

# Social Dimensions of Transport – a resource for Social Impact Appraisals<sup>1</sup>

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<sup>1</sup> This working document was written in 2013 by Katie Norman while on a Graduate Placement at the Department for International Development. With thanks to Gina Porter for reviewing the document and Anna McCord, Katie Chapman, Elizabeth Jones and Simon Narbeth for their contributions.

# 1. Introduction

## 1.1 Purpose and structure of document

This document was written as a **social impact appraisal** to support the design of new transport research business cases. In addition it is anticipated that it will be a useful resource for DFID advisors and external partners working on transport programmes and research. As a **summary of key evidence on the social dimensions of transport**, it provides a platform for further research, programme design or business case development

This document outlines the **links between poor connectivity and poverty**. It covers the **social welfare benefits of transport**, focusing on **health, education, access to markets and improved livelihood opportunities** (Section 2). It also examines the **distributional impacts of transport interventions**, considering gender, income groups, people with disabilities and children (Section 3).

**Transport infrastructure** is an important part of the picture. However, connectivity and access to services and markets also relies on the availability of **affordable and reliable transport services**<sup>2</sup>. This appraisal considers the importance of transport services to social welfare (Section 2.3).

While transport interventions can deliver improved social welfare outcomes, they also carry associated risks. For example low income and middle income countries account for 92 percent of global road fatalities, despite owning only 53 percent of the world's motor vehicles<sup>3</sup>. The **social risks** and undesirable outcomes of transport interventions are explored along with mitigation suggestions and examples of good practice (Section 4).

In addition, there are two sections which address programme operation and design. An overview of **public works programmes** is provided to give a framework for assessing the relevance of labour-intensive intervention strategies (Section 5). There is also a **Checklist** to ensure that social development concerns are sufficiently integrated into the design of both programmes and research (Section 6).

This appraisal has been produced through a review of relevant literature, both online and that supplied by DFID and external colleagues. A combination of case studies, cross-country comparisons, synthesis papers and policy documents has been used to

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<sup>2</sup> Porter, G (2013) *Transport Services and their impact on poverty and growth in rural sub-Saharan Africa*. AFCAP <http://r4d.dfid.gov.uk/pdf/outputs/AfCap/AFCAP-GEN-060-J-Transport-Services-Poverty-and-Growth.pdf>

<sup>3</sup> World Health Organisation (2013) *Global Status Report on Road Safety*. Accessed at: [http://www.who.int/violence\\_injury\\_prevention/road\\_safety\\_status/2013/report/en/index.html](http://www.who.int/violence_injury_prevention/road_safety_status/2013/report/en/index.html)

give a reliable but applied evidence base. A **Resource Matrix** has also been produced to accompany this appraisal. It summarises key arguments of all works cited to facilitate further research.

## 1.2 The need for transport

Worldwide over 1 billion people lack access to roads, 98 percent of them in developing countries<sup>4</sup>. For the 72 percent that live in rural areas in poor countries<sup>5</sup>, poor mobility is particularly apparent. 61 percent of rural dwellers in developing countries have access to the transport network. In Sub Saharan Africa this figure is even lower at 30 percent<sup>6</sup>. Among DFID's priority countries, the average RAI is 43% (see Table 1).

**Table 1: Rural Access Index<sup>7</sup> (DFID bilateral countries which are included in RAI data)**

Source: World Bank *Rural Access Index* (2006)

DFID Priority Country	Rural Access Indicator
Pakistan	77%
Nepal	15%
India	60%
Bangladesh	37%
Yemen	21%
Tajikistan	74%
Tanzania	38%
Nigeria	47%
Niger	37%
Malawi	38%
Kenya	44%
Ghana	44%
Ethiopia	17%
Democratic Republic of Congo	26%
Uganda	27%
Zambia	64%
Sierra Leone	65%

The report from the High Level Panel on the Post 2015 development framework suggested the following goal on transport: "Strengthen productive capacity by

<sup>4</sup> World Bank (2008) *World Bank Group Sustainable Infrastructure Action Plan*. Accessed at: <http://documents.worldbank.org/curated/en/2008/07/9719738/world-bank-group-sustainable-infrastructure-action-plan-fy09-011>

<sup>5</sup> World Bank Development Indicators

<sup>6</sup> World Bank (2006) *Rural Access Index*

<sup>7</sup> Refers to percentage of the population living within 2km of an all season road, irrespective of the availability of suitable transport services.

providing universal access to financial services and infrastructure such as transportation and ICT". The report recognises that connectivity can help people to increase their income through greater productivity.

## 2. Transport and Social Welfare

### 2.1 Poverty-reducing impacts of connectivity

Poor connectivity is one of the factors that contribute to household poverty, restricting access to markets and basic services. Lack of mobility can be a significant barrier to reaching the Millennium Development Goals: Halving poverty and hunger, increasing access to education, reducing maternal<sup>8</sup> mortality and improving child health. Although not recognised in the current MDG targets<sup>9</sup>, evidence suggests that transport and connectivity are highly instrumental in the delivery of social welfare outcomes by increasing individual access to facilities and supporting income generation<sup>10</sup>.

There are studies linking connectivity with measurable poverty reduction. Research in Ethiopia found that access to all-weather roads reduced poverty by 6.9 percent and increased consumption growth by 16.3 percent<sup>11</sup>. Several studies have found correlation between access to transport and rural poverty as well as other social development indicators such as school enrolment<sup>121314</sup>. (See Table 3)

**Table 2: Examples of developmental and poverty-reduction impacts of rural roads.**

Source: Kingombe (2011)<sup>15</sup>

Author	Country covered	Data	Method	Major Findings
Mu and van de Walle (2007) (2011)	WB financed rural road rehabilitation project implemented in rural Vietnam between 1997 and 2001	The "Survey of impacts of rural roads in Vietnam" consists of a panel of 200 communes and 3,000 households. The survey design implicitly takes the commune as the	Double difference and matching methods	Significant average impacts on the development of local markets. Improved and sustained primary school completion rates. Impacts larger for poorer areas.

<sup>8</sup> World Bank *Maternal Mortality and Rural Access*. Accessed at: <http://www.worldbank.org/transport/transportresults/headline/rural-access/rai-mmr-worldmap-20070305.pdf>

<sup>9</sup> Connectivity/transport is now on the agenda for the post-2015 targets.

<sup>10</sup> DFID Transport Resource Centre (2002) *Transport's Role in Achieving the Millennium Development Goals*; African Union, UN Economic Commission for Africa, with African Development Bank, World Bank, European Union (2005) *Transport and the Millennium Development Goals in Africa*, February 2005.

<sup>11</sup> Dercon *et al.* (2008) "The Impact of Agricultural Extension and Roads on Poverty and Consumption Growth in Fifteen Ethiopian Villages" IFPRI Discussion Paper 840

<sup>12</sup> Bakht, Z. *et al* (2009) "The Poverty Impact of Rural Roads: Evidence from Bangladesh" *Economic Development and Cultural Change* Vol. 57:4, pp685-722

<sup>13</sup> Gibson, J. and S. Rozelle (2003) "Poverty and Access to Roads in Papua New Guinea" *Economic and Development and Cultural Change* Vol. 52:1:159-85

<sup>14</sup> Essakali, M. (2005) *Rural Access and Mobility in Pakistan: A Policy Note*. World Bank Transport Note No. TRN-28. Accessed at: <http://hdl.handle.net/10986/11781>

<sup>15</sup> Kingombe, C. (2011) *Achieving pro-poor growth through investment in rural feeder roads: the role of impact evaluation*. ODI Background Note.

