



**AFCAP**



**Linking Rural Communities with Health Services:  
Assessing the effectiveness of the Ghana Ambulance  
Service in meeting the needs of rural communities**

**Quarterly Report 3**

Submitted by **TRANSAID**

*29<sup>th</sup> June, 2012*

This project was funded by the Africa Community Access Programme (AFCAP) which promotes safe and sustainable access to markets, healthcare, education, employment and social and political networks for rural communities in Africa.

Launched in June 2008 and managed by Crown Agents, the five year-long, UK government (DFID) funded project, supports research and knowledge sharing between participating countries to enhance the uptake of low cost, proven solutions for rural access that maximise the use of local resources.

The programme is currently active in Ethiopia, Kenya, Ghana, Malawi, Mozambique, Tanzania, Zambia, South Africa, Democratic Republic of Congo and South Sudan and is developing relationships with a number of other countries and regional organisations across Africa.

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For further information visit <https://www.afcap.org>

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## ANNEXES

## **INTRODUCTION**

Continuing progress has been made on this project. The partnership between the National Ambulance Service (for Ghana Ministry of Health) and Transaid has deepened and NAS have now been offered a contract to undertake the fieldwork for Workpackage 3. The NAS have assembled a very high quality team to undertake the work and it represents further progress in developing the ownership of the project by NAS.

The work for Workpackage 3 on the impact of improved access through delivering an ambulance service has also progressed with submission having been made for Ethical Review and approval due, just after the deadline for this report on July 25. Here again the growing support and ownership of NAS has been invaluable. A fieldwork training workshop will also be undertaken just after this reporting deadline on July 25-26 in Ashanti Region, Ghana.

Dissemination output from this project has also been developed with this quarterly report setting out 3 dissemination output. The project also sought to present at the recent 2<sup>nd</sup> AFCAP Practitioners Conference, but unfortunately due to administrative difficulties faced by the organisers, this will not now take place.

## **REPORTING AGAINST THE LOGICAL FRAMEWORK**

### ***Progress to date***

The development of the fieldwork has continued and there have been a range of activities that contribute to progress on Activity 1.3. There has been significant assistance from the NAS in submission for ethical clearance from the Ethical Review Committee of the Ghana Health Service. A submission has been made and ethical clearance is expected to be given on July 25<sup>th</sup>.

A fieldwork briefing meeting will take place in Ashanti Region on July 25<sup>th</sup> and fieldwork is expected to commence shortly after,

There has also been a range of activities undertaken to develop further the process of dissemination of the outcome of this project as captured by Activity 1.4. These include:

- A paper submitted to 2<sup>nd</sup> AFCAP Practitioners Conference for the AFCAP Conference Proceedings
- A chapter submitted to a peer-reviewed book on the Future of Ghanaian Development Policy
- Development of the outline of the Guidelines for National Ambulance Services

| PROJECT TITLE   | <b>Linking Rural Communities with Health Services</b> |   |                                     |                                     |               |  |  |
|---|---|---|-------------------------------------|-------------------------------------|---------------|--|--|
| GOAL  | Indicator   | Baseline + year   | Milestone 1                         | Milestone 2                         | Target + year |  |  |
| To contribute to the reduction of maternal mortality in Ghana | Level of maternal mortality                           | 350 per 100,000 live births in 2008   | 260 per 100,000 live births in 2011 | 290 per 100,000 live births in 2012 |               |  |  |
|   |   | <b>Source</b>   |                                     |                                     |               |  |  |
|   |   | UN MDG Indicator Data <a href="http://mdgs.un.org/unsd/mdg/Data.aspx">http://mdgs.un.org/unsd/mdg/Data.aspx</a> |                                     |                                     |               |  |  |

| PURPOSE  | Indicator   | Baseline + year   | Milestone 1                                       | Milestone 2   | Target + year   | Assumptions  |
|--|---|-------------------|---|---|---|--|
| Strengthened evidence base developed, promoted and policy influenced on the importance of emergency transport solutions for reducing maternal mortality in Ghana | Evidence-based practice guidelines produced to develop emergency transport solutions for maternal mortality | 0 at July 2011    | Report on Cost effectiveness of Ambulance Service | Report on impact of the ambulance service on maternal mortality | Best practise guidance and regional workshop on National ambulance services | 1. Support for tackling transport issues in maternal mortality |
|  |   | <b>Source</b>     |   |   |   |  |
|  |   | Quarterly Reports |   |   |   |  |

| <b>OUTPUT 1</b>  | <b>1.1 Indicator</b>                                 | <b>Baseline + year</b>               | <b>Milestone 1</b>                             | <b>Milestone 2</b>              | <b>Target + year</b>  | <b>Assumptions</b>  |                    |
|--|--|--------------------------------------|--|---------------------------------|-----------------------|---|--------------------|
| Evidence-based practice guidelines produced to develop emergency transport solutions for maternal mortality in Ghana | Report on Cost effectiveness of Ambulance Service    | 0 at July 2011                       | Assessment visit complete by Month 5           | Report submitted by month 6     |                       | 1. Support from MoH to facilitate assessment<br>2. Community Surveys completed<br>3. Regional Workshop take place |                    |
|  |  | <b>Source</b>                        |  |                                 |                       |   |                    |
|  | Programme Quarterly Reports                          |                                      |  |                                 |                       |   |                    |
|  | <b>1.2 Indicator</b>                                 | <b>Baseline + year</b>               | <b>Milestone 1</b>                             | <b>Milestone 2</b>              | <b>Target + year</b>  |   |                    |
| Report on impact of the ambulance service on maternal mortality  | 0 at July 2011                                       | Kick-off of evaluation stage Month 6 | Report on impact in Month 15                   |                                 |                       |   |                    |
|  | <b>Source</b>  |                                      |  |                                 |                       |   |                    |
| Programme Quarterly Reports  |  |                                      |  |                                 |                       |   |                    |
| <b>IMPACT WEIGHTING</b>  | <b>1.3 Indicator</b>                                 | <b>Baseline + year</b>               | <b>Milestone 1</b>                             | <b>Milestone 2</b>              | <b>Target + year</b>  |   |                    |
|  | Best practise guidance on National ambulance service | 0 at July 2011                       | Regional workshop on best practice in month 17 | Guidelines produced by month 18 |                       |   |                    |
|  |  | <b>Source</b>                        |  |                                 |                       |   | <b>RISK RATING</b> |
| Programme Quarterly Reports  |  |                                      |  |                                 |                       | Medium  |                    |
| <b>INPUTS (£)</b>  | <b>DFID (£)</b>                                      | <b>Govt (£)</b>                      | <b>Other (£)</b>                               | <b>Total (£)</b>                | <b>DFID SHARE (%)</b> |   |                    |
|  | 119,100  |                                      | 30,000   | 149,100                         | 80                    |   |                    |
| <b>INPUTS (HR)</b>   | <b>DFID (FTEs)</b>                                   |                                      |  |                                 |                       |   |                    |
|  |  |                                      |  |                                 |                       |   |                    |

## ACTIVITIES LOG

Progress Key:

