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Research for Community Access Partnership

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Transforming rural access: motorcycles, low-cost infrastructure and appropriate standards

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Transforming rural access: motorcycles, low-cost infrastructure and appropriate standards

Introduction

Victor Simfukwe
Project Manager, Transaid

Agenda

- Workshop overview and objectives
- Recent ReCAP activities concerning motorcycle taxis - (Caroline Barber – Transaid)
- Transforming community access to the rural road network: motorcycle infrastructure to connect all villages in Liberia – (Paul Starkey – ReCAP)
- Strengthening rural access through transport associations – a case study from Uganda – Victor Simfukwe
- Group work to discuss:
  - Key issues
  - Policy implications
  - Research needs

Workshop Objectives

1. To raise awareness about the many issues of motorcycle taxis in rural areas
2. To share information concerning the recent April 2017 motorcycle webinar
3. To stimulate discussion on ‘best practices’ relating to motorcycle taxis in rural areas, including issues relating to improving safety, training, operator associations, regulation and infrastructure provision
4. To stimulate discussion on the policy implications and research needs arising from the issues raised during the workshop

Motorcycle taxis…

- There are clearly some legitimate safety concerns relating to motorcycles and motorcycle taxis
- However in rural areas they can provide a vital service (and bridge a gap) regarding accessing essential services (health, markets, education….)
- In some countries there been explosion in their use (examples)
- Countries have reacted differently to this growth (examples)

Recent ReCAP activities concerning motorcycle taxis –

Caroline Barber – Transaid

Previous ReCAP work on motorcycle taxis

- In 2014 AFCAP undertook clustered research on transport services in Tanzania, this included:
  - Study on the magnitude and characteristics of road traffic injuries on low volume rural roads including motorcycle taxis
  - Development of an appropriate training curriculum for motorcycle taxi riders
  - Research by HelpAge International - older people and access

Introductory webinar on motorcycles in the Rural Context in Sub-Saharan Africa and South Asia

- 6th April 2017
- Webinar – an effective way to share information and encourage discussion
- Brought together African and Asian transport researchers, regulators and practitioners
- Three presentations – covering safety and regulation, helmet use, access to essential health services
- Recording is available on youtube (search for Transaid)
- Or find the presentation on the Transaid website
- Will be on ReCAP site soon
- Qs - info@transaid.org

Introductory webinar - metrics

- 150 people registered
- 59 joined the live broadcast on the day
- Another 36 joined via ‘link up hubs’
- From 24 countries
- Feedback has been very positive – for over half of our participants it was their first webinar

Webinar – key discussion points

The most common recurring themes from the Q&As and discussion included:

- challenges of regulating and enforcing law for the motorcycle taxi industry
- Requests for “good practice” examples
- low utilisation of helmets and other safety gear
- training
- use of motorcycle taxis for access to health services
- the role of innovation and technology

.

Recommendations

- Appetite amongst participants for attending more webinars
- Participants wanted more time for debate and questions and answers session
- Suggested future research topics:
    - Rider training across the whole country
    - Leveraging technology to enhance safety and efficiency of motorcycle transport services.
    - Making motorcycle transport a profession that make a living which is stable and viable
    - Rural paths to facilitate access
    - Enforcement and scope to work with associations
    - Disaggregation of motorcycle use/crashes at different stages in the transport network
    - Research on behavioural issues of riders & accidents
    - Safety equipment and visibility

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Follow ReCAP on:

Transforming community access: enabling motorcycles to reach all villages in Liberia and elsewhere

Paul Starkey

Transport Services Research Manager
Africa Community Access Partnership (AfCAP)

8th Africa Transportation Technology Transfer Conference, 8-10 May 2017, Livingstone, Zambia

Presentation outline

- Liberian multimodal master plan study
- Motorcycles are transforming rural access
- Nature of required investments
- Strategic investment plan analysis approach
- Initial cost benefit analyses
- Conclusions and next steps for Liberia
- Sierra Leone: similar issues
- Conclusions: can other African countries benefit . . .

Liberia multi-modal transport investment plan

- Government of Liberia:
  Ministry of Public Works and Ministry of Transport
- Funding from World Bank
- Study implemented by Cardno IT Transport
- All transport modes (road, rail, water, air)
- International, urban, inter-urban and rural transport
- Infrastructure, services and regulatory authorities
- New motorcycle trail infrastructure identified as a key rural transport investment

