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Financing Rural Transport Services in Developing Countries: Challenges and Opportunities

Discussion Paper



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Abstract

The economic and social development of a large part of rural populations, especially in the developing world, is being held back by limited, unreliable or expensive access to markets and essential services. This problem is perpetuated by the continued bias towards the development of rural transport infrastructure, and the relative neglect of passenger and freight services operating on such infrastructure.

In many developing countries where rural transport services do exist, they are often expensive, of poor quality and unreliable. The supply of rural transport tends to be dominated by cartels, and farmers need to pay significant sums for often-unreliable freight services. For most poorer developing countries, road building and maintenance is the only form of assistance provided for rural transport, and the provision for transport services is very much left up to the informal market. The absence of well functioning markets may hamper the improvement of rural transport services.

To address these issues, the authors recommend additional research and increased collection of basic information; new approaches to regulating rural transport services; incorporation of rural transport services in government and donor rural infrastructure programs; appropriate subsidy schemes for rural transport services; and innovative use of ICT to support rural transport services.

Key words

Transport services, rural access, road funds, output-based aid, transport subsidies, intermediate means of transport, Africa, Asia.

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Acronyms, Units and Currencies

AFCAP	Africa Community Access Partnership
ASCAP	Asia Community Access Partnership
GDP	Gross Domestic Product
GPOBA	Global Partnership for Output Based Aid
GPRTU	Ghana Private Road Transport Union
IFRTD	International Forum for Rural Transport Development
IMT	Intermediate Modes of Transport
MAP-21	Moving Ahead for Progress in the 21st Century Act
MPI	Multidimensional Poverty Index
OBA	Output-Based Aid
PSO	Public Service Obligations
RECAP	Research for Community Access Partnership
SLoCaT	Partnership on Sustainable, Low Carbon Transport
UK	United Kingdom (of Great Britain and Northern Ireland)
UKAid	United Kingdom Aid (Department for International Development, UK)

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1 Introduction

There are major challenges to the provision of transport services in rural areas of developing countries. The issues are common to many parts of the world but are particularly acute in Africa (and to a lesser extent, in Asia), where services can be non-existent or thin on the ground, particularly in more remote rural areas. Where transport services do exist, they can be unsafe and expensive. Despite this, most developing countries and donors until now consider providing rural transport infrastructure as the main solution, and they tend to overlook the crucial role of transport services.

This paper considers the role of finance in the provision of rural transport services and, in particular the case for rural transport subsidies. The first part of the paper reviews the need to improve rural transport services and their current organisational structures. The paper then considers the financial challenges and how rural transport services are organised and supported in both developed as well as in middle income and developing countries. It then considers the experience of Road Funds and Rural Investment Programs. The paper ends with conclusions and finance related recommendations in support of the developing and maintaining a greater availability of rural transport services.

2 What are rural transport services, and why do we need to improve them?

A lack of rural transport is recognised to be a major constraint on development and an important contributor to poverty in many regions. A disproportionate proportion of poor people live in rural locations. While 58% of developing country population live in rural areas, 78% of the extreme poor (Olinto et.al. 2013), and 85% of the multidimensional poor (measured by the Multidimensional Poverty Index (MPI), (Alkire et.al 2014), are located in rural areas.

There are important concerns over the lack of access to markets and essential services in rural areas, particularly in Africa. So far, governments and donors have tried to deal with this issue, almost exclusively by improving and maintaining rural transport infrastructure, leaving the provision and organisation of services that use the infrastructure to private organizations and individuals in a mostly poorly regulated market.¹ Obviously it is not possible to operate transport services without a supporting infrastructure and poor quality infrastructure affects transport availability and operating costs. The disproportionate emphasis on infrastructure development also shows in World Bank lending, where 98% of rural transport lending is for road building and maintenance (Tsumagari, 2007).

There are voices that have argued that much greater attention needs to be given to other components of the transport system, including e.g. “Roads are not Enough” (Dawson and Barwell, 1993) while others have suggested that Transport Services are the “forgotten problem” and that we cannot rely on the widespread assumption that investment in roads will spontaneously lead to the provision of transport services by the private sector. The lack of affordable rural transport also has knock on effects on accessing schools, clinics, hospitals, markets and other social services (Porter, 2013).

¹ Poor regulation is not a constraint to transport services per se, but does result in a risk of unsafe services. More regulation may result in less frequent and more expensive services.

2.1 Rural Transport Services

Rural transport services cover the means of transport that are used to convey people and goods in rural areas. The main focus of this paper is on motorised transport that takes place outside of the village area, for people and goods to travel between villages, markets and towns. However, it cannot be entirely separated from very short distance movements, for example between farm and household, as well as from transport connecting rural areas to major cities.

The typical modes of transport used in rural contexts are minibuses, buses, pickups, small and medium trucks, saloon cars (or sedans), four-wheel drive vehicles, motorcycles, bicycles, donkeys, animal carts, tractors and power tillers with trailers. Although the cheapest forms of transport (i.e. bicycles and donkeys) will be mostly used for personal transport they are all also hired for commercial transport. For example, hired bicycle transport (boda-boda) has been very common in Uganda and Kenya for some time. For example it was estimated that in 2001 in Uganda there were 200'000 bicycle boda-boda and 70,000 motorcycle boda-boda (Howe and Davis, 2002).

Currently, probably the biggest change taking place in rural transport, worldwide is the huge growth in motorcycle use, resulting from the increased availability of relatively cheap Chinese motorcycles. The growth now taking place in Africa, the Middle East, South Asia and Latin America follows on from earlier growth that took place in the 1990s in South East Asia. As an example in December 2005 there were 31,006 motorcycles registered in Tanzania. By December 2010 this number had increased to 323,192, equivalent to a growth rate of 60% per year (Ministry of Infrastructure Development, 2010).

Now it is very common to find in rural areas, motorcycle taxi services operating with mobile phones. The motorcycles operate a local service (typically of up to 6 km) between peoples' homes and the minibus, bus and truck stops where people and freight loads are consolidated. Since motorcycles can go through tracks where three and four wheelers cannot pass, they are also used for transporting freight (e.g. crop harvest) from farm to home and/or main consolidation points. In some cases, and during the wet season, motorcycle taxis are the only form of public transport provided (Starkey et.al. 2013 and Willilo et.al. 2013). Motorcycle transport, however, is relatively expensive in Africa and only the richer sections of the population can afford its use.

