

# 1 Travel demand management

During my most recent trip to Lagos Nigeria, I noticed that the congestion problem has increased by astronomical proportion compared with what obtained about several years previously. Measures instituted by Lagos State Traffic Management Authority to combat this disturbing trend have yielded insignificant or no positive results. For example the implementation of the Bus Rapid Transit (BRT) scheme has been flawed due to the road ownership scheme in place in the country. Some major routes in Lagos that ought to be part of the BRT route are actually owned, controlled and maintained by the federal government. Therefore the lack of buy-in from the federal government has significantly reduced the benefit obtainable from such a scheme. Therefore, though the BRT scheme promises a lot of benefit to road users, maximum benefit cannot be attained until institutional issues such as the one identified here can be resolved.

Another measure has been the implementation of traffic lights at some junctions. Traffic light traditionally has been used to prevent congestion breakdown at junctions as well as to coordinate flows at junctions. However practice has shown that fixed time signalling is not the best as traffic demand on links around junction often changes dramatically within a few minutes. This places an adaptability requirement on signal timing schemes in order to achieve the most efficient junction flow. Several adaptive traffic signal control solutions are available today. Some of these are integrated with traffic counting and detecting systems such that flow information from links coming into towards it are analysed and appropriate timing schemes set to disperse traffic in a more efficient manner. Such adaptive systems are based on standard signal optimization algorithms. Another group of such intelligent traffic control system have integrated communication systems giving them the ability to talk to other signalised junctions across the wider road network so as to exchange flow useful information. An example of such system is the widely used Split Cycle Offset Optimisation Technique (SCOOT) system developed by Transport Research Laboratory in UK. This has been used for several decades and in many part of the world. SCOOT can be adapted for use within Nigeria's metropolitan cities. A proper implementation would ensure that outstanding benefit can be realised.

In this article I present an approach that would ensure significant and immediate reduction in traffic levels. These are based on managing traffic demand using a range of measures. The belief expressed here is through proper implementation of the measures highlighted in this article, it would be possible to reduce the traffic congestion levels on Nigerian roads by a significant proportion. Some of the measures are as listed below:

## 1. Tele-working

The congestion problem in places such as on Lagos Island could be significantly reduced if some employees of major companies on the Island are allowed to work from home. For example once a week for senior managers or those that can work on their own initiative without supervision. This would be more beneficial in cases where some of the work activities they engage in can actually be carried out outside of the office. To achieve this some technical, infrastructure, psychological and disciplinary challenges would need to be addressed. Remote access solutions with good tracking mechanism have been implemented in other parts of the world to ensure productive work is done at home. Other technical issues such as the availability of work space in the house, computing and telephone facilities and availability of power would also need to be addressed. Initially such privileges may be given to senior staff who can afford the comfort of working from home. Companies may also opt to fund their employees by

paying them rental charge for using their home/computers/ phone for company's benefit.

## **2. Flexi-working**

Congestion problem is of two major types; one is caused by seasonal variation in travel demand such as those that occur during morning or evening peak. The other is caused by insufficient road capacity. Peak period traffic can be strategically reduced if companies located in the most congestion prone areas institute flexible working regimes. Since most businesses in Lagos operate between 8.00am – 5.00pm, everyday a significant proportion of employees strive to get to work before 8am and tries to leave after 5.00 pm on week days. Flexible working hours would ensure that employees can start work as early as possible and close as late as possible in order to reduce traditional peak hour demands. Example could be having a resumption period of between 6.30am – 10.00am with a corresponding closing time of 2.30 pm - 6.30pm such that those starting early can finish early and vice versa. This way traffic demands on major routes can be evenly distributed throughout the day. Another variation to this approach is allowing certain individual to opt to work part time either by number of hours or by number of days in a week. Some may also be given the opportunity to choose to work for half a day (morning or afternoon) depending on their personal schedules or lifestyle requirements. This is especially advantageous to workers with under aged children.

