

Safe and sustainable transport for rural communities

Dear Colleague,

We are pleased to provide you with the June edition of the ReCAP e-Newsletter. In this edition you will find updates on AfCAP activities in Zambia, work by the World Bank on improving the Rural Access Indicator (RAI), a report of a recently held workshop on Knowledge Generation in the Rural Transport sector in Nepal, new initiatives on the topic of mainstreaming gender in transport, the start of the AfCAP regional project on Climate Adaptation.

Do not hesitate to share this Newsletter with your colleagues; have an enjoyable read.

The ReCAP team

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Road and Transport Services Research

Zambia off to a good start in rural road research

Zambia is one of four African countries so far accepted into AfCAP as a new partner during the second phase of the programme. AfCAP's partner organisation in Zambia is the Roads Development Agency (RDA), which recently hosted the AfCAP Steering Committee meeting. Priority infrastructure and transport services research projects have been identified for AfCAP support, and are now underway.

Infrastructure research projects

One project has already been completed and two are in the pipeline and are at an advanced level of preparation (Concept Notes and Terms of Reference). These projects are earmarked for commencement during the current financial year 2016/2017.

Scoping Study for Establishment of Pilot Project for Tractor Technology (TT) and Training and Demonstration Unit (TDU) for road maintenance.

This scoping study, implemented by Intech Associates and Clanview Civils through AfCAP, is concerned with the establishment of a pilot project for tractor-based approaches for road maintenance in Zambia.. Two stakeholder workshops, hosted by the RDA in Lusaka, were held to disseminate the findings from the study and to get stakeholder input and ownership. The first workshop was held on 4th February 2016 with public sector stakeholders and endorsed the study findings and agreed to proceed with a second workshop involving a wider range of participation, including private sector organisations.



Photo 1 Two tonne tractor-towed grader manufactured in Zimbabwe (Photo: Rob Petts)

The second workshop, held on 6th April 2016, achieved wider endorsement of the Tractor Technology (TT) and Training and Demonstration Unit (TDU) proposals, and resulted in a draft schedule of required activities and the assignment of tentative responsibilities for each component of the implementation programme. Importantly, the second workshop agreed to form a TDU Coordination Committee, with a provisional membership of a wide range of stakeholders, including public sector agencies, training authorities, NGOs and professional associations and the private sector.

The first meeting of the TDU Coordination Committee took place on 8th April 2016 and was used to make the initial plans for the next phase: the establishment of the pilot project. The Terms of Reference for the pilot demonstration and training initiatives, plus equipment procurement and any support requirements will now be developed by the newly formed TDU Coordination Committee with the support of AfCAP.

The full scoping report can be downloaded here: [Scoping Study for the Establishment of Pilot Project to Implement Tractor-based Road Maintenance Approaches in Zambia](#), as well as its [Annexes](#).

Design, Construction and Monitoring of trial sections in Western and Eastern Zambia

The objective of this project is to carry out pavement design of Low Volume Sealed Roads (LVSR) using the DCP-DN method, followed by the construction of trial sections in Western Zambia and Eastern Zambia to sealed standard, using various

seal types and using locally-available materials (Kalahari sands and calcretes in Western Zambia; laterites in Eastern Zambia, respectively) on an experimental basis.

An experimental research matrix, identifying the variables to be investigated and rationale tying together past and current research towards a defined objective, will be prepared during the design stage.

The project has an important training and capacity building component. The staff of the RDA Research Department will be provided with opportunities to participate in all aspects of the project development and implementation. Training and mentoring will be provided to RDA staff on how to develop research procedures and carry out research activities, as well as on what the requirements are for supervision of construction and technical monitoring in accordance with regional protocols.

The second part of the training will involve the local private sector construction industry, as well as academic and training institutions. It will include both on-site training of contractors and the supervision consultant's key site personnel and the dissemination of the findings of the study. Dissemination will be achieved through visits to the demonstration sites, workshops, and conference papers.

At the completion of construction, baseline data will be collected and a programme of long-term pavement performance monitoring (LTPP) will be established.

