Trade-offs in Transport Reform - Balancing the Economic, Social and Environmental Issues with a Focus on Roads.

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Abstract:
This paper examines the balancing and harmonising of economic growth, social issues and environmental protection in the field of Transport with a focus on Roads, illustrating Queensland's experience.

It shows that an increasing standard of living in a modern society is closely tied to ecologically sustainable economic growth and that a well managed Transport system, incorporating road transport, is essential for this growth. It also establishes that the outcomes of road infrastructure investment, development and management are based on what an informed community desires and seeks as interpreted by their political representatives through a process of community consultation and tested through transparency and accountability of both the Political and Administrative incumbents. The need for balancing the three issues is therefore inherent.

Furthermore, internationally and nationally accepted environmental protection requirements are embodied in Acts of Parliament and supported by intergovernmental agreements. In Queensland, the economic policy statement of the Government lays down the policy framework that is necessary to deliver the outcomes promised and therefore, expected by the Community. Legislation concerning transport has been enacted so the Government can ensure that the policies have the force of Law.

Sound Project Selection and evaluation techniques take into account quantifiable impacts using direct or surrogate monetary values, and where this is not possible, as in the case of many environmental impacts, a qualitative assessment is made taking into account community values and aspirations with regard to standard of living, quality of life and a livable environment.

Reforms undertaken in Queensland Transport are to ensure the efficient delivery of the program of projects that best contributes to economic growth in Queensland consistent with social and environmental objectives of Government.

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1. INTRODUCTION

Roads are an integral part of the total infrastructure needed to facilitate the creation of wealth. The road network is also central to our social needs. In the broadest sense, roads enable economic, social and cultural interaction and cohesion. Roads, in some form or the other, also impact on the life of every person, some positively, on certain occasions, perhaps negatively.

These competing objectives and uneven impact of the benefits and costs inevitably give rise to the need to make choices and trade-offs. Roads (or their lack) impact on the whole community. They facilitate the creation of wealth and its distribution and redistribution. Seizing the benefits from Roads cannot be done at no cost, and this causes conflicts. The key issues are how to:

1. resolve these conflicts in a manner acceptable to the community; and
2. balance economic, social and environmental issues in a manner that will facilitate sustainable long term growth and development.

In addressing these issues it is necessary to take into account the magnitude of the transport task performed by the road sector. In Australia, the road network totals nearly 900,000 kilometres, and is used by over 9.5 million registered motor vehicles. The road system handled:

- 95% of passenger kilometres of urban travel,
- 80% of non-urban travel (1991); and
- 68.4% of the total freight tonnage hauled (1988/89).

In looking at the economic significance of Roads, especially to exporters, we have to take into account relative population density and distribution, per capita GNP and the comparative cost advantages enjoyed by our competitors in the region's market-place because of their proximity to the growing markets.

Our future success or failure depends on the quality of life we chose and our ability to afford it. This is linked to our own future economic direction, the direction in which the rest of the world is moving and the internationalisation of our economy. There is however no doubt that sustained productivity growth determines which nations win or lose in the international marketplace.

In addition, the following are some of the developments that will impact on our wellbeing as a Nation, and the extent to which Australia keeps up with the world in:

- information superhighways;
- elaborately transformed manufacture;
- downstream and upstream value adding;
This paper will expound the proposition that:

- regionalisation both within and outside Australia;
- growth and the accompanying consumer spending;
- the economic success in the Asia Pacific region and Australia's role in this market;
- adoption of the principles of open markets/free trade the world over;
- politically and economically motivated organisations like the GATT and WTO, AFTA, NAFTA, APEC, CER, EC (and many waiting to be born)

Australia's need for competitive and comparative advantages arising from these and the shift from volume to value growth as a consequence of becoming the clever country will have to be taken into account in the re-assessment, development, provision and management of road infrastructure. The progress of structural change arising from all this is irreversible.

This leads to a choice. On the one extreme a nation with an unacceptable low standard of living left behind by the rest of the world and on the other, where a single-minded focus on growth may lead to an environmental wasteland where quality of life would be unacceptably low. The real choice is to seek a balance.

Roads provide positive economic benefits, and on balance, they provide positive social benefits also. However, in the area of environmental and ecological impacts, the positive benefits of roads are ignored giving rise to a perception, in certain quarters, that roads have only a negative impact.

