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Rural Mobility and Socio-Economic Baseline Pilot Study in Liberia

Final Report

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The views in this document are those of the authors and they do not necessarily reflect the views of the Research for Community Access Partnership (ReCAP) or Cardno Emerging Markets (UK) Ltd for whom the document was prepared.

Cover photo: Family en-route from Baywadee to Zwedru (County Capital), Grand Gedeh County, Liberia

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General Comments

1. Some brief step wise information on the data management system and how it operates will be well suited for the draft final report
2. The report on the M and E guideline will be better appreciated if it is presented to directly correspond to the framework in Figure 1
3. The section on the Economic baseline Analysis should be well checked for the use of correct grammar especially with the use of past and present tenses.
4. The format of presentation and the structure should be very consistent especially in the presentation of sub headings
5. The comments made on the Zwedru – Baywadee report should be applied to the Zwesru Boduo rport

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Abstract

Safe, reliable and affordable rural access facilitates the movement of goods and services which affects the livelihoods of low-income households, especially in developing economies such as Liberia. Evidence shows there is a strong correlation between poverty and physical connectivity. Currently, various donor funded rural access programmes and projects are being implemented in Liberia, whilst other such projects are in the pipeline.

There is a growing need to measure the impact of these rural access investments on livelihood opportunities and poverty reduction, and to measure the socio-economic benefits accruing to project beneficiaries.

To this end, the Liberian Ministry of Public Works (MPW) is working towards the establishment of a Monitoring and Evaluation (M&E) system for assessing the socio-economic impacts of rural road improvement projects. The system is being established with the assistance of ReCAP using the Liberian Swedish Feeder Roads Project (LSFRP) funded by the Swedish Government as a case pilot study under a consultancy agreement with the University of Birmingham.

This Final Report presents the outcomes of the study and gives guidelines on conducting socio-economic impact baseline and follow up studies on rural road projects in Liberia..

Key issues arising from the study include the need to focus on creating synergies amongst ministries, agencies and projects that are active in the rural roads sectorto enable the effective sharing of resources and data required to build the M&E System. The Road Fund is seen as key to ensuring sustainability of the system through providing funds for revamping MPW's IT system in the short term, and funding data collection activities in the future.

Key Words

Rural Mobility, Socio-economic, Data, Database, Evaluation, Indicators, Monitoring,Online, Website

Research for Community Access Partnership (ReCAP)

Safe and sustainable transport for rural communities

ReCAP is a research programme, funded by UK Aid, with the aim of promoting safe and sustainable transport for rural communities in Africa and Asia. ReCAP comprises the Africa Community Access Partnership (AfCAP) and the Asia Community Access Partnership (AsCAP). These partnerships support knowledge sharing between participating countries in order to enhance the uptake of low cost, proven solutions for rural access that maximise the use of local resources. The ReCAP programme is managed by Cardno Emerging Markets (UK) Ltd.

www.research4cap.org

Acronyms, Units and Currencies

ADB	African Development Bank
ADF	African Development Fund
AFCAP	Africa Community Access Partnership
AIDS	Acquired Immune Deficiency Syndrome
ASCAP	Asia Community Access Partnership
CBO	Community Based Organisation
CBA	Cost Benefit Analysis
CC	Climate Change
DFR	Department of Feeder Roads
EMA	Environmental Management Agency
EIA	Environmental Impact Assessment
GIZ	German International Cooperation Agency
HDM	Highway Design and Management, software
IMT	Intermediate Means of Transport
IT	Information Technology
FRAMP	Feeder Road Alternatives and Maintenance Program
IPSS	Infrastructure Planning and Support System
LIC	Low Income Countries
LIS-GIS	Liberia Institute of Statistics and Geo-Information Services
LRA	Liberia Revenue Authority
LSFRP	Liberian Swedish Feeder Roads Project
LVRR	Low Volume Rural Road
M&E	Monitoring and Evaluation
MPW	Ministry of Public Works
PMC	Project Management Committee
QA	Quality Assurance
RECAP	Research for Community Access Partnership
RR	Rural Roads
SAPEC	Smallholder Agricultural Productivity Enhancement and Commercialization Project
SSA	Sub Saharan Africa
ToR	Terms of Reference
TRL	Transport Research Laboratory
TS	Transport Services
UoB	University of Birmingham
UKAID	United Kingdom Agency for International Development
URL	Uniform Resource Locator

USAID	United States Agency for International Development
WB	World Bank

1 Introduction

1.1 Background to Study

Safe, reliable and affordable rural access facilitates the movement of goods and services which affect the livelihoods of low-incomehouseholds, especially in developing economies such as Liberia. Evidence shows there is a strong correlation between poverty and physical connectivity. Road access can improve social welfare by increasing the proximity to and quality of basic services and by broadening livelihood opportunities.

To monitor and evaluate the impact of investments in rural access projects on livelihood opportunities and poverty reduction, and to measure the socio-economic benefits of improved accessibility toproject beneficiaries, it is important to identify whether the project outcomes have been achieved through ex-ante and ex-post impact studies.

Currently, various donor funded rural access programmes and projects are being implemented in Liberia, whilst other such projects are in the pipeline. There is a growing need to measure the impact of these projects on rural livelihoods and economic growth.

The Liberian Ministry of Public Works (MPW) sought to establish a Monitoring and Evaluation (M&E) Framework for assessing the socio-economic impacts of rural road improvement projects, using the Liberian Swedish Feeder Roads Project (LSFRP) funded by the Swedish Government as a case study. MPW obtained assistance from the ReCAP programme to undertake a pilot study on two roads. The University of Birmingham was awarded the contract to provide consultancy services towards establishment of an M&E Framework.

1.2 Study Aim

The aim of the project is to establish a systematic and functional progress and impact monitoring and evaluation system for low volume feeder roads, including a robust data collection approach and an associated online data management system

1.3 Study Objectives

The objectives to meet the study aim were to:

- Define indicators of measurement and specifications that can be used to measure potential direct and indirect impacts of the rehabilitation of LVRs under LSFRP.
- Establish an appropriate study approach and procedure for socio-economic baseline data collection on LVRs in Liberia.
- Develop a database management system that can be used to compare and contrast‘before’ and ‘after’ projectimpact data for the LSFRP and other feeder road projects in Liberia.
- Populate the database using existing socio-economic data obtained from local communities along the project roads. The communities on the ‘with project’ road will be impacted bythe works interventions planned to commence in 2018.
- Build capacity and transfer knowledge to the MPW’s Department of Feeder Roads (DFR)and M&E staff so they canindependently carry out baseline, output, outcomes and impact surveys.
- Achieve uptake and embedment of the approach through conducting two country workshops to validate the proposed methodology for study and review the outcomes of the study.

1.4 Study Approach

Before the commencement of the study, it was known that there were several, albeit disjointed, efforts to monitor the outputs of several of the current rural road rehabilitation projects in Liberia. At the same time, several studies in other parts of Sub-Saharan Africahave attempted to determine the relevance of socio-

economic baseline studies in determining the impact of investment in rural road infrastructure. To that end, several indicators of the impact of such investments have been researched and documented.

The approach adopted in this study tookaccountof relevant completed studies and took advantage of the existing body of knowledge to deliver an M&E framework and online system that is appropriate, simple, practical and sustainable. In addition, it was important to develop an M&E system based on full consideration of stakeholder needs and expectations so as to ensure understanding, ownership and use of resultant M&E information.

1.5 Purpose of this Report

This Final Report presents the outcomes of the study andprovides pointers toguidelines and manualsfor the conductof socio-economic impact baseline and follow up studieson rural road projects in Liberia.

2 Study Activities Summary

2.1 Inception

The Inception Report for the study was submitted on 20th July 2018 and presented activities that had been undertaken to date as part of the pilot study, as well as those that were still to be undertaken. An outline of the study methodology and an updated programme of activitieswasprovided. The report also indicated the planned outlay of resources to achieve the study objectives, confirmed the project management structure,and updated the risk register for the study.

2.2 Development of a Monitoring and Evaluation Framework

Following submission of the Inception Report the proposed Monitoring and Evaluation (M&E) Framework was then developed that would govern the entire process of monitoring ongoing development and maintenance interventions on rural roads in Liberia. The framework wasdeveloped following a detailed literature review and situational analysis exercises.

A systematic review of impact evaluations of rural roads investments in low- and middle-income countries was provided as a standalone document.

2.3 Data Collection Method Validation

A method validation workshop and two supplementary meetings were held in Monrovia on 31 May, 20 June and 28 June 2018 respectively. The views of stakeholders on the proposed draft framework for the socio-economic data collection and data management system for Liberia were sought. Stakeholder inputs on the socio-economic indicators and database management system were captured before undertaking the pilot fieldwork.

2.4 Data CollectionExercise

The data collection exercise for the trial implementation was undertaken in Grand Gedeh County from 1st June to 18thJune 2018. Quantitative and qualitative methods were successfully trialled. Personal electronic tablets were used to collect most of the data. A team composed of MPW staff and students drawn from the University of Liberia and Stella Marie Polytechnic Technical College were trained and deployed to the study areas in the field andthe data collection exercise wascompleted as planned. The two supplementary meetings were held in Monrovia after the fieldwork to present progress and obtain feedback from stakeholders.

2.5 Results Validation and Socio-economic Baseline Reporting

The results validation workshop was held in Monrovia on 23 October 2018 for the purpose of seeking agreement on the proposed socio-economic indicators and presenting a practical demonstration of the database management system for stakeholder approval.

2.6 M&E Database Design and Commissioning

Following the successful results validation workshop the M&E online database design was finalised and populated with the data collected from the LSFRP project in Grand Gedeh County and simulated data for other projects under the responsibilityof MPW.The M&E online system is run from common web browsers such as Google Chrome, Internet Explorer, Firefox and Opera.

2.7 Train the Trainer Course

A train-the-trainercourse in road socio-economic baseline data collection and use of the data management systemwas held in Monrovia in from 09 to 12 July, 2019. A separate report for the workshop was prepared.

3 Study Outcomes

3.1 The Monitoring and EvaluationFramework

3.1.1 Overview

This section gives an overview of one of the significant outcomes of the study, this being the M&E Framework that will be the foundation of the entire MPW M&E system. The process of developing the framework has been included in the MPW M&E Guideline prepared for the entire M&E process . An outline of the proposed guideline is given in Section 3.2 of this report.

The components of the M&E Framework are shown schematically in Figure 1.

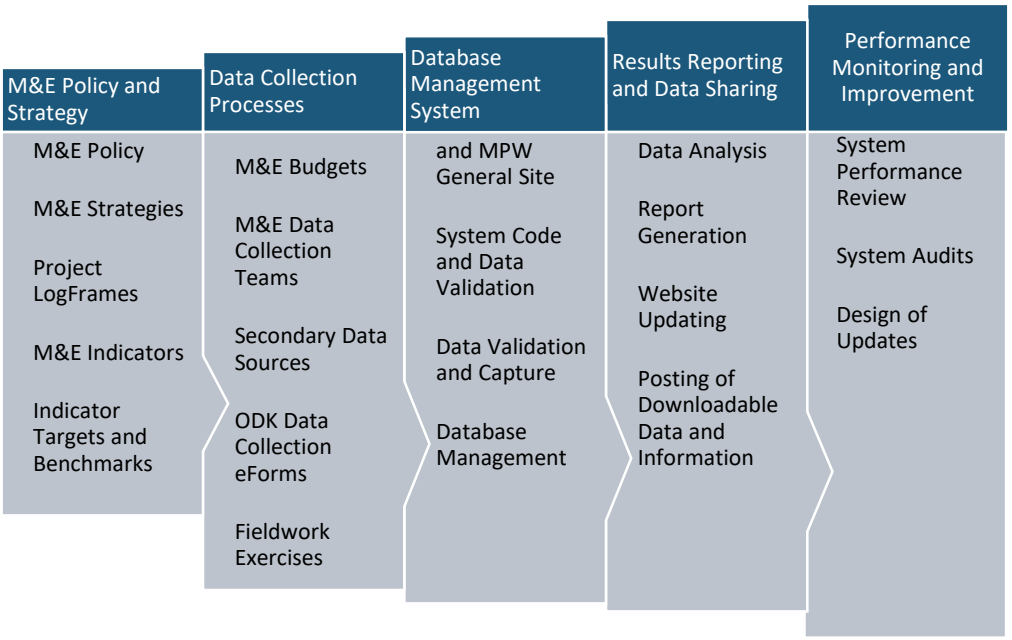

Figure 1: MPW M&E Framework

3.1.2 Monitoring and Evaluation Policy

MPW currently does not have an approved M&E Policy, however willingness to put this in place was demonstrated. To that end a draft policy statement,to be signed off by the Minister, has been developed and is included in Annex 1. The draft policy statement dictates that a results-based monitoring approach shall be instituted by MPW and an inclusive approach in undertaking M&E activities shall be adopted. The views of all relevant stakeholders of road provision and maintenance are to be taken on board.

Transparency in publishing results of the M&E processes is a key component of the policy.

3.1.3 Adoption of Results Based Monitoring

Monitoring and evaluation of projects or programmes by MPW shall adopt a Results-Based-Monitoring Approach and utilise the Logical Framework Approach (LogFrame). The logical framework approach follows a hierarchical results-oriented planning structure and methodology which focuses all project planning elements on the achievement of one project purpose. In the case of MPW projects, the purpose of interventions on rural roads shall be the improvement of social and economic livelihoods of the rural communities.

The Logical Framework, project implementation schedules, activity schedules, and project budgetswill provide the basis for monitoring all designated projects that fall under the Ministry's authority. Table 1 gives the principles that underpin the Logical Framework which is to be established for each project.

Table 1: Project Logical Framework Approach

Intervention Logic	Objectively Verifiable indicators	Source of Verification	Important Assumptions
Overall Objective/Impact (The project'scontribution to policy or programme objectives)	**Impact Indicators** Measures to show thecontribution made tothe overall objectives, measures of socio-economic impact of the project on the community.	Sources of informationand methods used tocollect Impact Indicators.	
Purpose/Outcomes(Direct benefits to thetarget groups andbeneficiaries)	**Outcome Indicators**Measures that provideevidence that thepurpose has beenachieved.	Same as above, but forOutcome Indicators.	Factors outside theproject management'scontrol that may impacton the Purpose-Objectivelinkage
Outputs (Tangible productsprovided by theproject)	**Output IndicatorsPhysical products as a result of the project in terms of:** Quantity, Quality, Timeliness.	Same as above, but forOutput Indicators.	Factors outside theproject management'scontrol that may impacton the Output-Purpose linkage.
Inputs (Resourcesneeded to deliver theOutputs)	**Input Indicators** Measure of inputs into the project, in this case approved funding.	Same as above, but forInputIndicators.	Same as above, but forInput-Output linkage.

Source: Liberian Swedish Feeder Roads Project (adapted)

3.1.4 Allocation of Responsibilities for M&E Activities

To ensure M&E culture is developed and sustained within the MPW, the support of the Minister of Public Works is considered to be a pre-requisite and would be demonstrated through the signing of the proposed M&E Policy Statement.

The MPW's M&E Bureau shall have the overall responsibility for all M&E processes. Assistance shall be rendered by the various sector stakeholders as indicated in Table 2.

The framework for the allocation of responsibilities as indicated in Table 2 wasdiscussed and agreed during Workshop No. 2 and will form the basis for formal assignment of the same by the Ministry.

