency in the allocation of resources within the transport sector.

5. Urban Transport Problem and Public Transport:

It has been generally observed in studies on urban transport that most of the urban transport problems are location specific and depend very much on network characteristics, availability of infra-structure and a

number of other socio-economic factors. Characterised by these factors, a common feature in a poor urban transport system is what we described as traffic congestion. In Sri Lanka, traffic congestion is a problem which is confined mainly to Colombo.

Traffic congestion in Colombo may be attributed mainly to peak demand. In a traffic survey conducted for the Sri Lanka Transport Sector Planning Study (1986) it was found that flow profiles showing hourly traffic variations on an average week day in Colombo city boundaries and on entry roads to Fort (central business area) show substantial differences. The in-bound traffic flows in the city border are high in the morning peak due to journeys to work and school. A small mid-day peak, attributable to journeys home for lunch and return from school is followed by a less concentrated out-bound peak in the afternoon. In contrast, traffic flows through Fort show minimal directional imbalances and the peak, in fact occurs in the mid morning and mid afternoon periods when business, commercial and retail activities reach their greatest level.

Congestion reduces the speed at which a vehicle could move. In so far as slower speed means increased costs because operating expenses are greater at lower speeds and as time itself is valuable, the unit operating cost increases as traffic volume increases. The major physical causes which create congestion in Colombo and certain suburban areas are usually identified as restricted carriage ways, narrow bridges and railway crossings, some of which seem to be undergoing improvement. Considered in terms of a larger geogra-

phical area including Greater Colombo, urban traffic congestion is caused by a number of factors which include, among other things (a) inappropriate traffic control methods and traffic signs (b) indiscriminate and un-regulated parking (c) inadequate lane demarcations (d) poor junction layouts (e) undisciplined behaviour at bus stops, particularly by drivers of private buses (f) pedestrian interference with traffic (g) slow moving vehicles and (h) inadequate parking facilities.

With the implementation of appropriate traffic management measures existing capacity may be more efficiently utilised. In many large cities in the world effective solutions to traffic congestion have been found in traffic management policies in which priority is given to public modes of transport. These policies include public transport priorities and different forms of physical controls on the use of private motor vehicles. These physical controls may be discussed in relation to both efficient use of capacity and securing of distributional equality. However, the imposition of physical restraints on private transport needs to be done carefully because the objective of any transport system should be to facilitate and encourage the movement of traffic and not to restrict.

The option of encouraging public transport to relieve urban congestion in Sri Lanka seems a far cry because at present, the demand for public transport is very much in excess of supply. Any increase in the demand will lead to further deterioration of the services. It would therefore, be a fair conclusion to make that the sharp increase in the use of private

modes of transport at present is partly due to lack of a good urban public transport system. Unlike in high income countries where the problem is to divert traffic from private to public modes which operate with excess capacity, in most low income countries, public modes are over-burdened and they find it difficult to cope with the prevailing excess demand.

In recent years, a reduced dependence on public transport may be observed in the passenger sector in urban areas. This trend has emerged particularly since the late 1980's when the availability of public transport was restricted due to problems caused by civil disturbances. Some evidence to this effect may be found in the annual new registrations of motor cars and motor cycles which increased quite sharply since the mid 1980's. The annual new registrations of the former increased from 5,115 to 15,061 and that of the latter from 16,783 to 84,424 during the period between 1984 and 1990. The increased ownership of private vehicles would have made possible at least some degree of modal choice and this would be an encouraging sign although its effects on urban congestion are quite adverse.

In a number of studies it has been pointed out that the road accident rate in Colombo is quite high and a combination of factors such as poor driving habits, pedestrians walking on the carriage way and weak road conditions including poor shoulders, irregular pavements, lack of sidewalks and the absence of basic traffic signs are responsible for this situation. The national average of the accident rate was 33 per 10,000 vehicles in 1991 and this is about 10 per cent higher than that in the industrialised countries. More than 30 per cent of the country's road accidents occur in the Colombo police division.

