

FINANCING RURAL TRANSPORT SERVICES: IMPLICATIONS FOR THE ASIA-PACIFIC REGION

John Hine, Cornie Huizenga and Karl Peet¹

ABSTRACT

The provision of transport services for people and goods in rural areas is a major, but often neglected, issue in developing countries. Without adequate access to transport services there is real danger that the poorest, the elderly, the disabled, the young and most remote will suffer disproportionately and the social and economic development of rural communities will be severely limited.

All countries accept the need for state involvement in the provision of rural road infrastructure in developed countries, almost without exception, rural public transport services, are regulated and subsidized. In contrast, in developing and middle income countries government support for rural transport services varies widely from virtually nothing to a comprehensive programme. The paper explores these issues together with a range of initiatives that have been implemented and proposed by different Asian countries. The paper examines sources of funding and considers the need for collecting more information to improve decision making.

INTRODUCTION

There are major challenges to the provision of transport services in rural areas of developing countries, including in the Asia-Pacific region. The issues are common to many parts of the world but can be particularly acute in more remote rural areas where services can be non-existent or thin on the ground. 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 rural transport *services*.

This paper considers the role of finance in the provision of rural transport services and, in particular the case for rural transport service subsidies. The first part of the paper reviews the need to improve rural transport services and their current organizational structures. The paper then considers financial challenges and how rural transport services are organized and supported in both developed and developing countries. Finally, funding sources are considered and the paper ends with conclusions and finance related recommendations in support of developing and maintaining a greater availability of rural transport services across Asia and throughout the world.

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

A lack of rural transport creates a major constraint on economic development and is a significant contributor to poverty in many regions. A disproportionate proportion of poor people live in rural locations. While 58 per cent of developing country population live in rural areas, 78 per cent of the extreme poor (Olinto et.al. 2013), and 85 per cent of the multidimensional poor (measured by the Multidimensional Poverty Index (MPI), (Alkire et.al 2014), are located in rural areas. At the same time, less than one third of the rural populations of Afghanistan (22 per cent), Myanmar (23 per cent) and Nepal (17 per cent) has access to an all-season road within two kilometres, and less than one half of the populations of Bangladesh (37 per cent), Bhutan (47 per cent), Mongolia (36 per cent) enjoy such access, thus limiting access to economic opportunities and essential services¹.

There are numerous concerns over the lack of access to markets and essential services in rural areas, and so far, governments and donors have tried to deal with this issue, almost solely by improving and maintaining rural transport infrastructure, leaving the provision and organization of

¹John Hine, (Independent Consultant), Cornie Huizenga, Partnership on Sustainable Low Carbon Transport (SLoCaT) and Karl Peet, Partnership on Sustainable Low Carbon Transport (SLoCaT)
<http://www.worldbank.org/transport/transportresults/headline/rural-access/rai-updated-modelbasedscores5-20070305.pdf>

services that use the infrastructure to private organizations and individuals². 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 it was found that 98 per cent of rural transport lending is for road building and maintenance (Tsumagari, 2007).

Some opined that much greater attention should 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 accessibility to schools, clinics, hospitals, markets and other social services (Porter, 2013).

Defining rural transport services

Rural transport services facilitate movement of people and goods in rural areas. The main focus of this paper is on motorized transport that takes place outside of the village area, for people and goods to travel between villages, markets and towns.

The typical modes of transport used in rural contexts are minibuses, buses, pickups, small and medium trucks, saloon cars, four-wheel drive vehicles, motorcycles, bicycles, donkeys, animal carts, tractors and power tillers with trailers. Although the cheapest forms of transport will tend to be used for personal transport they are all also hired for commercial purposes. The pedal-powered and motorized rickshaws in India and Bangladesh are examples.

Currently, probably the biggest change taking place in rural transport, worldwide is the huge growth in motorcycle use arising from the increased availability of relatively inexpensive Chinese and Indian motorcycles. An example is Tanzania where in 2005 31,000 motorcycles were registered, however by 2010 the number had increased to 323,000, representing annual rate of growth of 60 per cent per year (Ministry of Infrastructure Development, 2010). 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.