Table 2: Allocation of Roles and Responsibilities

Entity/Stakeholder	Role/Responsibilities
Minister of Public Works	Approval of M&E Policies and strategies Signing off the M&E Policy Statement Overall responsibility for M&E function
Assistant Minister Planning	Endorsement of M&E Policies and Strategies
Assistant Minister Rural Development	Contributing to drafting of M&E policies and strategies
MPW M&E Director	Overall responsibility for entire M&E Processes and System
MPW Planning and Monitoring Bureau	Policy review and drafting Strategy setting, drafting Preparation of annual M&E Plans and Calendar Coordination of M&E Budgeting Approving users of the system, at various levels Data collection forms design M&E fieldwork, data collection Data entry, collation and validation Data Analysis and Reporting
Director for Feeder Roads	Coordination andcollection of M&E data on all ongoing feeder road projects
MPW Project Staff	M&E data collection and collation Entry of data into system Data review and validation Generating reports
Donor Funded Projects Staff, 3rd Party Project Staff	Data collection M&E data collection Entry of data into system Data review and validation Generating reports
MPW IT Department	Management of IT network Programming and coding of system improvements Maintenance of the Database and websites
County Engineer, County Staff; LISGIS Ministry of Transport; Liberia Roads Agency	Data collection Data entry – remotely into system Review reports

Liberia Road Fund	Provision of funding for M&E exercises Reviewing reports
Benefactors	Funding M&E Activities; Receiving and Reviewing M&E Reports
Beneficiaries	Reviewing reports Feedback on impact of interventions

3.1.5 Monitoring and Evaluation Plans and Calendar

Each project and programme will be expected to hold an approved M&E Plan at all times. The M&E Bureau shall receive, review and approve project specific M&E plans and consolidate these into an overall MPW M&E plan.

Well before the end of the calendar year, MPW M&E Bureau shall publish its M&E plans for the next incoming year. Each project will have submitted its activity details for consideration by the M&E Bureau. There shall be extensive consultations amongst all relevant parties before the annual M&E calendar is finalised and published.

3.1.6 Monitoring and Evaluation Budget Requirements

The study found that MPW's M&E Bureau is severely underfunded and as a result it does not have adequate basic equipment such as computers and vehicles. Bureau staff largely depend on funding from donor projects to undertake their activities. Further, the study showed that, notwithstanding the shortage of funds, aminimum budget allocation of US$100, 000 is required on anannual basis to sustain the activities of the M&E Bureau. Currently the M&E Bureau receives less than US$5 000 per year and this falls severely short of requirements. Each project will also need to set aside adequate funding for project level M&E activities.

The M&E Director shall prepare, on an annual basis, a detailed budget that covers all costs including M&E surveys, staff costs, equipment and operational costs. The budget shall be prepared in consultation with divisions and projects whose personnel shall be charged with responsibility for data collection.

3.1.7 Selection ofMonitoring and Evaluation Indicators

Programme, project and activity level results will be measured by a selection of appropriateimpact, outcome, output and input indicators. Indicator baseline and targets will be set for each indicator and rationalised before commencement of any intervention on the road. This will be done on a project by project basis and experience from other ongoing or completed projects will be examined and adopted where possible. Setting of performance targets is expected to encourage adoption and sustenance of best practices by all involved in the MPW M&E process.

In addition to the above there will be benefits of comparison with peer organisations or ministries in other countries. Experience from third parties will be used in setting benchmarks for applicable indicators.

A bank of 45 indicators was considered during the study; however, it was agreed that the list was too onerous and the Bureau would face considerable challenges in collecting information on all of them.The 18impact and outcomes indicators provided in Table 3 were therefore selected as primary indicators that would be developed in full and immediately pre-programmed into the data base management system. Table 4 shows the selected primary indicators for inputs and outputs.

Annex 2 gives the detailed fact sheets for each indicator showing the following aspects:indicator name, definition of indicator, unit of measurement, source of data, method of data collection, frequency of data collection, the entity responsible for collecting the data, and the anticipated use of the data collected. The indicator fact sheet also shows how the indicator data will be disaggregated.

Table 3: Selected Impact and Outcome Indicators

#	Indicator Level	Indicator Code	Aspect	Indicator	Unit of Measurement
1	Impact	IMP01	Socio-economic conditions	Average Farming Hectarage	Ha/Family
2	Impact	IMP02	Socio-economic conditions	Average Annual Household Income	L$ per Year
3	Impact	IMP05	Socio-economic conditions	Transport Mode to Health Facilities	Type
4	Impact	IMP06	Socio-economic conditions	Enrolment in High Schools	%
5	Outcome	OUC01	Employment Creation and Improved Conditions	No of visible Businesses along road	No. of
6	Outcome	OUC02	Employment Creation and Improved Conditions	Percent Women Traders	%
7	Outcome	OUC03	Travel, Transport and Costs	Transport Mode available to County Capital	Mode
8	Outcome	OUC04	Travel, Transport and Costs	Transport Mode Frequency to County Capital	No. per Day
9	Outcome	OUC05	Travel, Transport and Costs	Average Waiting Time for Transport	Minutes
10	Outcome	OUC06	Travel, Transport and Costs	Travel Time Index	Percent
11	Outcome	OUC07	Travel, Transport and Costs	Frequency of Travel to County Capital	No. of Visits per Month
12	Outcome	OUC08	Travel, Transport and Costs	Freight Costs to County Capital	L$ per Kg per Km
13	Outcome	OUC09	Travel, Transport and Costs	Freight Costs to Local Markets	L$ per Kg per Km
14	Outcome	OUC10	Travel, Transport and Costs	Passenger Travel Cost to County Capital	L$ per Person per Km
15	Outcome	OUC11	Travel, Transport and Costs	Traffic Volumes	ADT
16	Outcome	OUC12	Road Condition	Road Condition Index	%
17	Outcome	OUC13	Safety	Accidents per year	No. per Year
18	Outcome	OUC14	Safety	Annual number fatal accidents	No.per Year

Table 4: Selected Output and Input Indicators

#	Indicator Level	Indicator Code	Aspect	Indicator	Unit of Measurement
1	Output	OUP01	Civil Works	Routine Maintenance of Rural Roads	Kms per Year
2	Output	OUP02	Civil Works	Periodic Maintenance of Rural Roads	Kms per Year
3	Output	OUP03	Civil Works	Upgrading of Feeder Roads	Kms per Year
4	Output	OUP04	Civil Works	Milestones status (Pending, In-progress, Delayed, Completed)	No. of
5	Input	INP01	Expenditure	Rate of disbursement of approved funding	Percent

3.1.8 Monitoring and Evaluation Data Sourcesand Collection Methods

Input and output data for each project will be obtained from primary sources including MPW-DFR teams and consultants supervising road works, contractors, consultants engaged in other related projects and NGO's etc.

Higher level indicators (outcomes and impacts) will be measured through special studies and surveys.

As appropriate, secondary data will also be obtained from government institutions such as Liberia Institute of Statistics and Geo-Information Services (LISGIS), Ministry of Finance, Ministry of Economics and Planning and international agencies.

Both qualitative and quantitative data collection methods are recommended to assess progress made towards the goals and objectives of interventions on rural roads under MPW.

Quantitative methods willinclude technical surveys and data capturing through key informant interviews whilst qualitative formal focus group discussions will be used to obtain salient information that will be analysed exogenously to the database management system and included in reports as necessary.

Qualitative methods will help to explain the presence or absence of outputs, outcomes and impacts, as well as to assess and explain the effectiveness of some of the project processes targeting women and youths.

3.1.9 Frequency of Data Collection

Baseline surveys and data collection exercises will be undertaken for each project and will be timed to be completed well before the commencement of any interventions on the project roads. Data collected in such surveys and data collection exercises will form the basis for comparison of the before and after scenarios in the future.

Project progress monitoring data shall be posted by each project on a monthly, quarterly, bi-annual or annual basis depending on the indicators selected.

Impact monitoring surveys aimed at collecting socio-economic data shall be conducted annually as a minimum. These surveys will aim to capture impacts on households, businesses, road users, transport operators, health services, education, agriculture, etc.

3.1.10 Data Collection Tools

3.1.10.1 Use of Electronic Tablets

The MPW M&E System allows for the use of electronic means to collect some of the data using ODK Open-Source free software to create survey forms, collect the data and aggregate the same for storage in the MPW M&E Database. The ODK Software is available for free at the following website: https://opendatakit.org/. MPW's M&E Bureau will use Android powered Samsung tablets, or other similar tablets, to hold the survey forms and automate the data collection and transfer the collected information to the MPW M&E web-based generic database.

3.1.10.2 Use of Traditional Forms

Whilst some of the forms for data collection have been automated as indicated above, certain data will still be collected using traditional paper-based forms. Thereafter the data can be transferred to Excel spreadsheets and uploaded onto the MPW M&E Database.

Traditional paper forms are to be used for the following: Traffic Counts, Road Condition Surveys and Project Evaluation Ratings. Details of these are given in the M&E Guidelines.

3.1.10.3 Project Progress Monitoring Returns

The M&E Bureau shall receive regular progress monitoring returns from designated project M&E Officers. Returns will mainly be in electronic format and will need validation/approval by the M&E Director before data is entered into the database. Some of the returns shall be automatically uploaded to the online M&E system whilst others will be received by email.

3.1.11 Data Analysis and Reporting

Data analysis shall be structured and planned for and will follow these key steps: data preparation, data analysis, data presentation, verification and finally preparations of recommendations.

The double difference approach will be used to analyse the impact of interventions on the local communities and will be applied as given in the following example.

Where Y represents an *Outcome* as a result of the intervention, e.g. changes in traffic volume, and

A = Villages "near" treatment road (Zwedru Baywadee),

B = Villages "near" control road (Zwedru Budou),

and,

2018 = Initial (pre-treatment) time period,

2019 = Final (post-treatment) time period,

The impact of the treatment for villages "near" the Zwedru Baywadee road is evaluated as:

$$(Y^{A}_{2019} - Y^{A}_{2018}) - (Y^{B}_{2019} - Y^{B}_{2018}).$$

The above calculation is applied to all socio-economic indicators.

3.1.12 Database Management System

MPW M&E has set up an online relational database that enables easy extraction of information to measure the outputs and outcomes of interventions on rural roads. The information so extracted leads to the analysis of impact of the projects on the socio-economic development of their respective influence areas. The M&E Director is responsible for administering the system which allows prescribed officers to enter monitoring data remotely. The system is open to the public to view and will be linked to the main MPW website. At the time of preparation of this report the system could be accessed at the following URL address:https://mpwme-liberia.georams.co.za/#map=19.109257071294063/-1161246.09/716774.95/0

3.2 Monitoring and Evaluation Guideline

3.2.1 Overview

A guideline for undertaking M&E on rural roads was prepared at the end of the pilot project.The document wasinformed by the lessons learnt in the pilot project and presents a practical and modern approach to monitor and evaluate interventions on rural roads in Liberia..

3.2.2 Purpose, Scope and Structure of the Guideline

The guideline is meant as a reference document for M&E processes by MPW M&E staff. It is complemented by a related document termed the Operational Manual for the Database Management System.

The guideline concentrates on the monitoring and evaluation of intervention on rural roads. However, the system described therein can be adapted to include other types of roads including major highways. The processes, with some modification, can also be applied to urban roads.

The guideline aids monitoring and evaluating of projects and programmes throughout the entire project cycle from conceptualisation to the periods after commissioning or opening of the road infrastructure.

The document is structured into the followingsections and annexes that summarise M&E practices as informed by best practices and experiences from the afore-mentioned pilot study:

- An overview of the M&E Framework as adopted by MPW.
- Identification of enablers to the M&E system and their responsibilities.
- Step by step procedures for undertaking M&E activities covering:
    - Project identification for monitoring and evaluation.
    - Assignment of responsibility for M&E.
    - Setting up the LogFrame for each project.
    - Preparation of project M&E plans.
    - M&E data collection methods.
    - M&E data collation and management.
    - Use of Information Technology.
    - Data Analysis.
    - Reporting M&E results.
- An outline of the structure of the online MPW M&E Database Management System.
- Annexes containing standard forms for M&E surveys.
- An annex containing the M&E Training Guideline.

3.2.3 Recommendations on the Application of the Guideline

The guideline was prepared with the objective of presenting the information in a practical, simple and concise manner. Users are reminded that the document is meant for guidance and is not intended to be a manual. Constant reference to the extensive M&E body of knowledge will be necessary and where necessary new and inexperienced users should obtain training from experienced users before applying the recommend processes.

3.3 Monitoring and Evaluation Database Operational Manual

The operational manual for the Database System is structured to be user-friendly and guides the user through the following aspects:

- Database System Architecture.
- Data Collection Tools, Data Aggregation Routines, Database Structure.
- Website Linkages, Off-line Functionality, Setting User Access Levels.
- Creation and Editing Survey Forms.
- Uploading Forms onto Tablets or Smartphones.
- Completion of Survey Forms and Uploading Completed Survey Forms.
- Backing-up Completed Survey Forms.
- Creating Project Profiles, Selecting Indicators, Setting Milestones.
- Direct Data Entry, Data Import, Data Analysis.
- Programme and Project Monitoring Reports, Impact Assessment Reports.
- Downloading of Data and Reports.
- Data Management and Data Quality Assurance.

3.4 Baseline Data Analysis Results

Data collected on the Zwedru to Baywadee and Zwedru to Bodou Roads was analysed and it yielded the general baseline statistics shown in Table 5. Annex 3 gives a more detailed summary of the data collected.

Table 5: Comparative Analysis of General Data on Study Roads

#	Data Aspect	Zwedru Baywadee Rd	Zwedru Budou Rd
1	Road length	24kms	20kms
2	Road class	Tertiary	Tertiary
3	Planned works	Rehabilitation	None
4	No of respondents	172	157
4	Percent respondents less than 50 years of age	62%	59%
5	Gender: Male Female	69% 31%	50% 50%
6	Percent not attended school	34%	37%
7	Percent attended Tertiary Level	2.3%	1.9%
8	Percent Self Employed	77%	75%
9	Percent in formal employment	15%	21%
10	Percent employed by civil service	30%	21%
11	Monthly income in USD 0-100 per month	57%	32%
12	Self-employed and in crop farming	92%	89%
13	Frequency of visit to Market: Daily Weekly	11% 85%	18% 52%
14	Purpose of Market visit: To Sell To Buy	48% 52%	49% 51%

15	Transport mode: Walk Motorcycle	88% 12%	75% 25%
16	Products ferried to Zwedru	Fufu, Bitter ball, Plantain, Rice, Palm oil	Fufu, Bitter ball, Plantain, Rice, Palm oil

3.5 Comparative Analysis of Data on Selected Monitoring and Evaluation Indicators

Table 5 shows a comparative listing of data on the indicators that have been recommended for inclusion in the MPW M&E System.

Table 6: Comparative Analysis of Selected Indicators on Study Roads

#	Level	Indicator Code	Indicator	Unit of Measurement	Zwedru Baywadee Rd	Zwedru Budou Rd
1	Impact	IMP01	Average Farming Hectarage	Ha/Household	TBA	TBA
2	Impact	IMP02	Average Annual Household Income	L$ per Year	100,000	100,000
3	Impact	IMP03	Transport Mode to Health Facilities	Mode	Walk	M/Cycle
4	Impact	IMP04	Enrolment in High Schools	%	45%	55%
5	Outcome	OUC01	No of visible Businesses along road	No. of	24	6
6	Outcome	OUC02	Women Traders	Percent of Traders	75%	83%
7	Outcome	OUC03	Transport Mode available to County Capital	Mode	Walk M/Cycle	Walk M/Cycle
8	Outcome	OUC04	Motorised Transport Mode Frequency to County Capital	No. per Day	TBA?	TBA?
9	Outcome	OUC05	Average Waiting Time for Transport	Minutes	15	30
10	Outcome	OUC06	Travel Time Index	Percent	2.5	3.0
11	Outcome	OUC07	Frequency of Travel to County Capital	No. of Visits per Month	2	2
12	Outcome	OUC08	Freight Costs to County Capital	L$ per Kg per Km	0.30	0.60
13	Outcome	OUC09	Freight Costs to Local Markets	L$ per Kg per Km	0.30	No local markets
14	Outcome	OUC10	Passenger Travel Cost to County	L$ per Person per	12.5	30.0

			Capital	Km		
18	Outcome	OUC11	Traffic Volumes: M/Cycle	ADT: Market Day ADT: None Market Day	120 45	32 32
19	Outcome	OUC12	Road Condition Index: %	%	30% V. Poor	35% V. Poor
20	Outcome	OUC13	Accidents per year	No. per Year	TBA	TBA
21	Outcome	OUC14	Annual number fatal accidents	No. per Year	TBA	TBA

4 Key Issues Arising from Study Activities

4.1 Selection of Indicators

As emphasised in previous reports, it was noted that the initial list of socio-economic indicators was onerous, and stakeholders recommended that these be reduced to 15-20 in number. The cost of data collection will thus be reduced. In the end a total of 18 indicators of social and economic impact are included in the system. The system, however, allows insertion of new indicators that may be selected in future.