This paper will expound the proposition that:

- roads are essential for economic and social welfare and benefits include reduction of cost of access as in most instances, the prime means of access is roads. Properly and sensitively planned and managed, roads will enhance the quality of life of the community at large;

- planning of an adequate road system including road policies that provide for uncongested mobility is essential;

- with environmentally sensitive treatment and efficient and effective management of roads, it is possible to reduce the negative impacts of road transport.

- it is possible to balance economic, social and environmental issues arising from development of roads; that this is being done, but we are not perfect. In fact, the outcomes of the investment, development and maintenance of road infrastructure is what an informed community desiring an acceptable standard of living seeks. This is interpreted by their political representatives and surrogate decisionmakers. Therefore, balancing the three issues is inherent.

- Roads must be planned and provided in the context of all alternative transport solutions and other solutions that will provide mobility and accessibility.
in this area, there is a dual role for the Road Authorities as planners, builders and managers of road infrastructure;

- as the analyst and provider of choice, to offer for consideration the choices available to the community, their political representatives and other decision makers along with the relevant information and a transparent assessment of the consequences in order to enable them to make a well informed and properly deliberated choice. (simply, complex political choices must be made by informed politicians.)

- as the implementer, once the choice is made, the Road Authority must select and implement the best course of action in the most efficient and cost-effective manner and monitor, review and report the impacts and outcomes.

- as the manager of the Road system ensure that supply is prioritised to reflect community needs. That the demand for road space and the usage are properly and adequately controlled through demand management procedures designed to ensure their optimum economic utilisation. (The technology for road pricing is far more advanced than the political process necessary to gain acceptance)

In addition, Road Authorities must be aware of their professional, moral and ethical obligations to be prudent, effective, community focussed and outcome oriented. They also desire to be recognised as model corporate citizens; and

- The paper also describes the manner in which economic, social and environmental issues arising from roads are balanced and harmonised with examples from Queensland.

2. ECONOMIC, SOCIAL AND ENVIRONMENTAL CONSIDERATIONS IN PERSPECTIVE

Economic considerations

Transport is a direct production input. It is therefore reflected in the price of outputs and has micro and macro economic impacts. The Economic History of developed nations clearly shows the important role played by various transport modes in developing and shaping the production, distribution and consumption functions of these societies irrespective of the outcome of the debate as to whether transport led or followed economic development.

All economic interaction, as we know today, are to a greater or lesser extent, dependent on transport. This necessarily involves choices and trade-offs. Roads contribution to these interactions are however proportionately greater than other forms of transport and is increasing over time. This fact has to be at the forefront when choices and trade-offs are made on behalf of the community.
This can be illustrated with a few examples from Australia. In the domestic sector (Land Transport) in 1991 roads carried 52% of the total tonne kilometres whereas 20 years earlier the roads share was only 41%. In terms of passenger transport in urban areas, roads carried 95%. This is an increase of 4% from 1971. The non-urban travel (which includes air), the Roads share in 1991 was 81%. There was no significant change from 1971 probably due to the spectacular increase in the marketshare of Air transport. This increase in road use has been further accentuated by the increase in use of heavy vehicles which in turn has brought about sustained pressure for increase in vehicle dimensions and mass.

In Australia, these movements take place on nearly 900,000 kilometres of road and the total expenditure on roads in 1990-91 was approximately $5.8 billion. However, road use is increasing at a rate of two to three times that of the population growth and four to five times the rate of growth in road capacity.

One can also see the intensity of the road dependence in Australia from the facts that 82% of driving age population are licenced drivers and there are 450 registered cars per 1000 population. The significance of this fact is seen from research carried out elsewhere which shows that transition from predominantly public to predominantly private transport takes place at between 40 - 120 cars per 1000 persons. The preference for the motorcar will persist unless managed through the imposition of direct controls or through a process of pricing, taking into account the costs imposed and the market values of the economic resources consumed.

The overwhelming message is that demand for road space will grow at a faster rate than:

- supply of road space
- population growth
- economic growth

Untrammelled choice therefore has consequences in economic, environmental and social areas. However, mobility, in itself is not a bad thing. What is needed is the proper and effective addressing of the consequences of mobility through:

- demand friendly transport planning
- minimising the need for overloading the road system beyond its design capacity
- balance mobility and accessibility and where possible minimise the need for mobility through proper and effective accessibility (after all the purpose of mobility is the need for access to facilities and services that the community wants)
Transport has always been a derived demand arising from industry, trade and regional development and the desire and the need of communities for economic, social and cultural interactions. The manner in which our society and its economy is structured and indeed its continuing efficient development demand an efficient transport system. There is no room for bottlenecks. This is even more so in the context of the need to compete successfully in the global marketplace.