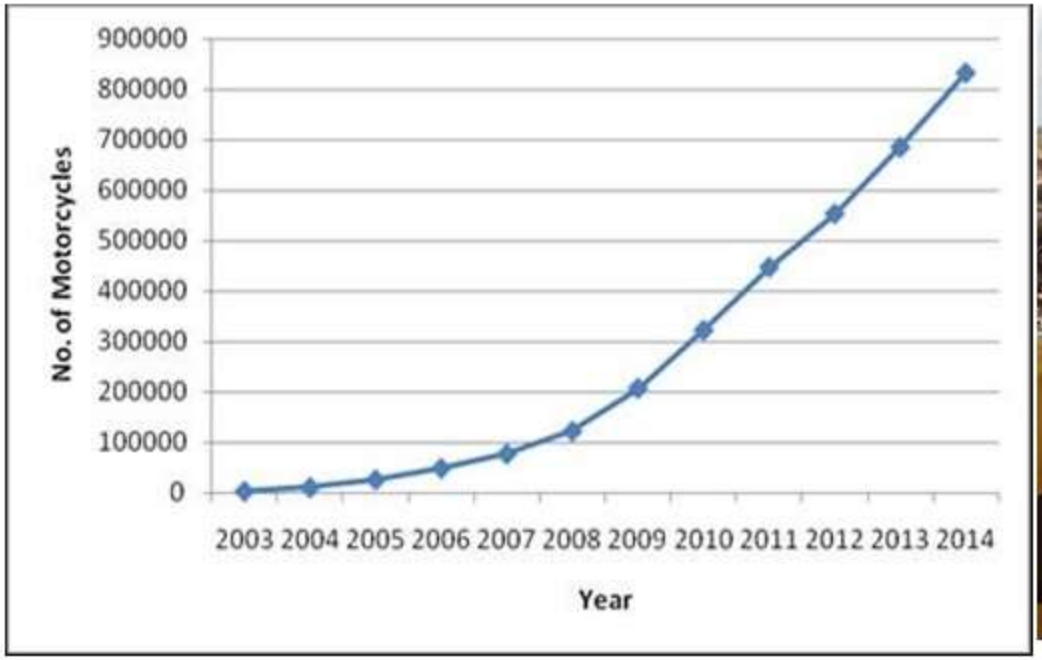
Motorcycles are transforming rural access

Remarkable transport 'revolution' in Liberia in the past ten years

Motorcycles are often the commonest vehicles on rural roads

Motorcycles are transforming rural access

Motorcycles increasing rapidly in Libera and many other countries



From: Bishop and Amos, 2015

- In Tanzania motorcycle numbers increased from about 2,000 in 2003 to over 800,000 in 2014

Motorcycle taxis


Liberia


Sierra Leone


Kenya


Tanzania


Rwanda


Myanmar


Uganda


Colombia


Nigeria


Ghana


Cameroun

Motorcycles are transforming rural access

Motorcycle taxis complement and link with larger transport options

More expensive than other transport services *(often +50-100%)*

People use motorcycle taxis because

They are more timely

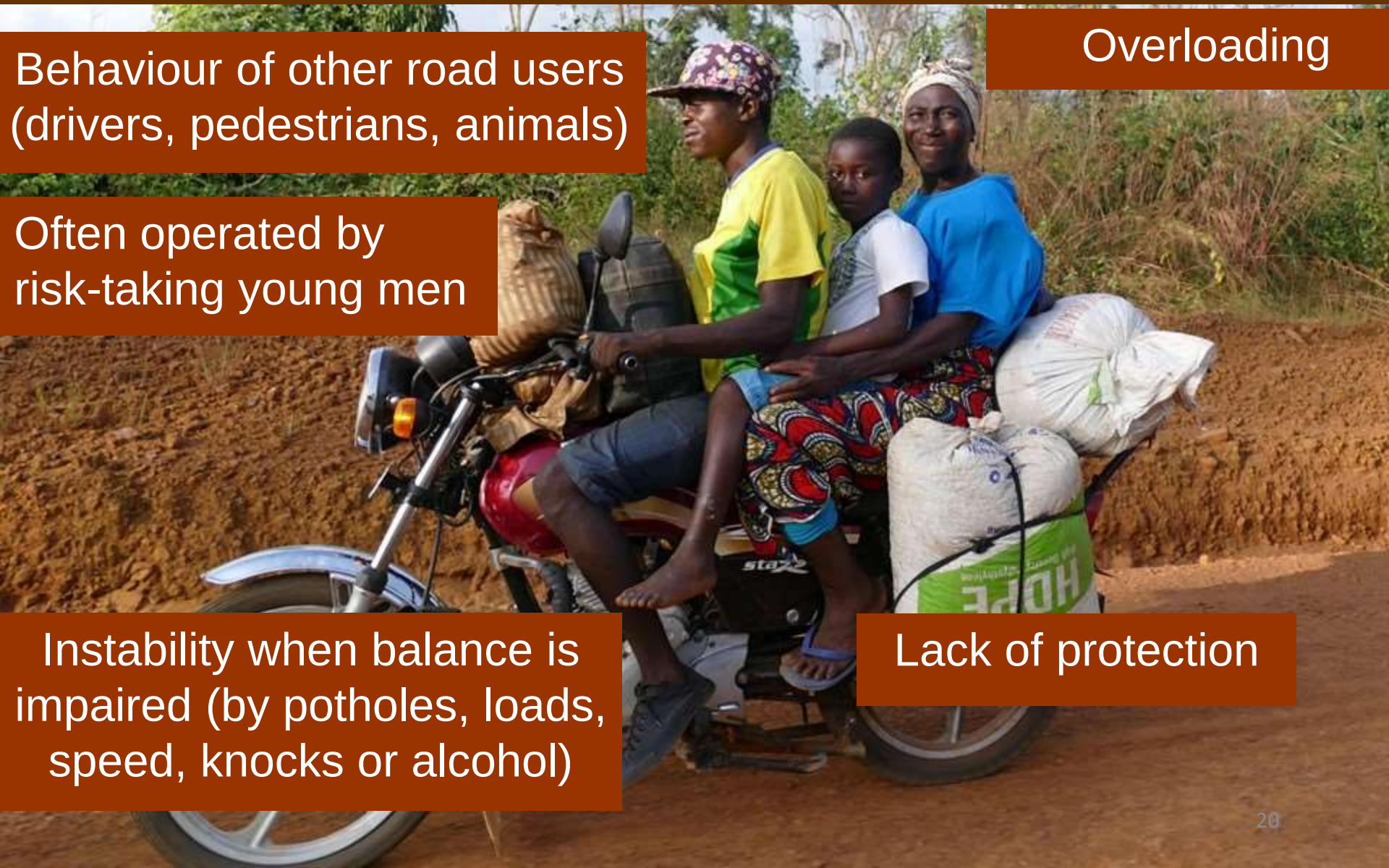
They are more convenient (point to point)

