

LIFE OF THE
**RESEARCH FOR COMMUNITY
ACCESS PARTNERSHIP**

PROGRAMME REPORT 2014-2020





PHOTO: TOBY WONG/UNSPLASH



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MESSAGE

FROM THE STEERING COMMITTEE CHAIRS



This Life of the Research for Community Access Partnership (ReCAP) Report addresses the key achievements, challenges and lessons learnt over the six-year life of the Programme.

In Africa, ReCAP has been able to build and extend on the valuable foundations of its predecessor programme, the first phase of the Africa Community Access Partnership (AFCAP1). ReCAP has successfully extended AFCAP1's scope on the continent, both in geographical terms with the inclusion of five additional partner countries in Sub-Saharan Africa, as well as in technical delivery outputs, beyond the initial focus on rural road infrastructure. These now include transport services (i.e. mobility in rural areas) and respective associated policies.

In South Asia, the Asia Community Access Partnership (AsCAP) was established under the ReCAP umbrella, partially expanding on the previous South East Asia Community Access Programme (SEACAP), but working in five new countries in the region. All of these countries have benefitted from the foundations laid by ReCAP's predecessor programmes, but have further advanced with their own specific rural transport developmental needs.

ReCAP is an established name in both the AfCAP and AsCAP regions with regards to transport and rural access research. Over its lifespan, the Programme has delivered high quality research content. The numerous research topics covered national and cross-national issues related to planning and prioritisation of low volume rural roads, building

resilience into rural road infrastructure that would provide reliable access throughout the seasons, including asset preservation methodologies. A notable achievement has been the enhancement of the Rural Access Index (RAI), which provides a measure of the ease of mobility in rural areas. This is a significant contribution to the UN's sustainable development indicators. The research also covered matters related to inclusiveness and gender mainstreaming in rural transport and road safety. The results have become a practical tool for rural road infrastructure and transport influencers, policy makers and practitioners.

ReCAP is leaving behind an important legacy for both the transport and development sectors. We hope to see African and Asian countries, development partners, international and regional transport authorities and practitioners adopt its philosophy and use the resources it has produced. We are convinced they will enhance the development and sustain rural transport and its accompanying infrastructure on the pathway to poverty alleviation and prosperity.



Nazir Alli, Chair
Africa Community Access Partnership
Steering Committee
September 2020



Ram Chandra Shrestha, Chair
Asia Community Access Partnership
Steering Committee
September 2020

HOW THIS REPORT IS STRUCTURED



In the Overview, Chapter 1 presents the global context of rural access and transport, and emphasises the importance of a credible and impactful research cycle to support access to roads and transport services for all. It then describes the objective of the Research for Community Access Partnership (ReCAP) to improve mobility for the rural poor across 17 partner countries in Africa and Asia. Chapter 2 explains the basis of ReCAP's three strategic pillars of road infrastructure provision, road maintenance and transport services provision, and stresses the need to embed rural road research findings at the highest level so they are implemented for the benefit of rural communities, including vulnerable groups.

Part A presents ReCAP's research contribution to its three strategic pillars. Chapter 3 showcases the programme's key achievements in producing a series of highly regarded, practical design manuals, guidelines and handbooks to support the cost-effective and sustainable provision of rural road infrastructure. ReCAP's design manuals for low volume rural roads, in particular, have been enthusiastically welcomed by partner countries. Chapter 4 highlights ReCAP's work to develop best practices for road maintenance to safeguard assets for the benefit of rural communities, in particular the rural road asset management methodology. Chapter 5 looks at how ReCAP has tackled the neglected area of rural transport services research with innovative projects to study the impact that better access has on small-scale farming, road safety, and the interaction between road conditions and the quality of transport services. It also emphasises the potential of the Rural Access Index, indicator 9.1.1 of the Sustainable Development Goals, as a tool for resource allocation.

Part B describes ReCAP's strategy to maximise the value of research by working to build the ability of its partners to conduct and disseminate research, with consideration for the concerns of vulnerable groups. Chapter 6 describes partnerships with in-country agencies to set up rural Road Research Centres, along with initiatives to train budding researchers. Chapter 7 highlights several platforms for managing the knowledge produced by ReCAP, including the Rural Access Library, the Senior Experts' Knowledge project and massive open online courses (MOOCs). Chapter 8 describes the development of ReCAP's milestone publication on gender mainstreaming, the inclusive approach of which can provide a model for credible research.

Part C describes the networks of collaboration and knowledge sharing that ReCAP has engaged with, including its influence on the multilateral agenda. Chapter 9 focuses on the programme's efforts to build coalitions of like-minded organisations, including at its own flagship Inter-Regional Implementation Meetings and regional and global conferences, where it has made a strong case for rural road research. Chapter 10 highlights ReCAP's engagement with universities and training to increase the uptake of its findings, as it moves to embed them into national and regional regulations by obtaining official endorsements. Brief lessons and recommendations for future rural road research programmes are summarised in Chapter 11, and a key list of resources is provided in Chapter 12.



PHOTO: ALI AHSAN/UNSPLASH

REPORT OVERVIEW



The Road to ReCAP

*“The Roman road is the greatest monument ever raised to human liberty”
Robert Graves, Claudius the God, 1935*

To understand the significance of this opening statement, we have to consider what the writer saw in roads. The answer is mobility and connectivity. Through roads, cities are connected to cities, nations to nations and, perhaps most importantly, people to people. Roads allow movement, and as Graves observed, they are “always thronged with grateful travellers”.

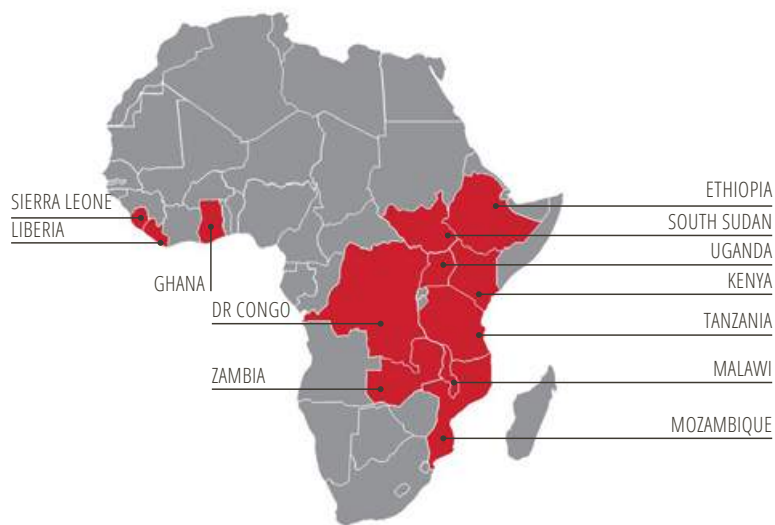
Freedom of movement is a human right (Article 13 of the Universal Declaration of Human Rights). More explicitly, Sustainable Development Goal (SDG) Target 9.1 requires the development of “quality, reliable, sustainable and resilient infrastructure ... to support economic development and human well-being, with a focus on affordable and equitable access for all”. Yet well into the 21st century, over one billion people around the world live more than 2 km from a road that is open through the year. This has serious consequences for the quality of their lives. Too many people living in rural areas are hindered in earning a living by the difficulty of travelling to a job or transporting their agricultural produce to market, and they are equally unable to access life-enhancing health and education services.

The Research for Community Access Partnership (ReCAP) is a programme from the UK Government that seeks to improve the access of the rural poor in Africa and Asia to economic opportunities and public goods and services through improvements to road infrastructure and transport services. Over the life of the programme (2014–2020), ReCAP has strengthened the evidence for more cost-effective and reliable approaches to building and maintaining low volume rural roads as well as providing safe and inclusive transport services, and has used research to influence policy and practice. ReCAP works with 17 partner countries, 12 in Africa (AfCAP) and 5 in Asia (AsCAP), and has so far invested £21 million across 252 national and regional research projects – with close to £26 million in co-funding from partners.

FIGURE 1 PARTNER COUNTRIES IN SOUTH ASIA



FIGURE 2 PARTNER COUNTRIES IN SUB-SAHARAN AFRICA



Pre-ReCAP

The UK Department for International Development (DFID) supported two earlier interventions in the rural transport sector. The first was the South East Asia Community Access Programme (SEACAP), which ran from 2004 to 2009 in Vietnam, Cambodia and Laos. The second

was the Africa Community Access Partnership (AfCAP 1), which ran from 2008 to 2014 in 7 African nations: Democratic Republic of Congo, Ethiopia, Kenya, Malawi, Mozambique, South Sudan and Tanzania. AfCAP 1 was replaced by AfCAP 2, which added 5 more partner

countries in Africa (Ghana, Liberia, Sierra Leone, Uganda and Zambia), and 5 countries in Asia (AsCAP): Afghanistan, Bangladesh, Myanmar, Nepal and Pakistan, to form ReCAP (see Figures 1 and 2).



PHOTO: ETHIOPIA ROADS AUTHORITY, 2010



PHOTO: P STARKEY, 2014



UNDERSTANDING **RURAL TRANSPORT**

Build it and they will come?

It's important to build good roads and keep them that way – but they aren't much good if people aren't able to use them. ReCAP has therefore focused on supporting research in three areas: building resilient rural road networks; maintaining them in a timely and efficient way; and, providing appropriate transport services along them.



PHOTO: P. STARKEY, 2008

While it seems obvious that we should focus on these three aspects of sustainable rural mobility, balancing them is easier said than done. Governments in Africa and Asia often favour building roads, but fall short when it comes to providing resources to maintain these roads, particularly those serving rural communities. Road agencies and the engineers that work there understand the long-term economic benefits of a 'life-cycle' approach to managing their assets: roads provide better value for money over a longer period of time if they are kept in good condition. But there may be significant difficulties in obtaining the resources needed to maintain road networks.

Furthermore, road agencies under the jurisdiction of ministries of public works normally do not have the mandate to

intervene in transport services. Providing services is usually left to the private sector, which may be only loosely administered by ministries of transport. This often results in an unregulated patchwork of services comprising buses, three-wheelers and motorcycle taxis operating in a haphazard, unsafe manner that is not always in the best interests of people. And by people, we mean everyone, including women, children, and the socially and physically disadvantaged.

Research plays a key role in understanding aspects of infrastructure provision, maintenance and transport services, and it is important to see these three pillars as a continuum rather than separate elements. What's more, research is only useful to the degree that findings on how best to build and maintain roads and get people to use them are published in guidelines and manuals, shared widely,

and incorporated into national standards and regulations so they are actually implemented. ReCAP's focus has been on supporting research from root to fruit. Its commitment of resources across thematic areas covers, for example, research on the strategic pillars from sustainable and economic provision of infrastructure (18 per cent) and the optimised use of material resources and environment (10 per cent); through effective whole life rural road asset management (14 per cent) and climate resilience (5 per cent); to rural mobility and access to roads (6 per cent). It also focuses on ensuring this knowledge is shared and embedded, through capacity building (11 per cent) and knowledge management (17 per cent) (see Figure 3).

Part A

- 112** Citations in academic articles of ReCAP-supported research papers
- 24** ReCAP-supported, peer-reviewed low volume rural road papers published (open access)
- 20** ReCAP-supported, peer-reviewed rural transport services papers published (open access)
- 474** ReCAP-supported knowledge products generated

Part B

- 44.0%** Share of ReCAP spending on projects undertaken by in-country experts
- 13.7%** Share of ReCAP spending on projects managed by national research centres
- 32.0%** Share of ReCAP spending on projects undertaken with female senior technical researchers

Part C

- 23** The times that ReCAP-generated knowledge has been presented at high-level international meetings
- 41** The times that ReCAP-generated knowledge has been effectively shared through workshops and training
- 47** Documents adopted by governments based on ReCAP engineering research
- 15** Documents adopted by governments based on ReCAP transport services research
- 13** Cost-benefit analyses conducted to test the cost-effectiveness of ReCAP research solutions
- 523,806** Kilometres of road where ReCAP guidelines will be applied

FIGURE 3 EXPENDITURE BY THEMATIC AREA AS AT 30 APRIL 2020



PART A

PLANNING THE JOURNEY



ReCAP has supported research on road infrastructure provision, road maintenance and transport services. Key projects include:

- Low Volume Rural Road (LVRR) design manuals
- a Climate Adaptation Handbook and four associated Guidelines
- back analysis to learn from the performance of older rural roads
- a rural road asset management methodology for road agencies and departments
- a cost-benefit analysis of improving access for small-scale farming
- studying the interactions between rural access infrastructure and transport services
- balancing the benefits of motorcycle and three-wheeler taxis with road safety
- enhancing the Rural Access Index (RAI) as a measure of rural communities' access to roads.

"ReCAP's design manuals are definitely not gathering dust."

Joey Malota, Programmes Officer, Association of Southern Africa Road Agencies (ASANRA)

Since 2014, building on the experience and lessons learned from previous UK aid-funded rural transport programmes, ReCAP has worked closely with 17 partner countries across the AfCAP and AsCAP regions to produce manuals and guidelines on the most cost-effective and socially and environmentally appropriate ways to build, maintain and use rural roads. Mirroring the opinion of many partners, Joey Malota of the Association of Southern Africa National Road Agencies (ASANRA) observes that these research products are being widely used; they "are definitely not gathering dust". The implementation of ReCAP's research will potentially impact hundreds of thousands of kilometres of rural roads.