Sustainable economic development is necessary to support change; change in population and regional growth, changing needs of markets and market demand. These require qualitative and quantitative changes of be made to the historic transport infrastructure network.

Change in population

Though the future population growth in Australia is predicted to be comparatively modest, various regions are expected to gain quite rapid population growth within the next twenty years. For example, the population in SE Queensland, an area of 23,000 sq kilometre is expected to grow from the 1,849,000 in 1991 to 3,050,000 in 2011 a growth of 65% in 20 years. The social and economic needs arising from this diverse growth and the derived demand placed on the road infrastructure has to be met effectively and efficiently.

This creates the need to make efficient choices now to meet the needs of future generations. This will inevitably create the problems we are currently facing in that everyone accepts the need for new Road, Rail and other infrastructure but not in their backyard. Similarly, public Passenger Transport is also "for the other person".

Regional growth

Sustainable development of the Australian economy as a whole is dependent upon the development of policies that promote and provide the opportunities for all regions to achieve their optimum potential for growth. Regional growth has to be facilitated and supported by an adequate and efficient transport system.

The need to serve the changing markets and market demand

The emerging acceptance of free and open markets and regional trading and economic associations will make it necessary for Australia to compete in an open and aggressive world market where not only price, quality and timeliness but also the value of the products in relation to its volume i.e. higher value per tonne, becoming an increasingly important consideration.

The changes required in the transport infrastructure network

The transport infrastructure that was developed over the years, both in terms of its structure and quality will have to be changed in accordance with the demands placed by the changing structure and needs of the customers.
This is however not solely demand dependent growth. It is also controlled, (including pricing through tolls), and managed growth directed at optimising the use of road space. The change in population due to growth and redistribution, regional development policies and the shift from volume to value growth in the future are also important considerations in the qualitative and quantitative development of the general transport infrastructure and the modal split within it.

The increasing intrinsic values of the commodities and the adoption of efficient production concepts such as "just in time" and "total quality management" require that time spent in transit or storage is reduced to the barest minimum in order to achieve competitive advantage in the free world markets. Adoption of world best practice and benchmarking, both internal and external in the processes adopted by elaborately transformed manufacture will expose any bottlenecks and the resulting cost escalation due to an inefficient or outmoded transport sector.

Roads which have an inherent advantage over other modes have to develop and 'modernise' its infrastructure in order to ensure that road systems do not become bottlenecks restricting economic development.

Social considerations

The dependence of our households on road transport is demonstrated by the proportionate expenditure on it; of total household expenditure, 16% was on transport, it has been exceeded by only the expenditure on household equipment and operation (18.4%) and food (18.3%). Of the 16% of household expenditure on transport, private motoring accounts for 92%.

Transport should meet the emerging and changing needs and desires of the whole community. For a society to enjoy an increasing standard of living, sustainable economic development as defined above, is a prerequisite. Apart from this, a society can function effectively only if the freedom and the infrastructure necessary for economic and social mobility is assured and valued by those who use it more than the costs. Transport in general and roads in particular provide for the society's need for economic, social and cultural interactions and thereby enhance opportunities and enrich the quality of life of its people. Among transport modes, roads predominantly provide access and equity to the majority. This includes those who live in rural and remote locations.

Whilst these are positive attributes of road transport, a very significant negative attribute is the issue of road safety. The social and economic costs of road accidents are very significant indeed; in 1993 there were 1946 fatalities on our roads. This leads to the question - What is the dollar value of a life? In addition a further 25,000 people are injured each year.

Other negative attributes are disruption, dislocation, visual intrusion, severance and noise.
New technologies are being developed to minimise these negative attributes e.g. noise generated by the contact of tyres on road surface is being abated through the appropriate use of porous road surfacing and sealing materials. This technology also has a marked effect on safety in wet weather due to reduced spray and improved traction.

However, continuing economic and social development and sharing of wealth result in increasing demand for personal mobility. While we are strongly pursuing strategies to increase patronage by public transport, especially by rail, a very large proportion of this derived demand will have to be satisfied by roads. In Australia approximately 75% of all road travel (150 billion VKT in 1991) is performed by passenger vehicles of which 51% is private, 25% to and from work and 24% for business.

