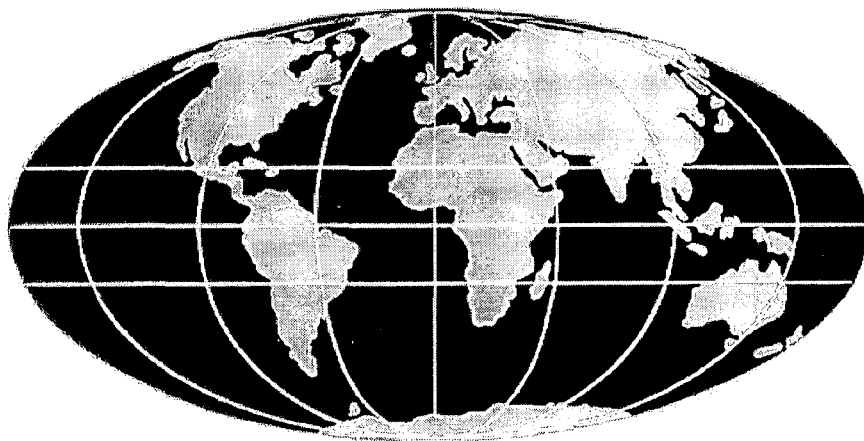


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# BARRIERS TO COST-EFFECTIVE TRANSPORT

## BARRIÈRES AUX MESURES POUR LE TRANSPORT QUI SONT RENTABLES

### BARRERAS QUE PREVIENEN RENTABLE TRANSPORTE

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**ABSTRACT:** Medium sized cities in developing countries need to be able to identify their main transport problems as quickly and cheaply as possible. A brief city-audit using a comprehensive inspection framework can highlight the key issues and provide initial guidance on suitable cost-effective solutions. Such an inspection manual has been developed and trialled in several cities, and the results of this work are reported here.

**RÉSUMÉ:** Les villes moyennes dans les pays en voie de développement doivent pouvoir identifier leurs problèmes principaux de transport en tant que rapidement et à bon marché que possible. Un bref ville-audit utilisant un cadre complet d'inspection peut mettre en valeur les questions clés et fournir des conseils initiaux sur les solutions rentables appropriées. Un tel manuel d'inspection a été développé et trialled dans plusieurs villes, et les résultats de ceci fonctionnent, financé par le gouvernement britannique sont enregistrés ici.

**RESUMEN:** Las ciudades de tamaño mediano en países en vías de desarrollo necesitan poder identificar sus problemas principales del transporte como rápidamente y barato como posible. Una ciudad-intervención abreviada que usa un marco comprensivo del examen puede destacar las cuestiones claves y proporcionar a la dirección inicial en soluciones rentables convenientes. Tal manual del examen se ha desarrollado y trialled en varias ciudades, y los resultados de esto trabajan, financiado por el gobierno británico están señalados aquí.

## 1 INTRODUCTION

This paper describes a project funded by the UK Department for International Development to develop a low-cost means of improving cost-effective transport in developing cities. The output of the research takes the form of a manual that can be given to practitioners for use in the field.

### 1.1 AIMS

The main aim of the project is to improve the availability of cost-effective transport for the rural and urban poor, including public transport and non-motorised modes. A further aim is to increase the ability of developing city governments to introduce energy efficient transport systems.

In pursuance of this aim the objectives are to help developing cities to identify as quickly and as cheaply as possible the main problems that exist in the field of transport. This is achieved through the production of guidelines for a cost-effective audit of performance and, during the project itself, by direct contact between the project team and ten developing city transport authorities.

The beneficiaries should comprise all urban travellers including women and the urban poor. In addition, efforts will be made to reduce wasteful expenditure on prestigious but inappropriate schemes. Monies thus freed will be available for investment in the social and welfare sector.

### 1.2 BACKGROUND

Almost all research into urban transport problems has taken place in developed countries. Traffic characteristics in developing cities can be very different. As car ownership levels rise dramatically, many of the World's cities are facing unprecedented levels of traffic congestion. Resulting time delays, pollution and road accidents are a major concern. A third of the global energy consumption and associated pollution arises from transport activities. Air and noise pollution is particularly severe in cities of developing countries whose streets are prone to traffic congestion. Contrary to popular belief, these problems are not inevitable. Techniques exist today that can help to minimise congestion and improve the environment.

