Assisting the development of the road sector in Uganda

CrossRoads – five years of progress

CrossRoads
Supporting the national road construction industry
Our Vision is to “create a sustainable market system that will encourage both public and private sector actors to develop a more efficient and competitive road construction and maintenance industry in Uganda.”
Contents

Contents ..............................................................................................................................................1
Foreword .............................................................................................................................................2
About this report ..............................................................................................................................3
1. Using market systems to understand the road sector .................................................................4
   Understanding Uganda’s road sector .............................................................................................4
2. Changing the dynamics of Uganda’s road sector ........................................................................6
   Policy research, analysis and advocacy .......................................................................................6
   Approaches used ............................................................................................................................6
   Main achievements and impacts .................................................................................................7
3. Improving access to finance .......................................................................................................12
   Building bridges to financial institutions: the Construction Guarantee Fund .........................12
   Supporting equipment leasing ....................................................................................................14
   Long-term maintenance contracts ..............................................................................................15
4. Making better use of plant and equipment ...............................................................................16
   Training Uganda’s plant operators .............................................................................................16
   Understanding the status of MoWT equipment .........................................................................18
   Developing an equipment management system manual .............................................................18
5. Building capacity in the road sector .........................................................................................22
   Supporting DIT to develop vocational qualifications ...............................................................22
   Certifying vocational skills ........................................................................................................23
   Training road contractors in finance and business management ..............................................25
   Making a national association an industry leader ....................................................................26
   Introducing international standards for consulting engineers .................................................27
   Developing the practical training of graduate engineers .........................................................28
6. Sponsoring research and innovation .........................................................................................30
   Why was CrossRoads undertaking research? ............................................................................30
   Why encourage innovation? .......................................................................................................30
   The CrossRoads Challenge Fund ..............................................................................................30
7. Leaving a continuing legacy ......................................................................................................34
   Training contractors in finance and business management ......................................................34
   Teaching children how to stay safe on the roads .....................................................................35
   Leaving simulators and real plant for sustainable training ......................................................35
   Identifying human resources’ requirements ..............................................................................35
8. Resources .....................................................................................................................................36
Foreword

As CrossRoads draws to a close, the Secretariat is very keen to see its work continue to have an impact long into the future. This desire to have as much effect as possible is a major reason for producing this report. It not only gives an overview of what CrossRoads has achieved, but also ensures that stakeholders will still have easy access to our key documents after our office has closed.

CrossRoads was managed by a Secretariat from IMC Worldwide. As Team Leader, I believe that CrossRoads’ outputs, such as its training courses, its Guarantee Fund, its research and the work we’ve done to change government thinking about the importance of local contractors have contributed strongly to changing key behaviours in Uganda’s road market.

Though no one programme can claim full credit for the positive changes that have been seen in Uganda’s road sector over the past five years, it is no coincidence that since CrossRoads began its work the confidence of financial institutions in the road sector has increased. The average cost of constructing a kilometre of road to bitumen standard has decreased by UGX 1 billion (USD 293,000), and the Uganda National Roads Authority is awarding long-term (three years) maintenance contracts.

In terms of the lifecycle of road planning, design, construction and maintenance, CrossRoads’ five year life span has been very short. So, we have to recognise that we are not going to be able to record all the impacts that the Programme has created. However, the team is proud of what we have achieved to date, while working with the country’s contractors, consultants, government ministries and departments, and civil society.

CrossRoads had two main aims: to help improve the quality of Uganda’s road network and to help improve the efficiency of the Government of Uganda’s spending on roads. The Government of Uganda demonstrated its commitment to reform, by increasing expenditure on roads, passing new policy on the construction sector, and several other measures. Working together I think we achieved some really strong impacts, with the road sector in a much better position to attract the investment needed to improve the country’s road network.

I am confident that CrossRoads will continue to yield results well into the future, bringing benefit to Uganda, its industry and population.

David Entwistle
(December 2015)
About this report

**Section 1** summarises the approach the Secretariat has taken with CrossRoads, bringing a new understanding of the road sector in Uganda, eliminating some of the myths surrounding plant and equipment around the country, and highlighting the major issues that the road sector faces. The finding that Uganda actually has enough plant and equipment allowed us to focus on increasing the availability, use and efficiency of the plant and equipment already available in the country.

**Section 2** looks at the dynamics of the road sector and the success of CrossRoads in changing the behaviour of market actors. After adopting the market systems approach, policy research, analysis and advocacy were used to transform behaviour and practices, resulting in, among other impacts, increasing the availability of information on road sector issues, raising the brand and profile of the Roads Industry Council (RIC) and improving monitoring and evaluation (M&E) in the road sector.

**Section 3** describes how access to finance has improved, by establishing the CrossRoads Construction Guarantee Fund, to build trust between contractors and financing institutions. This Fund made it easier for Uganda’s small- and medium-sized road contractors and consultants to access the financial guarantees that they needed to capture work. Another key legacy was to improve contractors’ access to equipment by supporting finance leases so that contractors can acquire expensive equipment without having to take out loans.

**Section 4** details the approach taken to improve the use of plant and equipment. Uganda lacks the skilled personnel needed to operate plant and equipment efficiently, so long-term training systems were set up to leave a sustainable solution to the need for operator training. A detailed review of the holdings of the Ministry of Works and Transport showed that a considerable part of the Ministry’s equipment is not being used effectively, because of mechanical failure and ineffective operators. Addressing this should be an important focus for the Ministry in the future.

**Section 5** looks at the work CrossRoads did to build capacity in the road sector. CrossRoads worked with the Directorate of Industrial Training to develop vocational training opportunities, worked to strengthen the Uganda National Association of Building and Civil Engineering Contractors and helped train consulting engineers to international standards. CrossRoads also started training contractors running smaller enterprises in the skills they need to operate in a competitive commercial environment.

**Section 6** shows how CrossRoads-funded research contributed to the growth of the transport sector, reducing construction costs, improving road safety, generating jobs and empowering poor communities. A series of case studies detailed in this section illustrates the success of the CrossRoads Challenge Fund that was established to help drive innovation in the Ugandan market.

**Section 7** illustrates the lasting legacy in Uganda’s road sector. At the end of five years of work with partners, each area of focus has created measurable changes in Uganda’s road sector. Examples range from making it easier for contractors to arrange the finance that they need, to capture new contracts to the development and testing of new road building techniques relevant to Uganda.

**Section 8** describes the resources on the CD. Crossroads has produced a large volume of useful documents that range from reports to training manuals, and from issues briefs to policy reviews. These are likely to remain useful for years to come, and CrossRoads is keen to ensure that they are available for future use. The most useful reports and documents are gathered onto an interactive CD distributed with this report, which provides the ability to access and search the full report.
1. Using market systems to understand the road sector

Over the last five years CrossRoads has been working to develop a more competitive and sustainable road construction and maintenance industry in Uganda. Work focused on increasing the private sector’s ability to provide road maintenance and construction services, and on improving the way that work is procured and managed by government departments. In both cases the focus of the work has been on capacity building taking a market systems approach. Our vision was to create a market system that provides strong incentives for stakeholders and businesses to tackle the underlying causes of market inefficiencies.

CrossRoads treats Uganda’s road sector as an ‘arena controlled by supply and demand’. In simple terms, improving the demand for high-quality road-related services, and the ability of local contractors to meet those demands, should ultimately set Uganda’s road market on an upward spiral through the forces of market competition. In this scenario, government demands for quality and on-time delivery would increase, contractors’ skills would improve and costs would remain competitive, but fair to support this balance.

Understanding Uganda’s road sector

For the CrossRoads approach to really work, the team needed a clear and accurate understanding of the road sector in Uganda and the problems it faced. So, early on, the team made some major surveys to understand how much equipment the contractors, the Ministry of Works and Transport (MoWT) and the Uganda National Roads Authority (UNRA) actually held. Initiatives such as a Road Users’ Satisfaction Survey (RUSS) then helped visualise the everyday needs of road users in the country. The needs of other stakeholders (such as contractors and policy makers) were also explored through a range of face-to-face meetings, with different specialists focusing on different areas (such as finance, capacity building and equipment).

Exploding myths around plant and equipment

When CrossRoads began its work in Uganda, the team was wary of accepting at face value certain key assertions that had been guiding the development of the country’s road sector for years. Probably the most important of these was the strongly held belief that there was not enough equipment in the country to construct and maintain its roads. Proving categorically whether or not this was correct would be key to many of the approaches that CrossRoads would take, as the conviction guided a range of road-related policies in the country.

In 2012–2013, therefore, CrossRoads conducted a countrywide survey of plant and equipment. This covered 741 private contractors and 22 UNRA and MoWT stations. This was the first survey of its kind ever run in Uganda and would prove a lynchpin for much of CrossRoads’ future development. Why? Because its results proved definitively that the belief that Uganda’s road sector did not have enough machinery was incorrect – there was indeed enough plant and equipment to service the country’s roads industry. The way that the road equipment was being used was the problem that had to be solved.

In fact, the major issues affecting road construction and maintenance were not inadequate equipment but lack of:

- Coordination and cooperation between contractors
- The skills needed to operate and maintain the equipment
- Plant hire companies to provide sufficient flexibility for tendering for larger contracts
- Cost effective financial credit to enable growth and investment
- Consistent payment by the main customer (UNRA and the MoWT).

