

Safe and sustainable transport for rural communities

Dear Colleague,

We are pleased to share with you the October edition of the ReCAP e-Newsletter. This edition you will provide you with updates on knowledge management projects in support of new and existing transport research centres in ReCAP partner countries, AsCAP activities in Bangladesh, the regional AfCAP project on the use of high-tech solutions for road network assessment, including satellite imagery and AsCAP's recent participation in the Asian Development Bank's bi-annual Transport Forum in Manila, the Philippines.

Feel free to share this newsletter with your colleagues and we hope you will enjoy this edition.

The ReCAP team

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Knowledge Management

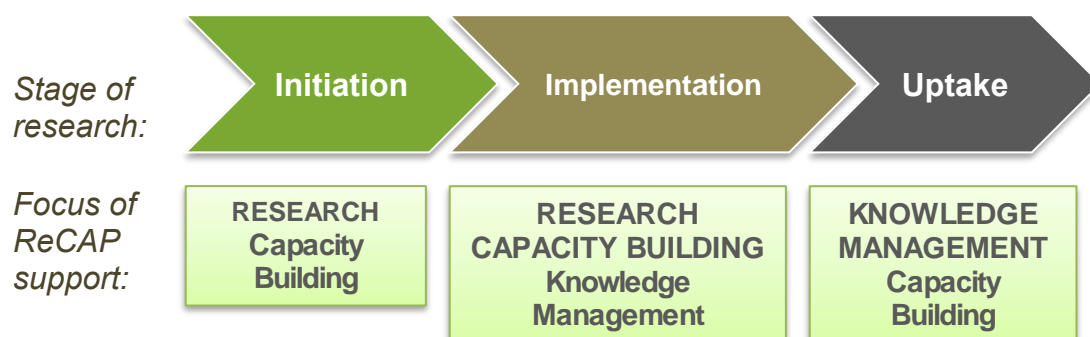
Building capacity for sustainable Knowledge Management in ReCAP partner countries

Introduction

ReCAP's knowledge management strategy defines the way forward to achieve a number of goals: 1) to strengthen research influence on policy and practice; 2) to strengthen partner countries' research capacity through better knowledge management; and 3) to enhance the interconnectedness of rural access practitioners internationally.

Knowledge management is defined as "[...] the systematic management of an organization's knowledge assets for the purpose of creating value and meeting tactical & strategic requirements; it consists of the initiatives, processes, strategies, and systems that sustain and enhance the storage, assessment, sharing, refinement, and creation of knowledge" (Frost, 2010).

Knowledge management is of particular strategic importance to institutions that *create* and *generate* new knowledge, such as transport research centres. Knowledge management is an integrated part of ReCAP support, as demonstrated in the figure below:



ReCAP activities to enhance sustainable research management

Initiatives in the Knowledge Management domain have been launched with a number of existing and newly formed national research centres and local partners in ReCAP partner countries. Activities include the mapping of Knowledge Management needs, training of local (research centre) staff in information/library management and the establishment of local research portals and repositories. So far, a number of **AfCAP** projects have been implemented in the context of enhancing sustainable research management within partner country institutions. Examples are:

Mapping of Knowledge Management and Capacity Building needs of the Materials Testing and Research Department (MTRD) in Kenya¹

MTRD's vision is to become a Centre of Excellence for materials testing and a research centre for roads and transport. In this context AfCAP has been supporting MTRD with various projects. The needs assessment involved a document review of relevant material, a series of in-depth interviews with sector stakeholders and a study of the internal processes and procedures for information gathering, analysis, storage and dissemination. A gap analysis of the current situation versus the vision led to a listing of needs and recommendations, which were then included in a road map for implementation. The preliminary recommendations concerning Knowledge Management included:

- The implementation of a comprehensive content management solution to streamline necessary governance structures along with standard approval and routing frameworks;
- Establishment of a library and information service;
- Development of internal and external web-based knowledge portals;
- Enhancement of records management;
- Support of collaborative research through virtual collaboration platforms; and
- Establishment and fostering of communities of practice.

The results of the needs assessment are to be discussed during a stakeholder workshop to attract buy-in and support for the implementation road map from multiple partners.

Technical assistance to the Mozambique Road Research Centre

¹ Taken from: Heerden, M. Van; Jennings, D. (2016) Capacity Building and Knowledge Management Study of MTRD, Draft Report, AfCAP (KEN2047), ReCAP for DFID, London.

AfCAP is supporting the Mozambican Roads Administration (Administração Nacional de Estradas, ANE) in its efforts to set up a Road Research Centre (RRC) in Maputo. Part of the support is directed towards a study establishing the knowledge management needs, in particular related to the establishment of an Information Centre. The KM study addressed the application of knowledge management principles in the generation and transfer of relevant road research knowledge.

