

'Travelling Together': Disability Inclusive Road Development in Papua New Guinea

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Abbreviations

AusAID	Australian Aid for International Development
CRPD	Convention on the Rights of Persons with Disabilities
DFID	Department for International Development, UK
DPO	Disabled People's Organization
GoPNG	Government of Papua New Guinea
ICF	International Classification of Functioning, Disability and Health
MTDS	Medium Term Development Strategy 2005 – 2010
NTDP	National Transport Development Plan 2006 – 2010
PNG	Papua New Guinea
TRL Ltd	Transport Research Laboratory, Ltd.
TSSP	Transport Sector Support Program
RMRP	Road Maintenance and Rehabilitation Project
WHO	World Health Organization

Executive Summary

Despite the fact that an estimated 10-15% of the population, or 520,000 people, are living with

a disability in Papua New Guinea (PNG), people with disabilities are often excluded from community development activities. Previous disability surveys in PNG have demonstrated the challenges in defining disability and understanding the experience of people with disability through quantitative methods, as well as the challenges to rigor and reliability of study designs.

Road infrastructure is a recognized approach to poverty reduction in developing countries, and research from PNG has demonstrated positive changes in income and travel time to schools and health clinics for village members living near road developments. There is no evidence however of whether these benefits are equitably distributed and enjoyed by people with disabilities, or whether there are in fact negative outcomes as a result of road development.

The Government of PNG (GoPNG) is responsible for the maintenance and development of the national road networks, with provincial governments being responsible for the planning of feeder roads. There is very little published literature on how community members contribute to road planning at national and provincial levels.

There is limited literature from other developing countries on different methods for engaging communities in road planning, but none which specifically consider the inclusion of people with disabilities. There are however some technical standards and guidelines for accessible road planning in urban centres.

The findings of this literature review have the following key implications for the current research project:

- The research needs to consider qualitative methodologies which will more effectively explore the situation of people with disabilities and the impact of roads on their lives.
- The Washington Group questions should provide the basis for defining disability.
- The research should seek to include a women and youth with disabilities, and people with different types of impairments recognising the diversity of the population, and seeking to explore the different experiences and perspectives.
- Rights based approaches should be considered throughout the project design and implementation optimising empowerment of the disability movement in PNG and the longer term outcomes.

Finally, the project should consider mapping the existing GoPNG planning and community participation processes through additional data collection approaches such as key informant interviews.

Introduction

Investment in infrastructure is a recognized approach to poverty reduction in developing countries, through improving community access to essential services, social networks and economic opportunities.[2] Community participation in identifying needs and design is crucial for sustainable, effective and efficient road infrastructure development, which should connect people and places appropriately, and benefit the poorest groups.[3] Studies demonstrate that addressing the needs of people with disability at the planning and design phase improves the quality and effectiveness of infrastructure for all people, and is relatively low-cost in comparison to adapting or rebuilding an inaccessible system.[4]

Despite the fact that an estimated 10-15% of the PNG population, or 520,000 people, are living with a disability, the Minister for Community Development acknowledges that people with disabilities “have been totally invisible in all areas and at all levels of the development processes of this country”.[5, p. 5] There is evidence that improved road and bridge infrastructure in some parts of PNG has had a positive impact on income, access to education and health of the general population [6], and that improving access to schools in particular can result in large poverty reductions [7]. However, the impact of infrastructure developments on the social and economic participation of men, women and young people with different types of disabilities in PNG is unknown.

Infrastructure remains a key sector for investment of Australian overseas development aid with the 2010-2011 budget committing \$562 million towards infrastructure programs in developing countries. Approximately 40% of infrastructure expenditure is targeted towards improving transport infrastructure. Additionally AusAID have pledged through their Development for All strategy that all infrastructure activities within the Australian aid program will be inclusive of, and accessible to people with disabilities.[8] Whilst there are some broad guidelines and tools to assist planners in designing accessible buildings [1, 9, 10], there is a lack of documented evidence or best practices, especially in the PNG context, to support the road infrastructure sector in disability inclusive planning and programming.

A literature review has been undertaken with the aim of identifying appropriate background information relating to disability and road planning in PNG, as well as existing evidence and best practices relating to inclusive road infrastructure planning and design in developing countries. This report presents the findings of this literature review and the implications for the current research project.

PNG Country Profile

PNG has a population of 6.5 million people growing at a rate of 2.4% per year, and is classified by the World Bank as a lower middle income country. Despite an abundance of natural resources, which support the formal sectors of the PNG economy, poverty remains a concern with approximately 40% of the population living on less than US\$1 per day.[11] Of these poorest households, approximately 94% are located in the rural areas of the country where they are dependent on subsistence farming and face many challenges relating to isolation and lack of accessibility.[7]

Disability in developing countries

Poverty is both a cause and a consequence of disability. People living in poverty are more likely to develop impairments due to illness arising from poor living standards and lack of accessible and appropriate health care. Once the individual has developed impairment, they may be excluded from,

and discriminated within society, reducing their access to opportunities which would improve their socioeconomic situation. Such opportunities include education, work and mainstream services or projects. The exclusion of people with disability in the education and employment sectors, and the additional costs incurred managing illness and impairment, has wider implications for their families and communities, and precipitates the cycle of poverty.[12, 13] Hence, inclusion of people with disability in development activities is essential to not only break the cycle of poverty and disability experienced by that individual, but to also ensure poverty reduction for the entire community.