PHOTO: KHADIJA YOUSAF/UNSPLASH

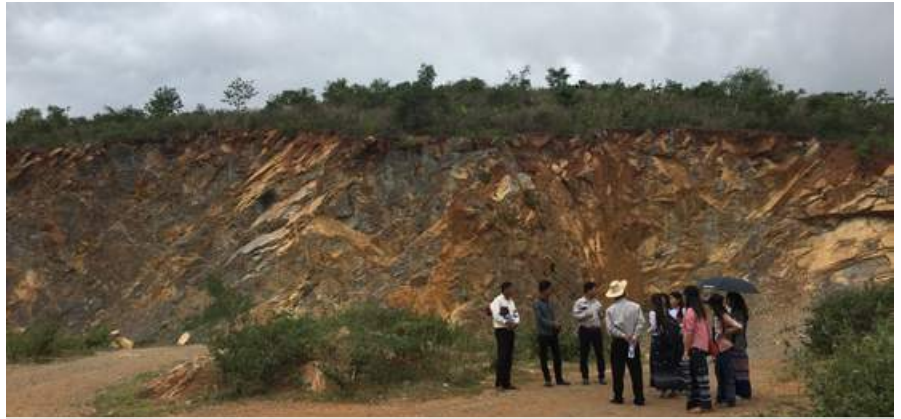


PHOTO: CIVIL DESIGN SOLUTIONS, 2018



PHOTO: P STARKEY

BUILDING RURAL ROADS

Designing rural roads

National highways and other major roads may be designed and constructed according to set specifications, but in many developing countries there are no stringent specifications in place for roads connecting rural communities. Roads may be built with materials that are locally available, to the standards dictated by the budget available as well as the experience (or integrity) of the contractors involved. Some may deteriorate prematurely and become impassable during certain

seasons. However, rural roads may also be built to generalised specifications taken from high volume roads, leading to their being over-designed and unnecessarily costly.

Yet low volume rural roads – defined as roads with traffic of about 300 vehicles a day and up to one million equivalent standard axles (ESAs) – make up the bulk of roads across vast regions in Africa and Asia, and millions rely on them for access to markets, public goods and services. Even if these roads do not need to be



PHOTO: CIVIL DESIGN SOLUTIONS, 2018

Box 1 A Low Volume Rural Road Manual for Myanmar

When the Government of Myanmar expressed interest in developing a framework of design standards and procedures suited to its geophysical and socio-economic environment, in line with its objective to provide all-season sustainable access to at least 80 per cent of its 64,000 villages by 2030, ReCAP stepped up to support the Department of Rural Road Development (DRRD). A review of existing standards was carried out, followed by the planning and production of a design manual, completed within a year in January 2020.

The Myanmar LVRR Design Manual, as well as the Review of Standards, draws on lessons learned from AfCAP and SEACAP countries. ReCAP has taken care to address any potential lack of agreement among stakeholders or incompatibility between DRRD processes and those elaborated in the manual. To boost the chances of the manual being used it was written in simple English, with an emphasis on illustrative tables and figures; a field manual could also be developed. The manual itself will have to be translated into Burmese for use by local consultants and contractors.

Fitting into a strategy of rural connectivity that emphasises the use of local resources to overcome local challenges, the manual will be a valuable tool for the DRRD in delivering sustainable rural road access with its development partners.

constructed to the standard of high-volume roads, it is essential that they be fit for purpose. They need to be geometrically designed for the numbers and types of motorised vehicles expected (including two or three-wheelers) and for non-motorised users, too (including cyclists, pedestrians and animal-drawn carts).

Beginning with a comprehensive update of Ethiopia's national manual on low volume road design in 2016, ReCAP has produced a series of Low Volume Rural Road (LVRR) manuals in cooperation with partner countries. These manuals, which are comprehensive how-to guides on planning, site investigation, traffic engineering, design, construction and maintenance of low volume roads, are tailored to the specific environmental and institutional conditions of the countries they are meant to be used in, including the modes of transport most likely to be used on them, such as motorcycle taxis in rural Africa. Their practical utility means that they have been welcomed by road engineers – with 10 LVRR manuals in 10 countries revised or completed so far – and enthusiastically adopted by in-country institutions. Further, traffic safety is a key concern for decision-makers everywhere, and ReCAP-supported research on an internet-based accident blackspot management system in Ghana, and a crash database in Sierra Leone, are important contributions to this vital issue in sub-Saharan Africa.

The significance of the LVRR manuals cannot be overstated: in Ethiopia alone, the manual was applied to the construction of 70,000 km of roads under the Universal Rural Road Access Programme (URRAP), and was also used in the US\$25 billion Road Sector Development Programme V. With the implementation of the first series of manuals in Kenya, Tanzania and Mozambique, we can expect 230,000 km of African road networks to be directly affected.

The development of LVRR manuals has been one of ReCAP's key achievements, as it sets solid engineering standards for the construction and maintenance of rural roads – standards that ReCAP has worked very hard to make available across relevant government agencies and to other interested parties through online dissemination and workshops, presentations and poster displays at regional and international conferences. This has created demand from other countries, leading to projects to develop manuals for the West African sub-region (Ghana, Liberia and Sierra Leone) as well as Malawi and Zambia.

ReCAP has supported partner countries in producing many other manuals and design documents. These include the regional Climate Adaptation Handbook and the Rural Road Asset Management Practitioners' Guideline, but also country-specific documents such as a Right of Way Utilisation Manual in Nepal, which will guide the construction of demonstration sections for roadside plantation to stabilise banks, and a peer review of the road standards manual in Bangladesh. Key elements of these manuals are summarised in the Rural Road Note (see box 2).

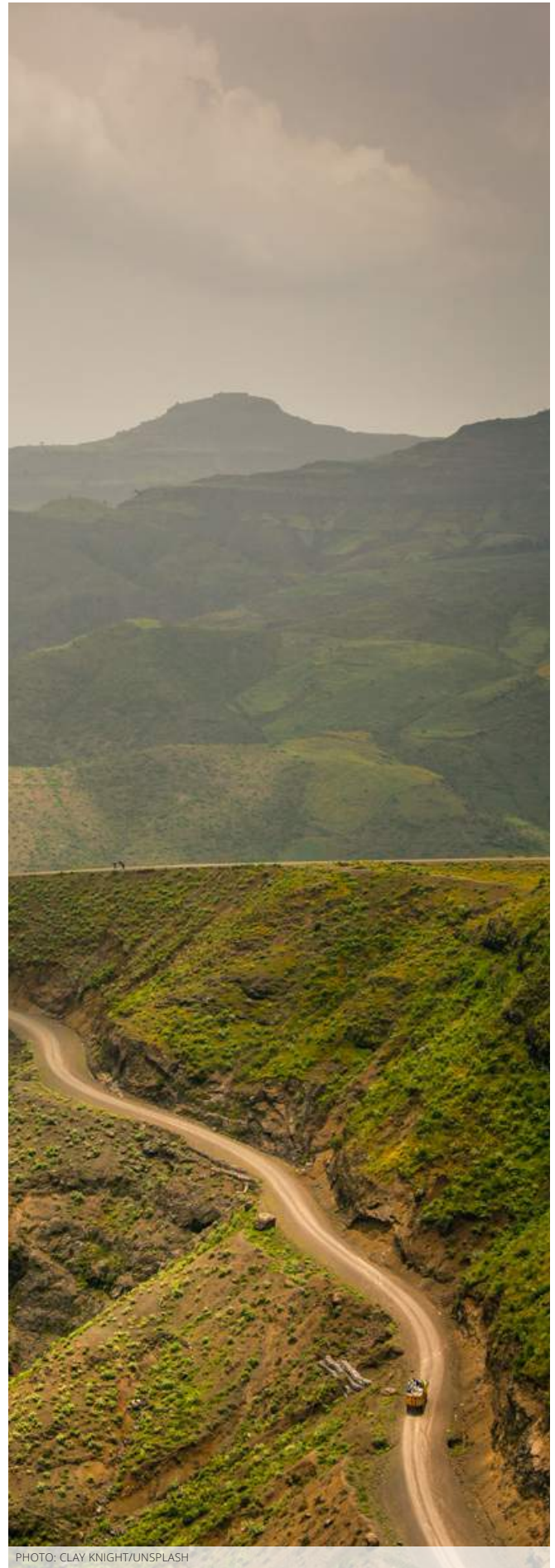


PHOTO: CLAY KNIGHT/UNSPLASH



PHOTO: DAMIAN PATKOWSKI/UNSPLASH



Rural Road Note 01: A Guide on the Application of Pavement Design Methods for Low Volume Rural Roads



Box 2 Rural Road Note: a classic in the making

ReCAP tasked the transport research pioneers, TRL, to produce a concise Rural Road Note to provide technical guidance to road agencies and other practitioners on the available pavement design methods for low volume roads in low- and middle-income countries. This is the first Rural Road Note in the series and it draws extensively on the LVRR manuals that have already been developed, existing literature on

a number of design methods, as well as other studies undertaken across ReCAP partner countries. Published in July 2020, including a series of online training lectures on key insights, it is expected to be a very useful and practical guide for road agencies and practitioners involved in pavement design of low volume roads in low to middle income countries for years to come.



PHOTO: MOTT MACDONALD

Accounting for climate change

ReCAP's partner countries in Africa and Asia will be disproportionately affected by climate change. With over 1,400 weather-related disasters in the last four decades that have led to the deaths of 600,000 people and affected 460 million others, the African continent may be the most vulnerable region in the world. In 2015, the Asian Development Bank announced that it would double climate change financing to US\$6 billion annually by 2020, signalling an equivalent urgency for the Asia-Pacific region.

For rural communities, climate change poses particular threats. With less than 40 per cent of rural Africans living within 2 km of an all-season road, unpredictable patterns of storms, floods and droughts can cut off entire communities for part of the year or lead to such deterioration of the road network that access to markets, goods and services is considerably diminished. In short, climate change threatens lives and livelihoods, and not only in terms of fatalities caused by extreme weather events.

Accordingly, ReCAP's Climate Adaptation Handbook, based on research and trials in Ethiopia, Ghana and Mozambique, covers

climate threats and adaptation measures, both engineering and non-engineering, for existing and new road infrastructure. It is accompanied by four separate Guidelines: on Change Management; Climate Risk and Vulnerability Assessment; Engineering Adaptation; and Visual Assessment. The Climate Adaptation Handbook and the Guidelines are vital components of a strategy for climate-resilient road networks that takes into account the needs of a changing world. The countries were selected on the basis of their wide range of geographies and climate systems, as the Handbook and associated Guidelines are intended to be useful for ReCAP partner countries and beyond.

ReCAP intends the research that underpins these documents to align with the International Climate Change Adaptation Framework for Road Infrastructure, which is being developed by the World Road Association (PIARC). This global framework is meant to assist transport decision-makers in both developing and developed countries in preparing appropriate infrastructure adaptation strategies.

Countering climate change also demands a strategy for green mobility in order to reduce greenhouse gas emissions. This



Box 3 Climate-resilient marine concrete for Bangladesh ... and beyond

For countries like Bangladesh, with low-lying floodplains at an average elevation of 1-1.5 m above sea level, climate change is already here. Bangladesh's road network is constantly subject to an aggressive marine environment responsible for accelerated physical and chemical deterioration of concrete structures and reinforcements. Climate change will raise the concentration of carbon dioxide in the atmosphere and the salinity of seawater, accelerating the corrosion of concrete and reinforcements in bridges and culverts and increasing the cost of maintenance.

ReCAP undertook research in collaboration with Bangladesh's Local Government Engineering Department (LGED) to identify ways to improve the strength of materials used in coastal regions. It found that durability testing was important in designing an appropriate concrete mix; determined that stone aggregate concrete mixes would be superior to the commonly used brick aggregate mixes; and recommended a concrete mix with 30 per cent fly ash content as a substitute for cement along with a high cement content of 450 kg/m³ or more.

The findings were adopted by the Government of Bangladesh and incorporated in the World Bank-funded Program for Supporting Rural Bridges. This US\$625 million programme will potentially impact 380,000 metres of currently existing concrete bridges and culverts in rural coastal areas, and another 200,000 metres that Bangladesh plans to build in the next decade, reducing the very real risks faced by millions during severe weather events. It is hoped that the findings will prove useful to other ReCAP partner countries at constant risk of marine flooding.

has been identified by the ReCAP team as an area of interest and concern, given the additional positive impacts of reducing greenhouse gas emissions from vehicles on local environments, and the health of rural communities using or living in proximity to roads. ReCAP research has included analysis of actions that mitigate the potential environmental impact and disturbance of road construction projects. In Nepal, for example, dust-measuring equipment was tested to establish what levels of dust should be considered acceptable on gravel roads, how effective dust suppressants were, and what negative impacts dust has on road users, local communities and agricultural livelihoods.

Back analysis of rural roads

Given the constraints on resources to reach the 1 billion people who live more than 2 km from an all-season road, roads should not be built to the highest standards possible. Rather, they should be fit for purpose, meaning they should be constructed to standards appropriate to their intended function and local context.

