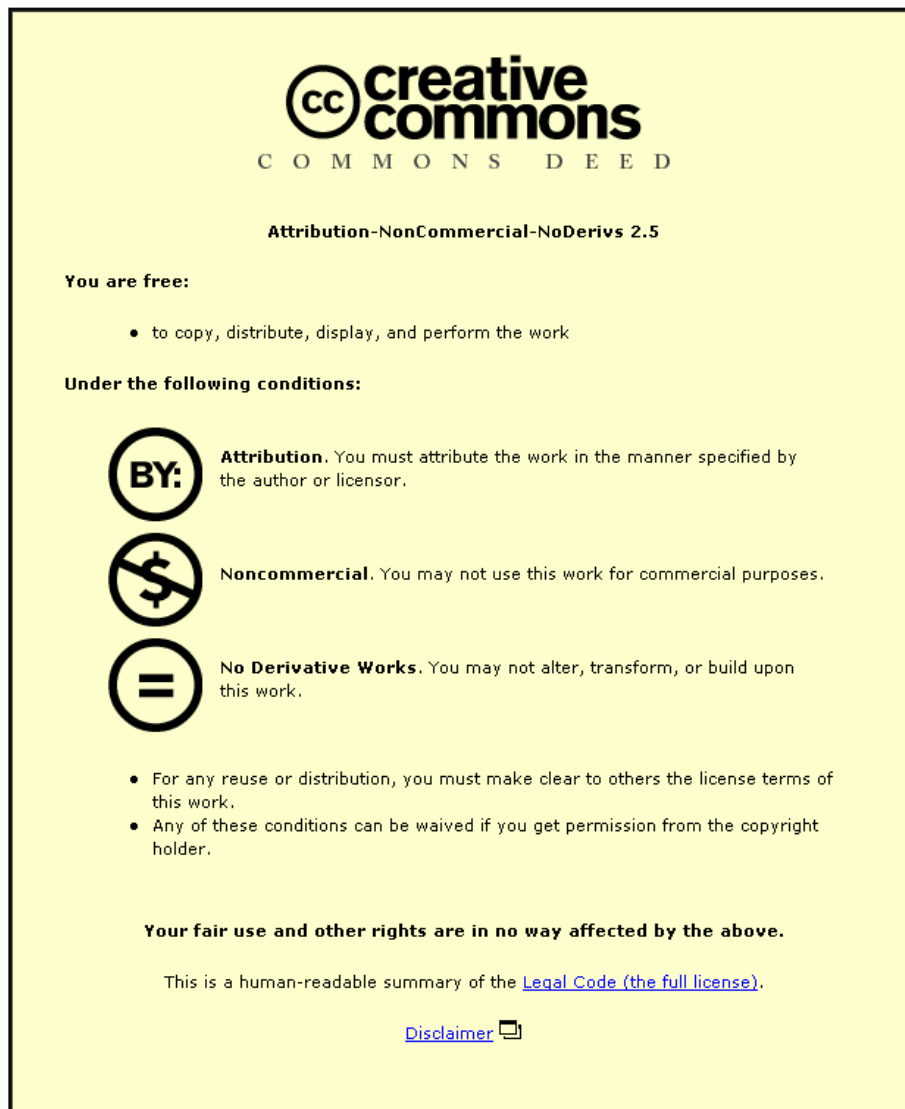


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Mauritius: An example of how modern transport systems develop: M.P. Enoch

The case of Mauritius:- A simplified and accelerated example of how modern transport systems develop

Marcus P. Enoch*

Energy and Environment Research Unit, The Open University, Milton Keynes MK7 6AA, UK

Like many developing nations over the last twenty years or so, Mauritius has undergone - and continues to undergo - a revolution in the way its society lives and works. From a transport perspective what makes the country of interest, is that this small, densely populated, developing island nation located in the Indian Ocean, serves as a microcosm of how transport systems in most of the world's more developed nations have evolved. Mauritian policy makers are already faced with many of the problems faced in other countries, but with less time, experience and resources to develop a solution before the situation becomes critical - due to the faster pace of population, economic growth, and the lack of space. The aim of the paper therefore, is to construct a case study of Mauritius to provide a simplified and manageable model of how physical, economic and social factors - combined with transport policy choices - can influence how transport systems develop. The paper will outline the development of transport policy in Mauritius to date, and look at the options available for the future. From this, conclusions will be drawn as to what can be learnt from the Mauritian experience.

Keywords: Transport policy; island; Mauritius; Case Study

Background

Geographical and historical context

Mauritius lies 800km east of Madagascar, and 5854km west of Perth Western Australia in the Indian Ocean, and shares the same latitude as Rio de Janeiro in Brazil and Harare in Zimbabwe, resulting in a maritime, sub-tropical climate. It was a British colony until 1968 and became a republic in 1992. The main island is 58km north to south by 47km east to west, (total land area 1,864.8 square kilometres). The country also includes the island of Rodrigues, 560km to the north east, and various other scattered atolls. Not surprisingly, given that its scenery is dominated by sugar cane fields, volcanic mountains, and beautiful beaches, the country's major industries are sugar, tourism, and less obviously, textiles (Singh, Swaney and Strauss, 1998; GIS, 1999).

