

# Leapfrogging from Rural Hubs to New Markets

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# 1. Background

- This paper is based on an ongoing AFCAP funded project titled **“Rural Logistics for Smallholder Farmers to Meet New Agricultural Market Demands”**.

## Project Objective

1. To analyse existing transport services and logistics.
2. In-depth analysis of the organisation of transport services/logistics in selected value chains.
3. Developing a planning framework for improving the efficiency of transport services in the high value agricultural sub-sector
4. Final Report, Booklet and Dissemination

## 2. Introduction

### Rural Access, A logistical nightmare for small scale farmers

- Rural transport logistics provide **a major challenge for small scale farmers** to deliver produce to the market efficiently, cost effectively, while maintaining quality and standards.



The **spatial dispersal** of small scale rural farms also provides logistical challenge

### 3. Opportunities in emerging new markets

- New markets for high value agricultural produce are **creating an increased demand** for fresh, high quality, agricultural products
- They represent a **good opportunity** for rural small-scale farmers to increase incomes from agricultural production and hence lower poverty levels.

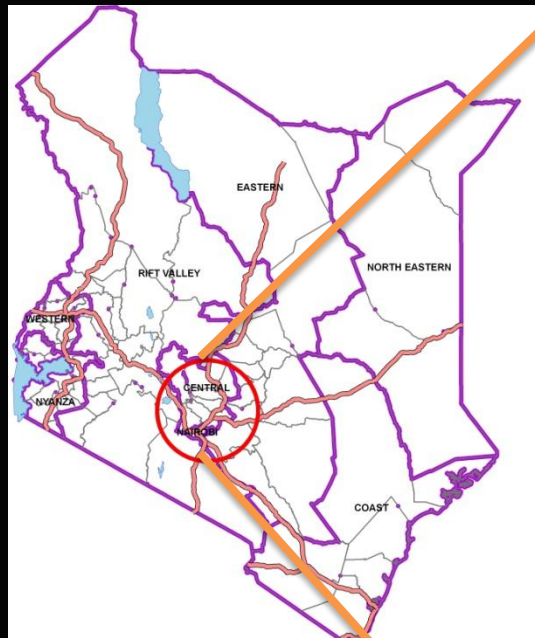
## 4. But,

- The markets require **strict adherence to the high Quality Standards** demanded by emerging markets and compliance with international food standards.
- They also a number of innovations with respect to **marketing organisation and infrastructures**, which have their specific demands for logistic transport services.
- The produce have to be **transported timely and efficiently** to the market but rural roads conditions a major setback.