Now it is very common to find in rural areas, motorcycle taxi services operating with mobile phones. The motorcycles operate a local service between peoples' homes and the minibus, bus and truck stops where people and freight loads are consolidated and motorcycles can navigate tracks where three and four wheelers cannot pass. In some cases, and during the wet season, motorcycle taxis are the only form of public transport provided (Starkey et.al. 2013). Motorcycle transport, however, is relatively more expensive and often only the richer sections of the population can afford its use. In Myanmar motorcycles can cost US 30 cents per passenger-km, compared with conventional buses which may cost as little as 1.6 cents per passenger-km. (van Dissel et. al. 2015)

While there is growth in Africa's non-motorized vehicle fleet, many of the fast growing economies of Asia are replacing their bicycles by motorcycles or cars. For example, between 1995 and 2005, China's bicycle fleet declined by 35 per cent (Roney, 2008). This is also true for many other Asian countries, where income increases enable their citizens to purchase motorized vehicles.

The organization and regulation of rural transport services differs between countries. 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 more likely to attract regulation of passenger fares than other rural services. 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 regulation from transport associations.

² 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.

Rural transport user perspectives

The most common passenger complaints, particularly in the more remote rural areas relate to a lack of services, a shortage of emergency transport and to unaffordable fares. The most severe problems arise in sparsely populated areas in low-income countries. For example, surveys carried out in Ghana and Malawi have found that even though a village lies on a passable road it may be extremely difficult to access services, either because passing traffic is so sparse, or because vehicles leave the main destinations completely full and hence there is no capacity at intermediate locations. These surveys found that 30-40 per cent 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, to improve their chances of getting on a bus or truck (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 China and Ghana. Recent surveys carried out on one 26 km road in Cameroon found six-days-a-week motorcycle transport was the only type of public transport available, with minibus services and light truck services only available on market day (Kemtsop and Starkey, 2013).

In Tanzania many people cannot afford to use rural motorcycle services. On one occasion it was observed by the author 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 older people complained that they physically could not get onto a motorcycle or on to the back of a pickup to go to town. 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. (Porter et. al. 2013)

Similar stories are reported in other countries, for example in the mountains of Negros Oriental, Philippines, it was reported that old people are 'left to die' at home (with relatives doing as best they can) when they can no long withstand the stresses of being carried along footpaths and then held on the back of a motorcycle to make it to the main road where more conventional transport is available to go to hospital.³

It is difficult for people to get access to emergency health care in rural areas and any journey made to the hospital is often complicated by the weather, particularly during wet seasons when rural roads become difficult to access.

Out-of-village rural transport may also complicate access to 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. Inaccessibility has been found to be a major factor in lower attendance rates for girls in secondary schools in Nepal (Kc, S. 2007).

A high proportion of rural passengers take small loads on their journey, for example for selling or buying goods at market. Larger loads of agricultural produce, building materials, furniture, and soft drinks and beer are also very common. As with passenger transportation, there are also serious concerns about the frequency and costs of transporting goods. 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.

In 2010 it was estimated that about 1.3 million people died from road injuries worldwide, with 90 per cent of deaths occurring in middle and low income countries. The urban/rural split of traffic deaths is not known although there is evidence from India that the rural population is at much greater risk than the urban population, while little difference between these populations 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 wheelers 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 helmets in the proper fashion.

³ Personal Communication to the Author, 2016.

SUPPLY PERSPECTIVES AND ORGANIZATION OF THE RURAL TRANSPORT SERVICES MARKET

Most transport services in rural areas in developing countries are provided by the informal market place. In low income countries transport services provide a major opportunity for employment and in some countries, particularly in Africa, but also in Latin America and in Asian countries such as Yemen and Nepal, restrictive operating practices have developed that, while inefficient, keep employment as well as fares and tariffs high. Restrictive practices have also been employed by inefficient government owned public transport operators in Asia in order to keep employment high.