		project's zone of influence.		Further analysis in 2011 supported these findings
Deininger and Okidi (2003)	Uganda	Micro-level survey and panel-data evidence of about 1,200 households spanning 1992-2000	Proceed in three stages: i) estimating determinants of economic growth at the household level, ii) expanded to consider poverty reduction, and iii) perform simulations	Access to key public goods such as infrastructure, and the avoidance of civil strife has been a critical determinant of households' ability to increase their income and reduce the risk of falling into poverty
Khandker et al. (2006)	Bangladesh	Household-level panel data	Use a household fixed-effects technique to estimate the returns to road investment in terms of impact on household per capita consumption	Road investments are pro-poor, meaning the gains are proportionately higher for the poor than for the non-poor <sup>16</sup>
Jacoby (2000)	Nepal	Nepal Living Standard Surveys	A method for non-parametrically estimating the benefits from road projects at the household level	Large benefits from extending roads into remote rural areas, much of these gains going to poorer households. But rural road construction is not the magic bullet for poverty alleviation
Escobal and Ponce (2003)	Peru	Using information from rural households living in some of the poorest districts of Peru	The propensity score matching methodology is used, after adapting it to the specific characteristics of the data used	Rehabilitated road accessibility can be related to changes in income sources, as these enhance non-agricultural income opportunities, especially from wage-employment sources

<sup>16</sup> But see Khandker and Koolwal 2010. They construct a new data set from 3 household panel surveys and find that 'while poorer households have benefitted from paved road access and irrigation, ... households at higher percentiles [of per capita income] appear to have capitalised to a greater extent from these interventions' [p.1128, "How Infrastructure and Financial Institutions Affect Rural Income and Poverty: Evidence from Bangladesh", *Journal of Development Studies*, 46:6]

Lokshin and Yemtsow (2005)	Georgia: Rural infrastructure rehabilitation projects for schools, roads and water supply systems between 1998 and 2001	Community-level panel data from a regular household survey augmented with a special community module	Propensity score-matched difference-in-difference comparisons	Plausible results regarding the size of welfare gains from a particular project at the village level and allows for differentiation of benefits between the poor and non-poor
Dercon et al. (2008)	15 Ethiopian villages, 1994-2004	Making use of new longitudinal household survey data that were not used in earlier Dercon papers	An instrumental variables model using Generalised Methods of Moments and controlling for household fixed effects	Access to all-weather roads: reduces poverty by 6.9 percentage points and increases consumption growth by 16.3%. These results are robust to changes in model specification and estimation methods
Dercon and Hoddinott (2005)	15 Ethiopian villages	Data taken from the Ethiopia Rural Household Survey (ERHS), a unique longitudinal household data set covering households in 15 areas of rural Ethiopia. Data collection started in 1989 and the survey was expanded in 1994 to yield a sample of 1,477 households. An additional round was conducted in late 1994, with further rounds in 1995, 1997, 1999, and 2004	Estimate a series of probit regressions. Fixed effect IV regression	An increase of 10 km in the distance from the rural village to the closest market town has a dramatic effect on the likelihood that the household purchases inputs, controlling for the effect of other factors. Increases in road quality have strong positive growth effects
Kingombe (2011)	Zambia (Eastern Province)	(Pseudo-panel) household surveys (LCMS), pooled repeated cross-section Post-Harvest Surveys (PHS), community survey,	Average treatment effects, differences-to-differences estimators, parametric and semi-parametric regression models,	Improved accessibility led to changes in land allocation and in yields to the cash crop – cotton. Although, the mean cotton sales

		transport/firm survey	Tobit models, multi-nominal logit	share of household income more than doubled, the estimation results only show small gains to mean consumption
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## 2.2 Access to health and education services

Studies suggest that increased mobility can improve the uptake and quality of health and education services, particularly in rural or isolated areas<sup>17</sup>.

Connectivity is particularly important in access to emergency and life-saving healthcare. Access to transport can increase the uptake of health services. A study in South Africa found that the adjusted odds of a homestead within 30 minutes of a clinic making use of the service were 10 times those of a homestead in the 90-120 minute zone<sup>18</sup>. Evidence from transport interventions show that improved mobility can have measurable impacts on health indicators such as immunization<sup>19</sup>. Low-cost, timely transport also improves access to ARV therapy<sup>20</sup>.

Transport is also a key component of the “three delays” model for maternal mortality<sup>21</sup>. The World Health Organisation estimates that 75 percent of maternal deaths can be prevented if emergency obstetric care can be reached within 12 hours of obstetric complication<sup>22</sup>. Road infrastructure and transport services can increase the likelihood of reaching obstetric care. In Pakistan, it was found that 58 percent of births in villages with road access were assisted by a skilled attended, compared with 39 percent for women without road access<sup>23</sup>.

Transport infrastructure can improve education outcomes by increasing primary school enrolment, especially where road improvements are associated with improved access to transport services. In Morocco, the most significant impact of a

<sup>17</sup> Cook, C *et al.* (2005) *Assessing the Impact of Transport and Energy Infrastructure on Poverty Reduction*. ADB Publishing

<sup>18</sup> Tanser, F., Gijsbertsen, B., Herbst, K. (2006) “Modelling and understanding primary health care accessibility and utilization in rural South Africa: An exploration using a geographical information system”. *Social Science and Medicine* 63:3:691-705

<sup>19</sup> Bosu *et al.* (1997) “Factors influencing attendance to immunization session for children in a rural district of Ghana” *Acta Tropica* 68, pp 259-267

<sup>20</sup> Zachariah, R., Harries, A. D., Manzi, M. *et al.* (2006) “Acceptance of Anti-Retroviral Therapy among Patients Infected with HIV and Tuberculosis in Rural Malawi Is Low and Associated with Cost of Transport” *PLOS ONE* 1,2: DI 10.1371/journal.pone.0000121

<sup>21</sup> Thaddeus, S. & Maine, D. (1994). “Too far to walk: maternal mortality in context”. *Soc. Sci. Med* 38: 1091-1110

<sup>22</sup> IDS (2013) “Maternal Health and Transport: Eldis Health Key Issues Guide” *IDS Health and Development Information Team*. Accessed at: <http://www.eldis.org/go/topics/resource-guides/health-challenges/key-issues/maternal-health-and-transport>

<sup>23</sup> Babinard, J. and Roberts, P. (2006) *Maternal and child mortality development goals: what can the transport sector do?* Washington: World Bank, Transport Sector Board.

rural roads programme was a sharp increase in school enrolment, especially for girls<sup>24</sup>. Evidence from Vietnam shows improvements in primary school completion rates as a result of rural road rehabilitation<sup>25</sup>.

Connectivity is particularly important for secondary school attendance, since secondary schools tend to be more sparsely located than primary. A study of transport infrastructure in Asia found that, while all villages surveyed had primary schools, many students had to travel outside of the village for post-primary education. Children, in particular adolescent girls, may be prevented from attending school because of parental fears for their safety on the journeys between school and home<sup>26</sup>. Thus, amongst other factors such as the spread of secondary schools, enrolment in secondary and further education is contingent on pupils' proximity to school and mobility potential<sup>27</sup>.

Connectivity may also affect service delivery long-term. The more accessible areas can attract better quality staff, improve staff retention in schools and health centres<sup>28</sup> and increase the feasibility of monitoring rural schools<sup>29</sup>. Investments in transport and infrastructure more broadly may facilitate the improvement and equity of health and education services.

### 2.3 Livelihoods and access to markets

As well as increasing access to facilities, transport access can improve livelihood prospects. Transport directly benefits many poor people through employment in the sector. Connectivity also provides indirect benefits. It can improve agricultural profitability and facilitate income diversification.

Proximity to urban and trading centres is crucial for agricultural trade, which comprises 75% of rural employment<sup>30</sup>. Underdeveloped road and transport networks lead to high transport costs for moving agricultural products to market as well as bringing in farm inputs, reducing farmers' competitiveness<sup>31</sup>. Studies found that agricultural production is highly correlated with proximity (as measured by

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<sup>24</sup> Levy, H. (2004) *Rural Roads and Poverty Alleviation in Morocco*. World Bank Case Studies in Scaling up Poverty Reduction.

<sup>25</sup> Mu, R and D.van de Walle (2007) *Rural Roads and Poor Area Development in Vietnam*. Policy Research Working Paper 4340.

<sup>26</sup> Porter, G. *et al* (2010) "Youth transport, mobility and security in sub-Saharan Africa: the gendered journey to school." *World Transport Policy and Practice*, 16(1): 51-71.