Transport Services Research

AfCAP is in the process of helping Zambia explore the challenges and possible solutions relating to rural transport services on Low Volume Rural Roads (LVRR). In particular, AfCAP is looking to support research relating to practical and policy initiatives that could lead to significant improvements in rural access, allowing villagers connected by low volume rural roads to access agricultural markets, health centres and education facilities as well as allowing rural teachers, health workers and other service providers to operate effectively in the rural areas.

AfCAP is aiming to keep an integrated approach to improving access on LVRR, so it is important that stakeholders concerned with LVRR construction and maintenance are fully informed about the possible research relating to the rural transport services (passenger and freight) operating on LVRR.

For more information on AfCAP activities in Zambia, please contact Nkululeko Leta, AfCAP Regional Technical Manager East and Southern Africa, at nkululeko.leta@cardno.uk.com.

Cross Cutting Issues

Developing and testing the new Rural Access Index (RAI)

The World Bank, in consultation with ReCAP and with funding from DFID, has developed a new Rural Access Index (RAI) that will use GIS-based technologies. It will help to measure rural access at both national and devolved levels and will be used as an indicator of progress towards improving rural access within the new Sustainable Development Goals (SDGs).

Background and the original RAI

It is widely recognised that good rural access and mobility are crucial to poverty alleviation and economic development. Improvements in rural health, education, agricultural production and incomes are closely linked to the provision of rural roads and transport services. In order to plan for rural development and measure progress against development goals, one needs to be able to measure rural access and mobility. Therefore, in the early years of the twenty-first century, the World Bank developed the Rural Access Index (RAI) as a 'headline indicator' (Roberts and Thum, 2005). This was defined as the percentage of rural people who live within two kilometres (typically equivalent to a walk of 20 minutes) of an all-season road. An 'all-season road' is a road that is motorable all year round by the prevailing means of rural transport. The 'all-season road' was included in the definition so that roads that were unusable for several months a year did not count. However, the RAI did not specify all-weather roads as these have a much more expensive design standard.

The RAI was only a measure of the proximity of infrastructure, and did not attempt to measure rural mobility or the availability of appropriate transport services. The RAI was designated a mandatory indicator so that all governments receiving World Bank/IDA finance had to submit estimates. Initial estimates were made of RAIs for most developing countries, based on household surveys (in a very few countries) and on various computer models.

However, this RAI has attracted criticism as a useful indicator. There has been little consistency between countries in the way in which it was estimated. It had been envisaged that data would be collected through household surveys, but such surveys have long lead-in and analysis times and few countries initiated survey procedures that would obtain useful estimates. There was also little clarity on the interpretation of the national RAI statistic, as proximity to rural roads varied greatly within countries, with the more developed areas having most people living within two kilometres of an all-season road, but the remoter areas having only a small percentage of the population so close to a road. There was also some confusion as to whether the RAI was a target (with an aspiration to achieve 100%) or simply an access indicator.

Developing a new RAI

As the new SDGs were adopted, one of the proposed indicators of progress was based on the RAI. The World Bank was identified as the institution that would monitor this indicator. Discussions were held between ReCAP, the World Bank and DFID and a research project was established to develop a new RAI based on GIS technologies. The World Bank team was led by Atsushi Iimi.

In terms of data, the new index required accurate and 'high-resolution' information relating to the location of rural people, the location of rural roads and the condition of those rural roads. The team looked at several options on population, and opted for the WorldPop dataset that is widely available and has a resolution of 100 metres. There has been some discussion about the boundaries of urban and rural populations, in terms of peri-urban settlements and the populations of 'rural towns'. More problematic has been finding suitable and internationally consistent definitions relating to road condition that can be easily applied within low-income countries.