While previous studies have suggested that the relatively higher transportation tariffs in Africa, compared to other high population density countries in Asia, are due to a range of factors including higher input costs, newer studies have shown that profiteering by private operators may be a major contributing factor. (Teravaninthorn and Raballand, 2009).

Cartels employ various measures to keep supply artificially low as they have a dis-preference for carrying sub-optimal loads. 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 utilization by using low cost second-hand vehicles from high income countries that have minimal depreciation costs (usually those which are no longer suitable for urban transport services)⁴. These vehicles may be ten to twenty years old, and tend to be unreliable, and polluting with relatively high fuel consumption. Fuel consumption per passenger, or per weight of load, is minimized by the vehicle waiting until it is full at the start of its journey before moving.

It may be possible to improve services and at the same time reduce costs and fares by reorganizing or deregulating the transport market. This would involve increasing competition and reducing the power of transport unions or cartels that effectively keep large numbers of redundant vehicles in the market. New route licensing arrangements would be required (Delaquis, 1993; Ellis and Hine, 1998). An example of where direct measures were taken by local authorities in the Cameroon, to increase competition, reduce the power of cartels and reduce fare levels, is provided in Box 1.

The newest and highest quality vehicles are likely to be used on interurban and urban routes where customers have higher incomes and thus expect more comfortable journeys. Even within rural transport operations, Venter (2014) in South Africa has found a differentiated service

Box 1. Reducing rural transport cartels in Cameroon

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 per cent higher (for trips of 10 km) and 370 per cent higher (for trips of 200 km) (Lisinge, 2001).

hierarchy with better quality minibus taxi services employed on surfaced roads and better quality gravel roads, while poorer quality and older minibuses and pickups are employed on roads in poor condition.

Long waiting times, and low frequency or absence of rural transport operations, implies the major problem is often a shortage of demand for services/ This in turn has a strong adverse impact on

⁴ 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 Central America and the Middle East.

the prospects for rural development. Many low and medium density rural areas are therefore held in a 'vicious circle' of low demand, poor high-cost transport and poverty limiting the potential of new agricultural and other commercial opportunities.

Perhaps the biggest constraint to developing a better quality, more competitive and lower cost transport system for rural transport is the lack of demand. Cartels are more difficult to sustain where there is a high density demand and a dense route network. Likewise, the costs of vehicles, parts and fuel are likely to be lower, and service frequency will be higher where demand is high. A low density of demand, expressed in terms of GDP per unit area provides a rough indicator of countries most at risk from high cost and poor transport services. This is shown in Table 1 for selected countries.

Table 1. Selected countries showing GDP per unit area

Country	GDP/Area (US\$ 000/sq. km)
United Kingdom	12,325
Sri Lanka	1,202
China	1,082
India	623
Uzbekistan	140
Nepal	134
Myanmar	95
Cambodia	93
Kazakhstan	80
Yemen	70
Bhutan	51
Laos	51
Papua New Guinea	37
Afghanistan	31
Mongolia	8

In the Asia- Pacific Region countries such as Mongolia, Afghanistan, Papua New Guinea, Lao PDR, Bhutan, Yemen and the other countries listed in the lower part of Table 1 have a low density of demand, and are therefore most likely to be at risk from high cost and poor transport services.

Challenges in financing rural transport services

There is a major knowledge gap in financing and running of rural transport services. For the most part the operations are part of the informal sector, where record keeping is rudimentary.

The informal sector tends to have limited access to collateral and bank finance. Due to its mobile nature, banks may also be unwilling to use the vehicle itself as collateral. This is because in many countries banks have no legal title to a vehicle for which a loan is made. 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).