Defining disability

Research into disability and any cross cutting issues is predominantly challenged by inconsistencies in defining disability. In the disability field there has been a paradigm shift from a purely medical or impairment based model to an integrated biopsychosocial model.[14, 15] It is now widely accepted that disability extends beyond physical impairments and also involves a complex interaction with social and environmental components. There is also recognition that disability may affect us all at some stage in our lives, and therefore can be considered along a continuum of health, which will vary according to the context, culture and environment in which one is living. The World Health Organization (WHO) International Classification of Functioning, Disability and Health (ICF) acknowledges this continuum.[15] The social model of disability has been further reinforced through the Convention on Rights of Persons with Disabilities which defines a person with disabilities as:

“those who have long-term physical, mental, intellectual or sensory impairments which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others.”[16, p. 5]

Disability research

Global estimates of disability prevalence are challenged by both lack of empirical data and inconsistencies in the definition of disability utilised for such data collection. Despite being based on data which is now more than 25 years old, the WHO estimate that 10% of any population are disabled, continues to be cited by most academics and authors. International research into disability is plagued by inconsistencies and as Metts describes “published estimates of national, regional and global disabled populations are little more than speculation and educated guesswork”. [17, p. 6] Impairment based definitions have been used widely for research and data collection, neglecting the social and environmental factors which contribute to the experience of disability. The Washington Group on Disability was formed in 2001 in response to these problems plaguing international data collection on disability and has subsequently developed a short set of questions for use in national Censuses to identify people with disabilities. These questions gather information about limitations in activity and functioning, and have been piloted, tested and validated in a variety of settings, enabling comparable cross-national data from populations from a variety of cultures and economic situations.[18]

International frameworks on disability

PNG has not yet signed or ratified the UN Convention on the Rights of Persons with Disability (CRPD). There are however positive moves on a regional level to support the Pacific nations through the convention process with the adoption of a Pacific Regional Strategy on Disability by the Pacific Islands Forum Secretariat in October 2009.[19] Additionally, the Government of PNG (GoPNG) has announced in March 2010 its commitment to signing, and in due course ratifying the convention. The GoPNG has since made requests to the Australian Aid Program for support through this process.[20]

Article 9 of the CRPD specific requires States to take appropriate measures to identify and eliminate any barriers which people with disabilities face in accessing all types of infrastructure and services, and with particular mention to roads. Additionally Article 32 provides a clear stance that people with disabilities must be included in international development cooperation. With much of the international development cooperation in PNG focussed on road infrastructure, this will have significant implications for the GoPNG, development partners and contractors alike. This article continues with some clear guidance on how to promote inclusion through:

- Building partnerships with organisations and civil society, particularly Disabled People's Organisations (DPOs).
- Facilitating and supporting capacity development of the sector to be more inclusive and for DPOs to fully participate in development.
- Promoting cooperation in research and technical knowledge.
- Ensuring access to assistive technologies.[16]

Venter and colleagues [21] conducted a study of the mobility and accessibility issues faced by people with disabilities in India, Malawi, Mexico, Mozambique and South Africa, using focus group discussions and key informant interviews for data collection. The overall barriers experienced by people with disabilities which reduce their access and participation can be divided into three main categories – Social barriers, psychological barriers and structural barriers.

