

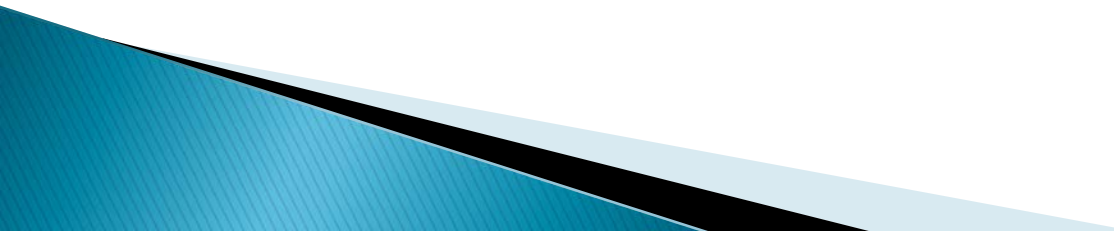
**REGIONAL SEMINAR TO UPDATE STAKEHOLDERS IN
WEST AFRICA ON THE OUTPUT OF THE AFRICA ACCESS
PROGRAMME (AFCAP)**

DEVELOPMENT IN THE PROVISION OF RURAL ACCESS IN GHANA

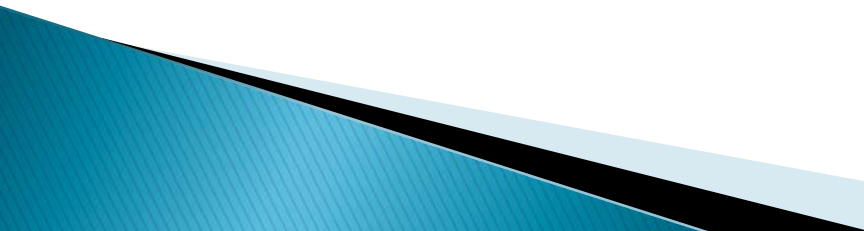
**DEPT. OF FEEDER
ROADS, GHANA**

29th May 2014

Outline of Presentation

- Introduction
 - Road Network
 - Research and Development
 - Challenges and the Way Forward
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INTRODUCTION

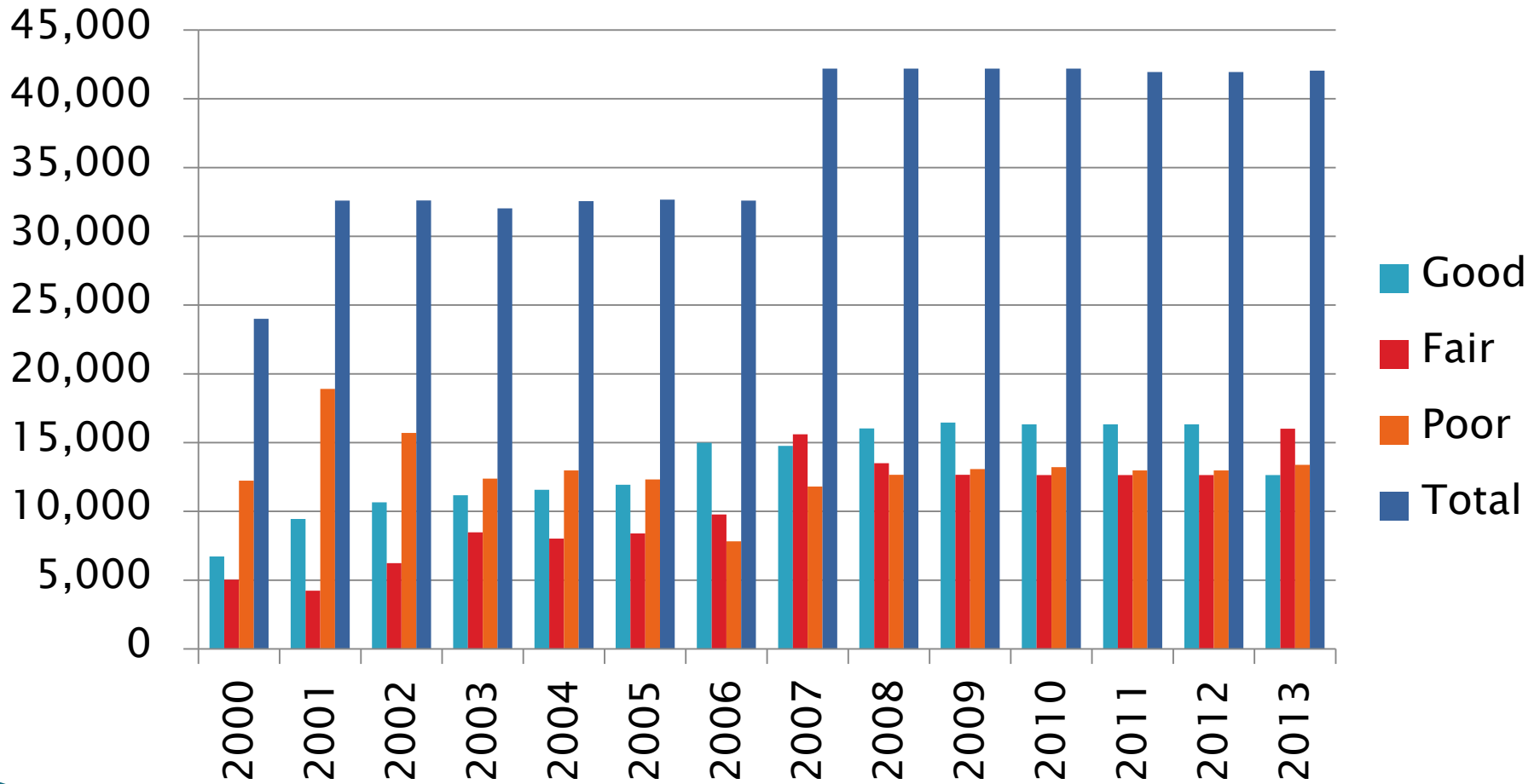
- ▶ The Department of Feeder Roads (DFR) was established in 1981 and is the agency of the Government of Ghana responsible for the planning, development and maintenance of all feeder roads in Ghana.
 - ▶ It thus follows that DFR is the main agency of the government of Ghana tasked with the development and provision of rural access in Ghana.
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ROAD NETWORK AND CONDITION

