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OPTIONS FOR ROAD SAFETY FUNDING IN MALAYSIA

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ABSTRACT. Road safety is a major transport, health and social issue worldwide as an estimated 1.3 million road users are killed on the roads every year, of which 90% are in low and middle-income countries (LMIC), where 72% of the world's population lives but only half of the world's registered vehicles are owned and driven. In terms of cost, it is estimated that USD 518 billion of lost yearly has been recorded according to the World Health Organisation, WHO (2009). These poor road safety records require immediate actions to be taken in areas of management, institutional reform and funding. Malaysia is an established dynamic and progressive LMIC seeking to improve its road safety performance and until today it depends mostly on the government's revenues to finance its road safety plans. This practice however may cause burden to the government yearly budget which also need to cater for other sectors such as education, health and defence. To this end, this paper explores and critically evaluates the current situation of road safety inclusive of its funding mechanisms on a global scale as well as in Malaysia. In an effort to improve the situation, the paper aims at analysing the effectiveness of funding mechanism in enhancing road safety. A number of examples of successful road funding mechanism worldwide are presented together with implementation issues with the view to suggest options to improve road safety management and financing at both national and local level in Malaysia.

INTRODUCTION

According to the World Health Organisation (WHO), road traffic injury (RTI) has become the ninth world leading cause of death in 2011. These poor road safety records require immediate actions to be taken in areas of management, institutional reform and funding. It is a social and health issue that is present in all nations globally since it touches on a very vital sector of trade and economic. Moreover, in recent years road safety has become an issue of central concern for national governments as well as different government agencies. Numerous countries have experienced significant levels of economic growth in the last ten years leading to a change in people's lifestyle. The number of people owning vehicles has increased as well as the intensity of travel by public transportation means. Reckless and poor driving skills have led to a surge in the number of road accidents resulting in increased death rates and untold number of fatalities (Elvik et al., 2009).

As a result, most governments have had to put into place both legislative as well as institutional frameworks to enhance issues of road safety management. There have been numerous institutions or road safety agencies that have been created to address the rising problem of road safety (Ogden, 1996). However, the effectiveness and efficiency of these institutions has not been very evident as cases of road carnage continue to rise.

As postulated by the WHO (2009), LMICs are considered to have higher road traffic fatality rates (21.5 for low-income countries and 19.5 for middle-income countries per every 100,000 population). On the other hand, the high-income countries are considered to have a road traffic fatality rate of approximately 10.3 per every 100,000 population. The World Health

Organization (2009) continues to posit that, “Over 90% of the world’s fatalities on the roads occur in LMIC, which have only 48% of the world’s registered vehicles.”

The weakness of institutional road safety management in the LMICs which lead to the failure of the LMICs in reducing road traffic accidents has been identified by the World Report on Road Traffic Injury Prevention 2004 (Bliss and Breen, 2009). In an attempt to overcome this weakness, the World Bank has recommended several measures which include allocating financial and human resources to allow for road safety initiatives to address the problem. It is showed that without adequate funding and skilled resources institutional structures and processes are ineffective and national action plans remain paper plans.

ROAD SAFETY SCENARIO IN MALAYSIA

Malaysia is an established dynamic and progressive LMIC which is located in South East Asia. Since independence in 1957, it has been experiencing a rapid growth in population, industrialization and motorization. Malaysia experienced an increase of an average population growth rate of 2.5% a year from 24.7 million in 2002 to 29.4 million in 2012 (Department of Statistics Malaysia, 2013). Like many other developing countries, Malaysia has experienced a good economic growth which helps to spur the economic activities inclusive of construction and transportation industries. As shown in Figure 1, the total number of motor vehicles registered in Malaysia has increased consistently from 6.18 million in 1994 to 22.7 million in 2012 (Department of Road Transport Malaysia, 2013).



Figure 1: Total number of motor vehicles in Malaysia (1994-2012) (Source: Department of Road Transport Malaysia, 2013)

With the large number of vehicles on the road, it means that the Malaysian drivers have higher risk to get involve in a road accident due to high exposures. At the same time, in order to cater for the higher number of vehicles, the government have taken initiatives to upgrade the infrastructure facilities inclusive of the construction of new roads and highways. Up to year 2013, it is estimated about 180,000 km of road inclusive of highways, federal and state roads and also private roads have been constructed around Malaysia (see Table 1). All of these efforts, even though was built to accommodate the rapid development, at the same time have led to an increase in the number of road traffic accidents. This can be seen from the number of road accidents which has increase from 250,429 in year 2000 to 414,421 in year 2010 (Malaysia Institute of Road Safety (MIROS), 2013).