4.2 System Scope and Complexity

Enquiries were made as to whether the system would include monitoring and evaluation ofother classes of roads such as secondary and primary roads. The design of the system allowsentry of data for all classes of roads and can capture pertinent data on all projects and programme progress (inputs and outputs) and outcomes (social and economic impacts).

4.3 System Sustainability

4.3.1 Ensuring Adequate Funding

During consultations with MPW personnel and other stakeholders it was highlighted that systems that would have been set up in the MPW with donor support usually end up not being used mainly due to inadequate budgets and the lack of adequately experienced staff. Innovative ways of sustaining the system have been considered including designing a simple system to start with and recognising the road fund as a potential funder of M&E efforts. Support of the proposed system at high levels in the Ministry has been assured and this should go a long way in guaranteeing the sustainability of the system.

4.3.2 Capacity Building

Interactions with stakeholders have resulted in identifying the difficulties faced in securing enough and appropriate human resources to run the M&E system. On MPW's part, significant efforts will be required to retain and motivate staff through offering attractive working conditions and remuneration. Staff will require extensive training in M&E as well as refresher courses in specific aspects. The conditions of employment of staff must clearly state the roles and responsibilities of staff in the collection, management and analysis of M&E data.

In the short term, it will be necessary to ensure that current ongoing or incoming donor funded projects are structured to include capacity building and skills transfer components.

4.4 Involvement of Key Enablers

The MPW will seek the recognition of the importance of funding M&E as well as research activities by the Road Fund. These activities are usually viewed as peripheral to road provision and maintenance and therefore end up receiving inadequate funding. The Road Fund is therefore a key enabler of the efforts to set up a sustainable system.

Aside from the road fund donor funded projectswill continue to make provision for project impact assessment and are seen as a key enabler of monitoring and evaluation exercises, especially at system developmental and uptake stage.

Third parties such as the Liberian Institute of Statistics and Geo-information Systems (LISGIS), the university and technical colleges are keen to be involvedin monitoring social and economic impacts of interventions on rural roads and should be accommodated. They are enablers to the system and can be part of field teams that will be posted into the project areas on an annual basis. The same applies to the Ministry of Transport; they attend to transport needs and have direct contact with transport operators. The data they are currently capturing on rural transport will be very useful and as such the system recognises the Ministry of Transport as a major enabler.

4.5 Creation of Synergies

The rural roads sector in Liberia is of interest to many parties and is the focus of direct, concentrated investment as a poverty alleviation strategy. There are several projects being funded by the African Development Fund (ADF,) the World Bank, USAID, the Swedish Embassy, GIZ and others. The projects are managed by various ministries including the MPW, Ministry of Transport, Ministry of Agriculture and NGO's. In many cases special project units have been set up to be responsible for the day to day activities under the said projects.

To date, representatives of the many projects or programmes in the road sector meet monthly under the coordination of the MPW. At these meetings each project or programme presents the status of its activities at this meeting. There is no standardised way of reporting and participants do not receive the reports prior to the meeting. The M&E system as designed will enable real-time capturing of project data and generation of reports. Project managers on rural roads projects will be expected to contribute to the M&E system by posting progress data on a regular basis. Stakeholders and project managers will be able to extract pertinent reports online and will be better informed about of the overall situation on all projects in the rural roads sector when they attend coordination meetings.

5 Recommendations

5.1 Ensuring Adequate Funding for Monitoring and Evaluation Activities

In the preceding section it was mentioned that the Road Fund was identified as a key enabler of MPW's efforts to set up a sustainable M&E System. The Fund will also benefit from the results generated by the M&E System as it will be able to gauge effectiveness, efficiency and impact of interventions it will be funding. It is therefore recommendedthat a budget item for M&E is included in all requests for funding submitted by MPW to the Road Fund and that this be given a high priority.

5.2 IT Network Upgrade

There has been general and continuous concern about the sustainability of the online system, especially taking into account the reportedly poor state of the MPW IT network. The study observed that the Local Area Network (LAN) is incomplete, and the Wi-Fi is weak in most locations within the MPW headquarters building. There is no live and sustainable link between MPW headquarters and county offices. Staff at county level use their own resources to communicate with Monrovia. During the study MPW's IT Division appealed for support to review the Ministry's entire internet connectivity and implement some

improvements. Due to a lack of resources, it was not possible to provide such assistance under this study. It is therefore recommended that funds be sourced for a complete upgrade of the MPW IT network, as well as establishment of links with county offices. County engineers and other offices will be responsible for collection of most of the socio-economic data from the communities and it is important that they be afforded adequate resources to efficiently undertake their activities, and securely capture the data in the central database management system.

5.3 Alternative Ways of Collecting Social Data

In reviewing literature for this study, it was found that a lesson from Viet Nam (Mu and D. Van de Walle, 2011) regarding collecting information at the local level (commune) can be pertinent to Liberia. The practice entails collection of data at local level whereby each village or town engages one or more 'statisticians' whose assignment is to collect and preserve certain types of information related to various aspects such as demographics, land use, distribution and production activities. Adopting such a methodology in a country like Liberia can help in ensuring data availability, consistency and reliability. For example, the timely collection of data on agricultural production (postharvest surveys) carried out after each season can reduce possible recalling errors associated with conventional questionnaires.

5.4 Sampling Methods

The study roads did not have large and sparsely distributed populations. Communities tended to be settled in clustered groups. Hence all households in these rural settlements/towns were made part of the sample. As the M&E processes are implemented stratified sampling should be considered and it can be helpful especially when there are concerns that other practical sampling techniques may not be representative of the entire population. This is particularly applicable for large populations where random samples are unlikely to represent the whole population. In addition, stratified sampling can also be carried out along with random sampling to check the robustness of the sampling exercise.

5.5 Timing of Follow-Up Surveys

Following the establishment of baselines, the timing of the post-impact survey(s) isimportant. Since many of the aspects to be evaluated are seasonal in nature, it is recommended to carry out baseline and follow-up surveys at the same time of the year, and to avoid busy periods of economic activity, such as seeding or harvest time, to encourage the participation of local people.

Annex 1 MPW Monitoring and Evaluation Policy Statement

Republic of Liberia

MINISTRY OF PUBLIC WORKS
SOUTH LINCH STREET
MONROVIA, LIBERIA

MONITORING AND EVALUATION POLICY STATEMENT

MPW is committed to ensure transparency, accountability and effectiveness in all its development efforts, projects and programs. Achieving visible results is the central thrust of our development efforts.

MPWshall maintain a Monitoring and Evaluation (M&E) System to monitor project implementation progress and measure the socio-economic impact of road provision and maintenance interventions on the Liberian road network, in a quantitative and/or qualitative manner.

MPW's M&E System shall ensure continuous information gathering, assessment, analysis, reporting and learning.

MPW endorses allocating necessary human and capital resources required for establishment and implementation of its M&E function. It is important that M&E budgets are reflective of the importance of the road network in alleviating poverty amongst the rural communities.

In pursuit of excellence in undertaking M&E activities, **MPW** shall:

- Develop the M&E System in collaboration with stakeholders, ensuring that their specific information needs are integrated and their views on data collection and analysis are considered.
- Design data gathering systems that are ethical and recognise the importance of maintaining the right to privacy for all potential respondents.
- Use information generated by the M&E System as a planning tool for designing future interventions, and a project management tool at operational level.
- Communicate M&E results to different stakeholders according to their different information needs.
- Set up and maintain a public M&E website for access by all and any interested parties.

The M&E Bureau is charged with overall responsibility for the M&E System and shall execute its duties diligently.

_____

Hon. Mobutu Nyenpan

Minister of Public Works

Date: _____

Annex 2 Indicator Sheets

Indicator Reference Sheet Number:	**01**
Indicator MPW Code:	IMP01
Name of Indicator:	Average Farming Hectarage
Result to which Indicator Responds:	Improved Agricultural Production
Level of Indicator:	Impact
Description	
Aspect:	Agricultural Production
Definition:	
Unit of Measurement:	Ha
Disaggregation:	None
Plan for Data Acquisition	
Data Collection Method:	Household Survey
Data Source:	Head of Household
Frequency and Timing of Data Acquisition:	Baseline + Yearly
Responsibility for Data Collection:	MPW Bureau
Data Collection Tools:	ODK Forms on Samsung Tablets
Location of Data Storage (paper):	MPW M&E Bureau; MPW Central Registry
Location of Data Storage (electronic):	MPW Data Management System MPW Server
Data Quality Issues	
Known Data Limitations and Significance:	Estimation of area is coarse
Actions Taken or Planned to Address this Limitation:	Sample measurements to be undertake accurately
Internal Data Quality Assessments:	
Plan for Data Analysis, Review & Reporting	
Data Analysis:	Yearly
Review of Data:	M&E Data Validation Processes
Accessing of Results:	Controlled by MPW M&E Director
Data Use:	Impact Analysis
Notes / Comments:	

Indicator Reference Sheet Number:	**02**
Indicator MPW Code:	IMP02
Name of Indicator:	Average Annual Household Income
Result to which Indicator Responds:	Improved Socio-economic conditions
Level of Indicator:	Impact
Description	
Aspect:	Socio-economic conditions
Definition:	Value of goods or services sold by household in a year
Unit of Measurement:	L$ per Year
disaggregation:	Male Headed Household Female Headed Household
Plan for Data Acquisition	
Data Collection Method:	Household Survey
Data Source:	Head of Household
Frequency and Timing of Data Acquisition:	Baseline + Yearly
Responsibility for Data Collection:	MPW Bureau
Data Collection Tools:	ODK Forms on Samsung Tablets
Location of Data Storage (paper):	MPW M&E Bureau; MPW Central Registry
Location of Data Storage (electronic):	MPW Data Management System MPW Server
Data Quality Issues	
Known Data Limitations and Significance:	
Actions Taken or Planned to Address this Limitation:	
Internal Data Quality Assessments:	
Plan for Data Analysis, Review & Reporting	
Data Analysis:	Baseline and Yearly
Review of Data:	M&E Data Validation Processes
Accessing of Results:	Controlled by MPW M&E Director
Data Use:	Impact Analysis
Notes / Comments:	

Indicator Reference Sheet Number:	**03**
Indicator MPW Code:	IMP03
Name of Indicator:	Savings Level on Total Income
Result to which Indicator Responds:	Improved Socio-Economic Conditions
Level of Indicator:	Impact
Description	
Aspect:	Socio-economic conditions
Definition:	Percent of total income saved on an annual basis
Unit of Measurement:	%
Disaggregation:	None
Plan for Data Acquisition	
Data Collection Method:	Household Survey
Data Source:	Head of Household
Frequency and Timing of Data Acquisition:	Baseline + Yearly
Responsibility for Data Collection:	MPW Bureau
Data Collection Tools:	ODK Forms on Samsung Tablets
Location of Data Storage (paper):	MPW M&E Bureau; MPW Central Registry
Location of Data Storage (electronic):	MPW Data Management System MPW Server
Data Quality Issues	
Known Data Limitations and Significance:	None
Actions Taken or Planned to Address this Limitation:	
Internal Data Quality Assessments:	
Plan for Data Analysis, Review & Reporting	
Data Analysis:	Yearly
Review of Data:	M&E Data Validation Processes
Accessing of Results:	Controlled by MPW M&E Director
Data Use:	Impact Analysis
Notes / Comments:	

Indicator Reference Sheet Number:	**04**
Indicator MPW Code:	IMP04
Name of Indicator:	Percent of Income used on Transport
Result to which Indicator Responds:	Improved Socio-Economic Conditions
Level of Indicator:	Impact
Description	
Aspect:	Socio-economic conditions
Definition:	Estimated total expenditure on transport and goods charges as a percentage of estimated total income
Unit of Measurement:	%
Disaggregation:	None
Plan for Data Acquisition	
Data Collection Method:	Household Survey
Data Source:	Head of Household
Frequency and Timing of Data Acquisition:	Baseline + Yearly
Responsibility for Data Collection:	MPW Bureau
Data Collection Tools:	ODK Forms on Samsung Tablets
Location of Data Storage (paper):	MPW M&E Bureau; MPW Central Registry
Location of Data Storage (electronic):	MPW Data Management System MPW Server
Data Quality Issues	
Known Data Limitations and Significance:	None
Actions Taken or Planned to Address this Limitation:	
Internal Data Quality Assessments:	
Plan for Data Analysis, Review & Reporting	
Data Analysis:	Yearly
Review of Data:	M&E Data Validation Processes
Accessing of Results:	Controlled by MPW M&E Director
Data Use:	Impact Analysis
Notes / Comments:	

Indicator Reference Sheet Number:	**05**
Indicator MPW Code:	IMP05
Name of Indicator:	Transport Mode to Health Facilities
Result to which Indicator Responds:	Improved socio-economic conditions
Level of Indicator:	Impact
Description	
Aspect:	Socio-economic conditions
Definition:	The indicator measures the preferred and available mode of transport used to transport the sick in the community
Unit of Measurement:	Mode
Disaggregation:	Mode type
Plan for Data Acquisition	
Data Collection Method:	Institutional Survey
Data Source:	Clinics and hospitals
Frequency and Timing of Data Acquisition:	Baseline + Yearly
Responsibility for Data Collection:	MPW Bureau
Data Collection Tools:	ODK Forms on Samsung Tablets
Location of Data Storage (paper):	MPW M&E Bureau; MPW Central Registry
Location of Data Storage (electronic):	MPW Data Management System MPW Server
Data Quality Issues	
Known Data Limitations and Significance:	None
Actions Taken or Planned to Address this Limitation:	
Internal Data Quality Assessments:	
Plan for Data Analysis, Review & Reporting	
Data Analysis:	Yearly
Review of Data:	M&E Data Validation Processes
Accessing of Results:	Controlled by MPW M&E Director
Data Use:	Impact Analysis
Notes / Comments:	

Indicator Reference Sheet Number:	**06**
Indicator MPW Code:	IMP06
Name of Indicator:	Enrolment in higher institution of learning
Result to which Indicator Responds:	Improved socio-economic conditions
Level of Indicator:	Impact
Description	
Aspect:	Socio-economic conditions
Definition:	The indicator measures the rate of entry into high schools and tertiary institutions
Unit of Measurement:	%
Disaggregation:	High school, Tertiary, Gender
Plan for Data Acquisition	
Data Collection Method:	Institutional Survey
Data Source:	Schools
Frequency and Timing of Data Acquisition:	Baseline + Yearly
Responsibility for Data Collection:	MPW Bureau
Data Collection Tools:	ODK Forms on Samsung Tablets
Location of Data Storage (paper):	MPW M&E Bureau; MPW Central Registry
Location of Data Storage (electronic):	MPW Data Management System MPW Server
Data Quality Issues	
Known Data Limitations and Significance:	None
Actions Taken or Planned to Address this Limitation:	
Internal Data Quality Assessments:	
Plan for Data Analysis, Review & Reporting	
Data Analysis:	Yearly
Review of Data:	M&E Data Validation Processes
Accessing of Results:	Controlled by MPW M&E Director
Data Use:	Impact Analysis
Notes / Comments:	