DFR NETWORK PORTFOLIO FROM 2000 – 2013

Year	Good	Fair	Poor	Total
2000	6,720	5,040	12,239	23,999
2001	9,453	4,238	18,906	32,597
2002	10,662	6,240	15,706	32,608
2003	11,174	8,475	12,386	32,035
2004	11,568	8,018	12,974	32,560
2005	11,941	8,397	12,324	32,662
2006	14,996	9,780	7,824	32,600
2007	14,766	15,609	11,813	42,188
2008	16,032	13,500	12,657	42,189
2009	16,454	12,657	13,078	42,189
2010	16,334	12,637	13,219	42,190
2011	16,334	12,637	12,976	41,947
2012	16,334	12,637	12,976	41,947
2013	12,640	16,017	13,388	42,046

DFR NETWORK PORTFOLIO FROM 2000 - 2013



Condition Mix As at Dec. 2013- Entire Network

Condition	Percentage (%)
Good	30
Fair	38
Poor	32
Total	100

Network by Surface Type as at Dec. 2013

Surface Type	Length (km)	Percentage (%)
Bituminous	1,927.78	4
Gravel	27,231.20	65
Earth	12,886.20	31
Total	42,045.18	100

Network by Engineering Class

Engineering Class	Length (Km)	Percentage (%)
Engineered	25,930.65	62
Partially Eng.	6,206.72	15
Un-Engineered	9,934.42	23
Total	42,045.18	100

RESEARCH AND DEVELOPMENT (R&D)

- ▶ DFR is actively engaged with partners and collaborators in R&D with the objective of
 - uncovering new knowledge,
 - materials and
 - technical methods and processes.
- ▶ This is to improve upon the status quo in the planning, development and maintenance of more durable, cost effective and sustainable feeder roads infrastructure in Ghana.

Recent R&D Activities of DFR

SN	Partner/Collaborator	Research Brief	Remarks
1	Kwame Nkrumah University of Science and Technology, Kumasi, Ghana.	<p>-Three surfaces were studied - conventional Chip seal surface, Otta seal surfacing using crushed rock aggregate and Otta seal surfacing using natural gravel.</p> <p>-The objective of this research is to compare the performance and cost of feeder roads constructed with chip seal with that constructed with Otta seal surfacing and to investigate how the performance varies with factors such as gradation of aggregates and bitumen spray rate. The study also considers the potential for labour-based technology application.</p>	-Monitoring is currently underway for the outcome of this research.