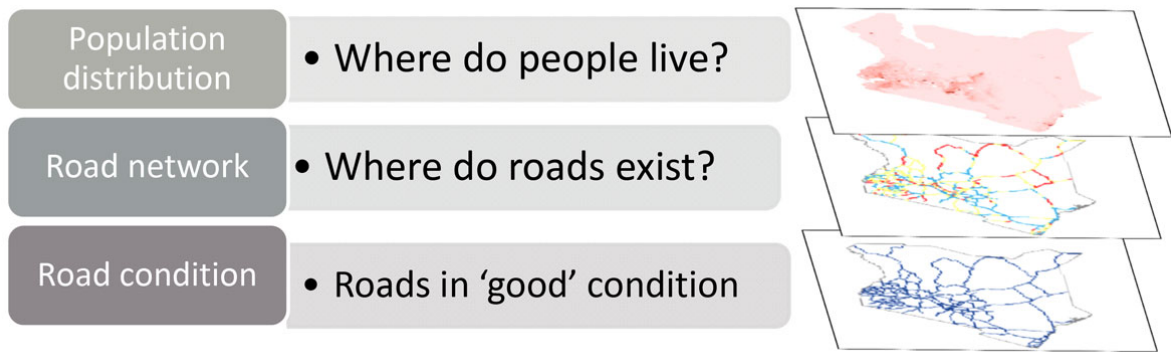


Figure 1 The three GIS datasets needed for the new RAI

Pilot projects in eight ReCAP countries

The World Bank worked with national authorities in six AfCAP countries (Ethiopia, Kenya, Mozambique, Tanzania, Uganda and Zambia) and two AsCAP countries (Nepal and Bangladesh). In deciding which roads to include, there was need to compromise between accuracy from the users' perspective and utility from the institutional perspective. As a poverty-related index, all motorable roads in reasonable condition should be included (such roads provide access and assist development). However, as a useful planning indicator, the data must be easily accessible and regularly updatable (and only roads for which national datasets exist may be fulfilling these criteria). The team therefore settled on working a definition as the share of the population who live within two kilometres of the nearest road in 'good condition' in rural areas. Roads in 'good condition' are defined as classified paved roads with an International Roughness Index (IRI) of less than 6 m/km and classified unpaved roads with an IRI less than 13 m/km. If no IRI data exists, then using other road condition criteria, included roads are paved roads in 'excellent', 'good' or 'fair' condition and unpaved roads in 'excellent' and 'good' condition. By these definitions unpaved roads will not be included if they are in 'fair' condition, even if they provide motorable, all-season access.

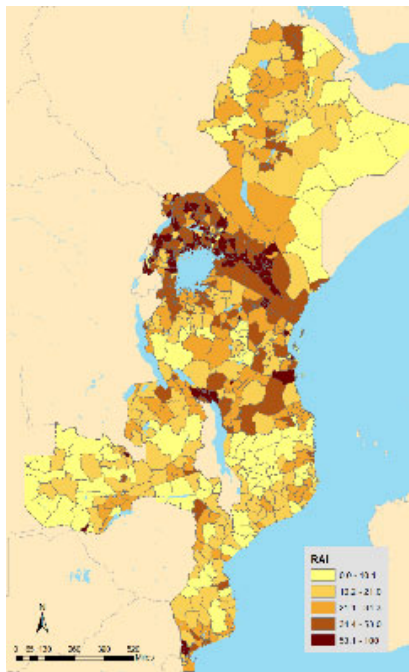


Figure 2 Schematic map of eastern Africa showing provisional new RAI estimates for all districts (the darker the colour, the higher the RAI) (Source: World Bank)

The pilot studies in eight countries have provided national and local estimates of the new RAI, and graphics have been produced to illustrate clearly the wide variations in the index between and within countries. The World Bank will be sharing a report soon that describes the development of the new RAI and provides clear examples of the work in the collaborating countries (details will be on the ReCAP website). Statistical correlations have shown that the index is a reasonable indicator of rural poverty, with higher new RAI percentages correlating with higher developmental indices.