“results proved definitively that the belief that Uganda’s road sector did not have enough machinery was incorrect – there was indeed enough plant and equipment to service the country’s roads industry”
It was also contended that there were not enough national contractors to carry out all of the road work, hence the need for the continued use of force account and the use of international contractors for the larger rehabilitation and upgrading work. CrossRoads collected data countrywide from all contractors and consultants who claimed to either be active or to have worked on roads contracts in the last three years. The data, in addition to full contact details, included information about annual turnover, numbers of skilled people employed, equipment holdings, association membership, etc. Skills shortages and the constraints contractors faced were also provided.

Almost 850 national contractors and more than 20 national consultants stated they had been recently active on road contracts. While the numerical majority of the contractors were small enterprises which had worked mainly at local government level, the evidence demonstrated that there was indeed a sufficient number of contractors to satisfy the demands for road works. One of their main constraints was insufficient road contracts being let to be able to sustain specialisation in road work; so they had to survive by carrying out other activities.

The discovery that Uganda actually already has enough road equipment and sufficient numbers of contractors willing to service the sector had a range of impacts on the approach taken by CrossRoads. The focus of the key work streams shifted slightly to better reflect realities on the ground. By the end of the first 12 months it was clear that CrossRoads’ six main areas of focus should be:

1. Advocacy
2. Increased access to finance
3. Improved use of plant and equipment
4. Training of stakeholders
5. Capacity development of institutions
6. Research and innovation.
2. Changing the dynamics of Uganda’s road sector

After adopting a market systems approach, policy research, analysis and advocacy were used to transform behaviour and practices, resulting in, among other impacts, increasing the availability of information on road sector issues, raising the brand and profile of the RIC and improving M&E in the road sector.

Policy research, analysis and advocacy

The market systems approach was used to design and deliver the CrossRoads Programme. Under this approach, changing the behaviour of market actors is achieved through interventions that tackle dysfunctions in three pillars of the market, namely:

> The policy environment
> The relationships and linkages between and among market actors
> The skills and inputs required by market actors to perform their roles effectively and efficiently.

Policy research, analysis and advocacy are how the first pillar was addressed to bring about the required transformation in the behaviour and practices of market actors in the road sector.

The Secretariat established the Roads Industry Council to have oversight of the Programme’s interventions. In 2013, the Secretariat and RIC identified more than 30 policy issues that hindered the development and growth of a competitive and private sector driven roads industry in Uganda. Following a detailed brainstorming process, the Secretariat and RIC decided, for pragmatic reasons, to focus on seven issues for policy lobbying and advocacy. These were:

1. Increasing the budget allocated to road maintenance
2. Improving the interim management of force account
3. Facilitating citizen awareness and engagement in road sector delivery issues
4. Reducing the operating space for briefcase contractors
5. Improving accountability incentives with specific focus on contract supervision
6. Influencing decision makers to improve planning, procurement and supervision processes
7. Providing information to improve private sector confidence in demand-side planning, procurement and supervision.

‘Briefcase’ contractors are people who bid for work and win it, but do not have the necessary expertise to complete it.

They underline the need to improve registration of contractors to keep better control of those who work for the government.

Approaches used

The underlying approach used to carry out advocacy consisted of the following steps:

1. Commissioning detailed research to gather the evidence (facts and statistics) on how a particular policy hindered the development and growth of a competitive private sector driven industry
2. Summarising the research findings and results to produce policy briefs on the issues
3. Publishing the policy briefs in the local press to raise public awareness on the issues
4. RIC using the policy briefs to engage targeted policy makers and influential market actors in policy dialogue in order to influence reform
5. Building the capacity of civil society (Civil Society Coalition on Transport) to carry out policy research and analysis, raising public awareness and facilitating citizen engagement in road sector delivery issues.

The Roads Industry Council (RIC) was established in September 2011. Members of RIC were identified by the Secretariat, approved by DFID and appointed by the Minister of Works and Transport. RIC provided advice and oversight to the Secretariat, reviewed and approved CrossRoads’ Intervention Proposals and carried out advocacy on issues constraining the development and growth of a competitive and private sector led roads industry in Uganda.
Main achievements and impacts

Raising RIC’s brand and profile

Building RIC’s brand and profile involved setting up a website (www.ric-uganda.com) and facilitating policy dialogues between RIC and targeted policy makers that included the MoWT, the Prime Minister, Parliament’s Physical Infrastructure Committee and senior officials at UNRA and the Ministry of Education. RIC also made presentations at the annual Joint Transport Sector Reviews, highlighting policy analysis findings and recommendations.

“RIC is now well known as an important player in policy research and analysis in the road sector”

RIC is now well known as an important player in policy research and analysis in the road sector. The MoWT has commended RIC on various occasions on the high-quality information and advice contained in the policy briefs. The Minister has urged RIC to continue to provide policy advice to MoWT after CrossRoads. Work is in progress to develop a strategy to enable RIC (supported by a small Secretariat) to continue its policy advisory role after CrossRoads.

Producing influential policy briefs

Seven policy briefs have been produced and widely publicised in the local press to raise awareness. They have also been used by RIC to engage targeted policy makers.

Some positive policy changes have taken place thanks to the advocacy work carried out by CrossRoads in conjunction with other players in the sector. For instance, the road maintenance budget has increased from about UGX 180 billion (USD 72 million) in 2011–2012 to UGX 450 billion (USD 151 million) in 2014–2015, more than doubling over the four year period.

MoWT has taken CrossRoads’ advice to register and classify contractors to create a competitive private sector driven local industry. The registration and classification is continuing.

“the road maintenance budget has increased from about UGX 180 billion (USD 72 million) in 2011–2012 to UGX 450 billion (USD 151 million) in 2014–2015, more than doubling over the four year period”
Energising a Civil Society Coalition on Transport

About 25 non-governmental and civil society organisations working in the road sector have come together and set up the Civil Society Coalition on Transport (CISCOT). The coalition is leading efforts on raising public awareness and citizen engagement in delivery issues in the road sector.

The coalition produces annual M&E reports highlighting successes and challenges encountered in the delivery of road contracts. The coalition has also facilitated the establishment of citizen think tanks in Kampala, Wakiso, Iganga and Mbale. The think tanks provide a platform for citizens to engage local authorities in the identification and implementation of actions to address road delivery challenges in their localities. CISCOT is fundraising to be able to continue with advocacy work in the road sector after CrossRoads.

Making lasting resources more available

As large amounts of material have been produced that are relevant to road development programmes in Uganda, the Secretariat set up the RIC Resource Centre in 2014 to provide a one stop, easy to access information centre. Interested users in the road sector – researchers, policy makers, employers, etc. – are able to quickly identify and use the information they require. The Resource Centre provides information on a wide range of issues that include road sector policies and strategies, funding, economics and procurement, governance and audit, road safety, low-cost road sealing technologies, labour-based road works and CrossRoads reports.

The Resource Centre provides a long-lasting legacy of knowledge from the roads development sector, which can be easily cross referenced and used by government departments, programmes and civil society organisations to push their own work forward without repeating work that has already been done. It provides a wealth of information, knowledge, experience, insight, ideas and tools relating to the road sector.

This long-lasting information legacy will continue to benefit the roads industry to gain insights into the changes taking place in the Ugandan road sector initiated by CrossRoads, RIC, their partners and other organisations involved in roads development.

Registering and classifying contractors

Work on developing a Contractors’ Registration and Classification System (CRCS) is in progress. The production of the CRCS (manual and architecture) is expected to be completed by the end of October 2015. This will be followed by the actual registration and classification of contractors and the validation and updating of information in subsequent years.

Once operational, the CRCS will speed up and make procurement more transparent and significantly shrink the space for ‘briefcase contractors’ to operate. Ultimately, this will deliver value for money for the funds spent on road construction and maintenance.

A database of contractors, which contains data on contractors working in the road sector, was produced to provide accurate information to employers on the capacity available in the sector. The database is being used to facilitate the current work on registration and classification of contractors.

Surveying road user satisfaction

Road managers and politicians need to be seen to be maintaining or improving the service levels of roads, but they also need to know how they are faring in the eyes of their customers. CrossRoads initiated an annual Road User Satisfaction Survey to provide a means for consistent and rigorous monitoring of the road sector. The survey enables policy makers and other actors in the sector to get answers and insight on many road-
related issues. Probably the two most fundamental issues are, firstly, road users’ views on the condition of the national road network and, secondly, the services provided by the designated road agencies, principally UNRA, Kampala Capital City Authority (KCCA) and the district local governments. A sample of road users (representing six road user categories) is interviewed each year across the country. About 2,880 interviews are carried out at 72 randomly selected locations on roads of all classes, ownership and surface type.

The results have been collated and presented in an online platform. The software allows users to choose any of the 57 questions asked during field data collection and get a summary of the answers provided by the road users interviewed. Four surveys have so far been carried out (2012–2015) and users are able to see emerging trends in terms of changes in the condition of the road network and the services provided by the designated road agencies.

The results yield interesting and useful data. Since 2012, there has been a steady improvement in user satisfaction with UNRA roads (Figure 1), compared to KCCA and District, Urban and Community Access Road (DUCAR) Agency roads, but less than 30% of people interviewed attributed this to UNRA.

The perception of the general road surface condition is showing a general, but not remarkable, positive trend for both UNRA and DUCAR Agency maintained roads. UNRA roads consistently win greater approval (Figure 2).

“RUSS has been widely acknowledged as an effective and rigorous M&E tool in the road sector”

The RUSS has been widely acknowledged as an effective and rigorous M&E tool in the road sector. The Uganda Road Fund will take over and continue to implement future surveys starting in 2016. How the results are used depends on the recipient. Those in road management will know what people are thinking about the organisation’s performance, with some pointers on how to improve. Politicians will understand what road users are wanting to see in their constituency and influence funding accordingly. Road users with concerns about particular aspects of roads, such as road capacity or road safety, can use RUSS data rather than anecdotes to support lobbying efforts with the relevant authorities. The RUSS data can also guide the priorities of policy makers.