6. Impact of Pricing Policy of Petroleum on Public Transport:

Petroleum products i. e. petrol and auto-diesel account for almost the entirety of energy used in motorised transport in Sri Lanka. The evidence available on the end-use of these two products indicate that auto diesel is a source of energy for vehicles that carry bulk transport of both goods and passengers and is generally considered a public transport fuel. Petrol is predominantly a private transport fuel.

The inland sales of petrol increased from 137,546 metric tons in 1971 to 159,765 metric tons in 1991 and this was an increase of 16.2 per cent for a period of 20 years. In fact, the volume of petrol sales decreased by 11 per cent in 1991 as compared to that of 1990. In contrast, a phenomenal growth of 124.4 per cent was observed in respect of local sales of auto diesel (including super diesel) which increased from 249,580 metric tons in 1971 to 559,972 metric tons in 1991. The rapid growth of the demand for auto-diesel is due mainly to the sharp increase in the diesel operated vehicle population and this increase was a joint outcome of the government policy to maintain a low relative price of auto-diesel and this gave a substantial advantage of low running cost to diesel operated vehicles over that of petrol operated vehicles.

In recent years, the price of auto-diesel has decreased in relation to that of petrol and its present proportion is 1: 2.7 i.e. the price of petrol is 2.7 times that of auto-diesel. This ratio which was as low as

1: 1.6 during the period 1981 through 1988 increased to 1: 1.9 in 1989, 1: 2.3 in 1990 and then to the present level of 1: 2.7 in 1991. If the relative price was maintained in the same level as the relative cost of production, a large gap of this magnitude would not exist between petrol and auto-diesel prices. It is implicit from the underlying principle of the present pricing policy of petroleum products that the prices of different products are deliberately set with the objective of offsetting the losses by means of cross-subsidisation.

Attributable mainly to the low relative price of auto-diesel, new dimensions are emerging in the transport sector. One such trend is associated with the users' perception that diesel operated vehicles are cheaper for private use than petrol operated vehicles. In addition to increased buying of new and used diesel vehicles, engines of petrol operated old vehicles are being replaced with diesel engines. Regardless of distortions prevailing in the market, this trend is an indication of rational behaviour of people in response to price signals. The import of used engines has been a low cost source of diesel engines for conversion of fuel type from petrol to auto-diesel.

The purpose of maintaining auto-diesel price at a low level stems from the notion that petrol is paid for by high income groups of the society and auto-diesel is used for public transport. However, at present the validity of this notion appears to be in question, because larger proportion of auto - diesel is consumed by private vehicles such as vans, jeeps, dual purpose vehicles, heavy vehicles and

equipment etc, and fuel consumption of some of these is either equal or even higher as compared to that of public transport vehicles. The benefits of low relative price of auto-diesel is actually resulting in rather more private benefits than in improved welfare to the society in general. The price distortions caused by this invalid hypothesis lead to misallocation of resources not only within the transport sector but also within and between all sectors of the economy. It should be pointed out that these distortions cannot be rectified by way of higher taxes levied on the ownership of privately owned diesel vehicles because fuel consumption depends on the extent of use and not on the ownership of vehicles.

7. Summary and Conclusions:

Although it is difficult to compute a simple indicator of the level of transport inputs in economic activity, measured in terms of available macro-economic indicators, the transport sector accounts for a sizeable share of the national product, public expenditure and private consumption expenditure. However, these indicators generally under-state the significance of the transport sector's contribution to economic activity because very often transport inputs are unquantifiable.

Sound transport policies and practices are a catalyst for rapid economic growth. Sri Lanka, a developing economy depends largely on public transport, its role has become increasingly more significant with the expansion of the economy following the introduction of open economy policies since the late 1977. The State owned RTBs and the

SLR together with private omnibus operators have been responsible for the provision of public passenger transport while the main suppliers of freight transport services have been the SLR and private road hauliers. In both passenger and freight sectors the private sector share has increased steadily since the late 1970s. This is due to the influx of vehicles which resulted from the relaxation of vehicle import restrictions and the increased private sector participation in passenger transport following the introduction of private omnibus service in 1979. This trend was accelerated by further steps taken by the government to peoplise the RTBs under a re-structuring programme which is being implemented since 1990.

