



## A Route from Research into Practice: Outcomes of AFCAP Phase 1

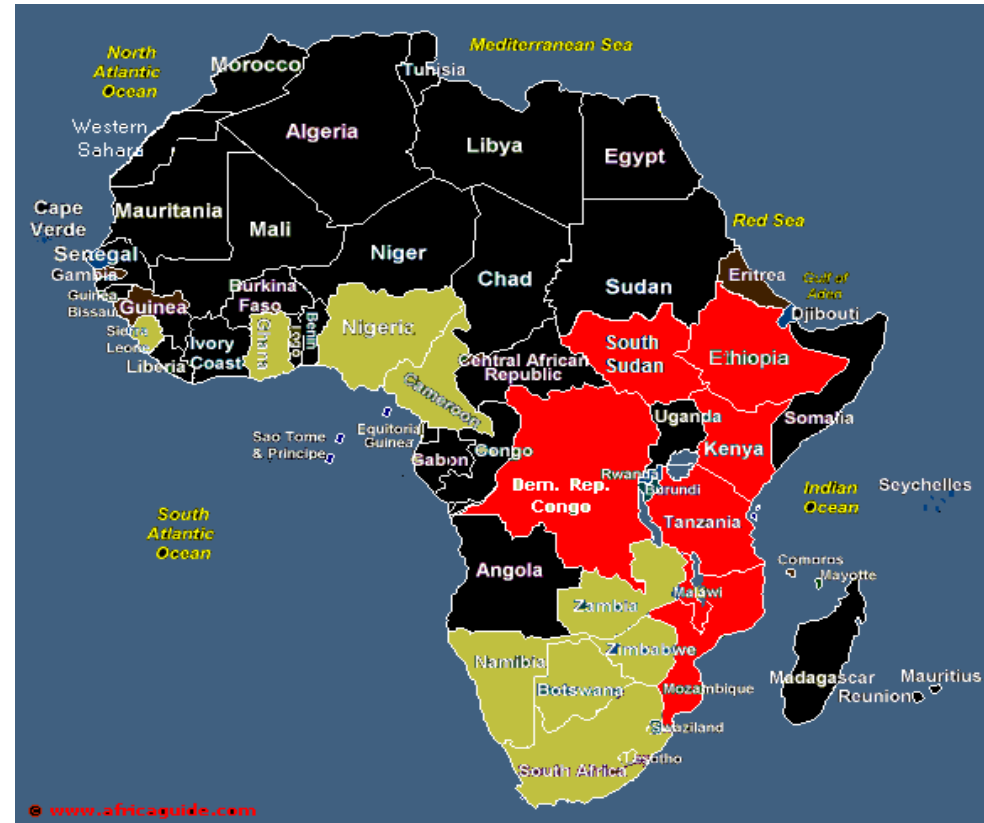
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# Presentation Outline

1. Introduction
2. AFCAP Theory of Change
3. Description of Programme
4. Research Projects
5. Development of Local Research Capacity
6. Summary of Standards Developed & Applied
7. Conclusions

# 1. Introduction: What is AFCAP?

- Knowledge and research programme for the rural transport sector in Africa.
- June 2008 to 2020.
- DFID budget £32 million (low cost high impact).
- Management contract:
  - Crown Agents for Phase 1
  - Cardno/ITT for Phase 2 .
- 15 African countries directly benefitting.