## **3. Corporate Car Sharing Policies**

Companies ought to see the value in car pooling and car sharing as a means of contributing to tackling the congestion problem. We must outgrow the era of selfishness whereby several employees of the same organization travel in lone cars to work when they could have shared with other employees travelling on similar routes. Employees should be ready to inconvenience themselves a little for the greater good of the community and wherever possible they must be encouraged to do so. By providing staff buses, offering incentives such as privilege parking and free fuel tickets to car sharers, many more can be persuaded to consider the merit of car sharing and car pooling. A car should be seen as a way of transporting people from point A to point B and not necessarily as a status classification machine. If half of the number of car owners travelling on a particular route decides to car share with the other regular lone travellers on the same route, this would result in an automatic reduction in traffic levels by 50%.

Security concerns about car sharing can be easily eliminated if every government and large organisations cooperate to set up a state wide car sharing scheme. The idea is to ensure that identities can be verified before a car owner is allowed to register on the scheme. These way the public can be assured that due diligence was exercised as part of car sharing programme implementation.

## **4. High Occupancy Vehicle (HOV) Lanes**

High occupancy vehicle lanes or hot lanes as they have often called refer to special dedicated lanes reserved for vehicles travelling with two or more occupants inside it. With HOV lanes in operation, car owners can be discouraged from travelling alone so as to enjoy the benefit of travelling on less congested lane with additional benefit of a more pleasant journeys. This ensures reduced traffic on the road leading to improved air quality as a result of fewer vehicles and lower emissions. There is also the additional benefit of reduced noise pollution and improved lower fuel consumption through reduction in start-stop driving. HOV lanes can be designed by creating dedicated lanes for HOV operation during road construction or by specifically expanding existing roads with additional lanes to support HOV operation.

## **5. Park and Ride Service**

Investment in car parks by the private sectors should be encouraged. Cars parked on the road side have always contributed to the congestion problem and this act must be greatly discouraged. At entry points to the most congested routes/links private car parks may be located and as a requirement they must offer a park and ride service to the most congested zones. As requirement to make this service widely acceptable, congestion charges have to be introduced in these areas to discourage people from driving individual vehicles into these zones. The charges must be properly and strategically fixed to ensure the overall objective of decongesting these areas is achieved. Also the buses used for the park and ride service must provide users with comfort levels as close as possible to that enjoyed in their cars. These service must also be fairly regular as a requirement.

## **6. Congestion Charges**

In the most congested areas of Lagos such as Victoria Island, discouraging lone occupant driving could significantly alleviate congestion in these areas. Traditionally, introduction of charges for driving within these areas would be a useful deterrent mechanism. However in order to do this, viable alternative means of getting into these identified congestion zones must be readily available. Also the issue of revenue collection (technical and institutional) must be given serious thought before implementation. Furthermore, the commercial approach and accountability for the revenue to be generated from such scheme must be treated with transparency.

## **7. Traffic Information**

Access to traffic information is essential to mitigating congestion in the metropolis. Having prior knowledge of congestion on certain routes would ensure that drivers intending to travel on such route may decide to travel on alternative routes if available or alter their travel time. By so doing flows into the congested routes are controlled thereby causing the congestion build up to dissipate quicker. In some developed countries, government agencies have provided real time life traffic information to her citizens but we have also noticed some private sector participation in this regards. In Nigeria, Globacom is about to launch a product that delivers real time traffic information to mobile phones for the benefit of car owners.

## **8. Public communication**

It is highly essential that any measure being introduced must be widely publicised so that the public can be made aware of latest efforts at reducing congestion and potential benefits. The information should be as clear and as simple as possible to ensure everyone is aware of what is expected from them and are able to secure more information about such measures should need be.

Clearly implementing some of the suggestion highlighted here would require institutional cooperation and arrangement between state and federal road/traffic management agencies. Some others may require enactment of government legislation or change in policies direction to make them effective. Above all, improving the quality of life of people in metropolitan cities such as Lagos through minimising traffic congestion would require collective effort and a sense of responsibility from the citizenry. Also public and private sector employers must be prepared to do all that is within their powers to contribute to winning the good fight against traffic congestion.