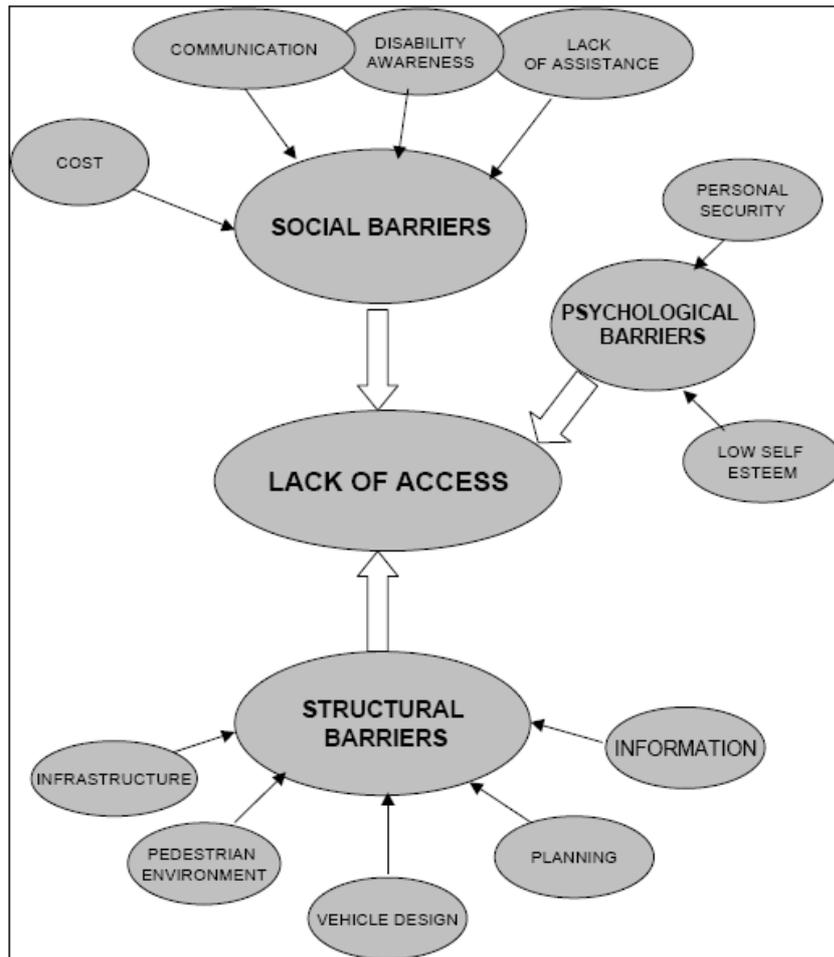


Figure 1: Barriers to accessibility identified by needs analysis (Source: Venter, et. al., n.d., p. 8)

Descriptor for Figure 1: This diagram shows social barriers, psychological barriers and structural barriers contributing to lack of access. Social barriers have the contributing factors of cost, communication, disability awareness and lack of assistance. Psychological barriers have contributing factors of personal security and lack of self esteem. Structural barriers have contributing factors of infrastructure, pedestrian environment, vehicle design, planning and information.

Disability in PNG

Previous disability research in PNG has been largely survey focussed, and has used a variety of questions to define disability, including questions about health conditions and impairments, general activity limitations, as well as varying ranges of activity limitations. A series of surveys conducted in by Callan Services for Disabled Persons, Divine Word University and the Melanesian Institute attempted to explore the link between activity limitation and the concept of participation in society. Survey questions proved unreliable in defining participation particularly when translated into Tok Pisin. These researchers found complementary qualitative techniques, such as in depth interviews, guided conversations and story-telling, more successful than surveys in exploring complex questions, such as the underlying beliefs about causes of disability.[22, 23]

Callan Services for Disabled Persons, Divine Word University and the Melanesian Institute have also made some recommendations for disability researchers on selection, incentives and training for data

collectors, communicating with the community and supervising field work based on their own experiences and in order to support future research projects in PNG.[23]

Quantitative data on the prevalence of disability in the PNG population has been collected through census and household surveys. These studies vary in quality and definition of disability and so provide a wide variation in prevalence rates. The census in 2000 included some questions on disability, resulting in a prevalence rate of 3%. Other surveys conducted in PNG since the 1980s have produced prevalence rates up to 10%. The Melanesian Institute and Callan Services for Disabled Persons conducted household surveys in three sites in 2005-2006 to determine the prevalence, causes and service needs of people with disabilities. They found significant variation in the prevalence rate of disability between the three different sites, with 12% of the population reporting a disability in urban areas; 23% in the rural highlands where it was suggested that there were higher numbers elderly people or people with impairments as a result of heavy physical work; and then 30% in coastal sites which is proposed to be a potential over estimate due to challenges in survey implementation.[23] The GoPNG refers to international research in the National Policy on Disability which estimates 10-15% of the population are living with a disability.[5]

Surveys demonstrate that the most common impairment reported by people with disabilities is difficulty moving, followed by difficulty seeing and then difficulty hearing. Most people with disabilities also report experiencing more than one type of impairment. Psychosocial impairments are reported by 19-28% of people with disabilities, with the higher rates being reported in urban areas.[23]

The most commonly reported causes of disability are disease, accidents and aging. Supernatural causes, such as sorcery or evil spirits are also reported as a perceived cause of disability, more commonly in the rural regions. The third most commonly cited cause of disability in Goroka was domestic violence and fights.[22, 23] These findings are consistent with other studies which have demonstrated high levels of domestic and sexual violence against women in Papua New Guinea [24], in some cases causing impairment and disability [25].

Among people with disabilities, those living in rural areas are significantly disadvantaged with up to 25% completing secondary schooling, compared with 50% in urban areas. Two thirds of people with disabilities living in rural areas are dependent upon subsistence farming, whereas a quarter of people with disabilities are committed to home duties in urban areas.[23] There is no data available, however, which compares these proportions with that of the non-disabled population.