## 5. How can small holder farmers exploit the opportunities in emerging market?

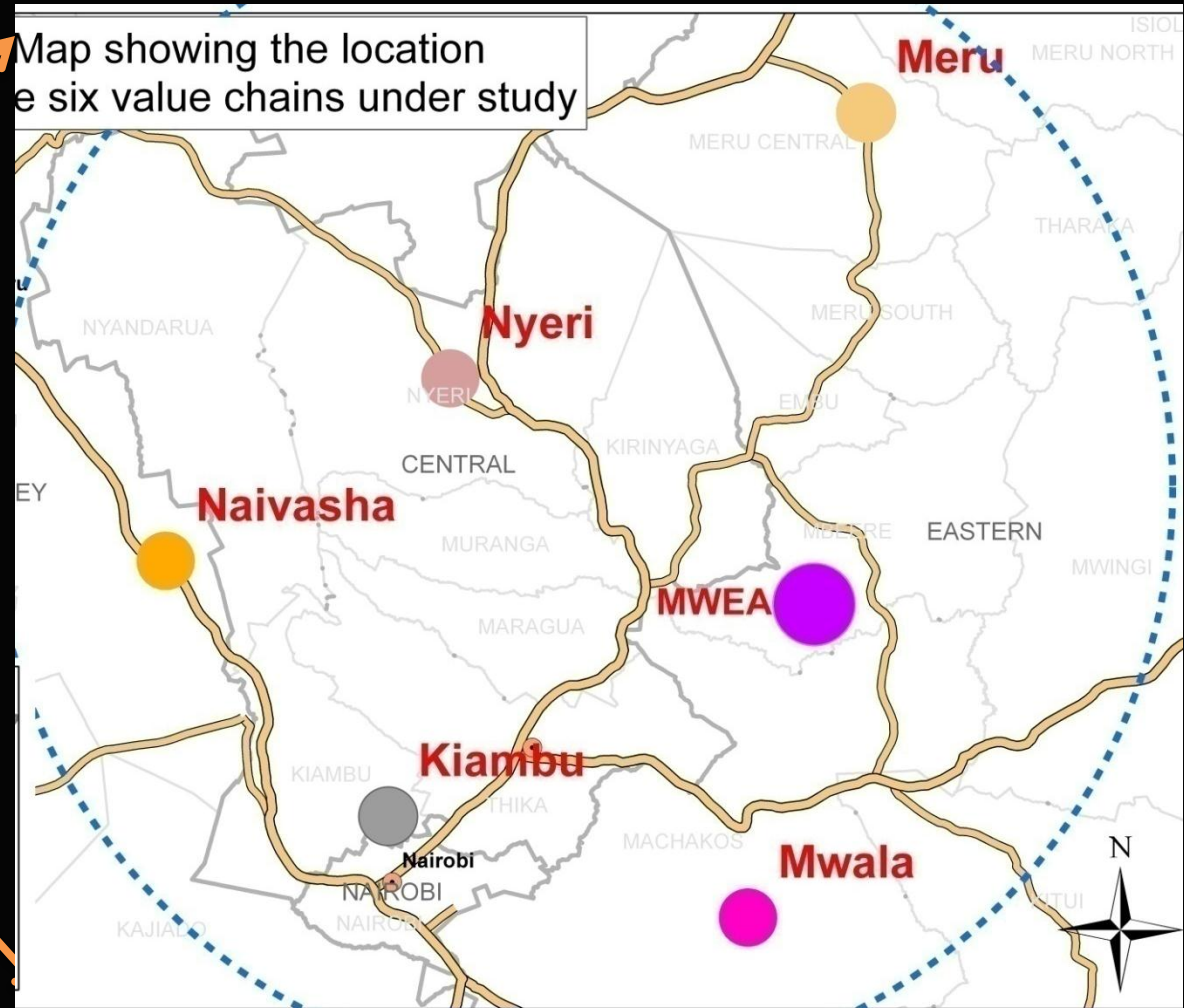
- There is need to **improve rural transport services**, with a focus on optimal multi-modal solutions at every stage of the transport/marketing chain.
- The produce have to undergo a number of processes, such as cleaning, **ripening, greening** and **de-greening, pre-cooling**, and **pack line operations**.
- Need for a well-equipped and hygienically maintained infrastructural base if rural farmers re to benefit from these markets.

## 6. Project Context



Six regions in Kenya have been chosen for in-depth analysis

Map showing the location of the six value chains under study



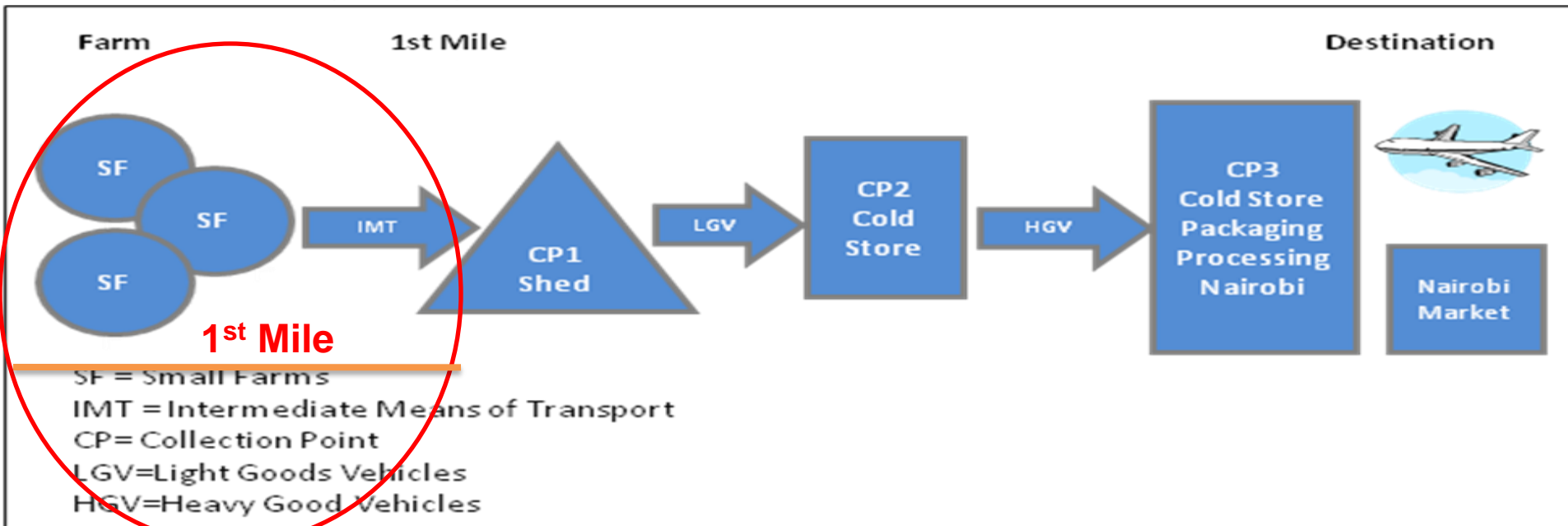
2. Primary data is being collected through interviews;  
**1. Farm survey , 2. Collection /Processing Point Survey, 3. Transport Survey**