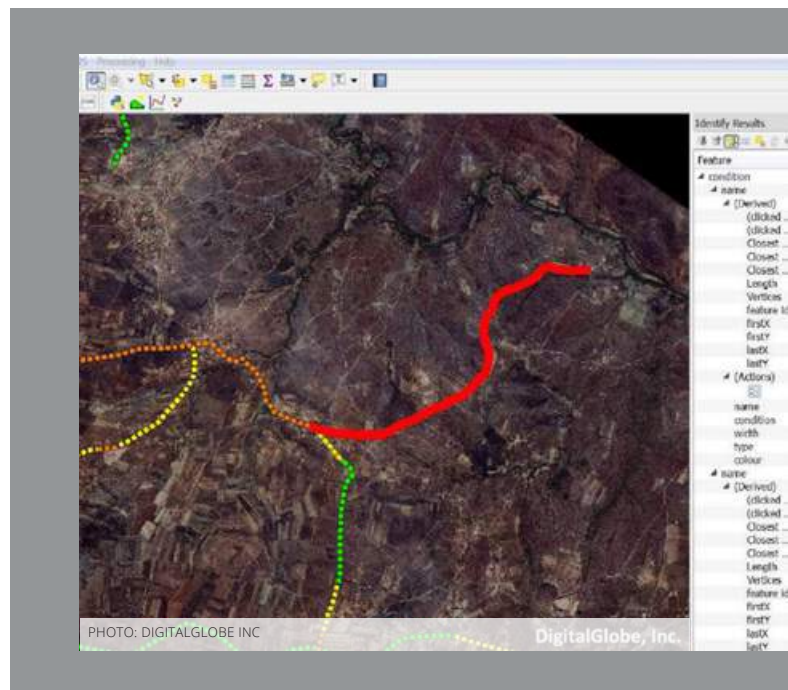
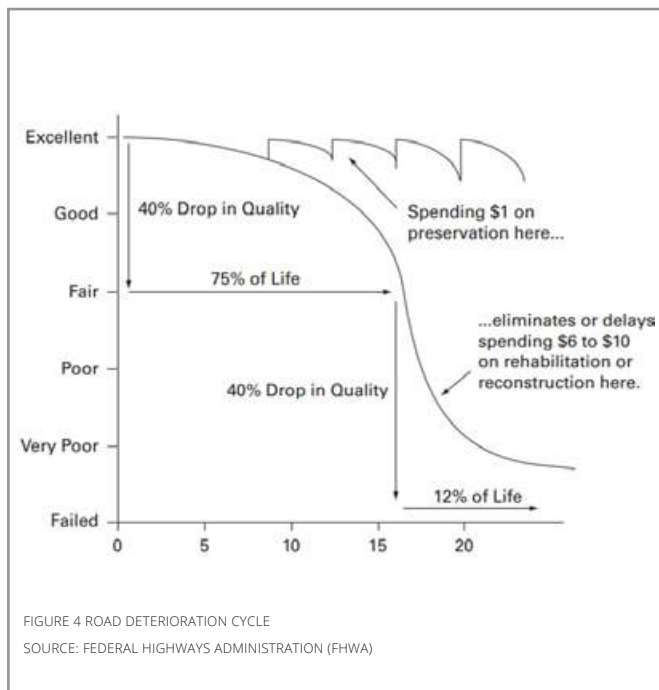
Ideally, these fit-for-purpose standards should be dictated by the design manuals

in use, which should be updated based on the long-term, in-service performance of roads. In many cases, particularly where the design manuals are not widely disseminated or implemented in local, rural contexts, roads have been built to lower specifications, depending on the financial and human resources as well as the materials available to contractors. In others, they have followed existing manuals that are applicable to high volume roads. ReCAP's support to perform a 'back analysis' of low volume roads long in use across rural regions in Ghana, Mozambique, Uganda and Zambia, including through the development of a database, led to some surprising results, upending conventional understandings of what 'appropriate' means in those contexts.

In short, these rural roads were performing much better than what might have been expected, given the materials and specifications used. Overall, it was found that the deterioration that had occurred in the sections of historical roads that were analysed was due to poor drainage and surface cracking rather than serious structural issues, and that these roads were capable of sustaining higher levels of traffic than their specifications

might indicate. Fieldwork and lab testing were carried out with the collaboration of participating road agencies, with findings shared at joint analysis workshops in each country and a regional workshop in Tanzania.

Design manuals are living documents; they are not set in stone. The research conducted by ReCAP indicated that restrictions on specifications for rural roads could be eased, allowing roads to be built at lower expense. The upwards revision of the traffic loading capability of low volume sealed roads means that a larger network of roads can be covered by broader, more cost-effective specifications. Further, back analysis has revolutionised understandings of so-called 'marginal material', local material that was often excavated and discarded in favour of importing more costly and scarce materials. These findings are in favour of 'environmentally optimised' designs that challenge traditional road design criteria and provide practical options where resources are limited – keeping in mind the aspirations of local communities to have high quality roads.



MAINTAINING THE NETWORK

Roads are valuable assets anywhere, but they are much more so for rural communities, where they may have been the end result of much effort, either on the part of stakeholders lobbying for scarce resources to be made available, or communities providing labour to build them.

The case for timely road maintenance is even clearer in economic terms, which demonstrate that it is far more cost-effective to maintain roads on a regular basis than to allow them to deteriorate to a point where they have to be built all over again (see Figure 4). In Nepal, for instance, it has been estimated that due to a lack of maintenance, 55 per cent of the local roads that have been constructed since 2000 were no longer trafficable by 2012, at a loss of investment of a staggering US\$1 billion.

Road agencies and departments have a pragmatic understanding of the need to manage their assets. Figures such as those just cited are effective in persuading policy-makers. Yet methodological frameworks that measure a wider range of factors may assist engineers in obtaining a more complete picture of the relationship between road conditions and the rural communities and economies dependent on them.

Supporting growth through effective rural road asset management

While road maintenance is part of the LVRR design manuals as well as the Climate Adaptation Handbook and its associated Guidelines, ReCAP also worked with its partners to develop a specific framework to help countries measure

Box 4 Eye in the sky: hi-tech options for road condition assessment

A significant obstacle to road asset management is the inaccessibility of parts of the networks. This may be caused by remoteness, conflict or weather, or by inadequate resources, tools or operational practices. Technology has the potential to leapfrog many of these obstacles.

ReCAP conducted a desk review and trials to identify hi-tech solutions for condition assessment in Ghana, Kenya, Uganda, Zambia and Tanzania. These included drones, video cameras, smartphone apps, accelerometers, Geographical Information Systems, crowdsourcing and satellite applications. ReCAP also developed a method to use dash cams to assess rural roads, feeding into a permanent database, the videos from which could be used to conduct visual assessments.

Satellite imagery was identified as a particular prospect for conflict-affected countries such as South Sudan and

Afghanistan. It is reasonably accurate, quicker and less resource-intensive than assessment using people and vehicles at ground level. To be cost-effective, the satellite imagery has to be obtained at significant discount and requirements for access should be relaxed. Problematic readings can be 'ground-truthed' with cross-referencing tools such as the dash cam mentioned above.

The ReCAP team trained road agency staff from participating countries in use of the technologies. A Guideline was also produced that identifies the most appropriate technologies and their use, including in combination. High-tech solutions could make a huge difference to how roads are assessed, in tandem with other ReCAP initiatives such as the Rural Road Asset Management Practitioners' Guideline, the Climate Adaptation Handbook and Guidelines, and the enhanced Rural Access Index.

the performance of their rural road asset management, with simple and appropriate tools and indicators to measure improvement or deterioration. Beginning with a review of maintenance programmes already in place, the project worked with road agencies in Tanzania, Sierra Leone, Uganda and Zambia to achieve sustainable improvements to road asset management, with the aim of benefiting local communities. The Western Cape Province of South Africa was involved in the project, providing an exemplar of best practice in rural road asset management.

Following a self-assessment carried out by staff within the road agencies, a range of indexes were developed, including the Road Condition Index (RCI), the Road Asset Preservation Index (RAPI) and the Road Sector Sustainability Index (RSSI). The RSSI measures the extent to which six related building blocks are satisfied in practice to achieve effective road asset preservation: government policy and funding for roads; sectoral institutional arrangements; agency management; technical standards; and the organisation of road maintenance. The ReCAP team developed tools to help

road agencies assess and monitor the condition of their networks, organised training events for over 30 trainers from AfCAP countries, and shared findings at international meetings. The methodology developed formed the basis for the Rural Road Asset Management Practitioners' Guideline.

Funding is the limiting factor for road maintenance, and this also applies to the implementation of the asset management methodology. The road networks in the study areas suffered through lack of maintenance across 2017 and 2018, but it was equally difficult to carry out capacity-building activities intended to make maintenance more effective. Tracing the causes of this funding constraint led to the conclusion that higher-level policies, strategies and regulations governing road agencies needed to be reformed, along with improved operational procedures, communication and discipline within the road sector. Despite these challenges, demonstrating the impact of a lack on maintenance on the value of the road network led to a better appreciation on the part of road agencies of the

factors affecting their performance and management of their assets. It also helped them forge stronger links with their parent ministries. The African Road Maintenance Funds Association (ARMFA) has agreed to take on the stewardship of the Practitioners' Guideline and, should sufficient support be available, could meet the demand from other ReCAP partner countries to roll out the methodology across their own rural road networks.

"I use a 'boda-boda' to get to work. It takes 30 minutes to get to work when the road has been graded, about 40 minutes when the road is poor and about an hour in the rainy season. At the flooded sections, 'boda-bodas' have to be carried and people use canoes to get across. In March and April this year (2018) I failed to get to work for about 7 days because of the poor state of the road due to heavy rains."

A midwife living 15 km from a health centre in Uganda



PHOTO: P STARKEY, 2019

IMPROVING ACCESS TO **RURAL TRANSPORT SERVICES**

A third of the world's population will still be living in rural areas in 2050. If we are to “leave no one behind”, as the United Nations’ 2030 Agenda declares, rural transportation must be a key part of the strategy to provide universal access. ReCAP’s research efforts to support appropriately designed and maintained roads have borne fruit in the form of design manuals, climate adaptation handbooks and the development of an asset management methodology, among many other products. But it is also crucial that people are able to access roads – affordably, appropriately and across seasons.

The First Mile

For rural communities, access means much more than being able to travel

between villages, towns and cities. It means facilitating the movement of (mostly agricultural) produce, public goods and services. This is often understood in terms of First Mile and Last Mile access. The former refers to the transport segment that links rural farms to markets; the latter refers to the same segment, but in terms of how it links people with public goods and services delivered from more central and better connected locations.

The cultivation of high-value crops for urban markets by smallholder farmers, particularly women, has been widely encouraged. But less attention has been paid to how produce gets to collection points and markets. Rural road networks that are chronically underfunded, and in many places actually deteriorating, escalate transportation costs for

Box 5 Qingqis in Pakistan: terrors or saviours?

Pakistan has over 2 million motorcycle rickshaws or 'Qingqis': motorised three-wheelers assembled in unauthorised workshops that run mainly on specific routes in peri-urban to rural areas. A ReCAP study in Punjab province found that while these are criticised by non-users as dangerous, illegal and low-status vehicles that should be banned, users typically praise them as convenient and cheap, particularly in rural areas where regular bus services may not be available.

The study confirmed that there are indeed issues with safety and non-compliance with regulations with regard to Qingqis in Pakistan. But these apply to all forms of transport, and Qingqis may be safer for schoolchildren than travelling on the backs of motorcycles. A key consideration is also their utility for women, who use them for 55 per cent of their journeys on public transport. The study also established that most people are willing to pay up to 40 per

cent more for safer, less crowded vehicles.

Unregistered Qingqis have been banned in the city of Karachi, in Sindh province, but citing a lack of alternative modes of transport for the public, the courts have rescinded these orders twice already. While the debate continues, the country's motorcycle three-wheelers may gradually be replaced by battery-powered vehicles with three or four wheels.

both agricultural inputs and harvests. Infrastructural bottlenecks may compel farmers to use slower, more expensive modes of transport such as head-loading and motorcycles rather than trucks. Failing even that, their hard-earned harvests may go to waste or be sold at below-market rates, leading farming to abandon agriculture with disastrous consequences for food security.

ReCAP carried out a cost-benefit analysis of the impact that better First Mile access has on small-scale farming and agricultural marketing in Tanzania and Kenya. After consulting farmers and transporters and evaluating the condition of local access roads, it was estimated that transport costs and crop losses reduce farmer incomes by 30-40 per cent for potatoes and pineapples in Tanzania and by 10-15 per cent for French beans in Kenya. Poor road conditions were largely to blame: some roads were no longer motorable by four-wheeled vehicles, others were accessible only during the dry season. Investing in these road networks has strong potential to reduce these costs and boost incomes. For the study area,

bringing collection points just 0.5 km closer to remote farms in Tanzania would reduce the burden of head- and back-loading by 35 per cent and reduce transport costs by 2.2 per cent, leading to an estimated rise in net farm incomes of 4.25 per cent. This provides a clear signal to government to extend all-season networks closer to farms, with advance planning to account for the transport needs of rural communities. Local government should be involved in providing resources and technical expertise for First Mile road rehabilitation and maintenance, and communities should also be involved.

The research also found that female farmers were especially disadvantaged by poor First Mile access. Their net incomes were substantially less than those of men, and they were much less likely to own a mode of transport or be able to negotiate good prices for transportation. Women should thus be supported to have more involvement in decision-making, including through membership and leadership in farmers' cooperatives and associations as focal points to improve First Mile access.

Following the ReCAP First Mile research, the Tanzania Rural and Urban Roads Agency (TARURA) prepared a video to show how infrastructure improvements in rural areas of Tanzania have helped farmers increase their incomes from transporting agricultural produce to market.

Interaction: Maintenance Provision of Access for Rural Transport Services (IMPARTS)

ReCAP's Way Forward Strategy drew its three strategic pillars closer together by conceptualising them as a provision-preservation-services continuum. The IMPARTS project set out to explore the interaction between the different components in this continuum, specifically looking at the changes in rural transport services that occur when roads are not adequately maintained. A desk review found that many studies on the beneficial impacts of rural road investments on local populations did not even provide details of the transport services available, even though it is these actors who help bring about the benefits of investments.

The project concluded that road authorities had to take a more integrated approach to the provision-preservation-services continuum. Recognising that private sector operators respond quickly to both road conditions and demand, IMPARTS studied selected LVRRs in Nepal and Tanzania, and conceptualised these interactions as either ascending spirals (as roads improve) or descending spirals (as roads deteriorate).

To 'prime the pump' and encourage ascending spirals, this project is looking to identify organisational and funding mechanisms to help the private sector provide better transport services. It recommends that road authorities and the aid agencies they work with maintain better datasets incorporating information on transport services. A key trend to be aware of is the massive increase in motorcycle use in rural transport, which often accounts for 80 per cent of passenger and small-freight services in ReCAP countries. Keeping track of such trends through datasets would allow planners and researchers to consider whether rural roads are designed for the services that ply on them.