The objective of the PNG National Policy and Action Plan on Disability is to create a barrier free physical and social environment for all. The GoPNG recognizes that "inaccessibility to the built environment is still a major barrier, which prevents people with disabilities from actively participating in social and economic activities". The Department for Community Development has therefore justified investment in the removal and prevention of architectural and design barriers, particularly in areas most critical to social and economic participation, such as transport, housing, education, employment, health care, cultural and religious activities. This would be implemented through awareness raising, advice to key service providers and review of existing policies, regulations and laws. Methods for implementing the proposed strategy include inter-governmental and civil society collaboration with the PNG Department of Works, and Department of Lands and Physical Planning in order to improve access to existing buildings and public transport for people with disabilities, as well as to identify access concerns in key public areas and other infrastructure developments.[26]

Road infrastructure in PNG

Transport networks in PNG are limited in distribution and quality. As 85% of the population live in rural areas [27], it is estimated that 35% live over 10 km from a road which would link them to a major urban centre, and 17% of the population have no road access at all. There is a total of 25,000 km of roads,

with 7,600 km designated as national roads and under the coordination and management of the national government, and 17,000 km of feeder roads under the local level government responsibility.[28] Up to 85% of major roads are impassable during the wet seasons.[11] It is also important to note that 6 out of 19 provinces are classified as maritime provinces in which wharves and jetties are as important as roads, but which also remain underdeveloped.[28]

It is no surprise then that the largest proportion of PNG's official development aid is channelled into transport infrastructure development.[29, 30] The Australian Government remains the nations' most significant development partner, committing to AU\$477 million to road maintenance and rehabilitation over the next five years through the Transport Sector Support Program (TSSP).[31, 32] The World Bank is also supporting the GoPNG through the Road Maintenance and Rehabilitation Project (RMRP).[33]

National development planning in PNG has "left an accumulated trail of plans, with a history of unsatisfactory, poor, or non-implementation" and often neglected the maintenance of existing transport infrastructure.[28, p. v] Improving transport infrastructure in PNG, especially road rehabilitation and construction, is a current priority for the GoPNG and is coordinated through several national and sector specific policies and programs.

- **Medium Term Development Strategy 2005 – 2010 (MTDS)**

This provides the overarching policy framework for the implementation of the Program for Recovery and Development. It guides the prioritisation of Government expenditure in the annual budget. The overall goal of the MTDS is to facilitate export-driven growth, rural development and poverty reduction. Towards this end, maintenance of transport infrastructure has been identified as a one of seven priority sectors for Government expenditure, with the District Roads Improvement Program (DRIP) and Highlands Highway Rehabilitation Project being costed programs implemented during this strategic period.[34]

- **Provincial Medium Term Development Strategies**

Each province also prepares a development strategy to see the translation of national priorities to local circumstances. This extends to provincial road rehabilitation and maintenance.[34]

- **National Transport Development Plan 2006 – 2010 (NTDP)**

The NTDP provides the detailed sectoral framework for implementation of the MTDS and the appropriate institutional arrangements. This plan follows the failed 2001-2010 plan which significantly under resourced maintenance of the existing transport infrastructure and required a complete review in 2005.[28] The current plan identifies 16 Priority National Roads which have subsequently been included in the Partnership for Development with the Australian Government.

Priority National Roads, NTDP

1. Highlands Highway
2. Buluminsky Highway, New Ireland
3. Koroba-Mendi Road, Southern Highlands Province
4. Progera Togoba Highway, Western Highlands Province
5. New Britain Highway
6. Sepik Highway
7. West Coast Highway
8. Baiyer Road, Western Highlands Province
9. Hiritano Highway, Central Gulf
10. Coastal Highway, East Sepik Province
11. Kokoda Road, Oro
12. Wau Road, Morobe
13. Buka Road, Bougainville
14. Magi Highway, Central Province
15. Ramu Highway, Magang
16. Northern Road, Oro

Box 1: Priority National Roads from the National Transport Development Plan 2006-2010 [28, 31]

- **Department of Works Corporate Plan 2009-2012**

The Department of Works, which is the government department responsible for the development and maintenance of national roads, has also identified a need to improve their engagement with communities and key stakeholders, including greater communication on their needs and satisfaction with infrastructure access.[35]

Impact of road infrastructure in developing countries

Impact of roads on development

Roads improve development opportunities, by removing barriers to participation in the social and economic activities of communities and individuals. Effective road development is believed to lower the costs of transportation, particularly for rural households, increasing their accessibility and mobility, and engagement in economic activities. For rural communities engaged primarily in farming or manufacturing, an effective road network will reduce the cost of production, by increasing availability of necessary materials and input, and increases profit through reduced distribution costs and greater market access. Road infrastructure has been linked to improved access to health and education services, supporting the fulfilment of second and third generation human rights, and promoting human

development and capital. Finally, the development of roads in rural areas can also stimulate other types of infrastructure development and diversification of livelihood opportunities.[3]

It is these theories of proposed poverty reduction and development that has prompted considerable aid investment in road infrastructure in developing countries. And yet very few road projects are ever evaluated for the real impact they make on development, the quality of life of community members, or the situation of people with disabilities.[36, 37]

The reliance on road infrastructure for poverty alleviation has been questioned by a number of authors. Estache [36] conducted a survey of infrastructure project evaluations and concluded that whilst rural roads can benefit the poorest households in a community, there is still significant inequity. Jacoby's [38] study of rural road infrastructure in Nepal demonstrated that whilst linking farmers to markets did result in the greatest benefits for the poorest households, these benefits were not enough to significantly reduce the inequalities in income within the population. Hence "rural road construction is certainly not the magic bullet for poverty alleviation" [36, p. 735].