3. GIS is being used in mapping of the logistic chains

# 7. Preliminary findings of the study

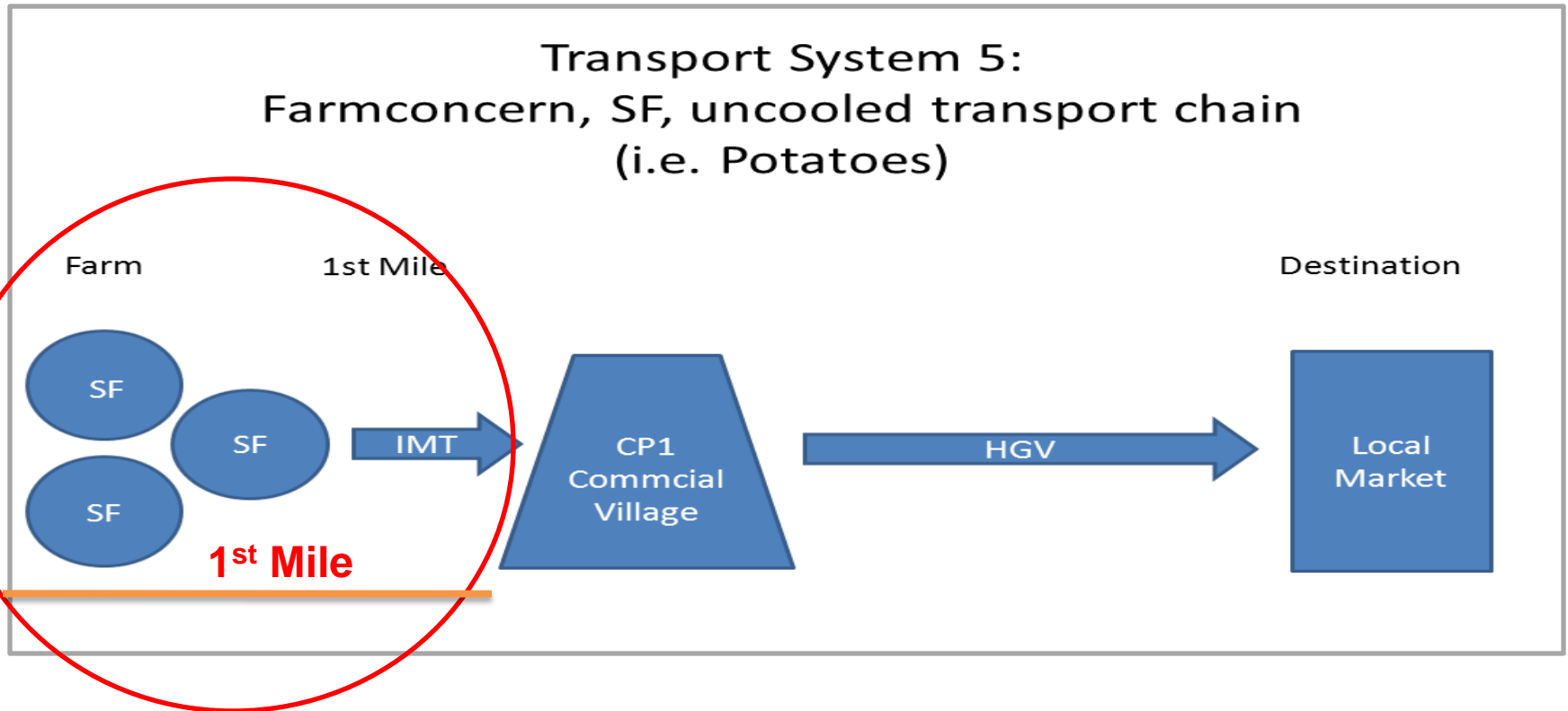
This study has identified five generic logistics systems that exist in Kenya.