# AFCAP advocacy initiatives (I)

- Through the International Forum for Rural Transport and Development (IFRTD):
  - Raising awareness about the Sustainable Development Goals (SDG) formulation process with African governments (Ministries of Transport):
    - Key message: Rural transport is a key enabler to achieve many of the SDGs

# AFCAP advocacy initiatives (II)

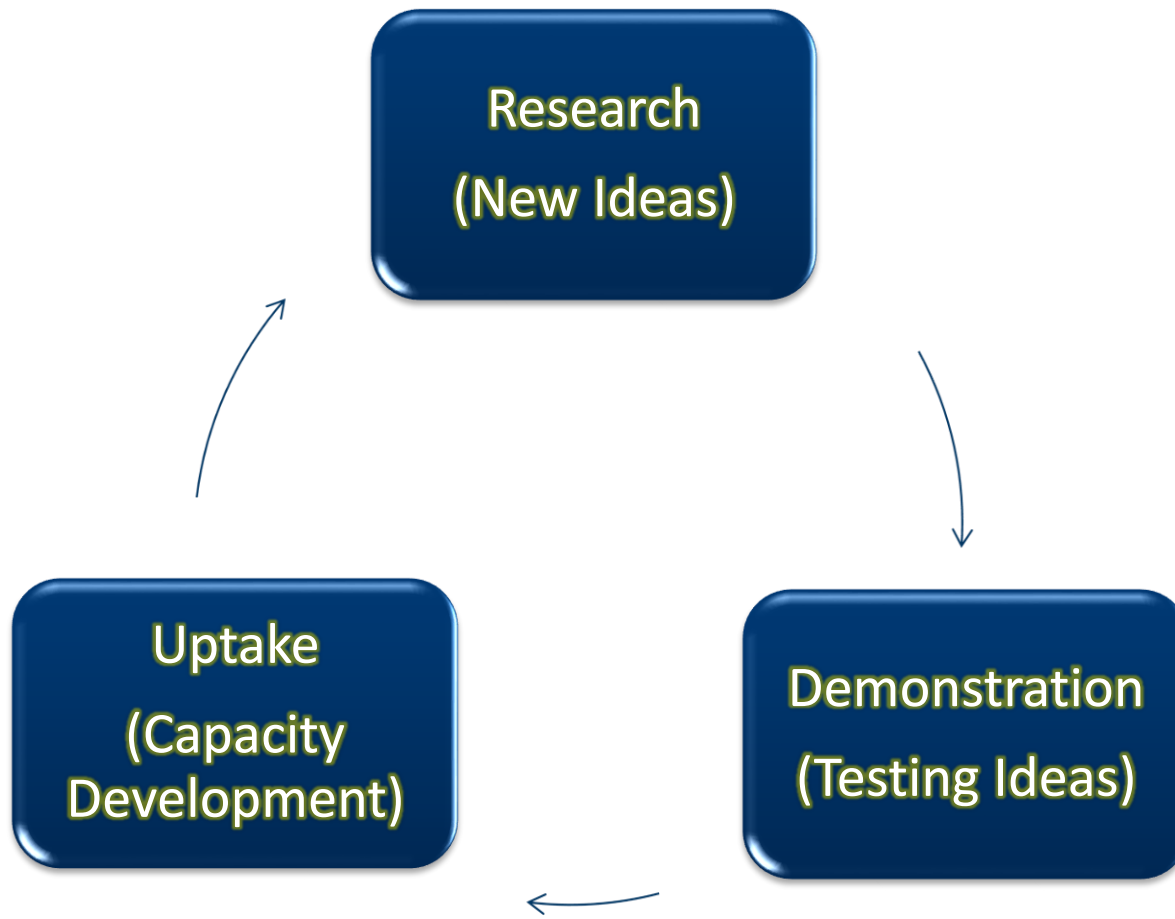
- Through the Partnership for Sustainable Low-Carbon Transport (SloCat)
  - Influencing SDG deliberations at multi-lateral level (in the formulation process, as well as implementation)
  - Raising awareness about Rural transport and LVR with multi-lateral institutions
  - Global Dialogue Process on Rural Transport