Social cohesion and contentment in a developed and well informed society is dependent on economic development leading to an acceptable standard of living. Furthermore, in a Western democracy, political survival of a Government is also tied to socially acceptable and equitable standards of living. Personal mobility is an essential component and therefore one measure of the standard of living.

It is true that cities are social structures which are developed over time, to enable exchange of various kinds (Engwicht 1991). This is equally applicable to villages and other groups living as communities. Where transport enables the exchange process to be freer and richer, transport is desirable but if transport obstructs that exchange, transport becomes a social impediment. If cities provide a range of choice, transport provides access to these choices.

Road Authorities need to be sensitive to the redistributive effects of their actions. They also bear a responsibility to ensure that the activities the community considers as desirable are promoted whilst not worsening the overall quality of life. Nor should they attempt to facilitate the mobility or accessibility of one group at the expense of the quality of life of another group. On balance the community must fare better and social impact of roads will be accepted as positive as long as road authorities ensure that the negative impacts are reduced to a minimum through effective research, community consultation and their efficient application.

Environmental Considerations

The economic and social wellbeing of our people is irrevocably dependent on sustainable economic development which has been defined "as patterns of activity that meets the need of the present without compromising the ability of future generations to meet their needs" (Brundtland Report - The Report of the World Commission of Environment and Development). In Australia the development of a national environment strategy is modelled on this Report.

At the international level, Australia has played an active role for several decades. At the national level, ecologically sustainable development is now a mainstream issue. This is reflected in the many Acts of Parliament and intergovernmental agreements on the environment.
AUSTROADS as the National Association of Road Transport and Traffic Authorities in Australia has given a commitment to ensure that the road system is built and managed in an environmentally sound way. This involves Member Authorities integrating environmental factors into the entire road planning, design, construction, maintenance and management process and is reflected in the Technology and Environment Program. Furthermore, AUSTROADS environmental goal is to promote a road transport system which addresses community access needs and reflects an appropriate balance amongst environmental, economic and social equity issues within the broader framework of Ecologically Sustainable Development.

Road Infrastructure interacts not only with other sectors of the society thus enhancing both positive and at times, negative impacts, it also impacts on life in general.

Places of great environmental beauty can be enjoyed by people only if they are accessible. Careful and sensitive road planning and development along with effective controls can provide eco tourism. Also, adequate measures to enable free flowing traffic, even on roads with heavy traffic, can reduce emission and, measures to provide multiple occupancy can reduce the number of passenger vehicles on our roads.

In the very near future, smart cars with low emission, smart trucks with less dead weight, all using environmentally friendly energy sources and smart roads which enable exchange of information via computers making it possible for drivers to avoid traffic jams by route switching and real time speed controls will be essential to help minimise adverse environmental impacts. In fact, a great deal of research is being carried out in Europe, U.S.A and Japan on Intelligent Vehicle Highway Systems.

Transport consumes 38% of the final energy used. Of this 81% is used by road vehicles which carry the larger part of the Transport Task and are comparatively energy intensive and consume some 56% of all oil used in Australia. The Road transport sector in 1989/90, accounted for 22% of all CO₂ emission; of the total fuel consumed, leaded gasoline comprised 53%, unleaded gasoline 20%, ADO 25% and LPG 2%.

While some environmental impacts like the number of houses or square area of farm land affected, noise and air pollution can be measured physically or scientifically and predicted mathematically, others such as physical and psychological impacts can be measured only partially. There are of course others, like the value of a landscape which cannot be satisfactorily measured at all. In fact most of the environmental costs cannot be expressed in monetary terms. And the same applies to most environmental benefits. They involve value judgment.

Therefore public consultation is an integral part of the evaluation process. The evaluation and appraisal process should obtain and take into account all the information regarding environmental impacts necessary for proper appraisal of the road programs or projects, the options available and evaluate and present them in a transparent manner. These are done through an environmental impact assessment which is a statutory requirement in Australia for major projects.
The decision as to the choice of the best option then becomes a matter of informed professional, community and political judgment on the importance of environmental quality or resources to society.