There are no alternatives

In general they complement 'conventional' transport serices and do not compete directly

Motorcycles are transforming rural access

Motorcycles can be a risky transport option



Motorcycles are transforming rural access

Benefits much greater than costs

Better access to health

Rural employment

Better access to markets (greater income, agricultural production and sales)

Rural women and men praise the benefits of motorycycle taxis

Better access to education

Three-wheelers also important and have a role

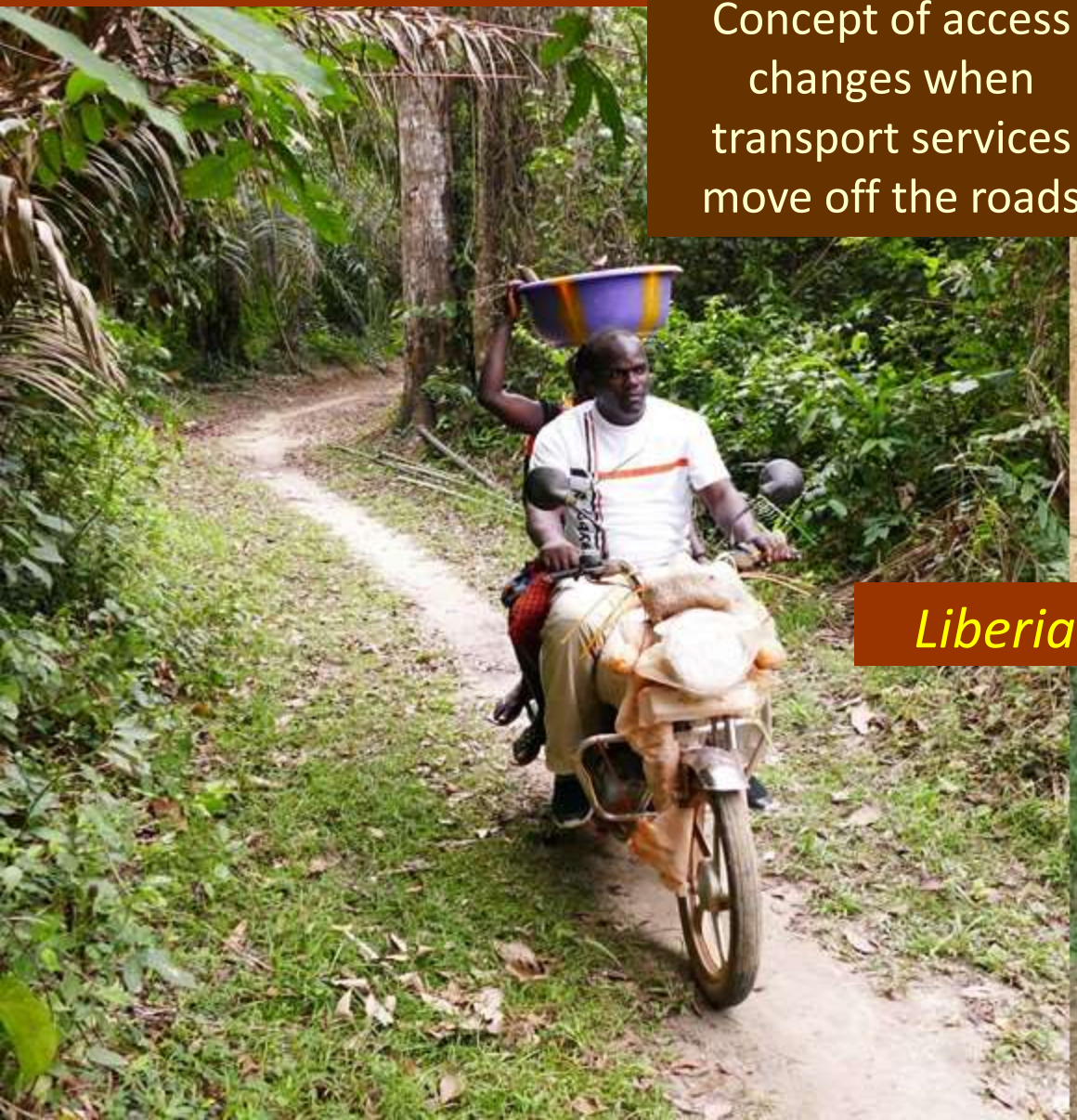
Track and bridge quality for three wheelers needs to be higher (more expensive investment and maintenance)