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1 Both network rating and satisfaction with agency performance are based on a scale of 1–4 where 1 is ‘very dissatisfied’ and 4 is ‘very satisfied’.
Increasing private sector confidence in planning, procurement and supervision

Two interventions were implemented to improve private sector confidence in planning and procurement. The first was the Independent Parallel Bid Evaluation (IPBE) implemented by Crown Agents. The second was Support to UNRA in Procurement of Road Works and Services implemented by Adam Smith International.

The IPBE’s key achievement has been to reduce the number of administrative reviews\(^6\) in which the original decision is overturned from seven in 2010–2011 to zero in 2014–2015. Contractors interviewed during an impact assessment in April 2015 said their confidence in the transparency and fairness of procurement processes has increased significantly since the start of the IPBE.

The MoWT has acknowledged the positive contribution made by the IPBE in tackling corruption in road sector procurement. Consequently, MoWT has decided to extend IPBE to road maintenance contracts. Implementation will commence in fiscal year 2015–2016. MoWT is also recommending that IPBE be extended to other ministries and departments.

Support provided to UNRA on the procuring of road works and services has included the production of a manual that addresses the unique procurement requirements of UNRA. Procurement and Disposal Unit staff have been trained in the provisions of the manual. The manual still awaits accreditation from the government’s Public Procurement and Disposal Authority to enable UNRA to use it. The impact of the manual will be assessed once UNRA starts using it to guide its procurement activities.

Benefits of a roads industry development strategy

There are too many small contractors in the road sector compared to the funding available. Research carried out by CrossRoads showed that there are about 800 road contractors in Uganda competing for work each year. A later study estimated that the current budget allocated to road works (about USD 714 million in 2015–2016) and budget projections up to 2018 can only provide consistent work each year for less than 200 contractors.

“CrossRoads/RIC has advised MoWT... by preparing and implementing a roads industry development strategy”

A strong and competitive private sector driven roads industry can only emerge if the Government of Uganda takes deliberate and targeted action to support the number of contractors consistent with the annual road development and maintenance budget. CrossRoads/RIC has advised MoWT to do this by preparing and implementing a roads industry development strategy.

Such a strategy would quantify the number and define the size (in different class categories) of contractors required. It would also define and provide targeted support to those registered and classified contractors as part of a comprehensive industrial development strategy. The recommendations have been taken up by MoWT and will be implemented between September 2015 and August 2016.

“The MoWT has acknowledged the positive contribution made by the IPBE in tackling corruption in road sector procurement”

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\(^6\) An administrative review is where an unsuccessful bidder/tenderer queries the award of the contract.
SECTION 2: CHANGING THE DYNAMICS OF UGANDA'S ROAD SECTOR
3. Improving access to finance

It is often hard for contractors and, to a lesser extent, consultants in the Ugandan roads industry to access the credit that they need to bid for work and grow their companies. CrossRoads has identified several reasons for this, and is working with various Ugandan partners to help overcome them.

**Building bridges to financial institutions: the Construction Guarantee Fund**

In the road sector, bidding for work and capturing contracts require financial backing – because bids and contracts for high value work all contain financial penalty clauses to guarantee delivery. When tendering for road rehabilitation, upgrading, maintenance, design and supervision work from UNRA and other government authorities, companies usually need to provide a performance guarantee – usually 10% of the contract sum – which can be claimed by the client if the contractor performs poorly or breaks his contract. Contractors have to get a bank to provide this guarantee and in order to do this the contractor has to provide collateral for the amount of the guarantee as banks are wary of lending to them without security.

**Encouraging dialogue between banks and contractors**

There are two main reasons for this: the contractors lack business management skills and the banks have a poor understanding of contracting work. This made bidding for and running contracts difficult for emerging companies in Uganda. Trust and communication between contractors and their financial backers is crucial to the delivery of good quality work, delivered on time, and at the budgeted price. For this reason, CrossRoads organised workshops to bring the staff of financial institutions together with employers and contractors from the road sector. The workshops have generated better mutual understanding between the parties, allowing them the chance to discuss each other’s respective needs and motivations.

**What is the Fund?**

To overcome this, in 2012 CrossRoads set up a UGX 8 billion (USD 3 million) Construction Guarantee Fund (CGF). It is a pool of money that banks can apply to when they are providing bonds and guarantees to road building companies. This improves the cash flow of the contractors, because they no longer have to use all of their own funds to secure a guarantee. The CGF also strengthens the ability of the lender institution to finance the national road construction and maintenance sector, specifically by providing performance bond guarantees, thereby stimulating economic growth, competition, profitability and cost effectiveness in the sector.

The CGF is managed by the Agri-Business Initiative (aBi) Finance on behalf of CrossRoads. This has created increased confidence and trust between contractors and financing institutions.

**How will it help?**

The initial funding was sufficient to support guarantees equal to UNRA’s annual maintenance budget. It improves the cash flow of contractors and consultants because of the better terms offered by the financial institutions that ensure they do not solely depend on their own funds to secure a bid or performance bond.

Should the contractor perform poorly, the CGF will underwrite a percentage, currently 50%, of any guarantee claimed by the employer. This has the effect of making it easier for Uganda’s small and medium-sized road contractors and consultants to access the financial guarantees that they need to capture work. At the time, this unique initiative was the only Guarantee Fund specifically focused on the road sector in the region.

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**How does the Fund work?**

The Fund covers 50% of any loss incurred by a financial institution if a contractor defaults on any agreement.

To date, there have not been any defaults, demonstrating that road contractors can be reliable clients. Initially, only performance bonds were covered, but this was extended to include bid securities and, more recently, advance payment guarantees.
Who can use the Fund?

To use the Fund, contractors have to show that they are in good standing with the Uganda Revenue Authority, and provide audited financial statements. They also have to have clean credit records and must be members of an approved association. The size of the contract is also limited, to make sure the Fund focuses on small- and medium-sized contractors. The maximum that can be guaranteed is UGX 1 or 1.2 billion (USD 293 million or USD 350 million), depending on the type of bond. Banks and insurance companies wanting to be involved also have to demonstrate an interest in supporting the road sector and to undergo due diligence with the local fund manager, aBi Finance.

Award-winning impact

In 2014 the Fund received the Research, Studies and Consulting Advisory Award at the 2014 Association for Consultancy and Engineering (ACE) Centenary Engineering Excellence Awards in the UK. The Association recognised the Fund as innovative and cost effective, and one which "is expected to stimulate economic growth, competition, profitability and cost effectiveness in the sector" and could be replicated in other countries. To date the Fund has achieved impressive impacts (see Figure 3).

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**Figure 3: Impacts of the Construction Guarantee Fund**

- **1,291** bid securities
- **123** performance bonds and
- **20** advance payment guarantees have been covered

- **1,435** guarantees valued at UGX 53.9 billion (USD 15.8 million) underwritten through the Fund

- **15** financial institutions have joined, of which **8** are very active

- **321** small-to-medium sized road contractors from all over the country have used the Fund
The Fund is now fully embedded as a trusted Ugandan facility. And, since the Fund is, as far as possible, financially self-sustaining (as it will only reduce if someone defaults), it should remain in place supporting Uganda’s road sector for the foreseeable future.

Although the Fund has not had a significant effect on bringing down interest rates for construction companies (around 24% at time of writing), it has had a profound effect on reducing collateral requirements. Contractors report that the CGF has really helped with their cash flow, enabling them to make a quicker start to contracts and get the contract payments coming faster.

The financial institutions acknowledge that the CGF has helped contractors to access guarantees, which would otherwise not have been possible. Unsecured bid securities of up to UGX 150 million are now available to contractors from 66% of the financial institutions interviewed and this has been directly attributable to the CGF. Other institutions that are not part of the scheme, e.g. Stanbic Bank, have also introduced similar terms for bid securities thereby having a positive impact on the entire sector.

### Supporting equipment leasing

Road maintenance uses heavy plant and is a cash hungry business. Quite apart from the substantial capital costs, typically over USD 250,000 per piece of equipment, a normal road maintenance operation requires thousands of dollars per day for fuel (most pieces of equipment would typically use a full passenger car’s tank of fuel every two hours of operation). If the customer does not pay on time, the plant grinds to a halt and the contractor cannot pay his/her debts.

A CrossRoads survey identified a number of distinct constraints on the contractor’s ability to grow and flourish in the road maintenance sector:

- Lack of flexibility because of a shortage of plant hire companies
- Reluctance to form strategic partnerships to tender for larger scope contracts
- High cost of credit to buy plant and equipment
- A lack of necessary resources and capital to buy plant and equipment.

UNRA’s spending on road maintenance increased from UGX 280 billion (USD 82 million) in 2012 to UGX 450 billion (USD 132 million) in 2014, an increase of 48%. It is anticipated that the level of spend on road maintenance will increase for at least the next four years. This means the requirement for good road equipment will be higher. The total replacement value for the plant and equipment fleet involved in the road maintenance sector is calculated as UGX 511 billion (USD 150 million). This illustrates the potential size of the market for leasing services.

There has been an encouraging and welcome growth in heavy plant hire over the last two years provided mainly by franchised dealerships. So, in order to provide the catalyst towards increasing contractor’s access to plant and equipment CrossRoads is extending the operation of the CGF to include leasing services. It is expected that the CrossRoads’ plant leasing intervention will provide essential further support to contractors that will assist them to buy the necessary plant and equipment to alleviate the high cost of equipment and lack of credit. This will, in the long term, make them more self-sufficient, less reliant on hiring and more able to demonstrate that they fulfil conditions necessary to bid for work.