In addition, highway projects must conform with the requirements of Federal and State environmental legislation. In Queensland, the State development and Public Works Organisation Act (section 29) requires the State Authority concerned to consider any significant environmental impact of proposed works or, a decision which might cause that impact, and if it appears that the undertaking of such development or works is likely to have major environmental effects, to take such environmental effects into account, and in doing so to have due regard to such policies or administrative arrangements as may be approved from time to time by the Minister to the extent that the same are compatible with legislation for the time being in force in the State.

In fact, policy and administrative arrangements with regard to impact assessment impose a duty on Queensland Transport to give appropriate consideration to the impact of any development and to have due regard to such matters in deciding whether the development should proceed and what conditions, if any, need to be imposed. Also, all proposed National Highway Projects must obtain an environmental clearance through a declaration and certification that the projects do conform with the relevant legislative requirements.

Measures necessary to minimise environmental impacts are most effective when taken during the planning and design stage of a road development program. It is also recognised that once a road project has been completed, its beneficial and harmful effects depend on managing the use of the road and therefore is less controllable. It is therefore necessary to incorporate good environmental practice into the planning and design stage.

Measures that are being adopted to ameliorate the negative impacts include the use of freeways in conjunction with travel demand management techniques and, more specifically, the use of open graded asphalt which minimises road noise produced by the interaction of tyres on pavement, noise abatement, frontage insulation, special structures to prevent pollution of ground water resources, extensive mounding, cuttings, use of special speed limits, tree planting, improved vehicle exhaust systems, reduction of the use of leaded petrol through penalty charges. A matter of great environment concern is the indiscriminate use of non-renewable or scarce materials. Through the use of an advanced recycling process, existing materials in road pavement are being re-used in the road construction process.

Some countries even compel road builders to bring into cultivation an amount of land equal to that lost to road projects.
Queensland is leading the nation out of the recession. It is also the fastest growing State both in terms of economic activity and population growth. It is also the most regionalised State and is diversifying its economy from one of resource based to value adding and elaborately transformed manufacture.

The growth industries that are dependent predominantly on road transport in Queensland are Tourism and Retail & Wholesale. During the ten years from 1990/91 to 2000/01, the tourist numbers are expected to grow from 12 million to 23 million and Retail/Wholesale Tonnage is predicted to grow by 50% and, these do not take into account the many million car trips occasioned by the demand for retail goods.

In Queensland, there is underway, a structural transformation in the industrial sector; changes in production processes, a shift in the location of various economic activities and increasing importance of the service sector in the economy. The resulting changes in production logistics, management forms and cost savings necessary to maintain international competitiveness is not possible without an efficient highway system keeping pace. We recognise a direct link between mobility, connectivity and productivity.

In Queensland, balancing and harmonising transport related economic, social and environmental issues arising out of this growth and the delivery of outcomes desired by the community, with the least possible negative impacts, are achieved through transparent policies, legislative and administrative reform and application of project selection and evaluation techniques.

As the Road Authority in Queensland, we are mindful that:

- market forces are essential, but by itself may not deliver sustainable economic development;
- Road transport infrastructure is not only a technical but also a political issue;
- there are social and political effects arising from technical and economic factors being considered in road infrastructure investment;
- our modern cities and neighbourhoods are to a large extent shaped by the motor vehicle and there are advantages and disadvantages arising from this;
- roads help to redistribute wealth and power and therefore are political. As such the program of proposed works must be subject to public scrutiny.
We are also conscious of the fact that the interaction and relationship between transport and other human activities has become much closer and more complex during the last fifty years. The intensity of the impact of economic and social development within the next twenty to thirty years in Australia and particularly in Queensland will be much stronger and more concentrated. These will require careful attention being paid to vehicle performance, safety and the provision of improved, efficient and coordinated transport infrastructure, taking into account economic and social needs and environmental impacts. We must make decisions today, that allow people to plan their homes and businesses, compatible with the transport needs and corridors of the future.

The role and outcomes expected of roads (and other forms of transport) in Queensland are determined by:

- the State's economic policy statement enshrined in a document entitled 'Queensland - Leading State'.

- the Transport Planning and Coordination Act 1994, the Transport Infrastructure Act 1994 and the major supporting legislation.

- Road Reform program of Queensland Transport.

- Road Network Strategy developed by the Roads Division.

- Project selection and evaluation guidelines.

Queensland Transport accepts that the purpose of roads, in the broadest sense of the term, is to facilitate the goals and expectations of the community in a sustainable manner. These goals and expectations of the community are interpreted by the Government which then develops interventions through policy, legislation and guidelines directed at achieving set goals and expectations. These also determine the various interventions in road infrastructure investment, development and management designed to ensure that the community expectations are satisfied with the least possible adverse effects. However, it is naive to believe there will never be negative effects.