*Tel: +44 (0)1908 652944; fax: +44 (0)1908 654052.
E-mail address: m.p.enoch@open.ac.uk (M.P. Enoch).

The already high population density of the main island of 624 people per square kilometre¹, looks to rise further by a steadily growing population. In 2000-2001 alone, the Mauritian population rose by 1.2% to 1,200,400 (CSO, 2001a).

In mid-1998, 43.3% of the population lived in the urban centres of Port Louis (147,131), the capital, and in the so-called 'dormitory settlements' or commuter towns of Beau Bassin-Rose Hill (100,616), Curepipe (79,614), Quatre Bornes (76,798) and Vacoas-Phoenix (98,464) (Europa, 2001).

Overall, between 1996 and 2000, Gross Domestic Product (GDP) grew at an average annual rate of 5.7%, although this growth performance was not sufficient to generate employment opportunities that would have contained the rising trend in unemployment. Despite this, per capita Gross National Product (GNP) has stagnated at about US\$3,600 over the last five years indicating that the living standards of the average Mauritian have not increased that much in real terms compared with similar nations² (MoF, 2000).

Figure 1: Mauritius (Saddul, 1996) Used with permission.

Transport trends - demand

As in most developing countries, the demand for transport in Mauritius has risen dramatically in recent years. This is due to a number of factors, including the fast increasing population, an increase in household income, migration of the middle classes from rural to urban areas, urban sprawl, edge-of-town and out-of-town development, and greater participation of women in the labour force. There has also been an increase in commercial and industrial activity, partially caused by the Government's efforts to decrease reliance on the sugar cane industry by diversifying into

other economic areas (Seewoo, 1997; MoF, 2000).

Transport Trends - supply

As a result of this economic growth, the number of registered vehicles in Mauritius (including motorcycles, cars, dual-purpose vehicles, vans, lorries and buses) is currently growing at 4.8% per annum and stood at nearly 250,000 in mid 2001. In the twelve-and-a-half years between from the end of 1988, the number of cars and dual purpose vehicles rose from 40,566 to 92,258 – a rise of 127%. Still more dramatically, the number of motorcycles increased from 39,093 to 118,483 in the same period, an increase of 203% (MEDPRD, 1999; CSO, 2001b). In the whole of Africa, which has a car ownership level of around 20 per thousand population, Mauritius is second only to South Africa in its level of car ownership per thousand population (IRF, 1995). The number of vehicles per thousand people in Mauritius stood at 77 in 2001 compared with 420 in the UK, while for motorcycles the respective figures are 99 and 13 (see Table 1).

Table 1: Vehicle Ownership per thousand Population in Mauritius and Britain (CSO, 2001b; DTLR, 2001)

Vehicle use figures are more difficult to obtain. However, the amount of petrol used by the transport sector grew from 47,000 tonnes in 1988 to 85,000 tonnes in 1998 – an increase of 81% (Euromonitor, 2002). A rough calculation for 1998 suggests that the average car is driven about 9-10,000km a year (See Appendix A).

Traffic and travel demand is rising considerably faster than roadspace. There has been a slight (6.7%) increase on the length of the road network, from 1783km in 1986 to 1910km in 1999. Of this, main roads and 'motorways' account for 50% of the network, secondary roads 33%, and other roads 17%. In addition, the quality of road infrastructure has been dramatically improved over the last decade. The First and Second Highway Projects aimed to upgrade horizontal and vertical alignment and surfacing, and bring road signing and road marking up to international standards. However, in spite of the extra road capacity, the increase in vehicles meant the vehicle density per kilometre increased from 40 to 104 in the eighteen years to 1999. It is now by far the highest such figure in Africa (MLTSPS, 1997;

¹ 2001, compared to a population density of the UK of 238 people per square kilometre in 1993 (Saddul, 1996).

² GNP at average prices on an international purchasing parity basis for 1996-98 was \$8,236 per head in Mauritius (Europa, 2001). The comparable figure for 1999 per capita in the UK was \$22,861 (DTLR, 2001).

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Seewoo, 1997; IRF, 1995; Europa, 2001). It well exceeds Britain's vehicle density which in 2000 was 73 vehicles per kilometre (DTLR, 2001).

Congestion is particularly bad during peak times on the Curepipe to Port Louis corridor, where journey times have increased by 40% over a ten-year period (MLTSPD, 1998). This is despite the route being served by 350 buses a day. In Mauritius as a whole, worsening congestion was estimated to cost the Mauritian economy MRs200m (~£8m) a year, or 0.5% of the Mauritian GDP in 1991³ (MLTSPS, 1997).

Plate 1: Traffic in Port Louis (Photo: Marcus Enoch)

Despite the improvements made to the roads, the number of road traffic accidents significantly worsened, rising from 10,316 in 1990, to 18,278 in 2000, a rise from 1,007 accidents per 100,000 population to 1,589 per 100,000 population. Fortunately, the number of fatalities has remained relatively stable, ranging from 119 to 173 a year over the period. Similarly, the number of seriously injured has fluctuated from 237 to 378 a year (Traffic Management and Road Safety Unit, 2002). Nevertheless, accident costs are estimated to cost the Mauritian economy MRs1.5bn (~£37.5m) a year (Traffic Management and Road Safety Unit, 2002).

Further problems include worsening air pollution and carbon dioxide emissions (see Figure 2).