Value of the new RAI and further development work

The new RAI has many advantages over the old RAI. The fact that it is 'high-resolution' and can be regularly updated means it can be used for planning at district and provincial levels. This should be particularly important in facilitating the implementation of pro-poor social and economic development policies and practices. The fact that

the new RAI depends on road classification as well as road condition is a pragmatic compromise. However, this could result in 'step-changes' in the index through institutional processes of reclassification that are not directly related to actual rural access. The new standard of included roads is quite high, and how this will affect policies and practices remains to be seen. Like the old RAI, the new RAI only measures infrastructure provision, and so provides no information on the actual rural mobility provided through rural transport services.

ReCAP intends to work with the World Bank and DFID to support the further testing and development of the new RAI, and will be supporting related work on assessing and measuring road condition through satellite imagery.

For more information, please contact Paul Starkey, ReCAP Transport Services Research Manager, at paul.starkey@cardno.uk.com.

Road and Transport Services Research:

Taking stock of progress and planning for future research in Nepal

The Department of Local Infrastructure and Agricultural Roads (DoLIDAR) of Nepal has been implementing three rural road research projects with support from the Asia Community Access Partnership (AsCAP). In this context, a one-day workshop on Knowledge Generation in the Rural Transport Sector in Nepal was held on 12 April 2016 in Kathmandu, with the participation of a range of stakeholders. The objectives of the workshop were:

- To present the findings of a scoping study on “Developing a participatory approach for road side protection of rural roads in Nepal” and collect feedback for possible implementation initiatives;
- To review ongoing programmes;
- To identify possible future research projects which could be supported by AsCAP; and
- To raise awareness and discuss knowledge management and dissemination needs and practices in the rural transport sub-sector in Nepal.

The workshop was inaugurated by Hon. Ms Kunti Kumari Shahi, State Minister, Ministry of Federal Affairs & Local Development (MoFALD). In her opening remarks Dr Sumitra Amatya, Honorable Member of the National Planning Commission, attended as a special guest and provided some pragmatic suggestions for initiating and expanding research works in the country in the rural transport sub-sector. Mr Ram Krishna Sapkota, Director General of DoLIDAR chaired the session. Mr Les Sampson, ReCAP Infrastructure Research Manager, presented an overview of current and future ReCAP/AsCAP activities focusing on Nepal.

The inauguration was followed by the presentation and discussion of a scoping study, carried out by Helvetas, on “Developing a participatory approach for road side protection of rural roads in Nepal”.

Developing a Participatory Approach for Road Side Protection of Rural Roads in Nepal

The objectives of the research by Helvetas were to analyse existing practices and to develop innovative approaches for the successful management of land within the Right of Way (RoW) of the district level roads. The study produced a number of significant conclusion, including:

- The concept of utilising the RoW land is new in Nepal, with currently no existing mechanisms in place. With the aim of signing a tripartite Memorandum of Understanding (MoU) for the use of the RoW land along a particular road section, it is essential to note that a wider consensus on matters is needed. This will need to consider benefit sharing mechanisms and the roles and responsibilities of the different government institutions such as municipalities, Village and District Development Committees, and DoLIDAR.
- Secondly, there is already widespread experience on the use of bio-engineering plants for road side stabilisation, but the experience on road side plantation for productive use is scarce. On the basis of field observations, discussions with the local communities and considering socio-economic criteria, the research team has – from a range of potential plants – identified those most suitable for productive use along the district roads in Kailali and Dhankuta.
- For a successful pilot, it is advisable not to choose plants on which information on costs and benefits are not available, or for which neither the skills for processing nor a market chain is yet in place. Not every plant can be used for plantation by the poorest that lack farming and marketing skills. The study recommends selecting crops with a high return on investment. Such plantations must be strictly feasible, sustainable and appropriate in the given context.

The full report will come available on the Rural Access Library shortly.

Box 1 Developing a Participatory Approach for Roadside Protection of Rural Roads in Nepal

Ms Caroline Visser, Knowledge Management and Communications Manager, ReCAP, gave an introductory presentation on research uptake and embedment and the role of knowledge management. In an interactive setting the workshop participants phrased their responses to three key questions, allowing them to assess current knowledge management and dissemination practices and to formulate improvements and ideas for the future to enhance the sustainability and uptake of rural transport research.