Transport problems can be viewed from different perspectives, i.e. that of operators, users and as part of national policies. Peak demand causes problems to the operator who as a result of which is confronted with problems of costing of services and setting passenger fares or freight rates as the case may be. The extra cost of operating an additional vehicle during the peak is much higher than in the off-peak and this situation leads to a highly differentiated fare structure in order to ensure most efficient allocation of resources.

The difficulty in matching the demand with supply due to the differences in the unit of measurement causes problems to the operator in scheduling of vehicles and determining the frequency of services operated. These problems need to be deal. with effectively. The use of vehicles of the appropriate size and careful routing would lead to maximum capacity utilisation and reduce the running of empty vehicles.

In the case of scheduled services, certain routes/services are remunarative while others may be unviable to operate. In order to identify which routes/services are remunerative and which routes/services are unremunerative, a route-wise or servicewise cost and revenue analysis must be conducted. An understanding of common and joint cost elements of different routes/services is required for this purpose. There is also an avoidable component of costs associated with any given level of service.

Although it is premature to make definite observations on the current re-structuring programme of the State owned bus service, the peoplisation programme appears to have resulted in a substantial improvement in the operational performance of the passenger transport sector. The peoplised ventures will continue to be more competitive as they will acquire more freedom in ownership and management to operate efficiently in a market oriented environment.

The private omnibus service has expanded rapidly since its inauguration in 1979 with the assistance provided through government incentives, this is manifested in the greater private sector participation and competitiveness in the market. In order to ensure greater benefits, co-ordination of time tabling, scheduling of services and more importantly future investment in the acquisition of vehicles and infra-structure is required between different modes of transport.

The lack of financing facilities for private purchase of buses on reasonable terms had been a major problem confronted by private operators. This situation was eased to a large extent by the introduction of a new credit facility through the NDB.

Monitoring of activities of private operators becomes difficult due to the existence of a large number of small operators. The present Operator Associations cannot function as fully representative bodies of member operators due to certain legal constraints. Also these organisations are unable to provide necessary infra-structure support to member operators due to lack of investment funds. The prevailing legalisation concerning the private omnibus service has not been implemented fully or at desired levels as yet.

According to available empirical evidence, the financial performance of private operators has been more satisfactory as compared to that of state owned (now peoplised) services. However, a simple comparison of the financial results of these two distinct operator organisations may not be warranted.

The SLR has been a significant provider of both passenger and freight transport services since its inception in 1864, although its market share has declined considerably over the years. Viewed in the present competitive market framework, it was observed that most of the problems of the SLR are associated with its large and continuous financial losses. The existing primitive organisational structure of the SLR is not geared to achieve commercial objectives in the increasingly competitive market. A comprehensive re-structuring programme which would ensure increased efficiency and productivity will place the SLR on a more commercially viable footing. The advantages, the SLR has in the urban commuter and bulk goods transport sectors should be harnessed. However, in other areas of traffic, the SLR is at a disadvantage

when compared with road transport modes, mainly due to additional costs of track and signalling systems, limited track network and additional costs involved in loading and unloading.

An important feature of road freight transport is that the entire ownership and management of this sector is in the hands of private and own account operators. The freight transport industry benefitted greatly from the liberalisation of vehicle imports. In the wake of escalating oil prices, the decrease in lorry hire rates was due to the large influx of freight vehicles since 1977 and this has been responsible for maintaining freight costs of goods at minimum levels. However, the road haulage industry remained a profitable business for private entrepreneurs.

From the user's point of view, public transport is of particular significance, especially in developing countries because of low income levels, limited access to private transport and heavy dependence of socio-economic activity on public transport. The factors such as, travel time, travel fare and quality of service such as convenience, reliability, and safety are important aspects of public transport. The significant impact public transport has on economic activity necessarily required the government to maintain public passenger travel fares at a low level and within the reach of low income users who form the great majority of the country's population. The government was also required to take necessary steps to maintain freight costs at a low level in recognition of its influence on the cost of production and general price level.

In compliance with new economic policies, the transport sector underwent substantial reforms in the post liberalisation period. It was observed that transport costs in the household budget has a considerable bearing on the distribution of benefits among different sectors of the population. Thus, in maintaining a delicate balance between a high level of economic growth and some equity in distribution of benefits, public transport has an important role to play.

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