Over the past thirty years there has been a large increase in the volume and diversity of intermediate forms of transport into Africa. Besides the growth of motorcycles mentioned earlier there have also been large increases in bicycles, donkeys, animal carts, pushcarts and power tillers (single axle tractors) used for transport. For example, Kenya imported fewer than 2,000 bicycles in 1985, but as many as 100,000 in 1989, and in Mauritania, the number of donkey carts increased from zero to 75,000 in 30 years (Starkey 2001). This recent growth of Intermediate Modes of Transport (IMT) stands in contrast to Asia, where IMTs have generally been better established in the past. For example, in China, there are 270 bicycles per 1,000 people, while in Africa, it is only around 35, since the cost of bicycle ownership is very high for the rural population in Africa compared to similar populations in Asia (e.g. buying a bicycle requires wages for 650 work days of a Malawian who earn the rural minimum wage; in contrast, it would only cost 80 days for a Bangladeshi earning rural minimum wage to buy a bicycle (Interdesign 2005).

While Africa's non-motorized vehicle fleet is slowly increasing, many of the fast growing economies of Asia are replacing their bicycles by motorcycles or cars; for example, between 1995 and 2005,

China's bike fleet declined by 35 percent (Roney, 2008). This holds true for many other Asian countries, where income increases enable their citizens to purchase motorized vehicles.

Overwhelmingly, the growth of IMTs has been supplied by the private sector, with relatively little direct government involvement, although changes in taxation and import duties may also have played a part (suggesting, that if sound road infrastructure is in place, the private sector will have an increased potential to respond). These forms of transport are, of course, ideally suited to meeting the short distance transport needs of the rural population and the changes have gone some distance to reducing the gap in rural transport provision between developing and developed economies.

Donor and government sponsored programmes to introduce IMTs have also been tested, on small scale, in many African countries. For the most part the sponsored programmes have not been successful for a wide range of reasons. These include:

- The difficulty in predicting what would be successful in a given environment
- The need to establish a critical minimum number of IMTs in a concentrated area before acceptance becomes widespread
- Cultural factors, including negative factors against women owning and running IMTs and perceived low status (e.g. bicycles in Southern Ghana). There may be little or no cultural history of how to look after animals to power vehicles.
- Access to spare parts and maintenance –particularly for more complex IMTs such as power tillers.
- The need to generate a cash income, particularly to pay for maintenance. Domestic time and effort savings are not sufficient for long-term sustainability.
- The quality of the IMT needs to up to the job. Many poor domestically quality IMTs have failed prematurely.
- Government regulations (often for perceived safety reasons) may prevent IMTs being used to earn money.

The success rate of IMT adoption has been greater in Asia due to contextual factors (e.g. topography, infrastructure stocks, and demography), economic factors, and social factors (e.g. relating to technological advances). To illustrate, IMTs such as bicycle sidecars can be commonly seen in the Philippines, cycle rickshaws in the Indian Sub-Continent, and becaks in Indonesia. In addition, there are widely used motorised three wheelers in India, motorcycle sidecars in the Philippines, and tuk-tuks in Thailand. Motorcycle goods trailers are widely used in Cambodia, Vietnam and Lao PDR. (IFRTD, not dated). The adoption of IMTs and IMT initiatives is further documented in Starkey, 2001; IT Transport Ltd, 2006; IT Transport Ltd, 2003; Porter, 2002.

The organisation and regulation of rural transport services varies from country to country, and in some cases from one part of the country to other parts. In general, authorities in developing countries pay far more attention to regulating urban and interurban transport than rural transport. Conventional bus services operating in rural areas are most likely to attract regulation of passenger fares and sometimes frequency of service. The regulation of freight transport, where it takes place, largely concentrated on axle load control, which usually is limited to the heaviest trucks on major corridors (mainly on paved roads). In contrast, local freight transport and informal passenger transport are least likely to be regulated by government authorities, although sometimes they may be subject to self-regulation from transport associations.

The Ghana Private Road Transport Union (GPRTU) controls much of the passenger and freight transport in Ghana, through the operation of bus and lorry parks. A queuing system is in operation to consolidate loads and minimise competition between operators. Fares levels and routes are controlled by the Union, while the Union is given recognition and de-facto support by the Government (Fouracre et.al. 1994).

2.2 User Perspectives: Passengers

The most common passenger complaints, particularly in the more remote rural areas relate to a lack of services, especially a shortage of emergency transport and to unaffordable fares. Clearly, the situation varies between countries and regions. The most severe problems arise in sparsely populated areas in low-income countries. Surveys carried out in Ghana and Malawi, have found that even though a village lies on a passable road² it may be extremely difficult to access services, either because passing traffic is so low, or because vehicles leave the main destinations completely full and hence there is no capacity at intermediate locations. These surveys found 30-40% of the rural population have to walk at least 4km and sometimes up to 20 km to a vehicle pick up point, often at a road junction, for a reasonable chance of getting on a bus or truck. In terms of travel frequency it was found that in much of rural Ghana and Kenya people made around 10 to 15 motorised trips per person, per year, while in rural Malawi it was as low as one tenth of a (motorised) trip per person per year. In the latter case a much greater volume of bicycle and longer distance walking trips were made but travelling significantly short distances (Hine and Rutter, 2000).

The new rural motorcycle services, while welcome for richer sections of the population are not legal, or available, in all countries, for example such services are illegal in Ghana. In a study in Tanzania motorcycle fares were found to be between 17 and 34 US cents per km, in comparison with rural bus fares of between 3.5 and 4.7 US cents per km (Willilo and Starkey, 2013). Recent surveys carried out on one 26 km road in Cameroon with a catchment population of 15,000, found for six days a week, motorcycle transport was the only type of public transport available, with minibuss services and light truck services only available on market day (Kemtsop and Starkey, 2013). Similarly, other surveys carried out on rural roads in Tanzania also found that for some roads motorcycles were the only form of public transport available (Starkey et.al. 2013).

In Tanzania many people cannot afford to use the motorcycle service. On one occasion it was recorded that people (in Kilolo district) would leave their village shortly after midnight to walk 5 hours to the bus stop to get the one bus per day into town. On another occasion (in Meru district) older people complained that they physically could not get onto a motorcycle or on to the back of a pickup to go to town. This was in a hilly area and these were the only forms of transport available to their village. Difficulties of using motorcycles and cycles are not limited to the elderly but also apply to young children, the disabled, as well as expectant and nursing mothers.

² Although a road might be passable, it might be very rough and therefore avoided by transporters. Future research should include some objective measure of the standard of the road (e.g. South African Road Classification and Access Management Manual) to make such surveys more meaningful.