### Advantages of leasing as a financial mechanism include:

- It is an alternative approach to financing the acquisition of business assets that avoids substantial commitment of working capital
- Leasing is asset based finance so no other collateral other than the leased equipment should be necessary
- It minimises the risk of funds being diverted to other uses because if the lessee does not make regular payments the lessor can repossess the asset
- The lessor retains legal ownership during the lease period
- It is more affordable for the lessee because terms can be from one to five years and payment schedules are easier to amend than those for loans
- Less working capital is tied up so the lessee can use more resources on contract performance
- Down payment requirements are flexible
- Approval time for lease finance is often faster than for asset loans, especially where the lessee is well known to the lessor
- It provides better access to modern technology and up to date equipment
- It broadens the range of financial products offered on the market.
Banks are being encouraged to offer this sort of product, but they may not be confident that the contractors have a reliable order book that will allow them to fulfil their lease contract. They also want to be sure that the main employer makes payments as agreed so that contractors have the anticipated cash flow.

To minimise risks to lessors and encourage the development of more leasing in Uganda, the Fund will cover half of any loss on a lease that does not go to its full term. This means the supplier or commercial bank will keep 100% of any profit made on a finance lease, but will only have to bear 50% of any loss.

The intervention is well timed because it takes place when the Government of Uganda has a draft Leasing Bill out for public consultation that will serve to provide a stronger regulatory base for leasing activity. In addition UNRA is releasing three-year ‘term’ contracts, which is making banks more confident of the contractors’ ability to fulfil their lease commitment.

“The Fund will cover half of any loss on a lease that does not go to its full term. This means the supplier or commercial bank will keep 100% of any profit made on a finance lease, but will only have to bear 50% of any loss”

**Long-term maintenance contracts**

CrossRoads cannot take full credit for UNRA recently starting to introduce term maintenance contracts. However, CrossRoads’ Private and Public Road Maintenance Sector Survey highlighted the fact that UNRA’s poor payment record was a major factor in increasing the cost of risk in the sector.

Term maintenance contracts, as recommended by CrossRoads, are a fixed cost contract for work by a contractor to provide routine maintenance of a predetermined road asset for a fixed period. The relevance of this type of contract is that term maintenance contracts provide contractors with a far more predictable source of income and cash flow and mitigate the erratic and protracted contract awarding process. In the case of UNRA these contracts will normally be for two to three years.

Term maintenance contracts encourage an environment of confidence and stability in the private sector, which in turn boosts capital investment.

**Impact of leasing**

The CGF has covered its first finance leases for two pieces of equipment, a Caterpillar tracked loader 963C and a 140H grader. However, the fall in the UGX against the USD is currently affecting the acquisition of road construction equipment under the leasing facility.

“I appreciate the role that CrossRoads has played in enabling my business to access the two pieces of road equipment. Now, I can execute the work in a far more cost effective, efficient and timely manner…..”

Mr. Wamimbi Robert – Managing Director, Rodo Contractors Limited.

Since 2013 UNRA has awarded a total of 61 term maintenance contracts to contractors. This process is continuing in 2015–2016.

The total value of term maintenance contracts for the three financial years is UGX 28.7 billion (USD 7.5 million).
4. Making better use of plant and equipment

In Uganda, there is a serious lack of the skilled personnel needed to operate plant and equipment, so long-term training systems were set up to leave a sustainable solution to the need for operator training. A detailed review of the holdings of the MoWT showed that a considerable part of the Ministry’s equipment is not being used effectively, because of mechanical failure and inefficient operators.

Training Uganda’s plant operators

Identifying the need for trained equipment operators

In 2011–2012 the CrossRoads’ equipment survey identified an acute shortage of competent plant operators in Uganda, and the lack of skill of existing plant operators. There has been a complete underinvestment in operator training in Uganda over the last 15+ years. The lack of continuous professional development has left the operators without the skills and competence to provide efficient plant services.

This is a problem for the sector as a whole, because poorly trained plant operators work slowly, produce poor quality work and even damage the equipment that they use.

At the start of CrossRoads, there were no formal plant operator training institutions or organisations in Uganda to train equipment operators from either the private or public sector. There were approximately 200 motor grader operators identified as ‘unskilled’ (incompetent; still learning on-the-job), 120 ‘semi-skilled’ operators and less than 10 grader operators who could be regarded as fully competent (capable of getting international operator jobs in East Africa).

During the same survey, it was realised that by introducing formal operator training, skill levels and quality would rise, and costs in road maintenance would be cut significantly. Improving the health and safety (and environmental) standards was also a significant factor.
The reasons why the key stakeholders in the industry had habitually underinvested in operator training was also examined. It was evident that contractors and government parastatals regarded training and skill upgrading as a luxury; an extravagance that the individual or the industry could apparently ill afford.

**Showing the benefits**

In September 2013, CrossRoads Secretariat set up a field-based case study to objectively demonstrate the ‘before-and-after-evidence’ of the impact and cost savings associated with training plant operators. The subsequent report provided actual (and potential) cost savings to factors such as fuel and time, based on predetermined controlled parameters.

For example, during the hydraulic excavator trenching exercise, the subsequent cost savings on fuel alone could be up to UGX 8 million (USD 2,360) per month. This is equivalent to a real fuel cost saving of UGX 955 million (USD 280,000) during the economic life span of typical heavy plant pan. It was proved that it was not so much that the industry could not afford the training, more that the industry could not afford not to invest in training.

This field-based study had a major impact on changing the deeply embedded mind-set that training was ‘simply an expensive luxury’ – for the first time, contractors could see real financial benefits and start treating training as an investment rather than simply as a cost.

The Secretariat recognised that while a CrossRoads-funded training programme may have powerful short-term effects i.e. producing a number of highly skilled motor grader operators, these effects are likely to be temporary and may not survive the withdrawal of the donor funded intervention. What CrossRoads attempted to do was more fundamental – it was inspiring behavioural changes towards training.

Table 1: Advantages of using a competent worker

<table>
<thead>
<tr>
<th>Activity</th>
<th>Time saved</th>
<th>Volume increase</th>
<th>Fuel saved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trenching</td>
<td>41%</td>
<td>88%</td>
<td>46%</td>
</tr>
<tr>
<td>Truck loading</td>
<td>11%</td>
<td>185%</td>
<td>30%</td>
</tr>
</tbody>
</table>

**Commissioning simulators and setting up training**

Training skilled operators is not a simple task, however. Plant is so expensive that it is not economical to allow untrained operators to practice on real equipment, which can burn up to 40 litres of fuel per hour. This means that training has to be provided in two stages: first using simulators and then (once a level of competence is reached), using real equipment. Providing such training also requires the production of a range of materials (like operator manuals, operator training logsheets, trainee guide books, etc.).

By initially using heavy plant simulators, the CrossRoads Secretariat would be able to provide immediate assistance to this significant problem with the medium-term ambition of completing operator training (i.e. to end up with highly competent operators) with real plant. CrossRoads, therefore, sourced and procured simulators for the most common types of heavy plant found in Uganda. The Secretariat administered the commissioning of the simulators and set up a training programme.

Table 2: Fuel and time savings before and after training

**Excavator**

- 30% average fuel saving at truck loading
- 45.8% average fuel saving in trenching
- 33.3% average fuel saving at bench loading

**Bulldozer**

- 13.1% average time saving in straight and level dozing
- 59.2% average time saving in score slot dozing
Trainees first learned on simulators at a training centre set up in Luwero by the CrossRoads team. After this, they could build their skills on real plant and equipment. The training has been very successful and despite the prerequisite that the trainee has to pay the full cost of this training, the courses offered have been heavily subscribed by new potential plant operators and existing operators wanting to improve their skill levels. Figure 4 shows the distribution of the courses chosen.

To date, the CrossRoads Secretariat has completed 17 simulator training courses bringing the number of simulator trained plant operators to 119 in total. These 119 are queuing up for real plant training, which is also well underway. At the time of this report, CrossRoads had completed the training of 32 plant operator trainees and these operators have successfully achieved Ugandan Vocational Qualifications Level 2 and Level 3.

Despite CrossRoads’ best efforts, the gender distribution of the trainees is disappointing. From over 100 applicants, only two women applied for operator plant training, and while they both qualified well, they have not secured related work after this training. It appears that the patriarchal culture of Uganda, particularly away from the cities, still proves to be a barrier to women.

Understanding the status of MoWT equipment

Surveying equipment holdings

In 2014 the MoWT asked CrossRoads to help it undertake a detailed review of its equipment holdings, to monitor its use and the management of road maintenance equipment by districts and urban councils.

Key findings for future use

The review team inspected 773 pieces of road equipment (244 pieces from the country’s original fleet and 529 pieces introduced as part of the purchase of Chinese equipment). In addition to the work providing important information on the current use of government (force account) equipment, it had the added benefit of providing a template and key performance indicators that will allow the Ministry to carry out comparable follow up reviews in the future.

The key result was that a considerable part of the Ministry’s equipment is not being used effectively, because of breakdowns and lack of fuel. Rather than buying new equipment, the government should focus on building the capacity needed to improve the use of the equipment already available.