Yet there is some evidence that roads can have a larger impact on poverty than other types of infrastructure development. Barrios [3] demonstrated that rural roads produced the greatest impact on development in the Philippines, as measured by the rural income index and income growth, when compared with other initiatives, such as development of irrigation systems or community capacity development. Despite this evidence, farming households perceived that community capacity development, such as training on livelihoods, had the greatest impact on poverty reduction. This discrepancy may be the result of a lack of advocacy and engagement with farming communities in the development of rural roads. Subsequently, Barrios advocates that construction of rural roads should remain a central tenet of rural development, but be packaged with other development initiatives, such as capacity building or social services, to optimise the benefits of improved accessibility.[3]

Impact of road development in PNG

The World Bank has been supporting road maintenance and rehabilitation in six provinces of PNG. A socio-economic survey conducted in 2007 demonstrated positive changes in income in 50% of sampled provinces, with up to 25% increased income for villages near road or bridge improvement projects. Additionally the survey demonstrated reduced travel time to schools and health clinics for village members, and a subsequent reduction in school drop-out rates.[39]

Although based on data which is now over 15 years old, Gibson and Rozelle's [7] study of poverty and access to infrastructure provides the most detailed analysis of the distribution of poverty in PNG relative to infrastructural developments. The authors analysed data from the first PNG Household Survey conducted in 1995 – 1996 and found a strong correlation between poverty, school attainment and access to roads. The incidence of poverty doubled for household living more than 60 minutes from a road compared with those living closer to a road. Hence, Gibson and Rozelle argue that reducing travelling time to the nearest road is an effective poverty reduction strategy in the PNG context, but that it needs to be targeted towards the most remote and poor communities.[7]

The primary means of transportation in PNG is walking.[39] In most communities of the developing world, traditional functions of roads, such as pedestrian movement and street trading, have become threatened by increasing motorization of vehicles. Traffic management and highway improvements that privilege motorized vehicle use may actually threaten these traditional functions of roads, with negative impacts on poor people.[32, 40]

Impact of roads on people with disabilities in developing countries

There are very few studies of the impact of roads on people with disabilities in developing countries. Only one empirical study found in literature searches by Mitullah and Makajuma [41] investigated the impact of a road on the pedestrian movement of people with disabilities and older persons in Nairobi. They observed that a major road in Nairobi failed to adequately accommodate the needs on pedestrians and particularly people with disabilities. In their pedestrian crossing observations they found that the majority of people with disabilities and the elderly were stressed and nervous when trying to traverse the road which had inadequate crossings. This is in contrast to the non-disabled population of which the majority were relaxed or able to run across the road. The authors concluded that infrastructure agencies have not given adequate attention to the needs of pedestrians and non-motorised transport in road construction, and suggest there is a need for greater sensitisation and training in this area.[41]

Limitations in measuring outcomes of road infrastructure

Evaluations of the impact of road infrastructure need to be carefully considered for a number of limitations. The most cited analysis of methodology for road evaluations comes from Van de Walle [37] who identified the following challenges to evaluating the impact of road projects:

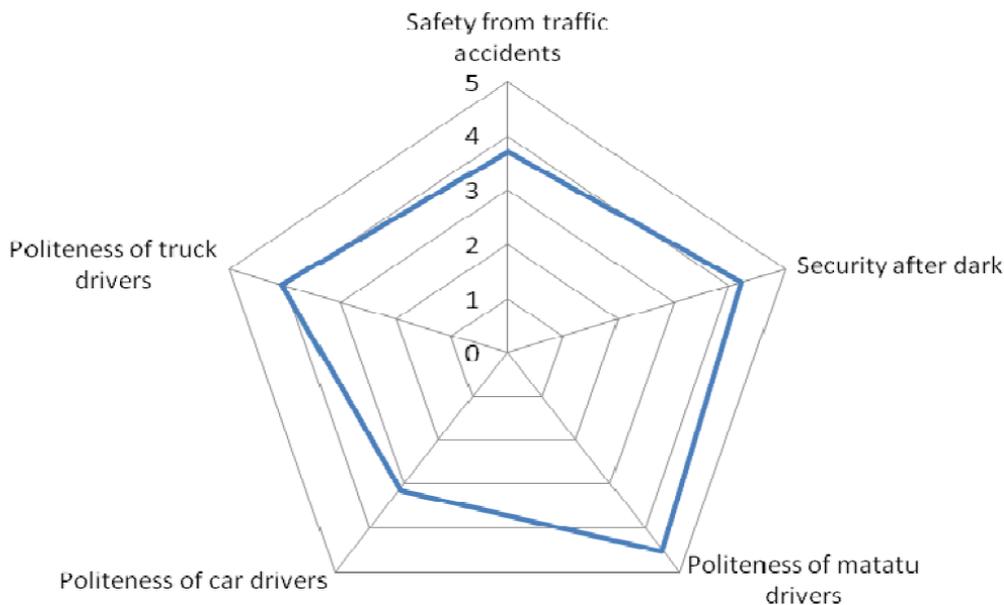
- **Impacts of roads are indirect and conditional** on the presence of other facilities and services. For example, it will only improve access to health clinics if these facilities are already in existence.
- **Roads are not randomly placed.** They are usually located according to the decisions of policy makers because it will have optimal economic potential or there is a particularly strong political constituency. This increases the likelihood of confounding factors affecting the outcome and also limits the possibility of finding a naturally occurring comparison group for experiential or quasi-experiential methodologies.
- **Roads have geographically dispersed effects and multiple outcomes** creating challenges for the defining of data collection. Van de Walle [37] refers to this as the “zone of influence” of a road and claims that many evaluations miss the wider geographical effects of a road project by defining this zone too narrowly.
- **Roads may have distributional impacts.** Few evaluations of road projects successfully explore different impacts (positive or negative) on different groups of people.
- **Full impact of roads takes time to become evident.** Complementary infrastructure development, physical and social networks all take time to establish following the development of a new road. Long term evaluation can be very costly and plagued with far more confounding factors. Hence, very little is known about the how long it takes for impacts to appear, and how