A major concern of rural women is getting to the hospital in an emergency, for example in a complication in pregnancy. This issue is heightened during the wet season if their road becomes impassable to normal traffic. Out-of-village rural transport can also be a major issue for education. While primary education is likely to be provided in the village area and is usually accessed via walking or cycling, rural secondary education generally requires longer distance transport usually by public transport. This can be beyond the means of the rural population and may lead to fewer children, especially girls, from attending.

In 2010 it was estimated that about 1.3 million people died from road injuries worldwide, with 90% of deaths occurring in middle and low Income countries. The urban/rural split is not known although there is evidence from India that the rural population is at much greater risk than the urban population, but little difference was found in Bangladesh (Aeron-Thomas et al, 2004). A major part of the problem is high speeds on interurban roads. For the most part rural roads do not have provision for pedestrians, and in the poorest countries pedestrians and those travelling on two and three wheels are at greatest risk. In this respect the growth of motorcycle traffic is a major concern, particularly in view of the widespread neglect of riders and passengers wearing a helmet in the proper fashion.

2.3 User Perspectives: Freight

A high proportion of rural passengers take small loads on their journey, for example for selling or buying at market. Larger loads of agricultural produce, building materials, furniture, and soft drinks and beer are also very common. Again, as for passenger transport, there is concern about the infrequency of service and high costs of transport, and a variety of arrangements are employed. Transport for loads are called (often by physically going to the truck park) to pick up from specific locations by individuals, while traders and travelling wholesalers will pick up food products either at the side of the road, usually by prior agreement, or from village markets. Where possible load consolidation will take place, particularly for taking agricultural produce to town.

Freight tariffs in Africa can be four or even up to six times the costs per tonne-km compared with Asia for comparable journeys. This applies especially to long distance transport, however (Ellis and Hine, 1998) reported the same pattern of high costs and inefficiencies for short-distance, low-capacity rural movements in Africa compared with more efficient lower cost rural transport in Asia.

2.4 Supply Perspectives and Organisation of the Market

Individual entrepreneurs operating in the informal sector supply most rural transport services in developing countries; this applies both to passenger and freight transport.

In low income countries transport services provide a major opportunity for employment and in some countries, particularly in Africa, but also in the Middle East and Latin America, operating practises have developed, that although they may be inefficient, keep employment as well as fares and tariffs high. Although earlier studies emphasized cost factors for high freight tariffs in Africa, a more recent study has suggested very high profits as the main explanation (Teravaninthorn and Raballand, 2009).

A range of cartels and queuing systems at truck and bus parks, have developed that share out demand, often amongst an unnecessarily large number of operators, and often keep productivity low. It is not uncommon to find truck, taxi and bus drivers waiting for days and often up to a week in a queue before they get a load. It is possible to sustain these low levels of utilisation by using low cost second-hand vehicles (often imported from Europe, the United States and Japan) that have

minimal depreciation costs (usually those which are no longer suitable for urban transport services)³. These vehicles may be ten to twenty years old, unreliable, and polluting with relatively high fuel consumption. Fuel consumption per passenger, or per weight of load, is minimised by the vehicle waiting at the start of its journey until it is full before moving.

The newest and better quality vehicles are likely to be used on interurban and urban routes where customers have higher incomes and are likely to be more demanding. Even within rural transport operations, Venter (2014) in South Africa has found a differentiated service hierarchy with better quality minibus taxi services employed on surfaced roads and better quality gravel roads, while poorer quality and older minibuses and pickups employed on roads in poor condition.

Perhaps the biggest constraint in preventing a better quality, more competitive and lower cost transport system developing for rural transport is the low density of demand. Cartels are more difficult to sustain in countries with a high density demand, likewise the costs of vehicles, parts and fuel are likely to be lower where demand is high. India, Pakistan and other countries in Asia have much higher measures of GDP per unit area than most countries in Africa, (for example India's GDP/sq km is 22 times that of Tanzania) and based on that have higher density demand.

It may be possible to improve services and at the same time reduce costs and fares by reorganising or deregulating the transport market. This would involve improving competition and reducing the power of transport unions or cartels that effectively keep large numbers of redundant vehicles in the market. New route licencing arrangements would be required (Delaquis, 1993; Ellis and Hine, 1998).

Ngoundere District in Northern Cameroon provides an example where a local mayor decided to address the issue of poor transport services and high fares. In Cameroon transport syndicates determine fares and routes, and they negotiate with the authorities for access, and fees, for use of the terminals. In Ngoundere the mayor licensed different transport agencies to operate from different terminals in competition with one another. In two years passenger fares dropped by 50 per cent, and there was reported to be a greater frequency of service, with cleaner and better maintained vehicles. As a result fares in Ngoundere became dramatically lower than comparable operations in the South of Cameroon, which were found to be between 53 percent higher (for trips of 10 km) and 370 percent higher (for trips of 200 km) (Lisinge, 2001).

A number of initiatives and schemes have been set up to deal with health and transport issues, e.g. in Malawi and Zambia, TRANSAID has been working with local communities to provide bicycle and motorcycle ambulances. Also, Riders for Health, working in seven African countries provides specialised training in the maintenance of vehicles for health staff. Likewise, the Partnership for Reviving Routine Immunisation in Northern Nigeria, Maternal, Newborn and Child Health Initiative in association with TRANSAID, has been working with the National Union of Road Transport workers to help train taxi drivers for emergency transportation of women in labour to the closest hospital. If a driver helps in the scheme then compensation is paid to the driver to cover the cost of fuel used.

³ Although new vehicles are used, most vehicles imported into Sub-Saharan Africa are second-hand there are also large numbers of second-hand vehicles imported into Latin America and the Middle East.

The driver is also given the privilege of going to the front of the taxi queue when the emergency assignment is complete. Between January 2010 and May 2012, 5,515 emergency transfers were recorded (Adamu, et. al. 2012).

3 Challenges in Financing Rural Transport Services

There is a major lack of systematic knowledge relating to the financing of start-up and running of rural transport services. For the most part the operations are part of the informal sector, where record keeping is rudimentary. In a small scale study of rural transport operations in Cameroon, Kenya and Tanzania there was little evidence of bank finance. At the same time there also appeared to be some complexity and variation in the exact financial arrangements between different providers of finance, owners and operators (Starkey et.al. 2013).