Developing an equipment management system manual

Following analysis of the prevailing situation, it was concluded that designing and delivering an equipment management system (EMS) manual for UNRA’s force account plant and equipment fleet would introduce much needed systems by which the Operations Directorate could achieve:

- **Economy** (by reducing waste and cutting costs)
- **Efficiency** (ensuring that costly resources are fully utilised)
- **Effectiveness** (achieving targets and fulfilling goals).
The EMS was based on the simple concept of the user paying the real costs for the equipment provision, which they would then recover through certificates/invoices for the work. Until now, the force accounts plant fleet was not fully costed; only the fuel and spare parts needed were recognised as costs. The massive depreciation, cost of capital employed, overheads, maintenance, repair and labour costs, etc., were not previously captured or recognised. It was, therefore, acknowledged that this apparent artificially ‘discounted’ plant fleet undercuts the private sector contractor’s rates, making it impossible for the private sector to compete and flourish.

Capturing all equipment related costs

It was, therefore, fundamental that all equipment related costs were captured by the systems, i.e. equipment owning and operating costs, overheads, facilities charges, etc. This strategic objective plays an integral role in the commercialisation/devolution process aimed at enabling the Station/Regional Engineers to manage their resources more effectively. The outputs (kilometres of roads maintained, etc.) can be measured against the inputs (Uganda Shillings spent, labour, materials, etc.) and provide a realistic value comparison with the private contractors. This has considerable benefits to the private contractors, since for the first time ever, both UNRA and the private sector would be operating on an equal cost footing.

CrossRoads recommended that technical assistance be provided to transform the mechanical equipment and plant component of UNRA into a commercialised plant pool. This would be a commercial equipment renting/leasing firm, still under the umbrella of UNRA, but with sufficient autonomy to operate as a strategic business unit. However, UNRA senior management was not yet ready to adopt more commercial systems to administer their force account fleet. So a toned down EMS was developed that introduced ‘industry best practice’ and a number of commercial management tools rolled out.
Surveys, innovation and advocacy

CrossRoads' countrywide surveys have established how many contractors own road construction equipment, the capacity of national contractors, and the amount of equipment held by UNRA and MoWT – all key information for developing a much needed contractors registration and classification system.

CrossRoads' GBP 1 million Challenge Fund has supported 9 projects focused on finding new solutions to issues affecting the road sector. This funding mechanism is the first of its kind to encourage road related innovation throughout Uganda.

CrossRoads' surveys of road users' have set long needed baselines for measuring work to improve Uganda's roads. Their findings indicate increasing levels of improvement in road conditions and the work of the road agencies between 2012 and 2015.

The Roads Industry Council (RIC) established by CrossRoads delivered advocacy campaigns that supported policies to guide the development of Uganda's roads industry. The practitioners from the public, private and financial sectors who sat on the Council also provided strategic oversight for CrossRoads.
Capacity development

CrossRoads’ award winning GBP 2 million Construction Guarantee Fund has improved relationships between road contractors and financial institutions. Banks are now providing guarantees to more companies – so increasing competition and encouraging value for money services for the government.

CrossRoads funded equipment simulators and road construction machinery have provided equipment operators with key training. Once trained, they can access newly established vocational qualifications.

CrossRoads’ support to increase the capacity and boost the image of the contractors’ association UNABCEC and the consultants’ association UACE has increased membership, and both organisations are now running successful training courses for roads industry professionals.

A six module training course in finance and business management was developed and delivered to more than 400 road sector contractors. Courses were run in Kampala, Mbale, Soroti, Lira, Gulu, Arua, Fort Portal and Mbarara, and, more can be expected in the future. A similar course was also given to 140 local government officers.
5. Building capacity in the road sector

The road sector lacks a skilled workforce. CrossRoads has worked with the Directorate of Industrial Training (DIT) to develop vocational qualifications for equipment operators, plant mechanics and road works’ supervisors and initiated new assessment procedures for these qualifications. We have helped the Uganda National Association of Building and Civil Engineering Contractors to raise its profile and widen its appeal to prospective members, and built an in-house training capability. The Institution of Professional Engineers has been assisted to establish a training programme for graduate engineers and the Association of Consulting Engineers has helped to conduct self-financing, internationally recognised training events.

Supporting DIT to develop vocational qualifications

During the inception phase of the CrossRoads Programme in 2011, one constraint mentioned by many contractors was the lack of a skilled workforce. One area highlighted was plant operation. Many operators had little or no formal education and there were no formal qualifications to guarantee proficiency and competence in correct operation or any proper tests to obtain licences to drive on the public roads. Recruitment was, therefore, an act of faith unless the person’s ability was already known. Some contractors had to import plant operators who could use their machines correctly from outside Uganda. This avoided damage to the machines and so protected their considerable investment and increased productivity.

In response, CrossRoads supported DIT to develop new vocational qualifications for road works. In the process, the Directorate has changed to an industry-led approach in developing and assessing vocational qualifications. This means they are kept current and continue to meet the needs of industry and remain on a par internationally. These qualifications may well be the first for road works in East Africa.

Uganda Vocational Qualifications Framework

Following reforms in the educational sector, a donor supported programme commenced in 2004 that enabled DIT to develop the Uganda Vocational Qualifications Framework. A system was established to write qualification level descriptors for occupations and assessment, which were piloted in 2006. Presented as Assessment and Training Packages (ATPs) that included the descriptors and type of training required to achieve them, more than 100 have been developed to date for the manufacturing, construction and agricultural sectors. Over 90,000 qualifications have been awarded.

While the ATPs were initially developed in consultation with industry, the approach was still ‘academic.’ For instance, the ATPs were not regularly updated to take account of changes in technology and industrial best practice. Assessments of a few selected tasks in the occupation concerned were mainly conducted in an artificial, simulated environment in training colleges and included academic style written tests with marks awarded at the end of the assessments like academic tests. Test results took a long time to be declared and there was no immediate feedback to candidates to enable them to improve if they were unsuccessful. The approach was very much like an examining body testing school students using questions based upon a syllabus.

The result of this pedagogical approach was that the qualifications did not meet international standards and did not provide the skilled people needed by international companies coming to work in Uganda and certainly not by the roads industry. This was particularly highlighted during the period

The benefits of using workers with vocational qualifications are:

- There is a guarantee of competency as the individual has been assessed actually doing all the work required by the industry
- The sites are safer and more care is taken of the environment
- The plant has proper use, maintenance and repair, according to best practice and manufacturer’s recommendations
- Site work is properly planned, organised and supervised
- Relations amongst the workforce and the road-side communities are improved
- Traffic management is improved
- Costs are lower and productivity is improved
- Profits are increased
- The work is performed faster, with less downtime and better quality
- The client receives better value for money.
of CrossRoads’ support by the newly arrived oil and gas industry asking for skilled workers to meet international quality assurance standards that Uganda could not provide, despite having many unemployed people.

Certifying vocational skills

The Government’s academic approach to training has made it difficult for Ugandan contractors to find qualified, experienced staff, and has contributed to the substandard delivery of road works in the country. Hard skills need to be taught in a practical way and workers need to be more thoroughly assessed to create a competent workforce.

‘Skilling’ the road sector in Uganda

Uganda’s DIT, which is part of the Ministry of Education, recognised this and through its ‘Skilling Uganda’ initiative proposed to reform vocational qualifications. But to implement vocational courses, Uganda needs competent Assessors familiar with all the tasks trainees would be required to do in the course of their work.

DIT enthusiastically agreed to develop the required vocational qualifications in road works with the support of CrossRoads. In an initial stakeholder’s workshop conducted in December 2011, industry representatives identified the three highest priority skills in road works – plant operators, plant mechanics and site supervisors.

Following the standard DIT procedures, a series of consultative workshops were conducted during 2012 to break down the occupations into three different skills levels and then to identify the main tasks and activities for each level, with a quality check by different industry representatives. Nine ATPs were drafted, three levels for each of the three occupations. Industry practitioners pointed out such major omissions that it was obvious a new approach was needed to produce vocational qualifications to meet industry and international standards.

Industry-led qualifications

For the road works industry, vocational qualifications are competence-based, industry-led qualifications that are achieved through an at-work assessment and on-the-job industrial training. This fundamental change means that occupational standards are led and updated by industry to reflect what competent people in a particular occupation are expected to be able to do, reflecting current best practice and the ability to adapt to future requirements.

This was a radical change for DIT, so with support from CrossRoads a start was made in 2013 that compared the new with the existing way of conducting assessments. After piloting a new six-step approach and conducting mock assessments in the latter part of 2013 and early 2014, DIT gave wholehearted support to the changes. This led in March 2014 to a dramatic shift in the approach taken by the Directorate.
to vocational qualifications, with DIT deciding to model all their future assessments of competency for vocational qualifications on this new approach.

**Adopting new assessment methodology**

The vocational qualifications were publicly launched and distributed to industry associations and posted on the DIT website. A series of five stakeholder workshops were conducted regionally for invited contractors and procuring entities to publicise the new vocational qualifications and demonstrate the benefits to both contractor and client of using certified workers on site.

The vocational qualifications developed in the three occupational profiles, Road Works Plant Operator, Road Works Plant Mechanic and Road Works Supervisor at all three levels have been updated within three years of their initial formulation by competent people in the particular occupation and subjected to quality assurance by a workshop of practitioners, professional engineers and senior managers.

The costs of multiple assessment visits cannot be covered by candidate fees alone. That would put a vocational qualification beyond the reach of most people. The true cost of assessment amounts to months of a site worker’s wages. In the initial stages, the costs were subsidised by CrossRoads, but in the future the levy on all contracts covered by the proposed Uganda Construction Industry Commission could be used for this purpose.