short-term and long-term impacts may differ. Van de Walle [37] suggests that the length of time for ex-post evaluation of impact will ultimately depend upon the types of outcome indicators set.

Data collection tools to measure impact of road infrastructure

- Defining the **zone of influence or project area** can be done in several ways:
 - Using the administrative units of the context.
E.g. the contemporary Government system in PNG is made up of national, provincial, Local Level Government Units. There are also the village units and indigenous leadership systems.
 - Setting a maximum distance on either side of a road link.[37]
- **Time use surveys** measure how individuals allocate their time across different activities in a typical day. These are usually conducted through a questionnaire administered to all household members over a certain age.[37]
- **Travel diaries** provide information on mode of travel, time spent, distance, cost and purpose, but require respondents to be literate.[37]

Note: It is well acknowledged in the literature that respondents will overestimate travel time and distance when self-reporting. This is largely linked to socio-economic factors and education levels. Hence some researchers have used additional tools such as pedometers, Global Positioning Systems and surveyor accompaniment.[37]
- **Non-motorised Transport tools** including pedestrian level of service (a quality measure expressing “degree of freedom of choice”), manual counts techniques, pedestrian crossing observation, radar plots and attitudinal surveys at pre-selected sites along a network or road corridor.[41]



Ranking scale: 1 = very good, 5 = very poor

Figure 2: Radar plot measuring operating conditions experienced by cyclists on the Jogoo Road corridor in Nairobi (Source: Mitullah and Makajuma, 2009, p. 14)

Descriptor for Figure 2: This diagram shows radar comprising of five concentric pentagons each numbered from 0 to 5. The five axis' of the pentagon represent different operating conditions, including safety from traffic accidents, security after dark, politeness of matatu drivers, politeness of car drivers, and politeness of truck drivers. Participants have placed a mark on the axis against the number which reflects their ranking of these conditions where 1 is very good and 5 is very poor. Lines have been drawn between their marks on the axis' to make a shape. The larger shapes represent poor operating conditions. Smaller shapes represent good operating conditions.

Community participation in road projects

There is no available empirical research exploring the participation of people with disabilities in road infrastructure projects in developing countries, and only a limited number of studies analysing broader community participation. Despite this lack of available research on community participation in road projects, it is readily recognised in the literature that engagement of the community in the identification and planning of all types of development projects will promote more effective and sustainable development practice, and more efficient and sustainable use of development resources.

Barrios [3] advocates for greater community participation in infrastructure planning because they bring vital knowledge about the environment and how it is currently used, as well as perceptions of successful outcomes. Participation throughout every phase of infrastructure development will promote ownership among stakeholders and users, and encourage their contribution to both construction and maintenance, in monetary and/or labour form.[3]

Dhimole and Tabiyo [42] describe the following types of community participation in rural road development:

Participation type	Characteristic
Passive participation	People participate by living in the area of the project. They may be told what is going to happen or has already happened but will have no other input.

Participation for material incentive	People participate by being paid for labour in food or cash, for a pre-determined project. This may be as a 'community' or as groups.
Participation by resource contribution	People participate by contributing a resource such as labour or money, to a pre-determined project.
Participation by consultation	People participate by being consulted (optional) on projects where the majority of the decisions have been made. Their view may or may not be considered.
Interactive participation	People participate by joining with external professionals in analysis of their situation, developing action plans and determining common projects.
Spontaneous mobilisation	People participate by taking their own initiative independent of external professionals to change their situation. This may lead to self-help projects or requests to other institutions for assistance.