An audit can provide clear evidence of the improvements that could, and should, be made. It is important that developing city leaders should recognise that change is possible.

Work by Lawson (1990) and others has shown the importance of road safety audits in the UK. In areas where there are no centrally prescribed road design standards, the need for an independent expert scrutiny is likely to be even greater.

The history of externally-funded traffic and transport projects in developing cities is a sorry tale of good ideas that have failed to come to fruition (Barrett, 1984). Work in Jakarta, Bangkok, Cairo, Abidjan and Nairobi have all failed to deliver and sustain the expected benefits. One common approach to a transport study is to use a large transport-planning model. These face particular problems: the software used may not have continuing local support - especially if the project over-runs, as is common. Study teams might break up if local staff get better offers based on their new-found computer and language skills. Often a study will take so long that a new administration might take over and may be unwilling to ratify the findings of a study not sponsored by them. Whatever the reason, there is a very good chance that the results of a large transport study imposed upon a city will be unsustainable (and indeed may well end up in a dustbin). Rather than a detailed study of one particular city, therefore, this research sets out to cover a wide large number of cities in the hope that seeds will be sown in some that will come to fruition.

In recognition of the difficulties of identifying problem areas in Developing Cities, the UN, World Bank and others are attempting to establish indicators of a city's performance, with particular reference to issues of sustainability. Strenuous efforts are made to ensure that these indicators are objective, measurable, and replicable. This is a very valuable activity and good worldwide collaboration is being achieved, in part thanks to the Internet. (Habitat, 1999)

The research described here, therefore, aims not to duplicate the collection of factual indicators, but to derive a means of incorporating subjective data into an appraisal process.

## 2 METHODOLOGY

An Urban Transport Audit methodology has been created to rapidly assess a city's ability to introduce cost-effective transport systems. An audit being 'a

searching examination by an official body.' The method attempts to enable the determination of where blockages are occurring that prevent the implementation of low-cost, appropriate, traffic and safety measures.

The research borrows heavily from a procedure developed in the UK to assist in the inspection of schools. Faced with the task of giving funding authorities and parents good quality information on more than 7000 schools within the target four years required a considered approach. The Office for Standards in Education (OFSTED) established a methodology that is based upon a detailed framework prepared centrally which is used by small teams visiting schools for less than one week. During the visit the team, working to a set plan, is able to make a guided judgement on the performance of the management and teaching standards. Substantial work has been done to ensure that the framework for assessment is clear, concise, and comprehensive. The aim of the present research is to produce the first version of such a framework for a city's performance in the transport sector.

The linking of judgement to evidence is a key principle of this approach. The existence of sound evidence can help turn an imprecise view into a measurement that, although still unquantifiable, is scientifically valid.

### 2.1 CAVEATS

It is recognised from the outset of the study that subjective decisions are, by definition, imperfect ones. In the field of road safety for example, a road that looks 'obviously' dangerous to a Western observer may have had no actual accidents. It is also recognised that there are substantial 'grey areas' in which two experts of equal experience may disagree. Those from North America, for example, will be accustomed to seeing far more traffic signals per linear mile than someone from the UK. Some indication of the experience and background of the inspectors should therefore be included in the evidence base and used in interpreting the results.

However, it is not the intention of the research to investigate the subtle differences that exist between similar cities. It is a sad fact that many of the World's developing cities have traffic and transport conditions that are on the point of collapse. For many years to come the problems will be very large and very obvious to anyone who is looking in the right place.

It is not the intention of this research to substitute for the detailed work going on in very large cities. These will often be full of political intrigue, which can negate the implementation of advice, no matter how appropriate. Instead, a typical target would be a city of around one million people. This will be large enough to have hundreds of thousands each day who are affected by the negative impacts of traffic, and this can be a major barrier to local development. If they have recently reached such a size as a result of rapid urbanisation, then these cities are unlikely to have a large contingent of transport professionals.

proach to development fits very well into the aims of the UK development agency DfID.