Table 1: Malaysia road network

ROAD CLASSIFICATION	MAIN FEDERAL ROAD (until 2011)	FELDA ROAD/ ENTRANCE TO INDUSTRIAL/ INSTITUTION (until 2011)	HIGHWAY (until 2013)	STATE ROAD (until 2011)
ROAD LENGTH (KM)	11,236.54	5,970.47	1,775.38	163,061.2
AUTHORITY	MINISTRY OF WORKS			MINISTRY OF RURAL AND REGIONAL DEVELOPMENT/MOW
MAINTENANCE AND MONITORING BY	Public Work Department	Malaysia Highway Authority & Concession Company		STATE PWD/ LOCAL AUTHORITY

(Source: Highway Planning Unit, Ministry of Works & Malaysia Highway Authority, 2013)

Based on a prediction done by MIROS, by year 2020 if there is no proactive action taken by the government to enhance road safety, the number of deaths due to road accident will exceed more than 10,000 fatalities. This figure is alarming and required an effective and strategic efforts from the government before it become worst.

Activities pertaining to road safety such as public awareness campaigns were carried out by individual departments as a separate entity as part of their main tasks as empowered by the law prior to year 1990. However, the Government has taken several immediate measures to overcome the escalating number of road accidents. Naming a few, a multi sectorial non-statutory advisory board known as Road Safety Council was formed functioning to assist the government in curbing road transport accidents.

The government has implemented the first Road Safety Plan of Malaysia 2006-2010 (RSPM) in 2006 after the Road Safety Department was established. The plan sets out approach by the Government in the implementation of road safety initiatives which includes the four E's, which are engineering, education, enforcement and environment, and also coordination, funding and mechanisms involved which is based on priority areas that the plan gives focus on (RSD 2006). Through this plan, the government has set out targets to reduce the road accidents in Malaysia by year 2010 as shown in Box 1.

Box 1: Target for Road Safety Plan 2006-2010

<ul style="list-style-type: none"> a) Reduce the number of road deaths per 10,000 registered vehicles by 52.4% from 4.2 in 2005 to 2.0 in 2010 b) 10 deaths per 100,000 population as compared to the current 23 deaths per 100,000 population and c) 10 deaths per 1.0 billion vehicle kilometre travelled compared to the current 18 deaths per 1.0 billion vehicle kilometre travelled

(Source: Road Safety Department of Malaysia, 2006)

After the implementation of the plan end in 2010, results from the plan has been measured as shown in Table 2. Even though it is an upset that the specific targets in the RSPM 2006-2010 were not fully achieved, there were some improvements in road safety during the RSPM 2006-2010. Based on a report by RSD, one of the reasons these targets were not achieved was due to the delay in the implementation of some of the outlined initiatives.

Table 2: The RSPM 2006-2010- Targets and Outcomes

Road Fatalities Indicator	Road Fatalities 2006	Road Fatalities Target 2010	Road Fatalities 2010
Per 10,000 Registered Vehicles	4.0	2.0	3.4
Per 100,000 Population	23.6	10.0	23.8
Per Billion Vehicle Kilometre Travelled (VKT)	18.9	10.0	17.3

(Source: Road Safety Department of Malaysia, 2011)

CURRENT ROAD SAFETY FUNDING IN MALAYSIA

The World Report on Road Traffic Injury Prevention 2004 by World Health Organisation (WHO) has come out with six priority actions that need to be implemented to improve road safety performance in a country (see Box 2). One of the recommendations is to ensure that there is enough allocation financially and technically to support the road safety programmes.

The WHO also notices that in certain LMIC with limited human and financial resources, it may be difficult for the governments to apply some of these recommendations. This is align with Bliss and Breen (2009) who also conquered by stressed the important of funding and resource allocation to ensure a strong and effective institutional management functions in a road safety management system.