<sup>27</sup> Cook, C *et al*. (2005) *Assessing the Impact of Transport and Energy Infrastructure on Poverty Reduction*. Asian Development Bank publications

<sup>28</sup> World Health Organisation (2009) *Increasing access to health workers in remote and rural areas through improved retention – Background paper*

<sup>29</sup> Cook, C. *et al*. (2005) *Assessing the Impact of Transport and Energy Infrastructure on Poverty Reduction*. Asian Development Bank Publications

<sup>30</sup> Anriquez, G. and L. Stloukal (2008) *Rural Population Change in Developing Countries: Lessons for Policymaking* FAO ESA Working Paper No.08-09

<sup>31</sup> Brixiova, Z., A. Kamara and A. Salami (2010) *Smallholder Agriculture in East Africa: Trends, Constraints and Opportunities*. Asian Development Bank Working Paper No. 105

travel time to urban markets)<sup>32</sup> and that isolation strongly negatively correlates with agricultural productivity<sup>33</sup>. Road access can therefore increase agricultural output and farmer incomes by improved marketing opportunities and reduced transaction costs<sup>34</sup>.

Evidence shows that rural road access increases non-agricultural diversification. Those with better road access are more likely to source income from other sectors, most notably service-based enterprises<sup>353637</sup>. Improved connectivity can encourage diversification to more profitable livelihoods, broadening the range of economic activities in a region. A study in Madagascar found that reducing the cost of transport in remote areas boosted household income by nearly half, mostly by raising non-farm earnings<sup>38</sup>.

Time poverty is a barrier to productive work and increasing access to transport can relieve this. People living in poverty, particularly in isolated areas, tend to spend much more time travelling (See Table 2). A large percentage of this travel is for domestic purposes, the burden of which is often disproportionately borne by women and their children. Women and girls in particular are involved in fuelwood and water portering, most of which is unremunerated. These activities can affect educational outcomes as well as having long-term health implications<sup>39</sup>. Improving mobility and proximity of basic utilities (water, fuel), services and markets could improve welfare outcomes, both within the household by decreasing the amount of time spent on domestic tasks and by releasing time for income generation<sup>40</sup>.

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<sup>32</sup> Dorosh, P. et al. (2010) *Crop Production and Road Connectivity in Sub-Saharan Africa: A Spatial Analysis*. World Bank Policy Research Working Paper 5385.

<sup>33</sup> Minten, B. and D. Stifel (2008) "Isolation and agricultural productivity" *Agricultural Economics*, 39:1-15

<sup>34</sup> Binswanger, H. P., and S. R. Khandker. "M. Rosenzweig (1993). "How Infrastructure and Financial Institutions Affect Agricultural Output and Investment in India."." *Journal of Development Economics* 41: 337-336.

<sup>35</sup> Mu, R and D. van de Walle (2007) *Rural Roads and Poor Area Development in Vietnam*. World Bank Policy Research Working Paper 4340

<sup>36</sup> Escobar, J and C. Ponce (2002) *The Benefits of Rural Roads: Enhancing Income Opportunities for the Rural Poor*. Grade Working Paper 40

<sup>37</sup> Lanjouw, P. J. "Quizon and R. Sparrow (2001) "Non-agricultural earnings in peri-urban areas of Tanzania: evidence from household survey data."." *Food Policy* 26.4: 385-404.

<sup>38</sup> Jacoby, H. and Minten, B. (2008) On measuring the benefits of lower transport costs. World Bank Policy Research Working Paper 4484.

<sup>39</sup> Porter et al. (2012) "Child portering and Africa's transport gap" *World Development* Vol. 40:10: 2136–2154

<sup>40</sup> Malmberg Calvo, C. (1994) *Case Study on the Role of Women in Rural Transport: Access of Women to Domestic Facilities*. SSATPP Working Paper No. 11

**Table 3:** Time spent on travel (Source: Booth *et al.*, 2000<sup>41</sup>)

Survey Location	Time taken to reach nearest facilities						
	Water	Firewood	Cultivated Land	Dispensary	Hospital	G rinding mill	Market
Tanga, Tanzania	31 mins	44 mins	N/A	1hr 45mins	N/A	1hr 51 mins	2hrs 37 mins
Makete, Tanzania	23 mins	1hr 38mins	1hr 5mins	1hr 36mins	5hrs 40mins	1hr 42 mins	3hrs 18 mins
Ghana [8 villages dispersed across the country]	25 mins	43 mins	48 mins	1hr 40mins	2hrs 38mins	28 mins	2hrs 8mins
Aurora, Philippines	5 mins	27 mins	11 mins	25 mins	1hr 54 mins	21 mins	2hrs 8 mins

These factors contributing to improved livelihoods support the findings of studies which demonstrate that road access correlates with greater household wealth and consumption levels<sup>42,43</sup>. Not only national highways and links to urban centres are important. Improved access to market towns can also increase economic activity and improve welfare in rural localities<sup>44</sup>. Thus rural road interventions can be an effective measure to reduce household poverty. An analysis of government spending in India found that expenditure on roads has by far the largest impact on rural poverty, increasing productivity and leading to higher wages<sup>45</sup>.

## 2.4 Transport services and Intermediate Means of Transport

Reliable and affordable transport services also facilitate access to markets and basic services. There have been surveys conducted in five African countries suggesting that both motorised<sup>46</sup> and intermediate means of transport<sup>46</sup> (IMTs) are vital for access to

<sup>41</sup> Booth, D. *et al.* (2000) *Poverty and Transport: A report prepared for the World Bank in collaboration with DFID*. ODI.

<sup>42</sup> Deininger, K. and J. Okidi (2002) *Growth and poverty reduction in Uganda, 1992-2000: Panel Data Evidence*. World Bank Economic Policy Research Council

<sup>43</sup> Jacoby, H. (2002) *Access to markets and the benefits of rural roads: Volume 1*. World Bank Policy Research Working Paper 2028

<sup>44</sup> Dercon, S and J. Hoddinott (2005) *Livelihoods, growth and links to market towns in 15 Ethiopian villages*. IFPRI FCND Discussion Paper 194.

<sup>45</sup> Fan, S., P. Hazell and S. Thorat (1999) *Linkages between Government Spending, Growth, and Poverty in rural India*. IFPRI Research Report 110

<sup>46</sup> Intermediate Means of Transport includes wheelbarrows, bicycles, rickshaws, various animal carts and wagons, motorcycles, motorized three-wheelers, and two-wheel tractors that fill the gap between more expensive motor vehicles and pedestrian travel and portage.

facilities in rural areas<sup>47</sup>. Significant time savings and productivity gains can be achieved by using IMTs which are low cost but generate high returns<sup>48</sup>.

In urban settings, where poor people live in the more remote peri-urban periphery, transport can comprise up to 35% of expenditure from disposable income<sup>49</sup>. Increasing the capacity and affordability of urban transport networks could reduce travel time and release household income for other needs.

***It is worth noting that the evidence base on transport services, both motorised and non, is weak. Further research could be designed to address the dearth of evidence in this area, analysing the effectiveness of interventions for different social groups (see Section 3), not just mapping service use among the poor.***

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<sup>47</sup> Starkey, P. (2007) *Rural transport services in Africa: Lessons from rapid appraisal surveys in Burkina Faso, Cameroon, Tanzania and Zambia*. SSATP Working Paper

<sup>48</sup> Carapetis, S., and J. Riverson (1991) *Intermediate Means of Transport in Sub-Saharan Africa: Its Potential for Improving Rural Travel and Transport*. World Bank Technical Paper 161, African Technical Department Series

<sup>49</sup> Bryceson, D. et. al., (2003): *Sustainable Mobility, Livelihoods, and Access Needs*. TRL Report 544. London, DFID

### **3. Distribution of impacts**

Patterns of transport use vary between population groups. Some groups have a disproportionately high travel burden due to poor access to transport infrastructure. Transport interventions will also have varying distributional impacts. This section considers both these variations with regards to gender (section 3.1), income groups (section 3.2), children and young people (section 3.3) and disabled and infirm people with additional mobility requirements (section 3.4).

#### **3.1 Gendered mobility patterns**

While women spend more time and effort on travel than men, they also have less access to private vehicles and public services. These gendered mobility patterns can prevent women from entering labour markets, engaging in productive work and accessing public services.

Research shows that it is not merely the lack of road infrastructure which limits mobility. For women in particular, safe/secure, cheap, reliable/predictable and efficient transport services are vital in relieving the time burden of their work load and facilitating economic empowerment.