# 1. Introduction (continued)

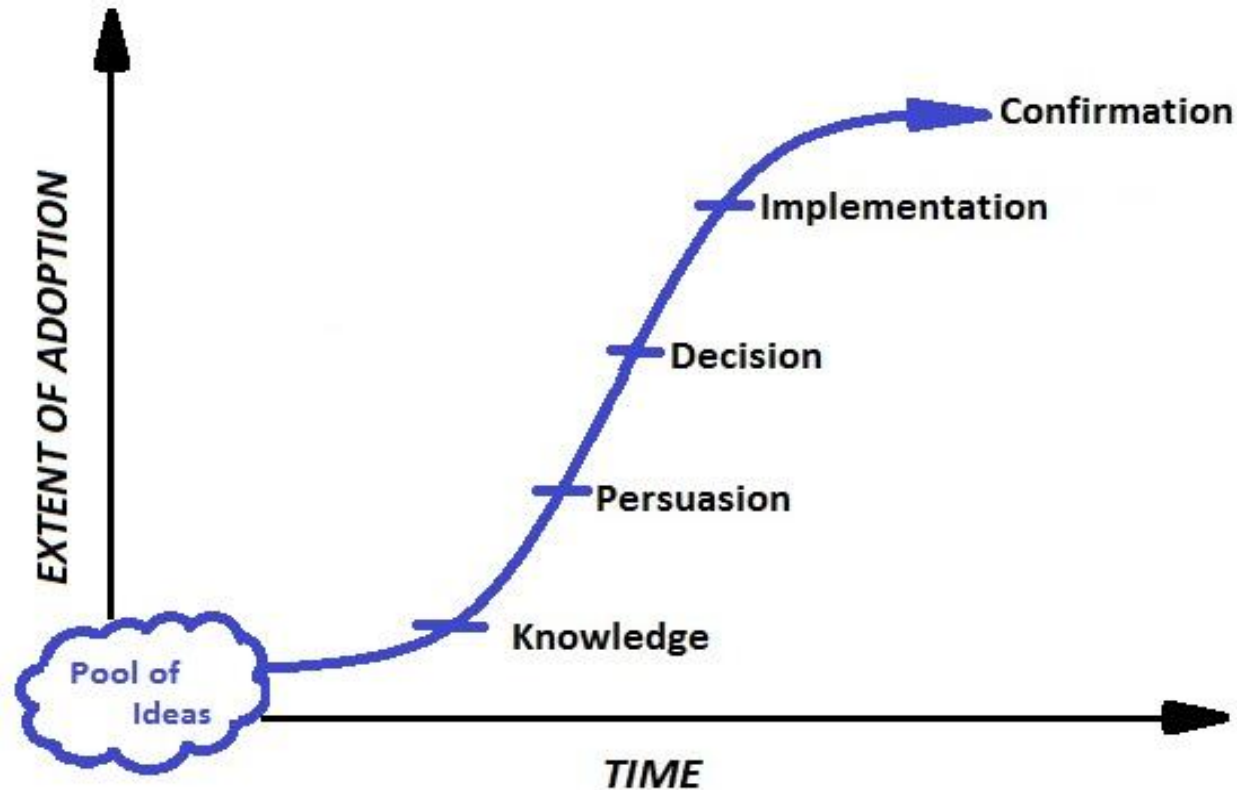
Paper describes how AFCAP 1:

- Contributed to new knowledge in cost-effective provision of LVR
- Enabled uptake of knowledge across 7 participating countries
- Demonstrated the value of research,
- Raised profile of rural road research
- Laid the foundation for institutionalisation of research and knowledge management

## 2. AFCAP Theory of Change



# Stages in uptake of innovations



S-Curve illustrating phases of adoption of innovation (adapted from Rogers, 1983)



### 3. Description of Programme

- Comprises a portfolio of research, demonstration, advisory and training projects
- Building on a considerable body of research established over several decades in Africa on construction and maintenance of rural roads
- Core participating countries: Ethiopia, Kenya, Tanzania, Malawi, S Sudan, DRC, Mozambique
- Research projects were also carried out in South Africa, Zambia, Ghana and Nigeria