## Four-stage logistics system.





## 9. Collective marketing by small holders for local markets



Small holders farmers in a village are **organized into a confederation of producers**, who work towards consolidation of their produce in order to achieve joint economies of scale for marketing.

# 10. Gender roles in rural agric production and transport



**Weeding and land preparation**



**90% of workers are women**

**Harvesting, transporting to CP1, sorting, grading, packing**



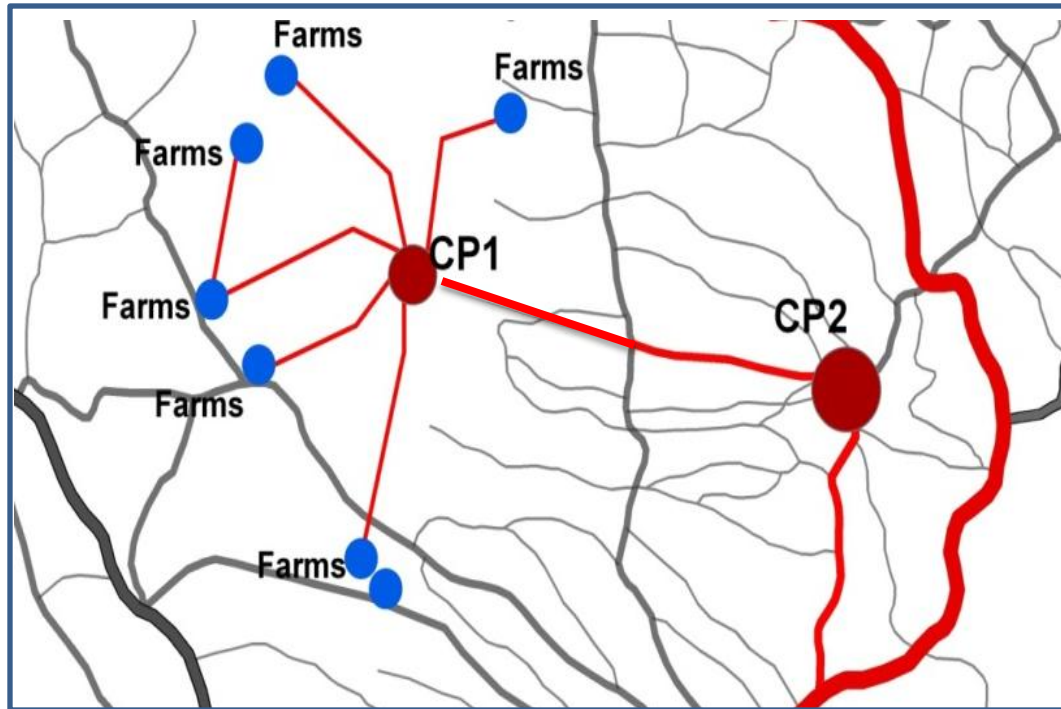
**Supervision/ Transport to CPs**

# 11. Using ICT to improve rural transport logistics

- **Geographic Information System (GIS)** being used in spatial mapping and geo-visualization of various components of the logistics chains.
- Being used to develop a **GIS geo-database** that can be used in rural transport logistic planning and management