Figure 2: Carbon Dioxide emissions from the transport sector in Mauritius 1980-1998 (Euromonitor, 2002).

Bus use too, has increased dramatically, and is expected to continue to do so. National Transport Authority (NTA) figures, quoted in Bhoyroo (1994) and Seewoo (1997), record that 174 million passenger journeys were made by bus in 1984, rising to 268 million in 1992, a 54% growth in eight years – broadly

comparable to the growth in general traffic. This was expected to increase still further by 2000, with 361 million passenger journeys estimated. In the event, it is estimated that only around 250 million passenger journeys were made in 2000, although this is difficult to verify⁴. So, after a period of high growth, bus use has fallen while private car use continues to rise. The fall is despite the increase in the size of the bus fleet from 1,664 vehicles in 1993 to 1,777 vehicles in 2001.

Table 2: Levels of Bus Use in Mauritius and Britain (Seewoo, 1997; NTA, 2002; DTLR, 2001)

This increase in bus use to 1992 has occurred in spite of the apparent deterioration in service quality. At the end of 1996, 44% of the bus fleet was less than five years old, 44% between five and ten years old, 6% was aged between ten and 15 years, and 6% was over 15 years old. Only two years later, the corresponding figures were 32%, 37%, 26% and 5% (MEDPRD, 1998 and 1999). The average age of vehicles in 2001 was around seven years. Regulations now prohibit buses aged over 16 years from operating.

Overall, the trends of private vehicle use increasing, buses getting older and patronage levels stagnating, if not in decline, very closely mirror the situation in the UK during the 1990s – a far from ideal position.

Organisational structure

The organisation of transport in Mauritius is, as in many countries, institutionally complicated, especially when one considers that the entire population is less than for example, that of Tyneside or West Yorkshire. While

³ This compares to a value of £15bn, the cost of congestion estimated by the Confederation of British Industry in 1997, which equates to about 1.8% of Britain's GDP.

⁴ Unfortunately, patronage figures for the 777 buses operated by Independent Operators do not exist. The estimated figure was calculated using NTA data for the number of passengers carried on the 1000 buses operated by the 'big five' bus companies (for which figures are available), multiplied by 1.777. This assumes IO-owned vehicles carry the same number of passengers as those of the larger companies and is probably therefore an under-estimate (see later).

responsibility for transport is largely overseen at a Government level by the Department of Land Transport, Shipping and Port Development, planning, policy making, investment, management, design, construction, regulation and enforcement functions are carried out by a myriad of agencies and organisations. These include the National Transport Authority, the Traffic Management Unit, Police Traffic Branch, Police Road Safety Unit, the Ministry of Public Infrastructure, and the technical division of the former Ministry of Works. In addition, at the local level nine district councils possess roughly similar powers to their British counterparts, with responsibilities for making planning decisions, and maintaining the smaller roads.

The organisational and regulatory structure of the public transport industry too, is currently rather ad hoc. This is largely due to historical reasons (see Henderson, Hughes and Busby, 1976; Commission of Inquiry of the Government of Mauritius, 1978; Bankur, 1990; Rowoteea, 1994; Bhoyroo, 1994). Essentially, prior to 1953, bus services were operated by small independent operators, but were then advised by the Transport Control Board to form bus companies. However, with the increase in demand for transport during the 1970s, coupled with growing industrial unrest, these bus companies were unable to cope, and so in 1978 the Government again awarded licenses to individual operators. In April 1979 the National Transport Corporation (NTC) was created. This Government-owned bus company was to have begun operating new vehicles in April 1980 to help ease the lack of public transport. But, after a series of strikes in August 1979 forced a number of bus companies to close, the situation meant that one of these was effectively taken over by the NTC, which then began operating in March 1980.

As a result, buses in Mauritius are run by a mixture of the para-statal NTC, private companies, and by a growing number of Independent Operators (IOs) (256 in 1985, 677 in 1995 and 750 in 2001), encouraged to participate by the Government (see Table 3).

Table 3: The Mauritian Bus Industry by the Number of Vehicles Owned 1985-2001, (Seewoo, 1997; NTA, 2002).

Buses in Mauritius are given exclusive franchises to operate along set routes through licenses issued by the NTC. However, in

practice the IOs in particular often operate more as dolmuses or jitneys than conventional buses. It is certainly true that buses leaving Port Louis in the evening peak wait until they are full before leaving. Uneconomic trips are not performed or cut short, excess passengers are carried, running times are not observed, resulting in long trip times, and buses wait unduly at bus stops. In addition, so-called contract buses exist, which are licensed specifically to transport employees and/or tourists.

The larger bus companies meanwhile do not tend to experience reliability difficulties. But, the operating costs of these operators is almost twice as high as for the IOs. This is because under an Industrial Relations Act, bus companies must employ seven conductors and seven drivers for every five buses, and must provide benefits such as pensions, holiday and sick pay. Worse for the operators, the regulation requiring that buses must be de-licensed after 16 years means that they can only use these vehicles for spare parts rather than sell on their buses to IOs as occurred before. As a result, the bus companies claim to be continually losing money, although as yet there is no operational subsidy provided by the Government. Fares meanwhile, are set by the Transport Tariff Committee. As of the end of 2001, fares range from MRs4 to MRs20 (£0.10 to £0.50) per trip.