### 3. Description of Programme (cont)

- Main beneficiaries are rural communities

Benefits include:

- safer and more reliable road transport;
- easier access to social services and employment opportunities;
- efficient transport services leading to lower costs of transport
- Paving low traffic rural roads has led to reduced dust, reduced maintenance burden and greater resilience to the effects of climate change

## 4. Research Projects - General

Successful outcomes of AFCAP 1 have been attributed to:

- Demand-driven process of identification, prioritisation and implementation of projects
- Dissemination of outputs, training, knowledge sharing of existing and new knowledge
- Ownership by road authorities, consolidated by financial contributions by partner governments, strong institutional support of programmes

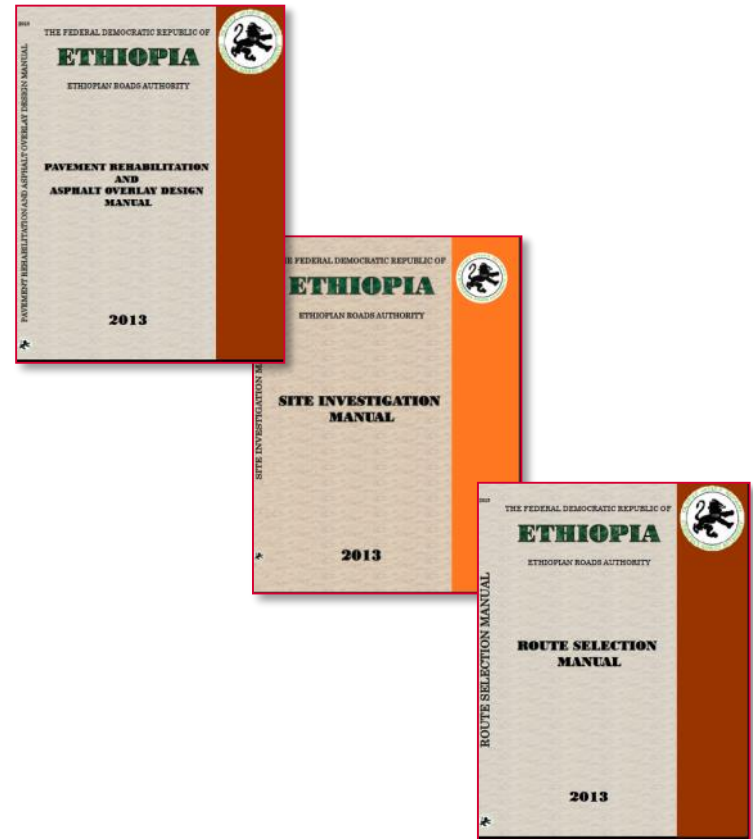
## 4. Typical Research Projects

- Construction of research and demonstration road sections that utilise alternative pavement design standards and surfacing
- Back-analysis of the performance of LVSR that were constructed in the past to unconventional design standards
- Preparation of new peer-reviewed manuals and specifications that promote best practice
- Support to the development of national research centres for the rural transport sector
- Conferences, workshops and study visits to facilitate knowledge sharing and dissemination