**Intervention through the State's economic policy**

Queensland Government's economic development policy is outlined in the document entitled "Queensland Leading State". It establishes among other things, the principles of Government intervention, policies for market enhancement, industry, trade and regional development.

The implications of the Queensland economic policy statement are many. It requires that the infrastructure planning provision be done in a coordinated manner which anticipates industrial, commercial and residential development and their needs taking into account social and environmental impacts. The economic policy statement also makes it clear that an efficient, effective and coordinated transport system is essential to support the economic activity of the State as well as enhancing the quality of life of Queenslanders.
Intervention through the two Transport Acts of 1994

While the Government's economic policy statement requires transport to help achieve its development objectives, the Minister for Transport is required by law to ensure transparency and is accountable to Parliament and the public for the outcomes and consequences resulting from the investment, development and provision of transport facilities.

The Transport Planning and Coordination Act (1994) is the peak legislation for transport. It establishes the outcomes required of the transport system (economic development, trade development, regional development, and a better quality of life for Queenslanders). The Act focuses on planning and coordination of transport and therefore requires the development of a Transport Coordination Plan.

Queensland Transport is committed to supporting the economic policy of the Government and to satisfying the Legal obligations through the development and adoption of the Transport Coordination Plan. The Legislation makes it clear that in developing Transport plans we must support and ensure that there is proper integration with regional plans, local plans catering for local needs and related land use plans, market enhancement and such other development plans and programs, giving proper and adequate consideration to all alternative transport and other solutions in order to provide for the required mobility and accessibility.

The Transport Coordination Plan would be a portfolio wide plan and will incorporate:

- a statement of the specific objectives sought to be achieved;
- proposals for the provision of transport infrastructure;
- investment criteria for deciding priorities for government supported infrastructure between and within the different transport modes and options for financing the priorities;
- criteria for deciding which roads should be controlled by the chief executive as State-controlled roads; and
- appropriate performance indicators for deciding whether, and to what extent, the objectives of the strategies have been achieved.

Transport Infrastructure Act, 1994

This Act focuses on the planning and delivery of infrastructure, establishing Queensland Transport's responsibilities for transport infrastructure provision and management, and requires the development of infrastructure strategies which flow from the Transport Coordination Plan.
Legislation imposes an obligation on the Minister to operate strategically and in a transparent manner across the various complementary, but in many ways competing, forms of transport, and to be accountable by tabling his plans in Parliament. The legislation also requires performance in the delivery of the roads program to be measured against detailed objectives and provide a basis for effective Parliamentary and public accountability.

Administrative Intervention through Road Reform

Road Reform essentially is the industry-wide, administrative intervention to ensure that Queensland Transport will:

- obtain best value for the road dollar;
- do the highest priority work in terms of return on investments whilst enhancing the quality of life of all Queeslanders’;
- do it in the most economical way adopting world best practice and benchmarking in a competitive environment;
- prove above; and
- provide an adequate and responsive road infrastructure as a foundation to support a strong, diversified and growing economy.

The objectives of Road Reform are:

- To integrate road planning into wider transport planning;
- To improve road system performance - doing the right job;
- To improve road works performance - doing the job right;
- To secure the right level of road investment; and
- To manage the change in a practical, sensitive and harmonious way.

A fundamental tenet of Road Reform is that Queensland Transport’s road program will be delivered mainly in an environment of competition. As a general rule, all those who undertake work for Queensland Transport, including its own workforce, will be exposed to open competition. Exceptions are based on community viability and other defensible circumstances. Queensland Transport however acknowledges the need to retain certain ‘core’ levels of efficient road works capability.
Apart from the above competition policy, Road Reform has the following key instruments:

- Road Network Strategy
- Industrial and Workplace Reform
- Commercialisation
- The delivery of Nationally accepted best practice in all areas of road transport infrastructure development, planning, maintenance and management.

The first three instruments may be briefly described as follows:

**Road Network Strategy**

The Road Network Strategy is the infrastructure strategy for roads consistent with the Transport Coordination Plan. It is the basis upon which the Road Implementation Programs will be prepared.