On the whole there appears to be little evidence that operators can expand their operations from retained profits. In contrast to the study of long distance interurban freight transport (Teravaninthorn and Raballand, 2009), profitability for rural transport operators generally appeared to be low, and this is also confirmed by Venter (2014). Operators appear trapped using second-hand poor quality vehicles serving a limited demand on poor quality roads, which are common and are a major deterrent to affordable transport services. If they had access to better quality vehicles then they would shift to interurban operations (Starkey et.al. 2013).

By its very nature the informal sector tends to have limited access to collateral and bank finance. Because of its mobile nature, banks may also be unwilling to use the vehicle itself as collateral. In Ghana banks are reluctant to become involved in vehicle finance. This is because in many countries banks have no legal title to a vehicle for which a loan is made, because in traffic law in these countries the registered owner is recognized as the person who keeps and uses the vehicle. In these cases banks have little power to repossess a vehicle in event of a default in repayment (Fouracre et.al. 1994).

An earlier study in Pakistan found a very active hire-purchase market for trucks. In contrast to Africa, there is much greater use of new vehicles in Pakistan, with few second-hand vehicles being imported into the country. Approximately three-quarters of the privately owned fleet were bought on a repayment (or hire –purchase) basis. Although bank finance is the cheapest form of credit, operators complained that banks usually demand comprehensive insurance and demand legal entitlement to other assets besides the truck for a loan. This can be expensive and time consuming to arrange.

The hire purchase arrangement will often be organised by a dealer in which repayments are specified over a period of typically between 40 and 60 months. From an estimate of the market value of the truck an implicit interest rate can be calculated. A very wide range of interest rates were calculated with the modal value between 16% and 20%; however, the interest rate was calculated to be over 60% in 13% of the cases. If the operator gets too far behind in his payments then the deal is presumed to be broken and the truck reverts to the dealer or money lender (Hine and Chilver 1991).

McCormick et.al. (2013) categorise public transport operations in Nairobi into three organisational styles, which also differ in their financing arrangements. These are:

- Low organisation: Individual (including sole owner/driver and family) owning one or more 14-seater, matatu minibuses with flat zone pricing. This is the main pattern of operation.

- Moderate organisation: Group ownership (including family partnerships, and cooperatives) that manages 25-to 55-seaterbuses on behalf of investors. Pricing is flat zone, monthly coupons and smart cards. It includes a franchise operation whereby trademarks, procedures and services are provided to individual matatu operator buys the right to use.
- High organisation: Composed of limited companies running mini and full sized buses. Transferable season tickets are used.

Organisational financing differs between the groups. For low organisation funding comes from self, family and friends. For moderate organisation, it is provided by self, family and banks. While for the high organisation, financing will come from investors and banks. Although unstated, one would expect the low organisation model, involving no bank finance, to be, by far the most relevant model in rural areas.

Overall, it appears that bank finance is not easily available to informal rural transport operators. Finance appears to come from an individual's own savings, from friends and family and from dealers and money-lenders. The providers of finance may take a stake in the business or effectively charge a wide range of interest rates. It appears that funding may often come from the profits of other business ventures, with fairly low profits being generated from purely rural transport operations, and higher profits coming from longer distance operations, where more reliable vehicles are required. There are exceptions on bank financing not being available. In Thailand, the Government Savings Bank lends to individuals for businesses in general where there is strong family, social/village support. This decreases risk of default and leads to lower interest rates and down payment needs.

Overall, the frequent references to the over-supply of vehicles at truck and bus parks, and rationing demand in Africa suggests that there is no major shortage of finance for the purchase of cheap, unreliable, second-hand vehicles. In Pakistan the widely available hire-purchase finance has enabled a much greater use of new vehicles, and because of competitive pressure the overall reliability is better, and maintenance costs are lower than in Africa. (Rizet and Hine, 1993)

The long waiting times, and low frequency of or absence of operations, (apart from expensive motorcycle taxis) on many routes in Africa, implies the major problem is a shortage of demand, this in turn, of course has a strong adverse impact on the prospects for rural development. Many low and medium density rural areas are therefore held in a 'vicious circle' of low demand, poor transport and poverty limiting the potential of new agricultural and other commercial opportunities. Different forms of funding operations are required to guarantee an adequate and affordable level service.

In most developing countries governments and aid agencies are reluctant to get involved, either through providing finance for vehicles, guarantee, or through providing service subsidies, in order to address the problems of poor service availability and high costs. The information base is weak, the industry has poor record keeping and markets appear fragmented. There is also a natural concern over the political power of transport associations/cartels, the costs and logistics of regulating and monitoring transport in rural areas, and the near-inevitability of corruption if subsidies were introduced. Public service obligations require thorough control of agreed service quality, and only independent organisations with representation by service users can deliver effective control of the service providers.

4 Financing Models and Approaches from the Developed World

A range of approaches have been suggested and introduced in different parts of the world to improve rural transport.

Evidence from high-income countries relates mostly to passenger transport. Limited information is available on specific financing arrangements for movement of goods in rural areas. As far is known all high-income countries subsidize public transport⁴, and all high-income countries provide some form of ambulance services for emergencies and often non-emergency medical transport. Some of the largest subsidies are provided for urban transit systems: however, most countries recognize the particular problems faced in rural areas. Public transport subsidies can involve very large sums of money, for example it was estimated that subsidies during the 1990's in the Netherlands amounted to 1.5 bn Euro, equivalent to 0.5% of GDP (van Goeverden et. al. 2006).

It is important to distinguish between subsidies and Public Service Obligations (PSOs). If the state funds transport for school children it is a PSO for the education sector, and the same holds true for handicapped, soldiers, elderly and others. These are not transport related subsidies. Subsidies in rural Australia are for school services, and historically some domestic aviation services, e.g. Remote Air Services Subsidy Scheme (RASS). Similarly, one could argue that transport is a basic need and the state has to provide a minimum service level. The Green government in Baden-Württemberg is presently introducing hourly public transport service from 5am to midnight. This is regarded as a task of the state to secure basic needs (Das einsvorsorge) for people without cars in rural areas. The state orders services that are not cost-covering and pays through the regionalisation funds for this specific service. (90 Bündnis/Die Grünen, 2014)

A range of arguments are used to justify different transport related subsidies, including the promotion of economic growth, market failure, efficiency and environmental sustainability, however perhaps the most relevant and fundamental argument for rural transport is a recognition that everyone, wherever they live, should have mobility and access to basic facilities and services. The 'right to transportation' is, in some countries, perceived as a civil rights issue, it is also enshrined in French legislation, in particular the law known as "LOTI" (domestic transport orientation law – Framework law on inland transport), passed in 1982: *"The progressive implementation of the right to transport allows users to travel in reasonable conditions in terms of access, quality and price, as well as in terms of the cost to public authorities, in particular by using a mode of public transport"* (Saroli, 2015).