##### **3.1.1 Unequal transport access**

Transport services are particularly important for women, who typically spend more time travelling. In Ghana, the typical woman devotes almost three times as many hours per annum (on average 20 hours weekly) to transport. This represents 50 percent of the time a worker would expect to devote to a typical full-time job, severely limiting the hours women can devote to productive work<sup>50</sup>. Women (with their children) are largely responsible for domestic travel associated with load-carrying, a survey from 4 areas in sub-Saharan Africa finding that between 71 and 96 percent of domestic carrying was undertaken by women. Measured in effort, women accounted for 66-84 percent of energy expended on travel<sup>51</sup>.

While women spend more time in transport, they often have less access to private vehicles. For example in Bamako, Mali only 13 percent of women had access to private transport compared to 44 percent of men<sup>52</sup>. "Since income-generating (productive) trips are more valued than domestic (reproductive) trips, vehicle use is

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<sup>50</sup> European Commission (2004) *Toolkit on mainstreaming gender equality in EC development cooperation*. Accessed at: <http://ec.europa.eu/europeaid/sp/gender-toolkit/index.htm>

<sup>51</sup> Calvo, C. Malmberg (1994) *Case Study on the Role of Women in Rural Transport: Access of Women to Domestic Facilities*. SSATp Working Paper 11.

<sup>52</sup> Peters, D. (2001) *Gender and Transport in Less Developed Countries: A Background Paper in Preparation for CSD-9, UNED*. Accessed at: <http://www.earthsummit2002.org/workshop/Gender%20%26%20Transport%20S%20DP.pdf>

higher for those trips and thus men usually benefit first”<sup>53</sup>. This pattern is reflected across other regions. In Ashgabat, Turkmenistan, 28 percent of women walk to work compared with 14 percent of men<sup>54</sup>.

As transport and connectivity is a crucial enabler for engaging in wealth creation, unequal access disadvantages women economically.

### 3.1.2 Implications – Women’s economic empowerment

Poor infrastructure is often a barrier to productive employment. However, the gendered division of labour means that poor connectivity disproportionately affects women, often limiting them to unpaid and household work. Where women are able to find employment, they may be forced into less productive work which is nearer or better connected to home.

One of the main causes of women’s lower earnings and productivity is the greater constraints on their time. While these constraints come mainly from informal institutions (eg. gendered social norms about childcare and women’s work), improving women’s access to markets and freeing up their time through infrastructure and transport investments can help to alleviate time pressures and allow for increased productivity<sup>55</sup>. The building of a road in rural Yemen led to increased household incomes and increased numbers of households buying basic goods such as water or firewood. This can help to alleviate the time pressure on women who are largely responsible for collecting these goods otherwise.<sup>56</sup>

Lack of mobility disadvantages women workers disproportionately. In Delhi, when 700,000 squatters resettled on the periphery of the city, female employment fell 27 percent because travel time increased three-fold. Male employment in the same location only decreased by 5 percent<sup>57</sup>. Mobility seems to be less negotiable for women, whose time burden is greater and whose employment may also be seen to be less of a priority in the household.

Equally, good transport services and other transport interventions can improve economic opportunities for women. A World Bank study in Urban Yemen found direct correlation between provision of transport infrastructure and services and women’s economic empowerment<sup>58</sup>. In rural Peru, 43 percent of women reported

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<sup>53</sup> Kunieda, M., & Gauthier, A. (2007). Gender and urban transport: Smart and affordable. *Module 7a. Sustainable Transport Sourcebook for Policy Makers in Developing Countries*. Eschborn: GTZ.

<sup>54</sup> Kunieda, M., & Gauthier, A. (2007). Gender and urban transport: Smart and affordable. *Module 7a. Sustainable Transport Sourcebook for Policy Makers in Developing Countries*. Eschborn: GTZ.

<sup>55</sup> World Bank (2012) *World Development Report – Gender Equality and Development*

<sup>56</sup> World Bank (2010) ‘Gender and Transport in MENA: Case Studies from West Bank Gaza and Yemen’ *MENA Knowledge and Learning: Quick Notes Series No. 21*

<sup>57</sup> GTZ (2007) ‘Gender and Urban Transport: Smart and Affordable’. *Sustainable Transport: A Sourcebook for Policy-makers in Developing Cities*. Module 7a

<sup>58</sup> World Bank (2010) ‘Gender and Transport in MENA: Case Studies from West Bank Gaza and Yemen’ *MENA Knowledge and Learning: Quick Notes Series No. 21*

that the availability of rehabilitated roads and tracks enable them to obtain more income. In Bangladesh, better rural roads led to a 49% increase in male labour supply and 51 percent increase in female labour supply<sup>59</sup>.

It is not just engagement but profitability which is affected by poor mobility. The gap in profitability between men and women in paid work is stark. Differences in average wages by gender range from 20 percent in Mozambique and Pakistan to more than 80 percent in Cote d'Ivoire and Jordan<sup>60</sup>. This is partly attributable to differences in occupation. *World Development Report 2012* states that gender differences in occupation and the employment sector account for 10-50 percent of the observed wage gap in 33 (of 53) low and middle income countries<sup>61</sup>. While a range of factors contribute to the segregation of male and female employment, poor mobility and access to transport can lead women to choose less profitable jobs which are easier to travel to, because of the higher constraints on their time.

***There remains a need for more research on the links between roads, transport services, connectivity and the economic empowerment of women and girls.***

### **3.1.3 Gender, transport services and infrastructure design**

It is not only the availability, but also the quality and safety/security, of transport infrastructure which is important for women's economic empowerment.

Women can be deterred from using public transport, or even travelling on foot if they do not feel safe. They may not want to wait for public transport for fear of harassment and therefore are less likely to use services with a random or unreliable schedule. Reliable return services home are particularly vital<sup>62</sup>. While this could prevent travel altogether, it can also raise the cost for those willing to travel, as they may prefer to take several different journeys than wait for a cheaper or more direct route. A World Bank study in Lima, Peru found that fear of sexual harassment and violence on public transport was one of the major constraints on women's mobility. An intervention that introduced teams of male and female drivers and conductors on public transport was found to be successful in addressing this concern<sup>63</sup>.

Similarly, an absence of street lighting in Sana'a, Yemen left women more vulnerable and fearful of assault and theft<sup>64</sup>. Women might give up on work or productive activities because they do not feel safe while travelling.

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<sup>59</sup> World Bank (2012) *World Development Report – Gender Equality and Development*

<sup>60</sup> World Bank (2012) *World Development Report – Gender Equality and Development*

<sup>61</sup> World Bank (2012) *World Development Report – Gender Equality and Development*

<sup>62</sup> ADB (2013) *Gender Tool Kit: Transport*. Accessed here:

<http://www.adb.org/sites/default/files/gender-tool-kit-transport.pdf>

<sup>63</sup> Malmberg Calvo, C. *et al.* (2001) *Transport: Infrastructure and Services*

<sup>64</sup> World Bank (2010) 'Gender and Transport in MENA: Case Studies from West Bank Gaza and Yemen' *MENA Knowledge and Learning: Quick Notes Series No. 21*

A study of social exclusion and transport in rural South Africa found that an infrastructure intervention which had upgraded 15km of road had not led to any improvement in the supply of road passenger services. As a result the poor, largely women in this area, were not benefiting from these works<sup>65</sup>.

### 3.1.4 Gender and social norms

While transport can facilitate women's participation in the workforce and increase their productivity, studies have shown in some cases that social norms are so prevailing as to prevent uptake of transport services<sup>66</sup>. In some contexts, cultural constraints prevent women from travelling to markets or employment. Men may associate women's frequent and distant travel with promiscuity and therefore discourage these trips<sup>67</sup>.

Not only may social norms prevent women from using transport but they can dramatically increase the cost. For example, women that are not allowed to travel unaccompanied must also pay for a male family member in some cases (thus 70% of women interviewed in the West Bank and Gaza said transport was unaffordable)<sup>68</sup>.

One area where figures on women's mobility do not converge is access to public transport. While in some countries women have equal access to public transport, elsewhere their access is restricted. Clearly women's mobility is not merely a question of infrastructure and transport services availability. Gender sensitive infrastructure needs to take account of social norms which affect the success of transport programmes in increasing connectivity for women. Research or interventions that don't take into account the influence of these attitudes over transport use may risk excluding vulnerable groups, including women, from benefitting.