Three wheelers need quite good roads or tracks and they cannot use simple footpaths

Motorcycles are transforming rural access

Motorcycles also important on rural paths and trails

Concept of access changes when transport services move off the roads



Liberia

Motorcycles are transforming rural access

Motorcycles also important on rural paths and trails

Some countries have special trails suitable for bicycles and motorcycles that connect villages to the roads

Myanmar (Burma)

Motorcycles are transforming rural access

Major importance to rural communities for passenger and freight transport

Motorcycle taxis

Very convenient

Will go off road

Accessible by mobile phone

Have transformed rural transport services

Motorcycles often contribute over 75% of annual passenger market and annual small freight on rural roads

Their contribution to transport and development is often rated very highly by women and men

Nature of Required Investments (1)

Motorcycle trails connecting villages to the road network

Labour-based work for women and men

Implemented by community-based organisations

Engineering advice (drainage etc)

Nature of Required Investments (2)

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AfCAP is supporting research in Liberia on the gender implications of motorcycle taxis, including the role of motorcycle trails

Log bridges over streams and gulleys.

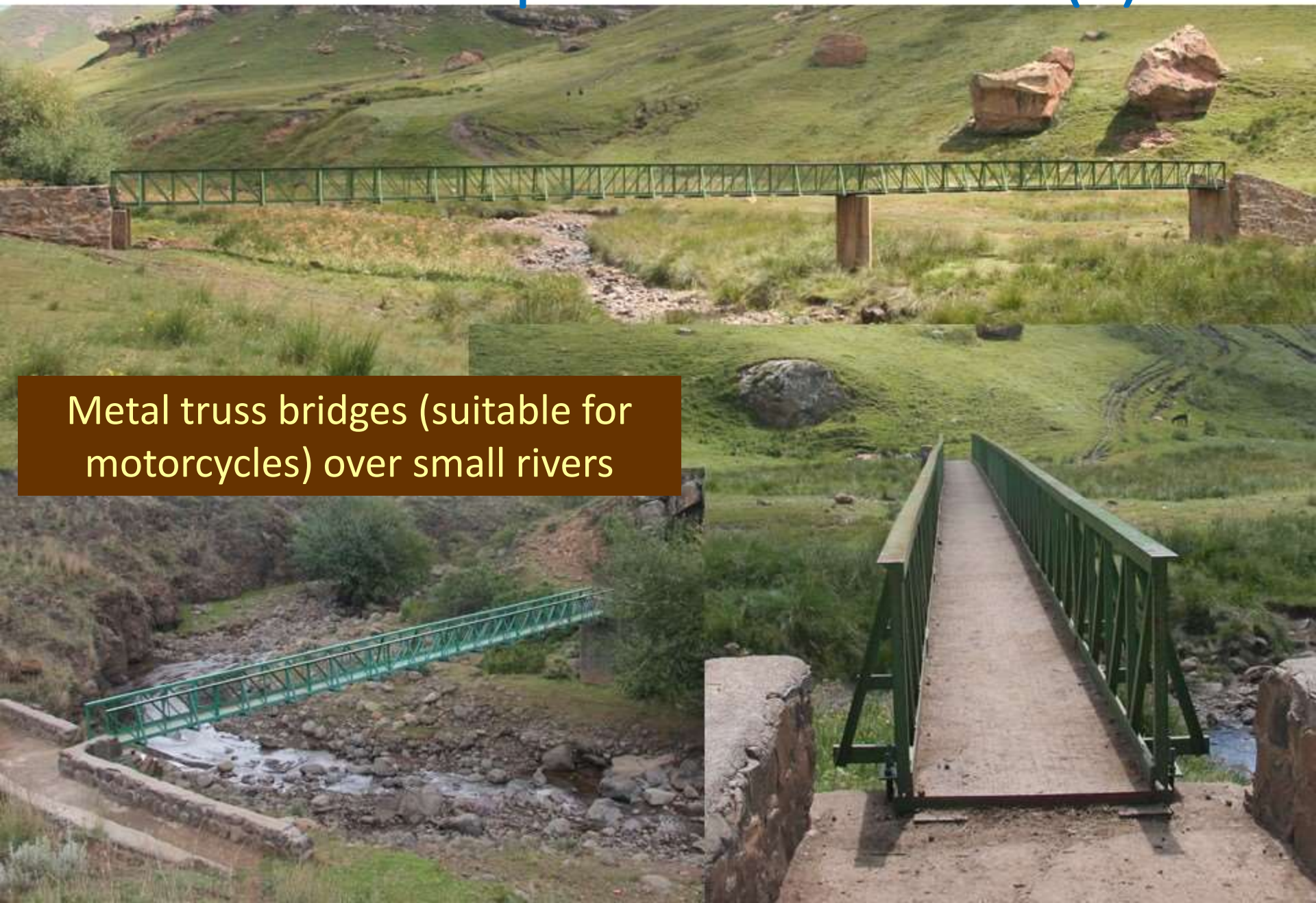
Simple log culverts where needed.