The strategy addresses the management of Queensland's road system. Such management extends from the setting of goals and objectives through to the development of an investment plan. The investment plan provides for the development and maintenance of a road system which meets the need of Queensland both now and into the future.

Planning of the road network to achieve broader outcomes must take into account related issues and activities such as land-use planning, vehicle use management, traffic management, social needs of the community including access and equity and environmental impact, cost and convenience of other transport modes. To the extent that they influence the performance of the road system, objectives for the management of road use, and intermodal issues are also included in pursuit of an integrated, system-wide approach to better meet the economic, social and environmental objectives of Government.

Road Network Strategy is not a stand-alone construction strategy, but requires consideration of alternative transport modes and other interventions including Demand Management. The Road Network Strategy therefore does not necessarily seek solutions to issues by investment in road infrastructure alone. Where appropriate, the correct solution may involve investment in other modes or in transport alternatives.

**Industrial and Workplace Reform**

Industrial and Workplace Reform sets out to develop and implement productivity focussed, participative workplace reform in the Roads Program which will efficiently and effectively deliver the Road product through the basic work unit and to achieve harmonious and work place focussed industrial relations. Clearly we want to unlock the creative potential of our people to deliver excellence.
Commercialisation

Commercialisation is adopting best business practice in the way Queensland Transport runs its business. Queensland Transport will operate using commercial principles in order to achieve efficiency and effectiveness of product delivery. These will be applied at levels appropriate to the type of units, particular products or service. When Queensland Transport does the work, we will need to demonstrate best value in the use of public funds.

Project Selection, evaluation and investment guidelines

The need for investment appraisal techniques for assessing and evaluating road infrastructure development projects stem from the inherent lack of an adequate pricing mechanism. The force that drives markets to balance supply and demand are therefore absent.

Various techniques have been devised to proxy the market forces and in doing so, aim to optimise the allocation of scarce resources between competing demands for goods and services. The most comprehensive of such techniques is cost benefit analysis (CBA) which assigns monetary values to all the major costs and benefits associated with a road project. In Queensland Transport, tools have been devised to enable the prediction of:

1. Road user costs including vehicle operating and time costs
2. Accident costs
3. Certain environmental costs (mainly noise effects)
4. Secondary benefits including damage to livestock and dust damage to crops.

CBA enables attainment of allocative efficiency but does not directly consider important factors such as equity, risk and political effects. Hence, methods enabling qualitative assessment of important yet unquantifiable factors have been devised that enable better approximation to reality and leaves more freedom to the decision maker. No methodology however could "capture", except at great cost, all the benefit and cost effects of roads on the community as a whole.

In Queensland Transport, a two stage approach to project evaluation has been developed.

Stage 1 Calculate benefit cost ratio in accordance with the Departmental Cost Benefit Analysis Manual incorporating the above four parameters.

Stage 2 Qualitative Assessment carried out in relation to set parameters given below.
The parameters in Stage 2 include:

1. General conditions covering risk and network effects and policy issues.
2. Development outcomes in terms of economic trade regional and sensitivity to private and small travel time savings.
3. Social justice outcomes.
4. Environmental Sustainability Outcomes.
5. Safety Outcomes.

Transparency and public consultation is therefore essential so that the community can register the strength of their preferences for roads. In Queensland, a commitment to community consultation is included in the Corporate Plan of Queensland Transport. This community consultation policy is in accord with the community consultation resource document for participants prepared by the Office of the Cabinet Social Policy Unit.

Also, the Queensland Government provides guidelines for analysis of the environmental effects of development proposals and Public Works in Queensland. In complex cases involving more than one Government organisation, the Coordinator-General is required to ensure that proper account is taken of the environmental effects.

The Cost Benefit Analysis methodology and the parameters used are being reviewed and researched by Queensland Transport and Nationally by AUSTROADS and ARRB. These, when completed, will result in setting new National guidelines.

In addition, AUSTROADS is also researching into the economic effects of investment in road infrastructure which is directed at identifying and quantifying the link between road infrastructure investment and micro and macro economic benefits.

The information required for Cost Benefit Analysis is obtained from a comprehensive computerised database called 'A Road Management Information System' (ARMIS). This database, developed by Queensland Transport, has as its core a system of Road Reference and Road Inventory which defines the road network and its physical characteristics. This core system along with its sub-systems provides information on road conditions and maintenance requirements. The need for enhanced capability to identify and quantify traffic demand is being addressed by the Traffic Analysis and Reporting System currently being developed.