McCormick et.al. (2013) found that in Nairobi, for informal operators with small fleets, funding typically comes from self, family or friends. Vehicle dealers and money lenders can also provide credit or take a stake in the business. In contrast, for larger companies managing many vehicles, funding came from banks and institutional investors. Although unstated, one would expect the low organization model, involving no bank finance, to be by far the most common model in rural areas. This is confirmed for a number of African countries by Starkey et.al. (2013)

A study in Pakistan found a very active and organized hire-purchase market for trucks. 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. These requirements create additional costs of compliance that discourage people from taking out bank loans.

The hire purchase arrangement will often be organized 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 per cent and 20 per cent; however, the interest rate was calculated to be over 60 per cent in 13 per cent 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).

In Pakistan the widely available hire-purchase finance has enabled a much greater use of new vehicles, compared with Africa, and because of competitive pressure the overall reliability is better, and maintenance costs are lower than in Africa (Rizet and Hine, 1993).

There are exceptions on bank financing not being available. For example, in Thailand, the Government Savings Bank lends to individuals for businesses in general where there is strong family, social or village support. This decreases risk of default and leads to lower interest rates and down payment requirements.

In India, although buses account for half of all motorized passenger journeys they now account for just 1.1 per cent of vehicles, compared with 11.1 per cent in 1951. In a bid to improve transport in rural areas, the Indian Association of State Road Transport Undertakings proposed government support under the 12th Five Year Plan (2012-2017) for the purchase of 85,000 buses (50,000 new and 35,000 for replacement) (Times of India, 2012). However, it appears that this proposal was not taken up by the Plan.

In most low-income 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. The publicly owned operators that exist tend to be very inefficient. 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 strong possibility of corruption if subsidies are introduced. Public service obligations require thorough control of agreed service quality, and only independent organizations with representation by service users can deliver effective control of the service providers.

Financing models and approaches from the developed world

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

Evidence from high-income countries relates mostly to passenger transport, as limited information is available on specific financing arrangements for movement of goods in rural areas. All high-income countries subsidize public transport⁵, 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 do recognize the particular problems faced by transport 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 the equivalent to 0.5 per cent of GDP (van Goeverden et. al. 2006).

There are many reasons for advocating transport related subsidies, including the promotion of economic growth, market failure, efficiency and environmental sustainability. Perhaps the most relevant and fundamental argument for rural transport subsidies is a recognition that everyone, wherever they live, should have the right to 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" (i.e. Framework law on inland transport), passed in 1982: *"The progressive implementation of the right to transport allows users to travel in reasonable*

⁵ 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, the United Kingdom, and the United States.

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 US\$608 million in FY 2014 for public transport in rural areas for residents who do not have access to personal vehicles. Funding is based on a formula that uses land area, population, and the number of low-income individuals residing in rural areas. The programme is seen as a 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).

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 countries, such as the United Kingdom, provide subsidized or free transport passes for children and for people when they reach state pension age. Government funded 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, and for people to visit day care centres and clinics.

Besides this individual support, governments may also support public transport through subsidized fuel, 'bus grants' for the purchases of buses and even employment subsidies. Where the commercial market cannot support public transport services at reasonable frequency and cost, governments will intervene with extra subsidies, regulation and direct contracts to ensure minimum levels of service. In 2007-08 local bus service support in the United Kingdom amounted to £2,485m, equivalent to 0.18 per cent of GDP (Commission for Integrated Transport, 2008).

Bus companies may hold exclusive operating rights on popular (usually inner town) routes that also stipulate that they run on less well-patronized out-of-town routes. Local authorities can call for tender on contracts for particular routes, with specified service frequencies, where competing companies specify the state subsidy they require to operate. This may be calculated 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 recent years there has been increasing interest in providing more demand-flexible transport rather than fixed-schedule services. 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. Transport authorities should ensure that the different approaches do not conflict with existing regulations governing conventional taxi operations. A mix of different shared taxi and minibus approaches have also been run in the United Kingdom, France, Netherlands, Germany and Switzerland whereby the percentage of the overall cost to be met by subsidy, varies from 30 per cent (Taxi tub in France, Anruf Sammel Taxi in Germany) to 93 per cent (North Sunderland, United Kingdom) (Commission for Integrated Transport, 2008).