## 4. Research Projects – Example 1

### *Ethiopia – Support to URRAP*

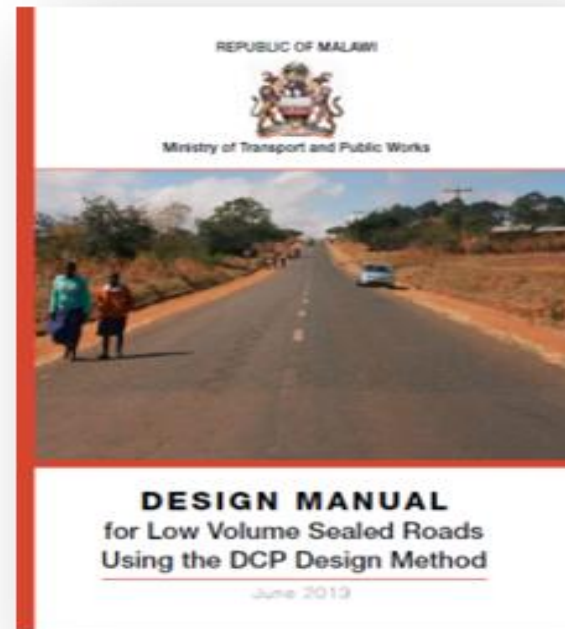
- 5-year US\$1billion programme to link sub-district centres with district centres with improved all-weather roads
- Total network over 70,000km of roads to be improved to new and appropriate design standards
- **AFCAP contribution - development of a suite of manuals for design and maintenance of these low volume roads.**



## 4. Research Projects – Example 2

*Malawi – New Pavement Design Manual for LVR (DCP-DN)*

- In 2009 and 2010 a Performance Review was undertaken by AFCAP of a selection of the roads built by the Malawi RA using their “low cost sealed road” design standards
- A new manual for the design of LVSRs in Malawi was prepared under AFCAP and published in September 2013



## 4. Research Projects – Example 3

### *Mozambique: Experimental sections*

- Research focussed on development of design solutions for upper pavement layers (road base) and wearing course, and surfacings/seals using locally-available materials.
- These materials include silty sand, cohesionless sand, plastic calcrete with low aggregate strength, laterites with high Pls, clay as well as black cotton soils.



## 4. Research Projects – Example 3

### *Mozambique: Experimental sections*

Research objectives included:

- Developing appropriate designs for non-standard materials which were locally available
- Developing designs which led to reduction in costs
- Developing work methods which were appropriate for the non-standard materials

**Outcome:** Improved specifications and work methods for different surfacing options now included in the revised Manual on Work Methods and Specifications.



## 5. Development of Local Research Capacity

### *AFCAP Exit Strategy*

- enhance capacity in participating countries to undertake their own research in the road transport sector.
- assist countries to improve the management of their own knowledge base
- Adopt appropriate institutional models for each country:

*Mozambique – initially setting up RRC within Roads Authority*

*Kenya – existing RRC under the Ministry of Transport & Infrastructure*

*Tanzania – RRC falls under PMO-RALG*

*Ethiopia – semi-autonomous RRC under Roads Authority*

## 6. Summary of Standards Developed & Applied

Ethiopia	Suite of design manuals, specifications applied on URRAP
Malawi	DCP design manual used to design 60km of LVSR on WB project
Tanzania	Tanzania LVR design manual incorporating findings from trial and demonstration sections
South Sudan	Ethiopia LVR manuals used as basis to develop SS manuals. Applied on all rural road programmes in the country
Kenya	Training in the DCP design method was conducted for road agencies staff. Wider application of approach expected.
Mozambique	Existing Manual on Work Norms and Specifications for LVRs was updated to include some of the latest research findings.

## 7. Conclusions

- The demand-led and participatory approach adopted by AFCAP has fostered buy-in and support from high levels in participating countries.
- AFCAP research on the use of naturally occurring materials in the upper pavement layers of low volume sealed roads has built on previous research initiatives in Africa, as well as international best practice.
- Research has focussed on the classification of materials found abundantly in Africa including sands, calcrete and laterite, and their application in LVSR
- Research on alternative road surfacings has sought solutions that are most appropriate to local conditions.

## 7. Conclusions

- The demonstration of innovative standards for LVRs has been an important step in achieving wider acceptance of the new approaches.
- The reduced construction costs of LVRs as a result of a more optimal design approach will allow governments and road agencies to more effectively meet the demand for LVSR.
- Consistent and systematic uptake of the research findings depends on their embedment in national standards and specifications.



## Thank you

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*UNESCO Africa Engineering Week, 14 – 19 September 2015, Victoria Falls, Zimbabwe*