## 3.2 Low income groups

Poverty tends to correlate with rural isolation, the poorest people having least access to transport networks<sup>69</sup>. However, the evidence is equivocal in whether transport interventions benefit the poorest quintiles disproportionately or even equally.

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<sup>65</sup> Mahapa, S. and M. Mashiri (2001) "Social exclusion and rural transport: Gender aspects of a road improvement project in Tshitwe Northern Province" *Development Southern Africa*, 18:3

<sup>66</sup> World Bank (2010) 'Gender and Transport in MENA: Case Studies from West Bank Gaza and Yemen' *MENA Knowledge and Learning: Quick Notes Series No. 21*

<sup>67</sup> Porter, G. (2011) "I think a woman who travels a lot is befriending other men and that's why she travels": Mobility constraints and their implications for rural women and girl children in sub-Saharan Africa". *Gender place and culture*: 18:1, 65-81.

<sup>68</sup> World Bank (2010) 'Gender and Transport in MENA: Case Studies from West Bank Gaza and Yemen' *MENA Knowledge and Learning: Quick Notes Series No. 21*

<sup>69</sup> World Bank (2006) *Rural Access Index*. See also Porter, G. (2002) "Living in a Walking World: Rural Mobility and Social Equity Issues in Sub-Saharan Africa" *World Development*, 30:2, 285-300

A study in Bangladesh found that in some cases, gains from rural road projects were significantly higher for poor than non-poor<sup>70</sup>. Evidence from Nepal showed that while many of the benefits from transport infrastructure would go to poor households, they would not be large enough, or targeted efficiently enough to appreciably reduce income inequality in the area<sup>71</sup>. Conversely, a study in Peru found that while rehabilitation of motorised roads correlated with increase in income, those households also had higher education, larger land holdings and greater access to other infrastructure<sup>72</sup>. It indicates the poorest were not benefitting as much from road interventions as those with considerable assets. In many contexts, those who are already mobile are likely to benefit most from road improvements.

Roads programmes may increase proximity to facilities, product and labour markets but this does not automatically couple with increased accessibility. Where transport services still remain scarce (whether motorised or intermediate) prices are likely to exceed the income capacity of the poorest, in particular for regular or frequent trips<sup>73</sup>. Wider access problems of poor infrastructure, services and employment opportunities could dampen the benefits of transport interventions for the poorest beneficiaries. ***The evidence around the distributional impacts by income groups of transport interventions is thin. Further research in this area could start to fill this knowledge gap and gather more evidence on connectivity for the poorest groups.***

### 3.3 Children and Young People

Like women, children also tend to bear a disproportionately high transport burden. In sub-Saharan Africa travel for domestic tasks, including headloading, is generally considered a task for girls, women and young boys<sup>74</sup>. Young men beyond their mid-teens are usually not expected to carry out such work.

The burden of headloading and travel is most severe in remote rural areas where the lack of transport brings additional demands. A qualitative study in Malawi found many children to be absent from school two days a week when the markets are held in town so that they can transport firewood<sup>75</sup>. Travel for unpaid work can affect schooling attendance as well as attainment. Research indicates that headloading

<sup>70</sup> Khandker, S *et al.* (2009) "The Poverty Impact of Rural Roads: Evidence from Bangladesh" *Economic Development and Cultural Change*. Vol. 57:4

<sup>71</sup> Jacoby, H. (2000) *Access to markets and the benefits of rural roads: Volume 1*. World Bank Policy Research Working Paper 2028.

<sup>72</sup> Escobar, J. and C Ponce (2002) *The Benefits of Rural Roads: Enhancing Income Opportunities for the Rural Poor*. Grade Working Paper 40

<sup>73</sup> Booth, D., L. Hanmer and E. Lovell (2000) *Poverty and Transport*

<sup>74</sup> Porter, G. *et al.* (2012) "Child porterage and Africa's transport gap: evidence from Ghana, Malawi and South Africa". *World Development* 40,10: 2136-2154

<sup>75</sup> Porter, G. (2007) "Transport, (im)mobility and spatial poverty traps: issues for rural women and girl children in sub-Saharan Africa", Presented at *Understanding and addressing spatial poverty traps: an international workshop*, 29<sup>th</sup> March 2007, Stellenbosch, South Africa. ODI. Accessed at: <http://www.odi.org.uk/sites/odi.org.uk/files/odi-assets/publications-opinion-files/3536.pdf>

may also have long-term health consequences. Children have reported severe head, neck and back pain as a result of repeated portering of heavy loads<sup>76</sup>.

Young women and girls typically have limited access to private vehicles. However, in sub-Saharan Africa in particular, operation of cycle and motorbike taxis seems to be principally in the hands of young men, offering lucrative livelihood opportunities. Initial research also suggests that the availability of IMTs could help ease children's transport burden. South Africa's Shova Kalula Programme, which provides low-cost bicycles to disadvantaged groups was shown to be helping school children to arrive at school in better time<sup>77</sup>. ***The potential for IMTs to improve young people's access to services needs further investigation, particularly concerning ways to address the gender gap in access to vehicles.***

### 3.4 People with disabilities and older people

Some people, including the infirm elderly, and those with disabilities and illness, have particular problems relating to mobility and access. These groups may be less likely to benefit from access to standard means of transport which do not cater to their needs. Local and more adaptable transport solutions may be important for improving their social welfare but will need careful consultation with older people and those with disabilities<sup>78</sup>.

A study in Papua New Guinea found no evidence that people with disabilities were involved in road planning consultations and that decision makers were very unaware of their needs. While most participants reported that roads infrastructure had improved their access to services, there was a concern that one new road studied was so inaccessible that it had a neutral or negative impact on accessibility<sup>79</sup>.

Inadequate monitoring and enforcement of compliance with accessibility legislation is a key impediment to inclusive transport. Although Mozambique, Malawi and India require urban public transport vehicles to have reserved seats and concessional fares, these measures are only very rarely enforced<sup>80</sup>. ***Research on successful***

<sup>76</sup> Porter, G. *et al.* (2012) "Child portering and Africa's transport gap: evidence from Ghana, Malawi and South Africa". *World Development* 40,10: 2136-2154

<sup>77</sup> Mahapa, S. 2003 *Integrating gender into World Bank financed transport programmes. case study South Africa Shova Kalula*, Accessed at: <http://www4.worldbank.org/afr/ssatp/Resources/HTML/Gender-RG/Source%20%20documents/case%20studies/ICNET%20Case%20Studies%20for%20WB/CsICN%2011%20SouthAfrica%20Case.pdf>

<sup>78</sup> Clarke N, (1999) Considering wheelchair riders as transport users. pp. 195-214 in: *Meeting transport needs with intermediate modes of transport*. Lanka Forum of Rural Transport Development, Colombo, Sri Lanka.

<sup>79</sup> Whitzman, C., James K and Powesue, I. (2013) Travelling together: participatory research methods for disability inclusive road development in Papua New Guinea. *J. of Transport Geography* 26: 65-71.

<sup>80</sup> Roberts, P., & Babinard, J. (2004). Transport strategy to improve accessibility in developing countries. Accessed at: <http://www.sortclearinghouse.info/cgi/viewcontent.cgi?article=1326&context=research>

***accessibility policies and interventions is needed to inform the programmes in this field.***

There has been limited research into the needs of older transport users in low-income countries. However, older people are likely to have elevated transport demands due to the number that are primary guardians for children. A recent child mobility study found that in South Africa, Malawi and Ghana respectively, 14%, 9% and 9% live with grandparents<sup>81</sup>. An increasing number are also primary carers for their adult children with HIV/AIDS – a role often involving prolonged travel<sup>82</sup>.