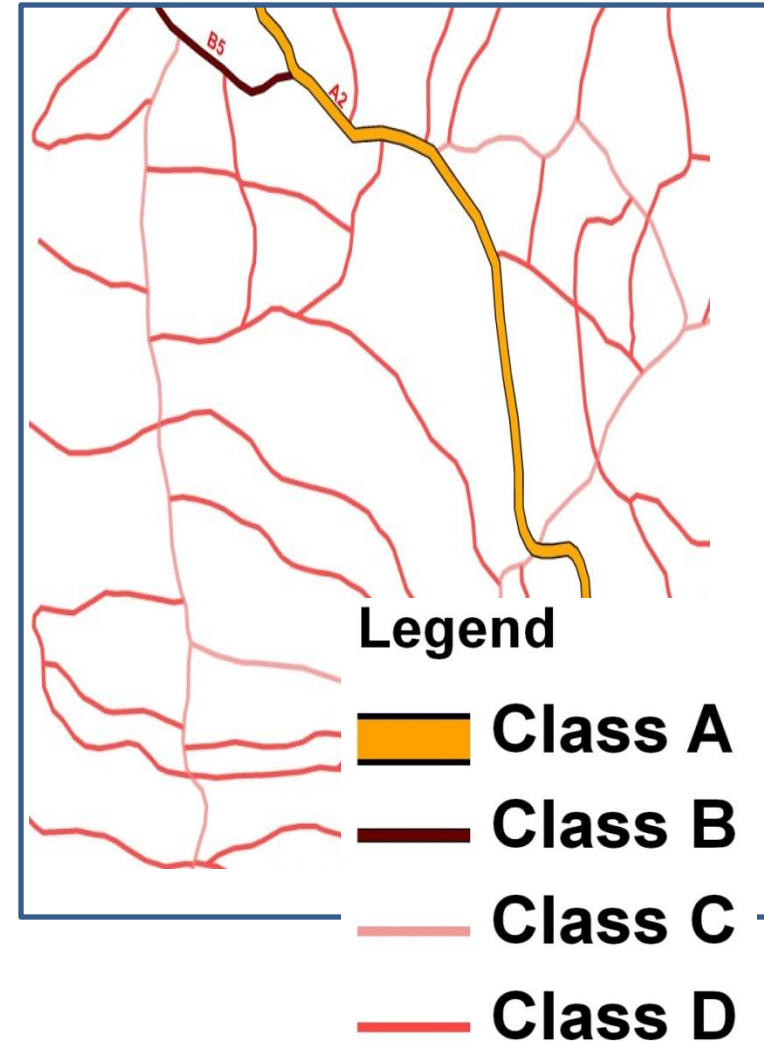
## 12. Developing Geo-database for rural transport logistics /chains