Indicator Reference Sheet Number:	**07**
Indicator MPW Code:	OUC01
Name of Indicator:	No of Visible Businesses
Result to which Indicator Responds:	Improved economic conditions
Level of Indicator:	Outcome
Description	
Aspect:	Employment creations and improved economic conditions
Definition:	The indicator measures the number of commercial enterprises established along the road
Unit of Measurement:	No.
Disaggregation:	Formal, Market
Plan for Data Acquisition	
Data Collection Method:	Business Survey
Data Source:	Business Owner, Operator, Worker
Frequency and Timing of Data Acquisition:	Baseline + Yearly
Responsibility for Data Collection:	MPW Bureau
Data Collection Tools:	ODK Forms on Samsung Tablets
Location of Data Storage (paper):	MPW M&E Bureau; MPW Central Registry
Location of Data Storage (electronic):	MPW Data Management System MPW Server
Data Quality Issues	
Known Data Limitations and Significance:	
Actions Taken or Planned to Address this Limitation:	
Internal Data Quality Assessments:	
Plan for Data Analysis, Review & Reporting	
Data Analysis:	Yearly
Review of Data:	M&E Data Validation Processes
Accessing of Results:	Controlled by MPW M&E Director
Data Use:	Impact Analysis
Notes / Comments:	

Indicator Reference Sheet Number:	**08**
Indicator MPW Code:	OUC02
Name of Indicator:	Percent Women Traders
Result to which Indicator Responds:	Improved economic conditions
Level of Indicator:	Outcome
Description	
Aspect:	Employment creations and improved economic conditions
Definition:	The indicator measures the number of commercial enterprises or market trading owned by women
Unit of Measurement:	% of Total
Disaggregation:	Formal, Market
Plan for Data Acquisition	
Data Collection Method:	Business Survey, Market Surveys
Data Source:	Business/Stall Owner, Operator, Worker
Frequency and Timing of Data Acquisition:	Baseline + Yearly
Responsibility for Data Collection:	MPW Bureau
Data Collection Tools:	ODK Forms on Samsung Tablets
Location of Data Storage (paper):	MPW M&E Bureau; MPW Central Registry
Location of Data Storage (electronic):	MPW Data Management System MPW Server
Data Quality Issues	
Known Data Limitations and Significance:	
Actions Taken or Planned to Address this Limitation:	
Internal Data Quality Assessments:	
Plan for Data Analysis, Review & Reporting	
Data Analysis:	Yearly
Review of Data:	M&E Data Validation Processes
Accessing of Results:	Controlled by MPW M&E Director
Data Use:	Impact Analysis
Notes / Comments:	

Indicator Reference Sheet Number:	**09**
Indicator MPW Code:	OUC03
Name of Indicator:	Transport Modes available to County Capital
Result to which Indicator Responds:	Transport and Freight Cost
Level of Indicator:	Outcome
Description	
Aspect:	Travel and Transport Costs
Definition:	Transport Modes available to County Capital
Unit of Measurement:	Mode
Disaggregation:	Mode Type
Plan for Data Acquisition	
Data Collection Method:	Road User and Operator Survey
Data Source:	Road users and transport operators
Frequency and Timing of Data Acquisition:	Baseline + Yearly
Responsibility for Data Collection:	MPW Bureau Teams; Project Teams; County Engineer
Data Collection Tools:	ODK Forms on Samsung Tablets
Location of Data Storage (paper):	MPW M&E Bureau; MPW Central Registry
Location of Data Storage (electronic):	MPW Data Management System MPW Server
Data Quality Issues	
Known Data Limitations and Significance:	
Actions Taken or Planned to Address this Limitation:	
Internal Data Quality Assessments:	
Plan for Data Analysis, Review & Reporting	
Data Analysis:	Yearly
Review of Data:	M&E Data Validation Processes
Accessing of Results:	Controlled by MPW M&E Director
Data Use:	Impact Analysis
Notes / Comments:	

Indicator Reference Sheet Number:	**10**
Indicator MPW Code:	OUC04
Name of Indicator:	Transport Modes Frequency to County Capital
Result to which Indicator Responds:	Transport and Freight Cost
Level of Indicator:	Outcome
Description	
Aspect:	Travel and Transport Costs
Definition:	Transport Modes Frequency to County Capital per Day
Unit of Measurement:	No. per Day
Disaggregation:	Mode
Plan for Data Acquisition	
Data Collection Method:	Road User and Operator Survey
Data Source:	Road users and transport operators
Frequency and Timing of Data Acquisition:	Baseline + Yearly
Responsibility for Data Collection:	MPW Bureau Teams; Project Teams; County Engineer
Data Collection Tools:	ODK Forms on Samsung Tablets
Location of Data Storage (paper):	MPW M&E Bureau; MPW Central Registry
Location of Data Storage (electronic):	MPW Data Management System MPW Server
Data Quality Issues	
Known Data Limitations and Significance:	
Actions Taken or Planned to Address this Limitation:	
Internal Data Quality Assessments:	
Plan for Data Analysis, Review & Reporting	
Data Analysis:	Yearly
Review of Data:	M&E Data Validation Processes
Accessing of Results:	Controlled by MPW M&E Director
Data Use:	Impact Analysis
Notes / Comments:	

Indicator Reference Sheet Number:	**11**
Indicator MPW Code:	OUC05
Name of Indicator:	Average Waiting Time
Result to which Indicator Responds:	Improved Socio-economic Conditions
Level of Indicator:	Outcome
Description	
Aspect:	Travel and Transport Costs
Definition:	Average time spent waiting for transport to local destinations or to the County Capital
Unit of Measurement:	Minutes
Disaggregation:	Mode of transport, Passenger, Freight
Plan for Data Acquisition	
Data Collection Method:	Road User Survey
Data Source:	Head of Household
Frequency and Timing of Data Acquisition:	Baseline + Yearly
Responsibility for Data Collection:	MPW Bureau Teams; County Engineer
Data Collection Tools:	ODK Forms on Samsung Tablets
Location of Data Storage (paper):	County Engineer's Office, MPW M&E Bureau; MPW Central Registry
Location of Data Storage (electronic):	MPW Data Management System MPW Server
Data Quality Issues	
Known Data Limitations and Significance:	Road user's quantification of time waited can be subjective
Actions Taken or Planned to Address this Limitation:	Extra care to be taken during the interviews
Internal Data Quality Assessments:	
Plan for Data Analysis, Review & Reporting	
Data Analysis:	Yearly
Review of Data:	M&E Data Validation Processes
Accessing of Results:	Controlled by MPW M&E Director
Data Use:	Impact and Outcome Analysis
Notes / Comments:	

Indicator Reference Sheet Number:	**12**
Indicator MPW Code:	OUC06
Name of Indicator:	Travel Time Index
Result to which Indicator Responds:	Savings in Travel Time
Level of Indicator:	Outcome
Description	
Aspect:	Travel and Transport Costs
Definition:	Travel time index is equivalent to Actual Travel Time as a Ratio of Ideal Travel Time over a representative length of the road
Unit of Measurement:	Dimensionless Ratio
Disaggregation:	Transport Mode
Plan for Data Acquisition	
Data Collection Method:	Travel Time Surveys or Operator Survey
Data Source:	Transport services providers
Frequency and Timing of Data Acquisition:	Baseline + Yearly
Responsibility for Data Collection:	MPW Bureau
Data Collection Tools:	Sample vehicles; Chronometers, Stopwatches, Dictaphones
Location of Data Storage (paper):	MPW M&E Bureau; MPW Central Registry
Location of Data Storage (electronic):	MPW Data Management System MPW Server
Data Quality Issues	
Known Data Limitations and Significance:	Speed of travel can be driver dependent
Actions Taken or Planned to Address this Limitation:	Drivers to be briefed on expected driving regimes before survey
Internal Data Quality Assessments:	
Plan for Data Analysis, Review & Reporting	
Data Analysis:	Yearly
Review of Data:	M&E Data Validation Processes
Accessing of Results:	Controlled by MPW M&E Director
Data Use:	Impact and Outcome Analysis
Notes / Comments:	

Indicator Reference Sheet Number:	**13**
Indicator MPW Code:	OUC07
Name of Indicator:	Travel Frequency to County Capital
Result to which Indicator Responds:	Transport and Freight Cost
Level of Indicator:	Outcome
Description	
Aspect:	Travel and Transport Costs
Definition:	Frequency to County Capital per Month
Unit of Measurement:	No. of Visits per Month
Disaggregation:	Gender
Plan for Data Acquisition	
Data Collection Method:	Road User
Data Source:	Road users
Frequency and Timing of Data Acquisition:	Baseline + Yearly
Responsibility for Data Collection:	MPW Bureau Teams; Project Teams; County Engineer
Data Collection Tools:	ODK Forms on Samsung Tablets
Location of Data Storage (paper):	MPW M&E Bureau; MPW Central Registry
Location of Data Storage (electronic):	MPW Data Management System MPW Server
Data Quality Issues	
Known Data Limitations and Significance:	
Actions Taken or Planned to Address this Limitation:	
Internal Data Quality Assessments:	
Plan for Data Analysis, Review & Reporting	
Data Analysis:	Yearly
Review of Data:	M&E Data Validation Processes
Accessing of Results:	Controlled by MPW M&E Director
Data Use:	Impact Analysis
Notes / Comments:	

Indicator Reference Sheet Number:	**14**
Indicator MPW Code:	OUC08
Name of Indicator:	Freight Costs to County Capital
Result to which Indicator Responds:	Savings in Cost of Freight
Level of Indicator:	Outcome
Description	
Aspect:	Travel and Transport Costs
Definition:	Cost of transporting primary products from community served by the road to the nearest County capital
Unit of Measurement:	L$ per Kg per Km
Disaggregation:	Type of Product, Mode
Plan for Data Acquisition	
Data Collection Method:	Road User Survey
Data Source:	Transport of Goods; Products
Frequency and Timing of Data Acquisition:	Baseline + Yearly
Responsibility for Data Collection:	MPW Bureau Teams; Project Teams; County Engineer
Data Collection Tools:	ODK Forms on Samsung Tablets
Location of Data Storage (paper):	MPW M&E Bureau; MPW Central Registry
Location of Data Storage (electronic):	MPW Data Management System MPW Server
Data Quality Issues	
Known Data Limitations and Significance:	Products may vary from area to area
Actions Taken or Planned to Address this Limitation:	Limit products considered for data collection to not more than 10 nationally
Internal Data Quality Assessments:	
Plan for Data Analysis, Review & Reporting	
Data Analysis:	Yearly
Review of Data:	M&E Data Validation Processes
Accessing of Results:	Controlled by MPW M&E Director
Data Use:	Impact Analysis
Notes / Comments:	

Indicator Reference Sheet Number:	**15**
Indicator MPW Code:	OUC015
Name of Indicator:	Freight Costs to Nearest Local Market
Result to which Indicator Responds:	Savings in Cost of Freight
Level of Indicator:	Outcome
Description	
Aspect:	Travel and Transport Costs
Definition:	Cost of transporting primary products from community served by the road to the nearest local market
Unit of Measurement:	L$ per Kg per Km
Disaggregation:	Type of Product
Plan for Data Acquisition	
Data Collection Method:	Road User Survey
Data Source:	Transport of Goods; Products
Frequency and Timing of Data Acquisition:	Baseline + Yearly
Responsibility for Data Collection:	MPW Bureau Teams; Project Teams; County Engineer
Data Collection Tools:	ODK Forms on Samsung Tablets
Location of Data Storage (paper):	MPW M&E Bureau; MPW Central Registry
Location of Data Storage (electronic):	MPW Data Management System MPW Server
Data Quality Issues	
Known Data Limitations and Significance:	Products may vary from area to area
Actions Taken or Planned to Address this Limitation:	Limit products considered for data collection to not more than 10 nationally
Internal Data Quality Assessments:	
Plan for Data Analysis, Review & Reporting	
Data Analysis:	Yearly
Review of Data:	M&E Data Validation Processes
Accessing of Results:	Controlled by MPW M&E Director
Data Use:	Impact Analysis
Notes / Comments:	

Indicator Reference Sheet Number:	**16**
Indicator MPW Code:	OUC10
Name of Indicator:	Passenger Travel Cost to County Capital
Result to which Indicator Responds:	Savings in Travel and Transport Costs
Level of Indicator:	Outcome
Description	
Aspect:	Travel and Transport Costs
Definition:	Average fare charged travelers from communities served by the road to the nearest County Capital
Unit of Measurement:	L$ per Person per Km
disaggregation:	Adult; Child
Plan for Data Acquisition	
Data Collection Method:	Road User Survey
Data Source:	Travelling person
Frequency and Timing of Data Acquisition:	Baseline + Yearly
Responsibility for Data Collection:	MPW Bureau
Data Collection Tools:	ODK Forms on Samsung Tablets
Location of Data Storage (paper):	MPW M&E Bureau; MPW Central Registry
Location of Data Storage (electronic):	MPW Data Management System MPW Server
Data Quality Issues	
Known Data Limitations and Significance:	None
Actions Taken or Planned to Address this Limitation:	
Internal Data Quality Assessments:	
Plan for Data Analysis, Review & Reporting	
Data Analysis:	Yearly
Review of Data:	M&E Data Validation Processes
Accessing of Results:	Controlled by MPW M&E Director
Data Use:	Impact Analysis
Notes / Comments:	

Indicator Reference Sheet Number:	**17**
Indicator MPW Code:	OUC11
Name of Indicator:	Traffic Volume
Result to which Indicator Responds:	Improved Socio-economic conditions
Level of Indicator:	Outcome
Description	
Aspect:	Travel and Transport Costs
Definition:	Simple Average Daily Traffic using the road or representative sections of the same
Unit of Measurement:	Vehicles per Day (ADT)
Disaggregation:	Mode
Plan for Data Acquisition	
Data Collection Method:	Traffic Counts over set period; usually at least three days
Frequency of Data Collection	Twice a Year
Data Source:	Direct Survey
Frequency and Timing of Data Acquisition:	Baseline + Yearly
Responsibility for Data Collection:	Project Teams and County Engineer
Data Collection Tools:	Manually completed paper forms
Location of Data Storage (paper):	County offices, Project Offices, MPW M&E Bureau; MPW Central Registry
Location of Data Storage (electronic):	MPW Data Management System MPW Server
Data Quality Issues	
Known Data Limitations and Significance:	None
Actions Taken or Planned to Address this Limitation:	
Internal Data Quality Assessments:	
Plan for Data Analysis, Review & Reporting	
Data Analysis:	Yearly
Review of Data:	M&E Data Validation Processes
Accessing of Results:	Controlled by MPW M&E Director
Data Use:	Impact Analysis
Notes / Comments:	

Indicator Reference Sheet Number:	**18**
Indicator MPW Code:	OUC12
Name of Indicator:	Road Condition Index
Result to which Indicator Responds:	Reduced vehicle Operating Costs; Increased Safety Levels
Level of Indicator:	Outcome
Description	
Aspect:	Road Condition
Definition:	Indication of the level of service offered by a road vis a vis comfort, safety and capacity of the road.
Unit of Measurement:	Percent
Disaggregation:	None
Plan for Data Acquisition	
Data Collection Method:	Visual Condition Survey
Data Source:	Direct Survey
Frequency and Timing of Data Acquisition:	Baseline + Yearly
Responsibility for Data Collection:	County Engineer
Data Collection Tools:	Paper based data collection procedures
Location of Data Storage (paper):	County Engineer's Office, MPW M&E Bureau; MPW Central Registry
Location of Data Storage (electronic):	MPW Data Management System MPW Server
Data Quality Issues	
Known Data Limitations and Significance:	None
Actions Taken or Planned to Address this Limitation:	
Internal Data Quality Assessments:	
Plan for Data Analysis, Review & Reporting	
Data Analysis:	Yearly
Review of Data:	M&E Data Validation Processes
Accessing of Results:	Controlled by MPW M&E Director
Data Use:	Impact and Outcome Analysis; Maintenance Planning
Notes / Comments:	