Mobility constraints of older people are likely to have a significant impact on their ability to act effectively in these roles. A study in Ibadan, Nigeria, found that lack of reliable transport services, poor facilities and long waiting times constrained transport use among older people<sup>83</sup>. ***The needs of older people, often more sensitive to poor quality transport services, are important to consider in service design. More research is needed in this area to identify specific user needs and ways to meet these requirements.***

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<sup>81</sup> Porter, G. *et al.* (2010) "Youth transport, mobility and security in sub-Saharan Africa: the gendered journey to school" *World Transport Policy and Practice*. 16,1: 51-71

<sup>82</sup> Ssengonzi, R. (2009) "The impact of HIV/AIDS on the living arrangements and well-being of elderly caregivers in rural Uganda" *AIDS care*. Vol. 21:3:309-14

<sup>83</sup> Ipingbemi, O. (2010) "Travel characteristics and mobility constraints of the elderly in Ibadan, Nigeria" *Journal of Transport Geography* Vol.18:285-291.

## 4. Social risks and negative social impacts

While the wider literature largely supports the extension of transport access as a tool for poverty reduction, many articles advocate the need for a broader, integrated approach. **It has become apparent that in many cases “roads are not enough” to improve mobility.** Depending on the context, affordable and reliable transport services are necessary to ensure poor and vulnerable groups benefit from infrastructure developments<sup>84</sup>. Some case studies have also shown transport programmes which have had little or no impact on poverty reduction<sup>85,86</sup>. ***It is important that DFID’s research will consider programme failures, look at integrated transport needs and assess combined interventions.***

Transport programmes also come with associated risks. Building infrastructure can result in displaced communities and livelihoods. Furthermore, while motorised transport access may increase mobility, it also introduces the risk of road traffic accidents and increased potential for sexually transmitted diseases (STDs). ***Research to understand effective mitigation strategies for these negative impacts could complement the social development agenda.***

### 4.1 Resettlement and Land Grabbing

The World Bank reports that transport is the largest cause of resettlement in their portfolios. Resettlement is involved in 20 per cent of their transport projects<sup>87</sup>. If residents are not adequately compensated for their loss of livelihood and responsibly relocated, their social welfare may worsen.

In the more extreme cases, infrastructure programmes have been associated with human rights abuses. The World Bank funded Polonoroeste programme in Brazil was accused of severe environmental and cultural devastation of Amerindian territory<sup>88</sup>. While this is an example of a wider governmental integration programme, resettlement and land loss are frequently associated with roads projects that are poorly planned.

However, resettlement can also be an opportunity to improve household mobility. A study in northern Uganda found that resettlement after conflict sees people living

<sup>84</sup> Booth, D., L. Hanmer and E. Lovell (2000) *Poverty and Transport*. Accessed at: [http://scholar.googleusercontent.com/scholar?q=cache:C2-tr9S9yAkJ:scholar.google.com/+poverty+and+transport+booth&hl=en&as\\_sdt=0,5](http://scholar.googleusercontent.com/scholar?q=cache:C2-tr9S9yAkJ:scholar.google.com/+poverty+and+transport+booth&hl=en&as_sdt=0,5)

<sup>85</sup> Malmberg-Calvo, C. (1994) “Case Study on Intermediate Means of Transport Bicycles and Rural Women in Uganda” World Bank SSATP Working Paper 12

<sup>86</sup> Gachassin, M., B. Najman and G. Raballand (2010) *The Impact of Roads on Poverty Reduction: A Case Study of Cameroon* World Bank Policy Research Working Paper 5209

<sup>87</sup> World Bank (1996) ‘Sustainable Transport: Priorities for Policy Reform’, Series: Development in Practice, Washington, DC: World Bank

<sup>88</sup> Ibid

much closer to roads that they had previously<sup>89</sup>. Voluntary resettlement can offer opportunities for improved access to services, though it also poses risks.

Minority groups with limited land rights and poor political representation may be particularly vulnerable to involuntary resettlement. Transport-related resettlements also affect the poorest in disproportionate numbers because low-income settlements naturally tend to be identified as low-cost, peripheral and easily cleared areas for new transport routes<sup>90</sup>.

In addition, road building and reconstruction has been associated with a rise in land grabbing. Unruh and Shalaby find that in Afghanistan, road construction and reconstruction can drive large increases in land value, causing a surge in land grabbing practices<sup>91</sup>. This can provoke further conflict and undermine the economic benefits that may arise from road construction. ***Transport programmes in post-conflict environments need to consider special measures to mitigate these risks.***

#### 4.1.1. Resources for good practice

The IFC have produced a guide for preparing a resettlement action plan to promote responsible management of involuntary resettlement when unavoidable<sup>92</sup>. This outlines the components of a resettlement action plan and provides an implementation checklist to support project planning.

The World Bank's resettlement sourcebook also provides an example of a Resettlement Entitlement Matrix, identifying the affected population groups and compensation policies for a flood control project in the China Yangtze Basin<sup>93</sup>.

## 4.2 Road Safety

Each year close to 1.24 million people die as a result of road crashes<sup>94</sup>. As well as creating social costs for individuals and communities, road traffic injuries place a heavy burden on health services and economies. Road traffic accidents are predicted to become the third leading cause of disability-adjusted life years (DALYs) lost globally by 2020.

<sup>89</sup> Joireman, S. F., Sawyer, A., & Wilhoit, J. (2012). A different way home: Resettlement patterns in Northern Uganda. *Political Geography*, 31(4), 197-204.

<sup>90</sup> Barter, P. (2001) *Linkages between Transport and Housing for the Urban Poor: Policy Implications and Alternatives*. UN Habitat Discussion Paper  
<http://www.unhabitat.org/pmss/getElectronicVersion.aspx?nr=1914&alt=1>

<sup>91</sup> Unruh, J. D. (2012). The interaction between landmine clearance and land rights in Angola: A volatile outcome of non-integrated peacebuilding. *Habitat International*, 36(1), 117-125.

<sup>92</sup> IFC (2002) *Handbook for Preparing a Resettlement Action Plan*. Accessed at:  
<http://www1.ifc.org/wps/wcm/connect/22ad720048855b25880cda6a6515bb18/ResettlementHandbook.PDF?MOD=AJPERES&CACHEID=22ad720048855b25880cda6a6515bb18>

<sup>93</sup> World Bank (2004) *Involuntary Resettlement Sourcebook: Planning and Implementation in Development Projects*

<sup>94</sup> World Health Organisation (2013) *Global Status Report on Road Safety*. Accessed at:  
[http://www.who.int/violence\\_injury\\_prevention/road\\_safety\\_status/2013/report/en/index.html](http://www.who.int/violence_injury_prevention/road_safety_status/2013/report/en/index.html)

The current burden of road traffic accidents in low and middle income countries is disproportionately high considering their relatively limited road infrastructure. LICs and MICs together own 53% of the world's motor vehicles but account for more than 92% of global fatalities<sup>95</sup>. Africa is the region with the worst death rate from road crashes with a fatality rate of 24 deaths per 100,000 population<sup>96</sup>. Young people and women, spending more time travelling but with poorer access to vehicles, are some of the worst affected. Road crashes are the second leading cause of death for the 5-44 age group in Africa<sup>97</sup>.

The negative impacts of road investments are experienced by the poorer and more vulnerable groups, those with poor mobility. Low income groups are more likely to be pedestrians, passengers of buses, operators or passengers of motorcycle-taxis, motorcyclists or cyclists. In low-income countries, with fewer cars and motorised vehicles, the majority of road traffic victims are not drivers but other road users (see Fig 4).

Fatalities, injuries and disabilities arising from road accidents can worsen household poverty. The costs of prolonged medical care, funeral costs, or the loss of income due to disability are all costly. A study in Bangladesh found that road crashes caused reduced household income and food consumption, in some cases pushing "non-poor" families into poverty<sup>98</sup>.