Figure 3: Different types of community participation in rural road development (Source: Dhimole and Tabiyo, 2010, p. 2)

These authors go further to define the different roles of three key groups in facilitating community participation. **Elected representatives** are responsible for listening to the community and make appropriate recommendations to the road planners on their behalf. Additionally they must ensure that information disseminated to the community is accurate and clear, and resolve conflicts between different groups in the community. **Community groups** contribute local knowledge, particularly about the sociocultural aspects of the community. They should understand the needs and interests of different groups in the community, highlighting their consideration when reviewing proposal plans and making alternative suggestions to planners. Finally, **Government agencies** provide the technical knowledge and administrative guidance, dissemination of project information to the community, and listening and responding to the public and their representatives.[42]

Historically road infrastructure planning in developing countries has been led by the State. It has been increasingly recognised that community participation in planning, design, monitoring and evaluation of large public investment projects can promote accountability and transparency of State functions.[43]

The criteria established for selecting road networks for development determine the subsequent allocation of resources. Decentralisation and development of local governments is considered a strategy to promote community participation in infrastructure development, particularly in the identification and planning phases, by bringing decision making closer to the community itself.[3, 44]

There are very few documented examples of how community participation in State road planning and development is undertaken in developing countries, and even fewer examples of strategies to improve community participation in planning processes.

Leyland [44] presents two potential methods for engaging communities in the ranking and prioritising of road networks for development. The District and Feeder Roads Project in Tanzania, used a stakeholder's workshop to bring together district councils, technical staff and representatives of the communities in the project area, to select road networks for rehabilitation and development. An alternative example from the Western Uganda Road Maintenance Capacity Building Project involved a workshop with approximately 60 local leaders and representatives and road workers. Workshop participants were facilitated to collectively define criteria for assessing the importance of a road, including social and economic factors, and ranking the most important roads in order of priority. The rehabilitation or development of each of these networks could then be assessed and costed by the project team. The author reports that this process ensured consensus on the outcome, was viewed by local leaders as effective and transparent, and provided easy and effective dissemination of decisions to the communities.[44]

Another example of community engagement in road projects is from the National Rural Roads Development Agency in India. This Government Agency supported a pilot project to develop and test a methodology for citizen involvement in the Pradhan Mantri Gram Sadak Yojana road program. In this program community participation was undertaken from the first planning phases with the Village Panchayat (or village council) identifying a list of roads for rehabilitation which formed the basis of the core projects and annual proposals. The local community was then involved in selecting the road positioning and alignment through participation in transect walks with the village panchayat, engineers and other officials. Community Information Boards at each work site provided information of anticipated cost, expenditure, times lines, and contracted agencies. In addition to these activities the programme established Citizen Monitoring and Audit Teams. Members of these teams, their roles and appropriate training were conducted in partnership with selected intermediary NGOs and civil society groups.[43] The audits conducted demonstrated that over half of the sampled roads failed to meet the minimum technical standards set, but also that 60% of the community surveyed were aware of the rural road projects in their area, and 80% had benefited most through better access to markets, health facilities and schools for their children.[45] This project demonstrates citizen's can be trained to lead monitoring processes relating to the technical quality of roads, but also suggests that structures which engage the community in this process may increase the overall awareness in the community and subsequent benefits from the road project.

The Western Uganda Road Maintenance Project which was launched in 1997 also piloted community participation methods, including the establishment of a Road Committee to represent the community in decision making processes, and employing community members in road construction. This project identified youth and women as potentially excluded groups for active inclusion in the employment components of the project, but they have failed to document the specific strategies implemented. Other findings included that women's full and active participation still fell short of their male counterparts and that there was a lack of understanding and resistance from technical leads and engineers to empowerment and participation strategies.[46]

Whilst these examples represent a unique method of ensuring community participation in a decentralised State planning system, it fails to provide evidence that community representation is inclusive of all members of the community, particularly marginalised groups such as people with disabilities.

Community participation in road projects in PNG

The GoPNG has recognised the role of communities in road projects, calling upon their engagement in the maintenance of rural roads and contribution of land in the MTDS – a principle they refer to as “sweat equity”. [34] There is however very little available documentation describing how communities in PNG are represented in the design of national and district road infrastructure strategies and plans, which ultimately determine the selection of road networks for rehabilitation and development. Additionally no documented evidence has been located on how the community is engaged by project teams in the positioning, design and development of roads.

Tools for community inclusion in road projects

There are a few tools and guidelines for broad community participation in road projects in developing countries:

- Ruralroads.org has a website with detailed questions for rural road planners and managers, including a section on gender issues and participation of women.[47]
- A Rural Transport Training Materials CD-ROM providing comprehensive resources for road planners on all stages of road development, but also including key modules on community participation, was funded DFID and commissioned by the Rural Travel and Transport Program, a component of the Sub-Saharan Africa Transport Program managed by the World Bank.[48]

Whilst these tools have guidelines for the inclusion of women and gender issues, they fail to acknowledge potential exclusion of other groups, such as people with disabilities, in community decision making and engagement.

Tools for disability inclusion in road projects

Whilst guidelines and tools have been designed to promote participation of people with disabilities in accessible transportation programs, there are no similar guidelines specific for road programs and projects. There are, however, some key documents which provide technical recommendations on road infrastructure.