Box 2: The World Report Recommendations

- | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> i. Identify a lead agency in government to guide the national road traffic safety effort ii. Assess the problem, policies and institutional settings relating to road traffic injury and the capacity for road traffic injury prevention in each country iii. Prepare a national road safety strategy and plan of action iv. Allocate financial and human resources to address the problem v. Implement specific actions to prevent road traffic crashes, minimize injuries and their consequences and evaluate the impact of these actions vi. Support the development of national capacity and international cooperation |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

(Source: *The World Report on Road Traffic Injury Prevention*, 2004)

Efforts to improve road safety in any country will not succeed without any sufficient and sustainable funding. According to Downing (2004) many countries have failed to ensure that road safety plans delivered accordingly since they have been forced to cut down their budget on road safety because of lack of funding. This is particularly worrying as it will hinder the process on improving road safety and reducing the number of fatalities cause by road accidents. As postulated by Heggie (1999), fast growing economic sectors with high cost consumes like roads will not be sufficient by only depend on government's budget. He also added that there are four factors that reducing government budget for road sector as follows:

- i. demands by other strategic sectors such as defence, health and education;
- ii. tax payers are not willing to pay higher tax rates since it is burdened;
- iii. road maintenance can always bring forward with very minimum impact; and

- iv. budget for road construction and maintenance keep increasing every year and it cannot fully financed from the government's funding alone.

In order to ensure the impact of every initiative taken to improve road safety conditions in a country, scale of road safety budget also need to be sufficient. Bishai et al., (2003) concluded that there is a correlation between amount of investment in road safety and its positive impact. Based on case studies conducted in two LMICs, Uganda and Pakistan, great reduction in road traffic incidents are being made in prospect if investment in road safety is stretched.

In Malaysia, the situation is almost similar to others. The gist to it is that the budget for road safety comes mainly from the government funding and is being granted annually through yearly budget. Although thorough budgeting has been considered to achieve the agreed allocation to the latter, and although the figure may be sufficient at this point of time, it can be confirmed that with the current situation of intensified road safety initiatives and public awareness towards road safety including campaigns through mass media, there will be a need to increase the budget in years to come. This in theory can easily be achieved if the entire yearly grant allocated to each sectors are being capitalised comprehensively. However, because there are many other sectors that are also included in the yearly budget from the government which includes other strategic sectors such as health, education and defence, there can be hitches faced in channelling extra budget towards road safety.

SOURCES OF ROAD SAFETY FUNDING

Road safety funding is mainly sourced from the following: general tax revenues, which is considered the government budget; specific taxes in most common example is usually traffic fines which is set aside to support expenditure on road safety; insurance premiums through levies that are added to it; funding or also sponsorships by private industries; and profits or revenues that comes from road user charges known as road funds.

Only a small number of countries appreciate the value spent on road safety. The UK had made an effort to evaluate its road safety expenses and costs, based on case studies. New Zealand, on the other hand, gives priority on keeping the track records of their funding sources for its program while other countries only had the costs of their programs. Also, it is generally for corrective works where public spending is unequivocally linked to road safety; which includes handling unsafe locations that are hazardous, rather than for accidents hindrance. There are, however, several LICs that have corrective mechanisms programs and examples in LICs of National Road Safety Councils (NRSCs) getting funding straight from the government, but separate road safety funds are rare.

Government budget through general tax revenues

Road safety involvements have been usually viewed as a public sector obligation. They are commonly incorporated in the budgets of the sector agencies involved, namely the transport ministry, central and local government roads departments, the hospital service and the police- even though it is hard to ascertain how much each agency generally expends on road safety. Based on a thorough study carried out in the UK, it is revealed that nearly 57 % of the total spending on road safety is incurred by the private sector (e.g., for driver training and testing, vehicle inspection). The ambulance and hospital services (50 %) and the police (27 %) makes up the most of the public sector expenditure. The huge influence made on the health sector which led to major improvement whereby it is now easier for hospitals to make claims for

treatment costs from the insurance companies. Expenditure by the transport ministry, the national road agency and local authorities comprises the remaining 33 % spent by the public sector comprises. NRSCs, or the ones equivalent or similar to them, normally suffer from a common shortage of investment because direct budget allocations for road safety are rare.

Earmarked taxes

Allocating or setting aside a specific tax for a designated purpose is known as earmarking. It separates money away from the government's budget which means that the financial plan portioned to other sectors has to be reduced to balance the budget, since the total budget envelope remains unchanged. Given this, earmarking has been opposed by finance ministries and the IMF and is only most likely to be acknowledged when the earmarked funds involve 'extra' payments by road users, which in turn makes the expenses 'neutral'. This means that it neither adds to, nor subtracts from, the profits available to other sectors with respect to the government's budget. The proceeds from traffic fines are occasionally set aside in this way and is utilised to fund the costs of traffic law enforcement. However, when this is done, it will normally extract profits away from the government's budget, hence is not budget neutral. Better law enforcement, if successful, will reduce the income from traffic fines in the long term. Therefore it is only worth earmarking traffic fines if and when the incomes can be clearly shown to generate additional profit (Creightney, 1993).