Plate 2: Buses in St Pierre Bus Station (Photo: Marcus Enoch)

With the problems of the bus industry, and the rise in general prosperity, taxis are also a popular means of transport - especially for important trips. Broadly there are three types of service - hire per trip, contract cars - often hired by tourists for a daily rate - and 'taxi-train'. Taxi trains are shared taxis that are licensed to operate along a set route as a supplementary bus. They are able to stop and pick up passengers along that route and charge separate fares of each passenger. Taxi-trains were first permitted under, section 103 of the Road Traffic Act 1962. Initially they were unable to collect passengers within 60 metres of a bus stop. But, the public transport situation became so chaotic during the mid-1970s (with many passengers waiting for inordinately long periods for a bus) that the 60-metre rule was rescinded. Interestingly, the separate fares charged are set at the same level

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as for a bus operating the same route - despite the rather quicker and more comfortable ride offered by the taxi-train. Understandably, there are many people who prefer to wait for a taxi-train, even if a bus to the same destination arrives in the meantime. Taxi drivers are not provided with any subsidies to operate as a taxi-train. However, they are offered an 80% rebate by Customs and Excise on the purchase taxes of their vehicles - a substantial incentive given that this can be set as high as 200% of the value of the vehicle - and pay only half the annual road tax. Overall, it is not known how many or what type of trips are made using taxi-trains in Mauritius, or what type of people are using the mode. Altogether around 5300 taxis are registered by the NTA. In addition there are a significant proportion of unlicensed taxis in operation.

Plate 3: A Plaine Magnien to Grand-Port taxi-train (Photo: Marcus Enoch)

Rail-based public transport - which disappeared with the closure of the Curepipe to Port Louis service in 1964 – could be in the process of making a comeback in the form of LRT, serving the same corridor. As of January 2002, the Government was in the process of evaluating three ‘Alternative Mode of Transport’ options - light rail, guided bus, or a ‘closed’ unguided bus system, and is considering wider implementation issues in a series of working groups.

Fiscal policy has so far focused entirely on purchasing and owning vehicles, rather than on using them. Prospective motorists must pay a purchase tax of a given percentage of the value of the vehicle (see Tables 5 and 6), plus 12% VAT. In addition, there is a registration fee of MRs2500 (~£100) for vehicles less than 1600cc and MRs5000 (~£200) for cars over 1600cc, and a nominal annual licence fee or road tax of MRs50 (£1.25) to pay (IRF, 2001). There are reductions in duty for civil servants, taxis etc.. As yet, there is no duty on petrol or any other form of use tax, although the NTA is currently studying the feasibility of replacing the road tax with a petrol tax.

Table 4: Purchase Tax Rates for Motor Cars Fitted with Petrol Engines (Mauritius Customs, 2000)

Table 5: Purchase Tax Rates for Motor Cars Fitted with Diesel Engines (Mauritius Customs, 2000)

Options for the future

The 1997 National Road Transport Policy

To deal with the worsening transport situation, the NTA drew up a National Road Transport Policy in March 1997, outlining its views on how transport should be directed over the subsequent fifteen years (MLTSPS, 1997). This aimed to improve public transport, provide safer roads, limit emissions and energy consumption, manage road infrastructure, manage the urban transport problem, and integrate land use and transport planning.

Amongst a raft of measures aimed at achieving these goals, this advocated considering road pricing as a mechanism to manage traffic growth. There were also plans to expand the road system by 300 lane-km over three years - bypasses, ring roads, link roads and junction upgrades - at an overall cost of MRs4bn (~£100m), while existing capacity was to be maximised through the use of advanced Urban Traffic Control methods. The high priority given to road maintenance over the previous decade was also still seen as important.

The document also recommended that the NTC be privatised, and the bus industry re-organised to become more commercially viable. In addition, it suggested a high capacity, high quality public transport system - either a busway or Light Rapid Transit route - should be considered for the Curepipe - Port Louis corridor.

Finally, the creation of a single agency - the Land Transport Authority - was mooted to better co-ordinate the Government bodies responsible for policy making, transport planning, traffic management, road safety, and road planning, design and construction.

The 2001 Halcrow Fox analysis

In the event, little happened beyond the appointment of contractors to design and build the LRT system before the election of a new Government in September 2000. This led to the transport policy question being considered again, this time with a comprehensive study from consultant Halcrow Fox in association

with MDS Transmodal which reported in June 2001 (Republic of Mauritius, 2001a).

This suggests that the most urgent need is to tackle traffic congestion around Port Louis, in the Port Louis-Curepipe corridor and in growing settlements outside the conurbation. It notes the main problems are due to the rise in private vehicle ownership, caused by the expanding economy, increasing personal disposable incomes and hence the expectations of the country's inhabitants.

At a strategic level, the report states that Government should continue to reduce its role as a provider of transport infrastructure and services, and concentrate more on policy formulation, planning and regulation. Ministries should be better co-ordinated, and municipalities and district councils more involved in the transport planning process. To meet these needs, a Transport Policy Co-ordinating Committee ought to be established, supported by a full-time Traffic and Transport Planning Unit.

In addition, the Government should transfer greater responsibility for the provision of transport infrastructure and services to the private sector.