Indicator Reference Sheet Number:	**19**
Indicator MPW Code:	OUC13
Name of Indicator:	Total number of accidents per Year
Result to which Indicator Responds:	Road safety
Level of Indicator:	Outcome
Description	
Aspect:	Road Safety
Definition:	Total number of accidents occurring along entire road length in a calendar Year
Unit of Measurement:	No
disaggregation:	Mode of Transport: Motor Cycle, Car, Bus, Heavy Vehicle
Plan for Data Acquisition	
Data Collection Method:	Institutional Interview
Data Source:	Police, Transport Organizations
Frequency and Timing of Data Acquisition:	Baseline + Yearly
Responsibility for Data Collection:	MPW Bureau
Data Collection Tools:	None Special
Location of Data Storage (paper):	MPW M&E Bureau; MPW Central Registry
Location of Data Storage (electronic):	MPW M&E Data Management System MPW Server
Data Quality Issues	
Known Data Limitations and Significance:	Un-reported accidents
Actions Taken or Planned to Address this Limitation:	Estimate number of unreported accidents from direct interviews with operators
Internal Data Quality Assessments:	
Plan for Data Analysis, Review & Reporting	
Data Analysis:	Yearly
Review of Data:	M&E Data Validation Processes
Accessing of Results:	Controlled by MPW M&E Director
Data Use:	Impact Analysis
Notes / Comments:	

Indicator Reference Sheet Number:	**20**
Indicator MPW Code:	OUC14
Name of Indicator:	Total Annual Fatal Accidents
Result to which Indicator Responds:	Improved Road Conditions
Level of Indicator:	Outcome
Description	
Aspect:	Road Safety
Definition:	Total number of accidents involving fatalities as recorded for the road on an annual basis
Unit of Measurement:	No. per Year
Disaggregation:	Transport Mode
Plan for Data Acquisition	
Data Collection Method:	Institutional Interview
Data Source:	Police, Ministry of Transport
Frequency and Timing of Data Acquisition:	Baseline + Yearly
Responsibility for Data Collection:	MPW Bureau Teams; County Engineer
Data Collection Tools:	Paper Based forms
Location of Data Storage (paper):	County Office, MPW M&E Bureau; MPW Central Registry
Location of Data Storage (electronic):	MPW Data Management System MPW Server
Data Quality Issues	
Known Data Limitations and Significance:	None, usually all fatalities are attended to by the Police
Actions Taken or Planned to Address this Limitation:	
Internal Data Quality Assessments:	
Plan for Data Analysis, Review & Reporting	
Data Analysis:	Yearly
Review of Data:	M&E Data Validation Processes
Accessing of Results:	Controlled by MPW M&E Director
Data Use:	Impact and Outcome Analysis
Notes / Comments:	

Indicator Reference Sheet Number:	**21**
Indicator MPW Code:	OUP01
Name of Indicator:	Routine maintenance works
Result to which Indicator Responds:	Efficient provision and maintenance of roads
Level of Indicator:	Output
Description	
Aspect:	Routine maintenance
Definition:	Output achieved in routine road maintenance
Unit of Measurement:	Km per Year
Disaggregation:	Road Class
Plan for Data Acquisition	
Data Collection Method:	Direct Reporting and Returns
Data Source:	Project Teams
Frequency and Timing of Data Acquisition:	Baseline + Monthly
Responsibility for Data Collection:	Project Team Leader, County Engineer
Data Collection Tools:	Report; Excel Return Form (standardized), Web based entries
Location of Data Storage (paper):	County Office, Project Offices; MPW Feeder Roads Division; MPW M&E Bureau; MPW Central Registry
Location of Data Storage (electronic):	MPW Data Management System MPW Server
Data Quality Issues	
Known Data Limitations and Significance:	
Actions Taken or Planned to Address this Limitation:	
Internal Data Quality Assessments:	
Plan for Data Analysis, Review & Reporting	
Data Analysis:	Monthly
Review of Data:	M&E Data Validation Processes
Accessing of Results:	Controlled by MPW M&E Director
Data Use:	Output/Progress tracking
Notes / Comments:	

Indicator Reference Sheet Number:	**22**
Indicator MPW Code:	OUP02
Name of Indicator:	Periodic maintenance works
Result to which Indicator Responds:	Efficient provision and maintenance of roads
Level of Indicator:	Output
Description	
Aspect:	Provision and maintenance of roads
Definition:	Output achieved in periodic maintenance
Unit of Measurement:	Km per Year
Disaggregation:	Road Class
Plan for Data Acquisition	
Data Collection Method:	Direct Reporting and Returns
Data Source:	Project Teams
Frequency and Timing of Data Acquisition:	Baseline + Monthly
Responsibility for Data Collection:	Project Team Leader, County Engineer
Data Collection Tools:	Report; Excel Return Form (standardized), Web based Direct entries
Location of Data Storage (paper):	County Office, Project Offices; MPW Feeder Roads Division; MPW M&E Bureau; MPW Central Registry
Location of Data Storage (electronic):	MPW Data Management System MPW Server
Data Quality Issues	
Known Data Limitations and Significance:	
Actions Taken or Planned to Address this Limitation:	
Internal Data Quality Assessments:	
Plan for Data Analysis, Review & Reporting	
Data Analysis:	Monthly
Review of Data:	M&E Data Validation Processes
Accessing of Results:	Controlled by MPW M&E Director
Data Use:	Output/Progress tracking
Notes / Comments:	

Indicator Reference Sheet Number:	**23**
Indicator MPW Code:	OUP03
Name of Indicator:	Upgrading road construction works
Result to which Indicator Responds:	Efficient provision and maintenance of roads
Level of Indicator:	Output
Description	
Aspect:	Provision and maintenance of roads
Definition:	Output achieved in road rehabilitation works
Unit of Measurement:	Km per Year
Disaggregation:	Road Class
Plan for Data Acquisition	
Data Collection Method:	Direct Reporting and Returns
Data Source:	Project Teams
Frequency and Timing of Data Acquisition:	Baseline + Monthly
Responsibility for Data Collection:	Project Team Leader, County Engineer
Data Collection Tools:	Report; Excel Return Form (standardized), Remote Web Entries
Location of Data Storage (paper):	County Office, Project Offices; MPW Feeder Roads Division; MPW M&E Bureau; MPW Central Registry
Location of Data Storage (electronic):	MPW Data Management System MPW Server
Data Quality Issues	
Known Data Limitations and Significance:	
Actions Taken or Planned to Address this Limitation:	
Internal Data Quality Assessments:	
Plan for Data Analysis, Review & Reporting	
Data Analysis:	Quarterly
Review of Data:	M&E Data Validation Processes
Accessing of Results:	Controlled by MPW M&E Director
Data Use:	Output/Progress tracking
Notes / Comments:	

Indicator Reference Sheet Number:	**24**
Indicator MPW Code:	OUP04
Name of Indicator:	Works milestone achieved
Result to which Indicator Responds:	Efficient provision and maintenance of roads
Level of Indicator:	Output
Description	
Aspect:	Provision and maintenance of roads
Definition:	Milestones status in road works implementation
Unit of Measurement:	No. of
Disaggregation:	Pending, In Progress, Delayed, Completed
Plan for Data Acquisition	
Data Collection Method:	Direct Reporting and Returns
Data Source:	Project Teams
Frequency and Timing of Data Acquisition:	Baseline + Monthly
Responsibility for Data Collection:	Project Team Leader, County Engineer
Data Collection Tools:	Report; Excel Return Form, Remote Web Entries (standardized)
Location of Data Storage (paper):	County Office, Project Offices; MPW Feeder Roads Division; MPW M&E Bureau; MPW Central Registry
Location of Data Storage (electronic):	MPW Data Management System MPW Server
Data Quality Issues	
Known Data Limitations and Significance:	
Actions Taken or Planned to Address this Limitation:	
Internal Data Quality Assessments:	
Plan for Data Analysis, Review & Reporting	
Data Analysis:	Monthly
Review of Data:	M&E Data Validation Processes
Accessing of Results:	Controlled by MPW M&E Director
Data Use:	Output/Progress tracking
Notes / Comments:	

Indicator Reference Sheet Number:	**25**
Indicator MPW Code:	INP01
Name of Indicator:	Funds Utilisation Rate
Result to which Indicator Responds:	Efficient provision and maintenance of roads
Level of Indicator:	Input
Description	
Aspect:	Provision and maintenance of roads
Definition:	Indicator is a measure of rate of utilization of funds set aside for road provision and maintenance
Unit of Measurement:	Percent Disbursed
Disaggregation:	Road Class, Project, County Type of Works: Routine Maintenance, Periodic Maintenance, Rehabilitation, Upgrading
Plan for Data Acquisition	
Data Collection Method:	Direct Reporting and Returns
Data Source:	Project Teams
Frequency and Timing of Data Acquisition:	Baseline + Monthly
Responsibility for Data Collection:	Project Team Leader, County Engineer
Data Collection Tools:	Report; Excel Return Form (standardized), Direct Web entries
Location of Data Storage (paper):	County Office, Project Offices; MPW Feeder Roads Division; MPW M&E Bureau; MPW Central Registry
Location of Data Storage (electronic):	MPW Data Management System MPW Server
Data Quality Issues	
Known Data Limitations and Significance:	
Actions Taken or Planned to Address this Limitation:	
Internal Data Quality Assessments:	
Plan for Data Analysis, Review & Reporting	
Data Analysis:	Monthly
Review of Data:	M&E Data Validation Processes
Accessing of Results:	Controlled by MPW M&E Director
Data Use:	Inputs utilization tracking (Project Funding)
Notes / Comments:	

Annex 3 Baseline Socio-economic Survey Data Analysis Report

ZWEDRU TO BAYWADEE ROAD

AND

ZWEDRU TO BODOU ROAD

SOCIO-ECONOMIC BASELINE SURVEY SUMMARY REPORT

ZWEDRU TO JANZON TO BAWAYDEE ROAD

HOUSEHOLD SURVEY

Introduction

Household surveys formed the main tool for collecting data on social and economic conditions of communities along the study roads. A total of 160 households were interviewed on Zwedru to Janzon Road. As the numbers of households on the roads were not too many, it was decided to interview all households found.

Respondent's Bio Data

An analysis of the status of the respondents indicates that 94.2 percent were household heads, 5.2 percent were spouses and 0.6 percent were a relative of the head. Males made up 69.2 percent while females constitute 30.8 percent of respondents. In all, 68.6 percent of households were male-headed, and 25.6 percent were female-headed.

The age distribution shows that nearly 80 percent were in the active age bracket of 20 to 60 years. Again, 40.7 percent of interviewees were between the ages of 20 and 40 years emphasizing the youthful population of the communities along this road stretch. Respondents between the ages of 41-50 years represented 21.5 percent whereas 14.5 percent were between 51-60 years. About 9.9 percent were between 71-80 years while only 2.3 percent were above 80 years.

Majority (52.9%) of the respondents were married while 8.7 percent were single or never married. Widows and Widowers made up 4.7 percent and respondents who were divorced made up 1.2 percent. Furthermore, about 32 percent were co-habiting while one person (1; 0.6%) were separated. More than one-third of the respondents (33.7%) had never been to school and for those who had some education; 30.2 percent each completed only primary or secondary school respectively. Very few (2.3%) had attained education up to tertiary level.

Details of Adults and Children Resident in the Household

Findings from the household survey indicated that the average number of adults per household were two (2) and the total number of adults in all the households were two hundred and fifty-seven (257). Majority (69.8%) of the householdshad between 1-3 adults in their households while 9.3 percent had 4-6 adults in their households. On the other hand, about 19.8 percent had no adult in their respective households while 1.2 percent had 7-9 adults in their households.

Almost half (48.3%) of the respondents had about 1-3 children in their households; followed by 27.3 percent who had 4-6 children in their households. Furthermore, about 6.4 percent have seven (7) to nine (9) children in their households while 0.6 percent have ten (10) to twelve (12) children in their households. Meanwhile, about 17.4 percent had no children in their households. Overall, the total number of children in all the households was five hundred and five (505) with an average of three (3) children per household. Children in the communities along this road stretch were about twice the number of the adults, further emphasizing the youthful population of the area.

Sources of Income and Savings

The employment statuses of the respondents were as follows: the data shows that the majority (76.7%) were self-employed whereas12.8 percent were employed by other people or institutions and self-employed. About 2.3 percent were employed but 8.1 percent were not economically active. Of those employed by institutions, 19.2 percent work with the Armed Forces of Liberia while 11.5

percent work for the Government of Liberia. Others also work with educational and health institutions as well as manufacturing companies.Agriculture (crop farming) were the major occupation of the majority (92.2%) of respondents who were self-employed; focus group discussions with the Chiefs and elders of Bawaydee revealed this as well. Farming duties were mainly done jointly by males and females. Men cultivate rice, cocoa, eddoes, cassava and plantain while women grow vegetables, pepper and bitter balls. Trading was the next economic activity of the self-employed respondents which engaged about 4 persons (2.6%) and three persons (3; 1.8%) were artisans made up of an auto- electrician, a motor cycle mechanic and a mason. Furthermore, about 1.9 percent were engaged in baking while one (1; 0.6%) respondent were into charcoal production.

Generally, earnings were quite low compared to the expected national minimum wage of approximately US$ 250 per month.While many (45.5%) of the respondents earned an average monthly income of between US$ 5 and US$ 50, another 24.7 percent earn between US$51 and US$100 monthly. Again, about 3.9 percent earned an average monthly income between US$101 and US$150 while 2.6 percent each earned between US$151-200 and US$201-250 respectively. Meanwhile, 17.5 percent do not earned any income at all and 2.6 percent earned more than US$300 monthly. Respondents generally had a poor savings culture.As the data shows,many (39.0%) of the respondents do not save at all and 35.5 percent save between US$2 and US$30 monthly. Only about 2.9 percent save more than US$ 200 monthly. The poor savings culture can be attributed to the small monthly incomes many households made.

Transport Services and Costs

Janzon market seems to be the preferred market choice for most households as majority (87.2%) journey there, whereas 7 percent frequent the Zwedru market. These markets were usually frequented to buy family provisions, sell farm produce and products, and to buy farm inputs as well. The Janzon market were a weekly market whiles the Zwedru were a daily market. Apart from 11 percent of respondents who visit the market on a daily basis, majority (84.7%) of the respondents visit the market on a weekly basis while 3.7 percent used it bi-weekly. In addition, only one (0.6%) of the respondents used the road to the markets monthly. In order to get the market, one had to either walk or take a motorcycle (the only means of transportation).

The cost of travel to the market by motorcycle varied depending on the location of the respondent and the load they were carrying. Majority (70.0%) of the respondents pay LR$ 150, followed by 15 percent who pay LR$ 200 and 5 percent who pay LR$ 250 for a one-way trip to the market. Average freight charges for goods were dependent on its weight. According to the Chief and elders of Janzon and Bawaydee, freight charges for a 200-pound bag costs LR$200 to the market. The responses of respondents weretabulated below.

Average Goods Freight Charges to Market

Amount (LR$)	No.	%
None	1	4.3
150	1	4.3
250	2	8.7
300	1	4.3
350	6	26.1
400	3	13.0
450	2	8.7
500	1	4.3
600	4	17.4
800	1	4.3

1500	1	4.3
Total	**23**	**100**

Travelling to the city (outside their rural settlements/towns) was also done by means of walking or by motorcycle. For 31 percent of the respondents, they travel outside their communities to buy goods for the households. About 24.7 percent also travel for social visits whereas 12.7 percent do so to sell their produce. Furthermore, 12.3 percent travel outside their towns to access health facilities, 8.9 percent for educational purposes and 7.3 percent travel to buy agricultural inputs. The cost of travel to the city by motorcycle for the majority was LR$ 150 while 22.7 percent pay LR$ 200. Only one (1; 4.5%) respondent paid an amount of LR$ 500 as cost of travel to the nearest city by motorcycle.

Average Cost of Passenger Travel to the City by Motorbike

Amount (LR$)	No.	%
None	1	4.5
150	15	68.2
200	5	22.7
500	1	4.5
Total	**22**	**100**

In transporting goods to the city, only ten (10) of the respondents didso by means of motorcycle. Goods transported include pepper, dried goods, cassava and bitterball. Freight charges incurred in transporting goods to the city were as detailed in the table below. While 30 percent each paid an amount of LR$ 350 and LR$ 600 respectively as freight charges, 10 percent each also pay LR$ 200 and LR$300 respectively.