### 3 CONTENT

The range of inputs has been chosen to allow for the uncertainty and limitations that any project in a developing city is subject to. The team will be equipped with a book of around 50 pages, each page

able 1: An extract from the Inspection Manual

26	<b>POLICE PERFORMANCE AND ROAD SAFETY ENFORCEMENT</b>	The activities of the police should have a purpose. The control of traffic regulations and driver behaviour is essential for reasons of safety and congestion. Police performance should therefore be judged according to how well they increase safety and reduce congestion.			
<<<Current Status		Efforts being made >>>			
VH	Police follow a clear plan to improve safety exactly where needed and intervene in automatic traffic control only in cases of emergency. Enforcement presence is sufficient to deter most traffic offences.	The extent to which this is an issue or a problem in the city is		The assessment of how well the authorities are dealing with this is	
H	Police make attempts to control speed where this is thought to be a problem (as opposed to where accident reports prove it). Enforcement of other offences is conducted at similar locations.	H The Evidence on which this Judgement is based is:			
M	position exactly between conditions above and below (not to be used as 'don't know')				
L	Police do link ticket issuing to speeds and real offences, but are as likely to do this where it will be easy, rather than where it will be effective. Most drivers do not fear breaking rules as they expect little effective enforcement, or know that an inducement will work.				
VL	Uncontrolled, ineffective, corrupt policing.	Recommendations:			

Around the world, there may be hundreds, if not thousands, of such cities. Unlikely to merit large transport studies, they would be eminently suited for a short transport audit or inspection to help guide local strategies and prioritise any external input.

It is intended that, for a city of around one million, a professional inspector, using suitable guidelines, could produce a preliminary audit for around ten thousand dollars inclusive of all fees, travel and subsistence. This means that for the price of one kilometre of underground metro railway track (one hundred million dollars) an audit could be done in ten thousand cities. This low-cost grass-roots ap-

proach covering a different component or sub-component.

The main areas to be looked at are as follows

- 1) Long term planning and infrastructure investment. Land-use & new development
- 2) Traffic Management and the organisation of the road network
- 3) Public Transport
- 4) Environmental impact of transport and Road Safety
- 5) Access to transport for disadvantaged groups and non-motorised transport
- 6) Institutional arrangements for transport in the city

These, together with the situational baseline details are evaluated using a set of guided judgements that break down each of these general areas into component parts that can be judged in turn.

In order to guide the judgements being made, a set of descriptors is provided. Reference to these, even though an exact match may not be possible, helps the inspection team to reach a conclusion. A five-point scale is used ranging from Very Low (VL) indicating performance significantly below requirements up to Very High (VH). As an example of this approach, table 1 gives an example.

Note that a key part of the structure of the method is that judgements such as the one illustrated above are preceded by a review of the relevant background conditions. In this case, the conditions of service and employment of the officers and the budget and equipment levels of the force will be reviewed and will ultimately be taken into consideration before judging the performance on the ground.

The five-point scale evaluation enables a measured judgement to be made of the situation as it currently is. As a further refinement, some assessment can be made of the efforts being made. For convenience the same five point scales is used, though in this case it runs from VL representing no effort (or even obstruction) up to VH for significant positive effort.

An important part of the process is the collection of evidence. This may not (during a short inspection) be quantified, but it should, as far as possible be able to be proven. For example, "considered opinion" is not a good example of evidence, whereas "footpath blockages are common" is, as even though unquantifiable, it could be tested by a short survey with photographic proof. All comments made should be able to tested against the question "could somebody argue with this statement? And if so, how would I justify my opinion". Quotations from local professionals are admissible evidence, though this has confidentiality implications.

Although again to be used with care, it is considered instructional (for both parties) to add a recommendation for each topic. Amongst other things, this helps test understanding of the issues. These will need to be graded, since most cities cannot usually afford to do everything all at once. As far as possible general (and obvious) recommendations (such as "ask central government for more money") should be avoided. Similarly, emphasis should be given to recommendations that (like the evidence) can be described and monitored, even where direct quantification is not always possible

### 3.1 *OUTPUTS*

The aim of this process is NOT to produce a total score for a city, though this would theoretically be possible. Rather the aim will be to assist in the decision-making process. The use of a method such as the one presented here provides a structured means of working through a large and unstructured problem. It brings the shared language of a logical approach to enable those with different viewpoints, either from different institutions or even different countries, to discuss the real essence of a problem. Its comprehensive nature also ensures that by the time the process is complete, there is unlikely to be any components of the traffic and transport problem that have not been dealt with in a systematic way.

The benefits for the city are that, for the smallest possible expenditure, the following are made available:

- 1) The biggest overall problem is identified
- 2) Relative importance of other problem areas is highlighted
- 3) An immediate action plan can be prepared to solve worst problems
- 4) Terms of Reference can be produced to tackle other deficiencies

The target for the project is that 80% of the benefits of a more comprehensive study can be achieved for around 20% of the cost.