Community-based organisations and labour.

Local skills with chainsaw.

Engineering advice

Nature of Required Investments (3)



Metal truss bridges (suitable for motorcycles) over small rivers

Nature of Required Investments (4)

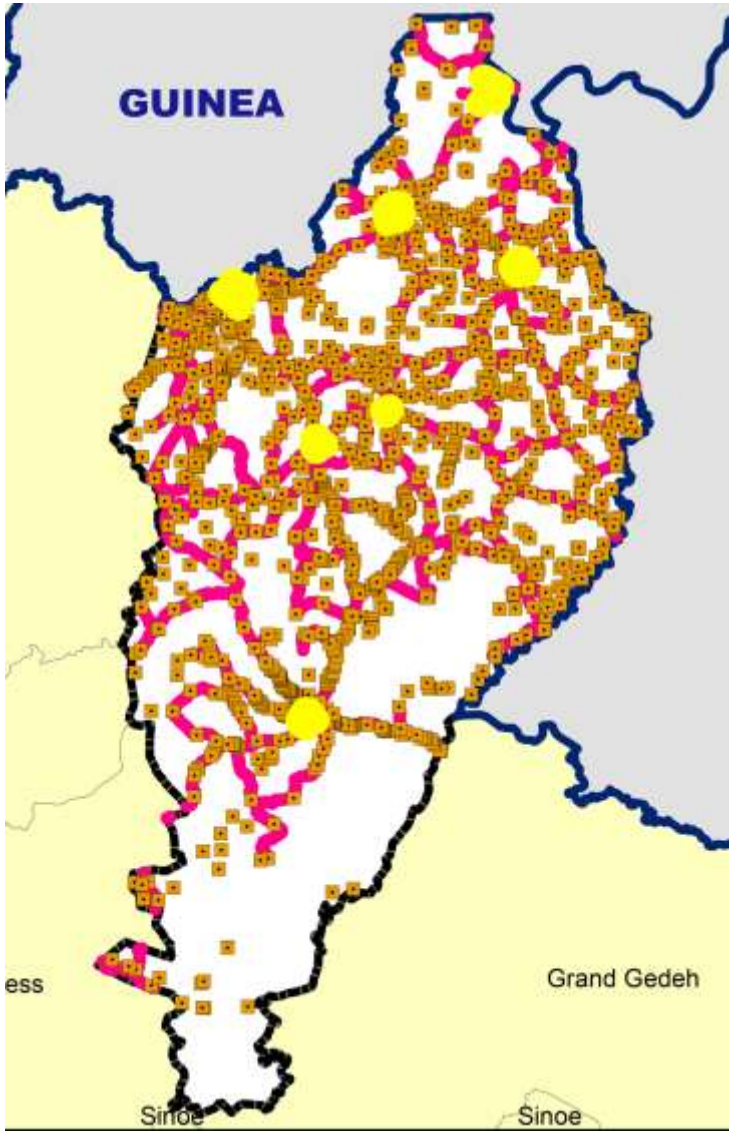
Suspension bridges over large rivers

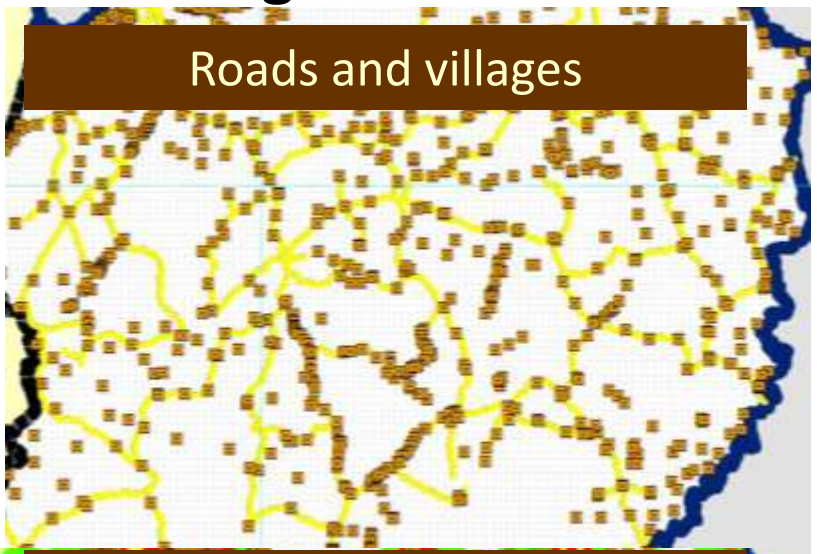
Nature of Required Investments (5)