- Milestone Achieved in this phase
- Activities undertaken in this Quarter that contribute to Milestone

| OUTPUT 1  | ACTIVITY 1.1  | Milestone 1  | Milestone 2  | Milestone 3                      | Risks   | Monitoring Officer        |
|---|---|--|--|----------------------------------|---|---------------------------|
| <b>Generation of evidence for effective policies and practices to achieve sustainable</b> | Development of Partnership with Ghana MoH and Project Management  | Inception Report by Month 3                              | 6 Steering Groups held by end of project and 4 QRs | Final Project Report by Month 18 | Breakdown in support from MoH                                     | PM                        |
|   | <b>ACTIVITY 1.2</b>   | <b>Milestone 1</b>                                       | <b>Milestone 2</b>                                 | <b>Milestone 3</b>               | <b>Risks</b>  | <b>Monitoring Officer</b> |
|   | Assessment of Ghana Ambulance Service as a transport operation  | Holding of 1 <sup>st</sup> Project Steering Group by MoH | Report on efficiency of Ambulance Service Month 6  |                                  | Breakdown in support from MoH or failure to facilitate assessment | PM                        |
|   | <b>ACTIVITY 1.3</b>   | <b>Milestone 1</b>                                       | <b>Milestone 2</b>                                 | <b>Milestone 3</b>               | <b>Risks</b>  | <b>Monitoring Officer</b> |
|   | Evaluation of impact on emergency healthcare in rural areas   | Kick-off meeting for evaluation Month 6                  | Report on impact on maternal death by Month 15     | Final Report by month 18         | Community Surveys not able to be completed                        | PM                        |
|   | <b>ACTIVITY 1.4</b>   | <b>Milestone 1</b>                                       | <b>Milestone 2</b>                                 | <b>Milestone 3</b>               | <b>Risks</b>  | <b>Monitoring Officer</b> |
|   | Development and Dissemination of Guidelines for National Ambulance Services for tackling health MDG's in rural Africa | Steering Group Mtg. Review Month 15                      | Regional guidelines Workshop Month 17              | Guidelines produced Month 18     | Regional Workshop does not take place                             | PM                        |

## PROGRESS TO DATE

The partnership between Transaid and the National Ambulance Service (NAS) has further developed over this period. The NAS have now been offered a formal contract to undertake the fieldwork phase of the evaluation of the impact of ambulances in rural areas. The team that NAS has offered to undertake the work is composed of

- Dr. Ahmed Nuhu Zakariah- Director, National Ambulance Service
- Dr. Samuel Kaba Akoriyea- Clinical Auditor, National Ambulance Service
- Dr. Nacauley Andah- Ashanti Regional coordinator, National Ambulance Service
- Dr. Dominic Awariyah- Medical Director, National Ambulance Service, Ashanti region
- Mr Saaka Dumba, Transport manager, Ministry of Health.

The CV' s for the team will be submitted separately for approval.

The Partnership has also worked well to develop a detailed protocol for the fieldwork and has been this has now been submitted to the Ethical Review Committee of the Ghana Health Service and approval is expected by July 25<sup>th</sup>.

Dissemination of the project's progress has also developed with:

- 1 peer-reviewed chapter drawing on the systematic literature review (Annex 2);
- 1 AFCAP conference paper (Annex 3) and
- the outline for the Project deliverable on Guidelines for National Ambulance Services (Annex 4)

having been submitted in this reporting period.

The draft outline for the project deliverable is just at an initial framework stage and sections or parts may be added and removed as data analysis, relevance and applicability are assessed.

The field work is also developing with a field team briefing scheduled for 25<sup>th</sup>-26<sup>th</sup> July in Kumasi and will also involve a field visit to set up the initial field surveys.

## FINANCIAL REPORT

The 'Linking Rural Communities with Health Services: Assessing the Effectiveness of the Ghana Ambulance Service in Meeting the Needs of Rural Communities' project is subject to fixed milestone payments based on defined outputs at each stage of the project.

The total amount to be paid for the completion of the services is fixed at GBP 134,100.00, The payment points are defined below in the schedule of payments.

| <b>Schedule of Payments:</b>       | <b>Amount of Payment</b>                   | <b>% Total</b> |
|------------------------------------|--|----------------|
| <b>Criteria for Payment</b>        | <b>(GBP)</b>                               | <b>Payment</b> |
| Acceptance of Inception Report     | 18,774.00 – Payment received in Oct 2011.  | 14             |
| Acceptance of 1st Quarterly Report | 18,774.00 – Payment received in Feb 2012   | 14             |
| Acceptance of 2nd Quarterly Report | 18,774.00 – Payment received in April 2012 | 14             |
| Acceptance of 3rd Quarterly Report | 18,774.00                                  | 14             |
| Acceptance of 4th Quarterly Report | 18,774.00                                  | 14             |
| Acceptance of Final Report         | 40,230.00                                  | 30             |
| <b>TOTAL:</b>                      | <b>134,100.00</b>                          | <b>100</b>     |

This Third Quarterly report, subject to successful sign-off by the Client, will trigger payment of the fourth instalment of £18,774.00 for the period 1<sup>st</sup> April – 30<sup>th</sup> June 2012 (highlighted in green above).

## **ANNEXES**

**ANNEX 1 Chapter submitted for Book on Development Policy for Ghana**

**ANNEX 2 Abstract of paper submitted for AFCAP Conference Proceedings**

**ANNEX 3 Draft Outline for Guidelines on National Ambulance Services in Africa**

**Accessibility, Development and Rural Ghana; the role of rural mobility in delivering successful development policies in Ghana**

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**Introduction**

Reliable, physical access to all kinds of economic and social services and opportunities is an integral element for the growth and development of rural communities in Ghana. However, despite not insignificant investment in road infrastructure since independence, it continues to be a significant challenge to deliver improved access for rural Ghana. More importantly, perhaps, the effectiveness of a wide range of economic and social policies and basic service delivery initiatives, targeted at rural communities, continue to be diminished partly due to unreliable access. The interaction between the challenge of access and the improved economic growth and development of rural Ghana needs to be recognised and tackled. Moreover, this is not simply a challenge for one economic or policy sector, but across a spectrum of policy areas and for which the nature and scale of the interaction is not well described. As a result, the interaction between physical access and rural economic growth and social development needs to be better understood, appreciated and addressed in Ghana, as in many other areas of sub-Saharan Africa.

Despite an unprecedented progress in the alleviation of poverty in developing countries in recent years, it still appears from the evaluation of poverty characteristics that it is more rural than urban. Poverty incidence in rural communities was estimated as being about 61 percent in Latin America, 60 percent in SSA, and 31 percent in Asia (Jazairy, 1992 as cited by Njenga and Davis, 2002, pp. 217). More recent figures from Uganda revealed that about 95 percent of the poor are concentrated in rural areas (Fan et al., 2004, pp. 7). On the subject, Bryceson, Mbara and Maunder, argue that uneven distribution of wealth and national economic output between regions have led to a dramatic rise in rural poverty incidence across the developing world, with agricultural activities their primary source of livelihood (Bryceson, Mbara and Maunder, 2002, pp. 177).