Photo 2 Workshop participants discussing knowledge management practices and needs in rural transport research (Photo: Caroline Visser)

Dr Chandra B. Shrestha led the session on the Way Forward. Suggestions for future research in Nepal included: follow up research on Road Side Plantation; bridge research; dust pollution; the establishment of a Transport Research Center (TRC); rural road safety and transport services; interlinkages between economic development and transport infrastructure, and the formation of a rural road research network as capacity development. The suggestions will be taken into account in the joint research planning process between DoLIDAR and AsCAP.

The workshop was closed by Mr. Sapkota, Director General, DoLIDAR, who expressed his thanks and stressed the relevance of all the topics discussed for Nepal.

For more information on AsCAP activities in Nepal, please contact Chandra Shrestha, AsCAP Regional Technical Manager, at Chandra.shrestha@cardno.uk.com.

Cross Cutting Issues:

New initiatives to mainstream gender in transport

'Gender equality, equity and social inclusion' is an important cross-cutting research theme for ReCAP. Potential research areas have been identified for a range of gender issues across transport services and infrastructure and as a central issue to community access. Poor transport is a gender and social exclusion issue, as women, persons with disability and the elderly are less likely to travel when infrastructure and services are poor, unpredictable or unsafe. Gender is therefore a key component of the ReCAP Research Strategy and is mainstreamed in strategies across the breadth of ReCAP thematic areas.

Key gender issues in rural access

Research undertaken by several organisations in recent decades has revealed the difference in travel patterns of men and women in rural areas of low-income countries. Factors that influence this include social roles and cultural behaviour. Women have a far larger role in local travel for domestic purposes whereas men tend to travel more outside the local area for work and business purposes. Studies have shown that the distance travelled and load carried by women at the village level is far greater than men. Men are much more likely to own and operate means of transport than women. Women may have less access to money and mobile phones than men and also tend to be more risk averse. This makes the safety, security, predictability, reliability and the cost of transport services important gender issues for investigation.

Lack of rural roads generally has negative educational impacts for all young people, but girls appear to be disadvantaged more than boys. Rural transport infrastructure and transport services can have significantly different impacts on men and women and many interventions in rural transport can appear to be skewed to the needs of men. While women and men can contribute to labour-based road construction and maintenance, men are generally the major beneficiaries of labour-based projects. There is therefore much potential to investigate, quantify and evaluate the different physical, social and economic impacts of rural transport interventions on men and women, and the application of this knowledge in planning and policy formulation. This may include areas such as gender, employment and local socio-economic issues in the prioritisation, construction and maintenance of rural roads and in the operation of rural transport services.

ReCAP support to the International Conference on Transport and Road Research (15-17 March 2016, Mombasa, Kenya) included a plenary session focused on sharing of experience in gender mainstreaming in the transport sector by a panel of African and Asian transport sector stakeholders. The discussions were animated and inspiring, but exposed some very different attitudes to gender issues, and the importance of gender-sensitive policies and practices.

Gender mainstreaming research cluster

The ReCAP research initiative on gender mainstreaming in rural transport (GEN2044) commenced in October 2015 with facilitated discussions (using websites, social media and email) about gender mainstreaming in rural transport with a view to identifying relevant research topics for further exploration. Four research themes were developed:

1. Transformative impact of gender mainstreaming at household, community and national levels.
2. Transformative impact of gender mainstreaming within rural transport institutions.
3. Potential for gender-focused rural transport initiatives be scaled-up and mainstreamed and importance of rural transport policy.
4. Methodologies, analytical frameworks and indicators to monitor effective gender mainstreaming in the rural transport sector.

An open procurement call for research concepts was issued in January 2016. This resulted in thirty-four responses, which were evaluated in March 2016. Seven research concepts were selected for full proposals. Together, these cover all four research themes and will involve research on gender mainstreaming in eight countries in Asia, West Africa and Eastern Africa. All projects will be implemented by gender-balanced teams, with African and Asian researchers involved at a senior level. Subject to relevant national-level approvals, the research is likely to be contracted in July 2016.