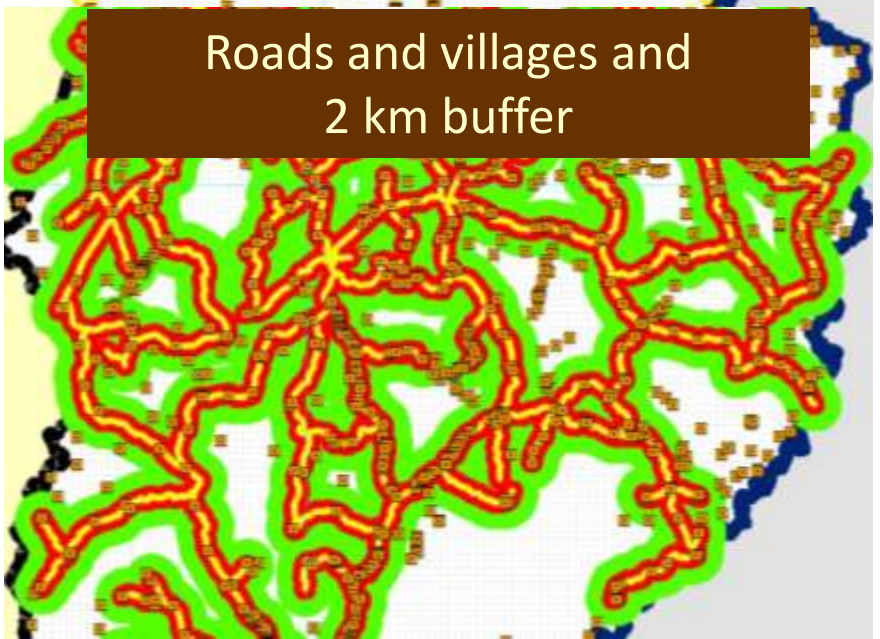
Trail suspension bridges can provide all-year motorcycle and pedestrian access to communities separated by large rivers

Strategic investment analysis approach (1)

Nimba County model: GIS roads and villages







SIP analysis approach (2)

Nimba County model: GIS roads and villages

- Total population: 462,000 of which 100,000 urban
- Rural population: **364,000** in 1307 villages
- **602 villages (220,000 people) are NOT on roads**. People walk on footpaths to reach markets and medical facilities

  . . . unless the paths can be used by motorcycles

Strategic investment analysis approach (3)

Nimba County model

Distance from road (km)	Villages	Population	Ave track (km)	Total track (km)
0.1-2 km	301	145,000	1.5	452
2-4 km	186	43,000	4.5	837
4-6 km	70	16,000	7.5	525
6 + km	45	16,000	10.5	473
	602	**220,000**		**2286**

- Track length estimated at 50% more than average distance straight line with no assumptions on track/bridge sharing

With 2,286 km of tracks (and trail bridges)
ALL villages could be connected in Nimba County

Strategic investment analysis approach (4)

Liberia, all villages

County`	Villages	Population
Bomi	481	80936
Bong	1844	316116
Gbarpolu	293	81363
Grand Bassa	1436	207614
Grand Gedeh	227	122549
Grand Kru	165	57633
GrandCape Mount	500	124971
Lofa	914	274511
Margibi	877	201236
Maryland	212	135804
Montserrado	721	139122
Nimba	1073	456513
River Gee	194	66388
Rivercess	430	69411
Sinoe	475	98685
	9842	**2432852**

- Liberia has approximately 10,000 villages (over 30 people) that are not on a road
- About 2.5 million people live in these villages
- Villages tend to cluster and be aligned along waterways or other features
- Access paths tend to go through other villages so assume 2 km new trail construction per village
- If new trail requirement is 2 km per village (average), approximately 20,000 kilometres of trails may be needed

Strategic investment analysis approach (5)

National model budget estimates

Item	Number	Cost/unit ($ '000s)	Totals ($ '000s)
Trail clearing (km)	20,000	1	20,000
Log bridges	10,000	1.5	15,000
20 m truss bridges	1000	24	24,000
70 m suspension bridges	400	112	45,000
Totals			**104,000**
Total per kilometre			**5.1**

Assumptions (to be verified through surveys):

Community-based track clearance: $1000 per km. Local log bridge: $1500

2 km of track per village connected (assuming track sharing and village clusters)

4 m log bridge, one per 2 km @ $1500

20 m truss bridge, one per 20 km @ $1200/m

70 m suspension bridge, one per 50 km @ $1600/m

Strategic investment analysis approach (6)

Cost of connecting ALL 10,000 villages in Liberia is estimated at $104 million (including bridges)

The cost is USD 5100 per kilometre, including bridges

With 2,500,000 isolated rural people the cost is $42 per person connected

The expected benefits to the health of women, men and children is likely to be high as are effects on agriculture, incomes and the economy

Cost Benefit Analyses

Cost Benefit Analysis Nimba County model

- Investment cost USD $10.4 million
- Assumptions (typical figures for rural Africa)
  - Annual maintenance 10% of capital for paths/wood bridges
  - 2 return trail trips per household per week @ 6.35 km
  - 20% trips with heavy head loads
  - Rural wage rate of $2.5 per day
  - 25% of trips and most loads move to motorcycles
- IRR 17% through value of time savings alone
- This does not include benefits relating to agricultural production, health, employment etc