Farms and Collection Point mapping

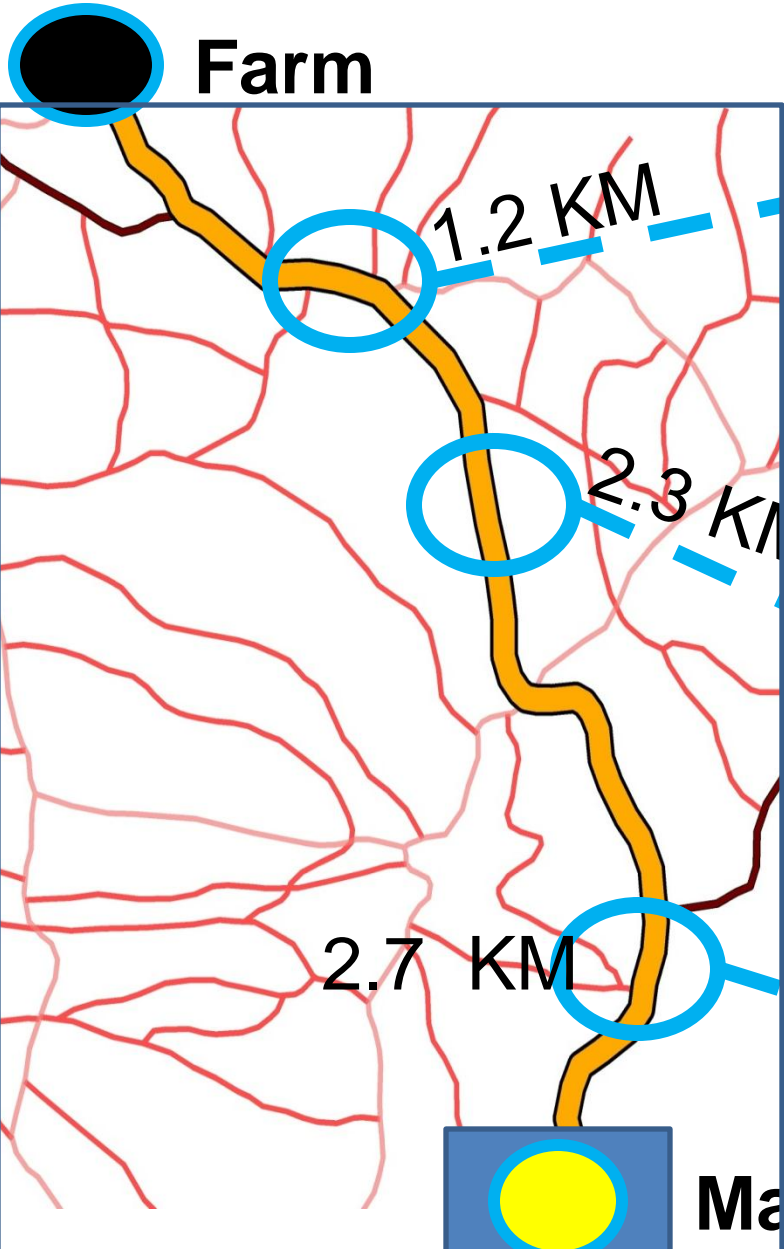


• **Local community knowledge**  
Integrated Using GIS through  
Participatory mapping

Creating road  
geo-database



# 13. Network analysis in GIS



Road Segmentation

Condition



Not passable



Passable

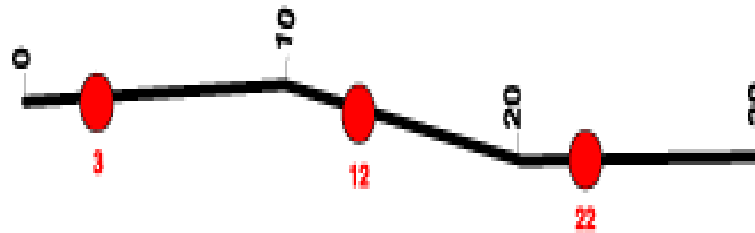


**Danger**  
(Broken bridge)

# 14. Linear referencing operation in GIS

Dynamic segmentation of rural access roads

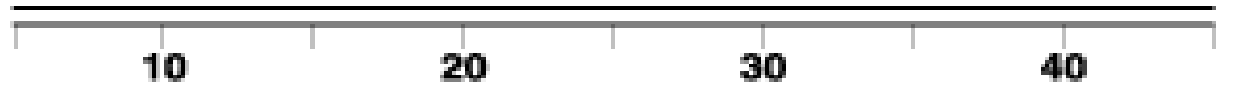
Road segment



Material

Asphalt	Concrete	Asphalt
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Road variables



State of each Road Segment

## 15. Route Optimization

- **Route maps** (farmer-Collection points - rural roads networks- CP2- market.
- Produce collection **route optimization** by the transporters- shortest route to take to collect the produce.

## 16. Interesting research area- A pilot study on geo-marketing concept

- Initial findings of this research open up an interesting research area in geo-marketing that if support is provided can be explored.
- This database can be used to develop a **“pilot rural geo-marketing tool”** that integrate GIS and Mobile phone’s Short Messaging Service (SMS).
- Farmers can use this to **send Geo coded short message services (sms)** to marketers and transporters. Indicating the quantity, type, location of farm and CP code).
- Explore the Geo-visualization of this in these maps in platforms like Google earth

## 17. Conclusion

- In-depth analysis of rural logistics chains is necessary to understanding rural access and mobility.
- Adoption of GIS technology is a necessary prerequisite for rural logistic planning
- The primary product of this study will be a livelihoods focused booklet summarizing the “Understanding of African Logistical and other Value-Chain Operational Components”.
- A livelihoods photo-story of real-life, ground-level happenings and case studies is also under development.

## 18. Research Partners

### 1. Dr Pascal Kaumbutho (CEO)

Kenya Network for Dissemination of Agricultural Technologies  
[KENDAT]

### 2. Peter Njenga (Executive Director)

International Forum for Rural Transport and Development [IFRTD]

### 3. Dr. Niklas Sieber

TCP International

### 4. Mathenge Mwehe

CEO- Geo spatial Africa Limited: Lecturer, Maseno university

**Thank you**

**Muito Obrigado**

**The research continues...**