Photo 3 One study will look at gender mainstreaming from the perspective of older persons in Tanzania (Photo: Paul Starkey)

The aim is to have a 'cluster' of projects that will work independently but will be aware of each other; technical conversations and liaison will be encouraged. Some research studies will look at the gendered impacts of labour-based road construction and rural infrastructure. One will consider the gender-related implications of motorcycle taxis operated by men and by women. Some research will look at the impacts within rural transport institutions of gender-mainstreaming policies and practices. With researchers in several countries studying gender mainstreaming in a variety of situations, and exchanging information, it is envisaged that a 'critical mass' of ideas, lessons and analytical tools will be generated that will be able to influence policies and practices in the rural transport sector.

Further information concerning the studies and their progress will be posted on the ReCAP website and shared by ReCAP through the Newsletter and social media.

For more information, please contact Paul Starkey, ReCAP Transport Services Research Manager, at paul.starkey@cardno.uk.com.

Rural Road Infrastructure Research

AfCAP Regional Project on Climate Adaptation takes off

(This article contains extracts of a Briefing Note prepared by CSIR, Paige-Green Consulting (Pty) and St Helens Consulting (Ltd))

In order to help address the significant threat to Africa's development posed by climate change, AfCAP has launched a regional project on climate adaptation, addressing in particular risk management and resilience optimisation for rural roads in Africa. The project aims to enhance the capacity of AfCAP partner countries to reduce current and future climate impacts on vulnerable rural road infrastructure by producing regional guidance on climate resilient rural access. Three partner countries will be participating directly in the research, with other partner countries being kept informed and involved in the discussions through regular meetings and dissemination of outputs. A consortium composed of the Council of Scientific and Industrial Research (CSIR) of South Africa, Paige-Green Consulting (Pty) and St Helens Consulting Ltd is undertaking the research. The project started in April 2016 and will run for two years.

The challenge

Studies show that the African continent is facing a potential direct liability of US \$184 billion to repair and maintain existing roads damaged from temperature and precipitation impacts directly related to projected climate change through this century. The liability does not include costs associated with impacts to critically needed new roads, nor does it include indirect socio-economic effects generated from dislocated communities and from loss of rural access.

There is clear evidence that climate change has already affected the magnitude and frequency of some climate extremes. Particularly vulnerable AfCAP partner countries are Ethiopia, Kenya, Mozambique, South Sudan, Tanzania, and Uganda; however, all African countries are affected. Research and Development is needed to identify the threats that are posed by climate change, to develop adaptation approaches to the predicted changes, to incorporate changes into mid-range and

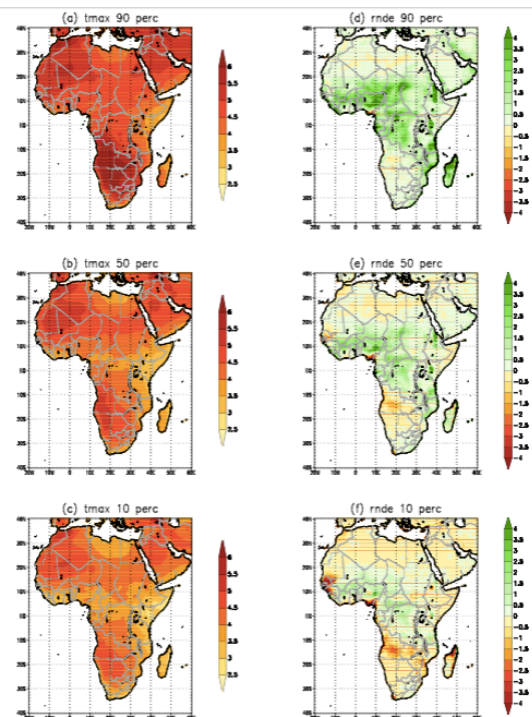


Figure 3 Projected changes in maximum temperature (O C, left) and extreme rainfall events for the period 2071-2100 relative to 1961-1990. (Source: CSIR)

long-term development plans, and to secure funding for the proposed and necessary adaptation.