Safe rural transport

There's no doubt that planners are worried about road safety when they consider banning the use of motorcycle and three-wheeler taxis, as has been done in Ghana and intermittently in Pakistan (see box). Road fatality rates in sub-Saharan Africa are the highest in the world, and most victims are passengers and pedestrians. Yet knee-jerk reactions do not consider the benefits of such forms of transportation for rural communities in the absence of appropriate, affordable alternatives – not least from public providers. In fact, banning legislation is often a response to higher rates of road injuries in urban areas, coupled with crime and anti-social behaviour: rural areas are being penalised for urban problems.

ReCAP research on motorcycle and three-wheeler taxis in Ghana, Kenya, Tanzania, Uganda and the Democratic Republic of the Congo revealed that while road safety is also an issue in rural areas, people often have no choice but to use these modes of transport to get their produce to market, or to access health services, particularly in



ANNIE SPRATT/UNSPLASH

emergencies. The objective of the exercise was to improve understanding of the state of affairs in study areas and point the way towards safer use of motorcycle and three-wheeler taxis. The recommended approach is thus one of management of the problem rather than regulation through legislation. Tom Bishop, Deputy Director of the non-governmental organisation Amend, explains that "people are being injured because of unsafe roads, but these roads are saving lives, too".

"People are being injured because of unsafe roads, but these roads are saving lives, too."

Tom Bishop, Deputy Director, AMEND

Though different aspects were studied in the four countries, overall it was found that 'best practice' was sorely lacking with regards to training of motorcycle riders, with the highest proportion who had ever undergone formal training at 34 per cent in Tanzania, dropping to 20 per cent in Kenya and just 8 per cent in Uganda. Injury levels, in terms of frequency and severity, were as high as

training levels were low. Accordingly, a motorcycle instructor's training manual and motorcycle taxi association operating manual were produced to increase the levels of safety and competency among motorcycle taxi riders.

A separate study, requested by the Democratic Republic of the Congo, also found that motorcycle taxis, or 'wewa', are essential for rural communities. The fact that pregnant women are so reliant on them to get to hospital to give birth highlights the life-saving qualities of rural transport access. Policy-makers calling for bans might instead consider supporting motorcycle safety training programmes.

Rural Access Index (RAI)

There are many factors that determine which roads will be built and maintained at any given time, and the question is more challenging for rural areas. Unfortunately, the needs of the rural communities are usually not the primary influence on decisions taken by road authorities and ministries. Though politicians are often very aware that

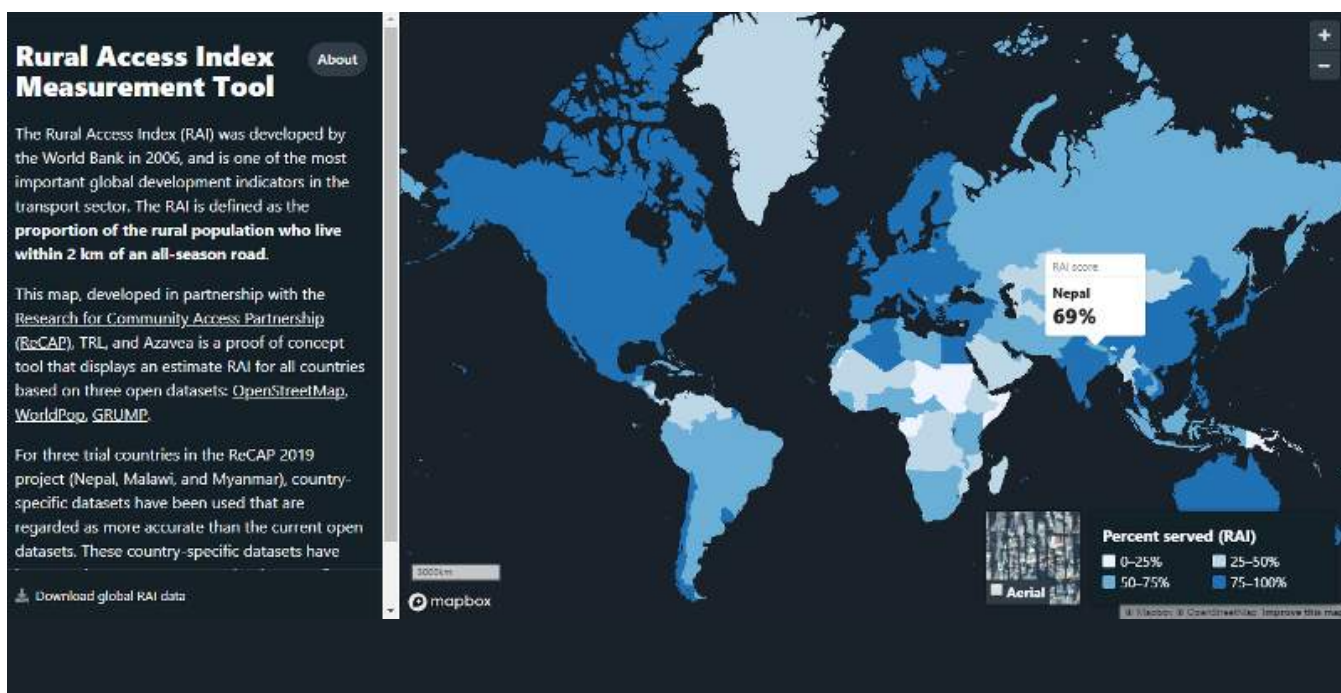


FIGURE 5 MEASURING RURAL ACCESS THROUGH THE RAI. SOURCE: RAI.AZAVEA.COM

building roads can be popular strategies to win votes, this does not always correspond to where roads are most needed, particularly for hard-to-reach communities.

The ReCAP PMU believes that evidence on rural road access, if presented clearly, can help decision-makers understand the situation on the ground. Originally developed by the World Bank in 2006 as a poverty indicator, and with the help of ReCAP launched as a geospatial methodology in 2016, the Rural Access Index (RAI) has been further refined with Supplemental Guidelines containing procedures for calculation, documentation and publication of the RAI for a country. A RAI Measurement Tool has also been developed to measure and display on an interactive geospatial map the proportion of the global population living within 2 km of an all-season road for all countries globally. More in-depth road datasets have been provided for Malawi, Myanmar and Nepal, and can be accessed at rai.azavea.com (see Figure 5).

The key marker of the RAI's utility so far has been its adoption as SDG indicator 9.1.1, under the overarching Goal of developing “quality, reliable, sustainable and resilient infrastructure”. ReCAP's contribution has played a vital role in the promotion of the RAI from a Tier 3 to Tier 2 SDG indicator, meaning that it is conceptually clear and uses an internationally established methodology and standards.

While the RAI uses a combination of national and open data sources and provides an excellent tool for researchers, it is hoped that it will be embedded into national statistical systems globally so that it is always up to date and accessible to transport decision-makers. The inflow of data from national sources would also boost its chances of being recognised as a Tier 1 indicator – an indicator for which data is regularly produced for at least 50 per cent of countries.

The RAI could be used by researchers and decision-makers across sectors such as agriculture, health and education, to map the interactions and correlations of

specific development indicators and plan interventions to improve the lives of rural communities. The RAI Measurement Tool is due to be hosted on the United Nations Global Platform, a digital collaborative environment for the statistical community. If the tool is widely shared and used by a range of actors, the potential to create synergies is all the greater.

Furthering the Sustainable Development Goal on infrastructure

ReCAP also carried out a scoping study to adapt SDG indicator 9.1.2, on passenger and freight volumes by mode of transport, based on the movement of rural passengers and freight road transport. The study recommended developing a sub-indicator for rural mobility within SDG 9.1.2, and an integrated reporting mechanism for all transport-related SDGs. The lack of central databases and issues with data consistency and availability, as well as the skills and resources to collect it, are major challenges. A Basic Model to estimate rural transport volumes has been put forward.

PART B

DRIVING RESEARCH



To boost the capacity of partner countries to carry out research and access the knowledge that is generated while ensuring that the needs of vulnerable groups are taken into account, ReCAP supported, among others:

- the development of Road Research Centres (RRCs) in 13 partner countries
- training sessions related to research products for in-country road engineers, contractors and other stakeholders
- the creation of a comprehensive Rural Access Library hosting the research produced by ReCAP
- a multimedia resource drawing on the deep knowledge of senior experts from the transport industry
- the development of comprehensive Gender Mainstreaming Guidelines



PHOTO: MD GOLAM MURSHED/UNSPLASH



PHOTO: ETHIOPIA ROADS AUTHORITY, 2009



GETTING RESEARCH 'INTO GEAR'

Road Research Centres

ReCAP has tried to ensure that the research it has supported is relevant to its partners by having them determine their own priorities and play an active role in conducting the research required. However, their ability to do so may be limited by research capacity in their institutions, transport sector and specific country circumstances.

It was therefore considered fundamental to a country's rural road research strategy

to have a dedicated Road Research Centre (RRC) in place, guaranteeing the sustainability of research activities beyond the duration of the ReCAP programme. Some partner countries already had relevant research centres – Ethiopia, Kenya and Pakistan, for example – either as units within the national road authorities or as autonomous institutions. Others, such as South Sudan, required support for scoping studies to consider the feasibility of an RRC. Whether it has provided support to set things up from scratch or boost



PHOTO: ANUP SHRESTHA/UNSPASH

existing capacity, ReCAP has worked with the concerned agencies to:

- develop an organisational structure appropriate to an RRC, including national committees to draw on the expertise and capacity of transport stakeholders across government, academia, civil society and the wider donor community
- clarify RRC roles and strategic objectives
- recruit a core team of researchers
- identify and prioritise initial research initiatives
- set up partnerships to make sure that human and financial resources are available
- conduct a baseline study of the research available and develop a centralised knowledge database
- prepare policies, guidelines, manuals and other documents to streamline research

management

- prepare business plans
 - prepare plans to develop skills and capabilities in line with a business plan.
- The organisational model of an RRC has usually included a research group, an information centre and a laboratory. However, the lack of funding and staffing resources remains the chief obstacle to the efficient functioning of RRCs. For these institutes to conduct original and meaningful research, that is developing new knowledge rather than carrying out laboratory testing (often for proprietary products developed and promoted by the private sector), incentives have to be put in place so research is an attractive profession with prospects for long-term career growth. But even where state-of-the-art equipment has been procured for RRCs, as for example in Mozambique,

there is not always technical capacity to use it appropriately.

Owing to differences in research capacity at the time ReCAP engaged with each road agency, and the varying levels of support partner countries have received, RRCs range from nascent to mature. At the time of the Inter-Regional Implementation Meeting (IRIM) 2019 in Kathmandu, Nepal, many country representatives expressed the hope that ReCAP would continue to provide support to their research centres. But there was also a broad recognition that they would either have to seek other partners or shoulder the responsibility of developing these centres themselves. The example of Ethiopia, which completed the construction of a research centre for the Ethiopian Roads Authority with £20 million in state funding and recruited

two dozen staff by March 2020, shows what is possible if decision-makers have confidence in research (see box).

Training researchers

ReCAP's objective to carry out research while simultaneously developing the capacity for research within partner countries means that training modules are part and parcel of many projects. This may be training in the use of high-tech equipment in labs or to operate machinery in field conditions; inducting staff into the use of newly produced manuals or guidelines; or in learning techniques or protocols that can be applied to a broader range of research questions.

In delivering in-country trainings, ReCAP has tried to make the best use of resources by encouraging and supporting the attendance of participants from multiple countries. For example, short training courses on the use of the Dynamic Cone Penetrometer (DCP-DN) pavement design method – whereby a relatively inexpensive tool is used to measure the strength of road surfaces – were held

with sub-regional participation in Malawi, Nepal and Ghana in 2017-2018. Trainers from Ghana, Liberia and Sierra Leone also had the opportunity to conduct training in neighbouring Burkina Faso, a non-ReCAP partner country. Mentorship programmes that invited senior professionals to share their knowledge with young researchers, for example the inter-regional project on monitoring of pavement performance for six AfCAP countries and Myanmar, took place from 2019 onwards in different locations in Africa and in Myanmar.

Training-of-trainer (ToT) programmes have been especially useful to amplify the value of ReCAP's work, even if the projects are restricted to a few lead countries. The pilot project on tractor-based road maintenance approaches that took place in Zambia in 2019 produced training curricula adopted by the Zambia Technical Education, Vocational and Entrepreneurship Training Authority (TEVETA). The National Construction Council enrolled a second batch of trainees in January 2020, and the training approaches have also been incorporated into the US\$200 million,

World Bank-supported Improved Rural Connectivity Project. ToT programmes with regional participation ramp up the speed and cost-effectiveness of knowledge-sharing programmes, such as those planned for the Climate Adaptation Handbook (and associated Guidelines) and the Rural Road Asset Management Practitioners' Guideline, under which 30 trainers each will be trained across AfCAP countries.

Modules from the Rural Transport Services Training Course (2013), implemented under ReCAP's predecessor programme (AfCAP 1), have also been adopted into the curriculum as part of Bachelor's, Master's and Diploma courses at the University of Malawi, and the University of Cape Coast in Ghana. The benefits of university engagement are likely to be replicated at a regional level once the ReCAP-initiated Centre for Sub-Saharan Transport Leadership is fully set up at Kwame Nkrumah University of Science and Technology in Ghana.

Box 6 Boosting research capacity in Tanzania

Following a government request for research capacity building within TARURA, the Tanzanian Rural and Urban Roads Agency, ReCAP put together a technical assistance programme to develop its human resources, form the organisational components of a research group, laboratory and information centre, and establish steering and technical committees.