In a rural context, rural access is frequently understood to focus on roads. van der Walle describes rural roads as “small local roads or paths & tracks in rural areas that have low or no motorized traffic volumes & link up villages with other villages or the road network” (van der Walle 2009, pp. 15). Rural transport is often determined by the quantity of roads as rural population value accessibility to roads more than accessibility to cars. In other words, rural mobility mostly depends on the infrastructures provided; these include paths, access or feeder roads, secondary roads, trunk roads, bridges and their conditions (paved or unpaved, dry season or all weather). It is clear from a wide range of studies that for rural areas in developing countries has shown that the most frequent means of transport is walking. For the majority of the rural poor, walking represents the most basic mode of travelling because it is simple and overcomes financial obstacles. Motorcycles, bicycles, and animal-aided transport are frequently a secondary means of transport and allow carrying heavier loads

than by walking but are mostly used on short distances. Cars, trucks, buses, and lorries are often unavailable and unaffordable in rural areas.

There exists a significant literature on the poverty impacts of roads and it is argued that transport infrastructure development is essential for economic growth to contribute to the reduction of poverty (United Nations, 2010, pp. 4). Certainly, as Riverson, Hine and Kwakye pointed out, it is important for developing countries to assess the impacts of road investment on socioeconomic development of rural areas (Riverson, Hine and Kwakye, 1988, pp. 19) considering the link between accessibility, marketing and agricultural development, for example. A certain amount of literature highlights the fact that transport infrastructure investments can foster positive economic growth and contribute to poverty reduction (Gachassin et al., 2010, pp. 2; Escobal and Ponce, 2010, pp. 5). Other work highlights some of the distributional benefits of such investments Khandker et al suggest that poor people are likely to benefit more from road investment than non-poor (Khandker et al., 2006, pp. 1).

Furthermore, some also argue that while such investments might not necessarily result in significant social benefits, according to van de Walle (van de Walle, 2002, pp. 579), the lack of roads is a major physical constraint perpetuating rural poverty. Indeed, the poor access of rural dwellers to social and productive services and markets is the result of inadequate transport infrastructure. A survey conducted in Sierra Leone in 1980s", revealed that investments for improvements to health clinics and schools were only carried out in villages with road access (Carapetis et al., 1984, pp. 6). More recent experience from substantial rural road investments in China and India led the International Food Policy Research Institute (IFPRI) to conclude that the most effective rural poverty reduction programs were those involving agriculture development, rural roads and education. In the case of China, for example, the improvement and provision of strong network of feeder roads had reduced transportation costs for local communities and largely contributed to the reduction of poverty (Fan and Chan-Kang 2005, pp.27).

Building roads is the foundation to rural poverty reduction but in order to sustain the efforts, it is important to take into account the social dimension of transport services with the aspect of mobility, the operating side and the sustainability of the network (e.g. management, maintenance). It is also essential to consider the needs of the rural poor before designing transport projects. This approach will enable policy makers to target and address the most important issues. It will also enable them to save money and time to gather resources for financing future policy programs. Today, most of the developing countries are still characterized by high levels of poverty despite the amount of studies available on the subject and only few will be able to achieve the Millennium Development Goals. Certainly, there are many obstacles to the success of transport projects, such as the complexity of the administration due to the wide range of stakeholders (e.g. users, operators, and regulators), the adaptation of infrastructure investment to the needs of local population, and financial constraints but these can be overcome through a good management of natural resources, accountability and transparency within local governments. Perhaps the most important factor to poverty eradication in developing countries is the willingness of local authorities to change current situations.

It can be argued, from this range of experience from the international development community and national governments, that effort to support rural transport infrastructure highlights that both urban and rural poverty can be reduced when transport improves accessibility and affordability for the poor, but the distributional impact of transport projects (and pricing policy) is under-researched. However, sustainability of such investments in

terms of their maintenance, often remains a major issue. An evaluation of rural road investments also found that in fragile states, the risks of intervention are high, but the returns can sometimes be substantial and also that where there was low institutional capacity, there is a general tendency to under-estimate the time needed to implement reforms, build capacity, and build institutions.

This chapter will add to our the understanding of the role of reliable, physical access in rural Ghana by exploring the relationship between rural mobility and 2 key policy areas; agricultural development and maternal and neo-natal healthcare. It will draw on 2 studies that have tried to develop a detailed picture of the nature and scale of the interaction with each of their respective sectors. The first study undertook exploratory secondary analysis of the Ghana Living Standard Surveys in order to assess the interaction between increased agricultural productivity, farming income and access to rural road infrastructures and transport services. It develops an explanatory model of the interaction and highlights the weaknesses in the existing approach used by such large evaluation approaches. The second study undertakes an evaluation of the impact of the establishment of a National Ambulance Service on maternal and neonatal healthcare. It develops a trans-disciplinary evaluation methodology that can capture the role that access plays in maternal and neo-natal mortality and provides some exploratory findings of the magnitude of access in health outcomes.

The chapter will critically examine the effectiveness of these respective evaluatory approaches in understanding the interaction between rural mobility and development and highlight possible areas for further methodological work. It will also highlight some fruitful policy directions to enhance the performance of rural access in Ghana and in particular provide pointers to some directions that could improve the positive impact that more reliable physical access could play on the effectiveness of policy delivery in key development sectors.

## **2. Food Security and revitalising Ghana's agriculture sector**

It is widely recognised that poor physical access to local, regional and international markets is one of the significant barriers to greater agricultural productivity in Ghana as in other countries in sub-Saharan Africa. (Plateau, 2006; Torero and Chowdhury, 2005; World Bank, WDR 2008). To take the harvest to market requires transport and travel. However, Africa faces significant constraints and challenges when it comes to the physical access to markets of its rural areas and agriculturally productive land. The vast majority of roads in rural Africa are un-paved and un-engineered. In Ghana 44% of the rural population live within 2 kilometres of an all-season road, though this is higher than the 34% for sub-Saharan Africa . This lack of rural transport connectivity seriously constrains agricultural production. Furthermore, infrequent, expensive or poor quality rural transport services and storage facilities increase production costs, damage goods and increase crop deterioration. Estimates of loss of harvest vary according to crop and other factors but estimates of loss vary between 10% and 40% of harvest due solely to poor physical access. The seasonal impassability of much of the rural road network can lead to 60-70% increase in trucking costs or the potential for substantial harvest losses, with the overall picture one of significant variation and uncertainty for the farmer.

Between 1996 and 2004, a project<sup>1</sup> interviewed 528 households in three wards of Zimbabwe with different access to roads (close, intermediate distance or far) and found that 86% of trips are of short distances, while less than 0.5% of people own a motorized vehicle. In the same time, 75 hours are spent travelling, essentially for water and fuel-wood collection, grain processing and crop production and marketing. This study was followed by the construction of low-cost footpaths and footbridges, leading to time savings and better access to services. Another study led by the World Bank in 2003 in Tanzania shows that up to 50 hours of the week time is spent on transport, i.e. the greatest part of the time available for a household.

Rural road and poverty related surveys have shown that agricultural subsistence and crop losses due to spoilage are the result of unreliable transport infrastructures and services. It is also found that improved roads and infrastructures can reduce inputs and transportation costs, leading to higher agricultural production, higher output prices, and higher wages, consequently reducing poverty through increased household income and consumption (Khandker et al., 2006, pp. 2 as cited by BIDS, 2004; Fan, Hazell, and Thorat 2000). A study on the impact of transport infrastructure on agricultural productivity in rural Nigeria revealed that following the construction and the renovation of more than 60,000 kilometres of paved roads, farmers working close to the rural roads had a better access to the market, and became more productive. As the community became accessible by paved road, transport related costs (e.g. time, money) decreased, which led to an increase of the rural income (Filani, 1993, pp. 253).