## 4 PRELIMINARY FINDINGS

So far the audit has taken place in around a dozen cities to a varying degree of detail. It is proving to be highly effective as a means of generating interest in the subject area and has stimulated debate internally within almost all of the cities visited. The method has evolved, with the final version of the inspection manual being version 11.

A full review of individual city performance is outside of the scope of this paper, but a summary of the main barriers to cost-effective transport can be given, as follows:

Planning: Where there are plans at all, these are rarely updated, and may incorporate ideas from previous decades such as zone plans and 'predict and provide' road building. Unfortunately, even though

they are out of date, there is still reluctance from 'junior' staff to question the validity of a master plan.

**Traffic Management:** There are few cities that have an effective hierarchy of roads. As a result main through routes are congested and minor roads have environmental problems. Traffic signals are seen as a dominant solution and little use is made of lower cost measures such as road markings.

**Road Safety:** Some specialist education is common in most cities visited. Most even collect some form of accident data. This is, however, rarely used as a means of actually implementing remedial measures (except in Tunis).

**Public Transport:** Few cities (outside of Brazil) have optimised the use of competitive private bus operations with considered route planning and social back up. Many cities face increasing pressure and problems from uncontrolled and unrestrictable paratransit.

**Enforcement:** There are financial and bureaucratic reasons why there is a long lag time between an offence being committed and a fine being administered. This means that there is no corrective effect and traffic police are seen as an unwelcome burden on drivers. Traffic policing is rarely a desirable or honourable profession.

**Sustainable Transport:** Few cities have even thought of reducing car dependence. Ironically as the West tries to encourage walking and cycling these are already important modes in low-income countries. Cycling is commonly in decline as motorcycling grows. Walking is the majority transport for all short trips but this is despite appalling conditions in every city visited. Footpaths everywhere are neglected, blocked by cars and hence failing to serve pedestrians, with severe safety and quality of life implications.

**Institutional:** The main drawback to improvement in cost-effective transport would appear to be that the agencies that have some ability to improve the situation rarely work together to good effect. Even a 25-dollar barrier outside a school can take months of argument and decision ratification at a very senior level. In deference to superiors, and fearful of their jobs, few junior staff are willing to take initiatives and to actually implement. Instead, discussion, study and deliberation take place, while blame is passed around for problems on the street.

## 5 CONCLUSIONS AND RECOMMENDATIONS

It has been shown to be possible to create a method for a short audit or inspection of a city's traffic transport and road safety. The method has many advantages, not least in that it draws together interested parties and can ensure that every element of a transport system is given attention fairly and without omissions.

Cities visited provide a good cross section of size, income and car usage. It is possible therefore to draw some recommendations that may have universal value in order that other cities can avoid making the same mistakes as many of those visited.

1. The number of transport professionals employed in a city should be linked to the number of vehicles. Car ownership is rising throughout the world and it must be recognised that this growth can be managed but only if the efforts made to control car use grow at the same rate.
2. Somebody, somewhere, should take a consumer viewpoint of public transport. If run for the sole benefit of operators, entrepreneurs or city bureaucrats, the service will deteriorate and the inevitable consequence will be that people will want to switch to private or semi-private modes as soon as they possibly can.
3. The ability of countermeasures to reduce road accidents at cluster sites should be recognised. Collection and use of accident data for remedial works should take priority over more general administrative use of figures.
4. The link between land use and transport must be appreciated. It is certain that a large building will generate both trips and parking. These need to be managed, in advance of the future worst case.

Other recommendations exist, but these are either of a very general nature (such as agencies should work together) or very specific (such as allocation of funding relative to other budgets).

Overall, the problems of motorised transport in low-income countries appear almost certain to increase. In some capital cities this may eventually be tackled, though solutions will require lengthy institutional negotiation based on intimate knowledge of local priorities. In smaller (though still large) cities there will be few people who have either the knowledge or the institutional capacity to control the worst excesses of unrestrained car growth. In such situa-

tions, nine times out of ten institutional blockages may still block implementation of progress. Frequently, however, the use of a short audit using a comprehensive inspection framework may provide the initial guidance that can offer a beginning towards a more cost-effective approach.

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