In the United States the Moving Ahead for Progress in the 21st Century Act (MAP-21) provided for \$608 million in FY 2014 for public transport in rural areas (defined as areas with a nucleus of fewer than 50,000 people) for residents who do not have access to personal vehicles. Funding is based on a formula that uses land area, population, the number of low-income individuals residing in rural areas, and the provision of a transit service. The programme is seen as lifeline for low-income working families, seniors, veterans, individuals with disabilities, tribal residents and others who cannot easily afford to travel to work and other destinations (US Department of Transportation, 2013).

⁴ This brief review has found evidence for public transport subsidies in Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, and United States

In high-income countries, the majority of the adult rural population predominantly use privately owned motor vehicles to go to work, for shopping and to meet most of their travel needs. However, a significant proportion of the population, namely the young, the elderly, the poor and people with disabilities do not have immediate access to a motor vehicle, and hence must rely on public transport. Many governments, such as the United Kingdom, provide subsidised or free transport passes for children and for people when they reach state pension age. Directly provided school bus services are also common and people with disabilities may also receive transport passes and transport grants that can be spent on private means of transport or taxis. Transport may also be arranged for social and medical purposes for people to visit day care centres and clinics.

Besides this personal support, governments may also support public transport through subsidised fuel, 'bus grants' for the purchases of buses and even employment subsidies. Where population densities are sufficiently high (as in towns and suburbs) the commercial market may be able to support public transport services at reasonable frequency and cost without further help. However, for many routes this is not perceived to be the case and hence governments will intervene with extra subsidies, regulation and direct contracts to ensure minimum levels of service. In 2007/8 local bus service support, in UK, amounted to £2,485m equivalent to 0.18% of GDP (Commission for Integrated Transport, 2008). Currently in England about 80% of local bus-km are run 'commercially', while 20% are tendered under contract. The tendered percentage was 14% in metropolitan areas, but 23% in the (lower density) rest of England (White, 2015).

Bus companies may be licenced to have the monopoly on particular routes and for the rights to run on popular (usually inner town) routes be also required to run on less well-patronised out-of-town routes. Local authorities can let contracts for particular routes, with specified service frequencies, where competing companies specify the subsidy they require to run the route. This may be on a net basis where the company also takes the fare revenue, or on a gross basis where the fare revenue reverts to the local authority.

In the UK, in contrast to infrastructure projects and major urban transport expenditures, there appears to be relatively little systematic appraisal of government support for rural transport. For the evaluation of tendered bus services local authorities use a guideline average value of net support per passenger trip (after taking into account fare revenues) in the range of £2 to £6. However, sometimes authorities place higher importance on journeys to work and for medical purposes than for leisure trips. Research by Mott MacDonald and the University of Leeds identified a social value for return trips that otherwise would not be made at 2010 values at £3.84 for a concessionary pass holder and £8.17 for a non-pass holder. These values are close to the guideline average used by local authorities and these values have been incorporated into Department of Transport guidance (White, 2015).

In recent years there has been increasing interest in providing more flexible transport rather than conventional large bus service on fixed route to a timetable. This can be in the form of 'community transport' for people who have difficulty using conventional services and 'demand responsive' transport whereby minibuses and shared taxis provide transport, on a door-to-door basis. These schemes can also be supplemented with ride sharing or carpooling, to match people on regular trips. Care needs to be taken to ensure that the different approaches do not conflict with existing regulations governing conventional taxi operations. A range of different shared taxi and minibus approaches have also been run in the UK, France, Netherlands, Germany and Switzerland whereby the percentage of the overall cost to be met by subsidy, varies from 30% (Taxi tub in France, and

Anruf Sammel Taxi in Germany) to 93% (North Sunderland, UK) (Commission for Integrated Transport, 2008).

In rural areas a large variety of flexible public transport services are recently cropping up, and new forms of service provision are possible through mobile phone apps, which enable various forms of car and ride sharing in rural areas. New technologies, such as Pedelecs (i.e. bikes with support of an electric engine) may be used in the future for intermodal transport from rural areas to conurbations.

The main lessons from high income countries is not that subsidy schemes should be directly replicated in developing countries, but that basic mobility and access is seen as an obligation of a modern state and that infrastructure provision alone is not a guarantee that affordable services will be provided. Hence, the provision of subsidised public transport in rural areas is very widespread in high-income countries.

5 Solutions for Middle Income and Developing Countries

Some middle-income countries have substantial public transport subsidy programmes, however it is more rare to find such programmes for low-income countries.

5.1 Sri Lanka

In 2004 in Sri Lanka public explicit, national level, public transport subsidies were identified as follows (Gwilliam 2005):

Wage Subsidies	SLRs 1,280m	(US\$ 12.67m)
Uneconomic routes	SLRs 188m	(US\$ 1.86m)
Scholar fare passes	SLRs 196m	(US\$ 1.94m)
Costs of running Sri Lanka		
Central Transport Board	SLRs 480m	(US\$ 4.75m)
Direct tire purchase	SLRs 45m	(US\$ 0.45m)
Total explicit subsidy	SLRs 2,718m	(US\$ 26.9m)

The total amount of explicit subsidy of US\$ 26.9m was the equivalent of 0.13% of GDP. Further hidden subsidies amounting to SLRs 8250m (US\$ 81.7m) were also identified. The identified subsidies relate to the 13 publically owned companies of the Sri Lanka Transport Board and additional “cluster companies”, however these companies carry just 24% of passenger trips, with the greater part of public transport run by private companies. Because of a publically funded bus acquisition policy in the 1990s the public sector fleet (8,404 vehicles) was just 7.4 years old, while the private fleet (16,727 vehicles) was 16.4 years old (Gwilliam (2005)). Much higher subsidies (SLRs 8.4 billion) have reported in the more recent press (Sunday Times, June 5, 2011)

For Sri Lanka the main justification for maintaining public ownership is that only these companies carry concessionary fare passengers and provide services not considered profitable. However, some have argued that, to achieve these social objectives, it would be better if a competitively tendered franchising system were introduced. Because if the private sector is more efficient then subsidy costs could be substantially reduced to achieve the same effect. Public sector companies tend to be heavily overstaffed and substantially unionised and are able to resist reform.