Therefore, to develop the potential for food in Ghana and elsewhere in the region requires a nuanced understanding of farmers, farming and travelling and transport. The burdens of transport are not simply a matter of costs or physical infrastructure, they are also to do with the way travel and transport interacts with social organisation, social processes, technology use, market institutions, ancillary services such as storage and processing, border crossings, technologies, market information, spatial form and distributions. It requires the development of methodologies to understand and evaluate efforts to improve access and its implications for agricultural development. The economic justification for rural road investment has often been contested and complex. As a result other more multi-disciplinary approaches have been called upon to help elucidate and understand the interactions between rural access and development.

According to Baba-Moussa et al (2009) in Grieco & Porter's book, *Transport and the Millennium Development Goals in Africa (2009)*, a farmer's access to an all weather road increased the probability of fertilizer adoption by approximately 15-20% in Ethiopia (Baba-Moussa et al., 2005, pp. 13). An adequate road investment can reduce transaction costs for the poor and provides saving that can be spent on other expenses such as food, health, and education. It is argued that the poor value access to basic transport as much as they value basic social services (Gannon and Liu, 1997, pp.12). In this line of reasoning, transport infrastructure investments can play a significant role in the reduction of poverty incidence (Khandker et al., 2006, pp. 2 as cited by BIDS, 2004; Fan et al., 2002). As part of an evaluation for the World Bank, 127 rural roads projects that were included under the above review were executed as standalone transport operations or as components of transport, agricultural and rural development projects (Riverson, Gavia and Thruscutt, 1991). From the above reviews, it was demonstrated that there were important linkages between rural roads and agricultural development that needed to be properly exploited in order to ensure that

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<sup>1</sup> Swedish International Development Agency study with technical assistance by the International Labour Organization, 1997

agricultural productivity and growth would occur as part of overall economic growth in countries of SSA.

Other significant examples of successful program of poverty reduction by investing in transport network were realised. In Guinea, a five-year study (until 2005) consisted in the observation of the economic development of regions which received investments in the improvement of feeder and local roads, in comparison with other regions which were not financially helped. It resulted that in the areas where roads had been improved, “area sown doubled and output sold almost quadrupled”, while the other areas showed no such evolution. At the same time, “travel time had halved, and freight transport costs had fallen 25% in the areas improved”, with again no such effect on the test regions<sup>2</sup>. In Ethiopia, the fifteen-year Road Sector Program resulted in constructing 70,000 kilometres community access roads, while the proportion of motorable roads increased from 50 to 70 percent, leading to an increase in the agriculture productivity.

It must also be remembered that women and girl children headloading is a substantial element of agricultural and freight transport with Ghana. The impacts of this reliance on human load-carrying by women and girl children can have substantial social and health implications. This rural reliance on human load carrying by women and children also translates itself into the urban Ghana context. *Kayayoo*, urban female head load carriers, are a major feature of Ghanaian urban transport, with complex social processes and inextricably linked to the petty trading structure of the urban economy. Girl children often sent, accompanied, with family or kin network members from the north of the country to work temporarily in Accra or other major cities. Many girls saw employment as *kayayoo* as a short-term measure of arduous work, as a way of getting together the goods necessary for their marriage and to increase future earning potential. For some young women from the rural north, being a *kayayoo* is one step in their career towards marriage; a marriage which is likely to entail plentiful financial domestic responsibilities. Evidence was also found of adult *kaya* women coming from rural north Ghana to Accra shortly after the birth of a child and remain within the *kaya* business until such time as the infant is toddling. Typically, respondents talked of returning home when sufficient income had been generated and this often consisted of being in Accra for 6-months to a year. However, for some the short-term measure may extend over significant periods and there may be plenty of occasions where they are at risk of commercial exploitation, and harassment that will separate them from any income they earn. Furthermore, some pre-pubescent girls have little control over their earnings but they were aware of being involved in saving activities as one respondent reported.

The young women involved in female portering are deeply embedded in rural family relations. They are often escorted from their rural communities by members of the family network. They also work in an occupational chaperoning context, working alongside older sisters and other relatives. Furthermore, there is a significant degree of social organisation amongst *kayayoo* and many were significantly involved in co-operation around savings and The widespread availability of *kayayoo* allow petty traders to connect with other informal public transport modes operating in the city. The extensive petty trading ensures a plentiful supply of smaller transport loads, sufficiently big to be arduous to carry by human transport but not impossible. Male and female porters operate in totally separate transport markets. Men frequently appear to be from local Accra populations, able to work collectively, to afford

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<sup>2</sup> République de Guinée Ministère des Transports 2005. Rôle des transports dans la réalisation des ODM (Étude de cas Guinée) SSATP, Washington D.C

technologies such as hand-pushed carts and to have a longer-term occupational structure. Female porters by contrast often operate on an individual basis with the most basic of transport technologies. There is also a need to consider mobile phone technology in the changing nature of these gendered divisions.

Significant efforts have been made over recent years to improve the evidence base for understanding social and economic development. A certain amount of this effort has been from multi-sectoral and multi-disciplinary perspectives, through such instruments as the Demographic and Health Surveys and the Living Standard Surveys. There are still limitations to how well such well-resourced measurement tools as these capture the interaction between rural mobility and development. There is equally little effort on the part of the transport sector itself to counter-act this weakness with its own evidence gathering responses. However, large multi-sectoral evidence gathering initiatives do offer significant scope for adding to our understanding of the interaction between rural mobility and rural development and as such are worth further exploration. In association with this, there is also a need for new trans-disciplinary perspectives to be developed on how interaction between rural mobility and other development sectors can be measured and on the measurement tools that may develop. This requires in-depth, co-operative endeavour between disciplines and sectors.

In order to contribute to the exploration of different fruitful approaches to understanding rural access as part of development, work was done by the authors to explore the extent to which significant evidence investments, such as the Ghana Living Standards Survey, can be used to explore further the interactions between rural access and poverty, particularly around agricultural productivity. The GLSS constitutes one of the most robust, large-scale, development survey datasets across sub-Saharan Africa.

Regression analysis was undertaken to explore linkages that could be determined using this dataset. The regression included a range of variables associated with living standards, income, distance to all-weather roads, cost of transportation and distances to markets. It was found that distance to an all-weather road in and of itself was not a significant predictor. Perhaps, this gives support to the idea that in rural areas, the mere presence of rural transport infrastructure may be as beneficial to communities unless there is some corollary with access to transport services. However, it was found throughout the regression analysis that distance to market was indeed a significant factor in being able to explain variations in living standards across rural Ghana. This may be explained in part by the importance of improved transport services to enable access to key services and opportunities, not just access to infrastructure.