The resulting RRC, LoGITReC, has purchased lab equipment with both

AfCAP 1 and government support, and over half of Tanzania's rural road projects are now able to access soil and aggregate testing facilities. There is a well-equipped lab in Dodoma and other cities, and there is capacity to carry out research related to road maintenance and asset management, long-term pavement performance monitoring, and alternative surfacing. At IRIM 2019, Tanzanian researchers observed that road surfaces had improved because of the quality

assurance procedures now in place and the continued development of human resources for research – it is estimated that the good to fair category of roads increased from 56 per cent in 2016 to 65 per cent in 2018. LoGITReC has been able to secure an allocation of research funds from the government, and is linking up with research networks nationally and internationally.



PHOTO: P STARKEY, 2005

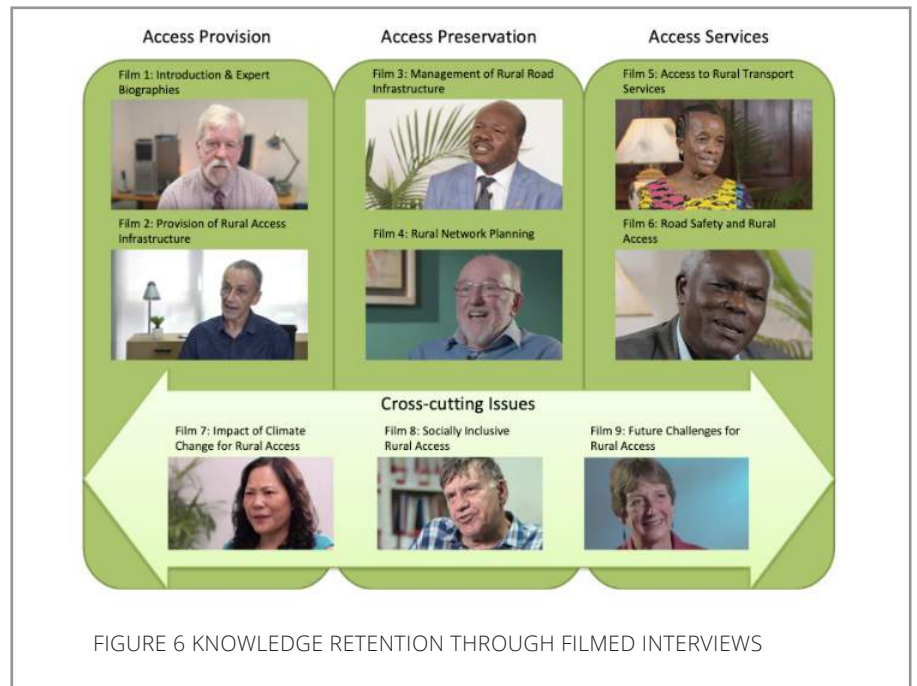


FIGURE 6 KNOWLEDGE RETENTION THROUGH FILMED INTERVIEWS

DRIVING KNOWLEDGE

Rural Access Library

In addition to engaging with and augmenting local research capacity, ReCAP has worked to capture and share the knowledge generated in order to achieve sustainable improvements in the rural transport sector. The ReCAP website (research4cap.org) provides a comprehensive, user-friendly portal for transport professionals and researchers, who can obtain an overview of the six-year programme and explore how its strategy has been applied.

In the interest of sharing the research that has been carried out under the ReCAP programme, as well as under the related programmes of SEACAP and AfCAP 1, the Rural Access Library makes available to read and download, for free,

over 1,500 journal articles, manuals, guidelines, reports, presentations and posters that have been produced for external audiences. In short, it is a massive clearinghouse for the knowledge created by ReCAP and its predecessors. This includes, across projects, the entire range of knowledge products including research reports, cost-benefit analyses and policy and technical briefs, so serious researchers and project managers can track the development of each research initiative through to completion. The Library is fully searchable by country, theme, keyword, author, year and project code. It is listed in the Directory of Open Access Repositories (DOAR), meeting with international quality standards.

Senior experts' knowledge

The accumulated experience of ReCAP's pool of senior experts, drawn from across the world and including researchers, planners and consultants, is invaluable. But this repository of knowledge on theory, policy and practice is at risk of being lost. Senior researchers are retiring, and there has been limited support for or interest in rural transport research industry in recent times, particularly in Africa and Asia.

ReCAP therefore commissioned a knowledge retention project to map, document and package the expertise of 20 senior rural transport experts. Links provided on the website provide an overview of knowledge (and gaps) on the themes covered by ReCAP, followed by



PHOTO: P STARKEY, 2005

detailed expert profiles. A key resource is a collection of videos of these experts, who illuminate their decades-long experience with examples of research they have been involved in (see Figure 6). It is hoped that these films will provide not only a vital source of information on the practice of applied transport research, but also inspiration to younger researchers looking to pursue careers in research. Knowledge comes in many forms, and often the codified, explicit knowledge that can be found in documents, while important, is only the tip of the iceberg. More intuitive, tacit knowledge is rooted in context and experience, and is harder to communicate: there's no substitute for learning from the most experienced transport professionals in the world.

Moving into massive online open courses

Online dissemination features strongly in ReCAP's strategy to share the knowledge it has generated, as there is a limit to how many people can be reached through the person-to-person interaction provided by presentations, seminars, workshops,

trainings and live university courses. ReCAP thus undertook a scoping study to explore the feasibility of massive online open courses (MOOCs).

A literature review found that there was a definite gap in terms of transport/engineering-related MOOCs, largely because most engineering curricula are linked to universities, require the use of laboratory facilities and are not as cost-effective as online courses. A survey of ReCAP's community of practice and universities and research institutions provided a sense of what kind of learning they might be interested in, along with the modalities of accreditation, costs and development.

Respondents felt that asset management, soils classification and testing, and skills to carry out research projects were most suited to distance learning for the rural transport sector. Given the challenges in adapting locally specific ReCAP projects into overarching MOOCs, an alternate pathway was recommended. Content would be developed according to the Open Education Resources model and made

available to educational institutions and governments, whereupon these eLearning resources could be contextualised as necessary. Rather than a single MOOC offered by ReCAP on a global level (which might or might not have adequate enrolment), a 'solar system' of online rural road and transport courses was deemed more suitable, and better value for money.

ReCAP is now working with the University of Birmingham, UK, to pilot two distance learning modules in collaboration with a partner country institution in Ethiopia and in Bangladesh. These will be publicly available and open to modification, and will offer learning on proficiency testing for materials laboratories (Addis Ababa Institute of Technology) and climate adaptation for rural road networks (Bangladesh University of Engineering and Technology).



PHOTO: P STARKEY, 2014

LEAVING NO ONE BEHIND

*“Compared with the past, we’re saving 50 per cent of our time and money because of the improved roads.”
Bhagat Rai, Vice-chairperson, Road User Group, Nepal*

It’s not enough to build roads and expect that they will be used appropriately. The question should be: are they appropriate for people? In other words, are the modes of transport that ply these roads appropriate for different categories of people, including women, children, the elderly and the disabled – as specified by SDG Target 11.2?

Inclusion of women and vulnerable groups in transport

For rural women, who tend to rely on public transport more than men and who often need to use it to access supplies and services for their households, including to meet the needs of children and the elderly, the convenience of what is available is key. If the needs of a certain demographic have been neglected, it is because these individuals have not been part of the process of planning, designing, constructing and maintaining roads, or of running services on them. Women

and other vulnerable groups need more than focus group discussions to bring in their opinions on what kinds of roads they want, where they want them, and how they would prefer to use them; they have to be involved as planners, designers and transport operators. This is where the transport sector in ReCAP partner countries has fallen short (see box).

ReCAP made a significant contribution to understanding the progress of gender mainstreaming in the rural transport sector across its partner countries through the Gender Mainstreaming in Rural Transport Research Initiative. The Guidelines for Mainstreaming Gender in Rural Transport that followed form a comprehensive step-by-step guide, enriched with illustrative examples from seven research projects, of how to incorporate gender issues in transport policy and planning, transport sector institutions, the transport infrastructure improvement cycle, and transport

service provision. Since the launch of this milestone publication in early 2019, ReCAP has reached out to its partner countries to secure the support of Gender Focal Points to disseminate the guidelines widely and effectively.

Importantly, ReCAP has made efforts to ensure that gender issues are not just on the agenda of the transport sector in its partner countries, but that they have been built into its own research strategy, and are addressed directly with the participation of women. From 2014 to 2020, 56 female researchers participated in 50 projects at the senior technical level. Women also engaged in all aspects of the programme itself as members of the Steering Committee, the Technical Panel, the Programme Management Unit and National Committees.



Box 7 Can women work on roads?

In rural Sierra Leone and Liberia, the introduction of motorcycle taxi services has transformed the lives of rural communities – both for the operators who have gained a new form of employment, and for villagers who can now access a low-cost service. Women, in particular, benefit from being able to transport goods to market and access health facilities, including for maternal health.

A ReCAP study confirmed these benefits and also explored the interest of women in becoming motorcycle taxi operators themselves. Challenges lie partly in the perceptions of both sexes that men are better suited to operate motorcycles, but also in women's lack of capital to buy motorcycles and businessmen's reluctance to rent machines to them.

The study recommended women's involvement in all aspects of the

rural transport continuum, from providing labour and materials for the construction of the roads they depend on to being involved in operating motorcycle taxis, through the provision of a cooperative-based credit scheme. This would further their empowerment, and that of their communities as a whole.

Box 8 Clearing the path to prosperity in Nepal

Inclusion means more than bringing roads to rural areas and making sure that communities can use them to transport crops, livestock and other products to market. Many of the poorest – particularly landless people – may not have any products other than their own labour to sell.

A collaboration with Helvetas in the hills of eastern Nepal exemplifies the holistic, participatory approach that ReCAP favours for the rural transport sector. After identifying suitable stretches of road with the then-Department of Local Development and Agricultural Roads (DoLIDAR, now

Department of Local Infrastructure), ReCAP undertook consultations with local government representatives and residents to select amriso (broom grass) as a plant that would not only stabilise the slopes around the roads and reduce the risk of landslides and soil erosion, but also provide income for the community. Subsequently, planting of amriso took place across 2,086 hectares.

The project is ongoing, with 52 disadvantaged households involved as part of local Road User Groups. These households are being trained in all aspects of running a business to make

and sell brooms from the anticipated harvest of amriso, from forming a cooperative to book-keeping. In the meantime, the improved quality of the roads is a boon for all residents of the villages and towns that have access to them. Produce that went to waste now gets to market quicker and more cheaply, with transport fares going down by a quarter between 2018 and 2019. As Bhagat Rai, vice-chairperson of a Road User Group, observes, “compared with the past, we're saving 50 per cent of our time and money because of the improved roads”.

BOX 9 Can roads work for women?

Seven ReCAP projects under the Gender Mainstreaming in Rural Transport Research Initiative examined the rural transport sector from multiple perspectives, and at different scales, to assess the impact of policies and practices on women, especially where gender mainstreaming was meant to have taken place. Projects studied gender mainstreaming in the rural transport sectors in Tanzania, Ethiopia, Nepal,

Kenya, Ghana, Uganda, Sierra Leone and Liberia.

The findings were mixed. While there were policies in place that should have improved women's prospects (as well as that of other vulnerable groups), the reality of practices in the rural transport sector was in many cases overwhelmingly negative. In Tanzania, for instance, despite the existence since 2009 of a Checklist for Gender Mainstreaming in the Infrastructure Sector, the sector remains insensitive

to women's needs and women's involvement in roadworks is limited, due to perceptions that they are less suited for construction work than for traditional roles in the domestic sphere. Understanding ground realities, and how important it is to ensure that gender mainstreaming isn't limited to lip service, was vital to developing ReCAP's Gender Mainstreaming Guidelines.

PART C

CLOSING THE LOOP



To ensure that research is taken up into national, regional and international guidelines and regulations, both voluntary and mandatory, ReCAP has:

- organised and participated in regular dissemination meetings and conferences to advocate for rural road research and build coalitions of like-minded stakeholders
- focused efforts on embedding its research into university curricula and training courses, including the planned Centre for Sub-Saharan Transport Leadership
- worked to implement its research through national regulations and policies, notably by supporting road agencies to obtain government approval of LVRR design guidelines and manuals, and, improving transport services for rural communities – e.g. legalising the commercial operation of motorcycles and three-wheelers in Ghana.

“We have to speak the right words to the right people.”

Peter O’Neill, ReCAP consultant

When ReCAP comes to a close, it will be all the more important to focus on the end point of the research cycle: embedment into national, regional and international regulations and policies, so new and updated knowledge is used to improve rural road infrastructure and its sustainable use. ReCAP has worked hard, particularly in the latter half of the programme, to reach out to transport sector stakeholders and, as emphasised by ReCAP consultant Peter O’Neill at IRIM 2019, “speak the right words to the right people”.