More tactically, there are several areas for improvement. These are:

Managing Road Use – measures should smooth traffic flow, cut accidents and pollution including better management of roads and junctions through signs, marking and signals. Some road space needs shifting to public transport and pedestrians. Parking in urban areas needs to be better managed and geared towards deterring all day commuters and encouraging short term parking for deliveries, shoppers and business. Development control process ought to be used to control private-non-residential parking.

Managing the Vehicle Stock – new regulations, improved enforcement and better quality fuel needed to improve vehicle emission standards are needed, along with price incentives for 'greener' vehicles.

Improving Public Transport – incentives for bus operators are necessary to improve vehicle and service quality. Encouragement of more competition, possible consolidation of Individual Operators into companies or co-operatives and privatisation of NTC to create a level playing field too is required, while reform of the taxi industry could improve its effectiveness.

Planning and Implementing the AMT – a key element in the strategy is to introduce an Alternative Mode of Transport (to be a light rail, guided bus, or a 'closed' unguided bus system), on the Curepipe-Port Louis corridor to alleviate the chronic congestion there. For further details see Appendix B.

Developing the Road Network – priority should go to maintaining existing infrastructure in good condition, given that 7% of the road network needs extensive work, and a further 16% requires periodic maintenance. Also there is a desperate need for improved facilities for pedestrians on many roads in the island. New roads should be considered only where traffic management measures insufficient, with bypasses of settlements the most likely areas of expansion. Specific examples include the Port Louis Outer Ring Road, the Phoenix-Beaux Songes Road and the Western Distributor Road which are required to expand the strategic road network within the conurbation, in part to provide better access to AMT stations. Studies of the first two of these schemes are ongoing, and an alignment study of the third will now be commissioned as a matter of urgency.

Reducing accidents - a Road Safety Council, supported by the Traffic Management and Road Safety Unit, is systematically processing data collection and analysis to identify the most common causes of accidents. Data-led remedial actions will then be undertaken, in conjunction with appropriate training, education and publicity campaigns.

Rodrigues – special funding is required urgently to improve the poor state of the road network – especially the 80km used by buses. Meanwhile existing shipping and air links with Mauritius need to be maintained and upgraded.

Comparison with UK

The policy objectives and solutions proposed above by the Mauritian Government's transport advisers, are remarkably similar to those advocated in the UK. Also similar are the problems faced in implementing such a programme. Despite the relatively low level of car use and the absence of a large car, or car-related (oil, car parts, steel, tyres etc.) industry⁵, the car lobby is still able to exert strong pressure on the Government to encourage the growth in

⁵ The exception here, is the relatively large road building industry in Mauritius.

car use. From this, it seems the relationship that links more cars with greater prosperity and social progress is almost impossible to argue against - even on a tiny island in the middle of the Indian Ocean. Quite simply, as elsewhere in the world, the car is a 'must have' for the socially upwardly mobile household, and democratically elected Governments ignore this fact of life at their peril.

Perhaps because of this, both Government's have been following an effective policy of inaction, or at least of putting off the inevitable politically unpopular decision. Where there is a difference, is in approach. Whereas in Mauritius the commitment to road building remains strong, in Britain the Government has theoretically at least recognised the futility of expanding road capacity to meet demand, and so has simply diverted money from transport to other sectors where the benefits of spending public money are more clear-cut. This will presumably change only once either Local Transport Plans are properly funded (possibly through the proposed hypothecation of workplace parking or road user charging levies to transport), or else the result of the inaction finally leads to a disaster and/or political unrest and thus to action.

Conclusions

Where Next for Mauritius?

What is so compelling and depressing about the Mauritian case, is that car ownership is still increasing so rapidly despite cars being very expensive and complicated to buy, expensive to run - and there being virtually nowhere to drive them. In addition, a very cheap, well used and comprehensive public transport system is available.

As a model, the Mauritius case demonstrates the process by which increased economic activity and affluence leads to increased mobility; at how in turn this leads to an increase in car use; and then to a worsening in the quality of the environment through worse congestion and poorer air quality. More interesting perhaps, and certainly more worrying, is that it points to a possible next stage in the cycle. This is where a deterioration in the environment results in less tourists wanting to visit, and higher freight costs for business, leading to a slow down in the economy (see Figure 3).

Figure 3: Economic growth to economic stagnation

There are two fundamental approaches to tackling this. One can either provide more capacity to accommodate the increasing demand for transport, or one can attempt to reduce the demand. Unfortunately there are problems with both.

The current Mauritian policy of road building makes sense at first glance. But ultimately the lack of resources (time, money, space) means that any such programme that would be able to keep up with the rapid increase in car use would be as undesirable as it would ultimately be ineffectual. This is because assuming everything else remains the same, the implicit result of increasing the efficiency of any factor of production causes the cost of that factor to drop, thus stimulating increased consumption of that factor at the macro level. In the transport sector, this means increasing road capacity merely induces more traffic than previously across the network, and thus stores up worse trouble further down the line⁶. Still worse in this case, is that all things are not likely to remain the same. The extremely strong growth in economic activity, and its resultant pressure on the level of demand for transport, would almost certainly speed up the time before the road network became totally congested.