### **3. Enhancing Ghana's Maternal and Neonatal health**

Another area of key interaction between rural transport and Ghana's wider development is in the area of health, particularly around maternal mortality. Meeting the Millennium Development Goal of reducing maternal mortality by 2015 is significant challenge in Ghana as in other areas across sub-Saharan Africa. The headline level of maternal mortality is significantly worse in sub-Saharan Africa than elsewhere in the world and the indicator is getting worse not better. Inadequate transport services and infrastructure currently represents a major contributor to maternal mortality in sub-Saharan Africa. In a developing context, it is estimated that 35% of all maternal mortality can be directly attributed to lack of transport Gil-González et al (2006) and that in 75% of maternal mortality cases transport is an influential factor (Babinard and Roberts,2006). However, the amount of research is still

very limited in this area. Of 2225 papers on maternal mortality reviewed by Gil-Gonzalez et al (2006) distance and transport constraints were analysed in only 11 of them.

However, timely access to health facilities is conceptually understood, as a key element to maternal and newborn health and the lack of adequate and appropriate transport services has a complex impact on the ability of a country's health care providers to provide adequate maternal and neonatal care to those in need. In fact the widely used 'Three Delays' model (Thaddeus & Maine, 1994) was developed from work done in West Africa by the Prevention of Maternal Mortality (PMM) programme in the early 1990's. Furthermore, work by Lema reviewing the interaction between transport and maternal health (Lema, 2010) found that travelling and the transport services contribute to health outcomes in pregnancy and childbirth in the following ways:

- Poor access, particularly in rural areas of Africa plays a key role in the death of women and newborns in child birth.
- Poor rural access delays decisions in seeking healthcare due to considerations of extra cost and time it places on households seeking healthcare.
- Poor rural access delays women in getting to healthcare in emergency situations.
- Poor access and ineffective transport management capacity delays women and newborns in being referred from health facility to appropriate healthcare professional when medical complications arise.
- Poor access and lack of transport management capacity reduces the ability of community health workers to undertake outreach activities to enhance maternal health access, particularly in pregnancy and post-natal care.
- Poor access of rural communities reduces the morale of health workers and limits the ability to retain skilled health workers
- Poor access and low logistics capacity restricts the ability to deliver medical supplies and drugs in a timely manner for effective maternal healthcare and facility management.
- Poor access impacts on health seeking behaviour in the antenatal period and management of other diseases in pregnancy such as HIV/AIDS and malaria
- Poor access impacts on household's survival if mothers and newborns require post natal care.
- Poor access impacts on the capacity of mothers or households to attend postnatal care for newborns.
- Poor access contributes to the delay in seeking medical attention in the case of sick newborns.

Other research highlights different aspects of the interaction between physical access and maternal mortality. Work by Baiden et al (2006), highlighted that 71% of maternal deaths in hospital occurred in women who lived within 15km of the hospital. The authors reported that, either women who live further from the hospital are purposefully not using the emergency services of the hospital or were dying before even reached the hospital. Van den Broek et al (2003) reported that average distance for those household surveyed was 4.85km with The distance of a household from a health centre was found to be important by the authors for outcomes. They found that for households situated within 1km of the health centre, 79.1% of pregnancies resulted in a currently living child, whereas they found that for households living 7km or more away this had reduced to 73.3% ( $p < 0.0001$ ). A Nigerian study found that 72.9% of deaths occurred in women who had been labouring at home without supervision. Almost half of the maternal deaths occurred in women who lived more than 10km away from the hospital. (Okonta et al 2002). A Gambian study found that transport played a part in between 5.6-16.7 per cent of mortality cases (Walraven et al 2000).

A study in Senegal found that women who were referred late, often as a result of delays in seeking care or travel to hospital, had an increased risk of mortality. The study also found that women referred from further away were more likely to have had severe complications and to arrive late (Garenne et al, 1997). Furthermore, 83% of the near-miss cases in a Cote d'Ivoire referral hospital were said to be in a critical condition on arrival at the hospital and 69% of them had been referred from another health facility. Those referred, were more statistically more likely to be a near miss case on arrival (Filipi et al 2005)).

Studies from Southern Africa point to significant impacts of poor access on maternal mortality/ Lack of transportation delayed or prevented access to healthy facilities in the rural area of Zimbabwe, a major problem in 28 percent of the maternal mortality cases studied.( Fawcus et 1996) and 5,8% of all cases reviewed in South Africa (Mhlanga et al 2000). In a Ugandan study (Okong 2006) 22 or 53% of cases reported in this Uganda audit of near misses had delays due to lack of transport, long distances or inappropriate means of travel. 34% also reported a lack of blood or lack of transport to the blood bank. Kadowa (2010) also found that in Uganda 64.4% of the women admitted with ruptured uterus lived over 10km from the hospital. By contrast work on fistula in Ethiopia (Muleta et al 2010) found that walking distance to the nearest health facility did not appear to influence longer duration of labour, stillbirth, urethral damage and vaginal scarring.

There is even less research with respect to neo-natal and child mortality and physical rural access. Work by Anyamele (2009) highlights that in many countries the level of access afforded by urban living reduces the likelihood of mortality for children. In Benin, it falls by 11.61%, Cameroon, 15.45%, Ethiopia, 25.42%, Niger, 39.16%, Nigeria, 16.89%. Work done in Burkina Faso found that being born in the rainy season was associated with significantly higher risk of mortality during the 1<sup>st</sup> year of life compared with being born in the dry season. Furthermore, it found that there was a 33% significantly increased infant mortality risk for those who were living more 10km from their nearest health centre. Becher et al 2004). A Ghanaian study found (Enweronu-Laryea et al 2008) found that the high mortality of new born babies from asphyxiation may have been due to the mode of transportation (usually in a taxi by their relatives) to the referral hospital. Wort et al (2008) found that prevalence of low birthweight in primigravidae increased with distance of the dispensary from the district hospital.

Different sectors need to develop pro-active responses to the worsening of the maternal and neonatal health MDGs. Integrated interventions across the transport and health sectors require robust investigation and evaluation to assess their impact as they address both socio-economic and medical factors contributing to mortality during childbirth. A number of innovative strategies to surmount cost, distance, and time barriers to accessing care have been previously implemented at the community level and many appear to offer solutions. However, few have reported or evaluated the possible impact of the wide-scale implementation of these strategies nor offered a route to implementation.

In Ghana, the health sector remains a central pillar to Government's development agenda and contributes to accelerated growth in many ways. The national policy sees the promotion of good health as a mechanism to create wealth by improving the social capital and productivity in the country. The ultimate goal of the Ghana Health Sector is to ensure a healthy and productive population that reproduces itself. In line with this goal the Ghana Ministry of Health established in 2004, a National Ambulance Service. Initially established across 7 pilot ambulance stations, it is planned for roll-out across the whole country in the

next few years. Currently NAS has twenty-four stations with two control rooms in the country. At present, the coverage of ambulance services is limited to regional capitals and a few rural districts. The operation of NAS has started with the provision of basic care by the Emergency and Medical Technicians (EMT's). Soon they will be upgraded to EMT advanced or intermediate to be able to provide more advanced care. NAS has provided new ambulances to all ambulance stations nationwide and some health facilities to support emergency delivery in the country. To date NAS has trained 243 emergency medical technicians to man its operations. Given the long history of developing robust transport management principles in the Ministry of Health there is an opportunity for the National Ambulance Service to become a sustainable, well-run and organised service. It will be crucial to its sustainability that the impact it has on meeting health objectives is established and monitored effectively. The research proposed here will be a very important step in establishing that impact.