***Road safety investments and regulations must keep pace with the accelerated expansion of road networks and motorised transport use in order to mitigate the considerable social burden of road accidents.***

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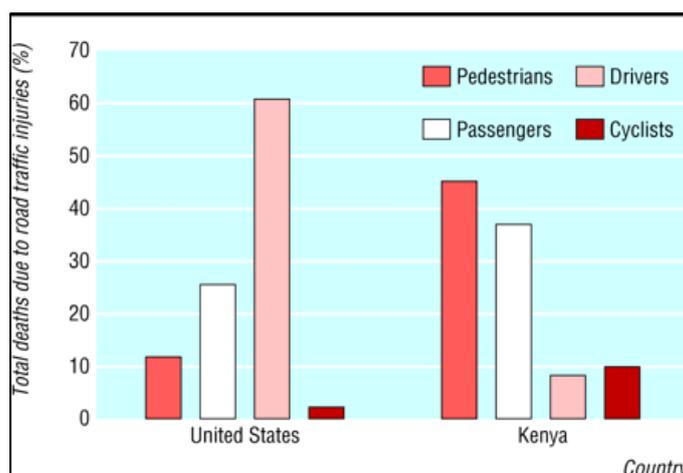
<sup>95</sup> World Health Organisation (2013) *Global Status Report on Road Safety*. Accessed at: [http://www.who.int/violence\\_injury\\_prevention/road\\_safety\\_status/2013/report/en/index.html](http://www.who.int/violence_injury_prevention/road_safety_status/2013/report/en/index.html)

<sup>96</sup> World Health Organisation (2013) *Global Status Report on Road Safety*. Accessed at: [http://www.who.int/violence\\_injury\\_prevention/road\\_safety\\_status/2013/report/en/index.html](http://www.who.int/violence_injury_prevention/road_safety_status/2013/report/en/index.html)

<sup>97</sup> gTKP. *Road Safety*. Accessed at: <http://www.gtkp.com/assets/uploads/20100408-120557-3803-Road%20Safety%20Main.rtf>

<sup>98</sup> Aeron-Thomas, A., et al. (2004) *The involvement and impact of road crashes on the poor: Bangladesh and India case studies*. TRL

**Figure 4:** Deaths due to road traffic injuries by road user category in a developed and a developing country. US data for 1996; Kenya data for 1995<sup>99</sup>



#### 4.2.1. Resources for good practice

Road crashes and fatalities can be prevented by better planning and more safety conscious design of the road network. The Transport Research Laboratory's guide to road safety in developing countries<sup>100</sup> provides information on incorporating safety factors when planning, designing and operating road works and includes a Road Safety Checklist for infrastructure assessment.

### 4.3 HIV/AIDS transmission

Increased connectivity and mobility can increase the uptake of healthcare and improve the quality of service. However, increased mobility may also accelerate the spread of infectious diseases and epidemics. This risk is particularly well evidenced in relation to HIV/AIDS and the prevalence of risky sexual practices among transport sector workers<sup>101,102</sup>.

Studies document higher prevalence of HIV among transport sector workers (in particular road and rail) than the general population<sup>103</sup>. Due to long periods of time spent away from their families and spouses, frequent delays at border crossings and

<sup>99</sup> Nantulya, V. M., & Reich, M. R. (2002). The neglected epidemic: road traffic injuries in developing countries. *BMJ: British Medical Journal*, 324(7346), 1139.

<sup>100</sup> Ross, A. (1991). *Towards safer roads in developing countries: a guide for planners and engineers*. Overseas Unit, Transport and Road Research Laboratory.

<sup>101</sup> Adebajo, S. *et al.* (2005) "Sexual Behaviour, HIV-Related Knowledge and Condom Use by Intra-City Commercial Bus Drivers and Motor Park Attendants in Lagos, Nigeria" *African Journal of Reproductive Health* Vol. 9:1

<sup>102</sup> Agha, S. (2000) "Potential for HIV transmission among truck drivers in Pakistan" *AIDS* Vol. 14:15

<sup>103</sup> International Transport Forum (2007) *Report on HIV/AIDS mapping among ITF affiliates*

road “choke points”, and the high incidence of engagement with commercial sex workers, risky sexual practices are particularly common among workers in this sector<sup>104</sup>.

The construction sector is also commonly identified as one of the groups most at risk of HIV infection<sup>105</sup>. Many are mobile workers, particularly in transport construction, with poor living and working conditions and often separated from their families. A study in Ghana found the prevalence of HIV infection to be 5-10 percent higher in the district where the Akosombo hydroelectric dam was under construction than in neighbouring districts. The construction site drew workers away from their families and increased commercial sex work in the area<sup>106</sup>.

Short-term mobility is also associated with higher HIV prevalence as well as with risky behaviours. An analysis of HIV transmission in West Africa found that infection rates were higher among populations living in interfaces such as urban centres or near major roads<sup>107</sup>. Connectivity and mobility seem to be important factors in the transmission of infectious disease.

#### 4.3.1 Resources for good practice

The World Bank’s 2009 paper *Transport against HIV/AIDS: Synthesis of Experience and Best Practice Guidelines* provides examples of HIV mitigation in the transport sector and guidelines for programmers<sup>108</sup>.

Examples of good practice HIV interventions in the sector include road-side clinics and wellness centres for truckers, health passports and targeted communication materials. Good practice corridor projects have provided condoms, STI treatment and HIV education to transport drivers and passengers along corridors.

The ILO guidelines on HIV/AIDS in the transport sector<sup>109</sup> also detail what a workplace policy on HIV/AIDS should cover and include recommendations based on HIV/AIDS prevention work in the sector.

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<sup>104</sup> ILO (2005) *HIV/AIDS in the transport sector of Southern African countries: A rapid assessment of cross-border regulations and formalities*. Accessed at: [http://www.ilo.org/wcmsp5/groups/public/---ed\\_protect/---protrav/---ilo\\_aids/documents/publication/wcms\\_116343.pdf](http://www.ilo.org/wcmsp5/groups/public/---ed_protect/---protrav/---ilo_aids/documents/publication/wcms_116343.pdf)

<sup>105</sup> ILO (2007) *HIV/AIDS + Work: Using the ILO Code of Practice on HIV/AIDS and the world of work*. Accessed at: <http://goo.gl/46aqCc>

<sup>106</sup> Descosas, J. HIV and Development, *World Bank*, 1996 cited in ILO (2007) *HIV/AIDS + Work: Using the ILO Code of Practice on HIV/AIDS and the world of work*. Accessed at: <http://goo.gl/46aqCc>

<sup>107</sup> Lagarde, E. *et al.* (2003) “Mobility and the spread of human immunodeficiency virus into rural areas of West Africa” *International Journal of Epidemiology* Vol. 32:5

<sup>108</sup> World Bank (2009) *Transport against HIV/AIDS: Synthesis of Experience and Best Practice Guidelines*. Transport Papers Series 25

<sup>109</sup> ILO (2005) *Using the ILO Code of Practice on HIV/AIDS and the world of work: Guidelines for the transport sector*

## 5. Public Works and Transport

Labour-based interventions involve community members in the building of productive assets, such as roads, in exchange for social protection and wage benefits. These range from government led public works programmes (PWPs), such as Ethiopia's Productive Safety Net Programme (PSNP) and India's Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS), to small-scale interventions. This section will examine the success of this model and viability for transport programming considering: 1) whether PWPs have measurable poverty reduction impacts and 2) whether PWPs increase women's community participation and empowerment.

### 5.1 Poverty Reduction

Public works programmes can contribute to poverty reduction via three main pathways:

- 1) Wages
- 2) Asset generation
- 3) Skills development

Wages boost household income and may increase investment and savings. Asset generation (as discussed in section 2) is an output in itself that can improve social welfare. Skills can be acquired through participation in PWPs that may improve productivity, employability and personal welfare<sup>110</sup>.

#### 5.1.1 Wages

The literature on whether wage employment generates long-term poverty reduction or alleviation presents varied findings. Works offering short-term employment have been shown to increase household income by as much as 78 percent in the short term but with no lasting impacts<sup>111112</sup>. Workers employed for less than one month tended to spend their wages entirely on basic consumption rather than invest in productive assets or savings<sup>113</sup>.

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<sup>110</sup> McCord, A. (2011) *Appraising productivity enhancing Public Works Programmes*. ODI Social Protection Toolsheet

<sup>111</sup> McCord, A. and R. Slater (2009) *Overview of Public Works Programmes in Sub-Saharan Africa*. ODI

<sup>112</sup> McCord, A. (2012) *Public Works and social protection in sub-Saharan Africa: Do public works work for the poor*. UCT Press.