Based on the contextual given above, earmarking of traffic fines is thus uncommon and rare, whereby Vietnam being the only country identified to earmark all of its traffic fines to road safety. In Malaysia and the Philippines, the traffic police hold onto a portion of traffic fines, whereas in Ethiopia, earmarking of traffic fines had been rejected recently. Recent case in point of acceptable earmarking are only the ones involving installation of new red light enforcement and speed control cameras where red light enforcement cameras check that drivers comply with the traffic light signals. These installed cameras create extra income and the additional revenue is then distributed to support road safety. In Western Australia for example, a third of red light and speed control camera fines are paid into the Road Trauma Trust Fund, while in the UK, speed camera trials are on-going with all revenues earmarked to provide more speed cameras at dangerous identified locations. Some states in the USA also utilises traffic fines to part-fund training in law enforcement and surcharges are levied on harmful moving violations in Mississippi, where the funds are used to provision emergency medical facilities. The money is contributed to a Traffic Safety Education and Enforcement Fund in New Mexico. As a whole, improved implementation of road enforcement will in turn lead to lower traffic fines in the future.

Levies added to insurance premiums

This includes accumulation of a levy or surcharge to required insurance premiums to assist in funding road safety events. Insurance premiums are linked to road crash expenses thus insurance companies have an incentive to reduce crash costs to help lessen the premiums charged. Both the public and the insurance companies must accept any additional surcharge on insurance premiums. Improvement can be made to this by making certain that there are no exclusions towards anybody (e.g., government vehicles are exempted in some countries), that the earnings from the levy are managed transparently to avoid unfair competition from all the participating insurance companies participate in the scheme.

The main concern with this source of funding is that LICs have many unlicensed and uninsured vehicles that often reach a staggering 50 percent, which causes two main problems. Firstly, the returns from the levy is less than it could be and secondly, which is a more

concern, the levy increases the costs of insurance which in turn upsurges the number of uninsured vehicles. South Africa now collects its third party injury premiums through a fuel levy in effort to reduce evasion and this procedure has also been adopted to another four other Southern African countries and is under consideration in Mauritius. Added benefit of linking payments is offered by collecting the insurance levy through a fuel levy which means those vehicles which travel more pay more.

Sponsorship

There are quite a number of private industries that supports road safety to portray a good image towards their business, to produce new markets through demonstration developments, or as a method in branding their products as safe. Fewer road crashes and safer driving practices may also give them benefit from the lower costs associated with it. The revenue can either be made available as cash or in kind. This sort of corporate sponsorship tends to give emphasis on four main topics; road safety education and knowledge transfer, road safety awareness campaigns, enforcement campaigns and driver training and awareness. Car manufacturers are the major contributors where they offer supply materials and even direct investment in road safety learning. These initiatives in the UK have included co-financing for public transportation such as taxi services and late night buses to take intoxicated drivers home and the facility of free non-alcoholic drinks to selected drivers. The production of educational and publicity purposes materials alongside code of practice on the naming, packaging and merchandising of alcoholic beverages are also included. Law enforcement and police are given support by businesses through donations of specialist vehicles and breathalysers to the police. Driving schools or individual instructors are often operated and provided by the private sectors. They also offer defensive driver training programs as well occasional sponsorship on driving competitions to encourage safer driving.

Road funds

After the year 1990, road funds were restructured or set up commonly as part of a long-term plan to commercialize the road sector (Potter, 1997). The idea was to manage it like a business by bring roads into the market and put them on a fee-for-service basis. Payment is due by road users for using the road system and the incomes collected from them are utilised to finance road improvement and maintenance, including road safety (see example of the New Zealand road fund which is considered one of the best examples of emerging 'good' practice) (Aeron et al., 2002). These road funds are normally managed by representatives of road users and the business community which makes up the oversight board. The proceeds for these road funds usually comes from several sources such as a levy added to the price of fuel, vehicle registration fees, vehicle license fees and direct road user charges (e.g., tolls and weight-distance fees). The matters funded from the road fund differ significantly between countries.