The main lesson from high income countries is not that subsidy schemes should be directly replicated in developing countries. Rather, governments should do their best to uphold the right of access to adequate transport for people and also formulate comprehensive solutions that both provide transport infrastructure and facilitate implementation of transport services.

Solutions for middle income and developing countries

Unlike middle-income countries, low-income countries are far less likely to have public transport subsidy programmes in place.

Sri Lanka

Table 2 identifies specific, explicit, public transport subsidies in Sri Lanka (Gwilliam 2005).

Table2. Public Transport Subsidies in Sri Lanka 2004

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

The total amount of explicit subsidy of US\$ 26.9m was the equivalent of 0.13 per cent of GDP. Further hidden subsidies amounting to LKR 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 per cent of passenger trips, with the greater part of public transport run by private companies (Gwilliam (2005)). Much higher subsidies (LKR 8.4 billion) have reported in 2011 by the Sri Lankan press.

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 unionized and thus are able to resist reform. Box 2 provides a case of Operating a ‘Village Bus’ in Sri Lanka.

However, the private sector, although not unionized, 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).

Box 2. Operating a ‘Village Bus’ in Sri Lanka

An alternative approach to providing rural transport services is a community owned ‘village bus’. Although 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).

Malaysia

In recent years in Malaysia there has been a dramatic increase in both car and motorcycle ownership. This has led to a 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 MYR 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, a ‘dial a ride’ system is also being considered for rural areas. This will provide access for recreation, shopping, education, medical services and social services for potentially isolated people. 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 because 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 MYR 410,000 (US\$ 122,000) per local authority, or MYR 45 million (US\$ 13.4 m) for the first year to set up the system⁶.

Thailand

In 2008, to assist the low income population, the Thai Government introduced free rail and bus transport on selected routes. Free train travel was introduced for third class travel on 172 lines on the five main routes from Bangkok to different regions in Thailand. It is report that up to 2013, 160 million passengers have benefited with a total subsidy of THB 4.7 billion (US\$ 145m). Free bus transport was introduced by the Bangkok Mass Transit Authority on 73 non-air conditioned routes all over the metropolitan area. Up until the 2013 the total subsidy was THB 10.5 billion (US\$ 325 m). Although the rural population would have benefitted, the free transport policy was most focused on the urban poor, but conceivably could be expanded to rural areas. (Source, undated internet paper by Tansawat. T. et al.)

Philippines

In an attempt to cushion the impact of rising fuel prices the Philippines has introduced a targeted programme of fuel subsidies for jeepneys and motorized tricycles using smart cards, operating in both urban and rural areas. The drivers of both are relatively poor and it is estimated that there are over a million tricycles in use. It is expected that the measure will benefit both drivers and users (Layug 2014).

Rural freight transport assistance

It is very rare for governments to subsidize general rural freight transport. However, financial supports for farmers to purchase agricultural tractors and for crop marketing exist in some parts of the world. Provision of free (emergency) and subsidized food and other goods is also common. Also, in the post war period government owned agricultural marketing boards were widespread, and some element of freight transport assistance occurred through that channel.

In Malaysia, to assist the agriculture industry, 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 were plans in 2014 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 distribute produce. The rationale is that farmers will get a better deal through government intervention rather than relying purely on the commercial market. Currently the government controls less than 20 per cent of agricultural transport capacity. Private vehicles are hired, to collect the rice harvest, but the objective now is to increase government involvement towards 50 per cent of the agricultural transport market⁷.

India has had a subsidy scheme in place since 1971 that promotes industrialization in remote, hilly inaccessible areas (principally in the north of the country). The subsidy covers 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 Indian state, the subsidy rate is equal to 50 per cent to 90 per cent of the transport costs. The subsidy is specified as being eligible to an industrial unit for five years. In an undated (post 2009) Internet report, it was estimated that INR 24,390 million (US\$ 380m) had been released under the scheme.⁸

⁶ Source Author's personal communication with different government officials, 2014.