OTTA SEAL APPLICATION



Excavating gravel from borrow pit to screening yard



Spreading out gravel to dry at screening yard prior to screening



Screening of gravel with a mechanical screen



Screening removes fines and oversized particles

OTTA SEAL APPLICATION



OTTA SEAL APPLICATION



Spraying of hot AC-10 bitumen



Spreading screened gravel from a rear-end chip spreader



Compaction with one pass of a 12 ton steel roller



Followed by 12 - 15 passes of a pneumatic roller

OTTA SEAL APPLICATION



OTTA SEAL APPLICATION



Otta seal at 26 weeks

Recent R&D Activities of DFR

SN	Partner/Collaborator	Research Brief	Remarks
2	White Knight Technologies (Gh) Ltd., Accra, Ghana.	<p>-Chemical stabilization using Landlock chemicals to stabilize road pavements, prevent erosion, suppress dust making for relatively more durable, sustainable, cost effective and environmentally friendlier roads.</p>	<p>-A pilot deployment of this technology on 67m of a feeder road in Greater Accra Region of Ghana was successful. It was however reported that “more pragmatic, efficient and time saving ways of administering the chemical” needed to be explored.</p> <p>-Further deployment of the technology on a 2km road on a trial contract Greater Accra Region of Ghana was unsuccessful.</p> <p>-Failure during the trial contract attributed to excessive delay in the application of the chemical.</p> <p>-Plans are underway for a second trial.</p>

Recent R&D Activities of DFR

SN	Partner / Collaborator	Research Brief	Remarks
3	JICA/Prof. Makoto Kimura	<ul style="list-style-type: none">-Using Dou – Nou Technology to carry out Spot Improvement on Un-engineered Feeder Roads- Do-Nou is bag filled with adequate specified inner materials at adequate volume. The open-end is tied with twine.- Main application is to improve swampy/muddy spots on the target roads to keep passability of the road throughout the year.- The spot improvement with Do-Nou Method is to be conducted with Labour-Based Technology..	<ul style="list-style-type: none">-Preparations are underway to undertake another pilot project in a wetted region in Ghana.

DOU-NOU TECHNOLOGY



Before Work



Excavation



Installation



Compaction

DOU-NOU TECHNOLOGY



Recent R&D Activities of DFR

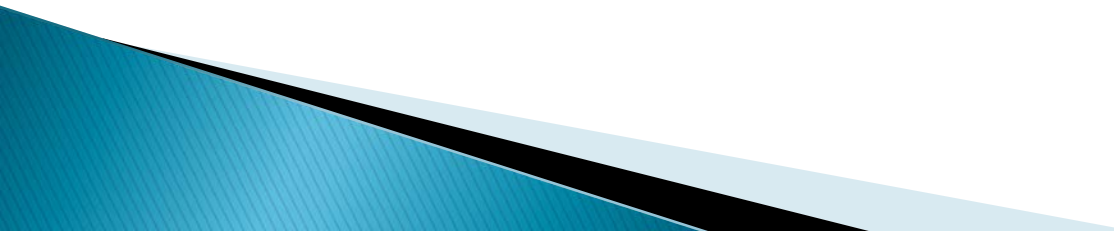
SN	Partner/Collaborator	Research Brief	Remarks
4	DFR Bridge Development Programme	-Mechanical stabilization of material for backfilling bridge abutments to enhance soil strength and stability by getting the right mix of hard well graded non-cohesive sand and gravel held together by the right amount of clayey cohesive material.	-This approach is in use on all DFR Bridge projects for fill works around abutments of steel bridges constructed.

CHALLENGES AND THE WAY FORWARD

Challenges

- ▶ Increasing size of network
- ▶ Multiplicity of rural roads development by other sectors which affects sustenance of maintenance efforts, standards and synergy
- ▶ Limited research initiates for further improvements
- ▶ Inadequate funding for research
- ▶ Difficulty in transferring research to practise

The Way Forward

- ▶ Reclassification to assign network management jurisdiction to road agency level and MMDAs level
 - ▶ There is the need to standardized rural roads jurisdiction
 - ▶ Research and Development should receive adequate funding
 - ▶ Need to implement research
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Thank you