However the private sector, although not unionised, has route associations that are able, through the threat of withdrawal of services, to resist the introduction of new operators. There are also complaints about operators’ poor behaviour (e.g. racing to stops, failure to pick school children

when full fare paying passengers are waiting). Again it is argued that the solution is to introduce incentives in a franchising where behaviour is specified in the contract, and hence persistent failure could lead to the loss of the franchise (Gwilliam 2005).

An alternative approach to providing rural transport services is the 'village bus'. Although the approach has been adopted from time to time and there is anecdotal evidence of failure (i.e. people in the village run it for their own personal gain or disappear with the assets), the approach was tried in Sri Lanka with success. The Community Bus Project was set up with the help of the local International Forum for Rural Transport Development (IFRTD) in 1997. Some initial external finance was available but the bus generated an income, which kept it going and a replacement bus was purchased in 2008 (Centre for Poverty Analysis, 2009).

5.2 South Africa

South Africa has had a very substantial public transport subsidy programme. For 2012/2013 it was reported as follows (Walters 2014):

Public Transport Operations Grant	R 4,317m	(US\$ 508m)
Taxi Recapitalisation Programme	R 407m	(US\$ 48 m)
Scholar Subsidy	R 1,256m	(US\$ 148 m)
Municipal Bus Subsidy	R 769m	(US\$ 91 m)
Provincial Bus Subsidy	R 908m	(US\$ 107 m)
Public Transport Infrastructure Grant	R 4,880m	(US\$ 575 m)
Passenger Rail Agency payment	R 10,228m	(US\$ 1,228 m)
Total	R 22,770m	(US\$ 2,680 m)

The total of US \$2.68 bn (which excludes the high-speed Gautrain) represents around 0.76 % of GDP. The Public Transport Operations Grant subsidises commuter bus services. The Taxi Recapitalisation Programme provides a capital subsidy to purchase new vehicles through a scrapping allowance of R 50,000 (US\$ 5,900) on old taxis and minibuses. The Scholar subsidy is designed to provide free transport for learners who travel more than 3 km to school. The Provincial Bus Subsidy is in part designed to ensure services in rural areas. However, in many rural areas, a large proportion of the population do not use public transport, and it is reported that over 5% of learners (mostly in rural areas) walk or cycle more than an hour to school.

South Africa uses an interesting approach of integrated regional and transport planning combined with modern telecommunication and vehicle hiring services (Sieber 2009). For South Africa it is argued that the current subsidy framework is not well aligned to national transport policy. It is concentrated on rail and bus modes and not on the minibus sector that transports 65% of the population, has the broadest network coverage and is most likely to operate in rural areas (Financial and Fiscal Commission, 2014). Others have praised the overall policy but criticised the implementation and the lack of suitable institutional structures. There have also been major problems with implementing the tendering of commuter bus services (Walters, 2014).

A number of authors have advocated competition for subsidies in tendering to provide transport services and there is a substantial literature on the subject (see Wellenius et.al. 2004, and Hensher

and Wallis, 2005). However, in the South African case substantially higher costs of the competitive tenders were incurred when initially introduced, compared with the original subsidy system that was being replaced, and there was a lack of provision for funding the contracting system. This, together with concerns over job security put a moratorium on further competitive tenders in 2001 (Walters, 2014).

5.3 Malaysia

In recent years in Malaysia there has been a dramatic increase in both car and motorcycle ownership. This has led to fall in patronage of scheduled bus services, and because important sections of the population do not have access to a motor vehicle the government is keen to ensure that a socially desirable level of service is maintained. As an interim measure a bus support fund of RM 400 m (US\$ 127 m) was set up. Under the National Land Public Transport Master Plan (Land Public Transport Commission 2013) the government's policy is setting up a system of competitive tendering and benchmarking. License terms will require that operators (or groups of operators) report against national benchmarking indicators such as operational performance, financial health and customer satisfaction.

Besides these measures for rural areas, a 'dial a ride' system is also being considered. This will provide access for recreation, shopping, education, medical services and social services for potentially isolated people in a community such as disabled, rural youth and the elderly. Initially two unit vehicles may be deployed for each local authority, a 31-seater minibus and a 14-seater van. The service will provide door-to-door services for those who are unable to use conventional public transport because it is unavailable or where the individual has specific needs. An advanced booking system, through a call centre, is required. Flexible routing and scheduling using small and medium vehicles operating in a shared-ride basis is proposed. The operational costs will be partially covered by the fare collection. The scheme could be arranged through 'gross cost' contracts. It is estimated that the total cost will be RM 410,000 (US\$ 122,000) per local authority, or RM 45 million (US\$ 13.4 m) for the first year to set up the system.

5.4 Rural Freight Transport Assistance in Ghana, Malaysia and India

It is very rare for governments to subsidise general rural freight transport; however, some support for farmers to purchase agricultural tractors and for crop marketing has been common. The distribution of free (emergency) and subsidised food and other goods has also been common. In the post war period agricultural marketing boards were widespread. However, where marketing boards have an exclusive right to purchase crops at controlled prices (as for example Ghana's Cocoa Marketing Board) it can be difficult to identify whether the transport and marketing has been subsidised, and where prices are particularly low (as for example for cocoa in Ghana during the 1980s and 1990s) it can be argued that the farmer is subsidising the government and the rest of the population. (See Jerome and Ogunkola, 2000, for a further discussion on the role of marketing boards).

In Malaysia, to assist with the movement of agricultural produce the government provides assistance through grants and micro credit for farmers to buy motorcycle sidecars for moving produce. The project was started in 2011, and there are plans to expand the programme to 1000 units. Working with the Farmers Association, the government of Malaysia is also involved in the collection and distribution of agricultural produce. There are 400 collection centres and 40 distribution centres, and farmers' markets are also supported. The Government runs 750 small and

medium trucks (2.5 to 12 tons) to collect and distributes produce. The view is taken that farmers will get a better deal through government intervention rather than relying purely on the commercial market. Currently the government owns less than 20% of agricultural transport. Private vehicles are hired, to collect the rice harvest, but the objective now is to increase government involvement towards 50% of the market.