Technical Assistance to Tanzania Local Government Infrastructure and Transportation Research Centre

The AfCAP technical assistance support to President's Office, Regional Administration and Local Government (PO-RALG) in Tanzania included a Knowledge Management study determining organisational expectations for a proposed Information Centre within the Local Government Infrastructure and Transportation Research Centre (LoGITReC) in Dodoma together with considering the services, associated resources and infrastructure.

The finalised reports of the above-mentioned studies will become available on the Rural Access Library.

A Baseline survey of past and current road sector research undertaken in Uganda and the establishment of electronic document management system (EDMS) is currently being tendered. The purpose of this project is to review, analyse, and compile a comprehensive listing of all past and current research that has been undertaken in the roads sector in Uganda in a centralised knowledge base. The knowledge base will be an indispensable source of information to a broad range of stakeholders, including current and future researchers, practitioners, academics, road policy and decision makers, and the general public.

In the framework of the **AsCAP** programme, a workshop held in April 2016 in Nepal on the topic of Knowledge Generation in the Rural Transport Sector included an interactive session on Knowledge Management and Research Uptake. This session outlined uptake objectives and discussed current KM practices within the institutions involved and KM priorities. With a number of AsCAP partner countries having expressed their interest in setting up national road research centres, AsCAP support will likely be geared towards assessing and the knowledge management needs and options in line with previous studies in AfCAP partner countries.

For more information about the Knowledge Management support projects, please contact Caroline Visser, ReCAP Knowledge Management & Communications Manager, at caroline.visser@cardno.uk.com.

Rural Roads Research

Rural road research tailored to the needs of Bangladesh

Introduction

The Local Government Engineering Department (LGED) of the Ministry of Local Government, Rural Development & Cooperatives in Bangladesh is mandated to implement local infrastructure programmes, including road and other elements. LGED has more than 10,000 staff and under its Chief Engineer is required to support the improvement of the socio-economic condition of the general public by providing rural roads, bridges/culverts and markets..

LGED is designated as the focal institution for the Asia Community Access Partnership (AsCAP) in Bangladesh for implementing research projects on rural

transport and transport services. Research activities are guided by a national steering committee, which comprises all relevant institutions in the rural transport sector, such as government agencies, universities and research institutes and the national planning commission. The criteria that the committee uses for assessing research proposals include: technical return on investment, numbers of beneficiaries and relevance to ReCAP's research scope.

On-going Infrastructure Research Projects in Bangladesh

Currently AsCAP is supporting three on-going projects in Bangladesh: planning and prioritisation of rural roads in Bangladesh, climate resilient reinforced concrete structures in the marine environment of Bangladesh and a study on ground improvement technique for soft clayey soil in the Khulna Region.

Planning and prioritisation of rural roads in Bangladesh

In Bangladesh, the rural population has grown tremendously and at the same time the process of urbanisation is accelerating. Rural roads need to be upgraded to cope with the potential volume of traffic. This requires proper population projection and judgement of the growth of urban centres. On the other hand, the roads with less potential do not require huge investment. To support the effective use of LGED resources, this project aims to develop a prioritisation methodology for the development, upgrade and maintenance of rural roads.

This project is being implemented by the Bangladesh University of Engineering and Technology (BUET). The Inception Report has been finalised and the project is now in implementation phase.



Photo 1: Project Field Visit to Village Roads in Mirzapur Upazila, Tangail (Photo Source: DURP/BUET)

Climate Resilient Reinforced Concrete Structures in the Marine Environment of Bangladesh

Bangladesh is seriously affected by climate impacts. Excessive intrusion of seawater, air borne chlorides and the high humidity of the coastal belt cause a rapid deterioration of standard concrete structures within 5 to 10 years of construction. LGED maintains around 380,000 linear metres of concrete bridges/culverts at the rural coastal areas and it is planning to build a further 200,000 linear metres during the next ten years in the rural coastal belt. This has created an urgent need for a research study into increasing the durability of concrete structures in the coastal marine environment of Bangladesh. The outcome of this study aims to improve the sustainability of concrete structures exposed to harsh marine conditions.

The study is being undertaken by Mott Macdonald. The inception report has been approved and the consultant's team is in the field for collecting deteriorated concrete samples.

Study on Ground Improvement Technique for Soft Clayey Soil of Khulna Region of Bangladesh

The sub-soil of the Khulna region in southwest Bangladesh consists of fine-grained soil with a considerable proportion of decomposed and semi-decomposed organic matter. This region is situated near protected mangrove forests (Sundarbans) and the soft soil deposits extend down to a considerable depth (up to 30-50m below the ground surface).