<sup>113</sup> Devereux, S. and C. Solomon (2006) *Employment creation programmes: The international experience*. ILO Issues in Employment and Poverty Discussion Paper 24

However there were programmes that found more permanent impacts that, if not reducing the poverty headcount, alleviated the effects of poverty<sup>114115116</sup>. Other studies showed various improvements to social welfare and productivity through avenues such as food security<sup>117118</sup> and diversification of income to non-farm businesses<sup>119</sup>. A study in Bangladesh found a lagged effect of infrastructure on paid labour for women, attributing the additional income not to infrastructure construction but other non-farm employment<sup>120</sup>. Local livelihood cycles can dictate the duration, timing and frequency of wage employment provided through public works. In some cases, livelihood gaps necessitate social protection to alleviate short-term household poverty. Where chronic poverty reduction is targeted, long-term and more sustainable employment programmes may be more appropriate<sup>121</sup>.

### 5.1.2 Skills Development

Skills development via participation in public works can improve productivity, employability and social welfare. Programmes such as the Ethiopian PSNP combined wage employment with extension services, leading to increased uptake of new agricultural technologies<sup>122</sup>. Skills acquired through public works may improve the employability of participants, but depends largely on the type of project and how far skills are transferable. A study in South Africa found that projects in the building industry led to greater potential than roadworks of finding work after the project<sup>123</sup>. Skills development in the absence of market demand (for labour, goods and services) is unlikely to have a significant impact on productivity<sup>124</sup>.

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<sup>114</sup> Gaiha, R. and K. Imai (2005) *A Review of the Employment Guarantee Scheme in India*. University of Delhi and University of Manchester.

<sup>115</sup> McCord, A. and R. Slater (2009) *Overview of Public Works Programmes in Sub-Saharan Africa*. ODI

<sup>116</sup> Teklu, T. and S. Asefa (1997) "Factors affecting employment choice in a labor-intensive public works scheme in rural Botswana" *Economic Development and Cultural Change* Vol. 46:1

<sup>117</sup> Ghosh, N. and B. Guha-Khasnobis (2006) *Looking for Answers to the Food Security Problem: India Under Current Compulsions*

<sup>118</sup> Gilligan, D., J. Hoddinott and A. Seyoum Taffesse (2009) "The impact of Ethiopia's Productive Safety Net Programme and its Linkages" *Journal of Development Studies* Vol. 45:10

<sup>119</sup> Gilligan, D., J. Hoddinott and A. Seyoum Taffesse (2009) "The impact of Ethiopia's Productive Safety Net Programme and its Linkages" *Journal of Development Studies* Vol. 45:10

<sup>120</sup> Chowdhury, S. (2010) "Impact of Infrastructures on paid work opportunities and unpaid work burdens on rural women in Bangladesh" *Journal of International Development* Vol.22:997-1017

<sup>121</sup> McCord, A. (2011) *Appraising productivity enhancing Public Works Programmes*. ODI Social Protection Toolsheet

<sup>122</sup> Gilligan, D., J. Hoddinott and A. Seyoum Taffesse (2009) "The impact of Ethiopia's Productive Safety Net Programme and its Linkages" *Journal of Development Studies* Vol. 45:10

<sup>123</sup> Devereux, S. and C. Solomon (2006) *Employment creation programmes: The international experience*. ILO Issues in Employment and Poverty Discussion Paper 24

<sup>124</sup> McCord A. (2007) "A Critical Evaluation of Training within the South African National Public Works Programme" *Human Resources Development Review*

Public works programmes can also integrate health, life skills and/or personal development into programme design so as to improve social welfare outcomes beyond direct productivity impact<sup>125126</sup>.

Prioritising between these 3 poverty reduction pathways (wages, asset creation, skills development) may determine programme design. If asset construction or maintenance is the primary objective, labour-based operation may not be deemed the most appropriate system. Similarly, where wage employment is prioritised, the location or design of assets may change according to local livelihood patterns. ***Balancing these pathways may help to clarify programme design***<sup>127</sup>.

## 5.2. Economic empowerment of women

Involving women in labour-based transport programmes can increase women's economic empowerment and community participation. Some public works programmes have introduced quotas for female employees to encourage greater gender equity in their workforce<sup>128129</sup>. The ILO Rural Maintenance Programme successfully employs over 50,000 rural women to maintain earthen roads, also providing training over a 4 year period<sup>130</sup>. Placing women in supervisory and technical positions, as occurred in Botswana's roads maintenance programme, can increase women's engagement in training and further employment<sup>131</sup>.

However, women's participation is also largely contingent on social norms and working patterns. One of the main obstacles is women's domestic and childcare responsibilities<sup>132</sup>. In Africa, women who participate in employment programmes are generally young and unmarried<sup>133</sup>. For married women with childcare duties, their involvement is thus very sensitive to timing and location of work. Another barrier to participation is access to information. Advertisement for job availability provided only at district level may not reach women<sup>134</sup>. ***Gendered needs must be considered***

<sup>125</sup> Devereux, S. and C. Solomon (2006) *Employment creation programmes: The international experience*. ILO Issues in Employment and Poverty Discussion Paper 24

<sup>126</sup> ANE (2002) *Zambezia Feeder Road Project: Final Report*

<sup>127</sup> McCord, A. (2011) *Appraising productivity enhancing Public Works Programmes*. ODI Social Protection Toolsheet

<sup>128</sup> Devereux, S. and C. Solomon (2006) *Employment creation programmes: The international experience*. ILO Issues in Employment and Poverty Discussion Paper 24

<sup>129</sup> IFAD (2010) *Women in infrastructure works: Boosting gender equality and rural development!*

<sup>130</sup> Devereux, S. and C. Solomon (2006) *Employment creation programmes: The international experience*. ILO Issues in Employment and Poverty Discussion Paper 24

<sup>131</sup> Dejardin, A. (1996) *Public Works Programmes, a strategy for poverty alleviation: the gender dimension*. ILO

<sup>132</sup> Devereux, S. and C. Solomon (2006) *Employment creation programmes: The international experience*. ILO Issues in Employment and Poverty Discussion Paper 24

<sup>133</sup> Dejardin, A. (1996) *Public Works Programmes, a strategy for poverty alleviation: the gender dimension*. ILO

<sup>134</sup> IFAD (2010) *Women in infrastructure works: Boosting gender equality and rural development!*

*throughout programme planning and implementation to overcome these barriers to women's participation*<sup>135</sup>.

## 6. Social development checklist

Addressing the social dimensions of transport infrastructure and transport services requires consideration of the following issues when designing and monitoring programmes and research:

- ✓ **Who benefits and who doesn't?** What are the distributional impacts of transport interventions – considering poor and vulnerable groups [e.g. women, children, unemployed youth, older people, people with disabilities, ethnic minorities] in particular.
- ✓ **Gender-sensitive?** How do transport patterns vary for women and men, and what are the implications for gender sensitive policy and programmes? How are women engaged in making these decisions?
- ✓ **Evidence gaps?** How can research programmes generate and synthesise evidence on gender and other social dimensions of transport? How can country programmes be monitored and evaluated to generate evidence?
- ✓ **Multidisciplinary?** How does the programme address multiple objectives including economic growth, socio-cultural and economic concerns (eg. impact of gender norms on transport use and productive activity)?
- ✓ **Capacity and expertise?** Do programme implementation and research partners include expertise in social and poverty analysis (including gender analysis)?
- ✓ **Disaggregation of data?** Will the programme collect data disaggregated by sex, age group and income groups (and other relevant social factors, eg. ethnicity)?
- ✓ **Pedestrians count?** Does road traffic data include pedestrians [with and without loads]?
- ✓ **User engagement?** How will programme and research partners ensure participation from transport sector operators and current and potential road users as well as other key stakeholders [regulators, roads authorities, development agencies] in research design, management, monitoring and evaluation?
- ✓ **Social risk mitigation?** How will the programmes or research address effective road safety and resettlement policies (including resettlement associated with climate change), and mitigate other risks?
- ✓ **Public works?** How can public work programme that build roads maximise benefits for women, poorest and other excluded groups?
- ✓ **New technology?** How can programme managers and researchers harness new technologies to ensure social inclusion in transport? eg. use of cell

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<sup>135</sup> Dejardin, A. (1996) *Public Works Programmes, a strategy for poverty alleviation: the gender dimension*. ILO

phone network expansion for monitoring real-time data such as patterns of bus use by excluded slum dwellers.