Winman and Sandhu [4] provide an overview of key infrastructure issues relating to disability in developing country contexts and recommendations on appropriate measures to integrate people with disabilities into specific parts of the infrastructure sector, including the transport sector. Here they recommend a particular focus on safety and accessibility of roads and streets in urban areas, namely non-motorised transport needs, such as space, footpaths, traffic lights with sounds and street furniture. Additionally they highlight the need to include accessibility standards to road infrastructure with appropriate budgetary considerations. This is supported by Takamine's [49] paper on infrastructure services and social inclusion of people with disabilities and older people advocating that roads investment should also budget for the provision of such sidewalks and other pedestrian facilities. DFID and TRL Limited [50] have produced comprehensive guidelines for improved urban and peri-urban access for people with disabilities. Inadequate pedestrian access in a road development can potentially increase risks for people with disabilities as they traverse these roads in both rural and urban settings. These guidelines provide detailed technical specifications for pedestrian access, including surface quality, dimensions, layout, tactile guide ways, gradients, footbridges, rest areas and guide rails.

The World Bank Design for All manual provides recommendations to programmers on ways to integrate Universal Design principles into various sectors of development activities. Recommendations for stakeholder participation in transportation projects include:

- Seek input from people with disabilities through meetings, focus groups, or audits which analyse the barriers to transportation.
- Ensure input from people with different types of impairments, their families and caregivers, and DPOs.
- Form an advisory committee so that people with disabilities can review plan and provide information to infrastructure planners.

- Ensure the committee includes people living in the areas served by feeder roads, as well as along the main road corridors, as they will have different needs and issues.
- Build a cooperative relationship among the Government agencies.[1]

This manual also provides some more detailed technical specifications for road and urban street design.

Box 2:

Key elements of Universal Design for Roads

- **Smoothness of moving on/off the road:** Does the road have a curb or entrance or exit point?
- **Grade:** What are the topographical features through which the road runs, and how does the road accommodate the steepness of the grade?
- **Surface:** What is the most acceptable surface for the road based on terrain, climate, and use? For instance, if the grade is steep, a rougher surface might be better for some users.
- **Separation of lanes:** When separate street lanes with dividers are created for pedestrians, bicyclists, and motorized vehicles, separate lanes for each mode are safer to use. This benefits everyone, but especially assists pedestrians with disabilities, or elders, and children.[1]

Key elements of Universal Design Urban Streets

At least one accessible route needs to be available for all pedestrians in continuous fashion throughout. All routes which join main avenues, secondary roads, bus stops and other access points for public transportation should be considered. Other key elements include:

- Surfaces, evenness
- Width and longitudinal/transverse gradient: flat as possible while allowing adequate drainage or outflow of water
- Pedestrian crossings: ramps should be smooth, free of obstacles
- Object, elements which encroach on pedestrian areas: posts, holes, open drains, sewers, vendors, etc.
- Location and accessibility of street furniture: located along the same strip; outer edge of the pavement
- Visual and informative signage: clear and bright
- Availability of all-weather pavements and walkways
- Maintenance, condition of streets [1]

Box 3: Key elements of Universal Design for Urban Streets (Source: World Bank, 2008, p. 12)

Implications for the research project

The findings of this literature review have several key implications for this research project “*Improving access for people with disabilities through inclusive infrastructure development in rural and urban PNG*”.

Research methodology

Firstly, previous studies in PNG have demonstrated that there are significant challenges to conducting rigorous surveys relating to disability issues, and qualitative approaches are more appropriate for the exploration of the experiences of people with disabilities. Additionally, evaluations of road infrastructure highlights that there are many confounding factors relating to impact which may bias a survey approach. We may only be able to study the short term outcomes of completed road projects, and should acknowledge that there may still be additional longer term benefits for people with disabilities which we have not been able to measure.

Definition of disability

The Washington Group questions should be used to identify people with disabilities. These questions recognise the social and environmental components of disability and should ensure that the research is inclusive of people with different types of impairments.

Including a diverse group of people

As acknowledged road infrastructure evaluations have largely failed to analyse impact for different groups of people, and it is very unlikely that impact, utilisation and participation are uniform across the diverse community. This research project should therefore collect data which will enable analysis of the impacts of road projects and participation in planning across different groups of people, in particular women, youth and people with different types of impairments.

Rights based approaches

Acknowledging the shift which has been marked by the CRPD, it is essential for the research project to adopt rights based approaches throughout. This might include promoting the use of the CRPD as a tool for people with disabilities, DPOs and road planners; enhancing the capacity of DPOs throughout the project to advocate for their participation in road planning; promoting accountability between government planners and persons with disabilities, as well as between the researchers and people with disabilities; increasing participation and ownership of people with disabilities in decision making on the research project; and ensuring that the project is inclusive of women, youth and people with different types of impairments. A PNG advisory panel which has DPO representatives, road planners and government planners and government agencies will facilitate this approach. Additionally recruiting people with disabilities into the research team will bring much valued skill and diversity to the research project.

Mapping GoPNG planning and community participation processes

As highlighted through the literature review, there is still a need to map in detail the GoPNG planning processes from the perspective of community participation and consultation, including marginalised groups. These will provide entry points for guidelines and recommendations relating to consultation and inclusion of people with disabilities. This may require adapting the methodology to include key informant interviews with road and government planners, as well as local community leaders. Whilst guidelines may be specific to the participation of people with disabilities in road planning and development within PNG administrative and contractor processes, there may be wider implication for broader community participation if it becomes clear that community participation in general is limited.

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