Several countries have a small percentage of the road fund allocated to subsidise road safety. Usually, there is a clause in their governing legislation that authorizes the board in the recently established road funds which is to finance such road safety projects as the board may determine. Where this is relevant, there is a need for the road and transport establishments to demand funds and to support these requests with a well-prepared program of road safety involvements. Encouragement of spending on road safety by allocating an indicative percentage of their revenues is done by some road funds. The Ethiopian Road Fund Board for example has recently projected that up to 3 % of the road fund could be assigned for road

safety (TRL, 2000). To mention others, Ghana Road Fund already begun their financing in road safety and currently supporting the NRSC and a major road crash data collection effort.

Second generation of road funds as a solution to road safety

Compared to first generation of road funds described above, second generation road funds are characterized with increased legal frameworks to ensure proper management of the funds as well as increased accountability to the government and the users in general. As postulated by Benmaamar (2006), second generation road funds are, *“Thus governed by specific legislation which sets out the roles and responsibilities of a representative management board to oversee operations and a secretariat to manage the business of the road fund on a day-to-day basis.”* The main purpose of the legislation is to set up an institution mandated with securing of various resources and ensuring that, the road funds are channelled to the right projects. As postulated by Heggie and Vickers (1998), characteristics of second generation funds include but not limited to the following characteristics:

- increased sound legal framework in terms of clear regulations, rules and a separate road fund administration;
- an agency that is considered as a purchaser of road maintenance services and not a provider of road maintenance services;
- efficient and lean administrative structure as well as sound financial management systems;
- regular and increased financial and technical audits; and
- increased revenue charges that are related to road use and are channelled directly to the road fund bank account.

Most developing countries have used the second generation road funds to offset the underfunding of roads maintenance and inefficient road maintenance. Second generation roads funds are funded by levies from fuel and are managed by boards, which represents the interests of people. However, as indicated in the Gwilliam and Kumar (2003), many economists have opposed the idea of second generation funds. According to Gwilliam and Kumar (2003), *“Macroeconomists often oppose such funds, arguing that this earmarking of revenue reduces fiscal flexibility”*.

Some argue that such road funds should be seen as an interim step toward fully commercialized road maintenance or good public sector governance and hence subject to sunset provisions. Gwilliam and Kumar (2003) continues to state that, some economists are of the opinion that, decisions as to whether to create or retain such second generation roads funds should be based on their overall effect on resource allocation, rent seeking and operational efficiency.

However, second generation road funds may be used as a solution to road safety in a number of ways. This is attributed to the increased accountability and management of second generation road funds compared to first generation roads funds (World Bank, 2007). According to Transportation & Development Institute (American Society of Civil Engineers) and American Society of Civil Engineers (2009), road safety is largely hampered by poor management of road funds as well as under allocation of funds to facilitate better road safety standards and practices. Second generation road funds to some extent promote effective road safety through enhancing proper road fund management practices that ensure roads funds are adequately used for the intended purposes. For example, road safety is dependent on the state of the roads in a country.

According to Fan and Chan-Kang (2005), poor roads are more likely to cause more road accidents as compared to well-maintained roads. The above sentiments underpins and explains the idea that, most developing, middle and low income countries experience large number of road accidents due to poor roads. On the contrary, as postulated by Dahdah (2008), developed countries record low number of road accident cases, a factor attributed to the good condition of roads in developed countries. Second generation roads funds are based on the premise of administrative autonomy, financial autonomy and regular auditing. The above operational premises ensure that, there is increased transparency, accountability and reporting in undertaking road maintenance practices, which subsequently promotes road safety. Second generation road funds are also based on rules and regulations that stipulate how the fund should be utilized in enhancing road safety through various initiatives. The rules and guidelines create a benchmark that ensure that, the revenues collected for the road fund are effectively used in undertaking road safety practices. Another way in which second generation funds are used to promote road safety is through the separation of the service provider and the purchaser. Separating the purchaser (the road fund) and the service provider (road agencies and departments) ensures increase service and quality delivery due to a reduction in conflicting interests. As postulated by Benmaamar (2006), *“Road fund boards tend to cumulate too many conflicting responsibilities, which often include funding, planning and managing road works. In such cases, they act both as the customer for the services provided, as well as the provider of those services. This creates an obvious conflict of interest, which weakens financial discipline and compromises efforts to control costs and maintain quality”*.