All of the studies set out earlier, however, have not had differences in access and transportation as a key design element of their work. Many use distance as simple proxies for access constraints. Distances may be short for some communities but difficulty through poor quality roads and lack of transport services because of night-time may contribute to negative health outcomes that would be picked-up by these studies. As a result, work is being undertaken by the lead author, as part of a partnership between the National Ambulance Service and the UK-based transport NGO, Transaid, to develop a robust evaluation framework, where distance and other factors are designed in, to understand better the interaction between physical access and maternal health. The work will also seek to explore the impact that the National Ambulance Service, as a policy measure, is having on maternal health, particularly in rural areas of Ghana. The work will look to develop a better understanding of the severity of patients' conditions, at the point of admission to Emergency Obstetric Care facilities, having arrived by a range of transport means. It will seek to explore to what extent does timely arrival, as for example, that provided by a dedicated ambulance service mean for health outcomes and explore how effective a policy measure such as an ambulance service may be in delivering improved maternal health for Ghana.

The research will focus not only on the Emergency Obstetric Care level facilities, but also undertake a series of detailed qualitative research amongst rural communities across Ashanti region. This will focus on understanding communities still very real challenges to accessing maternal health care in medical emergencies. It will seek to understand the strategies that communities adopt to overcome these challenges and see how multi-sectoral national policy around physical access will contribute to improvements in this area. In particular, it will seek to understand the impact that substantial changes in mobile phone technology use, coverage and availability have had on the strategies households and communities adopt in medical emergencies.

#### **4. Future Research Agenda**

Rural transport has a key role to play in a range of development priorities in Ghana over the coming years. Improvements to accessing services and opportunities for rural communities across the country have had and will continue to have substantial impacts on economic development and growth. This chapter highlights to particular areas where this is particularly the case for Ghana: agricultural development and maternal health. It seeks to show the implications of improved rural access for Ghana's development in these areas.

However, there is also substantial work yet to be done to better understand the most effective way to address the challenges and opportunities to enhance the interaction between agriculture, food security and physical access to markets which include:

- How can we promote the synergies between the Agriculture and Rural Transport sector synergies and cooperation?
- How can we promote greater participation of farming communities and community-based enterprises in decision-making around and delivery of improved rural access?
- How can we develop analytical tools that represent the interaction between rural access, agricultural growth and wider social and economic development?
- How can we develop a more nuanced, comprehensive evidence-base for the policy framework to improve of rural access?
- How can we better understand how transport and travelling impacts at household level, how it varies between men and women and what role strategies and competencies play in influencing the use and organisation of transport resources to benefit households?
- What strategies and competencies can develop to deal with change (natural, social organisation, technological, climate-change induced, seasonal, unforeseen, frequent, infrequent, one-off)?
- How can we develop a robust evaluation framework to understand the interaction between physical access and maternal mortality
- How can we better understand the impact that a well-managed nationally available ambulance service can have on the level of maternal mortality in rural Africa caused by poor physical access
- How can we develop research capacity to improve access for rural Africa?

## REFERENCES

Anyamele, O.D (2009) 'Urban and Rural Differences across countries in Child Mortality in Sub-Saharan Africa Journal of Health Care for the Poor and Underserved, Volume 20, Number 4, Supplement, pp. 90-98

Baba-Moussa, A., Kajange, D., Atta-Mensah, J., Lisinge, R., Guiebo, M., Adzigbey, Y., Alemseged, E., Nahusenay, T., Roberts, P., Willoughby, C., and Gaddaye, A. (2005) Transport and the Millennium Development Goals in Africa

Baiden, F., K. Amponsa-Achinano, A.R. Oduro, T.A.Mensah, R.Baiden and A. Hodgson (2006), 'Unmet need for essential obstetric services in a rural district in northern Ghana: Complications of unsafe abortions remain a major cause of mortality' Public Health, No 120, pp 421-426.

Van den Broek, N.R, S.A. White, C. Ntonya, M. Ngwale, T.R. Cullinan, M.E.Moyneux, J.P.Neillson (2003) 'Reproductive Health in Rural Malawi: a population-based survey' BJOG: An international Journal of Obstetrics and Gynaecology, Vol 110, pp 902-908

Bryceson, D., Mbari, T. and Maunder, D. (2002) Livelihoods, Daily Mobility and Poverty in Sub-Saharan Africa. Transport Reviews, Vol. 23, No.2, pp. 177-196

Carapetis, S., Beenhakker, H. and Howe, J. (1984) The Supply and Quality of Rural Transport Services in Developing Countries: A comparative review. World Bank Staff Working Papers, No. 654

Enweronu-Laryea, C.C., K. Nkyekyer, O.P.Rodrigues, (2008) 'The impact of improved neonatal intensive care facilities on referral pattern and outcome in a teaching hospital in Ghana' *Journal of Perinatology*, Vol 28, pp 561-565

Escobal, J. and Ponce, C. (2010) Access to Public Infrastructure, Institutional Thickness and Pro-Poor Growth in Rural Peru. IPPG Discussion Paper Series, No. 41 [www.ippg.or.uk](http://www.ippg.or.uk) accessed on 15/07/2011

Fan, S. and Chan-Kang, C. (2005) Road Development, Economic Growth and Poverty Reduction in China. International Food Policy Research Institute, Research Report No. 138

Fan, S., Zhang, X. and Rao, N. (2004) Public Expenditure, Growth, and Poverty Reduction in Rural Uganda. DSGD Discussion Paper No. 4

Fan, S., Hazell, P. and Thorat, S. (1999) Linkages between Government Spending, Growth and Poverty in Rural India. International Food Policy Research Institute (IFPRI), *Research Report*, No. 110

Fawcus, S., M. Mbizvo, G. Lindmark, and L. Nystrum (1996) *Studies in Family Planning* Vol 27 No 6 pp 319-327

Filani, O. (1993) Transport and rural development in Nigeria. *Journal of Transport Geography*, Vol. 1, Issue 4, pp. 248-254

Filippi, V., C. Ronsmans, V. Gohou, S. Goufodji, M. Lardi, A. Sahel, J. Saizonou and V. De Brouwere (2005) 'Maternity wards or emergency obstetric rooms? Incidence of near-miss events in African hospitals' *Acta Obstetric Gynaecologica Scandinavica*, Vol 84, pp 11-16

Garenne, M., K. Mbaye, M. Diawo Bah, and P. Correa (1997) 'Risk Factors for Maternal Mortality: A case-control study in Dakar Hospitals (Senegal)' *African Journal of Reproductive Health*, Vol 1, No1. Pp14-24

Havard, M., and A. Faye. 1988. "Eléments d'analyse de la situation actuelle de la culture attelée au Sénégal: perspectives d'études et de recherches." In P. H. Starkey and F. Ndiame, eds., *Animal Power in Farming Systems*. Vieweg for German Appropriate Technology Exchange. Eschborn, Germany: GTZ. ISBN 3-528-02047-4

IEG (Independent Evaluation Group). 2007. *A Decade of Action in Transport: An Evaluation of World Bank Assistance to Transport Sector, 1995-2005*. Washington DC: World Bank.