⁷ Source: Author's discussion with different government officials, 2014.

⁸http://dipp.nic.in/English/Schemes/Transport_Subsidy/Transport_Subsidy_Scheme.pdf

Lessons and opportunities from road funds and other funding modalities

Road funds

Road funds effectively heavily cross-subsidies the rural road network from the fuel levies on vehicles travelling on the main roads. So subsidies to support rural transport are not new, and in many cases they are already built into the management of the road network. 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.

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 African and Asian 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 (Heggie and Vickers, 1998).

The main rationale of the approach was the 'user pays' principle, so that road maintenance costs that were incurred by a vehicle could be recouped by setting appropriate fuel levies and vehicle charges. Although, the 'user pays' principle is economically sound in theory, in practice it only works for vehicles accessing the whole network, not for driving on a specific link. 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). For example, in Ethiopia it was found that, per vehicle kilometre, the routine and periodic maintenance cost of regional and district roads is around 18 times greater than a main paved road (Ethiopia Roads Authority 2004).

Many argue that fuel taxes should be used to help fund public transport. An example where fuel taxes are directly used to support public transport is the United States where fuel taxes go directly to the Federal Highway Trust Fund which, in turn, supports both highways and mass public transit programmes.

Output-based aid (OBA)

The Global Partnership for Output Based Aid (GPOBA)⁹ located at the World Bank provides funding assistance to help poor people that are unable to access 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.

An OBA funded targeted subsidy scheme using smart cards has been trialed in urban Bogota giving the user a 40 per cent discounted fare (Mehndiratta 2014). 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. As funding will taper off over time projects need to be designed such that they can generate enough cash flow to be self-sustainable. One key obstacle over the use of OBA is the relatively high initial funding threshold required in the application, which may inhibit the funding of initial low-cost pilot trials before a full programme is organized.

⁹<https://www.gpoba.org/>

CONCLUSIONS

This 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 against rural areas on the development of 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 the poor 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, its access is limited to richer segments of the population and is also generally inaccessible to the elderly, the disabled, children, and nursing and expectant mothers.

In many countries with rural transport services, they are often expensive, of poor quality and unreliable. The supply of rural transport can be dominated by cartels, or inefficient publically owned services, and the lack of competition encourages excessive numbers of old inefficient vehicles, achieving low utilization in a limited market. Although there is no shortage of cheap second-hand vehicles to operate rural transport services, the informal sector that operates these services cannot get access to conventional bank finance. Funds are generally provided through family and informal connections, though there is a general lack of knowledge on the precise financial terms and arrangements. Overall the current management and funding of rural transport prevents the development of a competitive and efficient rural transport market, and as a result, a large part of the rural population does not have access to rural transport services, at a reasonable price and this limits their development.

For most of the poorer developing countries, road building and maintenance are the only forms of assistance provided for rural transport. Provision for transport services is very much left up to the informal market. In contrast, many developed and middle-income countries have significant subsidy programmes for rural public transport. For many countries there is an explicit 'right to transportation' (including rural populations) that is enshrined in law, and there are specific subsidy programmes for otherwise unprofitable services, which provide rural transport to benefit the poor, elderly, people with disabilities, and school children.

The absence of a well-functioning rural transport market (e.g. with transparent financing structures and performance based pricing) may dis-incentivizes the growth 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 could help to improve rural transport services:

- There is a need to collect additional basic information about rural transport services, particularly on the availability, costs and financing to help assist with planning.
- New approaches to regulating and managing rural transport services are required, including the use of competitive service contracts and controlling the power of transport unions and cartels.
- Ways need to be found to incorporate rural transport services into government and donor rural infrastructure programmes.
- Appropriate subsidy schemes for rural transport services, (possibly involving competing for subsidies) need to be introduced particularly when, in the absence of subsidies, no services would be provided.
- Innovative use of Information and Communication Technology to support rural transport services (for example using smart phones and smart cards) should be explored.

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