Since 1971 India has had a subsidy scheme to promote industrialisation in remote, hilly inaccessible areas (principally in the north of the country). The subsidy is to cover the transport costs of raw materials and finished goods to and from the location of the industrial unit and a designated railhead. Depending on the state, the subsidy rate is equal to 50% to 90% of the transport costs. The subsidy is specified as being eligible to an industrial unit for five years. In a post 2009 (untitled) Internet report, it was estimated that India Rupees 24,390 million (US\$ 380m) had been released under the scheme.⁵

6 Lessons and Opportunities from Road Funds and Other Funding Modalities

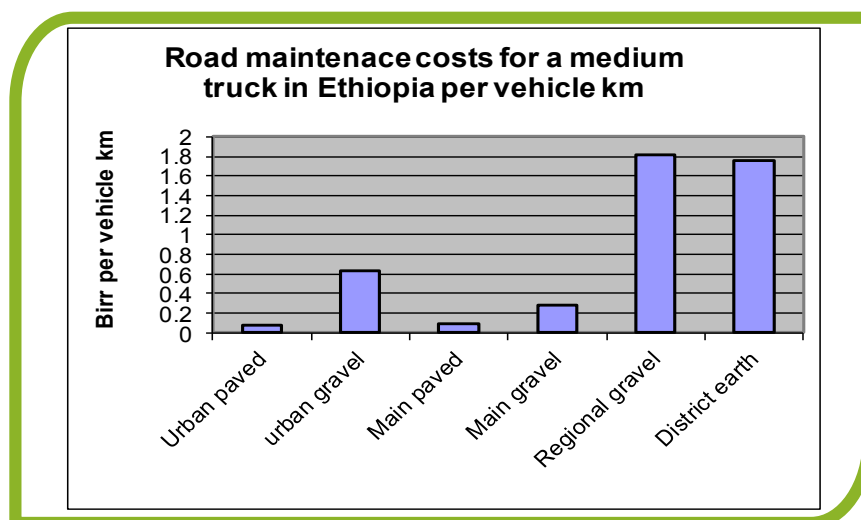
6.1 Road Funds

During the 1990s and 2000s a major effort, largely sponsored by the World Bank under the Road Maintenance Initiative (RMI), was made to address the problem of very poor road maintenance that had beset so many developing countries over the previous twenty years. An overtly commercial approach was adopted whereby ‘second generation road funds’ were introduced which had direct access to earmarked funding from fuel levies and a range of other charges. Under this model, which was introduced in a large number of countries, the funding was designed to be entirely separate from the standard government budget sources, which the road fund could distribute to highway agencies and regional local authorities to pay directly for road maintenance. Each agency held separate bank accounts that did not need to conform to the standard government accounting procedures (Heggie and Vickers, 1998). While it is important to separate road fund and government budgets (which were a primary cause of road deterioration in the 1980s and 1990s), second-generation road funds, with independent boards of directors, have proven to be more efficient (see Benmaamar 2006 for further discussion).

The main rationale of the approach was the ‘user pays’ principle. Road maintenance costs that were incurred by a vehicle could be recouped by setting appropriate fuel levies and vehicle charges. The road funds were to be managed according to commercial management procedures, with the minimum of political interference. Although, the ‘user pays’ principle has a powerful economic logic in reality it only works for vehicles accessing the whole network. Because of the high annual fixed costs (due to the effects of weather) and the large difference in traffic volumes for different road types, there are large cross-subsidies between main roads and rural roads if charges are based on vehicle use or, as for most road funds, on fuel consumption. The graph below, based on Ethiopian data, shows that the maintenance cost of regional and district roads is around 18 times greater than a main paved road (per vehicle kilometre).⁶

⁵ http://dipp.nic.in/English/Schemes/Transport_Subsidy/Transport_Subsidy_Scheme.pdf

⁶ While it is true that routine maintenance costs of unpaved roads are high (if indeed the roads are maintained), periodic maintenance costs (e.g. resealing) for paved roads are potentially even higher.



Source: Ethiopian Roads Authority, 2004

The lesson from this analysis is that despite the commercial ‘user pays’ principle, road funds have the potential to heavily cross-subsidise the rural road network from vehicles travelling on the main road network (although this does not always happen in practice, since many funds don’t provide sufficient resources to maintain the entire network, and thus either a prioritisation takes place or the government decides upon percentage share to be spent on rural and urban roads). This experience indicates that rural transport subsidies are not new, and in many cases they are already built into the management of the road network. If this is the case then it is open to question whether the form and extent of these road maintenance focused subsidies provide the best result in terms of supporting rural accessibility and mobility.

6.2 Output-Based Aid (OBA)

The Global Partnership for Output Based Aid (GPOBA)⁷ located at the World Bank provides funding assistance to help poor people that are excluded from basic services because they cannot afford to pay the full cost of user fees. Output-based aid (OBA) (also known as “performance-based aid”) is part of a broader donor effort to ensure that aid is well spent and that the benefits go to the poor. The aid is designed to cover a range of sectors (such as energy, water, and health) including the transport sector. OBA could be used to support the establishment of new rural transport services for the poor, although, it appears that so far, OBA has not been used for this purpose. Because funding will taper off over time projects need to be designed so that they will eventually become self-financing. One constraint over the use of OBA is the relatively high initial funding threshold required in the application, which may inhibit the funding for pilot trials.

Where poverty reduction is a goal of economic policy, market access for producers becomes immensely important. Recent studies on the role of market access have shown that significant gains to farmers are possible through improving procedures for marketing surplus produce (Obi et al, 2014). To promote income-earning opportunities, expansion of rural transport infrastructure often focuses on developing small farmers’ access to the market, to improve marketing opportunities and the supply of inputs. Where transport routes do not exist or roads are in poor condition, goods cannot always be transported; and if transport is possible, costs may be quite high (KfW/GIZ 2013).

⁷<https://www.gpoba.org/>

Distance and time to market are critical considerations in supply chain management, given that fresh produce deteriorates with increasing time between harvest and consumption (e.g. a mango must be delivered to the packing house no more than 12 hours after harvesting). Therefore, little or no private investment in supply chains will be undertaken, if frequent disruptions of the transport chain are expected (Sieber, 2009).

7 Conclusions and Recommendations

7.1 Conclusions

This discussion paper has argued that economic and social development of a large part of rural populations, especially in the developing world, is being held back by limited, unreliable or expensive access to markets and essential services. This problem is perpetuated by the continued bias towards the development of rural transport infrastructure, and the relative neglect of passenger and freight services operating on such infrastructure.

The level of transport services in many rural areas of poorer developing countries are low to non-existent, with many very poor people having to walk extensively to access transport services. Farmers need to pay significant sums for often-unreliable freight services. While the recent growth in motorcycle taxi services is a step forward, it can only be accessed by richer segments of the population and is also generally inaccessible to the elderly, the disabled, children, and nursing and expectant mothers.