The compressibility of the soil is very high and this hampers the effective construction of rural road embankments, shallow foundation bridges and culverts, or buildings on this soil. Roads in the regional also require frequent maintenance due to settlement of the road embankment. The consequence is that construction costs and the time for construction are higher than the national average in this region.

A recently initiated research project, being implemented by Mott MacDonald, is designed to consolidate the findings of previous research studies and review the effectiveness of the past ground improvement techniques, identify gaps in the previous research and develop recommendations for construction of roads in soft clayey soils typical of the Khulna region.

Future projects

LGED has expressed its wish to establish a transport research centre for taking-up the research findings and preserving knowledge for future generations. Considering this demand, AsCAP is looking to initiate a regional project supporting all AsCAP partner countries in scoping the efforts for establishing dedicated road research centres.

Other projects under consideration in Bangladesh include:

- Cost-effective means of embankment slope protection against coastal and river erosion.
- Analysis of patterns of rural trip generation
- Recommendations on the safety issues surrounding rural transport services.

The above-mentioned research proposals will all need to go through the various agree stages of ReCAP approval.

For more information on AsCAP projects in Bangladesh, please contact Dr Chandra Shrestha, AsCAP Regional Technical Manager for Nepal & Bangladesh, at Chandra.shrestha@cardno.uk.com.

Rural Roads Research

The use of appropriate high-tech solutions for road network and condition analysis, with a focus on satellite imagery

This regional AfCAP project on the use of high-tech solutions for road network assessment has been commissioned to TRL to explore the potential for cost-effective solutions to increase the knowledge of rural roads in Africa. Many countries in Africa have limited information on their rural roads networks, both in terms of location and geometry, as well as the associated condition of the roads. This information is

essential if a roads authority wishes to plan and budget effectively for road maintenance and rehabilitation. Planning road maintenance without this information could ultimately lead to a waste of resources. Recent research has shown that high-tech solutions using large datasets can be appropriate and cost-effective in providing road network solutions.

High-resolution satellite imagery is now available worldwide and covers many of the world's inaccessible areas, with the potential to provide rapid inventory data and condition assessments of entire road networks. There is also potential to use other high-tech solutions for data capture. This research project has two components, firstly to develop a methodology for using satellite imagery to assess road condition, and secondly to explore other high-tech solutions for network assessment.

From the initial literature review and desk study a number of potential areas for high-tech of research have been identified. They include areas such as big data, mobile phones, social media, Unmanned Aerial Vehicles (UAVs or drones) and alternative satellite applications. At present the project team is in the process of liaising with the four project partner countries Ghana, Kenya, Uganda and Zambia, to establish trials in some of these areas. These countries were selected using a combination of geography, location, capacity, vegetation and climate requirements in order to provide a range of environments within Africa.



Typical UAV for aerial imagery

Trials are also being undertaken to establish the accuracy and cost effectiveness of using visual and radar satellite imagery to estimate rural road condition, both on paved and unpaved roads. This technology has been trialed before in Nigeria with some success, and a methodology and eventually a guideline will be produced. The process involves identifying an area of road network and assessing the condition by using very high-resolution satellite imagery, typically 0.5m resolution. The assessment is carried out manually using visual imagery. The assessors are trained to recognise certain features that are visible on the imagery and use these to establish the condition by comparing them to a pre-determined scale. The result is an allocation of condition to each section of road on a five-level scale, ranging from very poor to very good. This assessment is then checked against ground truthing, which establishes the actual condition of the road, using traditional means. This usually involves visual surveys and often physical measurements of roughness, but should be based around the normal means of road condition assessment in each country.

The sustainability of the system will be based around training and coaching of local teams to carry out both the ground-truthing and satellite assessment. Each partner country is providing local resources and staff for the project, so it is expected that the system will be replicable once the project has been completed. So far it has been found that there is capacity locally for training in remote sensing, Geo Information Systems (GIS) and other related technologies, plus there is a significant appetite to explore high-tech solutions for road network analysis in Africa.

It is hoped that some of the technologies which are developing so rapidly in high-income countries can be applied effectively in Africa, and that some innovative technologies can be established through this research. A web-based portal and

repository for sharing information is being established which will be useful for practitioners and researchers alike. The final phase of the project will see the presentation of the results at a stakeholder workshop, culminating in a final report and a scientific paper to be published in a relevant journal.

For more information on the Satellite Imagery project, please contact team lead Robin Workman of TRL at rworkman@trl.co.uk, or be referred to the project webpage on the ReCAP website.

The views expressed in this article are of the author only and do not necessarily reflect the views of ReCAP or Cardno Emerging Markets (UK) Ltd, for whom the article was prepared.