Khandker, S., Bakht, Z. and Koolwal, G. (2006) The Poverty Impact of Rural roads: Evidence from Bangladesh. World Bank Policy Research Working Paper No. 3875

Kadowa, I. (2010) Ruptured uterus in rural Uganda: prevalence, predisposing factors and outcomes' *Singapore Medical Journal*, Vol 51 No 1 pp 35-38

Kawuwa, M.B., A.G. Magira, H.A. Usman. (2007) 'Community Perspective of Maternal Mortality: Experience from Konduga Local Government Area, Borno State, Nigeria' *Annals of African Medicine*, Vol 6 No 3 pp 109-114.

Mbara, T., Chiyaka, O., Bryceson, D., Maunder, D. and Davis, A. (2001) Sustainable Livelihoods, Access and Mobility along the Hararre-Bindura Corridor, Zimbabwe. DfID/TRL [www.transport-links.org/transport.../134\\_Exec\\_Summary\\_Report\\_Final.doc](http://www.transport-links.org/transport.../134_Exec_Summary_Report_Final.doc) accessed on 30/07/2011

Mhlanga, R.E., P.Tiebere, N. Xundu (2006) 'Maternal deaths of non-pregnancy-related infections: 3<sup>rd</sup> report of confidential enquiry into maternal deaths in South Africa 2002-2004' South African Journal of Obstetrics & Gynaecology, Vol 12, No 3, pp 130-138

Muleta, M., S. Rasmussen and T. Kiserud (2010) 'Obstetric Fistula in 14928 Ethiopian women' Acta Obstetrica & Gynecologica Vol 89 pp 945-951

Njenga, P. and Davis, A. (2002) Drawing the road map to rural poverty reduction. Transport Reviews, Vol. 23, No. 2, pp. 217-241

Okong, P., J. Byamugisha, F. Mirembe, R. Byaruhanga, S. Bergstrom (2006) 'Audit of severe maternal morbidity in Uganda – implications for quality of obstetric care'. Acta Obstetrica & Gynecologica Vol 85 pp 797-804

Okonta, P.I, U.K. Ovali, V.O. Otoide, and D. Twomey (2002) 'Exploring the causes of and risk factors for maternal death in a rural Nigerian referral hospital' Journal of Obstetrics and Gynaecology, Vol 22, No 6 pp 626-629

Platteu, J-P (1996). Physical Infrastructure as a Constraint on Agricultural Growth: The Case of Sub-Saharan Africa" *Oxford Development Studies* 24 (No. 3, 1996).

Riverson, J., Gaviria, J., and Thruscutt, S. 1991. *Rural Roads in Sub-Saharan Africa: Lessons from World Bank Experience*. World Bank Technical Paper No. 141. Washington DC: World Bank.

Riverson, J. Hine, J. and Kwakye, E. (1988) Rural Road Accessibility and Development of Agriculture and Social infrastructure in Ghana. Transportation Research Record, Vol. 898, pp. 19-24

Swedish International Development Agency study with technical assistance by the International Labour Organization, 1997

République de Guinée Ministère des Transports 2005. Rôle des transports dans la réalisation des ODM(Étude de cas Guinée) SSATP, Washington D.C

United Nations (2010) Millennium Development Goals Background Paper, Africa" s Infrastructure: An Agenda for Transformative Action

van de Walle, D. (2002) Choosing Rural Road Investments to help Reduce Poverty. World Development Vol. 30, No. 4, pp. 575-589

van de Walle, D. (2009) Impact Evaluation of Rural Road Projects. Journal of Development Effectiveness, Vol.1, No.1, pp. 15-36

Walraven, G., M. Teller, J. Rowley and C. Rosmans (2000) 'Maternal mortality in rural Gambia: levels, causes and contributing factors' *Bulletin of the World Health Organisation*, Vol 78, No 5 pp603-613

World Bank. 2003. *Reaching the Rural Poor: A Renewed Strategy For Rural Development*. Washington DC: World Bank.

World Bank (2008) *World Development Report: Agriculture for Development*

Wort, U.U. M. Warsame, B.J.Brabin (2008) 'Potential use of birthweight indicators in rural Tanzania for monitoring malaria control in pregnancy' *Public Health*, Vol 122 pp 923-932

## **ANNEX 2 Paper submitted to AFCAP Conference Proceedings**

### **Rural Mobility and Maternal Mortality: Innovative approaches to understanding the role that poor rural access plays in maternal and neonatal health**

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Meeting the Millennium Development Goal of reducing maternal mortality by 2015 is significant challenge in Africa. The headline level of maternal mortality is significantly worse in Africa than elsewhere in the world and the indicator is getting worse not better. Inadequate rural transport services and infrastructure currently represents a major contributor to maternal mortality in Africa. It is estimated that 35% of all maternal mortality can be directly attributed to lack of transport Gil-González et al (2006) and that in 75% of maternal mortality cases transport is an influential factor (Babinard and Roberts,2006). Timely access to health facilities is a key element to maternal and newborn health and the lack of adequate and appropriate rural transport services has a complex impact on the ability of a country's health care providers to provide adequate maternal and neonatal care to those in need. However, there is very limited evidence-based guidance for practitioners and policy-makers in either the health or rural transport sector on how best to reduce the negative impact that rural mobility has on the substantial efforts being made to reduce Africa's maternal mortality burden. This paper will set out some of the latest work undertaken on an ongoing AFCAP-funded joint Ghana Ministry of Health/Transaid project that is seeking to understand the impact of a the innovative policy of National Ambulance Service on rural maternal and neonatal health in Ghana. It will describe previously unreported work undertaken to review the limited existing knowledge and literature on the scale and nature of the role that poor rural access and mobility plays in the challenge of maternal and neo-natal mortality in Africa. It will describe recently completed work to develop an innovative evaluation methodology for measuring the role of access in maternal and neo-natal health. It will also describe some initial findings from field work in Ghana that will have used this innovative evaluation methodology. The paper will also describe the next steps for the ongoing project and highlight some of the possible policy directions that can be considered for rural mobility in maximising its contribution to one of Africa's key development challenges.



**TRANSAID GUIDELINES AND INFORMATION:**

**Guidelines and Information on how to manage a National  
Ambulance Service (NAS) in the African context**

----- 2012

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## Introduction

## Funding/costs

Operational – vehicles, fuel, maintenance, vehicle purchase & replacement  
Management – staffing (management, call centres, drivers, mechanics)  
Patient costs – for service

## Cost Implications / Costing Model

### Paramedics and medical equipment

Staff  
Training  
Equipment – purchase, availability

### Communication

single contact number (free)  
call centres – staffing and equipment

### Vehicles

Specifications  
Four wheeled, two wheeled ambulances?  
Purchase/replacement  
Maintenance – spare parts, mechanics etc

## Management

### Transport Management Systems an Introduction

The essential components of an effective Transport Management System (TMS) are as follows:

The five main components are:

- a) Policy
- b) Management Information
- c) Fleet Management
- d) Operational Management
- e) Human Resources

a) Policy

Policy steers the transport management system. Policy must be developed through a participatory process, so that all transport users have an opportunity to contribute to the final product. It is important to remember that a policy does not remain static; it must be updated at reasonable intervals and also after significant changes to the operation.

b) Management Information

The way in which information is collected, analysed, presented and stored are key to an effective TMS. Details about the cost and benefits of maintenance and supply options, staff training, planning and budgeting are gathered through Fleet Management, Operational Management and Human Resources procedures. This information enables decisions to be made about these components of TMS, supporting them with facts. Management Information also provides base data for budget preparation and review of Policy. The important Key Performance Indicators (KPIs) are part of this information.

c) Fleet Management

Fleet Management is about the systems and procedures that record, manage and impact upon the life of vehicles from the cradle (procurement) to the grave (disposal or sale). It is informed by Policy and dependent on keeping in touch with running conditions through well documented and adhered-to procedures that enable the right decisions about fleet specification, maintenance, and replacement, to be taken.

d) Operational Management

Operational management is defined as “Who needs to take what action, when and how”. It is the means by which Policy is adhered to. This includes systems and processes for planning and allocating vehicles, as well as the operational controls that manage their daily use.

e) Human Resources

TMS depends upon a management culture in the organisation where the systems and procedures for TMS are fully accepted and supported by all personnel. When a good system is in place, transport management is less complex and less time consuming. The identification, capacity building and retention of the right people, ideally with appropriate transport management qualifications, to run and manage transport must be made a priority.