Closely related to the supply led strategy, is the so-called 'technological fix', which essentially aims to mitigate the negative transport impacts of such rapid growth by increasing the efficiency of the various elements of the transport system – roads, vehicles etc.. This seems to be the great hope of the developed western nations, who cling to the belief that when economic, environmental and regulatory conditions demand it, then car manufacturers will deliver vehicles that meet the necessary standards to avert environmental

⁶ The findings of the Standing Advisory Committee on Trunk Road Assessment report of 1994 (SACTRA, 1994), and several studies on trip degeneration by professor Phil Goodwin and colleagues at the Centre for Transport Studies, University College London (see Cairns et al, 1998), support this hypothesis.

catastrophe. Unfortunately for Mauritius, even if this is the case, it will probably occur too late to help the country very much. This is partly because North America and Europe are likely to benefit far quicker from technological improvements to their vehicle fleets, and partly because of their greater capacity to absorb the adverse effects of car use.

As the first approach is so patently flawed, eventually the Mauritian Government will need to accept that more emphasis will need to be given to influencing behavioural change at the point in the system where more economic activity translates into greater transport demand (see Figure 4). The problem is that policies aimed at limiting the use of the car are politically very unpopular. Of course there is an argument that says if politicians wait for long enough, then the deterioration in transport conditions will mean the electorate will realise that some unpleasant measures are needed and accept their implementation. But, by that stage it is probable that the very seriousness of those conditions would necessitate far more drastic action than if car restraint policies were introduced now.

Figure 4: Action to mitigate the demand for transport, combined with technological solutions look to be the way forward.

Looking elsewhere for inspiration, Singapore – in many ways an island model that Mauritius aspires to follow – has demonstrated for more than a quarter of a century that such a transport demand management policy approach can be introduced successfully, albeit within a more controlled socio-political system. As a result, the transport system of Singapore continues to function effectively and efficiently, unlike in London for example where traffic speeds are no faster now than a century ago.

Overall, if Mauritius is to continue to succeed as a tourist destination and an agricultural, industrial and commercial centre, then it will have to act soon to overcome the link between increased economic activity and increased mobility, and thereby dissipate the increased mobility that is taken up by the car. One thing is clear. We should not have too long to wait to see how Mauritius – and by extension the world – acts to prevent itself being strangled by its own economic success.

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Appendix A: Assumptions for average vehicle distance per year calculation

In 1998, 80,576 cars and 109,143 motorcycles in Mauritius (MEDPRD, 1999).

85,258 tonnes of petrol used by transport sector in 1998 (Euromonitor, 2002).

One litre of petrol weighs 0.73kg, so 116,792,329 litres of petrol were consumed.

An average western European car can travel 100km on 8 litres of petrol, so it was assumed cars in Mauritius would need 12 litres per 100km.

Potter et al. (1997) suggests motorcycles can do 5 litres per 100km.

It was assumed 30% of car fleet powered by diesel or other fuels.

Assume cars and motorcycles travel the same distance.

Thus each vehicle on average does 9554km or say 10,000km per year.

Appendix B: The Alternative Mode of Transportation

The 25km route would follow the alignment of the old Midland Railway, serving 13 stations between Immigration Square in Port Louis and Jan Palach North Transport Terminal in Curepipe (Republic of Mauritius, 2001). It is proposed to be substantially at-grade, except where it is necessary to provide grade-separation in the interests of maintaining an attractive operating speed likely that the system completely segregated except at road crossings.

Public transport would be re-oriented to become a 'trunk-feeder' type system, to improve accessibility of the system and to eliminate competition from buses as far as possible. It is further envisaged that the AMT should (broadly) be as affordable to transport users as the existing bus system. Indeed this will be necessary if the above transport integration objectives are to be achieved,

although it is recognised that a small fare premium – 10% or so - may be feasible, in view of the higher quality of service being provided.

Initially, the AMT will need to be capable of carrying 6,000 passengers per hour per direction at the maximum load point. The frequency of operations should be such as to be attractive to users - not less than every 10 minutes during most parts of the day and 5 minutes at peak times. Capacity expansion potential should be provided if at all possible, at least so peak headways could be reduced to a minimum of 3 minutes over selected sections of the line (giving a 1-way line capacity of 10,000 passengers per hour).

Overall, three options are being considered - LRT, guided bus, and modern buses operating on a closed busway. The option of providing an open busway for existing buses was rejected because of low quality operational and environmental performance, poor image and due to serious operational difficulties at stops and junctions due to the number of buses required.

Estimated costs of each option are recorded in Table 6.

Table 6: Cost comparison of the Alternative Mode of Transport options for the Port Louis – Curepipe Corridor (Republic of Mauritius, 2001b)

The earliest the system could be operational is 2006. Currently the Government is investigating a number of the related issues – traffic management, fare structures, impact on the bus industry, etc. – through a series of committees before deciding on how to proceed.