Rural transport advocacy

ReCAP advocating for more suitable and sustainable rural roads at ADB Transport Forum 2016

From 13 to 15 September 2016, the Asian Development Bank (ADB) held its bi-annual Transport Forum in Manila, the Philippines. This year's edition was themed "Sustainable Transport for All" and attracted some 800 participants from ADB member countries' governments, NGOs, development partners, private sector and civil society. The programme comprised several high-level plenary sessions, addressing topics such as on Air Quality and Sustainable Transport in Cities, a number of sub-plenary technical sessions and various trainings and seminars.

The Research for Community Access Partnership (ReCAP) was invited to take part in a session on Rural Accessibility, which staged a debate on the hypothetical question of whether to build more roads or to manage existing roads. The session was moderated by Hideaki Iwasaki, Director of ADB's Transport & Communications' Division. At several points during the session, the audience was invited to vote on statements as well as the underlying theme. The opening vote resulted in a firm majority in favour of better existing roads.

David Salter, Senior Natural Resources and Agriculture Specialist of the ADB and member of the ReCAP Executive Committee, opened the session with an introductory assessment. Dr Jasper Cook, ReCAP Team Leader, and Dr Tran T.K. Dang, member of the ReCAP technical panel, took part in the team arguing for more roads. They were joined by Department of Transport Secretary Roy Mumu of Papua New Guinea, who advocated strongly for an extension of the rural road network in PNG to connect its rural population, which constitutes over 80% of the total population.



In their arguments for more roads Dr Cook and Dr Dang stressed the essential importance of increasing the number appropriate new roads – fitting with the function and type of traffic – and their sustainability in terms of use of (local) materials, involvement of local communities, their maintenance and their long-term financing. Proponents of the Better Existing Roads proposal brought in economic arguments and socio-economic benefits of maintaining existing roads. The end vote by the audience showed an impressive swing to a 58% majority in favour of more roads over better existing roads. Furthermore, close to 70% of the audience thought that development agendas should pursue rural accessibility as a goal in itself.

A special Youth Forum on the 3rd day of the ADB Transport Forum addressed, among other topics, Rural Access in Asia. Youth representatives stressed the importance of youth being involved in the validation of rural access research and the need to not just look at rural infrastructure but to consider transport services as well in enabling them to access basic services such as education, health care and job markets.

In conjunction with the ADB Forum, the Steering Committee of the Asia Community Access Partnership (AsCAP) convened for its second formal meeting. The Steering Committee elected Eng Ram Sapkota, Director General of DoLIDAR, Nepal, as the new chair following the departure of his predecessor from within DoLIDAR. Currently comprising three partner countries, i.e. Nepal, Bangladesh and Myanmar, the AsCAP programme is looking to extend its activities to Pakistan and Afghanistan. The Steering Committee discussed on-going projects, intermediary results and the way forward.



Participants in the AsCAP Steering Committee (Photo: Paul Starkey)

For more information on the AsCAP programme, please contact Dr Jasper Cook at j.cook@cardno.uk.com.

SHORT RECAP NEWS

ReCAP launches range of projects on Gender Mainstreaming in Transport

Following a Request for Proposals, which attracted 34 submissions, ReCAP has contracted a total of seven Gender Mainstreaming research projects in various ReCAP partner countries.

The aim of this cluster of research is to provide evidence that can be used for improved policy formulation and practices on gender-mainstreaming in transport. An overview of all seven projects can be found [here](#).

Joint ReCAP/Devex webinar on Engaging Local Communities in the Future of Transportation

A joint ReCAP/Devex webinar took place on Monday 12 September and addressed the topic of engaging local communities in rural transport research and in particular the active action research methodology. The speaker panel included Tony Greening, independent expert and ReCAP Technical Panel Coordinator, Gina Porter of Durham University and Caroline Barber of Transaid. The recorded webinar can be viewed [here](#). Full proceedings will come available on the ReCAP website shortly.

UPCOMING CALLS AND EVENTS:

Events:	Venue	Date
2nd IRF Asia Regional Conference	Kuala Lumpur, Malaysia	16-20 October 2016
2016 International Conference on Transportation in Africa (ICTA)	Ramada Resort, Accra, Ghana	26-28 October 2016
ARMFA Annual General Conference	Abidjan, Côte d'Ivoire	7-11 November 2016
Calls:		
Call for papers:		
8th Africa Transportation Technology Transfer Conference	Livingstone, Zambia	8-10 May 2017 Paper deadline: 30 October 2016

Tenders:

Keep an eye on the [Tender Section](#) of the ReCAP website for the latest tenders and opportunities.



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