Average Cost of Freight of Goods to the City

Amount (LR$)	No.	%
200	1	10.0
300	1	10.0
350	3	30.0
400	2	20.0
600	3	30.0
Total	**10**	**100**

Health Services Available

The analysis of data shows that about a third (27.0%) each of respondents had access to a health centre, a health post and a CHPS Compound nearby respectively. Others also had access to a public hospital (17.4%), a private hospital (1.5%) or a private clinic (0.2%).

Health Services available

Health Facility	No.	%
Community health Centre	110	27.0
Community health post	110	27.0

CHPS Compound	110	27.0
Public hospital	71	17.4
Private hospital	6	1.5
Private clinic	1	0.2
Total	**408**	**100**

Travel Fares toattend Health Facilities

Though majority (86.6%) of respondents resort to walking when accessing health facilities, a few (13.4%) used motorcycles as means of transportation to their respective health facilities. For those who visit the health facility by means of motorcycles, majority (56.5%) of the respondents pay LR$ 150 while 26.1 percent pay LR$200 as cost of transportation. While 4.3 percent do not pay fare when using motorcycle, another 4.3 percent each pay LR$15, LR$400 and LR$500 respectively.

Average Fare paid to the Health Facility by Motor Cycle

Amount (LR$)	No.	%
None	1	4.3
15	1	4.3
150	13	56.5
200	6	26.1
400	1	4.3
500	1	4.3
Total	23	100

Living Facilities and Condition

The analysis of data on housing characteristics indicates that for many (54.7%) homes, mud were the most commonly used construction material for walls. This were followed by bamboo (13.9%), wood (13.1%) and concrete at 7.3 percent. Again, about 4.1 percent used landcrete or sandcrete respectively while 2.9 percent used wattle and daub. Thatched roofing seemed to be the most common roofing material used by 45.9 percent of respondents. Galvanized iron was the next used material with 20.3 percent of the respondents; 10.5 percent used leaves. Asbestos follows (0.6%) as the least used material for roofing. Materials used for construction of house floors were either cement or earth as mentioned by the respondents. While the majority (68.0%) mentioned earth as the material for flooring, about 21.5 percent used cement.

About 30.8 percent live in houses with 1-2 rooms, the majority (56.4%) of households occupies houses with 3-4 rooms and 4.1 percent occupy 5-6 rooms. These houses were mostly self-owned (78.5%), family owned (10.5%) or rented (0.6%). Seventy-one (43.8%) of the homes had access to toilet facilities while majority consisting of 91 homes (56.2%) attended to nature's call in the bush.

Type of Toilet Facility Owned by Respondents' Household

Response	Toilet Type	No.	%
Yes	Pit latrine	63	38.9
	WC	6	3.7
	ODF	2	1.2
Yes Total		**71**	**43.8**
No	'Bush'	91	56.2

No Total	**91**	**56.2**
Grand Total	**162**	**100**

None of the households had access to electricity however; alternative sources of lighting for households included torch (87.8%), solar panel lamp (2.9%), solar lamp (1.7%), generator (1.2%) and kerosene lantern (0.6%). About 94.2 percent of households used fuel wood for cooking.

The main sources of water for drinking and household used included the hand pump, creek, borehole and pond. The table below shows that some individuals along the road stretch stillhad no/poor access to potable water.

Sources of Water for Drinking and Household Used

Source	Drinking Purposes		Household Purposes	
	No.	%	No.	%
Hand Pump	99	57.6	96	55.8
Borehole	34	19.8	33	19.2
Well	17	9.9	19	11
Pond	11	6.4	11	6.4
Creek	1	0.6	1	0.6
River/stream			2	1.2
No Response	10	5.8	10	5.8
Total	172	100	172	100

Perceived Project Impacts

The road condition were affecting the cost of transportation (high transportation fares) because of high gasoline consumption, high vehicle repair costs, the long period of time it takes to travel as well as body pains suffered by motorists. Production of food crops from the villages had reduced because of the road's condition and this wasmore noticeable during the rainy season.

- Positive Impacts of Improving the Road

Improving the proposed road was expected to bring about many benefits. These include access to market (15.6%) and access to health facilities (11.7%). With an improved road, there will be a higher value for land (6.2%) and members of the various communities along the road will also had easy access to educational facilities (6.2%). Furthermore, security (5.6%) and communication (4.8%) on the project corridor will be improved whereas access to transport services will increase (4.8%). Other responses were presented in the table below.

Positive Impacts of Improving the Road

Positive Impact	No.	%
Access to markets	147	15.6
Access to health	111	11.7
Used of IMTs	103	10.9
Social cohesion	99	10.5
New opportunities	77	8.1
Higher land value	59	6.2
Access to education	59	6.2

Improved security	53	5.6
Increased modes of transport	45	4.8
Enhanced communication	45	4.8
Access to quality products	42	4.4
Investor awareness	32	3.4
Access to water	28	3.0
New economic opportunities	22	2.3
Improved democracy	16	1.7
Low transportation cost	7	0.7
Total	**945**	**100**

- Negative Impacts of Improving the Road

Respondents also envisaged some negative impacts which may result from the proposed project. These include social disintegration (28.8%); accidents (23.7%); loss of land (18.6%) and a rise in environmental damage (14.2%). Other respondents believed there will be food insecurity (3.4%) and a rise in social vices (0.7%). The data is presented in the table below.

Negative Impacts of Improving the Road

Negative Impacts	**No.**	**%**
Social disintegration	85	28.8
Accidents	70	23.7
Loss of land	55	18.6
Environmental damage	42	14.2
High expectations	17	5.8
Worker migration	14	4.7
Food insecurity	10	3.4
Increase social vices	2	0.7
Total	**295**	**100**

INSTITUTIONAL SURVEY RESULTS - HEALTH

The hospital located at Janson town/villageserved eleven (11) communities including Janzon, Bawaydee, Beh's Town, Diahn, New Pohn, Old Pohn, Banana Village, Lawrence and Karr Village. Services provided by the hospital to these communities were the accident and emergency center, outpatient department, immunization service, pediatrics and laboratory services.

Even though the hospital served about eleven (11) communities there were no doctors employed by the hospital. Only one (1) nurse were employed to take care of about thirty-five (35) patients who visit the hospital daily on the average. The lack of health personnel at the hospital could be as result of poor education in the area as well as the poor conditions of the road preventing the few qualified personnel from reaching them. The hospital had current staff strength of eighty-two (82) with three (3) being professional workers as well as thirteen (13) beds available for admissions. The hospital had an average daily OPD attendance of thirty-five (35) for the year 2017. Road traffic accidents recorded for the year 2017 were twenty-four (24) in number with no fatalities.

The most common means of transportation in the area were the motorcycle and this causes the most accidents or injuries in the area. Patients report to the hospital with bruises as a result. About ninety-five (95) percent of patients walk to the hospital. The hospital had no standby ambulance but had access to ambulance services in cases of emergencies which were usually referred to the Martha

Tubman Memorial Hospital, 22kilometers from Janzon hospital with no expenses made by the hospital with regards to transportation.

Historical Records of Cases

Records/Cases	Types of cases
OPD attendances (2017)	Malaria, Anti-Natal Care (ANC), Myalgia, Delivery &Sexually transmitted diseases
Fatalities	None
Admissions in the last month	None
HIV/AIDS cases (2017)	13
Emergency services: average call out rate in a month	29

Mode of Transport to Health Facilities

Travel and Transport	Rate
Walking	95%
Carried	5%
Motorcycle	5%
Taxi	None
Ambulance call out rate in a month	2%
Ambulance call out time	1hour
Travel time of referral to hospital	1hour
Institution's transport costs: Monthly cost of transportation	2000
Institution's transport costs: Monthly cost of transportation as percentage of total expenditure	40%

The nature of the community's road was described by the respondents at the hospital as very poor as the road surface had a deep curve, were narrow, eroded and riddled with potholes. Slippery hills and ponds had also formed on the road. The hospital worker interviewed, believed construction of the road will improve access to health facilities, social cohesion, access to markets, access to quality products, wouldbring about new opportunities in the community, access to water, investor awareness, improved security network, increase in land values, easy access to educational facilities and will increase modes of transportation. Some of the negative impacts mentioned included an increase in road accidents and loss of properties..

INSTITUTIONAL SURVEY RESULTS - EDUCATION

Janzon Junior High School

From the interview, it was established that the school were a Junior High School (JHS 1 to 3) with vacancy for teachers because teachers were not willing to be assigned to the location of the school. Moving from Zwedru to Beh's Town were problematic because of the road condition and the location of the school were also not accessible to motorized vehicles. The total number of pupils in the school were 372 with 226 male students and 146 female students. The cost of transportation from Beh'sTown to Zwedru were also too high in proportion to the teachers' incomes.

The road were seen as very bad because it had overgrown trees at the sides, standing water causing ponds, sharp curves and falling logs on the road which mostly lead to accidents and delays in travel.

A reconstruction of the road will improve access to markets and quality education, social cohesion, bring about new economic opportunities, higher land values and improved modes of transport in the community. The table below presents data on enrollment and attendance.

	Total Number of Pupils	**Number of dropouts**	**Daily Attendance rate**	**Enrollment rate**
Male	226	6	75%	30%
Female	146	9	78%	
Total	**372**	**15**		**30%**

Bawaydee Basic School

From the interview, it was established that the school were a Basic School (From Kindergarten to JHS) with vacancy for teachers because of the Government's inability to supply teachers to the school. Moving from Zwedru to Beh's Town were problematic because of the bad road network and the location of the school were also not accessible to motorized vehicles. The total number of pupils in the school were 218 with 114 male students and 104 female students. Transportation costs for Teachers to carry monthly report and to collect pay cheques from Zwedru were extremely high due the nature of the road.

The road to the community were rated to be very poor by the principal because the road had not been maintained for over 20 years, the sides were overgrown with trees, and settling water had caused ponds, potholes and muddy sections.

A rehabilitation of the road will improve the living standards of the community. Many people will had access to quality health facilities and also boost their economic activities and marketing. Enrollment level were as shown in the table below:

	Total Number of Pupils	**Number of dropouts**	**Daily Attendance rate**	**Enrollment rate**
Male	114	10	80%	60%
Female	104	15	75%	
Total	**118**	**25**		**60%**

BUSINESS DATA ANALYSIS

Business operation on the road corridor were very low; a total of twenty-four business operators were surveyed along the road stretch. Of this number, 13 (54.2%) were males and 11 (45.8%) were females. Many (62.5%) of them were young business operators between the ages of 21 and 40. It can also be deduced from the data that females operate businesses at a younger age compared to males since between 21 and 30, the females outnumbered the males by two respondents.

Age and Sex of Respondents

AGE (YEARS)	**MALE**		**FEMALE**		**TOTAL**	
	No.	**%**	**No.**	**%**	**No.**	**%**

21-30	3	12.5	5	20.8	8	33.3
31-40	5	20.8	2	8.3	7	29.2
41-50	2	8.3	1	4.2	3	12.5
51-60	2	8.3			2	8.3
Above 60	1	4.2	3	12.5	4	16.7
Total	**13**	**54.2**	**11**	**45.8**	**24**	**100**

Out of the twenty-four business operators interviewed, 91.7 percent own their businesses while 8.3 percent (2) were owners/managers of their businesses. Majority of these businesses were solely operated with very few hiring extra hands to help. A few of the business owners and owner/managers had partners working with them. Most of the business premises were constructed with low cost materials like mud, bamboo and wattle and daub, reflecting the general architecture of the buildings on the road corridor. Very few businesses can afford the more expensive materials like cement and galvanized iron.

Business operators (about 83.3%) were mainly engaged in retail. Out of the twenty-four businesses, only one sells medicine while the rest sell mixed items such as rice, alcohol and palm oil, biscuits, beer and batteries. Four sources of supply were mentioned by the business owners: The County Capital (Zwedru), the Capital City (Monrovia), the District Capital and Ivory Coast. Of the four sources, Zwedru were the most popular among business owners since majority (88%) travel there to shop for supplies.

For many of the businesses, only one day out of the seven days were a good business day (though some businesses can had as many as seven). This could be a reflection of the economic statuses of people along the corridor since lower income levels can be directly related to the sales made for these businesses. The table below states an estimate of the sales businesses made each week.

Typical Turnover/Sales per week

SALE (LR$)	**NO.**	**%**
Below 1000	2	8.3
1000-2000	5	20.8
2001-3000	1	4.2
3001-4000	3	12.5
4001-5000	3	12.5
5001-6000	3	12.5
Above 6000	7	29.2
Total	**24**	**100**

Positive Impacts of the Project

Business managers and/or owners look forward to the upcoming road project with many positive expectations. These include access to markets (12.0%), access to education (9.4%), access to quality products (8.3%), access to water (2.6%) and new economic opportunities (1.6%). The table below lists the expected positive impacts of the project.

Positive Impacts of the Project

Positive Impact	**No.**	**%**
Used of IMTs	24	12.5

Access to markets	23	12.0
social cohesion	20	10.4
Access to health	19	9.9
Improved security	18	9.4
Access to education	18	9.4
Access to quality products	16	8.3
Higher land value	16	8.3
New opportunities	12	6.3
Increased modes of transport	5	2.6
Enhanced communication	5	2.6
Improved democracy	5	2.6
Access to water	5	2.6
New Economic Opportunities	3	1.6
Investor awareness	3	1.6
Total	**192**	**100**

Negative Impacts of the Project

With every good thing comes a bad side and this can be said about the upcoming project as well. Respondents believe that the road project will result in loss of lands (40%), accidents (15%), food insecurity (2.5%) and environmental damage (12.5%), to mention a few, during the construction phase. Below were a table stating the negative expectations respondents had about the upcoming project.

Negative Impacts of the Project

Negative Impact	**No.**	**%**
Loss of land	16	40.0
Accidents	6	15.0
Social Disintegration	6	15.0
Environmental damage	5	12.5
High Expectations	3	7.5
Worker migration	3	7.5
Food insecurity	1	2.5
Total	**40**	**100**

ROAD USER SURVEY

Respondents' Profile

One hundred and ninety-three (193) male and thirteen (13) female users of the Zwedru-Janzon-Bawaydee road were interviewed. About 10.7 percent were between 15 and 20 years, 38.8 percent were between 21 and 30 years, 33.5 percent were between 31 and 40 years, 10.7 percent were between 41 and 50 years, and 2.4 percent were above fifty years. For many of these respondents, the road was their main route to their various destinations. The low participation of females in this survey could be attributed to the poor nature of the road and the modes of transportation available.

Current Road Condition

The current road condition were rated generally to be very good, fair, poor and very poor by respondents. Of those that described the road as very poor, 18.8 percent say the road were full of

potholes, 18.3 percent mention the road gets flooded and muddy during rainfall, 2 percent say the road had not been rehabilitated for years, 1.5 percent talk about the fact that there were no properly constructed culverts, among others. Road users that report that the road were in poor condition also give reasons including the road being hilly, very slippery (1.5%) and bushy (0.5%). Also, a meeting with the youth of Janzon Town reveals that the road condition were affecting the cost of transportation (high transportation fares) because of high gasoline consumption, high vehicle repair costs, the long period of time it takes to travel as well as body pains suffered by motorists.

Improving the Zwedru-Janzon-Bawaydee road will result in numerous benefits for the community and its members and these included the usedof IMTs(9.8%), access to health (11.7%), social cohesion (9.4%), improved security (7.0%), access to quality products (5.6%), increased modes of transport (3.8%) and investor awareness (2.6%). These and other expected positive impacts were tabulated below.