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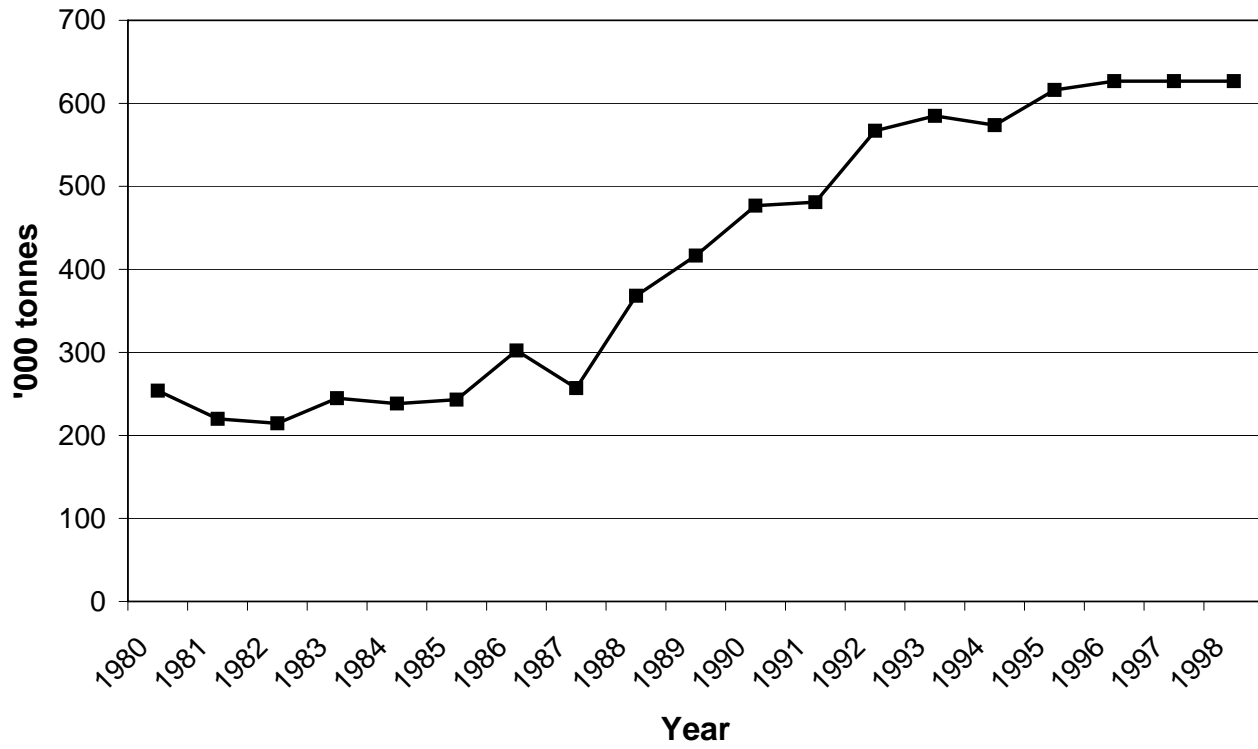


Figure 2: Carbon Dioxide emissions from the transport sector in Mauritius 1980-1998 (Euromonitor, 2002).

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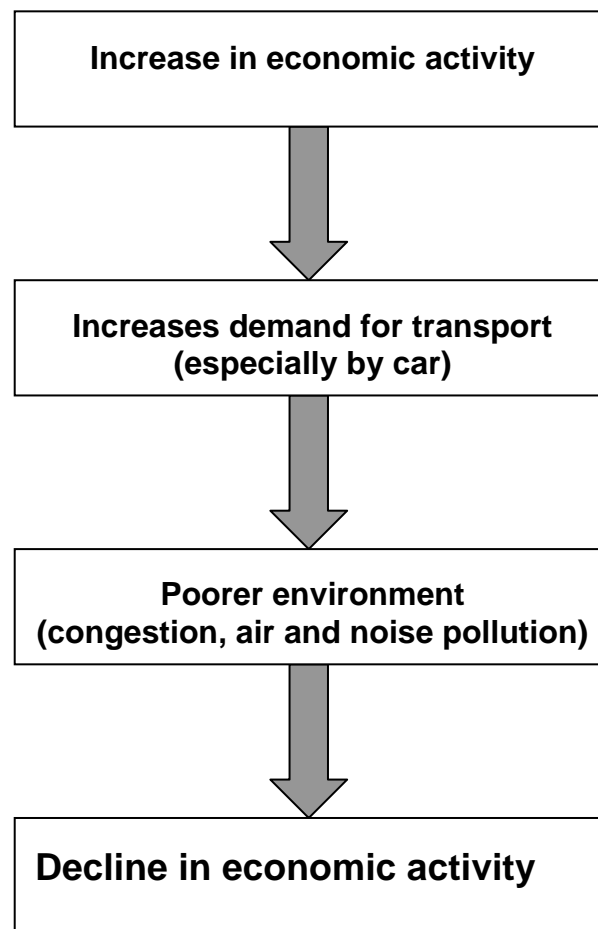


