Setting up of Tractor-based Road Maintenance Demonstration Unit in Zambia

RECAP PROJECT ZAM2059B
Kingstone Gongera & Robert Petts
Outline of Presentation

- Project rationale
- Pilot study
- Outcome of the study
- Project Aims
- Progress so far
- Challenges
- Way forward
Rationale: Tractor technology for road works

- Tractor Technology is proven, cost effective and appropriate for the lower class rural unpaved roads
- Most emerging and developing countries face problems of road maintenance, rural roads being the worst affected due to competing demands for limited national resources
Rationale: Tractor technology for road works

- The cost of heavy machinery is high and economically unjustifiable for maintenance of rural feeder roads due to low utilization and high finance & operating costs.

- Tractor technology: low cost investment & operation. Potential for high road sector and rural sector utilisation through multi-tasking.
Outcome of the Pilot Study

Project initiated by Road Development Agency

A 2016 Pilot Study conducted in Zambia confirmed that:

• Universal lack of efficient road maintenance performance

• Limited competent practical training or demonstration of affordable tractor based road maintenance and asset management good practice
Outcome of the Pilot Study

- Result is widespread wastage of construction investments, prevalent poor rural road conditions; high transport costs and constraint to rural development & poverty alleviation
- Adopting proven tractor technology will be cost effective and appropriate.
Project Aims

• Local community:
  Road networks in good condition; all-season access & lower transport costs

• Road authorities:
  Affordable & effective local training services
  Application of simpler, more robust technology
  Substantially reduced road maintenance costs (-50%)
  Make limited resources stretch further
  Flexibility to use force account or private sector options
DTU Stakeholder benefits

• **Private sector:**
  Affordable & effective local training services
  Affordable access to new market for MSMEs
  Increase national tractor fleet utilisation & lower costs

• **Nation/Region:**
  Basis for network asset management improvement; substantial economic & social benefits

• **Transport Stakeholders:**
  Vital source of cost & practical operational knowledge
Pre-requisites

• Workshop/training accommodation available nearby
• Network of up to 200km of unpaved roads suitable for maintenance unit approach
• Typical range of road environment conditions
• Method of accreditation of course qualifications
• System of sector recognition of accredited training
Critical Stakeholders for Success

RDA – Advisory and functional established structures
NRFA – Steady revenue base from fuel levy/other sources
NCC – Well established training facilities available
ZNS – Established and decentralized throughout the country
TEVETA – Existing structures for accreditation of training
Min of Agr. – Active cooperation on efficient utilisation of tractor resources
Min of Local Govt. – LRAs charged with rural road management
MSME representatives – Awareness and mobilisation.
Technical Support

AFCAP – Zambia is among the countries benefitting from the partnership of the AFCAP support programme for research, training, dissemination and uptake initiatives

AFCAP through Intech Associates consulting engineers is contracted to provide advisory and capacity development support.
Selected Location: Chongwe District
Phase 1 Activities

- Developing training curricula for operators, field mechanics, foremen, engineers/managers, community leaders and others
  (In conjunction with TEVETA, NCC, RDA, MoLG)
- Selecting the first batch of trainees and trainers
  (TDUCC, RDA, MoLG, NCC, TEVETA, CHONGWE DISTRICT COUNCIL)
- Securing training facilities and prepare a training programme
  (RDA, MLGH, NCC, TEVETA, TDUCC, CHONGWE D.C.)
- Prepare and submit a training report.

INTECH ASSOCIATES
Phase 1: Implementation

- Organisation of meeting with key stakeholders through the DTU Coordination Committee
  RDA, MoLG, INTECH ASSOCIATES, TEVETA, TDUCC, ZNS

- Carrying out of condition survey and inventory of road network
  CHONGWE DISTRICT COUNCIL, MoLG, RDA, TDUCC

- Preparation and submission road inventory and condition report
  INTECH ASSOCIATES

- Preparation and submission equipment evaluation report
  INTECH ASSOCIATES
Phase 1: Implementation

- 2-day study tour to South Africa (equipment manufacturer) **RDA, MoLG, INTECH ASSOCIATES, TEVETA, TDUCC**

- Prepare preliminary DTU programme of implementation of activities

- Conduct a 1-day workshop (**RDA, MoLG, NCC, TEVETA, TDUCC, CHONGWE D.C.**)

- Prepare workshop report

  **INTECH ASSOCIATES, RDA, MoLG, NCC, CHONGWE D.C.**
Progress to Date

• Equipment Evaluation Report.
• Road condition assessment report
Work in Progress

- Development of Tractor Technology for Road Works Training Modules
- Study tour to equipment suppliers for tractor based road works technology
- Stakeholder workshop to report on progress
- Conducting training for the trainers
- Implement the tractor based road maintenance technology on selected roads
- Roll out the technology to more districts in Zambia
Challenges being Encountered

- The accreditation process for the training syllabus and training material is taking longer than initially anticipated

- The number of training modules identified after the study require more resources to prepare than provided for in the project

- Funding for the accreditation of the workshop not readily available
Challenges being Encountered

- Timing for the accreditation workshop affecting the preparation timelines for the training material preparation

- Uncertainty in provision of maintenance funding for implementing the tractor based technology on the selected core road network
Next Steps

- Training of trainers in formal and practical application of the technology
- Setting up an effective road maintenance regime in Chongwe district
- Produce maintenance work plans and work programmes for implementation
- Monitor the progress of the maintenance regime
- Evaluate the system and report back in a stakeholder workshop
Thank you for your attention

www.research4cap.org

Follow ReCAP on:

LinkedIn  Facebook  Twitter  YouTube

#IRIM2017

IRIM2017  20-22 November 2017