**Certifying Assessors**

Trained and certified Assessors observe candidates at their place of work a number of times. For example, if a candidate bulldozer operator wishes to be assessed for bush clearing, this is done when the work is under way at a particular time in the contract. Other assessments are made when different tasks are being done according to the stage of contract, for example, ripping and spreading top soil.

Additional Assessors have been recruited on merit, monitored internally (by DIT) and externally (by CrossRoads). The framework of an Assessor’s handbook was drafted, with DIT and the Assessors adding material to reflect best practice, lessons learned and to ensure consistency of assessment practices.

Full record keeping is undertaken during the workplace assessment and signed by both the candidate and the Assessor and kept on file at DIT. Candidates keep a personal portfolio of the evidence of their work showing examples of successful completion through such things as workshop/site order completions, job cards, photographs, training logbooks, assessment check sheets, attendance records, etc.

**Competence-based, industry-led qualifications mean that there are:**

- Occupational standards (profiles), led and updated by industry, reflect what competent people in a particular occupation are expected to be able to do
- Transparency in what a vocational qualification entails
- Assessment standards, development led and updated by competent practitioners in industry, and regular updating of occupational profiles led by industry to ensure currency
- Consistent assessment conducted in the workplace by trained and certified Assessors observing candidates doing real, not simulated work
- Qualifications that are evidence based with an audit trail
- Robust system of quality assurance involving checks, monitoring and independence
- Service culture to support and respond to industry needs
- Feedback and regular consultations with candidates.

**Looking to the future**

As demand continues to rise for assessments, Assessors will become full-time and work independently under contract. Already some of the Assessors have registered a company in readiness for this situation. However, while this organisational change is essential, it is unlikely that restructuring changes will be undertaken in the time scale of the CrossRoads Programme.

DIT is also working to become a Skills Authority with its own full-time expert Verifiers, who will make random unannounced sampling visits to sites to monitor and check that procedures are being followed by the independent Assessors and that an audit trail exists.

With CrossRoads assistance, DIT is working to adopt a service culture to support industry needs, responding to requests for assessment more quickly than the previous requirement of two to three weeks’ notice. There is still some way to go before a 24 hour response time is possible, which will necessitate full-time independent Assessors.
The impact so far

Assessment and training packages developed by CrossRoads have already provided DIT with qualified Assessors for three vocational occupations.

So far 30 new assessors have been recruited to carry out the DIT assessments for the equipment operation course (10 Assessors), the equipment mechanics course (11 Assessors) and the works’ overseers course (9 Assessors).

Training road contractors in finance and business management

When CrossRoads began there were no financial or business courses for road contractors in Uganda. This was an important issue, as contractors need specific finance and business skills to operate professionally in a competitive commercial environment. Without these skills the contractors have difficulty accessing finance because many banks are reluctant to lend to contractors who lack business and financial management acumen.

Developing key courses with local partners

For CrossRoads, with its commitment to having a sustainable impact, any solution needed to be embedded in the local market. So in early 2012 the Secretariat invited Ugandan training and finance institutions to tender for the development and delivery of training modules to national small- and medium-sized contractors. Multitech Business School won the commission and proposed to develop six commercially viable training modules that the school could continue to offer after CrossRoads had closed. Although the main targets of the training were micro-, small- and medium-sized enterprises they were designed in such a way that they would also benefit larger, more established companies. To encourage contractors to value the training, a fee was charged though the costs were subsidised to make them affordable.

Training began in 2012 with courses being given at the Kampala headquarters of Multitech Business School, as well as in up-county centres in Mbale, Lira, Arua and Mbarara. Participants included directors, accountants, project managers, engineers and site managers. Women made up 14% of attendees for Modules 1 and 3, higher than the target of 5%.

Rigorous continuous evaluation was built into the training programme, including surveys, attendance records, tests and trainer performance monitoring. At the end of the five module course, contractors were confident that the training would increase their competitiveness: 128 said “improved relationships with finance institutions” was their basis for this confidence, while 117 said “capacity to prepare good bids”. Many said they had gained new bank credit facilities and several had won new contracts because of the courses. Participants also praised the courses as excellent opportunities to meet other contractors and share experiences.

Measuring the impact on business management

Between August and October 2014, the Secretariat ran a survey on the perception of a sample of 60 trainees, to assess the impact of the training. They found that 80% of the trainees felt that the training was timely and relevant and had equipped them with practical skills to improve the way they run their businesses. It also found that 75% of the trainees sampled said that they have now overhauled their business management systems and are using business plans as tools to make forecasts and monitor progress.

In terms of long-term impact, Multitech now has all the necessary training material to provide these key courses to Uganda’s road contractors, underlining the benefits of building the capacity of such organisations to ensure sustainability and protect donor investment. Multitech is now offering a diploma in construction management which has received accreditation from the Uganda National Council for Higher Education.

Training rated highly

By early 2014, 360 trainees had completed Modules 1 to 5 with 38 gaining distinctions. Of these trainees, 243 went on to complete Module 6.

Feedback was overwhelmingly positive. A mid-course assessment after Module 3 found that 95–96% of participants rated trainers, materials and the training as ‘good’ or ‘excellent’.
5. BUILDING CAPACITY IN THE ROAD SECTOR

Training Local Government Officials in finance and business management

The feedback from attendees on the training for road contractors in finance and business management and the subsequent Impact Assessment contained strong recommendations that similar training should be given to Local Government Officials with whom roads contractors interact. Road contractors referred to a number of issues they had with the Local Government officials, which included: bidding for work, specifications, delayed payments and other related matters.

Following meetings with the Ministry of Local Government it was agreed that such training be given and, as a result, in November 2015 a training workshop was held and attended by 140 participants from 23 Districts and 5 Municipalities. By providing similar training to both the demand and supply sides of the procurement chain both sides now have a greater understanding of their own and each other’s role in the process.

Making a national association an industry leader

The Uganda National Association of Building and Civil Engineering Contractors (UNABCEC) was reformed in 1993. At the start of the CrossRoads Programme the Association was embarking on a repositioning exercise to become more commercially orientated. CrossRoads sought to support this programme of change.

The finalised programme of 15 months’ capacity building support was agreed with the newly constituted UNABCEC Board and started in June 2013. To ensure complementarity the programme was co-ordinated with another regional programme of support to contractors’ associations. This other programme was being provided through the KfW Bank in Germany, following on from the earlier ProInvest funding. Implementation was provided by Baugewerbliche Verbände (BGV), a German Federation of six construction sector associations in North Rhine-Westfalia.

Developing staff capacity

Board Members found balancing the work of the UNABCEC Secretariat with the work of their own companies a challenge, but particularly found the requirements of using public funds for a transparent, fair and equitable procurement of services and goods very difficult. This necessitated considerable hands-on guidance from CrossRoads. A replacement officer for managing the CrossRoads Programme of support was not recruited until late May 2014 and a new Executive Director was appointed in June the same year.

CrossRoads provided close support and guidance to help develop the capacity of the new staff, particularly in procurement, budgeting and planning.

New staff were recruited to form a pool of approved UNABCEC trainers who could be called upon to deliver technical training. The newly recruited trainers benefited from a CrossRoads supported generic training of trainers course to enable them to design and deliver learning for adults. They then received technical training of trainers by international experts in their respective area of specialisation. Following this the Ugandan trainers prepared and delivered two training courses for national contractors.

Fine tuning the operations

A second programme of capacity building lasting 10 months increased support for advocacy and lobbying, strengthening the UNABCEC Secretariat by the provision of computing, telephone and power backup equipment. Field-based marketing assistants were contracted with the target of promoting the Association to contractors in the regions (outside Kampala) and to increase the number of members. From the lessons learned from the earlier programme of support, the CrossRoads Secretariat took even more of a hands-on approach to support the UNABCEC Secretariat and help to achieve successful implementation. Additional support for the UNABCEC trainers in construction site management and estimating, costing and building up rates was requested and accomplished.

Having an impact

The awareness of UNABCEC and its image were raised significantly by the stakeholder workshops, supported by significantly improved marketing and literature. The number of new memberships increased and existing members were retained, to surpass the agreed target.
“An independent fact-finding mission, conducted by the Federal Republic of Germany through the BGV project in April 2015, noted the transformation of UNABCEC from a weak association in 2013 to a leader in networking in the construction sector and working with government”

Advocacy and lobbying were strengthened, evidence-based issue papers were prepared and used for lobbying. A communications policy was developed with UNABCEC and a communications strategy template produced for use when preparing communications for different purposes. A pool of trained trainers is available to conduct two training courses in construction site management and estimating, costing and building up rates for tendering.

An independent fact-finding mission, conducted by the Federal Republic of Germany through the BGV project in April 2015, noted the transformation of UNABCEC from a weak association in 2013 to a leader in networking in the construction sector and working with government.

Introducing international standards for consulting engineers

The Uganda Association of Consulting Engineers (UACE) was formed in 1993 to represent the professional concerns and general business interests of member consulting engineering firms covering all aspects of engineering with a mission to develop and promote the consulting engineering industry in Uganda to internationally accepted standards.

The UACE is an active affiliate of the International Federation of Consulting Engineers (FIDIC – Fédération Internationale Des Ingénieurs-Conseils). The FIDIC conditions of contract are widely used internationally for construction contracts. They have been proved to be robust and suitable for a wide variety of construction projects. The FIDIC conditions of contract are used within Uganda for large civil works contracts including by the UNRA for its road development and rehabilitation contracts that are tendered internationally. Therefore, a sound appreciation of FIDIC conditions of contract is essential for engineers and lawyers working in the construction sector, whether employed in a consulting, contracting or client organisations, such as UNRA.