Figure 3: Economic growth to economic stagnation

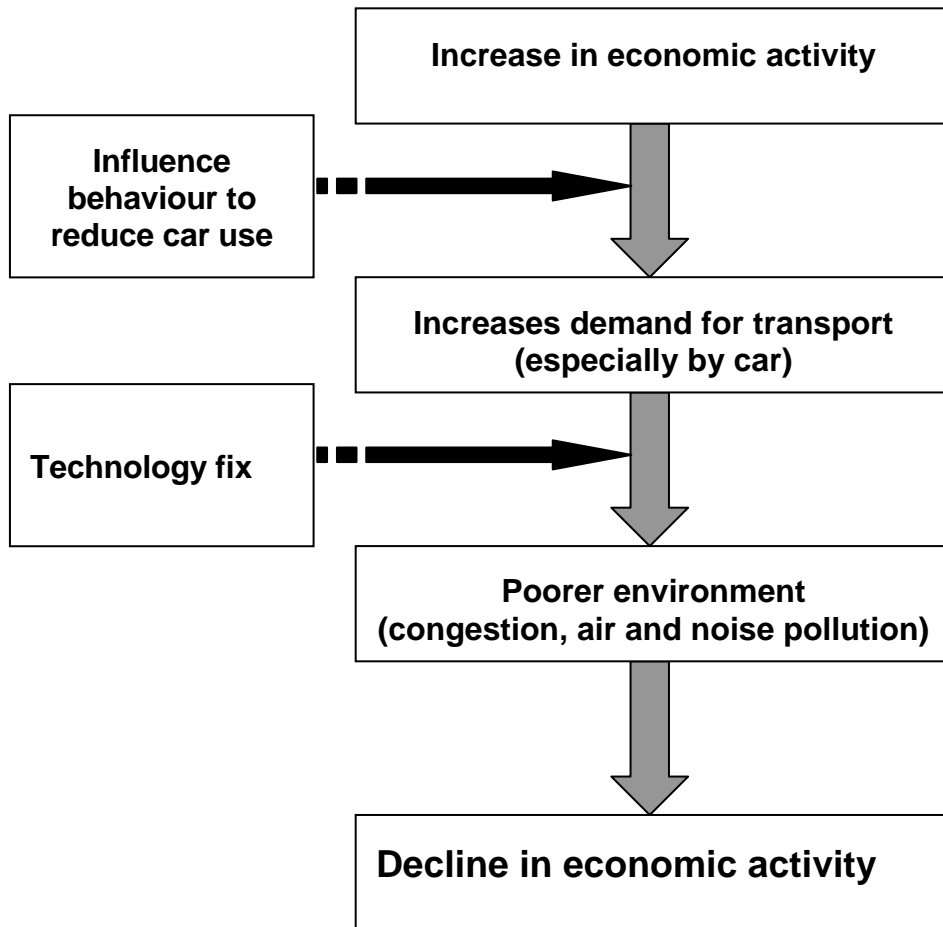


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Mauritius: An example of how modern transport systems develop: M.P. Enoch

	Mauritius		Great Britain	
	1988	2001	1988	2000
Cars and dual purpose vehicles per 1000 population	39	77	359	420
Motorcycles and mopeds per 1000 population	37	99	16	13

Table 1: Vehicle Ownership per thousand Population in Mauritius and Britain (CSO, 2001b; DTLR, 2001)

Mauritius: An example of how modern transport systems develop: M.P. Enoch

	Mauritius		Great Britain	
	1988	1998	1988	1998
Bus journeys per person per annum	194	300	99	76

Table 2: Levels of Bus Use in Mauritius and Britain (Seewoo, 1997; NTA, 2002; DTLR, 2001)

Mauritius: An example of how modern transport systems develop: M.P. Enoch

	1985	1995	2001
National Transport Corporation	334	512	497
United Bus Service	225	256	260
Rose-Hill Transport	78	80	134
Triolet Bus Service	55	104	82
Mauritian Bus Transport	18	25	27
Individual Operators	383	788	777
TOTAL	1093	1765	1777

Table 3: The Mauritian Bus Industry by the Number of Vehicles Owned 1985-2001, (Seewoo, 1997; NTA, 2002).

Mauritius: An example of how modern transport systems develop: M.P. Enoch

Engine Capacity	Customs Duty	Excise Duty
Up to 1250 cc	0%	90%
1251 cc to 1500 cc	0%	130%
1501 cc to 2000 cc	0%	180%
2001 cc and above	0%	250%

Table 4: Purchase Tax Rates for Motor Cars Fitted with Petrol Engines (Mauritius Customs, 2000)

Mauritius: An example of how modern transport systems develop: M.P. Enoch

Engine Capacity	Customs Duty	Excise Duty
Up to 1500 cc	0%	90%
1501 cc to 2000 cc	0%	130%
2001 cc to 3000 cc	0%	180%
3001 cc and above	0%	250%

Table 5: Purchase Tax Rates for Motor Cars Fitted with Diesel Engines (Mauritius Customs, 2000)

Mauritius: An example of how modern transport systems develop: M.P. Enoch

	Unguided Busway	Kerb Guided Busway	Light Rail Transit
Total Capital Costs	4,126	4,270	6,175
Foreign exchange requirement	US\$ 83 million (51% of total cost)	US\$ 88 million (53% of total cost)	US\$ 141 million (64% of total cost)
Net government contribution (central estimate, on initial capital costs)	MRs1,479 million (US\$53 million) 25% greater if no car drivers attracted	MRs1,651 million (US\$59 million) 25% greater if no car drivers attracted	MRs3,327 million (US\$119 million)
Annual operating costs (MRs million, 2006 operations, 2000 prices)	118 Possibly higher depending on cost of higher quality fuel	120 Possibly higher depending on cost of higher quality fuel	170

Table 6: Cost comparison of the Alternative Mode of Transport options for the Port Louis – Curepipe Corridor (Republic of Mauritius, 2001b).