A key finding from projections of future climate change over Africa is the projected rapid rise in surface temperatures over southern Africa and over subtropical North Africa (Engelbrecht et al., 2015). The impacts of such drastic temperature increases will be felt not only through the increase in average temperature, but also through extreme temperature events such as heat waves. The southern African region is likely to become generally drier under climate change whilst East Africa is predicted to become generally wetter (Christensen et al., 2007; Niang et al., 2015). Extreme rainfall events, in both severity and frequency, will significantly increase the number of damaging flash-flooding events. In affected areas, road infrastructure will be vulnerable.

Project objectives

The project aims to build sustainable capacity in AfCAP partner countries to deal with the impacts of weather variability and climate change on vulnerable rural access in a sustainable manner. Two prime objectives have been formulated:

Objective A: To identify, characterise and demonstrate appropriate engineering and non-engineering adaptation procedures that may be implemented to strengthen the long-term resilience of rural access. To achieve this objective, work will be undertaken to, among others, assess current climate trends and future projects for the region, assess climate vulnerability of road pavements, develop and implement adaptation action plans and monitor the interventions.

Objective B: To build capacity and disseminate knowledge. To achieve this the project will concentrate on awareness raising and knowledge building in a first phase and on dissemination, training and capacity building in a second phase. The capacity building component entails the selection of counterpart researchers from partner countries who will be integrated in the research team and participate in all in-country activities.

The project seeks to establish a dedicated knowledge-exchange network. More information will come available on the ReCAP website at www.research4cap.org and through ReCAP social media in the months to come.

The full May 2016 Briefing Note on Climate Adaptation, of which this article is an extract, can be downloaded here: [Climate Adaptation: Risk Management and Resilience Optimisation for Vulnerable Road Access in Africa](#).

For more information, please contact Les Sampson, ReCAP Infrastructure Research Manager, at les.sampson@cardno.uk.com.

SHORT RECAP NEWS

Recent uploads onto the Rural Access Library

ReCAP keeps a freely accessible, online repository on the ReCAP website which is continually updated with outputs of AfCAP and AsCAP activities and includes outputs from previous, DFID-funded rural access programmes. The library holds over 800 items varying from research reports, design manuals and standards for Low Volume Roads in various partner countries, workshop reports and conference papers & presentations, etc. Recent uploads onto the Library include:

- The [Inception Report](#) of the recently launched AfCAP regional project on the use of appropriate, high-tech solutions for road network and condition analysis, including satellite imagery;

- We look back on a successful International Conference on Transport and Road Research (ITRARR) held in Mombasa, Kenya in March 2016, that was supported by AfCAP; you will find our report on it here: [AfCAP Support to the International Transport and Road Research Conference \(iTRARR\)](#)
- A recently published [research paper](#) by Gina Porter of Durham University, United Kingdom, based on AfCAP research, on Mobilities in Rural Africa: New Connections, New Challenges.

AfCAP Steering Committee meets in Livingstone, Zambia

The AfCAP Steering Committee, composed of representatives of host organisations in the partner countries, met in May 2016 in Livingstone, Zambia, to discuss on-going activities at national and regional levels and to advise on the 2016-2017 work plan.



UPCOMING CALLS AND EVENTS:

Event	Venue	Date
14th World Conference on Transport Research (WCTRS)	Shanghai, P.R. China	10-15 July 2016
Asian Development Bank Transport Forum 2016	ADB Head Quarters, Manila, Philippines	13-15 September 2016
2016 International Conference on Transportation in Africa (ICTA)	Ramada Resort, Accra, Ghana	26-28 October 2016
Call for papers: Transportation Research Board 96th Annual Meeting		Submission deadline: 1 August 2016
Tenders: Keep an eye on the Tender Section of the ReCAP website for the latest tenders and opportunities.		



This material has been funded by UKaid from the Department for International Development, however the views expressed do not necessarily reflect the department's official policies.