The Project Evaluation methodology to be used by Roads Organisations is being evaluated in 1994/95 by AUSTROADS to achieve National comparability.
4. CONCLUSION

A resource rich, well informed and articulate Nation belonging to a first world democracy, such as Australia, will demand and receive a high standard of living from its Government. A continuing high standard of living, as we know it, is possible only with sustainable economic growth. However, sustainable economic growth in a large country with a small population, widely dispersed yet concentrated in a few medium sized cities and their sprawling suburbs requires a wide network of roads to enable both social and economic mobility and accessibility. A high standard of living is also synonymous with access to economic, social and cultural interaction via personalised and motorised mobility.

At a time when the Information Revolution is replacing the Industrial Revolution and historic trading links, production and marketing techniques and the relationship between various factors of production are being questioned and being replaced, a historic road network that was developed over time, must keep pace with that change heralded by revolutionary developments in information technology.

Roads, while facilitating change and providing economic and social benefits can and at times do inflict social and economic disbenefits. These disbenefits may be unacceptable to the community that it serves. However, links between land use planning and transport infrastructure investment, increase in economic productivity and rising standard of living are very strong indeed and the community needs to make a choice, taking into account the influence of environment protection measures on the total cost of road infrastructure development or its lack, to society.

It is the duty of Road Authorities to ensure that the benefits of roads are maximised and the disbenefits are minimised. This is being done in Queensland by balancing economic, social and environmental issues using mainly four different yet complimentary forms of intervention: through Government policy and guidelines; legislation; internal administrative reform and analytical and evaluation techniques and guidelines. Community Consultation, directed at ascertaining the needs and desires of the public and the value they place on social, cultural and environmental issues is also a fundamental component.

The Queensland Government’s economic policy statement lays down the economic objectives and the need for enhancing the quality of life of all Queenslanders through economic progress with proper and adequate consideration for the resulting social and environmental impacts and costs. In addition, guidelines have been laid down to deal with these concerns. Transport systems are required to facilitate economic, trade and regional development whilst enhancing the quality of life of all Queenslanders. It is the responsibility of Queensland Transport to identify and take into account the community values, needs and aspirations in the areas of economic, social and environmental impacts arising out of road infrastructure investment, development and management.
The Transport Planning and Coordination Act (1994) and Transport Infrastructure Act (1994) ensure the transparency and accountability of the Minister for Transport and his chief executive in the areas of all planning, executive actions and the resulting outcomes. These are subjected to both Parliamentary and public scrutiny. The preparation of the Transport Coordination Plan, which is to be a public document, also ensures the proper balancing and harmonising of economic, social and environmental impacts arising from the development of Transport in Queensland.

The Road Reform agenda of Queensland Transport aims to ensure that the right job is done and it is done in the right manner obtaining best value for the road dollar. This is achieved mainly through adopting world best practices, benchmarking and open competition. Road Reform also sets out to prove to the community that these are actually being achieved. This requires openness and transparency to ensure that Queensland Transport does balance the economic, social and environmental outcomes of its actions.

Project Selection, evaluation and investment guidelines require Queensland Transport to follow a two stage evaluation process which taken into account not only measurable economic, social and environmental impact but also qualitative assessment of their impacts. These evaluation techniques will be also continuously reviewed and improved so that community concerns and user preferences can be taken into account in an adequate and acceptable manner.

Balancing economic, social and environmental effects and impacts must be therefore inherent in road infrastructure planning, investment, development and management in the wider transport context, in Queensland.
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Transportation in Low Density Markets: a role for public policy?

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Abstract:
Many jurisdictions continue to regulate transportation services to small communities. These low density transport markets are subject to utilization economies that are lost when the market is fragmented among numerous competitors. This paper uses a simulation model that replicates the actual dispatching procedures used to distribute automobiles in western Canada. Using the actual demand for automobiles, the service levels and productivity of truck service in low density markets are estimated for various competitive scenarios and compared to the actual service and productivity levels achieved. Market performance results are modelled under monopoly and under competitive conditions and explicitly show the trade-off between service and productivity (cost). Market fragmentation is seen to result in significant productivity losses with service held constant, or service declines with productivity held constant. Competitors with the largest market shares have the greatest opportunities to produce the highest levels of service at the lowest cost. The results are consistent with empirical studies of other Canadian truck markets. Implications for public policy regarding transportation in low density markets are developed.

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