In many countries (and particularly in African countries), where rural transport services do exist, they are often expensive, of poor quality and unreliable. The supply of rural transport tends to be dominated by cartels, and the lack of competition encourages excessive numbers of old inefficient vehicles to compete in a limited market. Although there is no shortage of second-hand vehicles to operate rural transport services, the informal sector that operates these services cannot get access to conventional bank finance, and funds are generally understood to be provided through family and informal connections, though there is a lack of knowledge on the precise terms and arrangements. Overall the current management and funding of rural transport prevents the development of competitive and efficient rural transport market and service provision, and as a result, a large part of the rural population is not able to realize their developmental potential.

For most of the poorer developing countries, road building and maintenance is the only form of assistance provided for rural transport. Provision for transport services is very much left up to the informal market, and although there have been a number of small-scale IMT initiatives; on the whole these have not been particularly successful. In contrast, nearly all developed and many middle-income countries have significant subsidy programmes for rural public transport. For many countries there is an explicit 'right to transportation' that is enshrined in law, and there are specific subsidy programmes for otherwise un-remunerative services, which provide rural transport services to benefit the elderly, people with disabilities, and school children.

7.2 Recommendations

The absence of a well functioning market (e.g. with transparent financing structures and performance based pricing) may hamper the improvement of rural transport services (and in particular, the funding of such services). A major contributor to this situation is low demand density,

which is caused by rural poverty and dispersed settlement patterns and is exacerbated by bad roads and transport service monopolies. To address this situation, the following elements are recommended:

7.2.1 Additional research and increased collection of basic information

- It is necessary to address the substantial shortage of basic information about rural transport services, by increasing the collection of systematic information about specific financing arrangements (and overall profitability), in addition to service coverage, frequency of operations, market structure, operational costs, and other related factors.
- There is a clear link between improving transport services and equity issues. This link is currently not well documented, yet expanding rural transport services resulting in greater need for payment by users can have profound impacts on equity in rural areas.
- It is especially important to conduct comparative research between countries and continents in order to be able to arrive at policy recommendations that can be taken up in global policy making on rural development and infrastructure.
- Further research on trial contracts and service arrangements is required to ensure that rural transport services provide much-needed access to education, health care, employment opportunities, and essential services.
- Analysis of successful rural logistic chains that give access to high value markets (e.g. supermarkets in major cities, export markets). Of major importance is the question of how these successful patterns may be replicated in other countries and regions.

7.2.2 New approaches to regulating rural transport services

- It is possible to improve services (and at the same time reduce costs and fares) by reorganising the transport market. This would involve introducing new route licencing arrangements, increasing competition, and reducing the power of transport unions and cartels that effectively keep large numbers of redundant vehicles in the market (though unfortunately this may not be a realistic objective for many donor-funded initiatives).
- New forms of fair and effective regulation, possibly including competitive service contracts (including performance-based contracts), may be a solution that can both increase service quality and frequency, and in some cases lower overall costs. Institutional development (e.g. building capacity and standardizing practices within road funds, road management authorities, district engineers offices, and regional planning institutions) is also required in many areas to facilitate new market and legal arrangements.
- Since profits may be excessive in some aspects of the current market for rural transport services (due to cartels and monopolies), there is an opportunity in these cases to improve rural transport services through appropriate regulation and facilitating increased competition (for improving quality, and not just increasing quantity). Bidding for the market may reduce costs (and hence reduce fares).

7.2.3 Incorporation of rural transport services in government and donor rural infrastructure programs

- New rural road infrastructure initiatives should ideally be complemented by measures to improve transport services. This could be best achieved by agreeing an up-front ratio of budget allocated to construction and maintenance and budget allocated to develop and support the provision of rural transport services. It is acknowledged that subsidising rural transport may be difficult if countries are not able to adequately maintain their rural road networks (and since rural roads often receive a share of road fund contributions that do not relate to their actual costs). However, if such a subsidy were desired, the principles of public

service obligations would be applied (i.e. the government would define in detail the service standards (e.g. frequency, capacity, comfort) and would tender the bus lines).

- With the goal to achieve greater equality of rural transport infrastructure and services, it may be possible to use low cost roads connect all villages, rather than providing high quality access to a few locations. If necessary, lower road standards (e.g. spot improvement approaches) could be adopted with any additional funds to be used for rural transport services, while still ensuring that rural roads are passable (and ideally, that key routes are of a higher quality to encourage broader provision of rural transport services). An alternate view suggests that lowering road standards would yield no investment cost savings, since road and vehicle maintenance costs are expected to be higher due to lower standards. Further research is required to explore the interaction of road standards, maintenance costs, and rural transport services in various country contexts.
- Output-based aid (OBA) (also known as “performance-based aid”) approaches could be used to increase donor funding for rural transport services.

7.2.4 Appropriate subsidy schemes for rural transport services

- There is a need to provide on-going, and in some cases expanded, financial support for services in the most remote areas. Where motorised passenger mobility is very low, there is a good case to directly subsidise transport services, particularly when in the absence of subsidies no services, or a very low level of services, would be provided. Local governments could set basic service standards (e.g. frequency, capacity, safety standards) based on local conditions, which in turn would determine required provincial and national budget allocations to be dedicated to rural transport services to meet the required standards.
- Subsidies should be paid only to service providers that adhere to a strict set of standards, including timetable compliance, loading rates, and attention to health and safety factors.
- Service subsidies would be very small in relation to road construction costs, and the opportunities for corruption would be far less than in the case of infrastructure investment. Similarly, the management involved in regulation services would be a small burden in comparison with managing physical road works.
- Proposed donor and government rural road investment programmes and road funds could be a source of funds for subsidies, if other funding is not available. To increase political palatability, the term ‘subsidies’ should be replaced by ‘availability payments’ or ‘public service obligations.’

7.2.5 Innovative use of ICT to support rural transport services

- To ensure that possible subsidies for rural transport services are delivered in a targeted manner – going to those groups that require financial support – pilots should be carried out to test the use of ICT based applications to deliver such targeted support to either users or providers of rural transport services.
- Since smart phone penetration is outpacing growth in basic access in Africa, shared mobility services that are well established in urban contexts in developed countries may also offer positive impacts for rural transport services in developing countries. For example, ICT applications can help to consolidate goods and passenger loads in a more efficient manner and thus to reduce empty trips, as demonstrated in several successful projects in Kenya (KENDAT et al, 2013).

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