CONCLUDING DISCUSSION

It is evident that, the current state of world road safety is quite alarming especially in LMICs which are faced with poor legislation and legal frameworks to ensure proper utilization of road safety funding. These poor road safety records require immediate actions to be taken in areas of management, institutional reform and funding. Tackling road carnage can be a daunting process fraught with disappointments.

There are enough evidence that shows lack of funding in road safety is one of the reasons why this is happened worldwide which one of them postulated that there are numerous plans have been made and identified in effort of reducing the statistics of road accidents in relation to road safety however majority of the plans are not being able to put in place due to funding issues and methods of attaining them (Downing, 2004). It is envisaged that by exploring and using the mechanism of second generation road funds, a sufficient and sustainable funding for road safety can be proposed in order to ensure the effectiveness of a road safety management plan such as that in Malaysia.

However, this requires a systematic investigation to examine the factors that affect the implementation of second generation road funds, appropriate communication within authorities concerned, political support and a comprehensive plan to establish the funding mechanism in a sustainable manner.

REFERENCES

- 1) Aeron-Thomas A, Downing AJ, Jacobs GD, Fletcher JP, Deslby T and Silcock DT (2002). *A review of road safety management and practice*. London: DfID.
- 2) Benmaamar, M. (2006). “*Financing Of Road Maintenance In Sub-Saharan Africa Reforms and progress towards second generation road funds.*” Road management and Financing – RMF Series, Discussion Paper No. 6.
- 3) Bishai, D., Hyder, A. A., Ghaffar, A., Morrow, R. H., & Kobusingye, O. (2003). *Rates of public investment for road safety in developing countries: Case studies of Uganda and Pakistan*. Health Policy and Planning, 18(2), 232-235.
- 4) Bliss, T., & Breen, J. (2009). *Country guidelines for the conduct of road safety management capacity reviews and the specification of lead agency reforms, investment strategies and safe system projects*. World Bank Global Road Safety Facility, Washington, D.C.
- 5) Creightney C. (1993). *Road User Taxation in Selected OECD Countries*. Sub-Saharan Africa Transport Policy Program Working Paper No. 3. The World Bank and Economic Commission for Africa.
- 6) Dahdah, S. (2008). *Modeling an infrastructure safety rating for vulnerable road users in developing countries*. Ann Arbor, MI: UMI.
- 7) Downing, A. (2004). *Addressing the challenge of road safety*. In *Public health in the Middle East and North Africa, Meeting the challenges of the twenty-first century*.
- 8) Elvik, R., Vaa, T., Erke, A., & Sorensen, M. (Eds.). (2009). *The handbook of road safety measures*. Emerald Group Publishing.
- 9) Fan, S., & Chan-Kang, C. (2005). *Road development, economic growth, & poverty reduction in China*. Washington, DC: International Food Policy Research Institute.
- 10) Gwilliam, K & Kumar, A. (2003). “*How Effective Are Second-Generation Road Funds? A Preliminary Appraisal.*” World Bank Research Observer, 18(1), 113 – 128.
- 11) Heggie, Ian G. and Piers Vickers. (1998). *Commercial Management and Financing of Roads*. Technical paper 409, World Bank, Washington, D.C.
- 12) Heggie, I. G. (1999). *Commercially managed road funds: Managing roads like a business, not like a bureaucracy*. Transportation, 26(1), 87-111.
- 13) Ogden, K. W. (1996). *Safer roads: A guide to road safety engineering*. Aldershot: Avebury Technical.
- 14) Potter, B. H., 1997, *Dedicated Road Funds: A Preliminary View on a World Bank Initiative*. IMF Paper on Policy Analysis and Assessment (Fiscal Affairs Department, Washington, DC: IMF)
- 15) Transport Research Laboratory (2000), *Ethiopia Road Safety Study Survey Report*, Crowthorne.
- 16) Transportation & Development Institute (American Society of Civil Engineers), & American Society of Civil Engineers. (2009). *ICCTP 2009: Critical issues in transportation system planning, development, and management*. Proceedings of the Ninth International Conference of Chinese Transportation Professional: August 5-9, Harbin, China. Reston, VA: American Society of Civil Engineers.
- 17) World Bank. (2007). *A decade of action in transport: An evaluation of World Bank assistance to the transport sector, 1995-2005*. Washington, D.C: World Bank.
- 18) World Health Organization (Ed.). (2009). *Global status report on road safety: Time for action*. World Health Organization.