Adopting FIDIC standards

The UACE decided there was a strong need for training in FIDIC conditions of contract, as a core course, together with other short courses on demand. A pool of approved international trainers is used by FIDIC to conduct training courses accredited by them and FIDIC has to be paid for every course run. The fees and travel costs of these international trainers are considerable so the course overhead costs are high. CrossRoads supported several training courses in Uganda, and ultimately, over 150 consulting engineers were trained in FIDIC methodologies.

“over 150 consulting engineers were trained in FIDIC methodologies”

Final outcomes

The UACE effectively used the opportunities provided through this programme of support from CrossRoads and significantly raised its profile and reputation. The UACE is now playing an active part in consultation exercises and regional and international conferences, an example being an invitation to participate in consultations concerning draft legislation pertinent to the construction sector. Ugandan consulting engineers are now winning competitive tenders for the provision of services and so being contracted to supervise large road contracts by UNRA.

The UACE has established a good record and reputation for organising successful training events for the civil engineering profession. Through the Consultancy Forum, UACE organised and successfully delivered training workshops in response to market demand. Courses covered included procurement and contract management, technical audits, and hydrology and urban drainage. Repeat courses have been held in response to market demand. The UACE is now being approached by organisations to organise such events for them in-house, an example being for the National Water and Sewage Corporation in 2015. The MoWT indicated its interest in hiring UACE to deliver more professional training courses for its engineers in future.
Developing the practical training of graduate engineers

The Uganda Institution of Professional Engineers (UIPE) was established in 1972 to promote engineering, promote communication among its members, maintain professional ethics, standards and best practice, and lead engineering advocacy.

The UIPE proposed a scheme for CrossRoads support for a four year programme of structured industrial training known as the Graduate Apprenticeship Programme (GAP). This sought to provide the necessary on-the-job training and professional development to graduate engineers with the main objective being to increase the number of professionally qualified and fully registered engineers available to practice in Uganda.

The Graduate Engineer Training Programme (GTP) was intended to be the first year of the GAP. It would recruit and place selected graduate engineers in organisations to provide an enabling professional environment such that the graduates could subsequently complete the full GAP.
Overall the GTP recorded success with a total of 57 graduate engineers completing the full one year of training in the host organisation. Thirteen found employment, some in the same firm that they trained in, or went for further studies. However, with no further funding, no more trainees were taken into the GAP and UIPE did not continue with monitoring and evaluation of those graduates remaining with their firms who were effectively continuing with their remaining three years of training under the GAP.

To build upon the success of the one year GTP and learn from the lessons gained, a second programme of support was jointly prepared to overcome the main challenge of long-term sustainability and of UIPE as a learned society not being structured for project management. Unfortunately this support did not achieve the desired result with UIPE terminating the programme early.
6. Sponsoring research and innovation

Banks, investors and government agencies in Uganda are unwilling to shoulder the risk of investing in a new idea, resulting in a stagnant market. To address these issues, CrossRoads funded research and innovation activities which focused on finding new, cheaper and effective engineering solutions to make Uganda’s road sector more sustainable and efficient. Some feasible and innovative solutions arose from the process. A series of case studies illustrates the success of the CrossRoads Challenge Fund (CCF) that was established to help drive innovation in the Ugandan road sector.

Why was CrossRoads undertaking research?

Crossroads aims were to produce evidence and learning around road-related products, services and approaches – from road building materials, mechanised/non-mechanised maintenance techniques to initiatives to increase road safety – to engage and advise government on improving the efficiency and quality of Uganda’s road sector. Commissioning such research contributes to the development and growth of the transport sector, resulting in solutions that reduce construction costs, improve road conditions, generate jobs and build the capacity of Ugandan contractors.

Why encourage innovation?

CrossRoads encouraged innovation to strengthen the Ugandan market; supporting profitable new business ideas is a great way to do this. Encouraging innovation can result in new, cheaper and more efficient solutions to address Uganda’s road sector issues. Ugandan entrepreneurs, communities, and local and central government were the beneficiaries of these activities, with entrepreneurs given the opportunity to develop, test and market their ideas. Central and local government gained exposure to new products and approaches that will help them to get the most from their road budgets. Communities benefited from greater involvement in the decision making process in their districts and employment opportunities in road-related work.

There is a need for sustainable options for road construction. Gravel, the most commonly used road material in Uganda, is becoming very expensive (up to UGX 12,000 (USD 3.5) per cubic metre) as private borrow-pit owners raise their prices at will, and the need for cross-country haulage increases costs.

The CrossRoads Challenge Fund

A UGX 3.8 billion (USD 1.5 million at 2013 rates) Challenge Fund was established to help drive innovation in the Ugandan market and create an appetite for risk taking and investment in new and effective road sector ventures. The CCF supported organisations whose innovative ideas would contribute to the growth of the Ugandan road sector and reduce the costs of road construction. Results allowed RIC to advise the Government of Uganda on improving efficiency in the road sector, and give better value for the money the government invests in roads year on year.

“A UGX 3.8 billion (USD 1.5 million at 2013 rates) Challenge Fund was established to help drive innovation in the Ugandan market”

The impact of research and innovation

The outcomes and achievements of the CrossRoads Challenge Fund (CCF) research and innovation programme cluster mainly around three areas of work – road safety, community empowerment and poverty reduction, and engineering solutions.
Area 1. Road safety

Under the CCF, CrossRoads scaled-up a road safety initiative to roll out a road safety curriculum for primary schools across Uganda. The project was led by the Uganda Road Accident Reduction Network Organisation, which proposed innovative approaches to achieving this scale-up. These included integrating road safety related examples and illustrations into more traditional and established subjects to sensitise children and increase awareness of road safety rather than teaching it as a stand-alone subject. The project saw positive results with a dramatic decrease in the number of children involved in road accidents around schools in the intervention areas. Another study is highlighted in the case study below.

Area 2. Community empowerment and poverty reduction

The second intervention under research and innovation was a study of the evidence to support the inclusion and employment of poor and marginalised groups, such as women and youth, in road sector maintenance activities. Supporting the inclusion of all community members in road sector activities will lead to greater local ownership of roads and will ensure those communities take on a greater responsibility for the long-term well-being of the road. This area of work also reinforces Uganda’s international policy commitments to supporting gender equality and sustainability.

Case study: Boda-boda helmet wearing campaign

Through the Challenge Fund, the Uganda Helmet Vaccine Initiative (UHVI) designed and delivered a very successful programme to increase the wearing of helmets among boda-boda (motorbike) drivers in Kampala. The campaign sought to convince riders that their lives may depend on wearing a helmet and it involved working in partnership with the traffic police to improve enforcement of the by-law on the wearing of helmets (which the police were not enforcing).

Figures in July 2015 show that the wearing of helmets among boda-boda drivers increased from 49% to 77%, exceeding the target. The advocacy efforts of UHVI showed particular success. The most successful approach was the Helmet Checkpoint, where traffic police would stop riders; those wearing helmets were given reflective vests and those who were not were given a small roadside lesson in road safety. For additional visibility, the UHVI advocacy campaign had celebrity endorsement for the enforcement of helmet wearing.

‘Figures in July 2015 show that the wearing of helmets among boda-boda drivers increased from 49% to 77%, exceeding the target’
Case study: Friends of Roads Uganda

The Uganda National Passengers Rights Protection Association (UNAPARPA) and the Uganda National Non-governmental Organisations Forum (UNNGOF) developed an innovative pilot using mobile phone technology to increase community participation in the road sector. Community volunteers were engaged by UNAPARPA and formed into groups called ‘Friends of Roads’, each given a communal smartphone and trained in using an application to report local road issues.

Data was sent to a Kampala-based call centre, managed by UNNGOF, who collated the information into a report and shared this with the District concerned. In this way, the project sought to increase community participation and sense of ownership of local roads and encourage greater accountability and efficiency in District road maintenance.

“*The study found that the economic benefit to the community from labour-intensive works compared with mechanised works equated to UGX 6,039,000 (USD 1,770) per km*”

Another initiative, undertaken by M&E Associates, built an evidence base for more labour-intensive road work contracts in Uganda and increased employment opportunities for women. It comprised a comprehensive cost-benefit analysis of labour-intensive works versus mechanised works, and a socio-economic survey exploring how labour-intensive works can have positive impacts on the community.

The benefits included income derived from road works, positive changes in agricultural production, indirect employment, such as supplying food to workers and construction materials to sites, user savings on transport costs and reductions in travel time. The study found that the economic benefit to the community from labour-intensive works compared with mechanised works equated to UGX 6,039,000 (USD 1,770) per km and that the income earned through labour-intensive works was used to improve the socio-economic welfare of families.

“*It ensured a 50:50 gender balance among community volunteers*”

Area 3: Alternative stabilisers and sealants

The third intervention concerned research into alternative road stabilising agents and seals. Stabilisers and seals are not widely used on rural gravel roads in Uganda. Materials such as bitumen and lime act as a glue that binds together and strengthens different road layers. They are a low-cost and more practical alternative to expensive road construction materials, such as crushed stone or asphalt surfacing.

A rarely used (in Uganda) method of stabilisation is the use of chemical enzymes that are applied to pavement layers to form a protective skin that reduces the level of moisture seeping into the road layers and prevents erosion of the road surface.

The initiative was well executed at the field level. It was successful in engaging communities and securing interest and voluntary support. It ensured a 50:50 gender balance among community volunteers and increased community knowledge and understanding of critical road maintenance, quality and safety issues. However, it was found that greater coordination between the call centre and District authorities, as well as longer-term investment in sensitisation activities, was needed to make such a scheme sustainable.