Positive Impacts of Improving the Road

Positive Impacts	**No.**	**%**
Access to health	152	11.7
Access to markets	150	11.5
Used of IMTs	128	9.8
Social cohesion	122	9.4
New opportunities	118	9.1
Access to water	92	7.1
Improved security	91	7.0
Higher land value	87	6.7
Access to education	74	5.7
Access to quality products	73	5.6
Increased modes of transport	49	3.8
Enhanced communication	49	3.8
New economic opportunities	45	3.5
Improved democracy	38	2.9
Investor awareness	34	2.6
Low cost of transportation	1	0.1
Total	**1303**	**100**

The road users interviewed also mentioned that the project were likely to had negative impacts on the community and its members. These include loss of land, environmental damage, accidents, high expectations, food insecurity and social disintegration. The likely negative impacts of the road project were tabulated below.

Negative Impacts of improving the road

Negative Impacts	**No.**	**%**
Loss of land	86	21.4
Environmental damage	79	19.7
Social disintegration	78	19.4
Accidents	72	17.9
High expectations	50	12.4

Worker migration	23	5.7
Food insecurity	14	3.5
Total	**402**	**100**

MARKET SHOPPER SURVEY RESULTS

Fourteen respondents were selected to be interviewed in Janzon Market. While six of them live in the community, eight live in other communities (Zwedru, Bawaydee and New Pohn). The respondents constitute four males and ten females ranging between the ages of twenty (20) and sixty-two (62). Interviewees usually visit the Janzon market weekly to buy items like agricultural goods, mixed goods, cigarettes and iron soap.

Current Road Condition Rating

The road to the community were observed to be in a poor condition and while some of the respondents agreed with this, others mention that the road were in very poor condition. Of those who said the road were very poor, 20.8 percent mention that the nature of the road leads to frequent accidents, 16.7 percent complain that the road gets flooded and muddy during rainfall and 8.3 percent mention that the road were full of potholes. Those who describe the road as poor say the road were hilly and very slippery (4.2%) and that the road were full of potholes (4.2%). Reasons why respondents described the road as poor and very poor were stated in the table below.

Reasons for Road Condition Rating

Condition	Reason for choice	No.	%
Very Poor	The bad nature of the road leads to frequent road accidents	5	20.8
	The road gets flooded and muddy during rainfall	4	16.7
	The road had not been rehabilitated for over a number of years	3	12.5
	The road were full of pot holes	2	8.3
	The road gets eroded during rainfall	1	4.2
	High transport fares as a result of the bad nature of the road	1	4.2
	The road were bushy	1	4.2
	The road were hilly and very slippery	1	4.2
	There were no proper drainage system along the sides of the road	1	4.2
	Over grown trees along the side of the road fall on the road during rainfall	1	4.2
Very Poor Total		**20**	**83.3**
Poor	The road were full of pot holes	1	4.2
	The road gets flooded and muddy during rainfall	1	4.2
	The road were hilly and very slippery	1	4.2
	The road were in a very bad condition	1	4.2
Poor Total		**4**	**16.7**
Total		**24**	**100**

Positive Impacts of Improving the Road

The road were expected to bring about many benefits to the community and these include access to markets (28.3%), use of IMTs(10.9%), access to quality products (8.7%), access to water (4.3%) and improved security (4.3%). The table below shows the positive impacts respondents expect the project to had on the community and its members.

Positive Impacts of Improving the Road

Positive Impacts	No.	%
Access to markets	13	28.3
Social cohesion	8	17.4
New opportunities	5	10.9
Used of IMTs	5	10.9
Access to quality products	4	8.7
Increased modes of transport	3	6.5
Access to water	2	4.3
Access to education	2	4.3
Improved security	2	4.3
Investor awareness	2	4.3
Total	**46**	**100**

Negative Impacts of Improving the Road

Respondents were not oblivious of the negative impacts the road project were likely to cause. They mentioned that the project could result in accidents, social disintegration, environmental damage, loss of land and food insecurity if preventive measures were not put in place.

Negative Impacts of Improving the Road

Negative Impacts	No.	%
Accidents	5	35.7
Social disintegration	4	28.6
Environmental damage	2	14.3
Loss of land	2	14.3
Food insecurity	1	7.1
Total	**14**	**100**

MARKET TRADER SURVEY RESULTS

Respondents Interviewed in the Janzon Market

Sixteen respondents, of which four were males and twelve were females, were interviewed in the Janzon Market. About 50 percent were traders, 31.3 percent were managers and 18.8 percent were relatives of traders in the market. Many of them live in the community, however, those who do not reside there live in Zwedru andJanzon town. Respondents range between the ages of 17 and 60.

The lands used by the traders in the market were either owned by the District council or the community. One respondent mentioned that the land they occupy were rented. Facilities and stalls occupied by the traders were also categorized into three; rented, trader owned and District Council owned. Ten (10) of the sixteen (16) respondents interviewed rent their facilities/stall at the market. The table below shows the amounts of rent payment made each month by the ten.

Monthly Cost of rented facilities/stalls used for trading

Cost (LR$)	No.	%
10	6	60.0
75	1	10.0
300	1	10.0

350	1	10.0
500	1	10.0
Total	**10**	**100**

Stalls occupied by market traders were either open or constructed with wood. Other materials used for constructing market stalls were wood and mud, brick and concrete.

Market traders interviewed were not sure enough about the total number of traders in the market. About 12.5 percent claim there were one to two traders while 37.5 percent mention that there were 150 to 200 traders. Twenty-five percent say that there were 250 to 350 traders and one trader say there were about five hundred traders in the market. Only 18.8 percent admit they cannot estimate the number of traders in the market. Again, traders interviewed could not give a good estimate of the number of female traders in the market. While 2 respondents say there were only one female trader, one person says there were 120 and three others say there were 150 of them. About 18.8 percent of respondents mentionthat female traders were about 60 to 75 percent of the traders in the market. From the information given, the Janzon market can be concluded to be badly organized**.**

Many businesses were doing well in the market. While only two traders made under LR$ 1000, 14 of the traders made LR$1000 or more. One respondent even mentioned making as much as LR$15,000 on a market day. However, profits made were not as much; only a few traders made over LR$1000 as profit.

Typical Turnover/Sales on a market day

Sales (LR$)	No.	%
100	1	6.3
150	1	6.3
1000	5	31.3
1200	1	6.3
1500	1	6.3
2000	1	6.3
3000	1	6.3
4000	2	12.5
5000	2	12.5
15000	1	6.3
Total	**16**	**100**

Six sources of supply were mentioned by the market traders: the County Capital (Zwedru), the Capital City (Monrovia), Ivory Coast, one's own home and farm, within the community and nearby villages. Of the six sources, Zwedru were the most popular among the market traders since majority (43.8%) travel there to shop for supplies. Goods sold in the market include mixed goods, agricultural and non-agricultural goods, medicine, dry goods, cooked food and fish.

Most respondents had only one mode of transporting their supplies from their sources to the market which were the motorcycle. Some traders transport goods to the market daily, some weekly, some bi-weekly, some monthly and others yearly. However, many respondents mention that they transport goods weekly from their sources to the market. While some travel 0.5km from their sources of supply to the market, others embark on a 50km journey.

Current Road Condition Rating

The road condition were generally observed to be poor and this was confirmed by the vehicle operators. While some consider the road to be poor, others think it were very poor. Those who mentioned that the road was poor reasons like 'the road had a lot of potholes', 'the road gets eroded during rainfall' and 'the road gets flooded and muddy during rainfall', to emphasize their point. Those who attest to the very poor nature of the road mentioned that the road had not been rehabilitated over a number of years, it were in a very bad condition, it had a poor drainage system and that vehicles were unable to ply the road the road.

Positive Impacts of Improving the Road

Market traders look forward to the upcoming road project with many positive expectations. These include access to markets (17.8%), access to education (4.1%), access to quality products (5.5%), access to water (5.5%), used of IMT (17.8%) and new economic opportunities (4.1%). The table below lists the expected positive impacts of the project.

Positive Impacts of Improving the Road

Positive Impacts	**No.**	**%**
Access to markets	13	17.8
Used of IMTs	13	17.8
Social cohesion	8	11.0
Access to health	6	8.2
Increased modes of transport	5	6.8
Access to water	4	5.5
Access to quality products	4	5.5
New opportunities	4	5.5
Enhanced communication	3	4.1
New economic opportunities	3	4.1
Improved security	3	4.1
Access to education	3	4.1
Investor awareness	2	2.7
Higher land value	2	2.7
Total	**73**	**100**

Negative Impacts of Improving the Road

Respondents were not oblivious of the negative impacts the road project were likely to cause. They mentioned that the project can result in accidents, social disintegration, environmental damage, loss of land and high expectations if preventive measures were not put in place. The impacts mentioned were tabulated below.

Negative Impacts of Improving the Road

Negative Impacts	**No.**	**%**
Social disintegration	11	34.4
Accidents	10	31.3
Loss of land	6	18.8
Environmental damage	3	9.4
High expectations	2	6.3
Total	32	100

VEHICLE OPERATOR SURVEY

Vehicle operator surveys were undertaken on the prescribed market day for Janzon town.The job of operating vehicles were noted to be male dominated as none of the twenty-three interviewees were a female. Respondents interviewed on both roads ranged between nineteen (19) and fifty (50) years of age. It were established from the study that thecommon means of transportation were the motorcycle; only one operator used a pickup. Most of the operators used new motorcycles (1-3 years old) which could be bought at any price below LR$30,000 to any price above LR$150,000. Operators offer services on either one or two roads while some offer services on as many as five routes.

Gasoline were used as fuel by all the vehicle operators interviewed. From the interview, it were realized that majority of respondents (91.3%) used between one and two gallons of fuel in a day. Others used as many as seven gallons in a day. Gasoline stations had different prices for their fuel and while some sell a gallon of fuel for about LR$ 580 others sell theirs for as much as LR$ 1200. The table below gives information on how much operators spend on a gallon of gasoline.

Cost of Fuel per Gallon in LR$

Cost (LR$)	No.	%
580	7	30.4
585	1	4.3
600	9	39.1
650	1	4.3
800	1	4.3
900	2	8.7

Maintenance of motorcycles were good in general as operators service their vehicles daily, weekly, monthly and bi-monthly which cost them from about LR$4 to above LR$2,000. In addition, many of the vehicle operators interviewed changed a tyre or more in a year. Some of the respondents interviewed had made no tyre change.

Out of the twenty-three respondents interviewed, only five had never been involved in an accident within the last twelve months. Being involved in an accident or two seems to be a trend for the rest of the respondents with the exception of the four that had no response to the question asked. Accidents on the road corridor were caused by many factors especially the poor road conditions, driver error, overloading and the damage of tyres.

Positive Impacts of Improving the Road

When interviewing the vehicle operators, they mentioned that they expect the road project to impact them positively in many ways. Some of the impacts mentioned include easier access to markets, higher land value, increased modes of transport, new economic opportunities, improved security and access to education. The table below shows the positive impacts respondents expect the project to had on them and the community at large.

Positive Impacts of Improving the Road

POSITIVE IMPACTS	NO.	%
Access to markets	21	21.2
Used of IMTs	20	20.2
Access to health	13	13.1

New Opportunities	12	12.1
Improved security	5	5.1
Social Cohesion	4	4.0
Access to Quality Products	4	4.0
Increased modes of transport	4	4.0
Higher land value	3	3.0
Investor Awareness	3	3.0
Access to Education	3	3.0
Enhanced Communication	2	2.0
Improved Democracy	2	2.0
Access to water	2	2.0
New Economic Opportunities	1	1.0
Total	**99**	**100**

Negative Impacts of Improving the Road

Even though the vehicle operators expected a lot of benefits from the project they were aware of the negatives the project was likely to impose. These include accidents, loss of land, environmental damage and social disintegration. About 21.4 percent of respondents, however, some thought the project would had no negative effects on them or their communities.

Negative Impacts of Improving the Road

Negative Impacts	**No.**	**%**
No Negative Impact	6	21.4
Accidents	13	46.4
Loss of land	5	17.9
Social disintegration	3	10.7
Environmental damage	1	3.6
Total	**28**	**100**

REPORT ON SOCIOECONOMIC BASELINE SURVEY

ZWEDRU TO BODUO ROAD

HOUSEHOLD SURVEY RESULTS

Introduction

Household surveys constituted the main data collection tool on social and economic conditions of communities that reside along this study road as well. A total of 155 households were interviewed on the Zwedru to Boduo Road. As the numbers of household on the roads were not numerous, all households in the towns were interviewed. The distribution of the interviewees according to the location of towns were given in the table below.

Distribution of Household Surveys – Zwedru to Boduo

Zeon Town	12
Gleeplay	41
Beh Town	27
Compound	11
Kpa Town	9
Sinkor	16
Togbelee	24
Boduo	5
Small villages	10
Total	**155**

Respondents Profile

The analysis of the status of the respondents indicates that 89.8 percent were household heads, 9.6 were spouses and 0.6 percent were a relative of the head. In all 49 percent were male headed households and 39.5 percent were female-headed. Two of the households were headed by children.

Of respondents interviewed, 78 (49.7%) were males and 79 (50.3%) were females. Nearly half (42.6%) of the respondents fall within the age range of 41-60 years, followed by 32.4 percent who were aged 21 to 40 years, 21.7 percent were 61 years and above. Only 1.9 percent were aged 18 to 20 years. Both males and females were almost equally represented in the sample of respondents. A large percentage (76.9%) of respondents interviewed were legally within the working-class margin(18-60 years).

Majority of the respondents (49.7%) were married whereas only 7 percent were single. The other respondents fall into various marital situations with those involved in co-habitation constituting 29.3 percent, while divorcees and those separated from their spouses made up 1.3 percent and 0.6 percent respectively. On the other hand, 12.1 percent were widows and widowers. Out of the 155 respondents, fifty-eight (58) persons, making up 36.9 percent, had no form of formal education whatsoever and several (40.1%) had only been to primary school. Some 20.4 percent and 1.9

percent proceeded up to secondary and tertiary levels respectively. One respondent, however, were still schooling.

Details of Adults and Children Resident atthe Household

Findings from the household survey indicated that the average number of adults per household were one (1) and the total number of adults in all the households were one hundred and ninety-one (191). Majority of the respondents (79.6%) had up to three (3) adults in their households. Also, 1.3 percent of respondents each had 4 to 6 and 7 to 9 adults respectively in their households. On the other hand, 17.8 percent do not had any adult in their respective households.

Majority of the respondents (47.1%) had about one to three children in their households, followed by 33.1 percent who had four (4) to six (6) children in their households, 5.7 percent who had seven (7) to nine (9) children their households as well as 0.6 percent who had ten (10) to twelve (12) children in their households. In contrast, there were no children in the households of 13.4 percent of the respondents. Overall, the total number of children in all the households were four hundred and seventy (470) with an average of three (3) children per household. Children in the communities along this road stretch were about twice the number of the adults, highlighting the youthful population of the area.

Sources of Income and Savings

About 75.2 percent of respondents were self-employed whereas 9.6 percent were self-employed and work other people and institutions. Only 2.5 percent were employed by institutions and organisations whereas 12.7 percent were not economically active. Of those employed by institutions, 21.1 percent work for the Ministry of Health, 15.8 percent each work for the Government of Liberia and the Ministry of Education respectively, and the rest of the respondents work for various institutions like Armed Forces of Liberia, Beh's Town Clinic, ITC and Merlin (Save the Children).

Agriculture were the major occupation engaged in by almost all (88.7%) respondents who were self-employed. Trading were the next economic activity of the self-employed respondents; about 8 persons engage in petty trading and one (1) person each sells fish and had a medium sized shop. Commercial motorcyclists and charcoal producers represent 1.5 percent each. Only one (1) respondent were a wildlife hunter.