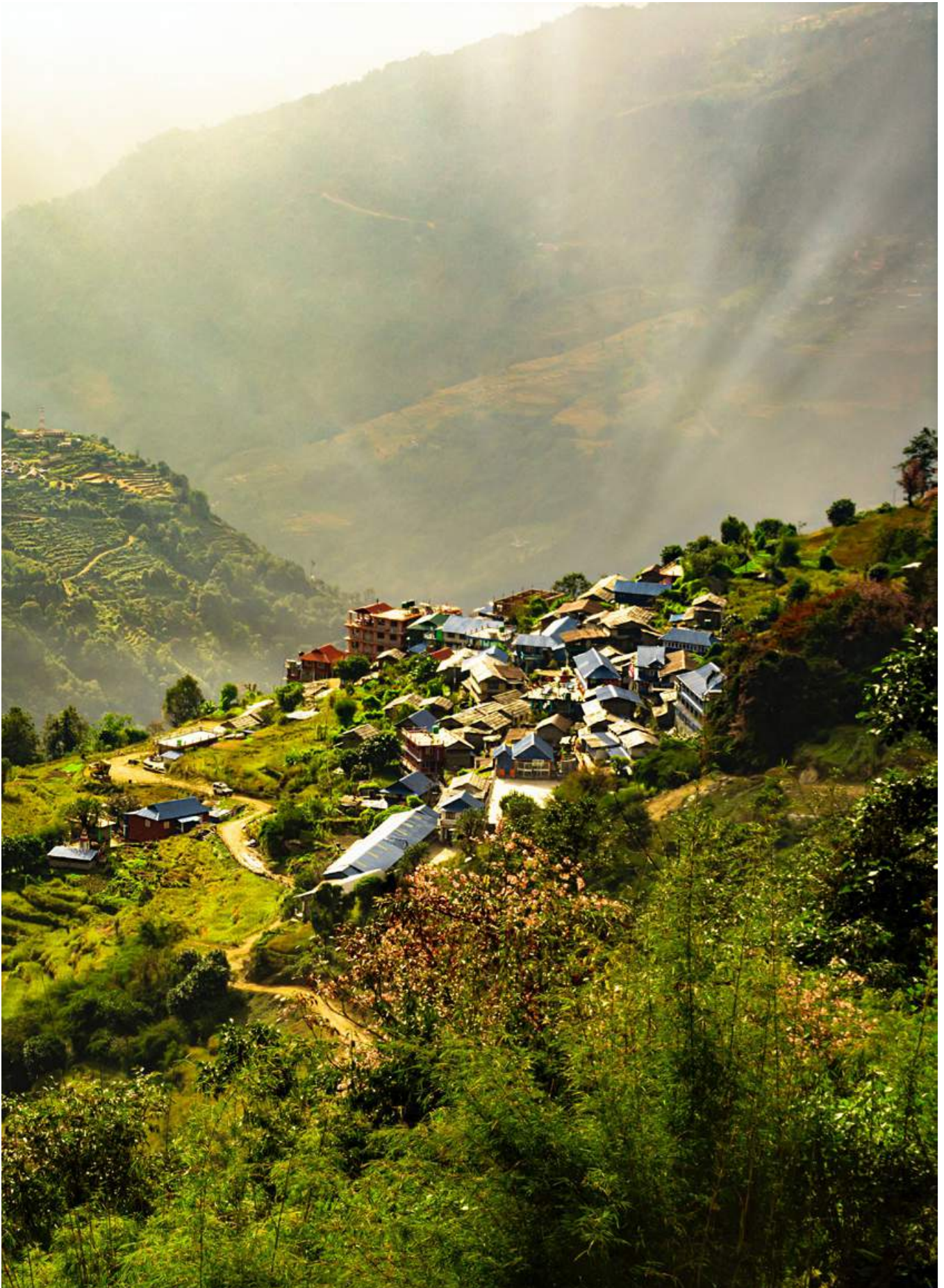


PHOTO: AZIN JAVADZADEH/UNSPLASH



PHOTO: EMMANUEL SAMUEL/UNSPLASH



PHOTO: NINNO JACKJR/UNSPLASH



WORKING TOGETHER

Reaching out

For research to be implemented, it has to reach the right people: decision-makers with influence over how resources are allocated and used in the rural transport sector. This means sharing knowledge with fellow researchers, road engineers, transport providers, civil society, civil servants, politicians, donor partners and those leading the national, regional and international organisations best placed to influence the agenda. From the outset, ReCAP has tried to reach out to a range

of stakeholders, who appreciate the value in sharing knowledge. As Jamie Leather, Chief of the Transport Sector Group at the Asian Development Bank, observes, “we are in favour of sharing information rather than producing ‘our’ information as it saves times and money”. ReCAP has done this not only through print and online dissemination of its research (including blogs and newsletters), but also by organising its own events and through participation in international transport-related meetings.

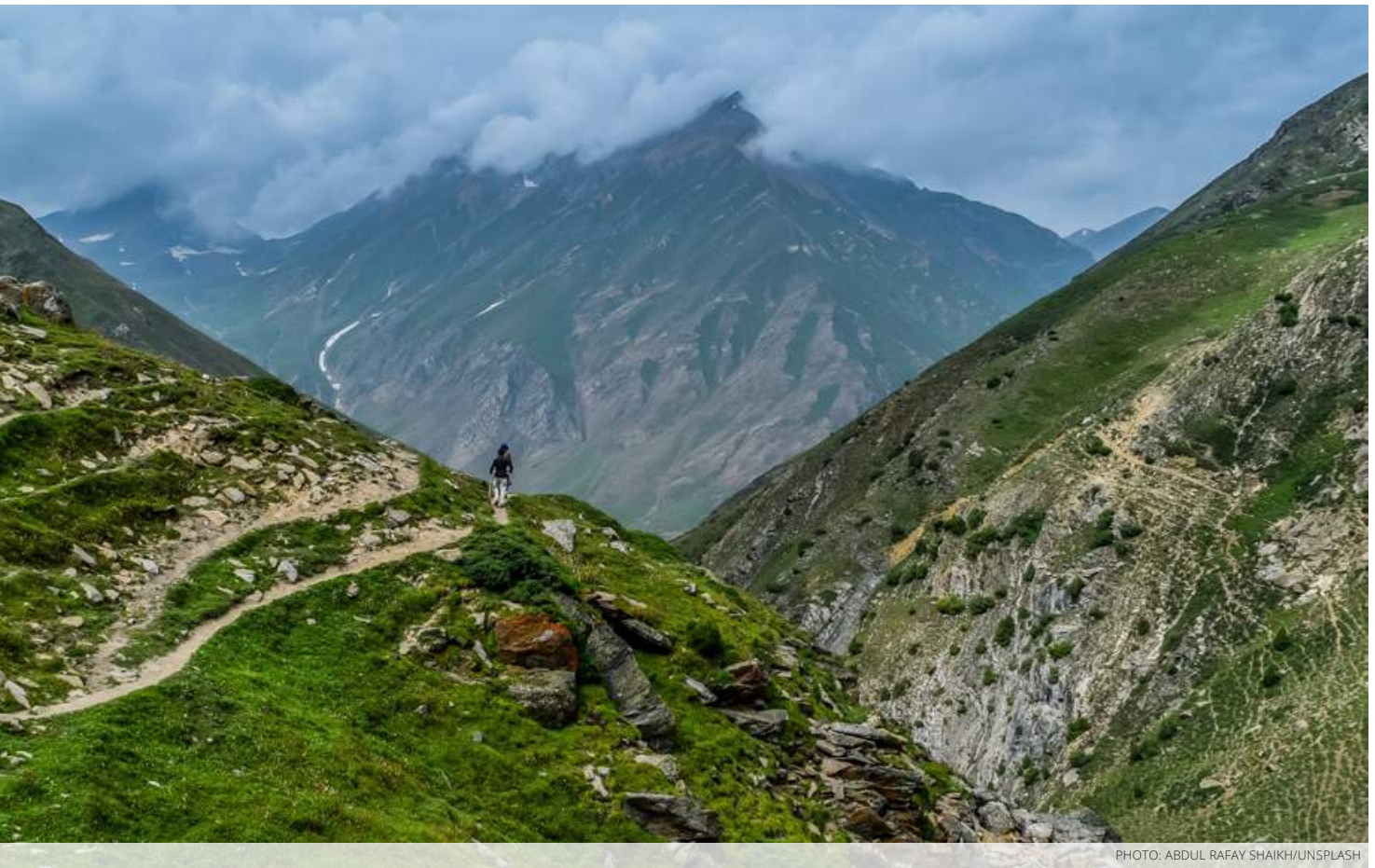


PHOTO: ABDUL RAFAY SHAIKH/UNSPLASH

“We are in favour of utilizing shared information rather than producing ‘our’ information as it saves time and money and adds consistency to all our efforts.”
Jamie Leather, Chief, Transport Sector Group, Asian Development Bank

In addition to regular meetings to inform the Executive Committee, the Steering Committees for Africa and Asia, the National Steering Committees and the Technical Panel of the progress of programme activities, ReCAP has organised regional and cross-regional conferences for a spectrum of stakeholders from partner countries. These include the AsCAP and AfCAP regional meetings and two IRIMs, in 2017 (Uganda) and 2019 (Nepal).

ReCAP has also been an active participant – often organising and funding the

attendance of partner country delegates to present papers and to network – in meetings and conferences hosted by national, regional and global transport stakeholders, including ARMFA, the African Road and Transport Research Forum (ARTReF), the Africa Transport Policy Program (SSATP), the Environmentally Sustainable Transport (EST) Forum, Sustainable Mobility For All (SuM4ALL), the World Road Association (PIARC), the Asian Development Bank Transport Forum and the International Road Federation (IRF).

Building coalitions

Getting the word out about rural transport is not limited to advocating for what needs to be done. It means building relationships with other institutions and programmes, and facilitating connections between transport stakeholders, so

diverse perspectives can come together and learning can take place on all sides. It also means working to ensure that an emphasis on sustainable rural transport infrastructure provision, maintenance and services is part of the global agenda.

The programme’s engagement with SuM4ALL – a consortium of over 50 major transport stakeholders coming together to advocate for a radically different approach to mobility in line with the SDGs, including the World Bank, DFID, IRF, the World Health Organization and other United Nations institutions – is a great example of ReCAP punching above its weight. In 2019, ReCAP contributed a paper on Universal Rural Access to the Global Roadmap of Action toward Sustainable Mobility, and its ongoing input into the RAI has revitalised its potential as a universally accepted indicator of progress in reducing poverty

in rural areas. In May 2020, ReCAP was informed that it has been retained for another two-year term on the SuM4All Steering Committee. Whilst it has a seat on the Committee, ReCAP will continue to actively contribute to addressing important issues concerning mobility and associated themes in the transport sector through this global platform.

Advocating for rural transport

ReCAP has worked to amplify the importance of rural road research through collaborations, and played a significant role in advocating for sustainable rural transport. At the Tenth Regional EST Forum for Asia and the Pacific held in Laos in 2017, ReCAP made a “strong intervention to advance the agenda of neglected rural transport”. The subsequently adopted Vientiane Declaration on Sustainable Rural Transport towards Achieving the 2030 Agenda for Sustainable Development has more of an emphasis on rural transport than the Bangkok Declaration on Sustainable Transport Goals for 2010-2020. The following year’s EST Forum in Mongolia featured a lively ReCAP pre-event on rural-urban connectivity that attracted over 100 delegates, as did the 2019 edition, where ReCAP addressed the role of women.

In July 2019, following ReCAP’s participation at the UN Economic and Social Commission for Asia and the Pacific Expert Group Meeting in Bangkok, the ESCAP Transport Division published a monograph series that acknowledges the significance of the ReCAP programme in developments in rural transport connectivity in the region. In November 2019, ReCAP collaborated with SSATP to hold a seminar on sustainable transport at its Annual General Meeting. ReCAP invited resource persons and donor partners to help set the scene for sustainable transport governance in Africa, and participants rated the seminar very highly, requesting similar side-events at future meetings.

*“At the Tenth Regional EST Forum for Asia and the Pacific, ReCAP made a strong intervention to advance the agenda of neglected rural transport in the context of achieving the SDGs.”
Chaudhary Rudra Charan Mohanty, Environment Programme Coordinator, UN Centre for Regional Development
– DSDG / UN DESA*

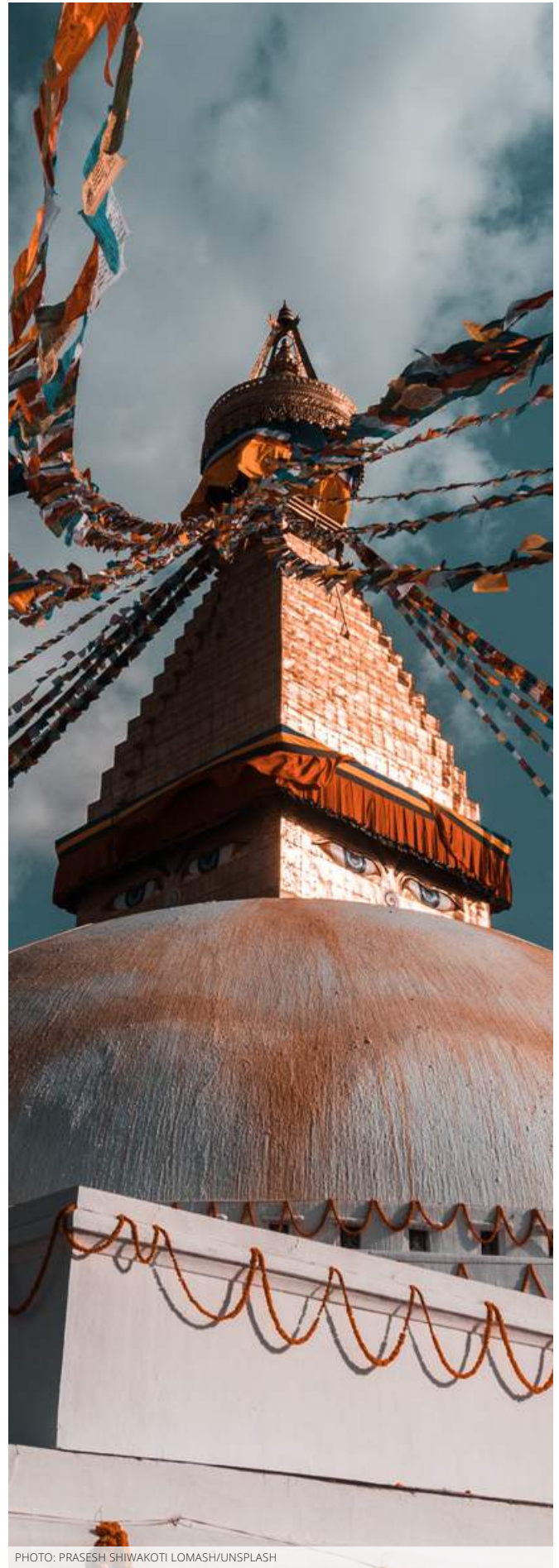


PHOTO: PRASESH SHIWAKOTI LOMASH/UNSPLASH

Box 10 “Let’s not reinvent the wheel!”