Given that Uganda has a variety of natural materials (rocks, soils, etc.) that are used in road construction, it seemed possible that cheaper materials could be used in conjunction with chemical stabilisers as a wearing course. Very little research into such alternatives had been undertaken and so CrossRoads decided to fund research to investigate such options. This involved testing and trialling different chemical stabilisers on roads across Uganda.
Case study: Vetiver grass – a natural, environmentally friendly method of slope stabilisation

A solution to the protection of cut and fill slopes following road widening is to use Vetiver grass. Vetiver is a tropical grass from South Asia which, when planted in a line, creates a barrier that filters out sediment, spreads rainwater, improves soil strength and recycles soil nutrients. Though Vetiver grows well in most climates, its ability as a road stabiliser in Uganda had not been explored until CrossRoads funded Vetiver Associates Ltd. to do this research.

The trials proved successful so CrossRoads extended funding for Vetiver Associates Ltd. to develop a publicity video to advocate Vetiver use in the road sector, and develop specifications and a manual for practitioners wishing to use the technology.

Both the Ministry of Agriculture and the Environmental Agency have inspected the trials and their certificates of approval are anticipated. MoWT can then include Vetiver as a means of slope treatment in the national specification for road works.

Case study: Termite saliva

After observing the strength and resilience of termite mounds during the rainy season in Uganda, engineers at Makerere University with support from CrossRoads carried out research into replicating the key bonding agent used by termites, their own saliva, to be used as a road stabiliser.

Under the CrossRoads Challenge Fund, Makerere successfully replicated and tested a synthetic material that mimicked the stabilising effects of termite saliva, naming the product ‘Termabond’. The application of Termabond was so successful that it is now being tested on a wider range of soil types to further understand its potential for use across all regions in Uganda.

‘Makerere successfully replicated and tested a synthetic material that mimicked the stabilising effects of termite saliva, naming the product Termabond’
CrossRoads looks likely to leave a lasting legacy in Uganda’s road sector. At the end of five years of work with partners, each area of focus has created measurable changes in Uganda’s road sector. Examples range from making it easier for contractors to arrange the finance that they need to capture new contracts (through the finance work stream), to the development and testing of new road building techniques relevant to Uganda (through the Challenge Fund run under research and innovation).

Institutions like the Civil Society Coalition on Transport in Uganda have been established. The contractor’s association, UNABCEC, is in a far stronger position in the industry. Nationally important monitoring systems have been put in place through the Road User Satisfaction Survey. And policy reviews and advice have set clear ways forward for the future of the country’s roads. A few of the other areas of work that are a part of the CrossRoads legacy are highlighted below. Previous sections go into more detail.

**Training contractors in finance and business management**

Often, contracting businesses in the roads sector are owned by civil engineers who have little experience in financial and business management. While some contractors may have had considerable hands-on work experience (as ex-employees of a larger road construction company, for example), many lack training in how to run a business and manage its finances well – this is particularly true among small contractors.

In response to this, a training programme in ‘Financial and Business Management for Roads Contractors’ started in the first half of 2012 and ultimately trained over 360 owners, managers and finance staff from up to 200 micro-, small- and medium-sized road contracting businesses. The training was delivered in regional locations and CrossRoads invited several Ugandan training organisations to deliver it. Multitech
7. LEAVING A CONTINUING LEGACY

Business School won the contract to deliver the training and is now planning to continue the training in the future since it has all the course notes etc., making the training sustainable.

**Teaching children how to stay safe on the roads**

CrossRoads scaled-up a road safety curriculum roll out to primary schools across Uganda. In the pilot 180 schools, early results of this initiative indicate that there have been no accidents recorded since classes were given and the road safety training materials that were developed for use in the schools are available for future use.

**Leaving simulators and real plant for sustainable training**

Crossroads procured simulators for the most common types of heavy plant found in Uganda. Using plant simulators enabled new trainee operators to familiarise themselves with controls and learn basic machine operations. It also substantially raised skill standards and levels of competence for more experienced operators by allowing them to refine their skills or break bad habits acquired over the course of their careers.

The simulators provided very effective training in the short term, and speeded up initial training when used with real plant for the medium and long term. Despite the prerequisite that the trainee had to pay the full cost of this training, the courses offered have been heavily subscribed by new potential plant operators and existing operators wanting to improve their skill levels. These simulators will remain in-country so that other potential operators can benefit.

**Identifying human resources’ requirements**

During the inception phase CrossRoads undertook a major study of the sector’s human resources that was used to determine the roads industry’s training requirements. A lack of continuous professional development had left the industry without the correct skills and competence to provide efficient services, particularly in the vocational trades. It was evident that there has been a complete underinvestment in skills development in the road sector over the last 10+ years, because contractors and government parastatals regarded training and skill upgrading as a luxury; an extravagance that the individual or the industry could apparently ill afford.

A subsequent report on operator training provided actual (and potential) cost savings to factors such as fuel and time. From these, it was clear that by establishing formal operator training, skill levels and work quality would rise, and the costs of road maintenance would be cut significantly. Health, safety and environmental standards would also improve. It was not so much that the industry could not afford the training, more that the industry could not afford not to invest in training.

A typical Caterpillar D6 size bulldozer is not only 10 times more expensive to purchase in the first place, but also consumes 25 litres of diesel an hour. This equates to around UGX 218 million (USD 64,000) per year (250 days).

An equivalent plant simulator for a D6 bulldozer would cost less than UGX 341 000 (USD 100) in electricity for the same 12-month period.
8. Resources

Listed below are the resources contained on the CD that is distributed with this report (inside back cover). Crossroads has produced a large volume of useful documents that range from reports to training manuals, and from issues briefs to policy reviews. These are likely to remain useful for years to come, and CrossRoads is keen to ensure that they are easily available as a legacy for future use. We have therefore gathered a quantity of the most useful outputs from CrossRoads onto an interactive CD attached to the back cover of this report. These include:

1. Advocacy
   1.1 An introduction to the CrossRoads Programme – Information Sheet 1
   1.2 Capacity development in Uganda’s road sector – Information Sheet 2
   1.3 Improving access to road construction equipment – Information Sheet 3
   1.4 Improving access to finance in Uganda’s road sector – Information Sheet 4
   1.5 The CrossRoads Challenge Fund – Information Sheet 5
   1.6 The Roads Industry Council: representing Uganda’s road sector – RIC issues sheet 1
   1.7 Adding value to the whole economy: maintaining Uganda’s roads – RIC issues sheet 2
   1.8 Rejuvenating Uganda’s road sector: focusing roads policies – RIC issues sheet 3
   1.9 Why change is needed: the challenges facing Uganda’s roads industry – RIC issues sheet 4
   1.10 The way forward: a roads industry development strategy – RIC issues sheet 5
   1.11 Poor road contract performance: are briefcase contractors the cause? – RIC issues sheet 6
   1.12 Low accountability in contract supervision: a high cost for Uganda’s road sector – RIC issues sheet 7
   1.13 CISCOT information sheet
   1.14 Study on the impact of force account on private contractors in Uganda
   1.15 Sector analysis, institutional change and advocacy report
   1.16 A study into causes of poor contractor performance failures in road maintenance
   1.17 The factors affecting the quality of supervision and accountability in Uganda’s road sector contracts
   1.18 Road user satisfaction survey reports
   1.19 Table on CrossRoads interventions and market responses
   1.20 Maintaining Uganda’s road network: the road ahead

2. Finance
   2.1 The CrossRoads Guarantee Fund in Uganda
   2.2 Training in finance and business management for contractors in the roads sector

3. Plant and equipment
   3.1 Impact of the Chinese plant on CrossRoads and the private sector
   3.2 Plant and equipment survey: UNRA report
   3.3 Plant and equipment survey: Private contractor report
   3.4 Commercialising UNRA’s force account pool
   3.5 Commercialisation of UNRA’s mechanical services
   3.6 Plant operator training manuals
   3.7 Monitoring the use and management of road maintenance equipment used by local government
   3.8 Equipment management and systems manual
   3.9 Field-based case study for heavy plant operator CAT simulator training

4. Capacity building
   4.1 Graduate engineer training programme. Final year report
   4.2 Training in financial and business management for road contractors: Impact assessment report
   4.3 Uganda National Association of Building and Civil Engineering Contractors: Final report
   4.4 Support to the Uganda Association of Consulting Engineers
   4.5 Support to the Uganda Institution of Professional Engineers
   4.6 Support to the Uganda National Association of Building and Civil Engineering Contractors
   4.7 Support to Department of Industrial Training

5. Research and innovation
   5.1 Building the evidence base for more labour-intensive road work contracts and increased employment opportunities for women
   5.2 Consultancy services for improving the performance of unsealed roads by the use of chemical stabilisation (enzymes)
   5.3 The cost of motorcycle accidents in Uganda
   5.4 The use of Vetiver grass technology in stabilisation of soils on slopes and embankments
   5.5 Practical training exercise in low cost sealing
   5.6 Development of termite saliva as a potential stabiliser for gravel road layers
   5.7 CrossRoads Challenge Fund case studies
   5.8 Road safety curriculum for primary schools – Training material

6. Cross cutting
   6.1 Two years of progress towards improving Uganda’s road sector
   6.2 Applying the market systems approach to deliver systemic market change under the Crossroads Programme
   6.3 CrossRoads handover and sustainability strategy
Over the last five years, the CrossRoads Programme has been working to develop a more competitive and sustainable road construction and maintenance industry in Uganda. This report summarises the progress of the project and highlights its successes and impact.

Further information

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