Generally, earnings were quite low. Nearly half (42.1%) of the respondents who work with others and institutions earned between US$101 and US$ 200 followed by some 31.6 percent who earned between US$ 25 and US$ 100. Only 5.3 percent earned between US$ 401 and US$ 500 and 21.1 percent did not give any response. For those who were self-employed, while nearly half of respondents (47.4%) earned an average monthly income of between US$ 5 and US$ 50, 18.8 percent do not earned any income at all. On the other hand, 20.3 percent earned between US$51 and US$100, 2.3 percent each earned 101 to 150 dollars and above 500 dollars. Respondents generally had a poor savings culture as the data showed that many (40.8%) do not save at all and 35 percent save $2-20, while 12.7 percent save $21-40. The remaining (11.5%) save more than $200 on a monthly basis. The poor savings culture could be attributed to the small monthly incomes many households made.

Transport Services and Costs

Respondents who frequent the Zwedru Market constitute 93 percent of those interviewed. However, 0.6 percent usually visits both the Zwedru and Janzon Market and 1.3 percent visits the Gle Town Market. While 2.5 percent visit other markets, 2.5 percent do not visit any market at all.

Apart from 17.8 percent of respondents who visit the market daily, majority (52%) percent of respondents visit the market on a weekly basis and 7.2 percent used it bi-weekly. In addition, 19.1 percent used the road on a monthly basis whereas 0.7 percent visits the market once every quarter.

In order to get to the market, one must either walk or take a motorcycle (the only other means of transportation).

Depending on the location of respondent, the cost of travel to the market by motorcycle varies between LR$75 to above 1000. Majority of the respondents pay between 101-200, followed by some 20.4 percent who pay 301-400 and 19.4 percent who pay 201-300. Also, 8.7 percent of the respondents pay 401-500, 1.9 percent pays 501-600 and 2.9 percent pay 701-800. One percent each pay 901-1000 and above 1000 respectively.

Amount Paid for a one-way trip to the Market per Person by Motorcycle

AMOUNT (LR$)	NO.	%
75 - 100	4	3.9
101 - 200	42	40.8
201 - 300	20	19.4
301 - 400	21	20.4
401 - 500	9	8.7
501 - 600	2	1.9
701 - 800	3	2.9
901 - 1000	1	1.0
Above 1000	1	1.0
Total	**103**	**100.0**

Freight charges incurred in transporting goods to the market were also detailed in the table below.

Average Goods Freight Charges to Market

Amount (LR$)	No.	%
30 - 100	8	8.9
101 - 200	20	22.2
201 - 300	16	17.8
301 - 400	20	22.2
401 - 500	8	8.9
501 - 600	4	4.4
601 - 700	2	2.2
701 - 800	4	4.4
901 - 1000	3	3.3
Above 1000	5	5.6
Total	**90**	**100.0**

Travelling to the city (outside their towns) were also done by means of walking or by motorcycle. There were different reasons for which people will travel outside their towns and cities of residence to other cities and towns. For 35.9 percent of the respondents, they travel outside their communities to buy goods for the households. About 24.2 percent and 20.5 percent travel to health facilities and to sell produce respectively. For the others, 7.7 percent travel to buy agricultural

inputs, 4 percent travel to go to school and only 0.7 percent travel for business purposes. Based on the location of the respondents and other factors, the cost of travel to the city by motorcycle ranges from LR$ 50 to LR$ 1000.

Average Cost of Passenger Travel to the City by Motorbike

Amount (LR$)	No	%
50 - 100	7	5.9
101 - 200	47	39.5
201 - 300	22	18.5
301 - 400	28	23.5
401 - 500	8	6.7
501 - 600	3	2.5
701 - 800	2	1.7
901 - 1000	2	1.7
Total	**119**	**100.0**

In transporting goods to the city, majority (83.9%) of the respondent resort to the used of motorcycles. About 15.3 percent convey their good on foot while only 0.7 do so by bicycle. Goods transported include pepper, coal, cocoa, bitter ball, okra and corn. Freight charges of goods to the city were tabulated below.

Average Cost of Freight of Goods to the City

Amount (LR$)	No	%
50 - 100	4	3.5
101 - 200	19	16.5
201 - 300	19	16.5
301 - 400	19	16.5
401 - 500	7	6.1
501 - 600	8	7.0
601 - 700	2	1.7
701 - 800	4	3.5
901 - 1000	3	2.6
Above 1000	2	1.7
No response	28	24.3
Total	**115**	100.0

Health Services Available

The table presents health facilities that were available to respondents and shows that about a third had a health center or health post or CHPS Compound nearby.

Health Facility	No	%
Community Health Centre	100	28.7
Community Health Post	100	28.7
CHPS Compound	100	28.7
Public Hospital	37	10.6
Private Hospital	2	0.6

Private Clinic	1	0.3
Traditional Medicine Practitioner	8	2.3
Counter Drug Seller	1	0.3
Total	**349**	**100.0**

Fare to Health Facility

In accessing healthcare at health facilities, the transportation means used by majority (73.9%) of the respondents were the motorcycle. About 15.3 percent resort to walking while 6.4 percent and 2.5 percent used saloon cars and SUV (Jeeps) respectively. For those who visit the health facility by means of motorcycles, a greater number (76.7%) pay LR$ 301-400, followed by some 13.8 percent who pay 201-300 and 3.4 percent who pay 401-500. Also, 1.7 percent each of the respondents pays 101-200, 501-600 and 901-1000 respectively. Only one person representing 0.9 percent pays 701-800.

Average Fare paid to the Health Facility by Motor Cycle

Amount (LR$)	**No**	**%**
101 - 200	2	1.7
201 - 300	16	13.8
301 - 400	89	76.7
401 - 500	4	3.4
501 - 600	2	1.7
701 - 800	1	0.9
901 - 1000	2	1.7
Total	**116**	**100.0**

Living Facilities and Condition

The analysis of data on housing characteristics indicates that the majority (45.5%) used mud for the wall. This were followed by those who used bamboo (20.9%), wattle and daub (10.2%) and wood (12.7%). Landcrete (3.0%), sandcrete (1.9%) and concrete (1.5%) were the least materials used.

Thatched roofing seems to be the most common roofing material used by 58.6 percent of respondents. Galvanized iron were the next used material with 20.4 percent and then leaves with 19.1 percent of respondents. Materials used for construction of house floors werebare earth (88.5%) or cement (9.6%).

While 1.3 percent lives in houses with 5-6 rooms, the majority (56.1%) of the households occupy houses with 3-4 rooms. About 41.4 percent occupy 1-2 rooms. These houses were self-owned (76.4%) or family owned (21.0%). One of the respondents were a squatter. About 71.3 percent of the homes had access to toilet facilities while a few (28.7%) attends to nature's call in the bush.

Type of Toilet Facility Owned by Respondents' Household

Response	**Toilet Type**	**No.**	**%**
Yes	Pit latrine	106	67.5
	WC	3	1.9
	ODF	3	1.9

Yes Total		**112**	71.3
No	Bush	45	28.7
Grand Total		**157**	100.0

None of the households had access to electricity however; alternative sources of lighting include torches (96.2%), solar panels and lamps (4.0%) and candles (0.6%).Almost all the respondents (99.4%) used wood as fuel source for cooking and only 0.6 percent used charcoal.

The main sources of water for drinking and household used include the hand pump, creek, borehole and pond. The table below shows that some individuals along the road stretch still had no/poor access to potable water.

Sources of Water for Drinking and Household Used

Source	**Drinking Purposes**		**Household Purposes**	
	No.	%	No.	%
Hand Pump	61	38.9	61	38.9
Borehole	60	38.2	52	33.1
Well	7	4.5	7	4.5
Pond	18	11.5	23	14.6
River/stream	11	7.0	14	8.9
Total	157	100	157	100

- Positive Impacts of Improving the Road

Likely positive impacts of the proposed project on the activities of the respondents include easy access to educational facilities (7.6%), water (4.6%) and quality products (3.0%).Hospitals would be easier to access (12.4%) improving the overall health of households and reducing illness-related deaths. The proposed project will provide means of transporting farm produce to market (14.4%) among others leading to high income generation which bring an improvement in the standard of living of the people. With the springing up of new opportunities (12.9%) as a result of the road, this will lead to investor awareness (3.3%) as well as bring about social cohesion (9.2%), enhance communication (2.7%) and improve democracy (1.8%). The new road will most likely help increase the number of available modes of transport (3.5%) and increase the patronage/used of IMT (11.4%). Nonetheless, with an improved road, security (3.5%) in the road corridor will increase drastically.

- Negative Impacts of Improving the Road

From the responses gathered on the likely negative impacts of the project, almost a third (31.2%) believe the project will bring social disintegration and cause an interruption in the peace and calm being enjoyed now. About 27.2percent foresee the possibility of accidents due to over speeding during the constructional and operational phases. Other respondents believe that people will lose their lands (22%), there will be a rise in environmental degradation (10.4%) and food insecurity (2.0 %).

Negative Impact of the Project

Impacts	**No.**	**%**
Accidents	68	27.2
Social Disintegration	78	31.2

Loss of Land	55	22
Environmental Damage	26	10.4
High Expectations	4	1.6
Food Insecurity	5	2
Worker Migration	14	5.6
Total	**250**	**100**

INSTITUTIONAL SURVEY RESULTS - HEALTH

Services provided include the accident and emergency services, outpatient department, inpatient admissions, immunization, pharmacy, pediatrics and laboratory services.

Even though the hospital served about fourteen communities including Beh's Town, there were no doctors employed by the hospital. Only two nurses had been employed to take care of about ten patients who visit the hospital daily on the average.

The most common means of transportation in the area were the motorcycle and this causes the most accidents in the area. Patients report to the clinic with scrapes and bruises resulting from the accidents. About a hundred percent of patients that visit the hospital arrive on motorbikes. The hospital had no standby ambulance but had access to ambulance services in cases of emergencies which were usually referred to the Martha Tubman Memorial Hospital.

The nature of the community's road were described as very poor as the road surface were narrow, eroded, bushes were overgrown, and ponds had formed on the road. The respondent believes that the construction of the road will improve access to health facilities, social cohesion, access to quality products, and will bring about new opportunities in the community. Some of the negative impacts mentioned include an increase in road accidents and loss of properties like land.

INSTITUTIONAL SURVEY RESULTS - EDUCATION

From the interview, it were established that the school were a primary school (Primary 1 to 6) with vacancy for teachers (4% vacancy). The total number of pupils in the school were 122 with 59 male students and 63 female students. Below were a table showing records of school enrolment, attendance and drop-out rates.

	MALES	**FEMALES**	**Total**
Enrolment	59	63	122
Number of pupils that dropped-out in previous academic year	10	5	15
Attendance rate in a month	75%	75%	

The enrolment rate in the school stands at 55 percent.

The condition of the road from Zwedru to Beh's Town were very bad and the location of the school were not accessible to motorized vehicles. The cost of transportation from Beh'sTownto Zwedru were also too high in proportion to the teachers' income. The school incurs transportation costs of

about 1000 Liberian dollars representing 50 percent of the school's total expenditure in a month. Students do not spend on transportation since they walk to school.

The surface condition of the road were rated to be very poor by the principal because there were overgrown trees along the road, it were badly eroded, and there were also a lot of water-filled potholes on road surface. The school were participating in the School Feeding Programme from World Food Programme and this were stopped due to the poor road condition.

A reconstruction of the road will improve access to quality of education, markets and social cohesion. It will bring about new economic opportunities, higher land values and improved modes of transport in the community.

BUSINESS DATA ANALYSIS

Business operation on the road corridor were very low. Only 6 respondents, 5 females and one male aged between twenty-four and seventy-two years were covered in the business survey. All six (6) business owners also reside in the community where their businesses were located. Two of the owners had partners but none of the six owners had employees. The oldest of the businesses were started in 2003 (15 years ago), while the rest were six years and below.

Apart from one business premise being family owned, the five remaining business structures were owned by the business owner. As shown in the table below, most business premises were constructed with low cost materials and reflect the general architecture of the buildings on the road corridor. The walls were mostly made of wattle and daub, the roofing were mostly thatch followed by galvanized iron and the floors were mostly made with earth.

Four businesses (57.1%) get their supplies from the county capital, Zwedru. One of the respondents obtains supplies from the capital city, Monrovia, another gets supplies from the district capital and another mentioned Ivory Coast. All the 6 businesses sell mixed products including food and beverages and dry goods. Some examples of items captured were alcohol, palm oil, batteries, rice and biscuits.

Two businesses had only one good business day per week, another 2 had five days out of seven in a week being good business days. One business had 2 days, and another had three days. Two businesses out of the six mentioned, also had two and three good business days respectively. The table below states an estimate of the sales businesses made each week.

Typical Turnover/Sales per week

Sale (LR$)	No.	%
1200	1	16.7
2000	1	16.7
2220	1	16.7
3500	1	16.7
10000	1	16.7
20000	1	16.7
Total	**6**	**100**

For the majority (66.7%) of business owners, the only modes of transport available to ferry them were the motorbike. The alternative to the motorbike used by two (33.3%) owners were walking. For freight transport, 83.3 percent used the motorbike. Types of goods usually transported were mixed goods (i.e. provisions, palm oil, can juice, cigarette, liquor, pepper, okra, peanut, etc.)

Impacts of the Project

The current road condition seems to affect respondents more negatively than it does positively. Half of the business owners complained that the road were poor while the other half emphasized that the road were of a very poor nature. About 30 percent mention that the road had a lot of potholes, another 25 percent complain of the bushy nature of the road and 20 percent state that the road easily gets eroded. Three (15%) of the respondents also mention that the road floods easily making it muddy, while 1 percent say the road were of a hilly nature.

- Positive Impacts of the Project

Business managers and/or owners look forward to the upcoming project with many expectations and these include the community being positively impacted. Among the many positives expected, 10.7 percent of the respondents expect social cohesion as a result of the project while 8.9 percent each expect an improvement in their access to education, health and the market. The table below gives more information on the positive impactsrespondents hoped to see in the community.

Positive Impacts of the Project

Positive Impact	No.	%
Used of IMT	6	10.7
Social Cohesion	6	10.7
Access to market	5	8.9
Access to Education	5	8.9
Access to Health	5	8.9
New Opportunities	4	7.1
Improved Security	4	7.1
Improved Democracy	4	7.1
Access to water	3	5.4
Access to Quality Products	3	5.4
Enhanced Communication	3	5.4
Increased modes of transport	3	5.4
Higher land value	2	3.6
New Economic Opportunities	2	3.6
Investor Awareness	1	1.8
Total	**56**	**100**

- Negative Impacts of the Project

Every road project comes with positive and negative impacts and this project were no exception. Among the many negative impacts of the project were social disintegration (20%), accidents (20%), loss of land (13.3%), food insecurity (10%) and environmental damage (13.3%). The table below states the various negative impacts that business owners mentioned.

Negative Impacts of the Project

Negative Impact	No.	%
Social disintegration	6	20.0
Accidents	6	20.0
Loss of land	4	13.3
High expectations	4	13.3
Environmental damage	4	13.3
Food Insecurity	3	10.0
Worker migration	3	10.0

Total	**30**	**100**

MARKET TRADER RESULTS

Meeting with Zwedru Market Leaders

There were six markets in Zwedru with Zwedru Central Market as the biggest. The market opens daily with the exception of Sundays. There were no prescribed market day mentioned for this market. The Zwedru Central Market hadfifty-seven shops and eight hundred tables. Of these, thirty-five shops and two hundred tables were empty and only twenty-two shops were functioning well in the market. According to the Zwedru Market Leaders, 200 tables were empty in the market due to the bad road condition causing difficulties in transporting farm produce. This in turn results in a general increase in the prices of goods and services. Currently, the production of food from the villages and towns had reduced because of the road's condition especially during the rainy season.

The lands used by the traders in the market were either owned by the District council or the community. Market women pay 10.00LD per ticket per a table. The fees of shops depend on the type and size though many pay 5.00 USD per month.

Projected Impacts

- Positive Impacts of the Project

The Zwedru Central Market Leaders seem to be of the belief that the bad nature of the road were affecting the effectiveness of the market. They believe that a properly constructed road to the market would bring many benefits including increased production, decrease in transportation costs, controlled market prices, as well as easier transportation of foodstuff, goods and people.