ReCAP’s flagship events, IRIM 2017 and IRIM 2019, were invaluable fora to share research findings and exchange ideas, furthering the embedment of research. Participants wholeheartedly agreed that findings from projects in other countries and regions can be used as evidence to persuade decision-makers to allocate domestic resources for similar applications in their own countries.

In short, as many put it, “let’s not reinvent the wheel!”

Given the limited resources available for rural transport research, these meetings also represented a cost-effective way to share knowledge. They provided opportunities to identify future collaborators and potential partners from the incredibly diverse pool of stakeholders

gathered – over 100 participants from two dozen countries at each IRIM. Strengthening the rural transport community of practice is a key way to take stock of achievements and provide direction moving forward, and the connections facilitated by such meetings have sent ripples out into the broader policy and practice network.

Box 11 Follow the leader: Ghana as a senior partner in West Africa

ReCAP’s engagement with its partner countries, whose research capabilities vary considerably, has depended to some extent on how long they have been with the programme. But a longer period of engagement has been no guarantee of research development. Projects in South Sudan have struggled to gain traction because of the difficulties created by conflict and the undeveloped nature of its institutions. ReCAP has thus looked to countries with more mature research capabilities to act as senior partners.

Ghana, a ‘late joiner’ itself, has been able to lead in ReCAP’s West African sub-region. Both Liberia and Sierra Leone share similar problems, not least the challenges of the 2014-2016 Ebola outbreak. Ghana, keen to implement its research agenda through a well-resourced rural road research centre that was already in place, was happy to use its capacity to help its neighbours.

Accordingly, Ghana was the first country in West Africa to commence sub-regional projects. One such project was the training programme

on DCP-DN that took place in Ghana with participation from Liberia and Sierra Leone (and activities in Burkina Faso). The other major project that is likely to cement Ghana’s role as a key ReCAP partner is the Centre for Sub-Saharan Transport Leadership, the planned training centre at Kwame Nkrumah University of Science and Technology, which hopes to recruit graduate students, trainees for continuing professional development, and trainers and mentors from around the world.



PHOTO: J HONGVE / E MUKANDILA



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IMPLEMENTING RESEARCH

The final destination of research lies in its implementation to improve the lives of people. For ReCAP, beyond setting up RRCs and ensuring that they have the capacity to carry out meaningful research, the desired outcome lies in the influence that their research into cost-effective and reliable low volume rural road and transport services has on policy and practice in Africa and Asia. The following sections provide a varied and non-exhaustive set of examples of how ReCAP-supported research is making a difference at all levels and scales in its partner countries.

Engaging academia

Research communities thrive when they have opportunities to collaborate, and ReCAP has nurtured its ties with academia by inviting university researchers and transport consultants from around the world to work on ReCAP projects and engage with other transport stakeholders at the meetings and conferences it has organised or attended. The informal and formal exchange of knowledge finds its way back to other researchers and, importantly, students.



PHOTO: TRL LTD

University of Birmingham (UK) lecturers, for example, have incorporated their experience of ReCAP projects, including asset management, into rural road lectures within the university's civil engineering undergraduate and postgraduate programmes. Similarly, Mbeya University of Science and Technology (Tanzania) is using the Tanzania LVRR manual and Regional Long Term Pavement Performance (LTPP) Monitoring Guidelines in undergraduate courses. A Rural Transport Services Training Course has been incorporated into University of Cape Coast (Ghana) and University of Malawi curricula. In the past five years, 775 students have received training in Rural Transport Services Research at the two universities, and 115 transport sector professionals in Ghana

have graduated with a Diploma in Road Safety and Logistics Management.

ReCAP has helped set up 13 RRCs, with the aim of carrying out research according to the needs of the partner countries. The ongoing efforts to finalise arrangements for the Centre for Sub-Saharan Transport Leadership, to be hosted by Kwame Nkrumah University of Science and Technology in Ghana, holds much promise. As an institutional effort to provide a regional home for cutting-edge transport research, it is hoped that it will develop into an international hub for transport professionals aligned with ReCAP's vision of research to support sustainable mobility for all.

Training transport professionals

It's as important to share the results of research with transport sector professionals such as road engineers and decision-makers as it is to deliver training programmes based on this research to transport sector operators such as the consultants and contractors involved in designing, building and maintaining roads and the motorcycle taxi drivers providing services on them. Zambia's TEVETA has approved the training curricula developed for tractor-based road maintenance, and it has now been included in the US\$200 million Improved Rural Connectivity Project funded by the World Bank. The Tanzanian Ministry of Home Affairs is also due to endorse the motorcycle instructor's manual developed by ReCAP in 2015. This has been shared with relevant institutions

in Tanzania, as well as the National Logistics Platform and Jamie's Fund in Uganda.

In Sierra Leone, it has been proposed to expand local government training in the asset management programme nationally, with the country's own resources if necessary. Beyond the training sessions that have been carried out for the application of its road design manual, there has been a request from the Sierra Leone Roads Authority to extend training in the accident data management system.

Implementing LVRR design manuals

ReCAP support has led to the development and/or revision of 10 LVRR design manuals, with all of them officially approved by national road authorities. Governmental adoption of a design manual makes it mandatory for road departments and contractors to implement the standards specified across the rural road network. Given that 90 per cent of roads in sub-Saharan African countries are low volume rural roads, the implications are far-reaching. Training programmes have been conducted to make sure that the design manuals are internalised by those meant to be using them, often with in-country support. Liberia, for example, has demonstrated its keenness to implement its LVRR design manual with funding for road maintenance, artisan training, procurement and contract management, and study tours, supported by equipment acquisition for road operators. It is also proposing to fund a 15 km trial section to test options for alternative surfacings in rural roads as part of the USAID-funded Feeder Roads Alternative and Maintenance Activity. The lessons learned were applied in Ghana, where ultra-thin asphalt surfacing was used on a project funded by Japan, and in Sierra Leone, on a 500 km project funded by DFID and the World Bank.

Zambia is planning to implement its LVRR manual as well, and will be developing a road asset management policy for Chongwe District. Finally, launching Mozambique's LVRR design manual in 2019, the Minister for Public Works, National Housing and Water Resources announced that 23,000 km of unsealed roads would be targeted for implementation.

Influencing transport policies and projects

Countries have embedded ReCAP-supported knowledge into their policies. Ghana, for example, has applied the DCP-DN pavement design method and research on alternative surfacing to its feeder roads, low volume trunk roads and urban roads under the jurisdiction of local government. The country is also planning to expand training on rural road development and maintenance for engineers in the private and public sectors, in Ghana and beyond, who have not benefited from ReCAP training. Policy is also being influenced in Ghana: the outcomes of the rural diagnostics studies and guidelines on climate adaptation have been considered in the review of the National Transport Policy. Moreover, as a result of road safety research, a Policy Paper has been presented to Members of Parliament within Cabinet to deliberate the legislative instrument on commercial two and three-wheeled vehicles in Ghana.

ReCAP's work on the Planning and Prioritization of Rural Roads has gained traction in Bangladesh, where following a trial in Tangail District the model is due to be rolled out nationally under the Asian Development Bank's Rural Connectivity Improvement Project; this will affect 256,000 km of roads. The findings of the project on climate-resilient marine concrete have been included in a US\$625 million project for rural bridges, impacting 380,000 m of concrete bridges and culverts in rural areas, and potentially another 200,000 m in planned construction.

Including vulnerable groups

Following the publication of the Gender Mainstreaming Guidelines, nominated Gender Focal Points have been approached in Malawi, Bangladesh, Zambia, Afghanistan, Ghana, Nepal, Sierra Leone, Liberia, Uganda, Ethiopia and Tanzania to discuss how the Guidelines can be embedded into road agency-led projects. While this is an ongoing process, advances in partner countries provide grounds for optimism.

The Sierra Leone Roads Authority is updating its National Feeder Roads Policy, in which aspects of the Guidelines will be incorporated. In Bangladesh, the

LGED gender committee will discuss submitting the Guidelines to its parent ministry to authorise their use in project delivery. In the Democratic Republic of the Congo, gender study materials are being translated into French to aid utilisation. In Zambia, the Road Development Agency will incorporate the Guidelines into the gender assessment component of the World Bank-funded Rural Connectivity Programme and the Road Sector Investment Programme document for the period 2019-2030. Ms Florence Ndenguma, the Director of Maintenance at the Malawi Roads Authority, who is the Gender Focal Person, states that "the Gender Mainstreaming Guidelines have come at the right time, when we are having meetings with the Ministry of Gender in trying to find ways and means of achieving our goal under the 50-50 campaign". This campaign aims to increase the representation of women in positions of leadership and decision-making in key institutions including political parties, the cabinet, parliament and local councils.

"The Gender Mainstreaming Guidelines have come at the right time, when we are having meetings with the Ministry of Gender in trying to find ways and means of achieving our goal under the 50-50 campaign."

Ms Florence Ndenguma, Director of Maintenance and Gender Focal Person, Malawi Roads Authority

Going beyond AfCAP and AsCAP

The uptake and embedment of research outputs from regional projects follows a slightly different approach, since they are not nationally driven. A number of continental bodies have expressed interest in adopting ReCAP's guidelines. For example, the 34-member ARMFA is to sign a Memorandum of Understanding with Cardno (which runs the ReCAP programme) and intends to adopt the Rural Road Asset Management Practitioners' Guideline and the Climate Adaptation Handbook and associated Guidelines. The African Union has expressed interest in including the RAI methodology in its policies, and this is currently being followed up. A draft Memorandum of Understanding with ASANRA is under consideration. The

African Union Development Agency – New Partnership for Africa's Development (AUDA-NEPAD) is interested in sharing ReCAP's LVRR guidelines, and the African Development Bank (AfDB) has expressed keen interest in adopting the Rural Road Asset Management Practitioners' Guideline and Climate Adaptation Guidelines for use in member countries. ReCAP is now a member of the PIARC Technical Committee on Climate Change and Resilience of Road Networks and Rural Roads, which will help the incorporation of ReCAP research into the Climate Adaptation Global Framework.

Further, a collaborative event was held in 2020 at the World Bank's Transforming Transportation conference with the High Volume Transit (HVT) Applied Research Programme, a five-year DFID programme to strengthen the evidence base for increased access to transport services, more affordable trade routes, and safer, low-carbon transport in low-income countries in sub-Saharan Africa and South Asia. The joint ReCAP-HVT session generated useful discussions on sustainable mobility and was acknowledged as a valuable addition to the conference agenda. It is expected that the knowledge generated from ReCAP will be absorbed by the HVT programme, particularly with regard to the research theme on Gender, Inclusion, and Vulnerable Groups (including Road Safety).

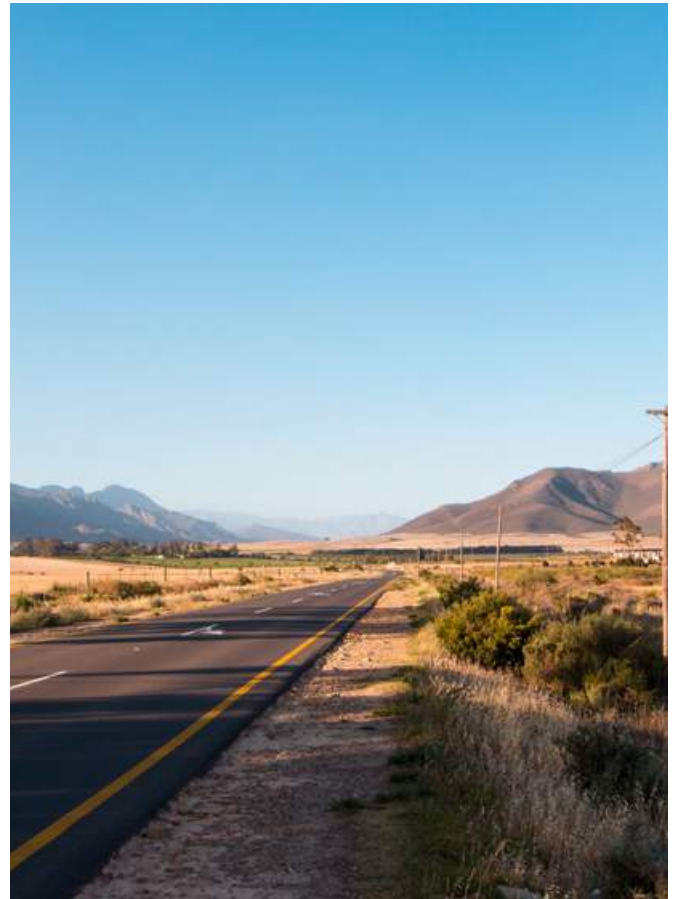


PHOTO: JAIRPH/UNSPLASH

BOX 12 Political will: driving action where the going is slow

ReCAP is at its heart demand-driven, which means that the impetus to join the programme and initiate research activities has largely come from potential partners within government. This has certainly been the case for countries that display a level of maturity in their transport research strategy, and research projects successfully undertaken in many AfCAP and AsCAP partners have been covered throughout this report.

It is equally important, however, to acknowledge the political will in countries building up research capability from scratch. An example is provided by the Deputy Minister of Local Government and Rural Development in Sierra Leone, Melrose Kargbo, who has championed women's rights and

provided support to ReCAP's work on gender mainstreaming. ReCAP has also worked closely with the DRRD in Myanmar, in particular Daw Tin Moe Myint, the responsible Deputy Director General, and the increase in the country's share of AsCAP expenditure (from 4 per cent in 2018 to 14 per cent in 2019) should be seen as evidence that the groundwork is being laid. Despite the difficulties in advancing work in South Sudan, the presence of the Minister of Roads and Bridges at the final workshop on the establishment of an RRC, covered on national TV, indicates continued political backing for ReCAP's projects in the country.