Next steps in Liberia

- Liberia's Minister of Public Works supports this approach which is likely to be approved in the national transport masterplan
- Several aid agencies have expressed interest (including SIDA and USAID that are funding feeder roads)
- A new **'trail'** category of access infrastructure may be designated. This will require **guidelines** (rather than uniform 'standards')
- The trails will be in addition to the expanding feeder road network. Trails will complement feeder roads with strong synergy and benefits
- Need for good baseline data
- Need for 'ground-truthing' surveys to determine anticipated bridge requirements and priorities for large trail suspension bridges
- Need for community-based groups to be trained in trail construction, management and maintenance and bridge maintenance and management

Liberia conclusion

Connecting ALL villages in Liberia within a few years appears possible, practicable and affordable, with major expected benefits to health, agriculture, employment and the economy

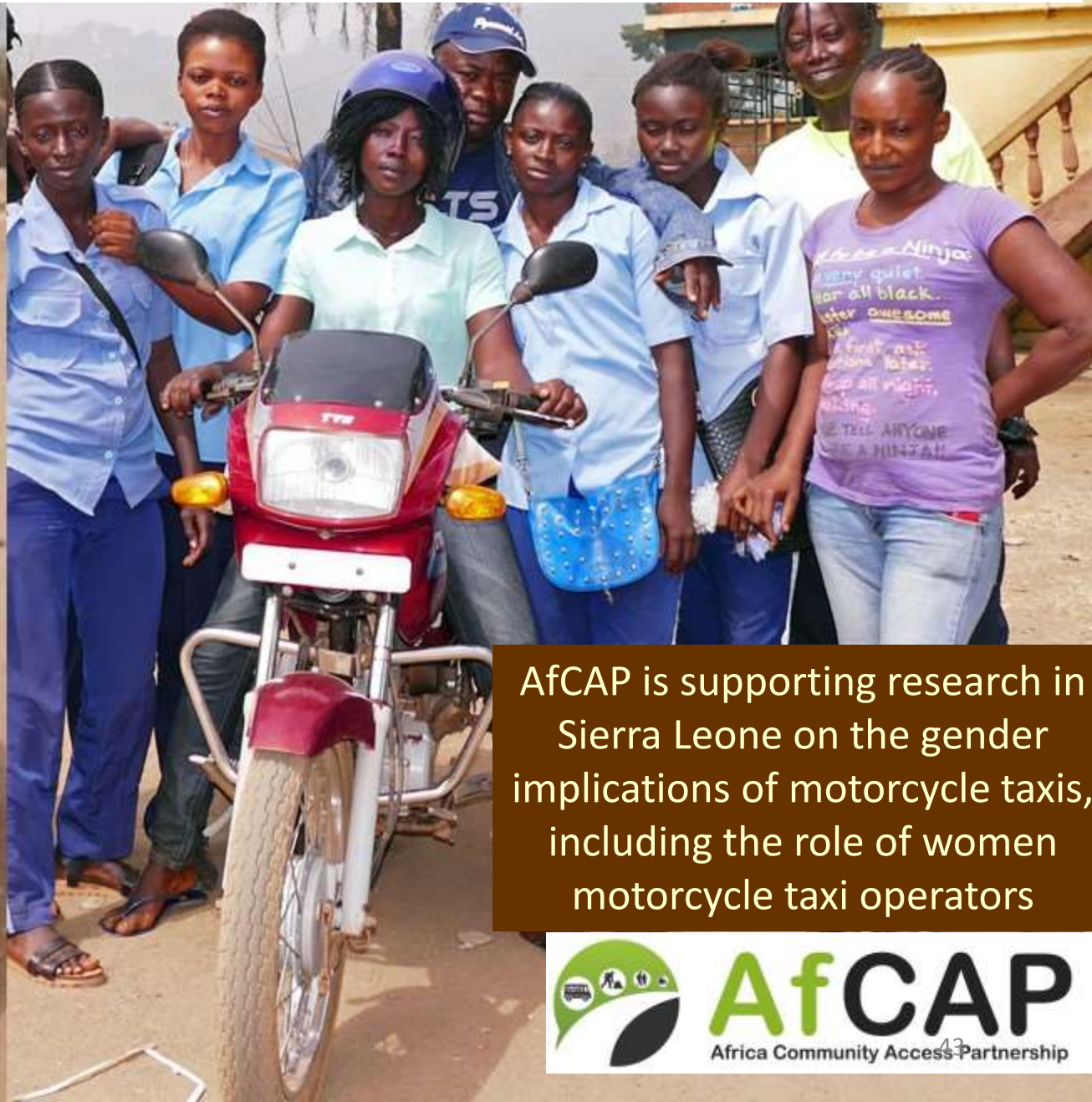
Sierra Leone: similar issues

Sierra Leone: similar issues

Rural paths and trails already being used by motorcycles

Sierra Leone: similar issues

Sierra Leone: similar issues



AfCAP is supporting research in Sierra Leone on the gender implications of motorcycle taxis, including the role of women motorcycle taxi operators

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Africa conclusion

With this approach, could we connect ALL villages in Africa to the road network?