## Indicators and appropriate management systems

### Vehicle Monitoring Indicators (Key Performance Indicators, KPIs)

- 1. Kilometres Travelled** – While not necessarily a useful indicator on its own, the Kilometres Travelled indicator can highlight disparities between the distances covered by vehicles and/or driver. It is also the foundation of almost every calculation required for the KPIs listed below.
- 2. Fuel Consumption** – Fuel consumption measured in KM per Litre can provide an early indication of fuel theft, poor driving technique or potential maintenance problems. Measuring fuel consumption is also key for calculating the running cost of each vehicle and thus the cost per item distributed.
- 3. Running Cost per KM** – Monitoring the running cost of each vehicle in the fleet is a fundamental part of best practice fleet management. Sudden changes in running cost can indicate maintenance problems, erratic driving, or even theft of fuel. Running cost per km is calculated by taking a single vehicle, adding its monthly fuel and maintenance costs, and dividing them by the number of kilometres travelled in that same month. For vehicles which don't travel long distances it may be more appropriate to observe the costs over a three month period in order to get a more accurate average.
- 4. Availability** – Vehicle availability is a measure of the amount of time that a vehicle is available for completing the duties of an organisation versus the amount of time it spends undergoing maintenance or repairs. This is calculated by looking at the number of days the vehicle spends in maintenance each month according to logbook data. An availability score of 100% for a vehicle within in an organisation can be disconcerting as it implies that the vehicle is not undergoing necessary and appropriate maintenance. Poor availability scores can represent a poor maintenance system with vehicles spending too long undergoing maintenance either due to the poor service offered by maintenance providers or an inconsistent maintenance regime resulting in regular mechanical failures.
- 5. Utilisation** – Vehicle utilisation is a measure of the amount of time which a vehicle is used when it is available according to the definition of availability above. Within some organisations the utilisation figure is calculated by dividing the number of days which the vehicle is used in a month by the number of days which that vehicle is available to give a percentage figure for each vehicle. However a more precise way of monitoring utilisation is by conducting the analysis on a per hour basis rather than on a per day. Some organisations prefer to put the emphasis on “unutilised” time and report against an indicator called standing time. A more precise utilisation calculation allows management to identify if capacity problems lie in a shortage of vehicles or poor planning of the existing fleet.
- 6. Needs Satisfaction** – This is a measure of the ability of the fleet to fulfil the needs of the distribution operation. Essentially it is calculated by comparing the number of return trips necessary to meet service delivery expectations (e.g. one shipment per delivery point per month) versus the number of return trips actually undertaken. This analysis will provide a percentage score, allowing any gap to be identified and analysed to understand what element within the supply chain was the cause.
- 7. Safety** – Road Traffic Crashes result in death and injury for thousands of people each year. They also cause disruption to transport operations, increase operational costs through

increased insurance premiums, and affect service delivery. Anybody responsible for vehicles, regardless of the size of the fleet, should monitor **near misses** (instances when a vehicle was almost involved in a crash) and **crashes**. The target for this indicator should be zero near misses and zero crashes each month.

- 8. Cost Effectiveness** - The cost effectiveness with which an order is delivered can be measured in a number of ways. By dissecting cost effectiveness to a per kilometre level it is possible to compare long and short distance trips more fairly. Further still measuring the operation by “**per KG per KM**”, “**per metre cubed per KM**” or “**per box per km**” helps to further identify inefficiencies such as delivery points with exceptionally long unloading times or drivers with high fuel consumption tendencies.

## Management capacity requirements

Management capacity analysis is best guided by the World Health Organisation's "Strengthening Management Capacity" framework. The framework suggests that there are four important and inter-dependant elements when assessing and/or building management capacity.

1. Number and distribution of managers
2. Managers' competencies
3. Management support systems
4. Working environment

## Technical skills and qualifications

In order to fulfil the role the person must possess the following skills and experience;

- Several years experience working in transportation or distribution within the African context
- Qualifications in distribution and transport
- Experience in implementing Transport Management Systems to international standards including:
  - Policy
  - Tools
  - Procedures
  - KPIs
- Preferably a background of working in both the private sector and the public sector within transport or distribution.

### Literature review of past reports and studies

The two tables below show the literature which was reviewed at the start of the process, and highlights the prevalence of various issues and/or recommendations.

| Identification Number | Report |
|-----------------------|--------|
| A                     |        |
| B                     |        |
| C                     |        |
| D                     |        |

| Issue/Recommendation | Presence in Existing Literature |
|----------------------|---------------------------------|
|                      |                                 |
|                      |                                 |
|                      |                                 |

### Experience from other countries - Case studies and experience from other countries

Case studies were reviewed for relevant studies to the subject matter of ambulance services and transport management strengthening. The case studies below best reflect these topics.

| Project                                   | Year and Country       | Noteworthy Findings   | Reference   |
|---|------------------------|---|---|
| Fleet Management Strengthening (Transaid) | South Africa 1998-2005 | <p>A Save the Children/Transaid transport management programme supported the health systems of 8 provinces in South Africa from 1995 to 2002. The programme increased the recognition of the critical value of good transport management in the support of effective health service delivery. Key management controls were introduced to improve the efficiency of transport and establish greater management controls on vehicles. A considerable emphasis on performance indicators with regular monitoring gave provincial health departments a clear sense of the cost of health transport.</p> <p>In North-West province the Transaid programme saw a cut in the number of vehicles used by the Health Department from 2,300 vehicles to less than 1,000. This reduced fleet is able to support the same level of service delivery and has delivered a massive saving in costs to the provincial Department. The Transaid emphasis on cost effectiveness and emphatic provincial transport management has removed old and redundant vehicles from a number of fleets left by old administrations from the Apartheid era. Obsolete vehicles were costing too much money and it was rational to remove them from the fleet. Across the provinces, vehicle availability remains high.</p> <p>During a 2004 visit by a DfID consultant, vehicle availability scores were on target and needs satisfaction, a measure of the ability of the fleet to meet health service needs, was up to 100% in some locations.</p> | Transaid, Technical Case Study (06) - South Africa Department of Health Transport Management Project.<br><a href="http://www.transaid.org">www.transaid.org</a> |

## Planning for the future / moving forward

### Appendices

Appendix 1 –

Appendix 2 -

Appendix 3 -

Appendix 4 -

Appendix 5 -