The same applies to Afghanistan, which joined the programme very late and has faced significant security challenges. Work on two

key products progressed well in the latter phase of ReCAP: the LVRR design manual proceeded satisfactorily; and a stakeholder workshop was held in New Delhi, India, with keen participation from the Ministry of Rural Rehabilitation and Development (MRRD), which benefited from the valuable experience of staff from India's Prime Minister's Rural Road Scheme (PMGSY). Afghanistan's Socio-Economic Impact Evaluation and Planning and Prioritisation Toolkit, too, represents a groundbreaking, holistic approach to rural road network planning. Once implemented, it will be a model for other countries.



PHOTO: ANNIE SPRATT/UNSPLASH



MOVING ONWARDS

As ReCAP draws to a close, it's important to reflect on its achievements, and also consider what could have been done better. Future research programmes focused on rural roads and transport services can learn lessons from what worked as well as what didn't. ReCAP itself drew lessons from previous DFID-funded programmes on rural transport research. SEACAP and AfCAP 1 had strong technical approaches, but did not prioritise developing the capacity of research units as institutions. The ReCAP strategy

plans for its research to be implemented through guidelines and manuals that make their way into national law, so it benefits the communities for whom rural road infrastructure is being provided. In this regard, dissemination and training is key – it's not enough to assume that good work will speak for itself.

Accordingly, ReCAP developed the idea of a continuum of strategic pillars comprising road infrastructure provision, preservation of assets and transport services provision, with each research product moving



through a process of dissemination resulting in uptake and embedment. The effectiveness of each area of research, in terms of pre-defined targets for outputs, has been assessed regularly in ReCAP's Annual Reports and other reviews. Though illustrative figures reflecting these outputs appear throughout this report, the approach has been to showcase achievements through ground-level examples of how research was conducted and implemented in the 17 partner countries. In this concluding chapter, the focus will be on drawing out lessons for the sustainability of ReCAP's work as well as for transport research programmes across the world.

Re-balancing infrastructure, maintenance and services

The allocation of ReCAP resources to the three strategic pillars of infrastructure provision, asset management and transport services research was determined by the budgets that were agreed on at the start of the programme. Accordingly, there was a proportionally higher allocation of resources to research on infrastructure provision. It's also worth remembering that agreements with partner countries were made with road agencies (and the ministries they were located in), limiting the extent to which transport services research could be included. However, one could argue for future arrangements with a more equal balance between such strategic pillars. Future programmes could align research

with the global trend towards sustainable mobility, as seen through initiatives such as SuM4ALL.

Greening mobility

The Climate Adaptation Handbook and associated Guidelines will be very useful for road agencies willing to adopt a longer view on the resilience of their infrastructure. But sustainability should go beyond ensuring the physical integrity of roads. It should link up with the concerns of green mobility, in terms of encouraging a reduction in greenhouse gas emissions. The proposal to replace Pakistan's Qingqi motorcycle taxis with electric scooter taxis is an example of how this might be achieved. HVT's research on low-carbon transport also reflects this concern.



PHOTO: ANNIE SPRATT/UNSPLASH

Mainstreaming gender and inclusiveness

Seven ReCAP research projects focused explicitly on the role of and impact on women in the transport sector, and the lessons were used to develop the Gender Mainstreaming Guidelines. The process of identifying Gender Focal Points is underway, and gender is now part of the political discourse in partner countries. Progress has been slow, due to lack of political will, capacity and data on the differing transport needs of women and men, as well as that of disabled and socioeconomically disadvantaged persons. Pushing the agenda of gender mainstreaming is further complicated by the fact that ReCAP has found it challenging to identify women with experience in both technical research and gender issues. It is crucial that researchers demonstrate genuine interest in making sure that projects take into consideration the needs of women and other vulnerable groups. Nepal provided a good example of how road engineers could commit to this by engaging with sociologists in the field.

Sustaining research through appropriate stakeholders

ReCAP has supported 13 partner countries in setting up RRCs. While this in itself is impressive, sustaining the work they do so that they continue to produce meaningful research is a major challenge. For newer

centres, part of the difficulty is finding enough work to engage staff; this is a work in progress. For all centres, funding is a key concern. Ultimately, countries must take ownership, which means technical capacity, financing arrangements and political will must be considered at the outset if they are genuinely interested in sustainability.

The example of India's PMGSY initiative is instructive: strong political will and institutional structures have been key factors in bringing rural roads and services to communities. The existence of a dedicated institution such as the Ministry of Rural Development makes a big difference in the extent to which resources are allocated to rural transport. ReCAP has found that engaging with local road departments is often more pertinent to rural connectivity than national road agencies focused on high volume urban transport. Even within partnering institutions, it is important to be assigned to work with staff who are placed at the right level of seniority and who have the right kind of expertise – rather than whoever may be available at a given time. Research programmes should thus be mindful of the stakeholders they engage with for their specific purposes. In this regard, ReCAP's National Steering Committees are one way to reach out to institutions beyond those that are

designated in the original Memorandum of Understanding.

Connecting rural and urban transport

Rural and urban movements of people and products cannot be separated in an era of migration, globalisation and continuing urbanisation. If, as is estimated, 60 per cent of Africa's population and 64 per cent of Asia's population will be living in cities by 2050, then we cannot consider rural areas in isolation. It will be necessary to identify the population movements feeding into urban areas, the flows of agricultural production one way and services the other (First Mile to Last Mile), and the question of urban sprawl. In terms of harnessing scarce resources, too, rural road research programmes would do well to hook up with urban transport programmes, as ReCAP has done with the HVT programme.

From opportunistic to structured collaboration

ReCAP has championed a unique emphasis on research to inform policy that is appreciated by partner countries, regional bodies and multilateral organisations. The second edition of IRIM (2019) proved invaluable as a forum to take stock, disseminate findings and network with the community of practice. Brendan Halleman, Vice President of

Europe and Central Asia at IRF, identifies ReCAP as a highly successful and relevant programme that his organisation has been happy to collaborate with. He notes that “ReCAP has achieved such a level of authority and impact on questions linked to rural transport that the IRF frequently reaches out to it”, and that its focus on issues frequently overlooked by central governments means that “the resources generated by ReCAP will have a range of impacts well beyond the lifespan of the programme”. But he also goes on to suggest that a more structured exchange could have led to longer-lasting impacts. Both structured and opportunistic relationships have a role, and the challenge lies in turning opportunities into productive, long-term exchanges between institutions, beyond short-term projects and programmes.

“The resources generated by ReCAP will have a range of impacts well beyond the lifespan of the programme.”
Brendan Halleman, Vice President, Europe and Central Asia, International Road Federation

Spreading the word

ReCAP projects have carried out research and dissemination activities, and uptake through guidelines and manuals is underway in many partner countries; however, embedment into national standards and regulations is a challenge, more so for regional projects that are not driven directly by in-country demand. Embedment can best be achieved by proactive engagement with decision-makers and advocacy through simple, evidence-backed messages and interaction. The emphasis that ReCAP has placed on dissemination has led to a change in mindset on the part of road engineers to recognise that they need to speak the language of decision-makers: to “speak the right words to the right people”.

A home for ReCAP research

There is a risk that once ReCAP ends, the momentum that has been created over the last six years will be lost. Concern for sustainability has played an important role in the set-up of the Rural Access Library featured on the ReCAP website, and a dedicated project has led to the upgrade

of the Library to international repository standards, shortlisting potential hosts and listing the minimum requirements for future hosting. Ultimately, the Centre for Sub-Saharan Transport Leadership may carry forward ReCAP’s agenda (and host the Library’s resources), but the marketability of its Transport Sector Leadership Development Programme will need to be boosted if it is to be sustainable and bring together transport leaders and researchers from across the region and beyond.

Assessing the true impact of ReCAP

It’s not always straightforward to assess the impact of a research programme such as ReCAP. On the one hand, the products developed – guides, manuals, handbooks – have certainly been appreciated by stakeholders. They are not “gathering dust”, and it has been calculated that research has been implemented across hundreds of thousands of kilometres of rural roads. But one must also be able to look beyond logframe outputs. Some partner countries have fewer visible outputs, but the groundwork that has been done in establishing basic foundations is equally important. Even in those countries and regions where targets have been attained, it may be that not enough attention has been paid to considering how research projects, over a longer period of time, might have been implemented, and how they may have changed or benefited society. Cost-benefit analyses can and have been carried out, but their focus is usually limited to the economic aspects, and the methodology used can be contested.

The ReCAP Benefit Assessment System aims to address this through six subsystems: the research product and usage; economic; socio-economic; safety; environmental; and user satisfaction and value. For instance, has the production of motorcycle training materials led to fewer road accidents? Have improved roads and transport services to rural areas led to lowered travel fares for local communities? Scores are provided for each sub-system, providing an overall picture of the relative performance of a given project. It is hoped that this tool – or a suitable adaptation – will be applied to future transport research programmes in partner countries and beyond.

“ReCAP has invested in knowledge. The money provided may be small, but this small money has a big impact.”
Monzur Sadeque, ReCAP national representative for Bangladesh / Executive Engineer, Local Government Engineering Department

ReCAP has punched above its weight, demonstrating the enduring value of research, even with relatively limited funding. In the words of the national representative for Bangladesh, Monzur Sadeque, “ReCAP has invested in knowledge. The money provided may be small, but this small money has a big impact.” This may be a lesson for larger infrastructure programmes to incorporate research components in order to amplify their impact.

Ultimately, the challenges and opportunities encountered can be largely attributed to the environment that exists within partner countries, which enables partners such as ReCAP to support and implement research. In this regard, ReCAP’s successes owe much to the competence, calibre and dedication of staff working in-country, as well as the leadership and drive of the stakeholders that it engages with. In many instances, this has been exceptional. If ReCAP has provided the support to in-country partners to carry out the research that they felt would benefit their road and transport sectors most, these stakeholders have themselves worked hard to ensure that manuals, guidelines and research findings have been taken up into the regulations that govern how roads are designed, built, maintained and used. It is their enthusiastic embrace of ReCAP’s approach that, through the road research institutions that have been set up across Africa and Asia, will enhance rural communities’ access to prosperity in the years to come.

RESOURCES



The following is a list of key ReCAP research products that are freely accessible from the searchable Rural Access Library at <http://research4cap.org/SitePages/Rural%20access%20library.aspx>.

Climate adaptation

Head, M., Verhaeghe, B., Paige-Green, P., le Roux, A., Makhanya, S. and Arnold, K. (2018). Climate Adaptation: Risk Management and Resilience Optimisation for Vulnerable Road Access in Africa. Climate Adaptation Handbook. London: ReCAP for DFID.

Le Roux, A., Makhanya, S., Arnold, K. and Mwenge Kahinda, J.M. (2018). Climate Adaptation: Risk Management and Resilience Optimisation for Vulnerable Road Access in Africa. Climate Threats and Vulnerability Assessment Guidelines. London: ReCAP for DFID.

Paige-Green, P., Verhaeghe, B. and Head, M. (2018). Climate Adaptation: Risk Management and Resilience Optimisation for Vulnerable Road Access in Africa. Engineering Adaptation Guidelines. London: ReCAP for DFID.

Paige-Green, P. and Verhaeghe, B. (2019). Climate Adaptation: Risk Management and Resilience Optimisation for Vulnerable Road Access in Africa, Visual Assessment Guidelines. London: ReCAP for DFID.

Head, M. and Verhaeghe, B. (2018). Climate Adaptation: Risk Management and Resilience Optimisation for Vulnerable Road Access in Africa. Change Management Guidelines. London: ReCAP for DFID.

Gender mainstreaming

Tanzarn, N. (2018). Gender Mainstreaming in Rural Transport: Desk Review. London: ReCAP for DFID.

Tanzarn, N. (2019). Guidelines for Mainstreaming Gender in Rural Transport. London: ReCAP for DFID.

Innovative technology

TRL and Airbus (2017). Guideline on the Use of High Tech Solutions for Road Network Inventory and Condition Analysis in Africa. London: ReCAP for DFID.

First Mile

TRL and IFRTD (2019). Evaluation of the Cost-Beneficial Improvement of First Mile Access on Small-Scale Farming and Agricultural Marketing. Policy Brief. London: ReCAP for DFID.

Rural road asset management

Geddes, R.N. et al (2019). Economic Growth through Effective Road Asset Management (GEM). Final Report. London: ReCAP for DFID.

Civil Design Solutions (2019). Rural Road Asset Management Practitioners' Guideline. London: ReCAP for DFID.

Rural road design

TRL (2020). Rural Road Note 01 - A Guide on the Application of Pavement Design Methods for Low Volume Rural Roads. London: ReCAP for DFID.

Back Analysis of Low Volume Sealed Roads

Otto, A., Mukura, K., Mayanja, M., Musenero, L., Leal, D., Rolt, J. and TRL (2020). Development of Guidelines and Specifications for Low Volume Sealed Roads through Back Analysis. Phase 3 Final Report. London: ReCAP for DFID.

Rolt, J., Mukura, K. and Otto, A. (2020). Development of a Simplified Agency Life-Cycle Costing Tool for Gravel Roads. In: Sustainability, vol 12. Permanent URL: doi:10.3390/su12114512

Rural Access Index (RAI)

TRL (2019). Rural Access Index Supplemental Guidelines: Measuring Rural Access Using New Technologies. London: ReCAP for DFID.

Motorcycle taxi safety

Transaid, Amend and TRL (2018). Enhancing understanding on safe motorcycle and three-wheeler use for rural transport, Literature Review. London: ReCAP for DFID.

Transaid, Amend and TRL (2019). Instructor's Manual for the Competency Based Curriculum for Training Motorcycle and Tricycle Riders. London: ReCAP for DFID.

Transaid, Amend and TRL (2019). A Manual for Motorcycle and Three-Wheeler Taxi Associations. London: ReCAP for DFID.

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