What a difference this could make to women, men, children, people with disabilities, etc who are currently isolated from the road network . . . .

Within a few years, almost everyone in Africa could have access to motorised transport services to access markets, health services, education etc . . .

The benefits to the health of women, men and children are likely to be high as are effects on agriculture, incomes and the economy

This could really stimulate rural economies . . .

Lets make it happen!

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Strengthening rural access through transport associations – a case study from Uganda

Victor Simfukwe – Transaid

Project Summary

Project Name:	Merck for Ugandan Mothers (MUM)
Donor:	Merck
Project Timeline:	October 2012 – August 2015
Lead Partner:	PACE (Programme for Accessible Health, Communication and Education)
Aim:	To improve access to maternal health care services through the implementation of appropriate local transport systems.

Transaid's Role

To implement a project enabling pregnant women to overcome the barriers to accessing maternal health care services in 5 rural districts in Uganda.

ACTIVITIES CARRIED OUT

Formative Assessments between May 2013 & February 2014

- **5 districts**
- **111 villages**
- **130 focus groups**

Project Implementation 2013 & September 2014

- Community-based Emergency Transport Systems in 3 districts
- Facility-based Emergency Transport Systems in 2 districts

Both operate using volunteer motorcycle taxi riders to transport pregnant women to maternal health services providing a safe and affordable means of travel

Project Implementation continued

2 motorcycle taxi trailers have been installed one in Alebtong and one in Ibanda District. They are facility-based and are primarily for referrals.

Ongoing Monitoring in 5 districts between September 2014 & August 2015

- To assess the number of active participants
- To correct and confirm contact details of participants
- To reinforce the key messages associated with ETS provision
- To identify and rectify any problems or concerns arising since implementation
- To carry out monthly data collection

Project Monitoring

	Jan-15						Feb-15							
	MU	HO	IB	LI	AL	TOTALS	MU	HO	IB	LI	AL	TOTALS	TOTALS Jan & Feb	
Number of ETS Riders	80	24	112	93	10	319	80	24	112	93	10	319	319	
Number of ETS riders contacted	51	12	73	67	8	211	51	12	73	67	8	211	211	
Number of women transported	185	63	176	218	23	665	120	48	105	156	16	445	1110	
Number of women transported for ANC	97	23	78	107	16	321	51	29	46	91	5	222	543	1110
Number of women transported for Delivery	88	40	98	111	7	344	69	19	59	65	11	223	567	
Number of women transported to Govt Facility	109	20	116	182	18	445	83	18	67	131	9	308	753	1110
Number of women transported to private Facility	76	43	60	36	5	220	37	30	38	25	7	137	357	
Average number of women transported per rider	3.63	5.25	2.41	3.25	2.88	3.48	2.35	4.00	1.44	2.33	2.00	2.42	2.95	
Average cost reduction of journey price	23%	3.66%	28.80%	6.48%	31.86%	18.76%	16.00%	6.31%	28.14%	7.99%	-1.40%	11.41%	15.08%	

Rural Assessments

To establish:

- Level of awareness in communities about the project
- Take up of ETS rider service
- “Correct” messages in identified areas where there has been misinterpretation
- Cross check data from ETS riders with communities

Rural Assessments Initial Key Findings

Additional rural assessments

- Majority had heard about the scheme through the riders promoting themselves
- Majority got contact details from the riders themselves
- Majority use the same rider again

- Riders are between 0.5km and 4km from the passenger
- Riders take between 2 and 20 minutes to reach the passenger

- Riders in Hoima and Alebtong tend to demand cash up front
- Riders in Ibanda, Lira and Mubende tend to offer credit

Community Feedback

"Very happy with the programme, the riders are safe and can be contacted at any time. They are not too fast and careless like these other ones."

"The rider is very good he picked me up twice in the night without even a complaint."

"Other riders who are not in the project would charge you 3 times and would not even wait for you at the clinic. We are benefiting a lot as women from this project."

Zambia-e-Ranger

- Motorcycle ambulance-11 MCA- 5 district
- Facility based MCA
- Dedicated to maternal transfers only
- Health Staff trained Riders
- Link between, community and district based ambulance's (bicycle and motorised ambulance)

Challenges

- Trained Riders- relocated
- Untrained Riders
- Crashes
- DHMT Support
  - Repairs
  - Fuel allocation
  - Filling in the log books
  - Misuse- remove the sidecar

Any questions?

Group break out - discussion topics:

1) The role and potential of **motorcycle taxi associations** to self-regulate and improve rural access and safety

2) R**egulation**, **Safety** and **training**

3) Community based labour to **build tracks/improve infrastructure** to improve rural mobility

For each topic the group will be asked to discuss and then present:
- Key considerations
- Examples of good practice that have been observed
- Proposed future research / implementation

Thank you for your participation

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